RESEARCH ARTICLE

Perceived inclusivity and trust in protected area management decisions among stakeholders in Alaska

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Abstract

1. The success of conservation initiatives often depends on the inclusion of diverse stakeholder interests in the decision-making process. Yet, there is a paucity of empirical knowledge concerning the factors that explain why stakeholders do—or do not— believe that they are meaningfully represented by government agencies.

2. Our study provides insight into the relationship between trust and stakeholder perceptions of inclusivity in public land management decisions. Here, we focus on the U.S. state of Alaska, where almost two-thirds of the land area are managed by the federal government.

3. We used structural equation modelling to test whether an individual's trust and the information sources used to learn about land management positively influenced perceived inclusivity. We conceptualized trust in terms of four dimensions that reflected an individual's disposition to trust, trust in the federal government, trust in shared values and trust that agencies adhere to a moral code.

4. We found that survey respondents across the U.S. state of Alaska had a limited disposition to trust others, did not trust federal land management agencies, did not believe agencies shared their values pertaining to protected area management and did not believe that agencies adhered to a moral code.

5. Beliefs about the morality of agencies were the primary driver of perceived inclusivity in land management decisions, indicating that agencies should focus on solving problems through deliberation and discussion about moral principles rather than by force.

6. Information acquired from professional, community-based or environmental advocacy exchanges also positively influenced perceived levels of involvement among stakeholders in resource management decisions.

7. These results provide a roadmap for how land management agencies can improve public relations and work towards a model of inclusive conservation around protected areas.

1 | INTRODUCTION

The irreversible losses of critical ecosystems and increasingly noticeable changes to social-ecological systems have ignited public awareness of nature conservation and garnered support for both dampening global environmental change (Bernstein et al., 2008; Chan et al., 2020; Leiserowitz et al., 2019) and generating more equitable policies that govern the use of natural resources (Mace, 2014; Smith & McDonough, 2001; Tyler & Degoey, 1995). The contentious history of land acquisition and regulations that underpin public opinions about how governments manage resources create even deeper divides between agencies and local communities. Investigations of (mis)representation of stakeholder interests in environmental conservation have consequently gained traction to better understand and enact value pluralism, as well as strive to strengthen the relationships between agencies and their constituencies (Cebrián-Piqueras et al., 2020; Palomo et al., 2014; van Riper et al., 2020). Indeed, public involvement in land management decisions is instrumental in the success of conservation initiatives and relies on both trust (Smith et al., 2013) and information exchange (Gould et al., 2019; Reed et al., 2010). Although a sizeable body of literature has recognized that successful conservation initiatives need to involve listening for values in community perspectives, power dynamics and levels of trust (Berkes, 2007; Oldekop et al., 2016; Smith et al., 2013; Staddon et al., 2021; Stern & Coleman, 2015), there is a limited empirical understanding of the combination of reasons why stakeholders hold different perceptions of inclusivity. Here, we examine how factors related to trust and transparency in communication influence beliefs that there is adequate inclusion of residents across the U.S. state of Alaska by land management agencies.

1.1 | Inclusive conservation as a research agenda

The concept of inclusive conservation originated from a concern that multiple approaches to valuing nature were increasingly contested rather than viewed as complementary (Mace, 2014; Saberwal, 1996; Tallis & Lubchenco, 2014). By dichotomizing goals into a binary system that consists of conservation for either intrinsic or instrumental purposes, scientists have risked overlooking the full complexity of interrelationships between people and nature (Palomo et al., 2014; West et al., 2020). For example, area-based conservation initiatives have been proposed as solutions to pressing global environmental issues including biodiversity loss and climate change (Dinerstein et al., 2019; Wilson, 2016). Indeed, the long-term success

of biodiversity conservation across large, interconnected swaths of land requires buy-in from stakeholder groups that espouse an array of values, especially the voices of Indigenous groups that have been historically underrepresented (Glaser et al., 2010). Likewise, local and traditional ecological knowledge rooted in non-Western understandings of a landscape need to be incorporated into biodiversity conservation (Charnley et al., 2007) in ways that expand the breadth of issues on which there is an agreement to shift focus from conflict to appreciation for the whole.

In practice, all values held and expressed by stakeholders cannot be equally served or represented in decision-making, but it is possible to simultaneously achieve outcomes including more effective biodiversity conservation and economic prosperity through societal transformations towards more sustainable futures (Chan et al., 2020). These transformations can, in part, be accomplished through community-based conservation initiatives that link environmental outcomes with community benefits (Kellert et al., 2000; Salafsky & Wollenberg, 2000; Wilson, 2004). However, community-based conservation is not a panacea but rather a starting point for land managers to develop the capacity for more effective stakeholder engagement and build strategies that successfully cope with multiple competing demands on limited resources (Berkes, 2007; Blaikie, 2006). In other words, inclusive conservation works to improve environmental and economic outcomes by reducing tensions that involve a wide range of stakeholders in decision-making processes.

The definition and meaning of inclusive conservation initiatives have varied widely within the conservation sciences (see Table 1). Building on previous research in the context of protected areas (ENVISION, 2021; López-Rodríguez et al., 2020), we define inclusive conservation as a process for developing and answering research questions that help to solve resource management problems that emerge from balancing the consequences of different visions for nature conservation. Ideally, a model of inclusive conservation considers the scale of the system being managed, establishes legitimacy with stakeholders through equitable resource management, uses verifiable ecological knowledge and develops a multicultural conservation ethic (Berkes, 2004; Farvar et al., 2018; Musavengane & Leonard, 2019). These lofty goals have been theoretically posited in previous research, yet no studies to date have established a psychometric scale for evaluating perceived inclusivity and, therefore, understanding the degree of success achieved by management agencies in their efforts to represent stakeholder interests. Thus, there is a strong need to measure perceived inclusivity, which we define as an individual's perception that they

TABLE 1 Definitions of the term inclusive conservation established in previous research

