



United States Department of Agriculture

# Climate Change Through an Intersectional Lens: Gendered Vulnerability and Resilience in Indigenous Communities in the United States

Kirsten Vinyeta, Kyle Powys Whyte, and Kathy Lynn



Forest  
Service

Pacific Northwest  
Research Station

General Technical Report  
PNW-GTR-923

December  
2015

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotape, American Sign Language, etc.) should contact the responsible Agency or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English.

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at [http://www.ascr.usda.gov/complaint\\_filing\\_cust.html](http://www.ascr.usda.gov/complaint_filing_cust.html) and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or (3) email: [program.intake@usda.gov](mailto:program.intake@usda.gov).

USDA is an equal opportunity provider, employer, and lender.

## Authors

**Kirsten Vinyeta** is a Ph.D. student in the Environmental Studies Program and Sociology Department at the University of Oregon, Eugene, OR 97403 ([kvinyeta@gmail.com](mailto:kvinyeta@gmail.com)). **Kyle Powys Whyte** holds the Timnick Chair in the Humanities, Department of Philosophy, Michigan State University. **Kathy Lynn** is coordinator of the Tribal Climate Change Project and a Faculty Research Assistant in the Environmental Studies Program at the University of Oregon, Eugene, OR 97403 ([kathy@uoregon.edu](mailto:kathy@uoregon.edu)).

This publication is the result of a joint venture agreement (2014-JV-11261935-061) between the USDA Forest Service Pacific Northwest Research Station and the University of Oregon.

Cover: "Fish Sticks" by Jon Ivy, Coquille Indian Tribe

## **Abstract**

**Vinyeta, Kirsten; Powys Whyte, Kyle; Lynn, Kathy. 2015.** Climate change through an intersectional lens: gendered vulnerability and resilience in indigenous communities in the United States. Gen. Tech. Rep. PNW-GTR-923. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 72 p.

The scientific and policy literature on climate change increasingly recognizes the vulnerabilities of indigenous communities and their capacities for resilience. The role of gender in defining how indigenous peoples experience climate change in the United States is a research area that deserves more attention. Advancing climate change threatens the continuance of many indigenous cultural systems that are based on reciprocal relationships with local plants, animals, and ecosystems. These reciprocal relationships, and the responsibilities associated with them, are gendered in many indigenous communities. American Indians, Alaska Natives, and Native Hawaiians experience colonization based on intersecting layers of oppression in which race and gender are major determinants. The coupling of climate change with settler colonialism is the source of unique vulnerabilities. At the same time, gendered knowledge and gender-based activism and initiatives may foster climate change resilience. In this literature synthesis, we cross-reference international literature on gender and climate change, literature on indigenous peoples and climate change, and literature describing gender roles in Native America, in order to build an understanding of how gendered indigeneity may influence climate change vulnerability and resilience in indigenous communities in the United States.

Keywords: Climate change, indigenous peoples, gender.

## Foreword

*Linda E. Kruger, Research Social Scientist  
Pacific Northwest Research Station*

Navigating the complex issues that surround climate change, and the rapidly expanding literature that attempts to describe and explain it, is challenging enough without introducing the variable of gender. However, that is exactly where Vinyeta, Whyte, and Lynn take us in this synthesis of the international literature on indigenous peoples, gender and climate change. Gender is rarely a topic of discussion in the climate change literature. The authors aim to fill the gaps in understanding that challenge our ability to design and implement efficient and effective adaptation and mitigation strategies in Indian Country. This is a venture into uncharted territory.

It is fairly well recognized that indigenous peoples face higher risk from the effects of climate change than other populations because of their close relationships and interdependence with plants, animals, and entire ecosystems. The authors recognize that it is these relationships with nature and the environment, under siege from climate change, that are gender-specific in many indigenous communities.

In this paper, Vinyeta, Whyte, and Lynn investigate the gendered knowledges, gender-based activism, and initiatives that may foster community resilience in Native American, Alaska Native, and Native Hawaiian communities. They explore different men's and women's roles. For example, women's relationship with and knowledge of water has led to a higher degree of activism and community resilience related to water. Many men have special knowledge and skills related to hunting and fishing. Together the genders provide for the community in complementary ways. However, climate change threatens access to species that are being affected by climate change such as the culturally important salmon. As indigenous peoples are displaced or relocate to other lands, they are displaced from the use, adaptation, and transmission of traditional knowledge.

The authors describe the adaptive processes employed by some tribes to encourage men and women to learn the responsibilities they have to each other. Young men and women are learning about food collection and preparation—regardless of gender. The authors also expand our understanding of indigenous lesbian, gay, bisexual, transgender, two-spirit, and queer (LGBTQ) persons who have played important cultural roles throughout history. They describe vulnerabilities and contributions of the LGBTQ communities within the context of climate change. Their discussion of “two-spirit people” makes a significant contribution to the literature on tribal communities and gender.

For indigenous communities, gendered knowledges and responsibilities have been critical for community sustainability and cultural resilience. The authors have provided a path for indigenous communities interested in incorporating gender in climate change mitigation and adaptation strategies. The document is also an aid to nonindigenous researchers, agencies, and organizations working with indigenous communities. In closing, Vinyeta, Whyte, and Lynn challenge us to explore gender specifically within the areas of public health; migration, displacement and altered social networks; unemployment, poverty, and impacts to tribal economies; and impacts to traditional species, places and relationships, which they meld together as culture. They assist us in this endeavor by presenting several provocative questions. Exploration of these questions will help move this work forward and expand the benefits that are possible.

## Contents

1	<b>Introduction</b>
2	Report Purpose and Structure
4	<b>Context</b>
4	Gender, Gender Roles, and Gender Inequality
5	Gender in International Climate Change Initiatives and Research
7	Concepts of Gender in U.S. Indigenous Communities
14	Gendered Responsibilities in Indigenous Communities
19	Perspectives on Climate Change Vulnerability and Resilience
21	<b>Gendered Climate Change Vulnerability and Resilience in Indigenous Communities in the United States</b>
21	Public Health
33	Migration, Displacement, and Altered Social Networks
38	Unemployment, Poverty, and Impacts on Tribal Economies
42	Culture: Impacts on Traditional Species, Places, and Relationships
49	<b>Conclusion</b>
49	Public Health
50	Migration, Displacement, and Altered Social Networks
50	Unemployment, Poverty, and Impacts on Tribal Economies
51	Culture: Impacts on Traditional Species, Places, and Relationships
52	<b>Acknowledgments</b>
52	<b>References</b>
69	<b>Glossary</b>

## **Introduction**

The scientific and policy literature on climate change increasingly describe indigenous peoples' vulnerabilities to climate change on their communities' close cultural connection to, and reliance upon, local species and ecosystems (Cameron 2012, Lynn et al. 2011, Maldonado et al. 2014, Parrotta and Agnoletti 2012, Whyte 2013, Wildcat 2013, Williams and Hardison 2013). For many indigenous communities, engaging in reciprocal relationships with local plants, animals, and ecosystems is the basis of their members' health, cultures, economies, and ways of life. Indigenous communities have already had to absorb disruptions to these relationships associated with settler colonialism; these relationships are now further threatened by climate change (Reo and Parker 2013, Whyte 2013). Specific examples of threats to indigenous peoples' health, cultures, economies, and ways of life include permafrost melt, sea-level rise, more frequent and stronger storms, longer periods of drought, increased frequency and intensity of wildfires, and opportunistic invasive species (Bennett et al. 2014, Grossman and Parker 2012). Indigenous peoples across the world are already experiencing many of these impacts (ACIA 2004, Bennett et al. 2014, IPCC 2007, IPCC 1 2001, IPCC 2 2001).

In the United States, American Indians, Alaska Natives, and Native Hawaiians are actively engaged in climate change initiatives within their communities and collaboratively with outside entities such as federal agencies and nongovernmental organizations. Tribes, indigenous scholars, and agencies and organizations working in collaboration with tribes are crafting culturally appropriate adaptation strategies by incorporating tribal cultural values and indigenous knowledge systems into climate change mitigation and adaptation strategies. The implications of climate change on indigenous relationships with and responsibilities toward land, water, plants and animals, and the development of solutions that prioritize these relationships and responsibilities, are topics that are being explored with increasing frequency in the United States and globally (Bennett et al. 2014, Maldonado et al. 2014, Maynard 1998).

The role of gender (see "Gender, Gender Roles, and Gender Inequality" for a definition of gender as used in this paper) in defining climate change experiences in the United States is a research area that deserves more attention. Gender is a socially constructed concept that is fluid and ever-changing, the meanings and accepted norms of which vary across cultures and across individuals. Despite its fluidity, gender has concrete, socially determined implications in people's lived experiences. For genders most frequently subject to oppression in the United States, such as women, and transgender and other gender nonconforming peoples, climate

change may have more significant impacts. At the same time, gender-based activism, initiatives, and communities may foster resilience in a climate change context. Denton (2002: 18) states:

Women are already paying huge prices for globalisation, economic depression, and environmental degradation. Climate change is likely to worsen their already precarious situation, and leave them even more vulnerable. More efforts should be made to give climate negotiations a people-centred approach, and to give women their rightful place within the sustainable development circle.

Denton points out that gender can be coupled with climate change impacts in ways that intersect with other forms of oppression, such as economic class and marginalization, to create unique climate change vulnerabilities. Similarly, Cudworth and Hobden (2011: 51) suggest that “human relations with the environment are socially intersectionalised, that is, existent in a context of overlapping relations with other systems of social relations, such as those based on class, gender and ethnic hierarchy.” American Indians, Alaska Natives, and Native Hawaiians have endured intersecting layers of oppression (Allen 1992, Chrystos 1995, Kauanui 2008, Maracle 1996, Miranda 2002, Morgensen 2011, Rifkin 2011, Ross 1998, Smith 2005) that according to Andrea Smith (2005: 8), involve “issues of colonial, race, and gender oppression” that “cannot be separated” (see also Crenshaw 1991 for a discussion of race and gender intersectionality). Based on these ideas of intersectionality, this literature synthesis explores currently published materials on the intersection of indigenous peoples (indigeneity), gender, and climate-change impacts in the United States.

## Report Purpose and Structure

In the following synthesis, we describe some of the ways in which gender may play a role in defining indigenous peoples’ experiences of climate change in the United States. This report is intended to serve as a resource for indigenous communities who want to explore how gender might be incorporated into indigenous climate change research, mitigation, and adaptation efforts. It is also intended to serve as a resource for nonindigenous researchers, agencies, and organizations working in collaboration with American Indians and Native Alaskans in the United States on climate change initiatives. Here, we will use the term **indigenous communities** to refer to the diversity of indigenous groups living within and neighboring the United States, including federally recognized, state-recognized, and unrecognized bands, tribes, and nations.



In this literature synthesis, we cross-reference international literature focused on gender and climate change, literature on indigenous peoples and climate change, and literature describing certain indigenous concepts of gender, in order to identify gendered impacts of climate change and solutions that may arise within indigenous communities in the United States. By better understanding how gender may affect climate change vulnerability and resilience for indigenous women, men, and LGBTTQ (lesbian, gay, bisexual, transgender, two-spirit, queer) persons, indigenous communities and collaborating agencies and organizations can embark on climate change initiatives that alleviate, not exacerbate, intersectional oppression.

We open this report with a “Context” section in which we broadly define gender and gender roles, describe how gender is shaping discussions of climate change internationally, and provide an overview of literature describing traditional gender roles in indigenous communities in the United States, as well as literature describing the impacts that colonization has had on these roles. In this section, we also discuss common perspectives on indigenous and gendered vulnerability and resilience, illustrating some of the limitations that exist when these issues are analyzed through Western institutional lenses. The “context” is intended to build a foundation that frames the next section of the synthesis, titled “Gendered Climate Change Vulnerability and Resilience in Indigenous Communities in the United States,” in which we focus on how gender may play a role in defining climate change impacts and solutions related to four key arenas: (1) public health; (2) migration, displacement, and altered social networks; (3) unemployment, poverty, and impacts on tribal economies; and (4) culture: impacts on traditional species, places, and relationships.

We conclude by highlighting gaps in the academic and policy literature that could benefit from future research, and we describe some of the key implications of gender with regard to policy and collective action within indigenous communities in a climate change context.

- Climate change threatens indigenous relationships to lands and waters that are vital for indigenous health, cultures, economies, and ways of life.
- Indigenous peoples are actively engaged in addressing climate impacts on their communities.
- A greater consideration of gender in indigenous climate initiatives may increase resilience in indigenous communities.

## Context

### Gender, Gender Roles, and Gender Inequality

Although “gender” and “sex” are sometimes used interchangeably, they are in fact distinct concepts. Gender Spectrum (2014) describes the difference as follows:

[Gender is] a socially constructed system of classification that ascribes qualities of masculinity and femininity to people. Gender characteristics can change over time and are different between cultures. Gender is often used synonymously with sex, but this is inaccurate because sex refers to physical/biological characteristics and gender refers to social and emotional attributes.

Though important in some cultures, masculinity and femininity are not always the basis of gender. In *Two-Spirit People*, Jacobs et al. (1997: 2) define gender as the “cultural rules, ideologies, and expected behavior of diverse phenotypes and psychosocial characteristics,” going on to state that “Cross-cultural comparative studies have shown that genders and sexualities are not always fixed into only two marked categories. Institutionalized gender diversity is found throughout the world but not in all cultures.” In other words, while some cultures (including many Western cultures) predominantly recognize only two genders (man or woman) and are thus said to institute a “gender binary,” there are cultures that recognize more than two genders.

Traditional gender roles are based on individual society’s social constructs of gender, and encompass the activities, responsibilities, expectations and decision-making power that a given culture has historically assigned to different genders within the public and private sphere (Gender Spectrum 2014, Gilles 2012). The dominant cultural paradigm in the United States recognizes two basic gender roles: masculine—having the qualities attributed to males—and feminine—having the qualities attributed to females (Corwin 2009, Norton and Herek 2013, Roscoe 1998, Rifkin 2011, Smith 2005). People who do not conform to socially assigned gender roles sometimes refer to themselves as gender nonconforming, gender variant, genderqueer, or transgender (Gender Spectrum 2014, UC Berkeley Gender Equity Resource Center 2014). Throughout history, diverse cultures—including some indigenous communities prior to colonization in the present-day United States—have recognized three or more gender roles (Corwin 2009, Gender Spectrum 2014, Roscoe 1998, Rifkin 2011). Gender roles are by no means static; they vary across space and time, are relational, and are constantly renegotiated (Alston 2013, Corwin 2009). Despite this constant flux, many societies have had long-standing gender-based power inequalities (Gilles 2012).

