Toward Sovereignty-Centered Forest Management: A Review of Participatory and Indigenous Research Frameworks for Tribal Forest Stewardship

Toward Sovereignty-Centered Forest Management: A Review of Participatory and Indigenous Research Frameworks for Tribal Forest Stewardship

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Introduction

Historic & Systemic Context

Settler colonialism, a pervasive and enduring structure of power rooted in occupation and the erasure of Indigenous societies, has played a significant role in shaping historical and contemporary global dynamics since at least the 12th century BCE (Farrell et al., 2021). Of focus of this literature review is the ongoing settler colonialism on Turtle Island[1]. This land dispossession and resulting impacts has been ongoing since European settlers arrived hundreds of years ago.

Farrell et al. (2021) provides quantitative context for the extent of land dispossession on Turtle Island. Accounting for shared lands and seasonal rotations across the continent, there was a 98.9% reduction in tribal-associated lands from historical locations to the present day (Farrell et a., 2021). Of the approximately 58% of tribes that have colonially recognized land, the median size is 0.4% of the amount available in the documented historical period (Farrell et al., 2021). In all, this assessment by Farrell et al. (2021) demonstrates the extensive land dispossession – and thus reduction in land sovereignty – for Indigenous tribes on Turtle Island.

Settler colonialism is not just a historical process; contemporary structural contexts provide context for land ownership challenges faced by Indigenous communities today. For one, Farrell et al. (2021) notes that allotments may have been allocated strategically based on a settler-perceived lack of valuable resources. Today, this contributes to significant environmental injustice. Current tribal lands are more subject to harmful byproducts of settler land use and

[1] Turtle Island is a term used by many Indigenous peoples to refer to the continent colonially known as North America, including the land often referred to as the United States. The use of Turtle Island in this review is intended to affirm Indigenous sovereignty over the land.

commercialization than non-tribal lands (Kennedy et al., 2023). Moreover, present-day tribal lands have greater extreme heat and drought risk (Farrell et al., 2021). Beyond injustices in the land itself, the complex checkerboarding of non-tribal and tribal land restricts access to key infrastructure, including roads, electricity, and water. Checkerboarding also restricts economic opportunity, particularly as it pertains to agriculture and resource management (Farrell et al., 2021).

The harm of land removal and settler colonialism goes beyond environmental and economic injustice. As described in "Decolonization is not a Metaphor", settler colonialism requires complete control over Indigenous life (Tuck & Yang, 2012). This involves disconnecting individuals from the land and portraying Indigenous relationships with the land as historic and thus irrelevant (Tuck and Yang, 2012). Though land dispossession is acutely violent, this larger attempt at complete cultural control has given rise to slower, structural violence (Tuck and Yang, 2012). In all, settler colonialism has caused extensive restriction of Indigenous land access through forced displacement. This forced displacement has significant consequences for both environmental and personal well-being among Indigenous individuals and communities at large.

In parallel with material dispossession, Western research practices have historically reinforced settler colonial structures by marginalizing Indigenous knowledge systems and reproducing power imbalances. Outsiders researching Indigenous communities often prioritized scientific gain over community wellbeing, leading to ethical violations, misuse of data, and deep mistrust (Davis & Reid, 1999). Many studies failed to recognize tribal sovereignty, profound knowledge, cultural values, or the diversity of Indigenous nations (Davis & Reid, 1999). In response, many tribes have asserted greater control over research through policies and protocols,

though gaps in cultural competency and respect persist among non-Indigenous researchers (Davis & Reid, 1999). Frameworks such as the CARE principles (Collective Benefit, Authority to Control, Responsibility, and Ethics) or braiding sweetgrass approach represent such examples of more ethically cognizant research models (Carroll et al., 2020; Eisenberg et al., 2024). Yet, their use by non-Indigenous researchers has been sparse. As such, ethically diligent, culturally considerate, and sovereignty-centered approaches are overdue to foster collaboration, trust, and mutual respect between non-Indigenous researchers and Indigenous experts.