Definitions	Source
'Recognition of the difficulties associated with implementing restrictive policies, and the fact that human land-use practices need not lead to degradation or to a decline in biological diversity, should lead to more inclusive conservation policies within protected areas as well as an expansion of the conservation focus beyond protected-area boundaries' (p.741)	Saberwal (1996)
'Studies for the conservation of historic environments have evolved from the conservation of only physical properties to an inclusive conservation approach concerning cultural properties' (p.105)	Karakul (2011)
'Together, we propose a unified and diverse conservation ethic; one that recognizes and accepts all values of nature, from intrinsic to instrumental, and welcomes all philosophies justifying nature protection and restoration, from ethical to economic, and from aesthetic to utilitarian' (p.27)	Tallis and Lubchenco (2014)
'A more inclusive conservation science (i.e., one that includes methods and insights from the natural sciences, the social sciences, and the humanities) will enable the conservation community to produce more ecologically effective and socially just conservation' (p.65)	Bennett et al. (2017)
'ICCA Consortium recommends that 'inclusive conservation' be understood as conservation where indigenous peoples and local communities are the key actors governing, managing and conserving their lands, waters and other gifts of nature and, as necessary and desired, invite others to collaborate with and support them on community-defined terms' (p.8)	Farvar et al. (2018)
'Promoting more inclusive conservation is complex and requires a broader conservation agenda for more inclusivity and to genuinely tackle issues of poverty. There is a need for conservation groups to also include the previously marginalized in leadership structures and to incorporate indigenous knowledge systems. This will assist in changing the perception of marginalized people that particular persons dominate conservation' (p.135)	Musavengane and Leonard (2019)
'Inclusive conservation involves developing and applying inter- and trans-disciplinary tools and processes to identify, compare and balance the consequences of different visions for how nature should be conserved' (Home page section)	ENVISION (2021)

are a valued stakeholder with reasonable influence on local land management decisions.

The idea of perceived inclusivity has been integral to explaining the evolution of public involvement in the United States environmental management system since the turn of the 20th century when many natural resources began to be managed by the federal government. Since 1874, when Yellowstone National Park was established, the concept of a national park circulated around the globe as a model for protecting charismatic landscape wonders such as geysers and waterfalls (Nash, 2014). Over time, conservation ideology has been restructured and challenged by a range of social-ecological factors such as colonialism, democracy and capital (Buscher & Fletcher, 2020), leading to current Western views of conservation that struggle to deal with the full complexity of engaging people in environmental management decisions (Ludwig et al., 2001). Moving from a philosophical discussion to one of the effectiveness requires that research focus on understanding these ideological transitions, identify meaningful solutions for achieving an inclusive conservation research agenda and provide standards for measuring the outcomes of fluidly connected systems of people and their environments (Fazey et al., 2004; Gould et al., 2019; Pullin & Knight, 2001; Raymond et al., 2021; Tallis & Lubchenco, 2014).

1.2 | Trust as a key factor in conservation

Previous research has suggested that trust instilled in public land management agencies positively influences levels of public involvement (Smith et al., 2013) and, thus, representation in decision-making through inclusive conservation. We define trust as a process where one actor believes in the truth, reliability and capability of another actor or agency (Stern & Coleman, 2015). There is a strong need to better understand the complexity of trust and its role in explaining how people perceive the opportunities afforded by agencies to express their interests and induce changes in social-ecological systems. For example, Smith et al. (2013) argued there were five dimensions of trust, including an individual's disposition to trust (i.e. an individual's general tendency to trust others), trust in federal governments (i.e. trust bestowed on government agencies), trust in shared values (i.e. perception that personal viewpoints and desired outcomes are also held by the trustee), moral competency (i.e. perception that another individual will adhere to moral codes and perform selfless behaviours accordingly) and technical competency (i.e. perception that an agency is guided by sound science and has the skills to perform necessary tasks). Although these five dimensions of trust are correlated, they remain theoretically distinguishable (Smith et al., 2013). Other authors have distinguished trust in decisions between a trustor and trustee (Molm, 2006), and drawn from social exchange theory (e.g. Earle & Cvetkovich, 1995; van Riper, Wallen, et al., 2016) to understand trust and the role of shared values in shaping relationships between the trustor and trustee. This body of work has established a multi-dimensional conceptualization of trust as a relevant construct for understanding how to solve resource management problems.

Studies focusing on community–agency trust have been conducted in various contexts with results indicating that trust is instrumental to successful resource management (Davenport et al., 2007; Leahy & Anderson, 2008; Payton et al., 2005). When agencies establish and maintain multiple forms of trust with a community, a stable relationship is formed which then increases institutional resilience (Folke et al., 2005; Stern, 2008; Stern & Baird, 2015). Consequently, an agency can carry out its general functions throughout disturbances while leaving room to adapt as new knowledge, skills, relationships and viewpoints are acquired (Folke et al., 2005). Knowledge exchange and information sharing are also most likely to occur if decision-makers are deemed trustworthy by relevant stakeholder groups (Strauser et al., 2020). Alternatively, a lack of community–agency trust has implications for managing ecosystems. For example, in a study of national parks, trust in land managers was identified as a positive predictor of compliance with park regulations (Stern, 2008). Specifically, untrusting residents who lived near the Great Smoky Mountains National Park reported high levels of participation in illegal hunting, harvesting and fishing. Similarly, Matera (2016) found that angler compliance with marine conservation projects was closely and positively related to their trust in government institutions. However, the process of maintaining stable agency–community relationships varies widely across resource management agencies. In the U.S. National Park Service (NPS) specifically, place-based management decisions are encouraged yet employees need to travel from park to park to advance their career (Everhart, 2019). This high turn-over rate can disrupt local relationships and deteriorate trust established between community members and previous NPS employees.