Today, indigenous communities in the United States and Canada experience significant gender inequalities (Barker 2008, Deer 2009, Goeman and Denetdale 2009, Kauanui 2008, Mihesuah 1996, Rifkin 2011, Smith 2005, Weaver 2009), but for some of these communities, it was not always this way. Prior to colonization, gender roles within many tribes were egalitarian, and many indigenous cultures were matrifocal (Allen 1992, Brave Heart et al. 2012, Kauanui 2008, Mihesuah 1996, Roscoe 1998, Smith 2005, Wagner 2001, Weaver 2009). Colonizers stripped indigenous women and gender nonconforming peoples of power and instituted a patriarchal system that continues to have significant impacts today (Allen 1992, Brave Heart et al. 2012, Kauanui 2008, LaFortune 2010, Mihesuah 1996, Morgensten 2011, Smith 2005, Weaver 2009).

**Gender inequality** is most commonly thought of as the social, political, and economic advantages favoring men at the expense of women. Note, however, that not all women have been (or are) affected equally, as race, class, ability, colonial history, and various other factors intersect with gender to affect lived experiences. For example, Euro-American women have benefitted greatly from the dispossession of indigenous communities and are likely to possess more socioeconomic privilege than an indigenous person, regardless of the indigenous person's gender. Chrystos (1995: 128) writes: "Patriarchy is only one of the many tools of colonizer mentality & it is often used by women against other women." Note also that women are not the only gender affected by gender inequality. Transgender and other gender nonconforming individuals who challenge current socially constructed norms of masculinity and femininity are often misunderstood and discriminated against by various societies (Gilles 2012). Additionally, socially constructed gender roles and inequalities can prove limiting for all genders, including men (Gilles 2012).

In the context of climate change, gender role expectations and existing gender inequality can affect individuals' vulnerability, resilience, and adaptive capacity (Alston 2013, Cuomo 2011, Denton 2002, Glazebrook 2011). As climate change progresses, preexisting gender inequality may worsen (UNDP 2007). Climate change research and initiatives worldwide can benefit from exploring the implications of gender on climate change impacts and solutions, and the implications of climate change for gender justice, in order to develop more effective strategies while simultaneously fostering gender justice.

## **Gender in International Climate Change Initiatives and Research**

The relevance of gender in the context of climate change is now being acknowledged with increasing frequency in international research, yet seldom do climate change policies or initiatives address gendered impacts and solutions. "Despite

---

**In the context of climate change, gender role expectations and existing gender inequality can affect individuals' vulnerability, resilience, and adaptive capacity.**

increasing evidence that women are more vulnerable, it has become apparent that climate change policies, frameworks, discourses and solutions are rarely gender-sensitive” (Alston 2013: 8). In response to this lack of focus on gender issues, organizations have formed to promote research and information-sharing regarding the implications of gender, particularly women, in a climate change context. One of these organizations is GenderCC—Women for Climate Justice, an international organization whose main objective is integrating gender justice in climate change policy at local, national, and international levels.

GenderCC and other organizations have encouraged the Intergovernmental Panel on Climate Change (IPCC) to pay closer attention to gender in their research and reporting. In light of these requests, “the IPCC’s Fourth Assessment Report recognises that gender roles and relations shape vulnerability and people’s capacity to adapt to climate change” (Terry 2009: 7). The IPCC’s Fifth Assessment Report on Impacts, Adaptation and Vulnerability further addresses the implications of gender in the context of climate change by including gender as a contributor to differential risks with regard to vulnerability and exposure (IPCC 2014).

Other major international organizations have addressed the importance of gender justice in the context of climate change by developing gender-sensitive initiatives, producing reports that shed light on gendered impacts and gendered solutions, or both. In 2009, the United Nations Population Fund (UNPFA) published a report that addressed the importance of reproductive health and improved gender relations in the fight against climate change. The World Health Organization (WHO 2011 publication *Gender, Climate Change and Health* aims “to provide a framework to strengthen the organizations support to Member States in developing standardized country-level health risk assessments and climate policy interventions that are beneficial to both women and men” (WHO 2011: 6).

The International Union for Conservation of Nature (IUCN) Gender Office has also been at the forefront of gender justice in climate change research and action. The IUCN has co-founded the Global Gender and Climate Alliance (GGCA), an alliance of 60 United Nations agencies and civil society institutions working together on gender and climate issues. Additionally, it has published the first Gender and Climate Change Training Manual (Aguilar 2009)—now used internationally—to include a gendered perspective in the analysis and implementation of national and regional adaptation and mitigation measures. The GGCA also trained nearly 500 participants from more than 100 countries on the linkages between gender and climate change. Many of those participants have used this training to spearhead their own initiatives in their home countries (Aguilar 2013: 150–151).

The Tebtebba Foundation in the Philippines has published resources examining the impacts of climate change on indigenous women, including a 2011 report that highlights the potential threats to indigenous women and their roles in traditional forest ecosystem and resource management (Tebtebba Foundation 2011). In understanding indigenous women's vulnerabilities and strengths, Tebtebba aims to develop programs and policies that protect women's needs, and enable women's gendered knowledge and skills to form a vital part of climate change initiatives.

## Concepts of Gender in U.S. Indigenous Communities

It is crucial to preface any description of sociocultural characteristics of indigenous communities in the United States by emphasizing that every tribe and Native group is unique in its social dynamics, belief systems, cultural practices, and in how it has been colonized and by whom. Below we provide a general understanding of gender dynamics in indigenous communities, but it is important to note that not all indigenous communities share these characteristics, nor are the gender dynamics of all indigenous communities described below. Additionally, within any given indigenous community, there may be a wide range of beliefs, traditions, and cultural practices regarding gender and gender roles. The description below is a synthesis of some of the available literature describing traditional gender roles and relations that have formed part of indigenous cultures in the United States. This description is not intended to minimize indigenous concepts of gender nor "freeze" them in time. It serves only as a starting point from which we can begin to explore the intersections of gender, indigeneity, and climate change, and assumes concepts of gender to be fluid, diverse, and ever-changing.

Many indigenous persons argue that gender roles were quite different in their communities prior to the colonization of North America. Key differences included egalitarian relationships between men and women and the leadership roles of women in various communities (Allen 1992, Brave Heart et al. 2012, Kauanui 2008, Mihesuah 1996, Roscoe 1998, Smith 2005, Wagner 2001, Weaver 2009), the institutionalized presence of multiple genders (Blackwood 1997, LaFortune 2010, Morgensen 2011, Roscoe 1998), and the infrequency of gender violence (Brave Heart et al. 2012, Deer 2009, Smith 2005, Weaver 2009).

With regard to gendered power dynamics in traditional indigenous communities, Allen (1992: 2) states, "Traditional tribal lifestyles are more often gynocratic than not, and they are never patriarchal." Although patriarchal systems have predominantly shaped gender and sexuality in European cultures, gynocratic systems (social systems in which females have central sociopolitical roles, are figures of moral authority, have control over property, or some combination of these characteristics) have shaped the formation of gender and sexuality in many North American indigenous communities:

Some distinguishing features of a woman-centered social system include free and easy sexuality and wide latitude in personal style. This latitude means that a diversity of people, including gay males and lesbians, are not denied and are in fact likely to be accorded honor. Also likely to be prominent in such systems are nurturing, pacifist, and passive males (as defined by western minds) and self-defining, assertive, decisive women. In many tribes, the nurturing male constitutes the ideal adult model for boys, while the decisive, self-directing female is the ideal model to which girls aspire. (Allen 1992: 2)

In some indigenous communities, gender identities and roles were more fluid, and individuals who did not conform to today's Western gender binary were respected and active community members (Allen 1992, Calhoun et al. 2007, Farrer 1997, Grahn 1984, Roscoe 1998, Thomas 1997). In these instances, it was often a person's contributions to the community, not their biological sex, which defined their gender identity (Calhoun et al. 2007, Roscoe 1998). Andrea Smith (2005: 178) explains "... Native societies were not necessarily structured through binary gender systems. Rather, some of these societies had multiple genders and people did not fit rigidly into particular gender categories." There are said to be over 80 tribes, spread throughout North America, in which gender and sexual diversity and fluidity have historically been accepted and/or deemed valuable, even sacred (Allen 1992, Grahn 1984). These include the Apache, Navajo, Winnebago, Cheyenne, Sioux, Menominee, Osage, Klamath, Shoshoni, Aleut, Pawnee, Mohave, Quinault, Ojibwe, Aztec, Seminole, Crow, and Eskimo (Grahn 1984). Gender diversity was also something that indigenous communities may have aspired to, which is different from the idea of leveling off differences across genders that is common in Western conversations about gender justice. Calhoun et al. (2007: 527) describe, "...in precontact times, the term 'equity' was not considered a relevant concept. All that was engendered was considered to have value necessary to the survival of traditional communities and all that was engendered was considered necessary for the survival of the people."

Today, some indigenous communities and individuals have adopted the term "two-spirit," first coined in 1990 at a Native queer gathering in Winnipeg. Gathering participants sought to find "a new term for Native sexualities and gender diversity" (Morgensen 2011: 81). "The term two-spirit was chosen as an intertribal term to be used in English as a way to communicate numerous tribal traditions and social categories of gender outside dominant European binaries" (Driskill 2010: 72). Morgensen (2011: 81) states:

As a calque of a term from "Northern Algonquin...niizh manitoag (Two-Spirits)," which participants at the Winnipeg gathering defined as "the presence of both a masculine and a feminine spirit in one person,"

Two-Spirit in English referred at once to “gay, lesbian, transvestite, transsexual, transgender, drag queens, and butches, as well as winkte, nadleeh, and other appropriate tribal terms.”

Although the term “two-spirit” has served to define some contemporary indigenous LGBTQ (lesbian, gay, bisexual, transgender, queer) narratives and identities, not all gender and sexuality nonconforming indigenous peoples refer to themselves as two-spirits or necessarily agree with that terminology. Thus, we use the more inclusive acronym LGBTTQ (lesbian, gay, bisexual, transgender, two-spirit, queer) to refer to indigenous persons who do not conform to the Euro-American gender binary, heteronormativity, or other settler colonial norms regarding gender and sexuality.

A third noted characteristic of gender relations in indigenous communities prior to colonization was the infrequency with which gender violence took place (Weaver 2009). “Domestic violence and child abuse were not tolerated; any perpetrator’s actions would be avenged by male relatives and often lead to banishment” (Brave Heart et al. 2012: 178). Even during conflict with incoming colonizers, Native men’s respectful treatment of white women was noteworthy. Smith (2005: 20) describes, “European women were often surprised to find that, even in war, they went unmolested by their Indian captors.”

The respectful gender relations in many indigenous communities were rapidly disrupted upon the arrival of European colonists (Allen 1992, Brave Heart et al. 2012, Calhoun et al. 2007, Mihesuah 1996, Smith 2005, Weaver 2009). Mihesuah (1996) explains:

If we look at tribal societies at contact and trace the changes in their social, economic, and political systems over time through interaction with Euroamericans and intertribal relations, we will find that women did have power taken from them and so did Indian males. Gender roles changed over time, and Europeans were among the catalysts for this change.

In light of indigenous women’s powerful and respected roles within many communities, European colonizers believed that the colonization of indigenous peoples depended in large part on the subjugation of indigenous women (Allen 1992, Smith 2005, Weaver 2009, Weisiger 2007). This colonial strategy would initiate a long history of disempowerment and violence toward indigenous women that continues today. Allen (1992: 3) states:

The colonizers saw (and rightly) that as long as women held unquestioned power of such magnitude, attempts at total conquest of the continents were bound to fail. In the centuries since the first attempts at colonization in the early 1500s, the invaders have exerted every effort to remove Indian

women from every position of authority, to obliterate all records pertaining to gynocratic social systems, and to ensure that no American and few American Indians would remember that gynocracy was the primary social order of Indian America prior to 1800.

Indigenous peoples who didn't conform to the European gender binary and/or heteronormativity were also targeted during colonization (Allen 1992, LaFortune 2010, Morgensen 2011, Smith 2005). LaFortune (2010) explains:

...early explorers and adventurers from Europe were outraged by the fact that many Two Spirit people (who might be called gay, lesbian, bisexual, or transgender in American English) among Indigenous cultures were persons of standing and rank in their communities. They were targeted at the beginning for extermination, particularly by the Spanish, from Florida to California.

Rifkin (2011: 144) describes the Euro-American persecution and villainization of indigenous forms of kinship, familial relations, and diverse sexuality as a social tool to advance the imperial agenda of the United States:

Non-nuclear modes of habitation, identification, and eroticism are cast as a challenge to the operation of U.S. sovereignty, and reciprocally, the exertion and extension of state power is justified on the basis of the need to protect the “social relations” that lie at the heart of civilized existence.

Through laws like the Dawes Allotment and the Indian Reorganization Act, the United States normalized heteronormative, patriarchal, nuclear-family-oriented narratives that promoted individuality, privatization, and property-holding, while framing indigenous relations as deviant and uncivilized, and delegitimizing indigenous clan and community-centered kinship that was frequently gynocratic (Calhoun et al. 2007, Rifkin 2011). Ross (1998) analyzes the history of the Euro-American criminalization of indigenous lifeways, the eradication of indigenous judicial systems, and the incarceration of indigenous peoples as a means to undermine sovereignty.

Precontact Native criminal justice was primarily a system of restitution—a system of mediation between families, of compensation, of recuperation. But this system of justice was changed into a shadow of itself. Attempts were made to make Natives like white people, first by means of war and, when the gunsmoke cleared, by means of laws—Native people instead became ‘criminals.’ (Ross 1998: 14)

The United States also used the law to disrupt traditional indigenous gender roles and kinship models by forcing indigenous children to attend boarding schools



that stripped them of their indigenous culture, language, and traditions, and inculcated them with European cultural values (Brave Heart et al. 2012, Rifkin 2011, Smith 2005). These schools separated indigenous children from their families and communities for long periods of time, which often led to rampant sexual, physical, and emotional abuse; replaced indigenous spirituality with Christianity; and molded indigenous children to fit patriarchal, nuclear family-oriented systems (Rifkin 2011, Smith 2005). The United Nations' definition of genocide includes "forcibly transferring children of the group to another group" (UN General Assembly 1948). By this definition, and by the accounts of indigenous communities, Indian boarding schools were genocidal both in intent and in nature.