Indigenous Forest Ownership

Indigenous forest ownership has been profoundly impacted by the historical and ongoing processes of settler colonialism. Currently, only 2% of forestland in the colonially known United States is under some form of Indigenous ownership (Oswalt et al., 2019). Much of this land is held in trust by the Bureau of Indian Affairs (BIA). As of December 2023, BIA managed 19.3 million acres of Tribal forests (*Tribal Forest Management*, 2023). This tribal forest ownership landscape was most recently assessed in the 2023 Indian Forest Management Assessment Team (IFMAT) report. Overall, the results presented a plethora of challenges faced by tribal forest owners. These challenges include chronic underfunding, limited staffing, and bureaucratic constraints that restrict management practices. Outdated policies and lack of technical support further hinder Indigenous forest owners, even as many tribes continue to lead in sustainable, innovative stewardship practices (Gordon et al., 2023). Overall, the report calls for greater support, policy reform, and recognition of Indigenous sovereignty in forest management (Gordon et al., 2023).

In response to these systemic challenges and recommended actions, the Family Forest Research Center (FFRC) has launched a project focused on integrating decolonizing approaches

to researching Tribal forests. This project will center around the USDA Forest Service, Forest Inventory and Analysis (FIA) National Woodland Owner Survey (NWOS), which collects information about private forest owners' forest land, their reasons for owning it, what they have done with it in the past and plan to do with it in the future, their concerns, and information about the landowners themselves in the colonially-known United States (Butler, 2021). More specifically, the goal is to assess the potential uses of the NWOS for tribal forest owners to better support this population and the lands that Indigenous peoples steward. To conduct this project, FFRC researchers hope to engage in a Participatory Action Research (PAR) approach that upholds tribal sovereignty over forest research and actions. The first step in this process is to assess potential research frameworks – particularly those in tribal land or forest management – that are congruent with sovereignty-centered approaches.

This literature review seeks to support that foundational step by surveying existing research methodologies that center Indigenous knowledge systems, sovereignty, and self-determination. This was accomplished through a literature search and framework extrapolation examining PAR and its related frameworks (Appendix, Table 1). In addition, this review considers adjacent Indigenous-focused research models. These frameworks offer guidance for how researchers might shift away from extractive approaches and toward research that is collaborative, reflexive, and accountable. While case studies of these approaches have been observed across fields such as education, health, and water management, there remains a significant gap in their application to Indigenous forest ownership. Through this review, we aim to highlight the key components, strengths, and challenges of these research frameworks, and explore how they may inform future co-research initiatives in tribal forest ownership.

Foundational Participatory Action Research Framework

Addressing the harm of Western research paradigms requires more than critical analysis; it demands research that is accountable, relational, and action oriented. PAR represents one such shift: a collaborative framework that seeks to center reflective action and local contexts (Baum et al., 2006). At its core, PAR challenges the power dynamic seen in conventional Western frameworks. For one, typical participants are placed in a co-researcher role (Baum et al., 2006). Additionally, an essential component of PAR is the shift from a one-knowledge to relational or multiple knowledge approach (Nutton et al., 2020).

Central to PAR is the integration of power and knowledge shifts into reflective action (Baum et al., 2006). This idea is exemplified by Bacon et al. (2005) in their work in Nicaragua and El Salvador. The authors define PAR as a cyclical process of problem or action definition, action, and reflection (Bacon et al., 2005). This cyclical process was both affirmed and expanded upon by Méndez et al. (2017). Notably, Méndez et al. (2017) added a "preflection" phase, where emphasis is placed on building relationships and trust between community members and researchers. Additionally, it is noted that internal (directly involved partners only) and external (including those not directly involved) reflection may be pertinent (Méndez et al., 2017). Together, these literature contributions highlight the evolving and relational nature of PAR as a collaborative methodology rooted in reflexivity and trust-building.

The strengths of PAR in fostering tangible changemaking and community building also underscore the significant challenges that arise in its practice. For one, all the previously mentioned frameworks noted that the time-consuming nature of PAR was a major challenge in its implementation and trust-building (Bacon et al., 2005; Baum et al., 2006; Méndez et al., 2017; Nutton et al., 2020). Méndez et al. (2017) specifically note that researchers may skip the

preflection phase entirely due to time or budget constraints. Additionally, Nutton et al. (2020) notes that researchers may struggle to get Western institutions to recognize PAR efforts, making it harder to get funding or publications. In studies specific to PAR in Indigenous communities, the extended time was noted as an obstacle (Barcus & Smith, 2016; Hernández Maqueda et al., 2022; Nutton et al., 2020). This challenge was further exacerbated by mistrust in institutions, rooted in traumatic historical context and negative past interactions, and by researchers' undue emphasis on Western credentials when engaging with Indigenous communities (Hernández Maqueda et al., 2022; Nutton et al., 2020). However, strategies such as including a liaison or having researchers focus more on their relationship with a community or project may help alleviate such mistrust (Barcus & Smith, 2016; Nutton et al., 2020).