1.3 | Information sources used to learn about public land management

Previous research has shown that communication between land managers and local residents is crucial for developing and maintaining public trust (Davenport et al., 2007; Stern, 2008). Therefore, establishing a process for inclusive conservation requires careful consideration of information sources, which we define as the place of origin for information disseminated to individual and groups, along with the channel that is used to deliver that information (Tucker & Napier, 2001). Consistency in community–agency communications is also vital to sustain trusting relationships (Kubo & Supriyanto, 2010) and ensure the success of protected areas that support biodiversity conservation (Hausmann et al., 2020; Pollnac et al., 2001). However, regularity in how agencies remain in contact with adjacent communities does not guarantee healthy relationships, as these communication networks can be strained by numerous barriers. For example, a lack of community knowledge (Shackleton et al., 2016) or misalignment between public concerns and agency priorities (Schenk et al., 2007; Wald et al., 2019) can result in failed attempts at communication. Therefore, land

managers are tasked with the difficult challenge of providing adequate knowledge to communities while also offering meaningful opportunities for the community to shape and guide their own decision-making (Tam et al., 2021). For this reason, there is a strong need to better understand the interrelationships between forms of learning and perceptions of inclusivity.

Two frameworks have been established to describe how land management information can be disseminated and absorbed by local residents to improve community–agency relationships and more effectively achieve conservation goals. First, conventional learning focuses on a one-way transmission of information whereby agencies disseminate information to prompt individual learning independently of an environment (National Academies of Sciences & Medicine, 2017). Such methods of communication assume that the rejection of scientific information is driven by a lack of stakeholder knowledge. This model has been criticized because it assumes a 'one-size-fits-all' approach that does not acknowledge people have pre-existing and variable degrees of knowledge (Allum et al., 2008). Also, the lasting effects from this kind of information dissemination are likely weaker as compared to a model that incorporates lived experiences. In its place, a second framework within the conservation sciences has emphasized the importance of social learning which is conceptualized as a shared process among stakeholders (Bandura, 1977; Schusler et al., 2003) that involves behavioural adaptation and a response to context-specific information (McElreath et al., 2005; Morgan et al., 2012). This method of communication requires the creation of dialogue among stakeholders and land managers, which can broaden one's personal viewpoint of environmental issues and increase the perceived legitimacy of information produced (Cash et al., 2003; Culwick et al., 2019; Eriksson et al., 2019; Pahl-Wostl et al., 2008). While both methods have been utilized to varying degrees, there is a gap in empirical knowledge of how various forms of learning—ranging from formal to informal outlets—relate to public perceptions of inclusivity in land management decisions.

1.4 | The current study

We examined here how the process of building trust and knowledge influenced Alaskan residents' perceptions of public land management decisions and whether residents felt included in those decisions. While inclusivity has been represented as part of the process (Lawrence et al., 1997), we position this construct as an outcome to test the relationships posited by Smith et al. (2013) between trust and inclusive participation in decision-making. We hypothesized that all four dimensions of trust would be positive predictors of perceived inclusivity (see Figure 1). Furthermore, given past work that showed positive correlations between environmental awareness and civic engagement (Knapp et al., 2021; Stern et al., 1999), we hypothesized that more information sources would be a positive predictor of perceived inclusivity in public land management. To explain perceived inclusivity more completely,
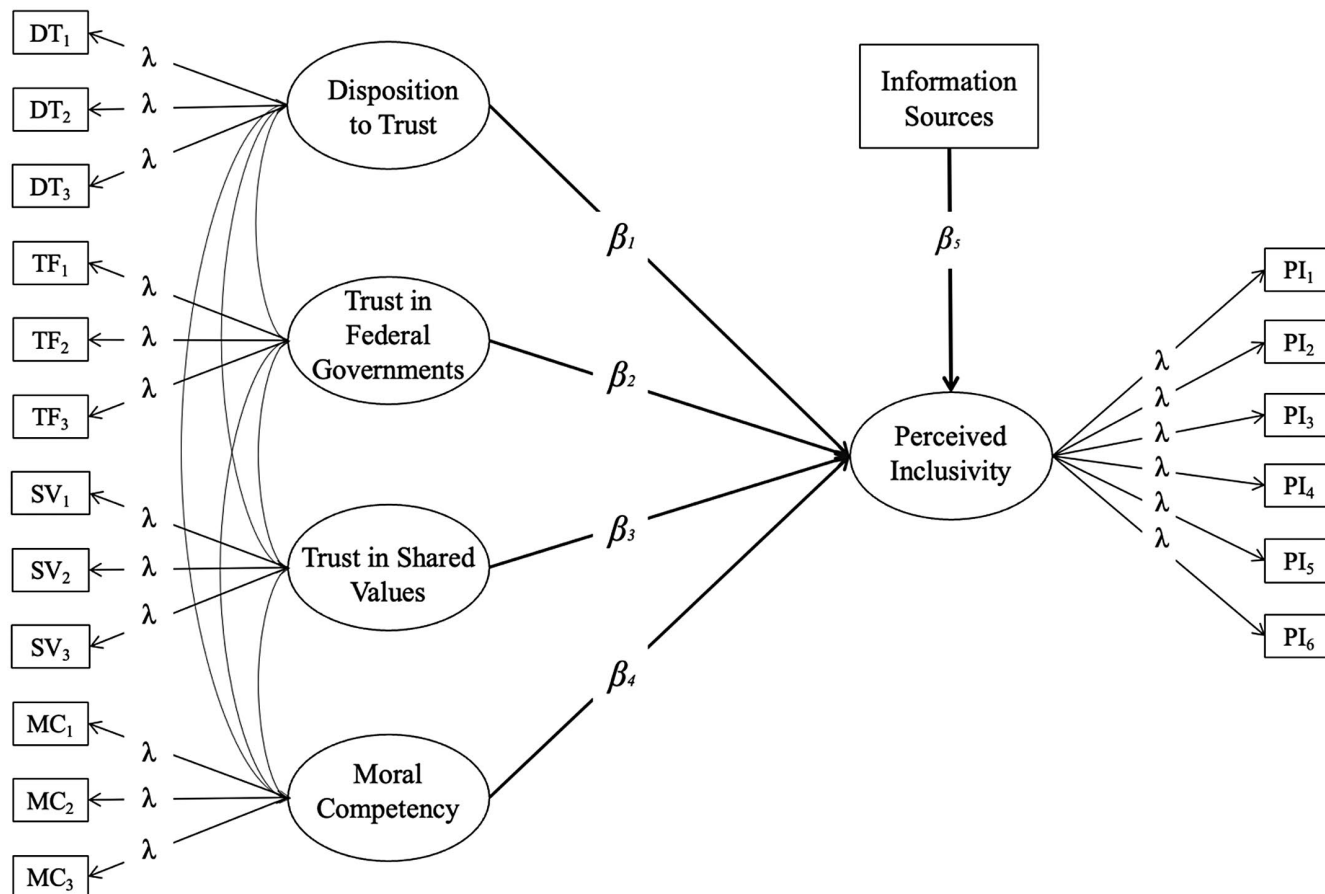
FIGURE 1 Hypothesized model of the theoretical relations among factors that predict perceived inclusivity