The cultural assimilation catalyzed by Indian boarding schools has led to the long-term devaluation of indigenous women (Calhoun et al. 2007, Weaver 2009) and increased violence, particularly violence against women and children, within indigenous communities (Smith 2005, Weaver 2009). Calhoun et al. (2007: 533) stated, "Gender inequity for American Indian students began in boarding schools that valued men's work and devalued women's work." These traumatizing and disempowering experiences have led many indigenous peoples to struggle with internalized self-hatred, which combined with the introduction of alcohol has led to high rates of substance abuse and suicide (Calhoun et al. 2007, Smith 2005, Weaver 2009). Additionally, the erosion of precolonial gender roles and the separation of children from their families during boarding school have affected the ability of some indigenous adults to be good parents (Ball 2009, Bigfoot and Funderburk 2011, Brave Heart et al. 2012, Mokuau 2002, Strickland et al. 2006).

The erosion of fathering among Lakota men, in part the result of the destructive influences of boarding schools that undermined traditional parenting roles, has contributed to confusion among boys and a lack of clarity regarding the meaning of becoming wicasa was'aka. (Brave Heart et al. 2012: 179)

Today, indigenous women, men, and LGBTTQ persons are striving to reconstruct positive gender roles and identities that will help heal the wounds of colonization and restore health to their communities (Allen 1992, Goeman 2013, Jacob 2013, LaFortune 2010, Maracle 1996). Allen (1992: 193) writes:

To survive culturally, American Indian women must often fight the United States government, the tribal governments, women and men of their tribe or their urban community who are virulently misogynist or who are threatened by attempts to change the images foisted on us over centuries by whites.

---

**Today, indigenous women, men, and LGBTTQ persons are striving to reconstruct positive gender roles and identities that will help heal the wounds of colonization and restore health to their communities.**

As Allen points out above, there can be disagreements regarding gender rights, roles, and identities within indigenous communities (Barker 2008, Denetdale 2008, Valencia-Weber 2011). For some indigenous groups, the fight to protect indigenous culture and sovereignty has taken precedence over gender rights. This tendency was evident in the court case of the Santa Clara Pueblo vs. Martinez:

Decided in 1978, the Martinez case denied Julia Martinez access to federal court to challenge a Pueblo membership ordinance treating female members who marry outside the Pueblo differently from male members who marry outside. The case has long attracted attention from feminists and human rights advocates, because they see a woman's claim of gender discrimination pitted against a Pueblo's claim of tribal sovereignty (Valencia-Weber 2011: 451).

Barker (2008: 259) describes the long fight that Indian women endured in Canada to amend the Indian Act of 1868, which used "patrilineality as the criterion for determining Indian status, including the rights of Indians to participate in band government, have access to band services and programs, and live on the reserves." Barker explains how the Indian Act propelled a sense of entitlement among status Indian men, who over time came to expect band government and property rights over Indian women. When various Indian women's constituencies rallied for (and eventually secured) amendments to the act to partially reverse the patrilineal criterion, their band governments (comprising primarily status Indian men) accused them of being anti-Indian, and complicit with colonial ideologies seeking to undermine indigenous sovereignty and lifeways.

In a related example, Ramirez (2008: 303) highlights some of the sexist tendencies of the American Indian Movement (AIM):

Native women frequently occupied subordinate positions within the movement, and were expected to satisfy and fulfill the sexual desires of AIM's male leaders. Native women were, therefore, encouraged to believe that indigenous men should be in power. Native American women were taught in this sexist environment to support an indigenous nationalism that disregarded their own antisexist priorities.

Some Native American women community leaders may choose to prioritize race over gender when it comes to activism, because in advocating along racial lines they protect not just women, but their entire indigenous community (Prindeville 2003). The mainstream feminist movement, the discourse of which is mostly formulated within circles of white women, often fails to resonate with women of color whose culture and history differs greatly from that of white

women (Goeman and Denetdale 2009, Mayer 2007, Ramirez 2008). For indigenous women, the mainstream feminist movement fails to account for the colonial history and unique cultural characteristics that have defined indigenous women's past and present experiences (Allen 1992, Goeman and Denetdale 2009, Maracle 1996, Mayer 2007, Stewart-Harawira 2007). Lorrain F. Mayer (2007: 23) describes her issues with feminism as a Cree Métis woman:

My reasons for rejecting feminism on any level were due in part to three major influences in my life. First, I agreed with Native women activists like Janet McCloud of the Tulalip Tribe, who criticized feminism as an attempt to "divert us into participating as 'equal' in our own colonization" (quoted in Jaimes 1992: 314). As I understood it, feminism was about asserting one's rights to be like white men. Second, since a gendered pronoun was absent from the Cree language, I could not conceive of Cree people ordering their world around a male-created reality; therefore, I reasoned, it must be a colonial construct. Third, and just as important to me, was the absence of domination in my early personal experiences with Native men. Thus, I was convinced that feminist claims about patriarchal hierarchy and domination could only refer to the white world.

It is important to note that concepts in white feminism do not predate indigenous concepts of gender equality and feminine power. In fact, indigenous gynocracies have often inspired or been a point of reference for social activists of diverse genders and races seeking more just and egalitarian social systems. As Allen (1992:2) describes, "American Indians are not merely doomed victims of western imperialism or progress; they are also the carriers of the dream that most activist movements in the Americas claim to be seeking." Wagner (1996, 2001) documents how the matrilineal culture of the Haudenosaunee (Iroquois) informed the early mainstream feminist movement. And yet today, mainstream feminism fails to address the intersectional oppressions faced by contemporary indigenous women and other women of color.

Indigenous scholars and thinkers are reaching back into their gendered histories and bringing them into a contemporary context to reconstruct indigenous feminisms that take into account the impacts of colonization, and work with (not against) tribal cultures and sovereignty (Allen 1992, Goeman and Denetdale 2009, Green 2007, Mayer 2007, Ramirez 2008, Stewart-Harawira 2007). Gender rights need not be set aside for sovereign indigenous rights; both have suffered as a result of colonization, and one cannot be properly addressed without the other. With regard to the many forces converging to oppress Native Hawaiian women, Kauanui (2008: 285) states:

---

**For indigenous women, the mainstream feminist movement fails to account for the colonial history and unique cultural characteristics that have defined indigenous women's past and present experiences.**

Even if patriarchy is understood as a colonial “import” to Hawai’i, male dominance and feminist critique are far from irrelevant to the oppression of Hawaiian women. If one asserts that women were not oppressed by men in traditional Hawai’i before the coming of foreign influences, the peril is that some may argue that simply getting rid of those influences (as if we could) would solve the problem of women’s oppression in Hawai’i today. In other words, we risk treating the problem of contemporary forms of gendered oppression as secondary to the restoration of political sovereignty, as though the recognition of Hawai’i’s sovereignty claims would be enough to deal with the structural manifestations of sexism and misogyny. Along with activism, critical analysis, and a decolonizing sensibility attuned to gender oppression are necessary emancipatory strategies for reckoning with the legacies of colonial male domination.

The ideas discussed in this overview regarding the intersection of indigeneity and gender are certainly relevant to climate change impacts. In preparing for climate change, indigenous communities and their allies can strive to address both indigenous and gender concerns by developing climate change frameworks that are sensitive to gendered, indigenous experiences, by fostering gender diversity in climate change leadership and decisionmaking, and by ensuring that climate change initiatives work to dismantle, not exacerbate, the colonial oppression of indigenous women, men, and LGBTTQ people.

### Gendered Responsibilities in Indigenous Communities

Gender has historically played an important role in defining social structure and socio-cultural responsibilities within indigenous communities in North America (Anderson 2005, Jacobs et al. 1997, Kuhlmann 1992, McGregor 2005, Mihesuah 1996, Roscoe 1998). Traditionally, responsibilities to land, water, plants, and animals were often gendered (Anderson 2005, Kuhlmann 1992). In many indigenous communities, women were often responsible for managing and harvesting plants and engaging in agricultural activities, whereas men were often responsible for hunting or fishing activities (Anderson 2005, Colombi 2012, Kuhlmann 1992, Scarry and Scarry 2005). “In aboriginal California, women were the ethnobotanists, testing, selecting, and tending much of the plant world, men were the ethnozoologists, applying their intimate knowledge of animal behavior and skillful hunting, fishing and fowling” (Anderson 2005: 41-42). Scarry and Scarry (2005: 261) describe that it was the women of Cherokee, Creek, Choctaw, and Chickasaw tribes in the southeastern United States that “bore the primary responsibility for preparing fields, planting, weeding and harvesting.” Thomas (2005) describes how sugar maple sap harvest and maple sugar preparation activities among the Ojibwe and Potawatomi Tribes in Wisconsin and Michigan were traditionally carried out by women.

Women across many indigenous communities have had a strong connection to water, often leading initiatives to protect it (Bruce and Harries 2010, McGregor 2005, McNutt 2012). “Women have a special relationship to water, in birth, ceremonies, and even cooking and cleaning” (McNutt 2012: 104). Bruce and Harries (2010: 6) explain that as the protectors of water, women “play an intimate role in defending this precious resource.”

Historically, the traditional gendered responsibilities of gender-variant individuals (today’s LGBTIQ people) varied on a tribal and case-by-case basis. Different tribes had different terms to describe gender diversity within their communities, and these different terms sometimes came with specific responsibilities and norms. In some cases, gender-variant individuals preferred or excelled at traditional activities and responsibilities of a sex not their own (Roscoe 1998). In tribes in which gender diversity was institutionalized, this was typically acceptable and people were free and often encouraged to pursue the traditional responsibilities to which they were inclined (Roscoe 1998). For example, in the Navajo language, the term *nádleehí* was used to refer to gender-variant community members.

Female *nádleehí* gained prestige in men’s pursuits such as hunting and warfare, while male *nádleehí* specialized in equally prestigious women’s activities of farming, herding sheep, gathering food sources, weaving, knitting, basketry, pottery, and leatherwork (Roscoe 1998: 41).

Yet gender-variant individuals didn’t necessarily abandon the traditional responsibilities ascribed to their biological sex; sometimes they pursued both traditionally masculine and feminine activities and responsibilities (Farrer 1997, Roscoe 1998).

Although some gendered responsibilities remain strong in today’s indigenous communities, other responsibilities have been altered in part because of the social and ecological changes brought on by colonization (Anderson 2005, Hoover 2013, McGregor 2005, Thomas 2005). Settlement of Indian lands, genocide of indigenous peoples, the disempowerment of indigenous women and LGBTIQ people, the exploitation of natural resources by settlers, and the physical relocation of various tribes have challenged many indigenous communities’ relationships with the landscapes, seascapes, plants, and animals with which they had regularly interacted since time immemorial (Anderson 2005, Hoover 2013, Jacob 2013, Merchant 2007, Smith 2005, Wilkinson 2005).

Some environments have been so severely degraded by industrial practices that the health repercussions for indigenous peoples threaten life across various generations. This is amplified by the fact that environmental justice is rarely served when it comes to locating toxic industries and waste. Of the 1,322 existing Superfund sites (or

hazardous waste cleanup sites) in the United States, nearly 25 percent of them are in Indian Country, and some of the persisting impacts, as in the case in Mohawk territory, may include the presence of endocrine disruptors (Hansen 2014). As the name implies, endocrine disruptors are chemicals that disrupt the normal function of the endocrine system, the system that regulates the body's hormones, potentially leading to a host of health problems in human and nonhuman animals, including developmental and reproductive abnormalities, reduced fertility, and increases in immune and autoimmune diseases as well as some types of cancer (NIEHS 2010, NRDC 1998). These chemicals are especially prevalent in pesticides and plastics (NIEHS 2010, NRDC 1998).

Murphy (2013) describes the environmental injustices faced by the Aamjiwnaang First Nation, a small Ojibwe group situated on the shores of the St. Clair River between Ontario, Canada, and Port Huron, Michigan, a place that has been dubbed “Chemical Valley.” With a population of 850, the Aamjiwnaang’s reserve comprises 1,280.5 acres, surrounded on all sides by refineries and petroleum facilities, including Dow Chemical, Suncor, and Shell, and is near various other factories producing toxic outputs. The effect of industrial toxins on tribal lifeways was already apparent in the 1970s, when commercial fishing was banned on the St. Clair River owing to mercury levels in the fish. The Aamjiwnaang, for whom fishing was an important subsistence activity, were among several First Nations communities to be diagnosed with Ontario Minamata Disease, a form of mercury poisoning. As Murphy (2013: 114) states, “The loss of this traditional food source was yet another manifestation of colonial violence in chemical form.”

Three decades later, and as a result of a lack of government regulation, the Aamjiwnaang are continuously exposed to pollutants that cause cancer, as well as cardiovascular, respiratory, developmental, and reproductive disorders. Among the greatest concerns are the Nation’s 39 percent rate of miscarriage, and an unprecedented birth ratio of two girls for every boy (Murphy 2013). In 2013, A First Nations’ rights group working in association with the Idle No More movement provided a “Toxic Tour” of Chemical Valley to shed light on the environmental injustices experienced by the Aamjiwnaang. Toledano (2013), who attended the tour, states:

Aamjiwnaang’s out-dated welcome sign, which reads “Population: 1,800,” betrays the truth of its endangered population. Many have abandoned the reserve due to health problems, often leaving behind elderly family members. Others stay because they cannot afford to leave. But a community continues to exist in this polluted wasteland—life goes on in toxic air.

Some indigenous peoples continue to carry out their traditional relationships with species and places despite having to do so in highly degraded environments.

---

**Some indigenous peoples continue to carry out their traditional relationships with species and places despite having to do so in highly degraded environments.**

One such case is documented by Hoover (2013: 6), in which a Mohawk man describes his reasons for continuing to fish, despite regional fish advisories warning the community of industry-caused toxicity in the water and in the fish:

We give thanks for that food and we have to use it. I mean it doesn't make sense scientifically, but it makes sense spiritually and mentally that you should eat that, you know. You can't just put it aside and say, "well your work is not good enough," or something, you know? They're still given out what their original instructions were, and it's us that are at fault, it's our fault that they're like that, you know.

Hoover (2013: 6) goes on to explain:

Even though as a Mohawk he is not responsible for the contamination that has affected the fish, as a human being he is implicated in the problem, and therefore it is even more important that he works to maintain this relationship with the fish. Because the job given by the Creator to fish is to offer themselves as food, and the job given to humans is to respectfully harvest these fish, people like Richard who are working to maintain tradition feel obligated to maintain these roles.