Evolutions of the Action Research Framework

Action research (AR) has been a defined framework since the mid-twentieth century (Baum et al., 2006). However, since its inception there have been various evolutions of this foundational model – such as the development of PAR in the late twentieth century (Baum et al., 2006). This section defines related models of AR found in the literature, including models more applied to Indigenous research contexts.

Community-Based Participatory Research

A close relative to PAR, Community-Based Participatory Research (CBPR) further emphasizes the collaborative nature of research by ensuring that community members not only participate in the research process but also play a central role in defining the research questions, methodologies, and actions taken (McCleary & Atalay, 2022). CBPR emerged directly from calls for decolonizing research, thus is potentially more relevant to Indigenous contexts

(McCleary & Atalay, 2022). In defining the CBPR process, Suri and Trott (2022) provide a clear four-step framework: (1) Identify community need, (2) develop relationships with the community, (3) beginning research or action with the community, (4) developing sustainable short- and long-term outcomes for the project. Though not enumerating a specific framework, Simonds and Christopher (2013) provide additional recommendations for CBPR, such as the use of a community advisory board (CAB) to drive research processes. In addition, Simonds and Christopher (2013) note the importance of reshaping CBPR to better serve the needs of specific Indigenous partners.

CBPR faces similar implementation challenges to PAR. For example, Stanton (2014) notes the time needed to build relationships with communities may lead researchers to revert to Western practices. An additional challenge noted within CBPR is the misalignment with conventional IRB or approval board processes (Simonds & Christopher, 2013; Stanton, 2014; Suri & Trott, 2022). This challenge, similar to PAR, is a result of the significant time commitment and community directed approach required for CBPR. It is important for researchers to keep these challenges in mind before engaging in the processes of PAR or CBPR; this will help guide the selection and evolution of the appropriate theoretical framework.

Decolonizing Participatory Action Research

Building on the foundations of PAR and CBPR, Decolonizing Participatory Action Research (DPAR) further critiques and transforms research methodologies by explicitly addressing the ethical missteps embedded in Western practices. For one, Tuck and Guishard (2013) outline how the IRB process – often heralded as the standard for ethical Western research – emerged in the context of outright inhumane practices. As a result, IRB does not necessarily consider how research theory and practice are entrenched in structural violence, such as settler

colonialism and white supremacy (Tuck and Guishard, 2013). As such, Tuck and Guishard (2013) outline additional ethical considerations for research, such as community needs, roles, and power.

Building off the outlined ethical considerations, Tuck and Guishard (2013) provide a central DPAR framework which is rooted in six primary ideas: reflexivity, expertise, humility, dignity, action, and relationality. Reflexivity asks researchers and communities to engage with three major questions before diving into PAR: What is the theory of change, what role does research have in said theory of change, and what role (if any) is there for academic research? (Tuck & Guishard, 2013). Expertise reminds researchers that communities have held knowledge and engaged in action, and thus this knowledge and voice should be respected and reflected accordingly (Tuck & Guishard, 2013). While expertise requires researchers to look outwards, humility asks researchers to look inwards and recognize limitations and biases within their theories for change, and to express this openly when working with communities (Tuck & Guishard, 2013). Dignity includes practices such as self-determination, theorizing back (building power with and within; dismantling institutional power over), and data sovereignty. Action in DPAR occurs similarly to CBPR, as it is collective, early, and occurs often across the project (Tuck & Guishard, 2013). Finally, relationality is presented as the feature most distinct between DPAR versus PAR, as it asks researchers to focus on relationships between people and places rather than isolated subjects or settings (Tuck & Guishard, 2013). Additionally, relationality describes the importance of showing trustworthiness in relationship building, such as researchers showing up to community events or demonstrating respect for cultural or gubernatorial practices (Tuck & Guishard, 2013).