we used structural equation modelling techniques to test relationships among a suite of variables.

2 | METHODS

2.1 | Study area

Our research was conducted with residents living throughout the U.S. state of Alaska, which is comprised of 41 million hectares of arctic and subarctic landscapes. In this largely rural landscape, the economy is predominantly stimulated by natural resource extraction, federal government jobs, seafood exports and industrial tourism (Goldsmith, 2008). Visitors and residents alike are often attracted to Alaska due to the vast amount of public open space, with uniquely characteristic landscapes and wildlife (Stamberger et al., 2018). In turn, the tourism industry has caused increased development to support the large influx of seasonal visitors. Almost two-thirds of the total land area in Alaska are managed by the U.S. federal government (Vincent et al., 2014). A contentious history of land acquisition and management by the federal government has continued to generate significant challenges even today (Knapp et al., 2014). As a result of the high proportion of federal public lands and many competing state and local interests, Alaska

is an ideal site to examine public land management and inclusive conservation.

2.2 | Collection of survey data and sampling design

We collected data June–August 2020 via an online survey administered to a panel of Alaskan residents through a Qualtrics interface (see questionnaire included as Supporting Information). Given that our research aimed to understand the 'average' Alaskan resident, Qualtrics criteria were chosen to reflect the 2010 Census on the basis of gender and age. When a respondent initiated the survey, they were asked to indicate their gender, age and zip code. Once proportional quotas for gender and age were met, access to the survey was restricted to those groups so that demographic categories were not oversampled. The survey process was initiated with a total of 920 individuals. Of the people who navigated to the online survey, a total of 189 people did not begin the survey process. From the submitted responses, 170 people were not eligible due to their primary residence being outside of the state, 114 people could not be validated as Alaskan residents and seven people were excluded due to speeding through the survey. The final sample included 398 residents. Survey respondents gave written informed consent, as part of human subjects research approval

provided by the University of Illinois at Urbana-Champaign Institutional Review Board #18679.

2.3 | Survey measures

We measured perceived inclusivity using six survey items. These questions were inspired by Arnstein's (1969) description of citizen participation and updated to reflect the overarching themes of inclusive conservation from the current conservation sciences literature. Respondents were asked to indicate how much they agreed or disagreed with a statement on a 5-point Likert scale from (1) 'Strongly Disagree' to (5) 'Strongly Agree'. We used an exploratory factor analysis (EFA) to examine the dimensionality of the scale we developed to measure perceived inclusivity, because it had not been tested in previous research. We used a robust maximum likelihood extraction to generate parameter estimates and varimax rotation to clarify the relationship among factors. Results from the EFA indicated that one factor emerged with 45.5% of the variance being explained. The perceived inclusivity scale had an acceptable internal consistency ($\alpha = 0.83$).

We measured the two hypothesized drivers of perceived inclusivity. To measure trust, we drew from past research to examine four dimensions (Barber, 1987; Smith et al., 2013): (a) an individual's disposition to trust, (b) trust in federal governments, (c) trust in shared values and (d) trust in moral competency. We asked respondents to express how much they agreed or disagreed with statements on a 5-point Likert scale. We measured information sources by asking respondents to identify the information sources they used to learn about protected area management using a dichotomous (yes/no) scale. All sources were identified in consultation with partners in the NPS and 10 local community members who served on an Executive Committee throughout the project. All the identified sources spanned formal (i.e. public agencies, government officials, scholarly articles, professional societies, online newspapers, public meetings, government websites and webinars) and informal mechanisms for gaining information (i.e. family and friends, social media, hunting organizations and environmental groups).

2.4 | Modelling process

We used a covariance-based two-step structural regression modelling process with a robust maximum likelihood estimation procedure to test the direct effects of trust and learning on perceived inclusivity (Anderson & Gerbing, 1988). We calculated the factor loadings for each survey item to verify that all items exceeded the 0.40 threshold established in previous research (Hair et al., 2009). Model fit was assessed using a χ^2 value, however, given this indicator's sensitivity to sample sizes larger than 200 (Kline, 2015), other fit statistics were also referenced, including the root mean square error (RMSEA) ≤0.07 (Steiger, 2007), comparative fit index (CFI)

≥0.90 (Bentler, 1990) and standardized root mean square residual (SRMR) ≤0.07 (Hu & Bentler, 1999). We used the LAVAAN package 0.6-8 in RStudio Version 1.3.1093 for our statistical analysis (Rosseel, 2012).

We assessed missing data patterns in our perceived inclusivity and trust constructs. A total of 2.3% of trust items and 12.1% of the perceived inclusivity items were missing or marked as 'not applicable' in the survey questionnaire. Therefore, we took steps to determine whether the missing items were missing at random (MAR), missing completely at random (MCAR) or missing not at random (MNAR). Little's (1988) test indicated the trust survey items were not MCAR ($p < 0.01$), while the perceived inclusivity was MCAR ($p > 0.24$). Results indicated the missing data patterns for trust were likely MAR. Given this finding, the full-information maximum likelihood (FIML) method was applied to all scales account for our different missing data patterns (Allison, 2003).