The social changes experienced by indigenous communities have also affected the ability of community members to exercise their traditional responsibilities and perpetuate traditional knowledge (Jacob 2013, McGregor 2005). Indian boarding schools separated children from their families at ages when they would have been learning traditional roles and responsibilities. Indigenous women, whose traditional roles and responsibilities had been critical to their communities, were often disempowered and forced to assimilate into Eurocentric gender roles (Jacob 2013, Smith 2005, Weaver 2009, Weisiger 2007). In reference to efforts to alter the roles of Navajo women, Weisiger (2007: 441) states, "Since the mid-nineteenth century, the Bureau of Indian Affairs had endeavored to transform Native societies by stripping women of their power as agricultural producers and hide processors and transforming them into good housewives." In describing the plight of Cree women, Ohmagari and Berkes (1997: 217) state: "Traditionally certain bush skills and knowledge were held by women, and their overall role and knowledge were considered as important as those of men. However, since settling into permanent villages, women have lost their role and some of their knowledge base." Similarly, when describing the eventual changes in maple sugar production among the Ojibwe and Potawatomi Tribes in Wisconsin and Michigan, Thomas (2005: 321) states:

It is my contention that the changes from women to men and from sugar to syrup that accompanied the abandonment of kettles and adoption of flat pans were not coincidental, but related to a larger process of westernization and masculinization of the Indian sugarbush.

The sociocultural impacts of colonization have also greatly affected the traditional roles of indigenous peoples with genders outside the European gender binary, in part due to assimilation into Western religion and cultural values that disapprove of gender diversity (Lang 1997).

Traditional gender roles for two-spirit individuals have disappeared on many reservations, and young people who grow up to be “different” in terms of occupational preferences and/or sexual orientation often find themselves at a loss for role models. This holds true even more for urban Native Americans (Lang 1997: 109).

Despite these challenges, many indigenous peoples still interact intimately with landscapes, seascapes, plants, and animals that have formed part of their cultural history (Wildcat 2009). Indigenous communities are well aware that ceasing to engage in these reciprocal relationships with traditional places and species can lead to cultural and ecological loss. “When intimate interaction ceases, the continuity of knowledge, passed down through generations, is broken, and the land becomes ‘wilderness’” (Anderson 2005: 4). Indigenous food sovereignty movements, in which indigenous communities re-assert their right to interact with and have access to traditional foods species, represent just one of the ways in which indigenous peoples are fighting for the preservation of traditional responsibilities and cultural practices. Some of these movements and initiatives are highlighted under “Traditional Foods, Diet, and Nutrition in the “Public Health”” subsection of this report.

---

**Gendered traditional responsibilities and knowledge have formed part of various successful indigenous activist strategies, and can form a vital part of climate change initiatives.**

Climate change exposes vulnerabilities, as it threatens to affect the range and distribution of culturally critical plants and animals as well as alter cultural landscapes, thereby compromising the ability of indigenous peoples to carry out traditional responsibilities and relationships (Whyte 2013). At the same time, indigenous communities can use their intimate knowledge and awareness to identify climate change threats and develop meaningful mitigation and adaptation strategies. Gendered traditional responsibilities and knowledge have formed part of various successful indigenous activist strategies (Bruce and Harries 2010, Goeman 2013, Jacob 2013, Weisiger 2007), and can form a vital part of climate change initiatives. Both vulnerability and resilience will be discussed in more detail in what follows.



## Perspectives on Climate Change Vulnerability and Resilience

In climate change literature and other literatures exploring social vulnerability, indigenous communities are often described as simultaneously vulnerable and resilient. Many of the factors that make contemporary indigenous communities uniquely vulnerable in the face of environmental change are directly related to European colonization. Historically, indigenous communities have been highly adaptable and resilient to environmental change (Turner and Clifton 2009). However at present, the ability of indigenous communities to exercise resilience is often limited by the ongoing impacts of colonialism. Colonization made possible the globalized economic system that has catalyzed anthropogenic climate change, while simultaneously dispossessing indigenous communities and creating environmental and social conditions that profoundly challenged their ability to exercise the knowledge, skills, and traditions that contribute to their resilience (Cameron 2012, Harris 2004, Mirzoeff 2013, Powless 2012, Wildcat 2009). Thus, it is critical to frame discussions of indigenous climate change vulnerability and resilience within the context of European colonization, as the two are inseparable.

Climate change itself, as a number of Indigenous leaders and scholars have made clear, is thoroughly tied to colonial practices, both historically and in the present, insofar as greenhouse gas production over the last two centuries hinged on the dispossession of Indigenous lands and resources (Gray and Mason 2009, Johnson 2010, as cited in Cameron 2012: 104).

Despite the numerous barriers posed by the continued impacts of colonization, indigenous communities continue to resist and thrive, using their unique positions as indigenous sovereigns to form coalitions and movements that are innovative, strategic, and culturally appropriate. In his analysis of indigenous movements to confront climate change, Powless (2012: 412) states:

Indigenous Peoples have indeed forged a unique, formidable, and cohesive social movement across borders, working both inside and outside official, governmental spaces and legal processes, in order to contest but also engage the dominant understandings of climate change and their hegemonic and (neo)colonial bases, while, at the same time, creating spaces to assert their own understandings and encounter potential allies. On the one hand, the movement challenges official decision-making processes while demanding inclusion on their own terms. On the other, they are constructing alternative spaces and forms of Indigenous collective power and, to some extent, with allied movements.

Although examples of indigenous resilience are abundant, indigenous narratives, including narratives of indigenous resilience, are often absent or misrepresented

---

**When indigenous vulnerability and resilience are examined in academic arenas, it is sometimes through a colonial lens that distorts or reduces indigenous experiences, knowledge, and capacity.**

in academic literature, in great part because of underrepresentation of indigenous peoples and epistemologies in Western academic institutions (Matsinhe 2007). When indigenous vulnerability and resilience are examined in academic arenas, it is sometimes through a colonial lens that distorts or reduces indigenous experiences, knowledge, and capacity. For example, Cameron (2012) describes the way in which deep-rooted colonial ideologies have led scholars to consider indigenous knowledge and skills relevant only at a local level, thereby limiting notions of indigenous agency, power, and relevance in an age of global environmental change. These limiting notions contrast with Powless' (2012) analyses highlighted above, in which he describes the transnational nature of many indigenous movements.

European colonization has especially marginalized the voices of indigenous women and LGBTTQ people (Kauanui 2008, LaFortune 2010, Maracle 1996, Miranda 2002, Smith 2005, Weaver 2009). This marginalization may be a reason why first-hand accounts of indigenous women's experiences, including ways in which they may be vulnerable or resilient in the face of climate change impacts, are scarce in the literature. When women's vulnerability and resilience is discussed in international climate change literature, it is often done in a generalizing, reductive way that disregards intersectional oppressions or privileges (Arora-Jonsson 2011). Additionally, the source of women's climate change vulnerabilities may be oversimplified in these literatures, blaming, for example, the likeliness of women's poverty without examining the unequal gendered power dynamics that undergird such poverty in the first place (Arora-Jonsson 2011). These simplistic portrayals of women's vulnerabilities and resilience in the literature can make it challenging to assess indigenous women's climate change vulnerabilities and resilience with the desired level of depth. There is also a shortage of literature on LGBTTQ people and climate change.

- Indigenous conceptions of gender differ from western conceptions in that many indigenous communities were (and sometimes still are) traditionally matrifocal, and often made valued spaces in society for more than two genders.
- Colonial impacts on gender roles in indigenous communities affect the health of these communities and reduce the resilience of indigenous peoples to climate change.
- Academic literature on indigenous resilience and vulnerability may include problematic assumptions about gender.

It is important to keep the above perspectives on vulnerability and resilience in mind. In the following sections, we examine literature describing gendered climate change impacts and solutions, and cross-reference it with the preceding description of indigenous gender roles and responsibilities before and after European settlement of the Americas. This literature synthesis seeks to identify literature that challenges misrepresentations of indigenous communities with regard to both climate change and gender. In the process, we hope to identify some ways in which gender may define climate change vulnerabilities and promote resilience in indigenous communities in the United States.

## **Gendered Climate Change Vulnerability and Resilience in Indigenous Communities in the United States**

### **Public Health**

The intersections between gender, climate change, and health are being explored with increasing frequency in the international arena. Understanding the gendered health implications of climate change for indigenous communities in the United States is important, particularly because American Indians rank highest in health disparities among ethnic and racial groups in the United States, despite comprising the smallest of these groups (Brave Heart et al. 2012). International literature analyzing the implications of gender on health risks in a climate change context tends to focus on women's vulnerabilities, in part because of the limitations experienced by women as a result of cultural gender norms, and because of the challenges women often experience socioeconomically in comparison to men. Indigenous women and LGBTTTQ people in the United States are vulnerable because their race and gender intersect to create socioeconomic and environmental challenges that affect their climate change resilience. For example, indigenous women experience some of the highest rates of violence of any women in the United States (Amnesty International USA 2007, Weaver 2009), making them particularly vulnerable to the escalating rates of domestic and sexual violence that have been documented after natural disasters or weather-related crises. Although little research has been done specifically on the health vulnerabilities of indigenous LGBTTTQ people, LGBTQ literature reveals that members of the LGBTQ community struggle to find healthcare options that meet their unique needs, making them more likely to postpone care or receive inadequate care (Chávez 2011).

Although indigenous women and LGBTTTQ people may be particularly vulnerable, it is also important to recognize the health crises affecting indigenous men in the United States, in part because of the cultural impacts of colonization. Brave Heart et al. (2012) report that death rates of American Indian males exceed

---

**Indigenous women and LGBTTTQ people in the United States are vulnerable because their race and gender intersect to create socioeconomic and environmental challenges that affect their climate change resilience.**

those of females for every age group up to age 75, because of health disparities such as cardiovascular disease, cancer, and diabetes, but also because of high rates of suicide, substance abuse, and mental health disorders, which disproportionately affect American Indian men and boys. Thus, it is also critical to assess the ways in which indigenous men's health may be uniquely vulnerable in the context of climate change.

Below, we discuss the potential implications of gender with regard to three climate change health impacts that are of particular relevance to indigenous communities:

- Injuries resulting from extreme weather or natural disasters.
- Traditional foods, diet, and nutrition.
- Mental health and community violence.

#### **Injuries resulting from extreme weather or natural disasters—**

In the face of extreme weather and natural disasters, women may be more vulnerable to injury and death than men (Alston 2013, David and Enarson 2012, Kukarenko 2011, Nellemann et al. 2011, Terry 2009, UNPFA 2009). This may be partly due to biological differences. For example, women may be particularly vulnerable in extreme weather conditions or in a natural disaster while in the later stages of pregnancy, because of the unique physical needs and limited mobility that may come with being pregnant (Neumayer and Plümper 2007, Zotti et al. 2012). However, Nellemann et al. (2011) explain that women's increased vulnerabilities are most often linked to socially constructed differences in gender norms and roles. Across many cultures, it is women who are most often expected to manage households and care for children and elderly family members (UNPFA 2009). This tends to limit the mobility of women in caretaking roles, making them less able to evacuate in the case of a weather emergency, placing them in a more vulnerable position (David and Enarson 2012, UNPFA 2009). Additionally, women caring for children are likely to risk their own lives in favor of protecting the children's safety in the face of a weather-related crisis (McNutt 2012, UNPFA 2009).

Women across most of the world are said to have lower socioeconomic status than their male counterparts, a fact that may challenge women's access to the information and resources necessary to prepare for and protect themselves from extreme weather (Alston 2013, Cuomo 2011, David and Enarson 2012, Terry 2009, UNPFA 2009).

Women are much more likely to be living in poverty, are less likely to own land and resources to protect them in a post-disaster situation, and have less control over production and income, less education and training, less access to institutional support and information, less freedom of association, and fewer positions on decision-making bodies (Alston 2013: 9).

Although there is evidence that women are more likely to die during heat waves (Kukarenko 2011, WHO 2011), acts of heroism and risk-taking behavior associated with masculinity in certain cultures may make men more vulnerable in other extreme weather scenarios (WHO 2011, Terry 2009). The World Health Organization (2011) reports that men are much more likely to drown, a statistic that may be linked to risk-taking behavior. Terry (2009: 7) states:

In some cases, cultural norms may create situations where men suffer from gender-specific vulnerability. For instance, the deaths in recent years of many young West African men trying to reach Europe by boat can be partly attributed to climate stress on rural livelihoods, which leads them to leave their families and communities and take fatal risks, hoping they will be able to find work and remit part of their earnings back home.

Climate change is leading to extreme weather in various regions of the United States. Findings from the Third National Climate Assessment reveal that extreme weather and climate events have increased in recent decades, including excessively high temperatures, heavy precipitation, and severe droughts, depending on the region (Melillo et al. 2014). Climate models project that heat waves, overall temperatures, heavy downpours, sea level rise, and hurricane-related storms and rainfall are all expected to increase (Melillo et al. 2014). These impacts have had (and will continue to have) repercussions for indigenous communities.

Hurricane Katrina (which took place in 2005) was among the worst natural disasters in U.S. history, and serves to illustrate some of the intersectional challenges faced by indigenous communities during and after a natural disaster. In 2008, the *American Indian Culture and Research Journal* released a special issue titled “Indigenous Locations Post-Katrina: Beyond Invisibility and Disaster.” In the issue’s Introduction, Jolivet (2008: 3) states:

While millions across the world watched their televisions in horror and disbelief, a greater tragedy began to unfold. Centuries of neglect and disinvestment in the indigenous and tribal communities of Louisiana would reach an all-time high in the aftermath of the storm forever known as Katrina.

Contributors to the issue, who include scholars and indigenous community members affected by the Hurricane, describe the immediate devastation and lingering impacts that Katrina brought to the Gulf Coast’s indigenous communities, particularly Houma, Point-au-Chien, Choctaw, Tunica-Biloxi, and mixed Indian-Creole communities (Childs 2008, Collins 2008, Cranford-Gomez 2008, Dardar 2008, D’Oney 2008, Dunn 2008, King 2008, Klopotek et al. 2008).

---

**Climate models project that heat waves, overall temperatures, heavy downpours, sea-level, and hurricane-related storms and rainfall are all expected to increase. These impacts have had (and will continue to have) repercussions for indigenous communities.**

The intersectional impacts of and recoveries from Hurricane Katrina have also been documented in *The Women of Katrina: How Gender, Race and Class Matter in an American Disaster* (David and Enarson 2012). This book highlights the intersectional experiences of hurricane survivors by featuring articles written post-Katrina in protest of the inadequacy of media coverage, and of rescue and recovery strategies that completely disregarded gendered and racialized experiences, as well as by including various testimonials from survivors discussing how gender, race, class, and ability defined their experiences during and after Katrina. One of the testimonials (Robichaux 2012) highlights the efforts of Brenda Dardar Robichaux and her Houma tribal community, and illustrates the post-disaster strength and perseverance that must come from within, particularly for indigenous communities that are federally unrecognized:

During those early days, Robichaux traveled down the bayou in her husband's truck; when they reached a point where water still covered the road, they got into pirogues (dugout canoes made from cypress) and brought people food and water that way (Robichaux 2012: 43).