Related Indigenous Engagement Frameworks

The previous paragraphs defined and expanded upon Participatory Action Research. The following section presents frameworks that are adjacent to PAR in goals and praxis. We believe these frameworks are important to consider as non-Indigenous researchers engaging in a project with tribal forest ownership.

Two-Eyed Seeing

Emerging alongside and in conversation with participatory action research (PAR), the principle of Two-Eyed Seeing offers a framework for working with Indigenous and Western knowledge systems in ways that align with PAR's emphasis on collaboration, reflexivity, and community empowerment. Two-Eyed Seeing (Etuaptmumk) is a guiding principle introduced by Mi'kmaw Elder Albert Marshall, advocating for the respectful co-existence and collaboration of Indigenous and Western ways of knowing (Reid et al., 2021). As described by Reid et al. (2021) in their paper on fisheries management, Two-Eyed Seeing encourages researchers to separately consider the strengths of Indigenous knowledge and the strengths of Western scientific approaches (Reid et al., 2021). Though Two-Eyed Seeing exists alongside other knowledge coexistence frameworks, Reid et al. (2021) highlight its distinctive emphasis not only on the creation of parallel knowledge systems but also on action informed by that shared understanding. Though considering specific case studies relevant to fisheries, Reid et al. (2021) present a generalized framework for Two-Eyed Seeing with the following cyclical steps: (1) identifying mutual research interest, (2) identification of required tools, (3) research co-development, (4) co-evaluation and community validation, (5) shared recognition and co-benefits, and (6) long term relationships.

While Two-Eyed Seeing offers a valuable framework for applying Indigenous and Western knowledge systems, its implementation faces several key challenges (Reid et al., 2021). These include difficulties scaling the approach beyond small, localized contexts, mismatches between worldviews that can lead to distrust, and power imbalances that often limit true collaboration (Reid et al., 2021). Commercial interests, limited access to diverse knowledge systems, and institutional resistance further complicate efforts (Reid et al., 2021). Together, these insights underscore both the promise and complexity of implementing Two-Eyed Seeing, highlighting the need for sustained commitment, potential structural changes, and mutual respect to fully realize its potential in research and resource management.

Relational Science Model

David-Chavez et al. (2024) propose a relational science model aimed at supporting Indigenous rights and reconciliation in research. This model synthesizes Indigenous and community-based research frameworks – including PAR and CBPR – bridging multiple disciplines and grounding research practices in culturally relevant methods. Central to this approach is the value of relationality, namely prioritizing relationship-building and mutual respect throughout the research process (David-Chavez et al., 2024). Additionally, David-Chavez et al. (2024) emphasize the importance of explicitly stating research values and following tribal consultation protocols, even though they may not be legally required (David-Chavez et al., 2024). The model also highlights the need for protecting Indigenous knowledge systems and peoples, citing frameworks such as the CARE Principles that center Indigenous data sovereignty (David-Chavez et al., 2024).

A core aspect of the relational science model is the emphasis on building trust and integrity through preliminary relationship-building and sustained, community-based exchanges

(David-Chavez et al., 2024). Additionally, the model encourages consideration of internal power dynamics within communities – especially when establishing advisory boards (David-Chavez et al., 2024). The relational model centers on four foundational values: integrity, respect, humility, and reciprocity (David-Chavez et al., 2024). The framework also stresses the importance of finding shared language and terminology when working with communities, as well as the critical role of including community members, especially youth, on research teams (David-Chavez et al., 2024). This values-centered approach aims to foster collaborative and ethically grounded research that supports Indigenous rights and promotes reconciliation.

Discussion and Conclusion

As the Family Forest Research Center moves towards greater inclusion of Indigenous forest owners as part of the NWOS mission, the use of a decolonizing research framework is both an epistemological and ethical imperative. More specifically, the NWOS has traditionally focused on describing the current forest ownership without necessarily considering the why and how that ownership came to pass. As such, we have the opportunity to transform the impact of the NWOS through applying elements of participatory action research and more specific Indigenous research frameworks. These frameworks offer meaningful avenues for centering relationship-building, Indigenous sovereignty, and community-driven inquiry.