We analysed the 12 learning source variables (i.e., public agencies, government officials, scholarly articles, professional societies, friends and family, social media, online newspapers, hunting organizations, environmental groups, public meetings, government websites and webinars) with a principal component analysis (PCA) to reduce the dimensionality of the data and increase interpretability. We retained the resulting components from the PCA with an eigenvalue greater than 1.0 (Kaiser, 1960). We interpreted the components based on their variable loading scores, with the assumption that variables producing the largest scores for each component had a larger influence when defining the component's characteristics.

3 | RESULTS

3.1 | Survey sample

The gender distribution of survey respondents was 60.3% male and 39.7% female (see Table 2). The majority (73.6%) identified as White, followed by American Indian/Native Alaskan (13.3%), Asian (8.0%), other (4.8%), Black/African American (4.0%) and Pacific Islander (2.0%). A total of 3.3% preferred not to answer this question. Respondents could select multiple options to indicate their racial identity. The sample of respondents included in this study was well educated, with every two out of 10 (21.1%) reporting a 4-year college degree or higher. A total of 23.6% reported earning a 2-year college degree, with 33% earning a vocation/trade school certificate, 34% earning a high school diploma and 2.01% reporting less than high school. The majority (69.4%) earned less than $100,000 by household annually and the average age was 44.5 years ($SD = 15.2$). The majority (50.3%) of respondents lived in Anchorage, followed by Matanuska-Susitna (15.1%), Fairbanks-North Star (8.8%), Kenai Peninsula (8.5%) and Juneau (5.3%). The remaining 12% of respondents lived throughout the state of Alaska.

We found that residents of Alaska held relatively low levels of trust towards federal land management agencies and did

TABLE 2 Socio-demographic characteristics of Alaska residents who responded to the household survey administered during the summer of 2020

Variable	N	%
Gender distribution		
Male	240	60.30
Female	158	39.70
Race		
American Indian/Native	53	13.32
Asian	32	8.04
White	293	73.62
Black/African American	16	4.02
Pacific Islander	8	2.01
Other	19	4.77
Prefer Not to Answer	13	3.27
Educational attainment		
Less than high school	8	2.01
High school graduate	137	34.42
Vocation/Trade school certificate	61	15.33
Two-year college degree	94	23.62
Four-year college degree	23	5.78
Graduate degree	61	15.33
Annual income		
Less than $24,999	68	17.09
$25,000–$49,999	86	21.61
$50,000–$99,999	122	30.65
$100,000–$149,999	54	13.57
$150,000–$199,999	26	6.53
$200,000–$249,999	8	2.01
$250,000 or more	7	1.76
Age (M, SD)	(44.5, 15.2)	

not believe they were included in decision-making (see Table 3). Respondents agreed with negatively worded items which measured their disposition to trust ($M = 2.41$, $SD = 0.97$), suggesting that residents did not have a general tendency to trust others. Respondents also expressed disagreement with all other statements measuring dimensions of trust examined in this study. Specifically, trust in federal governments was the lowest of the measured dimensions ($M = 2.27$, $SD = 1.05$), followed by shared values with federal land management agencies ($M = 2.65$, $SD = 0.97$), and the moral competency of federal land management agencies ($M = 2.78$, $SD = 1.08$). Residents of Alaska expressed disagreement with the survey items that measured perceived inclusivity as well ($M = 2.81$, $SD = 1.12$).

3.2 | Principal component analysis

The PCA reduced the 12 information source variables into seven components accounting for 69% of the variance in information sources of Alaskan residents (see Table 4). From these seven components, we identified three distinguishable components: (a) Public Information Sources (C1); (b) Community Information Sources (C2); and (c) Environmental Information Sources (C7). Component C1 described information sources from professionals or agencies well informed in land management practices. Individuals with high C1 scores obtained their information about land management from government officials, public agencies, professional societies and scholarly articles, whereas lower C1 scores indicated information was obtained from social media, friends and family. Component C2 described information sources from personal relationships and community members. Individuals with high C2 scores obtained their information from friends, family and hunting organizations; however, those with low C2 scores obtained information from online newspapers and social media. Individuals with high C7 scores were defined by primarily obtaining information from environmental groups.

3.3 | Structural regression modelling results

Results from our two-step structural regression model evaluated the psychometric properties of our survey scales. Fit indices from

TABLE 3 Survey items measuring trust and perceived inclusivity reported by survey respondents in Alaska

Scale items[a]		λ	Mean (SD)
Disposition to Trust[b] (α = 0.78)			2.41 (0.97)
DT1	You cannot be too careful when dealing with people	0.71	2.29 (0.91)
DT2	People are almost always interested only in their own welfare	0.75	2.57 (1.05)
DT3	One has to be alert or someone is likely to take advantage of you	0.76	2.37 (0.90)
Trust in Federal Governments (α = 0.86)			2.27 (1.05)
TF1	The U.S. Federal Government efficiently spends money	0.79	2.20 (1.05)
TF2	The U.S. Federal Government is effective in solving problems	0.87	2.33 (1.05)
TF3	I can trust the U.S. Federal Government to do what is right	0.83	2.30 (1.04)
Trust in Shared Values (α = 0.90)			2.65 (0.97)
SV1	Federal agencies that manage public lands support my views	0.82	2.72 (0.95)
SV2	Federal agencies that manage public lands think like me	0.92	2.58 (0.95)
SV3	Federal agencies that manage public lands have similar goals to mine	0.88	2.65 (0.99)
Moral competency (α = 0.73)			2.78 (1.08)
MC1	Federal employees are not self-serving in decision-making	0.70	2.78 (1.03)
MC2	Public land managers from the federal government really care what happens to me	0.82	2.47 (1.02)
MC3	Federal employees are sensitive to the local economic impacts of tourism and recreation	0.57	3.09 (1.10)
Perceived inclusivity (α = 0.83)			2.81 (1.12)
PI1	I have contributed to decision-making processes around management of public lands near my home	0.54	2.54 (1.17)
PI2	There are opportunities for me to help govern public lands near my home	0.70	2.97 (1.09)
PI3	My viewpoint is reflected in the current public land policies of federal agencies near my home	0.77	2.76 (1.00)
PI4	Decision-making is shaped by collaboration across different interests within my community	0.67	3.29 (1.03)
PI5	I am involved with organizations that play a role in public land management near my home	0.52	2.41 (1.15)
PI6	The viewpoints of my community are reflected in the current public land policies of federal agencies near my home	0.72	2.89 (1.03)