The testimonial also describes the way in which Robichaux housed, fed, and held cultural workshops for volunteers, whom she states “were a blessing.” It then describes the greatest challenge Robichaux faced in rebuilding her tribal community:

Robichaux's greatest challenge, however, came from the federal government, which she believed should have come to their aid. The tribe is fighting for federal recognition status through the Bureau of Indian Affairs. To compound their pending status, no one could get through to FEMA or the Red Cross. “They were incompetent and ineffective,” Robichaux comments. “I don't know where we would be without the volunteers. Our people have language barriers and education barriers; 47 percent of the adult population has less than a high school education” (Robichaux 2012: 45).

For indigenous communities, relying on the support of the federal government after extreme weather or natural disaster can be risky, given the inadequacy of previous emergency responses and support. This is especially true for tribes that are federally unrecognized, as they cannot rely on federal funding that is allocated to federally recognized tribes only. These challenges compound the physical and socioeconomic threats to indigenous peoples in an extreme weather situation.

Indigenous women and children may be more vulnerable to injury and death in the face of severe weather or natural disasters. The Native Women's Association of Canada (2007: 2) states:

The listing of vulnerable population as outlined by Health Canada places Aboriginal women and children within most or all of the categories of

---

**For indigenous communities, relying on the support of the federal government after extreme weather or natural disaster can be risky, given the inadequacy of previous emergency responses and support.**

vulnerable segments of the Canadian population. As a national Aboriginal organization, we are tasked with an important role in preparing our women and children to prepare for extreme weather impacts and to adopt adaptation strategies necessary to reduce the risks associated with climate change.

Indigenous men also face unique risks in the event of severe weather or natural disasters, particularly if they associate their masculinity with heroic acts and risk-taking. Rhoades (2003) has described the prevalence of risk-taking behaviors among American Indian men, and points out that American Indian men are more likely to die from accidents than American Indian women. Men may also be vulnerable to accidents if the environments in which they carry out their traditional activities, including hunting, whaling, and fishing, become more hazardous as a result of climate change. This trend is manifesting itself in the Arctic, where Alaska Natives and other indigenous groups may face unusual risks owing to the thinning and unpredictable nature of the sea ice on which they traditionally hunt (Ford and Smit 2004, McBeath and Shepro 2007).

#### **Traditional foods, diet, and nutrition—**

International literature reports that women are more likely to suffer from chronic hunger and malnourishment (Roberts 2009, WHO 2011). Women may be more likely to suffer from hunger in part because of lower socioeconomic status that limits access to sufficient or adequately nutritious food (WHO 2011). Roberts (2009: 39) states, “Among the chronically hungry people in the world, 60 percent are women. Climate change will only exacerbate these numbers.” This is particularly problematic because, as the World Health Organization (2011: 17) points out, “Women are more prone to nutritional deficiencies because of their unique nutritional needs, especially when they are pregnant or breastfeeding.”

With regard to climate change impacts on diet, some indigenous communities face disproportionate risks because of subsistence lifestyles, the cultural importance of traditional foods, and the health implications associated with losing these foods (Arquette et al. 2002, Hoover 2013, LaDuke 1999, Lynn et al. 2013). “Whereas climate change has widespread effects on communities globally, indigenous peoples who rely on traditional, locally harvested foods are especially vulnerable” (Wesche and Chan 2010: 361).

Traditional foods are those that have been the staples of indigenous diets since before European colonization and hold cultural and spiritual meaning. Indigenous communities have stewarded the landscape in ways that promote the abundance of traditional food species, engaging in reciprocal relationships with the plants and animals that feed their families (Anderson 2005, Whyte 2013).

---

**Men may also be vulnerable to accidents if the environments in which they carry out their traditional activities, including hunting, whaling, and fishing, become more hazardous as a result of climate change.**

Traditional foods are critical to maintaining health in indigenous communities. When access to these foods is limited, indigenous communities may have few viable options but to replace these nutritious foods with processed alternatives that are cheap and readily available, with negative impacts on the health of community members (Arquette et al. 2002, Norgaard 2004). In interviews carried out by the Centre for Indigenous Environmental Resources (CIER 2007: 5), some members of the Black River First Nation of Canada “attributed greater occurrence of sickness in the community (e.g., cancer, arthritis) to the greater reliance of community members on processed food instead of traditional food.” Norgaard (2004) documents a case in which the Karuk Tribe’s access to salmon has been compromised by various converging forces, including the construction of hydroelectric dams and the implementation of “non-Indian” laws and regulations, forcing the community to replace salmon with processed foods that have led to skyrocketing rates of diabetes and cardiovascular disease.

A traditional lifestyle and diet helps to prevent many chronic diseases, but climate change is decreasing access to some healthy traditional foods (Brubaker et al. 2011).

Indigenous communities know the traditional foods that are imperative for their health. The impact of climate change on the availability and quality of these plant and animal species requires strategies for adaptation that will help indigenous communities retain access to these species (Lynn et al. 2013). “The identification of feasible adaptation options, such as other available traditional wildlife species, and improved understandings of local and regional trends are urgently required for maintaining food security under changing and uncertain conditions” (Wesche and Chan 2010: 361).

Because women comprise a large proportion of the world’s population suffering from hunger (Roberts 2009), it is important for the dietary needs of indigenous women to be addressed as climate change advances. Particularly vulnerable are indigenous women who are pregnant or breastfeeding and have specific nutritional needs. Katsi Cook, a Mohawk midwife and environmental justice activist, helped create the Akwesasne Mothers’ Milk Project, “in an effort to ‘understand and characterize how toxic contaminants have moved through the local food chain, including mothers’ milk’” (LaDuke 1999: 19). Regional lands, waters, and wildlife have been plagued with a high concentration of PCB contaminants resulting from a Superfund site in Massena, New York, right next to the St. Lawrence River and the Mohawk Reservation (LaDuke 1999). The Akwesasne Mothers’ Milk Project “studied 50 new mothers over several years and documented a 200 percent greater concentration of PCBs in the breast milk



of those mothers who ate fish from the St. Lawrence River as opposed to the general population.” “But their PCB levels came down after they stopped eating fish,’ Katsi explained” (LaDuke 1999: 19).

Hoover (2013: 10) describes the difficult choices Mohawk mothers face when trying to avoid the industrial toxins found in the fish of their region:

When Mohawk mothers who participated in the breast milk study demonstrated that removing local fish from their diets decreased the PCB contamination in their breast milk, they showed that exposure to PCBs was avoidable, and thus according to conventional risk assessment the problem was eliminated. What was not predicted, and the reason why indigenous scholars such as Arquette et al. (2002) and Ranco et al. (2011) are calling for more holistic risk assessment, was that avoiding fish consumption had other health implications, both physical and cultural.

Mohawk mothers and their communities already contend with limits to their traditional diets because of corporate contamination of traditional foods. Changes in climate may further affect the availability and quality of traditional foods, adding yet another challenge to the community’s ability to harvest and eat the foods that are critical to their health and culture.

In the Arctic, there is concern that climate change may increase the concentrations of contaminants in marine animals that are vital to indigenous communities’ traditional diets, something which could be particularly threatening to pregnant indigenous women and their unborn children (Booth and Zeller 2005). Prenatal exposure to contaminants such as methyl mercury, for example, has been correlated with cognitive disorders in children (Booth and Zeller 2005).

Climate change may affect traditional methods of food preparation and storage, particularly in the Arctic. “As temperatures rise, methods for traditional food preparation and storage are less likely to prevent pathogens that cause illness. Just as the useful period for ice cellars has shortened, so also has the period when fish, seal, and caribou can be preserved on drying rack” (ANTHC 2011: 47). This trend has gendered implications. As the Alaska Native Tribal Health Consortium Center for Climate and Health (2011: 47) points out: “Pregnant women, infants, the elderly, and those with weakened immune systems are at higher risk for severe infections, such as those that result from eating wildlife diseased with zoonotic infections. Cases of zoonotic diseases may be increased by climate change.”

Indigenous food sovereignty movements are leading the way in protecting indigenous rights to traditional foods. The Northwest Indian College Traditional Plants and Foods Cooperative Extension Program (NWIC 2014) defines communities that exhibit tribal food sustainability and food sovereignty as those that:

---

**The stewardship, harvest, preparation, and consumption of traditional foods involve gendered cultural responsibility and traditional knowledge, calling for consideration of gender in food sovereignty movements.**

- Have access to healthy food;
- Have foods that are culturally appropriate;
- Grow, gather, hunt, and fish in ways that are maintainable over the long term;
- Distribute foods in such a way that people get what they need to stay healthy;
- Adequately compensate the people who provide the food; and
- Use tribal treaty rights and uphold policies that ensure continued access to traditional foods.

Examples of food sovereignty movements and initiatives include Makah and Nuu-chah-nulth efforts to preserve the cultural tradition of whaling in the Pacific Northwest (Coté 2010), the efforts of Winona LaDuke and her fellow Anishinaabe people of the White Earth Nation of Minnesota to protect wild rice from genetic manipulation by the University of Minnesota (LaDuke 2007), the Oneida Nation of Wisconsin’s Annual Food Sovereignty Summit (Walschinski 2014), and food sovereignty programs springing up at various tribal colleges with the intent of strengthening traditional food knowledge and skills among indigenous students, and by extension, their families and communities (Aaniiih Nakoda College 2014, NWIC 2014, Wendholt Silva 2012). The stewardship, harvest, preparation, and consumption of traditional foods involve gendered cultural responsibility and traditional knowledge, calling for consideration of gender in food sovereignty movements (Anderson 2005, Bruce and Harries 2010, Colombi 2012, Kuhlmann 1992, Marshall 2006, McGregor 2005, McNutt 2012, Scarry and Scarry 2005).

Some tribes are proactively embarking on initiatives to protect traditional foods in the face of climate change impacts. One such example comes from the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) of Oregon, who have developed a “First Foods” framework that serves to protect critical tribal foods species in the face of climate change impacts (CTUIR 2010). **First foods**, or traditional foods, refers to foods that indigenous communities rely on for traditions and culture, sustenance and health (Viles 2011). Based on the tribes’ first foods ceremonies, each branch of this framework defines the land and water management needs of one of the first foods important to the tribes (CTUIR 2010). In addition, the CTUIR are addressing the importance of gendered knowledge when it comes to traditional foods. The Tribes’ Comprehensive Plan includes a foods category referred to as “Women’s Foods,” which include berries and roots of cultural importance. The plan also recognizes that there is a gendered knowledge and management gap, stating that not enough attention has been given to plants, which are typically the women’s domain (CTUIR 2010). To address this gap, the tribes have carried out women’s food assessments, and tribal women have stepped up to assert their knowledge and involvement in management decisions (Shippentower 2014). In this way, the CTUIR have embarked on a climate change foods initiative that reempowers indigenous women.

### **Mental health and community violence—**

Research on the impacts of environmental change on mental health has revealed that in various communities, gender plays a role in how people’s mental health is affected by environmental change (Kukarenko 2011, Alston 2013, WHO 2011).

Men’s mental health may be particularly vulnerable to environmental change that affects the places and resources critical to men’s livelihoods and masculine identity (Kukarenko 2011, WHO 2011). Alston (2013) and the World Health Organization (2011) describe trends linking men’s mental health and drought. The World Health Organization (2011: 15) explains that “The stresses of lost incomes and associated indebtedness can spill over into mental health problems, despair and suicide among men. There is some empirical evidence linking drought and suicide among men in Australia (Nicholls et al. 2006).” In her analysis of gendered climate change impacts on human health in the Arctic, Kukarenko (2011) notes:

The disruption of traditional roles for men has been identified in a number of studies as a reason for profound problems in male identity and loss of men’s self-esteem, which, in turn, leads to a lot of psycho-social disorders among men, including higher suicide rates and alcoholism.

These vulnerabilities are further challenged by trends revealing that men and boys are less likely to seek help when suffering from stress and mental health issues (WHO 2011). This demonstrates how environmental and social vulnerabilities couple to affect people differently, in part based on gender.

International research indicates that women’s mental health may be affected in part by the social changes that result from environmental change. Rapid environmental change, such as that resulting from natural disasters, has been shown to increase rates of domestic and sexual violence, and human trafficking (Alston 2013, Nellemann et al. 2011, WHO 2011). Kukarenko (2011) explains that men’s loss of self-worth and other mental stresses caused by environmental change may lead men to be more violent towards women and children, thereby affecting women and children’s mental health, physical safety, and well-being. Alston (2013) notes that women became particularly vulnerable to violent attack in the United States following Hurricane Katrina.

Environmental change can be especially distressing to communities that have a strong connection to the land (Cunsolo Willox et al. 2013, McNamara and Westoby 2011). The stress, loss, and cultural changes associated with colonization, combined with the introduction of alcohol, have led to unusually high rates of substance abuse, suicide, and violence within indigenous communities (Maracle 1996, Mokuau 2002, Ross 1998, Smith 2005, Strickland et al. 2006, Weaver 2009). Jacob

---

**Research on the impacts of environmental change on mental health has revealed that in various communities, gender plays a role in how people’s mental health is affected by environmental change.**

---

**Rapid environmental change, such as that resulting from natural disasters, has been shown to increase rates of domestic and sexual violence, and human trafficking.**

(2013: 11) uses historical trauma as a theoretical framework to describe how the violence of colonialism travels and intensifies across indigenous generations:

As the theory explains, if the traumatic response to colonialism goes unaddressed and unresolved, then healing the soul wound will not happen. The trauma will worsen across generations. The soul wound is an important concept for decolonizing work because it accurately explains that the root cause of many social problems can be traced back to historical and ongoing forms of settler-colonial violence.

Relatedly, LaDuke (1999: 90) describes the rise of the term “ethnostress” to describe the psychological pressures experienced by some Indians:

Anes Williams, a Seneca social worker, came up with a term in her practice on the Cattaraugus reservation: “ethnostress.” That’s what you feel when you wake up in the morning and you are still Indian, and you still have to deal with stuff about being Indian—poverty, racism, death, the government, and strip mining.