PAR provides a foundational strategy for restructuring the role of participants in research. By positioning Indigenous forest owners as co-researchers rather than research subjects, a PAR framework has the potential to foster more locally relevant data and action-oriented outcomes. For example, integrating a preflection or relationship-building phase (Méndez et al., 2017) into the NWOS process would lay the groundwork for co-developing survey instruments and goals with community input. CBPR builds on this foundation by emphasizing the importance of

bringing communities into the research process intentionally and tangibly. In the context of the NWOS, the implementation of a community advisory board (CAB) – as recommended by Simonds and Christopher (2013) – composed of tribal forest owners and other pertinent stakeholders may further support the development of community driven research that is sustainably and thoughtfully organized. Establishing a CAB may work towards solving some of the challenges in PAR and CBPR, specifically the concern that Western researchers may not be part of a project in the long term.

Though PAR and CBPR provide a solid, tangible framework for the development of a community driven Tribal NWOS module, frameworks such as DPAR, Two-Eyed Seeing, and the Relational Science Model provide specific insights relevant to the Indigenous-focused context. For one, DPAR asserts the need for deeper ethical considerations when working with Indigenous forest owners and larger communities. Though this project will operate under IRB oversight, Tuck and Guishard (2013) emphasize that true ethical engagement with Indigenous communities – such as Indigenous forest owners – requires going deeper than an IRB. This can be done by engaging in transparency around research theories and practices, as well as a firm commitment to intentional relationship building, tribal self-governance and data sovereignty. In the case of the Tribal NWOS module, there are a plethora of steps that can be taken to uphold DPAR processes. For example, working with tribal forest owners to develop true means of reciprocity and mutual aid can build more ethical community engagement and authentically increase survey response rates.

The strength of Two-Eyed Seeing lies in its balanced consideration of Indigenous and Western knowledge systems, promoting co-learning and shared action (Reid et al., 2021). This is particularly valuable considering the positionality of the NWOS as a Western science entity.

Like the idea of humility put forth in DPAR, Two-Eyed Seeing provides clear recommendations for thoughtfully engaging theories and practices put forth in Western and Indigenous knowledge. In the context of NWOS, this could mean collaboratively designing survey questions that reflect Indigenous land relationships alongside conventional forest ownership metrics or integrating oral histories and community-defined indicators of forest concerns into data collection and analysis. Understanding the strengths of each perspective and approach – and balancing the power respectively – is vital to engaging Indigenous forest owners.

The Relational Science Model serves as an important synthesis that applies aspects of each of the aforementioned frameworks, while also adding other considerations. For one, David-Chavez et al. (2024) posits that it is important to consider the governance structure of Indigenous communities when engaging them in research. This means, for example, building relationships or working with liaisons to assess internal power dynamics that may exist in order to build truly representative and congruent community advisory boards. Additionally, many tribal governments have additional IRBs or research structures that, though not legally required, are important to implement as part of a decolonial and community-based research project. Finally, explicitly outlining how data sovereignty will be upheld, such as enumerating the use of CARE principles in data collection and storage, are critical.

Adopting these frameworks in national survey efforts like the NWOS also brings to light key structural challenges. The time and resource demands of relationship-building, community engagement, and collaborative design often conflict with the institutional priorities of Western funding bodies and publication timelines (Baum et al., 2006; Stanton, 2014). Furthermore, the bureaucratic limitations of IRB processes and standardized survey methods often do not accommodate the flexibility or ethical standards needed for relational or decolonial research (The

Community-Based PhD, 2022; Simonds & Christopher, 2013). Addressing these tensions may require systemic adjustments, such as adapting IRB policies for community-based protocols, developing funding mechanisms that support long-term engagements, and hiring Indigenous liaisons or community members to guide research development from within. However, the larger structure of the FFRC, including the longer-term scope of the NWOS, has potential to provide the time and resources needed to properly engage in community building and cyclical action on an appropriate scale.

In this review, publications focused on fields including education, health, agroecology, and water resource management were found. However, none of the literature was focused specifically on Indigenous forest ownership and participatory action research. This research gap is of particular note given that PAR and its evolutions or adjacencies explicitly support Indigenous self-determination, relational accountability, and data sovereignty. The underutilization of these frameworks may be representative of patterns of Western exclusion or dispossession of Indigenous knowledge in forestry research. However, the use of more expansive databases or assessing sources beyond conventional publications may offer more examples of PAR specific to Indigenous forest ownership.