[a]Mean values were coded on a Likert scale where 1 = 'Strongly Disagree' and 5 = 'Strong Agree'. Differences between means read from left to right: α, Cronbach's alpha; λ, factor loadings; SD, standard deviation.

[b]Reverse coded survey items.

the confirmatory factor analysis (CFA) showed that the model fit the sample data well (χ^2 = 278.13; df = 125; RMSEA = 0.056; CFI = 0.94; SRMR = 0.44; see Figure 2). All scales measuring trust were reliable given Cronbach α coefficients ranging from 0.73 to 0.90 and composite reliability scores ranging from 0.74 to 0.91. Also, all factor loadings were ≥0.40 so we proceeded to estimate a structural regression model.

Our hypothesized path model showed good fit (χ^2 = 365.19; df = 182; RMSEA = 0.05; CFI = 0.94; SRMR = 0.05). Consistent with our hypotheses, we found moral competency to be a positive predictor of perceived inclusivity among survey respondents (β = 0.46), indicating the belief—or disbelief—that land management agencies adhered to a moral code drove the perception of inclusion in decision-making. Three information source constructs also accounted for the pattern of variation in perceived inclusivity. As information learned from professional (β = 0.16), community (β = 0.15) and environmental advocacy sources (β = 0.13) increased, so too did

the degree to which residents felt included in resource management decision-making.

4 | DISCUSSION

Inclusive conservation is a process focused on understanding stakeholder visions for how nature should be conserved and improving the effectiveness of resource management strategies. To understand the reasons why perceptions of inclusivity existed within a population, we used a latent variable structural equation model to test how four dimensions of trust (Smith et al., 2013) and information sources (Reed et al., 2010; Tucker & Napier, 2001) shaped how residents in the U.S. state of Alaska viewed their involvement in resource management decisions. Our results indicated that trust and information sources accounted for a moderate

TABLE 4 Principle component analysis of land management information sources

Component name	C1 Public information sources	C2 Community information sources	C7 Environmental information sources
Public agencies	**0.47**	0.10	−0.22
Government officials	**0.58**	−0.04	−0.25
Scholarly articles	**0.40**	−0.16	−0.23
Professional societies	**0.44**	−0.09	0.20
Friends and family	**−0.48**	**0.60**	−0.22
Social media	**−0.50**	**−0.46**	0.05
Online newspapers	−0.06	**−0.64**	0.08
Hunting organizations	0.03	**0.40**	−0.05
Environmental groups	0.19	0.27	**0.80**
Public meetings	0.26	0.09	0.23
Government websites	0.17	0.06	−0.22
Webinars	0.12	0.01	0.03
Variation explained (%)	12.83	10.63	8.44
Eigenvalue	1.54	1.28	1.01

Note: Variables with loadings greater than 0.40 or less than −0.40 for the respective component are shown in bold.
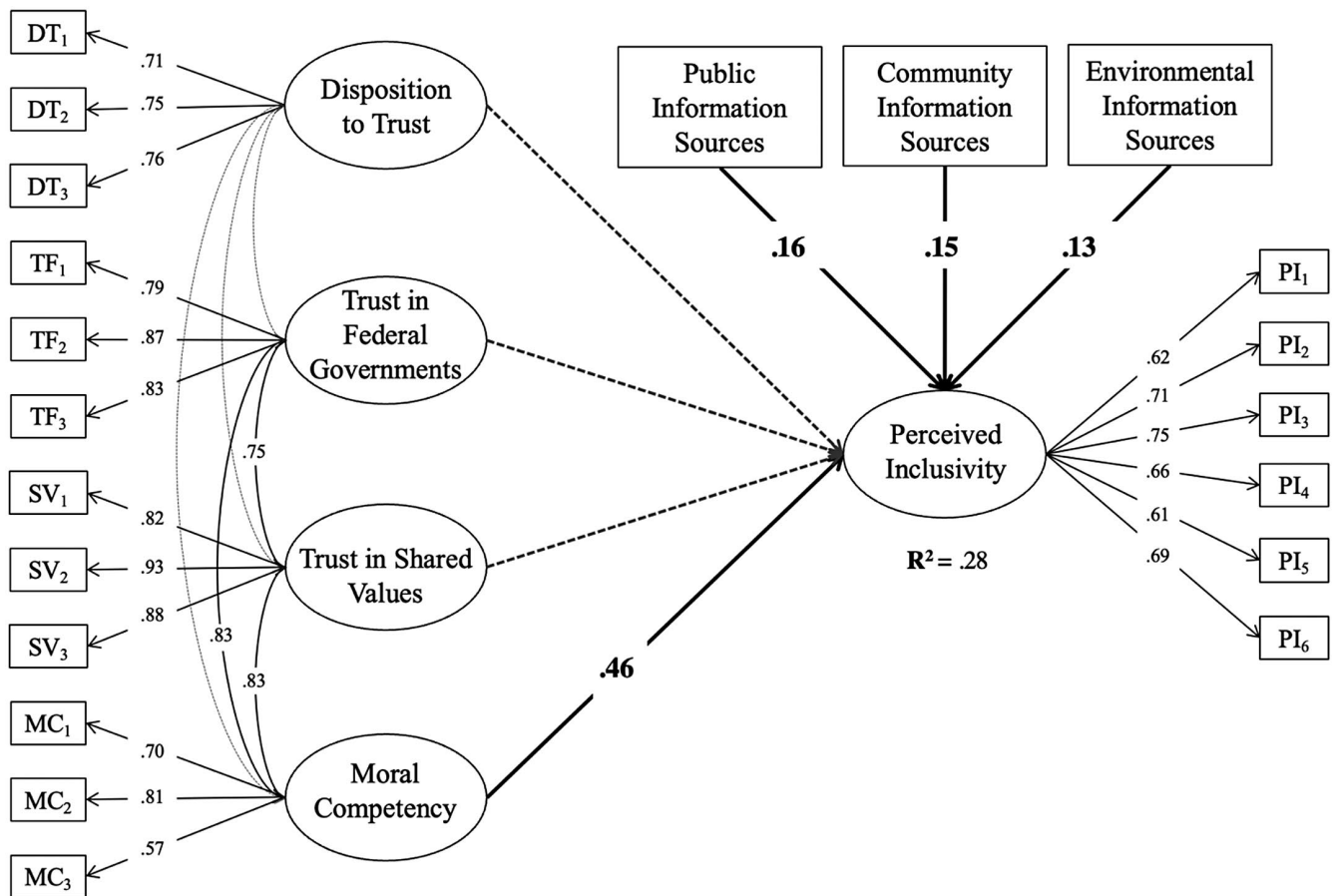