Climate change is likely to intersect with the impacts of colonization to further alter the places and species that are vital to indigenous cultures, economies, and health (Lynn et al. 2013, Voggesser et al. 2013). In a study about the impacts of climatic change on the emotional health of the Inuit community of Rigolet, Nunatsiavut, Cunsolo Willox et al. (2013: 20) describe:

For those who travel on the land and ice regularly, and maintain lifestyles of hunting, trapping, and fishing, not being able to travel on the land because of warmer weather and changes in ice patterns is incredibly restrictive and feels as though something fundamentally important to and in life is missing.

American Indian men and boys are unusually prone to accidents, suicide, and homicide (Brave Heart et al. 2012). Indigenous men in the United States have been found to exhibit increased risk-taking behaviors, explanations for which include loss of cultural identity, loss of traditional male roles, failure of primary socialization, and unresolved grief from historical trauma (Rhoades 2003). Studies also have found that indigenous men are less likely to use outpatient and inpatient services than indigenous women (Rhoades 2003), paralleling international trends suggesting that men and boys are less likely to seek help for mental health issues (WHO 2011).

Indigenous women’s mental health vulnerabilities may become amplified if climate change impacts, such as extreme weather or natural disasters, lead to elevated levels of domestic and sexual violence against indigenous women and children. Since colonization, indigenous women have suffered some of the highest rates of

---

**Climate change is likely to intersect with the impacts of colonization to further alter the places and species that are vital to indigenous cultures, economies, and health.**

domestic and sexual violence in the United States (Amnesty International USA 2007, Maracle 1996, Ross 1998, Smith 2005, Weaver 2009). Some of this violence can be attributed to substance abuse and other mental stressors in indigenous communities, but it is important to note that “according to the US Department of Justice, in at least 86 percent of the reported cases of rape or sexual assault against American Indian and Alaska Native women, survivors report that the perpetrators are non-Native men” (Amnesty International USA 2007). As climate change impacts affect the stability and mental health of indigenous and nonindigenous communities, indigenous women and children’s vulnerability may increase. As Smith (2005: 28) states, “In times of crisis, sexual violence against Native women escalates.”

Ross (1998) documents the experiences of incarcerated indigenous women, and highlights the violence that often permeates their lives leading up to imprisonment. Ross describes the years of physical, verbal, or sexual abuse many of the indigenous women she interviewed endure before finally retaliating against their perpetrators out of self-defense. Unfortunately, the justice system often operates in racist and misogynist ways to the disadvantage of these women, imprisoning them for long sentences even in cases in which self-defense or “battered woman syndrome” are unquestionable (Ross 1998). In prison, mental health conditions and rehabilitation are rarely prioritized, and many of these women must contend with being separated from their children, as most of them are mothers (Ross 1998). This cycle of violence and trauma can affect several generations and perpetuate oppressive conditions. In a climate change context, the mental health and well-being of criminalized indigenous men, women, LGBTTQ people and their families will be a critical component of community mental health. Justice system reform, better economic opportunities for people who have been imprisoned, and proper support for victims of domestic and sexual violence are critical steps toward reducing violence, imprisonment, and post-incarceration economic hardships.

Traditional healing practices and culturally appropriate mental health services have proven successful in helping indigenous peoples heal (Jacob 2013, Mokuau 2002, Nebelkopf and Penagos 2005). In Alaska, numerous organizations are working to ensure that Alaska Natives have access to a broad array of health services, including the Alaska Native Hospital, the Alaska Native Tribal Health Consortium (ANTHC), and the Southeast Alaska Regional Health Consortium. The ANTHC in particular has developed a program to facilitate learning and communication about the impacts of climate change on Alaska Native Villages through the Local Environmental Observers Network.

The Holistic Native Network, resulting from a collaboration between the Friendship House American Indian Healing Center and the Native American Health Center in the Bay Area, is an example of a “comprehensive, holistic, culturally-competent,

---

**In a climate change context, the mental health and well-being of criminalized indigenous men, women, LGBTTQ people and their families will be a critical component of community mental health.**

integrated system of care for Native Americans suffering from substance abuse, mental illness and HIV/AIDS” (Nebelkopf and Penagos 2005: 257). In Hawaii, organizations such as Queen Lili’uokalani Children’s Center and Ho’omau Ke Ola incorporate traditional Native Hawaiian values and culture to create effective support programs for at-risk Native Hawaiian children and substance abuse patients, respectively (Mokuau 2002).

Addressing substance abuse, supporting at-risk youth, and addressing mental health vulnerabilities in culturally meaningful ways can reduce instances of violence in the community. It is critical for such programs and initiatives to take into account the ways in which race, class, gender, and colonial history intersect to define the experiences of the people in need of healing. In *Yakama Rising*, Jacob (2013: 12) describes how Yakama cultural revitalization must involve efforts to heal the historical trauma, or “soul wounds” of Yakama people:

To address high rates of suicide and substance abuse, for example, one cannot simply look at problems in terms of individual deficit or even as evidence of lack of sufficient available social services (although these realities can contribute to the problems as well). Rather, healing approaches must look at the health and social problems in terms of land loss, genocide, warfare, assimilation, termination, and relocation (Jacob 2013: 12).

Jacob (2013: 12) describes the decolonized praxis that Yakama cultural revitalization activists are using to heal these wounds:

By drawing from traditions to undermine settler-colonial-imposed hierarchies and reasserting the importance of spiritual relations between humans and our surroundings, Yakama cultural revitalization efforts represent a distinctive indigenous feminist approach to “making power” within our community.

There is a shortage of documentation with regard to the mental health vulnerabilities of indigenous LGBTTTQ people in a climate change context, and yet indigenous LGBTTTQ people may be particularly vulnerable, given that their race and gender identity may intersect to create a unique set of challenges. Following natural disasters, extreme weather, and subsequent patterns of displacement and migration, preexisting patterns of discrimination and abuse often become amplified (UNPFA 2009). In addition, research shows that LGBTTTQ communities of all ages find it difficult to find healthcare providers who are sensitive to their unique needs, making them more prone to postpone care or receive inadequate care (Chávez 2011, Gendron et al. 2013, Hoffman et al. 2009). In light of this, it is important to further research indigenous LGBTTTQ people’s potential vulnerabilities when it comes to mental health and physical safety in a climate change context.

In early 2014, the Navajo Nation Human Rights Commission carried out public hearings and a data summit in which they collected written testimonies to learn more about the realities of violence and discrimination against Navajo women and LGBTIQ people. With the resulting findings, the Commission intends to “analyze existing laws, close loop holes and make recommendations to current Navajo laws, regulations and policies to address the hideous nature of violence against Navajo citizens” (NNHRC 2014). Efforts like these can strengthen gender justice within indigenous communities and make these communities more resilient to the gendered impacts of climate change.

- Indigenous peoples may experience gendered vulnerability in the face of extreme weather and natural disasters.
- Federal emergency response and aid have often been inadequate in indigenous communities, a fact that increases the need for indigenous self-reliance in the face of extreme weather and natural disasters.
- Climate impacts on traditional foods affect the mental, physical, and spiritual health of indigenous peoples.
- Socially marginalized indigenous peoples, such as LGBTIQ people and those who have been criminalized, may face additional health risks as climate change affects indigenous lifeways and economies.
- Climate change impacts on mental health may be gendered, potentially leading to higher rates of domestic violence against women and children, and higher rates of suicide and depression among men.

## Migration, Displacement, and Altered Social Networks

Extreme weather events and long-term ecosystem changes exacerbated by climate change are likely to compromise the habitability of many global locations (Laczko and Aghazarm 2009). A number of world regions are already experiencing rapid climatic changes that are challenging the safety and livelihood of citizens, leading to citizen migration and displacement (Laczko and Aghazarm 2009). “The number of natural disasters has more than doubled over the last two decades, and more than 20 million people were displaced by sudden-onset climate-related natural disasters in 2008” (OCHA 2009, as cited in Laczko and Aghazarm 2009: 9). The UNPFA (2009: 32) states, “Many environmentally induced population movements are temporary; many people prefer to return home as soon as it’s safe and feasible.”

In a climate change context, some impacts may be sufficiently mild or short term to make returning home a possibility (i.e., after a severe storm), while other impacts may

---

**A number of world regions are already experiencing rapid climatic changes that are challenging the safety and livelihood of citizens, leading to citizen migration and displacement.**

make an area permanently uninhabitable (i.e., an island now inundated by sea-level rise). Migration and displacement can severely alter social networks and can have gendered consequences. International literature provides varying accounts regarding relocation trends by gender, differences that may have to do with varying interpretations of what is considered optional migration, versus what is considered displacement (or forced migration). Although trends differ by region, international literature seems to indicate that men are more willing to migrate (WHO 2011) and that women, children, and the elderly are more likely to stay behind while one or more family members (often young males) relocate in search of better economic opportunities (UNPFA 2009). Conversely, when it comes to displacement (or forced migration), women and children make up the majority of displaced populations (Roberts 2009). In an article describing the impacts of war and climate change on women, Roberts (2009: 39) states, “Of the approximately 50 million people displaced from their homelands, about 80 percent are women and children,” numbers which she claims will be exacerbated by climate change. In reference to displacement after Hurricane Katrina, Roberts (2009: 40) states, “...households headed by low-income single mothers in New Orleans has [sic] dropped from 18,000 in 2005 to 3,000, indicating a significant displacement of these women and their children.”

Migration and displacement affect the social networks of those who relocate and those who stay behind. As social networks shift and social environments become less familiar, women and children may become particularly vulnerable to violence and trafficking (Nellemann et al. 2011; UNPFA 2009). “Both in gradual and sudden migration and displacement scenarios, preexisting patterns of discrimination and abuse are often aggravated. Women and girls are at risk to sexual and gender-based violence, human trafficking, child abuse and alcohol-related abuse” (UNPFA 2009: 35-36).

International refugee cases can also reveal gendered vulnerabilities that may arise during climate-induced migration and displacement. Freedman (2010) discusses the pressing need for international organizations such as the United Nations High Commissioner for Refugees to address gender-related persecution and violence against women refugees. She points out that it wasn’t until the 1980s that gender was put on the agenda concerning protection of refugees, after an incident in which forced migration from Southeast Asia by boat led to the rape of almost all of the women on board by pirates who later set the boat on fire.

When it comes to altered social networks and climate change vulnerability, it is also important to note that “older men are particularly disadvantaged by their tendency to be less connected than women to social networks and therefore unable to seek assistance from within the community when they need it” (Consedine and Skamai 2009, as cited in WHO 2011: 18).



Displacement is a phenomenon that many indigenous communities in the United States are all too familiar with. During the European settlement of the United States, many tribes and Native groups were displaced from their homelands, in some cases being forcibly relocated to reservations hundreds of miles from the lands they had long inhabited. Migration of indigenous peoples away from rural indigenous communities and to urban centers has also been a prevalent phenomenon, and one that the federal government often catalyzed via the enactment of policies such as the Indian Termination and Indian Relocation Acts of the 1950s (NUIFC 2009).

Today, many indigenous peoples in the United States live in urban centers. “In 2000, there were 4.3 million people who identified as American Indian and Alaska Native alone or in combination. Sixty-one percent of these Native people did not reside on reservations or other Native lands, up from 38 percent in 1970” (NUIFC 2009: 8).

Native people came to urban areas in substantial numbers because of a lack of employment and other social and economic problems existing on the reservation. Their transition to city life was often difficult due to a lack of necessary support (i.e., finding housing, accessing job training programs, finding employment, etc.) and a lack of understanding from the communities that they had relocated to (NUIFC 2009: 12).

The displacement and migration of indigenous peoples “have detrimental effects on social and cultural cohesion, the maintenance of tradition, and physical and psychological health” (Schweitzer and Marino 2005; Thornton 1997, as cited in Kingston and Marino 2010: 119). Climate change impacts may produce a new wave of displacement and migration of indigenous peoples by making tribal lands temporarily or permanently uninhabitable, and by altering the ecosystems and species that are critical to the culture, health, and economy of indigenous communities (Maldonado et al. 2013). A number of Alaska Native communities are among those already facing these threats:

Today there are nine indigenous communities in Alaska identified by state and federal governments that are in imminent danger of loss of life and property due to increased erosion and flooding. These changes in landscape can be linked directly and indirectly to warming temperatures and changes in climate patterns, and the number of villages susceptible to these hazards is likely to increase (Kingston and Marino 2010: 127).

Dardar (2008: 33) discusses the potential displacement faced by the Houma Nation of Louisiana as a result of industrial coastal degradation and climate change impacts:

---

**Climate change impacts may produce a new wave of displacement and migration of indigenous peoples by making tribal lands temporarily or permanently uninhabitable, and by altering the ecosystems and species that are critical to the culture, health, and economy of indigenous communities.**

What is the future of the Houma? A study was recently released with a bright red line drawn across the southern edge of Louisiana. We are told that if some drastic action is not taken in coastal restoration in the next ten years it will be too late to save those communities below the red line. Every Houma Indian community, the majority of our sixteen thousand citizens, lives below that red line. They tell us that in the end it will not be “cost-effective” to spend the millions of dollars needed to protect our isolated communities adequately. There is a word circulating amidst politicians and scientists now that Native people have heard before: relocation.

In recent years, coastal tribes in Louisiana have engaged in efforts to understand their vulnerability and help shape relocation in a way that is reflective of their own cultural practices and values (Maldonado et al. 2013).

Displacement and migration may affect indigenous men, women, and LGBTTQ people differently. As Freedman (2010) points out, women are particularly vulnerable to persecution and violence in international refugee situations. In light of this, and accounting for the fact that indigenous women are particularly vulnerable to gender violence (Amnesty International USA 2007), it is important to address the unique safety and health needs of indigenous women who are migrating, being displaced, or experiencing altered social networks owing to climate-related immigration to their geographic region. For example, warming of the circumpolar region has increased interest in resource extraction, and the corresponding economic growth has increased indigenous women’s risk of being trafficked (Sweet 2014). Additionally, indigenous women living in urban areas may face unique challenges. For example, “Urban Indian women have considerably lower rates of prenatal care and higher rates of infant mortality than even their reservation counterparts within the same state” (NUIFC 2009: 11).