Ultimately, transforming how we engage with forest owners – particularly Indigenous stewards – requires more than technical adjustments; it demands an epistemological shift in how research is conceptualized, who defines it, and what outcomes it aims to produce. By integrating participatory action approaches and Indigenous frameworks, the NWOS could move beyond data extraction and towards becoming a platform for co-learning and visible decolonization. This shift holds potential not only to improve the quality and relevance of forest ownership data, but also to support sovereignty and resilience in the face of ecological and social change.

References

Atalay, S., & Mccleary, A. (Eds.). (2022). *The Community-Based PhD: Complexities and Triumphs of Conducting CBPR*. University of Arizona Press. https://doi.org/10.2307/j.ctv29z1hhc

Bacon, C., Méndez, V., & Brown, M. (2005). *Participatory action research and support for community development and conservation: Examples from shade coffee landscapes in Nicaragua and El Salvador*.

Barcus, H. R., & Smith, L. J. (2016). Facilitating native land reacquisition in the rural USA through collaborative research and Geographic Information Systems. *Geographical Research*, *54*(2), 118–128. https://doi.org/10.1111/1745-5871.12167

Baum, F., MacDougall, C., & Smith, D. (2006). Participatory action research. *Journal of Epidemiology and Community Health*, *60*(10), 854–857. https://doi.org/10.1136/jech.2004.028662

Butler, B. J. (2021). *America's family forest owners*. Society of American Foresters. https://www.shopsaf.store/products/americas-family-forest-owners

Carroll, S. R., Garba, I., Figueroa-Rodríguez, O. L., Holbrook, J., Lovett, R., Materechera, S., Parsons, M., Raseroka, K., Rodriguez-Lonebear, D., Rowe, R., Sara, R., Walker, J. D., Anderson, J., & Hudson, M. (2020). The CARE Principles for Indigenous Data Governance. Data Science Journal, 19, 43. https://doi.org/10.5334/dsj-2020-043

David-Chavez, D. M., Gavin, M. C., Ortiz, N., Valdez, S., & Carroll, S. R. (2024). A values-centered relational science model: Supporting Indigenous rights and reconciliation in research. *Ecology and Society*, *29*(2). https://doi.org/10.5751/ES-14768-290211

Davis, S. M., & Reid, R. (1999). Practicing participatory research in American Indian

communities–. *The American Journal of Clinical Nutrition*, *69*(4 Suppl), 755S-759S.

Eisenberg, C., Prichard, S., Nelson, M. P., Hessburg, P. (2024). Braiding Indigenous and Western Knowledge for Climate-Adapted Forests: An Ecocultural State of Science Report.

Farrell, J., Burow, P. B., McConnell, K., Bayham, J., Whyte, K., & Koss, G. (2021). Effects of land dispossession and forced migration on Indigenous peoples in North America. *Science (New York, N.Y.)*, *374*(6567), eabe4943. https://doi.org/10.1126/science.abe4943

Gordon, J., Session, J., Hoagland, S., Leighton, A., & Corrao, V. (2023). *Assessment of Indian Forests and Forest Management in the United States* (p. 314). The Intertribal Timber Council.

Hernández Maqueda, R., Paste, S., Chango, M. del C., Serrano, B. F., & del Moral, F. (2022). Designing Biodiversity Management Strategies at the Community Level: Approaches Based on Participatory Action Research. *Human Ecology*, *50*(4), 665–679. https://doi.org/10.1007/s10745-022-00339-z

Kennedy, C. M., Fariss, B., Oakleaf, J. R., Garnett, S. T., Fernández-Llamazares, Á., Fa, J. E., Baruch-Mordo, S., & Kiesecker, J. (2023). Indigenous Peoples' lands are threatened by industrial development; conversion risk assessment reveals need to support Indigenous stewardship. *One Earth* (pp. 1032-1049). https://doi.org/10.1016/j.oneear.2023.07.006

McCleary, A., & Atalay, S. (2022). Introduction. In *The Community-Based PhD: Complexities and Triumphs of Conducting CBPR* (pp. 3–9). University of Arizona Press.