FIGURE 2 Results from the latent variable path analysis

degree of variation in reported levels of perceived inclusivity. Specifically, moral competency and three information sources (i.e. Public Information Sources, Community Information Sources, Environmental Information Sources) were helpful explanatory variables that we suggest should be carefully considered by protected area decision-makers in Alaska.

4.1 | The dimensionality of trust and its effects on perceived inclusivity

Public support for land management decisions is instrumental in the success of conservation initiatives and hinges on trustworthy relationships between trustors and trustees (Smith et al., 2013; Stern, 2008). In line with previous research (Liljeblad, 2005), we confirmed that trust was a multi-dimensional construct. Although trust in shared values, the federal government and moral competency were correlated exogenous variables, not all of our hypotheses were supported. Specifically, an individual's disposition to trust others did not covary with the other three dimensions established by Smith et al. (2013). In line with Goto (1996), we also observed that stakeholder dispositions (as compared to other forms of trust) were processed differently by survey respondents. It could be that an individual's disposition to trust is an antecedent to other trust concepts, particularly in contexts where knowledge is high. Because most of the Alaskan landmass is managed by the federal government, residents may have formed their (lack of) trust in agencies in response to personal experience, rather than relying on their general disposition to trust that is used in the absence of knowledge (Leahy & Anderson, 2008). From the dimensions of trust that we measured, moral competency was the only dimension that positively correlated with perceptions of inclusivity. This finding indicated that residents were more likely to believe they were included in policy outcomes when land managers had the ability to make sound decisions and effectively engage stakeholders in deliberation about their future.

Previous research has emphasized the importance of transparency and stakeholders knowing how decisions are made (Nie, 2003; Smith & McDonough, 2001; Staddon et al., 2021). In the context of Alaska, moral competency is likely deemed an important quality in this process, because it signals that key conflicts (e.g. tensions over subsistence hunting and ambivalence toward tourism; Johnson & van Riper, 2021) will be equitably addressed. While all values held by stakeholders cannot be equally served by land managers, agencies can support a process that involves the co-creation of policy outcomes in ways that reflects diverse stakeholder interests (Lind & Tyler, 1988; Stern & Coleman, 2015; Vaske et al., 2007). Indeed, trusting community–agency relationships can ease conflict resolution and encourage voluntary compliance with protected area regulations, thereby positively influencing environmental stewardship (Stern, 2008; Young et al., 2016).

4.2 | Communicating with stakeholders about resource management

Communication allows people to transmit their values and expertise on which trust is built (Calvet-Mir et al., 2015; Stern, 2008). Our study underscores the importance of information sources that people use to learn about protected areas as part of a strategic process whereby stakeholders acquire information within a collaborative learning context and then make behavioural adaptations in their efforts to communicate. While Alaskan residents built an understanding of public land management from a wide variety of sources, three groups emerged from our PCA and similarly influenced perceptions of inclusivity. Thus, both formal and informal information sources were important and reflected variation in reliance on structured processes and socialization for acquiring knowledge. In this vein, social learning has been highlighted in previous research as a process for fostering collaborative relationships among stakeholders (Schusler et al., 2003) and increasing an agency's adaptability (Pahl-Wostl et al., 2007; Pelling et al., 2008). However, our results indicate that social exchanges (i.e. acquiring information from friends, family, hunting organizations and environmental groups) are one of several forms of learning that support feelings of inclusion among stakeholders. A successful communication strategy for protected areas should, therefore, generate different spaces for individuals to build on their socially acquired information alongside information generated by institutions (Tam et al., 2021; Hausman et al., 2020).

4.3 | Future management practices and policy

Despite close physical proximity to a protected area, residents can feel excluded from decision-making about resources they rely on for well-being and quality of life (Carroll & Hendrix, 1992; Johnson & van Riper, 2021), which can lead to behaviours that negatively impact conservation efforts (Matera, 2016; Stern, 2008). By strengthening communication networks with communities, land managers can alleviate sources of conflict, offer support and facilitate knowledge exchange (Davenport et al., 2007; Heyman & Stronza, 2011). Local and traditional knowledge that is meaningfully integrated into resource management can further strengthen community–agency trust and identify shared conservation goals (Charnley et al., 2007). This allows for salience and resilience of protected areas used to address pressing global environmental issues (Mitchell et al., 1997).