Although there is a shortage of literature describing the experiences of indigenous LGBTTQ people during displacement and migration, we can draw some information from literature addressing other LGBTQ populations and migration. Karma Chávez’s research (2011) describes some of the challenges faced by LGBTQ migrants in southern Arizona. LGBTQ patients are challenged in finding healthcare providers that can adequately meet cultural needs while simultaneously meeting unique health needs. Another obstacle included finding adequate housing in a new location that will not discriminate based on race, migrant status, gender, or sexual orientation. Chávez noted that when searching for housing, LGBTQ migrants frequently rely on family and friends. This can be difficult when social networks are altered by displacement or migration. It is also important to note that “LGBTQ young people are more likely to be homeless than their heterosexual

counterparts as somewhere between 20 percent and 40 percent of homeless youth are LGBTQ” (Ray 2006, as cited in Chávez 2011). Although indigenous LGBTTTQ people’s lived experiences may be different from those of LGBTQ migrants and other LGBTQ youth, these trends serve to identify some of the challenges that indigenous LGBTTTQ people may face when migrating or being displaced from their communities.

One example of an organization formed by, and supporting, urban indigenous LGBTTTQ people is Bay Area American Indian Two-Spirits (BAAITS) in California. As climate change and other factors potentially increase displacement and migration of indigenous LGBTTTQ people to urban areas, organizations such as BAAITS can serve as a valuable cultural resource and a safe space to reconstruct supportive social and advocacy networks.

Indigenous men may also experience unique vulnerabilities as a result of migration and displacement. Although few articles address these vulnerabilities directly, the following description is revealing:

In 2000, there were slightly over 7,000 Alaska Native women eighteen years and above residing in Anchorage, but only some 5,500 men. The reasons for the higher numbers of women are complicated, but paramount among them is the longstanding division of labor between the sexes. As a general rule, Alaska Native men are the hunters and Alaska Native women are the gatherers, and gathering is more easily adapted to new terrains than hunting. Women can forage for berries near the roadsides outside Anchorage, or gather clams along the shoreline of the Kenai Peninsula, but when a man moves from the village to the city he forfeits access to, and specialized knowledge of, the hunting and fishing areas he has known all his life (Lee 2003: 586–587).

Lee’s article suggests that indigenous men migrating or being displaced from their homelands to more urban settings may find it particularly difficult to maintain their traditional relationships and knowledge.

Lee also enlightens us on positive ways in which Alaska Native women have dealt with the transition to an urban location such as Anchorage for economic purposes, particularly through the creation of the Alaska Federation of Natives (AFN) crafts fair. Lee argues that institutions such as the AFN “help the increasing number of urban-based Native women in a variety of ways to adjust to city life while maintaining their connection to their home villages and to the land and animals from which they obtain the raw materials for craft production” (Lee 2003: 583–584). Another indigenous initiative serving urban Indians is the Menominee Community Center of Chicago created by the Menominee Tribe of Wisconsin in 1994.

---

**Indigenous men migrating or being displaced from their homelands to more urban settings may find it particularly difficult to maintain their traditional relationships and knowledge.**

Groups such as BAAITS, AFN, and the Menominee Community Center can help preserve indigenous social networks despite migration and displacement. Gender has played, and can continue to play, a critical role in the development and success of indigenous organizations and collective action initiatives. Whyte (2014) makes the case for indigenous women’s “unique capacities for collective action that advance adaptation and mitigation” in a climate change context. Such gender-based initiatives may become critical avenues for making indigenous communities active and resilient in the face of environmental change.

On a larger scale, the displacement of entire indigenous communities as a result of climate change, such as is already occurring in some Alaska Native villages, calls for the urgent development of new national and international policies that secure the human and indigenous rights of these communities during these unprecedented relocation events. Several scholars, including Bronen (2011), Burkett (2011), and Maldonado et al. (2013) are proposing and critically assessing guidelines for human rights-based relocation policies in preparation for the likely displacement of peoples as a result of climate change. As these policies and guidelines begin to take clearer shape, it will be important to take the gendered social implications of relocation into strong consideration.

- In the face of climate-induced displacement and migration, indigenous women and LGBTTQ people may be susceptible to increased gender violence, while indigenous men may struggle to retain their traditional activities and responsibilities.
- Owing to the relationship between indigenous peoples and their homelands, climate change-induced displacement will have severe impacts on indigenous culture, health, and society.
- Displacement of entire indigenous communities (e.g., Alaska Native villages, small island communities) calls for immediate development of national and international policies and support for the human rights of these communities.

### Unemployment, Poverty, and Impacts on Tribal Economies

Climate change is affecting resources and places that drive both formal and informal economies, with impacts on people’s livelihoods and economic opportunities along the way. These impacts may have gendered consequences, given that gender often plays a role in determining available economic opportunities. International literature points to the fact that women are often economically disadvantaged (Alston 2013, Kukarenko 2011, Roberts 2009, UNPFA 2009).

The World Health Organization (2011: 17–18) describes the link between women’s roles as caretakers, poverty, and health:

Women and girls are generally expected to care for the sick, including in times of disaster and environmental stress (Brody et al. 2008). This limits the time they have available for income generation and education, which, when coupled with the rising medical costs associated with family illness, heightens levels of poverty, which is in turn a powerful determinant of health.

The socioeconomic conditions of women may make them particularly vulnerable to the impacts of climate change. Additionally, employment discrimination makes searching for new or better employment opportunities particularly difficult for certain groups (Gates 2011, Pager and Shepherd 2008, Sangganjanavanich 2009). Sangganjanavanich (2009: 128) states, “Although there are laws to protect disadvantaged groups such as women, ethnic groups, and sexual minorities against employment discrimination, this discrimination is still present in various employment settings.” For transgender individuals, retaining a job or seeking new employment can be a particularly challenging feat (Sangganjanavanich 2009). The economic impacts of climate change may be especially difficult for individuals for whom gender and race intersect, doubly challenging their ability to find employment. As Prindeville (2003: 592) states, “women of color, who bear the double burden of gender and racial discrimination, are often economically and politically marginalized.”

It is important to note that some scholars disagree with climate change vulnerability frameworks that highlight women’s poverty as a key factor making women vulnerable to climate change impacts. Arora-Jonsson (2011) states that statistics claiming women comprise a majority of the world’s poor are “anecdotal rather than empirically or statistically rigorous.” She also questions whether poverty is always directly linked to vulnerability. Perhaps most importantly, she argues that poverty alleviation strategies seeking to reduce women’s vulnerability sometimes place additional responsibilities and burdens on women, and serve to overshadow the real issue, which lies in the gender power imbalance forming part of social, economic, and political institutions. Arora-Jonsson’s observations reveal the need to critically analyze the long-term effectiveness of existing and proposed social programs. When addressing climate change vulnerability and developing adaptation strategies, it will be critical to assess whether these strategies provide actual, long-term benefits, and whether they address the unequal power dynamics that often lead to gendered (and racialized) economic challenges in the first place.

Climate change impacts may also have gendered economic consequences if certain, heavily gendered industries, suffer as a result. Roberts (2009: 40) discusses the gendered economic impacts of Hurricane Katrina:

---

**The economic impacts of climate change may be especially difficult for individuals for whom gender and race intersect, doubly challenging their ability to find employment.**

---

**When addressing climate change vulnerability and developing adaptation strategies, it will be critical to assess whether these strategies provide actual, long-term benefits, and whether they address the unequal power dynamics that often lead to gendered (and racialized) economic challenges in the first place.**

In the aftermath of Hurricane Katrina, the largest climate-spawned disaster to hit the United States, 180,000 people in Louisiana lost their livelihood. Of these, 103,000 were women. Health, education, and hospitality, all women-dominated industries, were hit hardest. Also, households headed by low-income single mothers in New Orleans has [sic] dropped from 18,000 in 2005 to 3,000, indicating a significant displacement of these women and their children.

Although this example highlights impacts on female-dominated industries, male-dominated industries, such as the timber and fisheries industries, could also see impacts as a result of climate change, leading to underemployment or unemployment.

Indigenous communities are among the most economically impoverished in the United States (Leichenko 2003). According to Sarche and Spicer (2008: 126–127), “More than one-quarter of the American Indian and Alaska Native population is living in poverty, a rate that is more than double that of the general population and one that is even greater for certain tribal groups (e.g., approaching 40 percent).” Some researchers attribute these trends to geographic isolation, lack of access to markets, inadequate infrastructure, and the availability of mostly low-income jobs in rural tribal communities (Leichenko 2003, Sarche and Spicer 2008). Yet urban Indians also face economic challenges, given that their poverty rate is 20.3 percent compared to 12.7 percent for the general urban population, and their unemployment rate is 1.7 times higher than that of non-Indians living in urban areas (NUIFC 2009). This may be significant in terms of climate change vulnerability:

Poor households are especially vulnerable to climate change because their marginal income provides little or no access to health services or other safety nets to protect against the threats from changing conditions and because they lack the resources to relocate when crises strike (UNPFA 2009: 3).

And yet, many indigenous communities have thriving tribal economies derived from tribal timber production, tribal fisheries, traditional crafts, gaming facilities, tribal foods production, tourism, and other tribal endeavors that have sustained or improved economic conditions for many indigenous communities. In a climate change context, strong indigenous economies may make indigenous communities more resilient. At the same time, some of these industries may be susceptible to climate change impacts, threatening economic stability. Although climate change may lead to some benefits to tribal economies, these benefits are unlikely to compensate for the negative impacts. In describing climate change projections for the Great Plains, Shafer et al. (2014) stated:

These increases in extreme heat will have many negative consequences, including increases in surface water losses, heat stress, and demand for

---

**In a climate change context, strong indigenous economies may make indigenous communities more resilient. At the same time, some of these industries may be susceptible to climate change impacts, threatening economic stability.**

air conditioning. These negative consequences will more than offset the benefits of warmer winters, such as lower winter heating demand, less cold stress on humans and animals, and a longer growing season, which will be extended by mid-century an average of 24 days relative to the 1971–2000 average. More overwintering insect populations are also expected.

Some of the tribal industries affected by climate change may be gendered. If climate change impacts affect resources that are critical to a gendered industry, then the gender dominating that industry may face high rates of unemployment.

Although international trends report that women are less likely to be educated and less likely to migrate, some indigenous communities in the United States are experiencing the opposite. Kleinfeld and Andrews (2006: 433) stated, “the gender gap favoring females in postsecondary education is both large and increasing among Alaska Natives.” This trend has implications for Alaska Native men, who are experiencing more unemployment, more social problems, lower rates of marriage, and lower rates of political participation (Kleinfeld and Andrews 2006).

The traditional male role among Alaska Natives emphasized skills and virtues for which schooling is irrelevant, but which were vital to the community, making the difference between survival and starvation. These traditional skills remain important, partly in providing food from the land but also in providing a sense of cultural continuity and stability. At the same time that the transition to a mixed wage and subsistence economy is making hunting skills less vital to sheer survival, the communication and quantitative skills that schools provide are becoming more essential to the flourishing of indigenous communities (Kleinfeld and Andrews 2006: 432).

Alaska Native women seem to be migrating to urban centers more frequently, for economic reasons (Kukarenko 2011, Lee 2003).

In many parts of the Arctic, economic cutbacks by national governments have often negative impact on small, rural and remote places, reducing the standard of living and the quality of life in these areas through limited employment opportunities, low wages and poor infrastructure and social services. According to Hoogensen, this leads to increased feeling of insecurity among women for their own future and the future of their children in the current place of residence and becomes one of the factors forcing women to migrate (Kukarenko 2011).

Based on the above trends, Alaska Native men may find themselves socioeconomically vulnerable, a vulnerability that may be exacerbated if climate change further affects the resources and conditions necessary to carry out their traditional

roles and livelihoods. Women too may face certain risks as they continue to migrate to urban centers in search of economic opportunities. As has been discussed throughout this paper, migration's effects on one's social network can make some genders more vulnerable to discrimination and violence (Nellemann et al. 2011, UNPFA 2009). For this reason, it is particularly beneficial to indigenous women, children, and LGBTTQ people in urban settings to find or form organizations or groups that can provide a sense of community, as well as provide a platform for collective action. Organizations such as the Alaska Federation of Natives (AFN), the Menominee Community Center of Chicago, and BAAITS (discussed in the previous section) may become increasingly important resources if climate change reduces employment in tribal communities and leads indigenous peoples to move to urban centers in search of new economic opportunities. These and other similar organizations may serve not only as indigenous sociocultural nodes, but also as places where urban Indians can learn about employment and career development opportunities.

- The economic impacts of climate change will be felt most by those already socioeconomically marginalized because of race, gender, and class.
- Tribal economies (e.g., fishing, timber, gaming) may be a source of resilience, yet also face potential impacts from climate change.
- Some tribal industries may be gendered, potentially leading to gendered impacts if climate change affects resources specific to a gendered industry.
- Indigenous people living in urban areas face unique risks, and may benefit from organizing and collaborating with other indigenous city dwellers.

### **Culture: Impacts on Traditional Species, Places, and Relationships**

Indigenous communities in the United States have fought to engage and practice indigenous culture and lifeways, despite the countless impacts of colonization. Prior to colonization, indigenous communities engaged in reciprocal relationships with plants, animals, and ecosystems (Anderson 2005, LaDuke 1999, Whyte 2013). These relationships were (and often still are) critical to indigenous communities' cultural, spiritual, and social identities (Jacob 2013, LaDuke 1999, Whyte 2013). As described earlier, colonizers greatly disrupted these critical relationships by killing and displacing indigenous peoples, settling indigenous territories, exploiting natural resources, and developing government programs and policies aimed



at forcing indigenous peoples to assimilate into a Euro-centric society (Anderson 2005, Merchant 2007, Smith 2005, Wilkinson 2005). Reo and Parker (2013) describe some of the impacts of colonization in New England:

Within a few hundred years of colonization, the exploitation of forests to support Atlantic trade and the expansion of colonial settlements irrevocably altered the New England landscape. New England was transformed from a heterogeneous patchwork of ecosystems supporting diverse food systems into a comparatively depauperate hash of fields and forests susceptible to pest outbreaks and erosion. The cascading effects of the initial human depopulation, biotic invasions, loss of key species and deforestation, driven by a new extractive economy, created political, cultural, and environmental chaos for Native peoples.

Today, the lingering impacts of colonization continue to challenge the ability of indigenous communities to carry out the cultural practices that are critical to their identities and well-being. Additionally, the ability of indigenous communities to carry out their relationships with traditional species and places often hinges on the federal government's ability and willingness to carry out its trust responsibilities toward federally recognized tribes. "Federal laws obstruct expanding or transferring tribal jurisdiction and few tribes have the economic means to buy new land" (Maldonado et al. 2013). Therefore, many tribes are forced to rely on federal trust lands as places to carry out traditional activities and relationships. The federal government has a responsibility to look out for federally recognized tribes' best interests when managing federal lands and developing policies. Nevertheless, there are many instances in which tribal interests are misunderstood, severely compromised, or denied outright, creating additional hurdles for indigenous communities seeking to protect the species and places that are vital to their cultures. State-recognized and unrecognized indigenous communities may face even more hurdles. Huntington and Watson (2012: 64–65) describe how wildlife policies have hindered indigenous cultural practices in Alaska:

The aim of wildlife regimes for many Native tribes is primarily to limit human interaction with nonhuman animals through creating "enforceable" regulations, such as bag limits and season dates. These regulations effectively police Natives' interactions with their kin. Unless wildlife managers can begin to create regulations based on Native wisdom, such as not shooting the first caribou that go by, or instructing hunters and wildlife resource managers on ways to increase genetic diversity, wildlife regulations are merely another tool for Native oppression.