Méndez, V. E., Caswell, M., Gliessman, S. R., & Cohen, R. (2017). Integrating Agroecology and Participatory Action Research (PAR): Lessons from Central America. *Sustainability*, *9*(5), Article 5. https://doi.org/10.3390/su9050705

Nutton, J., Lucero, N., & Ives, N. (2020). Relationality as a Response to Challenges of Participatory Action Research in Indigenous Contexts: Reflections from the Field. *Educational Action Research*, OBJ

Oswalt, S. N., Smith, W. B., Miles, P. D., & Pugh, S. A. (2019). Forest Resources of the United States, 2017: A technical document supporting the Forest Service 2020 RPA Assessment. Gen. Tech. Rep. WO-97. Washington, DC: U.S. Department of Agriculture, Forest Service, Washington Office., 97. https://doi.org/10.2737/WO-GTR-97

Simonds, V. W., & Christopher, S. (2013). Adapting Western Research Methods to Indigenous Ways of Knowing. *American Journal of Public Health*, *103*(12), 2185–2192. https://doi.org/10.2105/AJPH.2012.301157

Stanton, C. R. (2014). Crossing Methodological Borders: Decolonizing Community-Based Participatory Research. *Qualitative Inquiry*, *20*(5), 573–583. https://doi.org/10.1177/1077800413505541

Tribal Forest Management. (2023, December 22). [Site page]. https://www.doi.gov/ocl/tribal-forest-management

Tuck, E., & Guishard, M. (2013). Uncollapsing Ethics: Racialized Sciencism, Settler Coloniality, and an Ethical Framework of Decolonial Participatory Action Research. In *Challenging Status Quo Retrenchment: New Directions in Critical Research* (pp. 3–27). Information Age Publishing. (pp. 3–27). Information Age Publishing.

Tuck, E., & Yang, K. W. (2012). *Decolonization is not a metaphor*.

Appendix

Table 1.
Log outlining Literature Search

Date and time	Search location	Search terms	Number of results
2/20/25 @ 4:16pm	UMass Library Discovery search; filtered for only peer review articles	"Participatory Action Research" AND "forest" AND "Indigenous"	98
2/27/25 @ 12:09pm	UMass Library Discovery search; filtered for only peer review articles and english	"participatory action research or community based participatory research or participatory" AND "indigenous or native or aboriginal or indians or first nations" AND "united states or america or usa or u.s or turtle island" AND "forest management or forest conservation or forestry"	182
2/27/25 @ 12:17pm	UMass Library Discovery search; filtered for only peer review articles and english	"participatory action research" or "community based participatory research or participatory" AND "indigenous or native or aboriginal or indians or first nations" AND "united states or america or usa or u.s or turtle island" AND "forest management" or "forest conservation" or "forestry" AND "framework or model or theory or approach"	55
3/3/25 @ 11:05 am	UMass Library Discovery search; filtered for only peer review articles	"participatory action research" AND indigenous or native or aboriginal or indians or first nations AND united states or america or u.s or usa AND framework or model or theory or approach	185
3/8/25 @ 11:12 am	UMass Library Discovery search	"participatory action research" AND Indigenous forest owners OR indigenous land owners AND united states or america or u.s or usa AND framework or model or theory or approach	1
3/8/25 @ 11:20 am	UMass Library Discovery search; filtered for only peer review articles	"participatory action research" AND Indigenous forest owners OR indigenous land owners AND united states or america or u.s or usa	1

3/8/25 @ 11:22 am	UMass Library Discovery search; filtered for only peer review articles	"participatory action research" AND Indigenous forest owners OR indigenous land owners	3
3/8/25 @ 11:27 am	UMass Library Discovery search; filtered for only peer review articles	"participatory action research" AND Indigenous land AND united states or america or usa or u.s	54
3/24/25 @ 1:03 pm	UMass Library Discovery search	tribal forest management AND participatory action research	6
3/24/25 @ 1:10pm	UMass Library Discovery search	tribal forest management AND data sovereignty	7
3/24/25 @ 1:16pm	UMass Library Discovery search; filtered for only peer review articles	Indigenous forest owners OR indigenous land owners AND data sovereignty	174
3/30/25 @ 4:14pm	UMass Library Discovery search	Eve Tuck (author filter)	9
3/30/25 @ 4:53pm	UMass Library Discovery search; filtered for only peer review articles	DPAR or decolonizing participatory action research	370
3/30/25 @ 4:55pm	UMass Library Discovery search; filtered for only peer review articles	DPAR or decolonizing participatory action research AND indigenous	256