We observed that residents of Alaska built knowledge about land management through a wide range of sources that spanned a communication network. Due to the abundance of rural communities and remote contexts in Alaska, financial barriers and time constraints may constrain fluid in-person communication. As a result, managers might strategize by adopting different technologies for virtual communication and prioritizing relationships with stakeholders that subscribe to difference value systems (van Riper et al., 2020). For

example, preservation-oriented agencies like the NPS could prioritize engagement with organizations (e.g. hunting cooperatives) that involve resource extraction. In-person listening sessions and updating agency resources in response to what is learned from these sessions would help to illustrate how contrasting perspectives are being weighed, considered and incorporated into decisions. Given previous research showing trust, communication and participation are intertwined (Calvet-Mir et al., 2015), management agencies therefore have an opportunity for greater success in increasing levels of trust with these types of community–agency communication strategies.

We observed that multiple dimensions of trust were empirically distinguishable and helpful for understanding perceived inclusivity. This observation aligned with the extant literature (e.g. Smith et al., 2013) and signified that the different dimensions of trust each provide an opportunity for improving community–agency interactions. However, given the positive correlations between several dimensions of trust, it is important to consider how they are interrelated. It could be that residents involved in land management conflict reported managers lacked ethical decision-making (i.e. trust in moral competency was low), whereas the underlying issue was that the two parties did not align in their values (i.e. trust in shared values was low). Future work should explore how individuals distinguish between unethical decision-making and misaligned values to disentangle these complexities. Additionally, due to the importance of moral competency as a driver of perceived inclusivity, it would benefit agencies to work with local stakeholders to improve the perceived fairness of the decision-making process, while keeping in mind that there are multiple forms of trust (Stern & Coleman, 2015). Given that maintaining and improving community–agency relationships is difficult and requires commitment over time, a range of options should be considered to improve the decision-making process and achieve both ecologically and socially desirable outcomes for federally managed lands.

4.4 | Limitations and opportunities for future research

Perceived inclusivity and its drivers yielded important information, though several limitations warrant consideration. Results from our model indicated that trust in moral competency and three information sources accounted for moderate degrees of variance in our dependent variable, indicating there was a host of other important drivers of perceived inclusivity. Past scholarship has suggested technical competency within an agency is an important dimension of trust (Leahy & Anderson, 2008). However, given its conceptual overlap with moral competency and non-significance in predicting public involvement according to Smith et al. (2013), technical competency was not examined in this study. Our results were also constrained by the methods adopted to answer our research questions. There could be great value in relying on multiple forms of knowledge to guide a research process focused on understanding stakeholder concerns about inclusion. Allowing respondents to inductively identify the range of factors that shape their decisions would strengthen the quality of outcomes

from a research process. Future work should consider adopting mixed methods and relying on different epistemologies for building a more complete understanding of stakeholder interests.

Our model was developed using reliable scales, but future work should continue to refine the measurement of constructs. First, the scope of resource management agencies should be factored into decisions about the object of interest in survey items developed to reflect perceived inclusivity. We suggest that future research adopt the term 'federal lands' instead of 'public lands', given that residents likely respond differently to state versus federal agencies in the U.S. state of Alaska. Second, we evaluated four dimensions of trust established by Smith et al. (2013) while another stream of research has focused on the distinction between trust versus distrust in affecting the democratic outcomes from deliberation on topics of public interest (Parkins, 2010; Parkins et al., 2017). It could be that this alternative binary conceptualization of trust would be informative for future research focused on understanding the process (e.g. opportunity for engagement) and outcomes (e.g. participation and representation) of inclusive conservation.

A broader representation of the American public or another broader context would provide an interesting basis for comparison and help with the generalizability of our research findings. In this study, we focused on Alaskan residents to understand their drivers of perceived inclusivity. However, we do not know whether Alaskan residents were unique in their evaluations of inclusivity in federal land management decisions. Past work has shown that the general importance of trust and information sharing for stakeholders remains consistent across various contexts (Cinner et al., 2009; Payton et al., 2005; Stern, 2008) so it could be that other states in the U.S. adopt similar positions and concerns. Cross-validating our findings against other contexts with communities who are adjacent to large tracts of federal lands would support broad, evidence-based decisions about management of protected areas.

5 | CONCLUSION

Although a growing body of literature has recognized the need for considering local community viewpoints in public land management contexts, there is limited empirical knowledge of the reasons why stakeholders have different perceptions of inclusivity, which can hinder the successful implementation of more inclusive conservation initiatives. Therefore, we provide a theoretically grounded understanding of the multiple challenges and potential solutions facing stakeholder inclusion in protected area decision-making. Our use of structural equation modelling also offers a more refined understanding of the measurement properties of scales that can be adopted in future research. From our modelling results, we posit that perceived inclusivity is an important and powerful process for management of public lands that is inherently tied to trust and information sources. Our specific focus on Alaskan residents reveals the importance of moral competency and identifies which forms of communication positively influence community perceptions of inclusivity. Overall, this article aims to

support a collaborative process of inclusive conservation that will be well suited to strengthen connections between stakeholders and agencies focused on biodiversity conservation and other resource management objectives.

CONFLICT OF INTEREST
The authors have no conflict of interest to declare.

AUTHORS' CONTRIBUTIONS
D.J.G.: Developed the problem statement and literature review for the article, wrote the first draft, contributed to analysis and edited the manuscript; C.J.v.R.: Developed the problem statement and survey measures, provided the funding, analysed the data and edited the manuscript; R.A.: Coordinated the data collection, offered the conceptual guidance, analysed the data and edited the manuscript; M.A.C.-P.: Offered the conceptual guidance and edited the manuscript; M.E.H.: Offered the conceptual guidance and edited the manuscript the manuscript.

DATA AVAILABILITY STATEMENT
The compiled data reviewed and analysed in this study are available through ZenodoAUTHOR: Please check all website addresses and the functionality of the underlying links and confirm that they are correct. (Please note that it is the responsibility of the author(s) to ensure that all URLs given in this article are correct and usable.): https://zenodo.org/record/5904127#.YfGkQOrMJaQ.

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SUPPORTING INFORMATION

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