---

**Today, the lingering impacts of colonization continue to challenge the ability of indigenous communities to carry out the cultural practices that are critical to their identities and well-being.**

Climate change may further challenge indigenous cultural relationships to species and places by producing drastic environmental changes that may parallel the ecological impacts of colonization (Reo and Parker 2013). In their article “Re-thinking colonialism to prepare for the impacts of rapid environmental change,” Reo and Parker (2013) make a case for analyzing colonial history and its ecological implications, in order to “identify important interactions between human and natural systems useful for contemporary societies adjusting to environmental change.” This has both negative and positive implications for indigenous communities in the United States. On the one hand, climate change has the potential to intersect with the impacts of colonization to further alter the environments that are critical to indigenous cultures. On the other hand, indigenous communities are incredibly resilient, and possess traditional knowledge, practical experience, and adaptability that can serve these communities when preparing for the potential impacts of climate change (Grossman and Parker 2012, Huntington and Watson 2012, Wildcat 2009).

Climate change is affecting the range and abundance of culturally vital species, and is rapidly altering critical landscapes and waterscapes (Grossman and Parker 2012, Lynn et al. 2013, Voggesser et al. 2013). “Many tribes are concerned about how climate change will affect their relationship with culturally significant species and ecosystems” (Voggesser et al. 2013). Compromising indigenous people’s relationship with traditional cultural species and places also compromises the formation and continued application of traditional ecological knowledge (Hoover 2013, Voggesser et al. 2013). Hoover (2013: 5) describes the impacts that pollution-related fish advisories have had on Mohawk culture and knowledge transmission:

A cessation in fishing gradually diminished Mohawk culture in several ways. As Henry Lickers describes, the language and culture around tying knots in nets as well as the social interactions that occurred around the process of creating these nets are lost when there is no longer a use for those nets: “People forget, in their own culture, what you call the knot that you tie in a net. And so, a whole section of your language and culture is lost because no one is tying those nets anymore. The interrelation between men and women, when they tied nets, the relationship between adults or elders and young people, as they tied nets together, the stories...that whole social infrastructure that was around the fabrication of that net disappeared.”

Given that traditional responsibilities toward and knowledge about plants, animals, land, and water are often gendered, cultural vulnerability and resilience in the face of climate change impacts may also be gendered. An example of a gendered relationship with a cultural resource is that of Wabanaki women with berry plants. Natalie Michelle describes this relationship in Lynn et al. (2013):

---

**Given that traditional responsibilities toward and knowledge about plants, animals, land, and water are often gendered, cultural vulnerability and resilience in the face of climate change impacts may also be gendered.**

The native women are returning to the traditional uses of berry plants for health, well-being, and spirituality. The strawberry represents a primary nutrient source for female reproductive development and the psycho-social behavior of the young adolescent female. The “Strawberry Ceremony” or “berry fast” is still used for female adolescents’ initiation into womanhood.

Michelle’s research reveals that climate change is bringing about changes to the quality and availability of berry plants in Wabanaki territory (Lynn et al. 2013). This poses particular challenges to Wabanaki women for whom berry plants play health-related and sociocultural roles.

Women from many indigenous communities have a strong cultural relationship with water (Bruce and Harries 2010, McGregor 2005, McNutt 2012, Whyte 2014). Weather extremes associated with climate change may affect the quantity and quality of waters throughout the country, potentially compromising indigenous women’s cultural responsibilities toward water. Whyte (2014) describes:

Climate change impacts in the Great Lakes are projected to affect the ecological contexts needed for some Anishinaabe women and water to carry out their responsibilities to each other. Climate change impacts that degrade water in different ways will affect some of the core dimensions of Anishinaabe women’s identities, contributions within their communities, and will make their responsibilities to water more time consuming and harder (if not impossible) to carry out.

Indigenous women have used their special relationship with and knowledge of water resources to propel activism. In their article, Bruce and Harries (2010) describe an activist initiative led by women of Ontario’s Beausoleil First Nation in which they protested the construction of a dumpsite that would have repercussions on the region’s water quality. “They called themselves the Anishinabe Kweag (kweag means ‘women’). In a letter to Ontario Premier Dalton McGuinty (although this was a Simcoe County project, the province is responsible for environmental approvals) the five [women] served notice that, as Indigenous women, they were there to protect the water for future generations” (Bruce and Harries 2010: 6). Their peaceful, alliance-forming protests eventually led Simcoe County councilors to reverse county approval and cease construction of the dump. In a climate change context, indigenous women’s initiatives to protect the waters that are critical to their communities may be an important source of community resilience.

For the men of many indigenous communities in the United States, wildlife is vital to traditional cultural responsibilities (Colombi 2012, Marshall 2006). For the Nez Perce Tribe, salmon are critical to the lives of all tribal members, but they are

---

**In a climate change context, indigenous women’s initiatives to protect the waters that are critical to their communities may be an important source of community resilience.**

especially critical to men's traditional cultural roles (Marshall 2006). When describing the importance of salmon fishing for Nez Perce men and boys, Marshall (2006: 773) describes:

Task groups devoted to fishing are composed primarily of males and are important for developing gender identity and demonstrating a man's ability to contribute to the community. Task groups are significant for teaching young men basic Nez Perce values and world views; socializing them into adult male roles; teaching them many practical arts; and educating them in family, community, and tribal history.

Salmon are among the species that are particularly vulnerable to climate change, given that they are cold-water fish. Climate change threatens to raise water temperatures in waterways, thereby affecting cold-water species like salmon and trout. Tribes in the Pacific Northwest have already had to cope with reduced salmon availability as a result of hydroelectric dams, pollution, and overharvesting (Hanna 2007, Johnsen 2009, Norgaard 2004). Climate change may further challenge tribal access to these critical species, compromising men's traditional roles, knowledge, and activities.

Men's traditional relationships and activities may also be particularly vulnerable in the face of climate-driven migration and displacement. Lee (2003) describes that while Alaska Native women can still carry out gathering activities even in semiurban settings, it is much more difficult for men to continue their hunting and fishing practices away from their traditional territories. For indigenous men being displaced or migrating away from their tribal lands, exercising traditional cultural practices may be particularly difficult. This in turn may challenge the continued use, adaptation, and transmittance of gendered traditional knowledge that accompanies continued relationships with culturally vital species (Lee 2003).

In preparation for climate change, some tribes may choose to encourage tribal members, particularly of the younger generations, to step outside traditional gendered responsibilities and learn skills and knowledge that would have traditionally been the responsibility of other genders. For example, the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) are working to preserve cultural practices and skills surrounding traditional foods, by encouraging men and women to learn each other's traditional responsibilities:

"We manage our foods to have the foods into the future and preserve our culture." Historically, the men harvested and presented the salmon and the deer. The women collected and presented the roots and berries. Today, because climate change is already affecting the availability of foods, some

Umatilla tribal members teach their sons *and* daughters to collect both foods. “We don’t know what foods will be available [to tribal members] in the future or who they will marry,” said Farrow. “We want them to be able to identify these foods and know how to prepare them. It’s central to who we are” (Teara Farrow Ferman, Cultural Resources Protection Program Manager for the CTUIR as quoted in Swinomish 2010: 25).

Similarly, Jacob (2013) describes how Xwayamamí Ishích, a grassroots organization seeking to revitalize Yakama cultural practices, chooses not to confine cultural practices to specific genders. “Although fish drying and root gathering are traditionally women’s activities within Plateau cultures, it is important to offer the traditional foods workshops to all community members, to fill the persistent cultural knowledge gaps among Yakama peoples” (Jacob 2013: 93).

Present-day indigenous LGBTIQ traditional cultural responsibilities and activities are little documented in the literature. “In many cases the traditions of gender variance have been forgotten or repressed. Most of the data indicate that very few individuals who live in the role of the opposite sex and who other members of their community classify as belonging to an alternative gender still live on reservations” (Lang 1997: 108). And yet indigenous LGBTIQ identities are being progressively re-asserted and strengthened, as is illustrated by the rise of organizations such as BAAITS. Indigenous LGBTIQ people who continue to practice traditional cultural activities and responsibilities know what species and places are important to them. Indigenous communities can ensure the fostering of indigenous LGBTIQ traditional cultural activities and ways of knowing by making a place for two-spirit peoples in climate change and other initiatives.

As the impacts of climate change continue to affect the cultural traditions of indigenous peoples and shape indigenous experiences, it will be as critical as ever for the voices of indigenous women, men, and LGBTIQ people to be a vital part of academic and socio-political institutions. Calhoun et al. (2007) describe the importance of giving American Indian scholars and authors precedence when it comes to researching, writing about, and teaching topics related to American Indians. Miranda (2002) describes how underappreciated and underrepresented American Indian women writers and poets are in university literature courses. Goeman (2013) describes the importance of Native women’s literature as story- and memory-bound narratives that redefine the geographic and historic presence and sovereignty of Native peoples, and highlights how this redefinition, or “(re) mapping,” has taken place in the works of Mohawk writer Pauline Johnson, Muscogee Diné poet Esther Belin, Creek poet Joy Harjo, and Laguna Pueblo writer Leslie Marmon Silko.

There has been a historical tendency within Western academic institutions to either disregard or exploit indigenous peoples and their knowledge. Many Western scholars have benefitted from entering indigenous communities with little or no consent, documenting indigenous knowledge, and incorporating it into their research, without crediting or returning any benefits to the indigenous individuals or communities that contributed to the study. In addition, Western institutions are structured to reflect colonial values that often exclude or challenge indigenous knowledge and culture. These institutional barriers make it difficult for scholars, indigenous or otherwise, to carry out research that is culturally sensitive and beneficial for indigenous communities. In response to these tendencies, indigenous scholars and communities are developing research methods, often referred to as “decolonized methods” or “decolonized research,” that advocate for indigenous control over research that relates to indigenous peoples (ANSC 2011, Bishop 2005, Calhoun et al. 2007, Driskill 2010, Jacob 2013, Smith L. 2005). Decolonized methods promote direct and continuous involvement of indigenous peoples in shaping research objectives and processes within their communities, indigenous control over indigenous knowledge, and research that is culturally appropriate and that results in benefits to indigenous communities whenever possible. Decolonized methods may serve as an important tool for indigenous peoples of all genders wanting to lead or contribute to climate change research in their communities and beyond. Only when gendered indigenous knowledge is fostered, protected, and applied in culturally appropriate ways can climate change initiatives promote justice for indigenous women, men, and LGBTTTQ people.

- Indigenous control over production and dissemination of gendered traditional knowledge is critical to protecting indigenous cultures, and promoting justice for people of all genders in face of climate change.
- Climate change disrupts knowledge transmission, including gendered knowledge transmission. Tribes are adopting novel strategies to ensure that knowledge is passed down in their communities.
- Gender-based indigenous activism may serve to protect the lands, waters, plants, and animals that are critical to indigenous cultures.

## **Conclusion**

Gender plays an important role in defining climate change vulnerability and resilience. International literature has begun to analyze the ways in which climate change impacts and solutions may differ by gender. For indigenous communities in the United States, gender, race, and other social factors may intersect to create unique vulnerabilities and strengths. This literature synthesis illustrates some of the ways in which gender and indigeneity may intersect to make indigenous men, women, and LGBTTTQ people vulnerable or resilient in the face of particular impacts of climate change.

For many indigenous communities, traditional gendered responsibilities and knowledge have been vital to community health and survival for millennia. Colonization has profoundly affected and continues to affect these gendered responsibilities and knowledge by disrupting (and in some cases destroying) the sociocultural fabric that sustained gender diversity and gender egalitarianism within many tribes, and by affecting the plants, animals, lands, and waters that are critical to gendered responsibilities and knowledge. Gender rights are a critical component without which indigenous rights cannot be adequately asserted. As such, it is important for gender to form a vital part of indigenous climate change initiatives.

By taking gender into account, indigenous communities and their allies can ensure that climate change initiatives alleviate, not exacerbate, gender-based oppression. Policymakers and program directors must foster the long-term presence and active participation of all genders, particularly underrepresented genders such as women and LGBTTTQ people, in the development of climate change policies and programs. Additionally, by incorporating gendered knowledge and gender-based institutions and organizations into tribal climate change initiatives, tribes and partnering entities can make these initiatives more effective and resilient while simultaneously re-empowering community members who have been silenced by the social, cultural, and political impacts of colonization.

Indigenous communities can begin to assess gendered vulnerabilities and resilience as they pertain to public health, social networks, economic livelihood, and culture in a climate change context by considering the following questions:

### **Public Health**

- What strategies might ensure that men, women, and LGBTTTQ people have access to the traditional foods that are vital to health and well-being? Are the impacts of climate change on these traditional foods being researched in ways that are sensitive to gender? How can ecosystem management practices make management priorities for adaptation of traditional foods in ways that are sensitive to gender?

- How can current programs and resources be strengthened to better deal with the effects of climate change on mental health and community violence? For example, are there programs in place to help indigenous men, women, children, and LGBTTTQ people heal from historical trauma and reduce and recover from gender violence that might also begin to consider the impacts of climate change?
- How might climate change exacerbate the health-related and economic challenges faced by indigenous women, men, LGBTTTQ people, and minors who have been imprisoned? What programs are in place to support incarcerated indigenous peoples and their families? How can these programs take climate change impacts into account?
- How are urban indigenous populations connected with their tribal communities, and how can these connections be strengthened to promote health and well-being in the face of climate change? Are there programs that can serve as models?
- Is gender considered in disaster management plans that address public health and preparedness in indigenous communities in the event of climate-related (or other) disasters? How can tribal communities prepare for the impacts of extreme weather?

### Migration, Displacement, and Altered Social Networks

- How might support and social networking opportunities be extended from tribal communities to indigenous men, women, children, and LGBTTTQ people living in urban settings?
- In the event of climate-induced displacement, how might the unique relocation needs of indigenous men, women, children, and LGBTTTQ people be accounted for?
- How might climate-related immigration into indigenous communities and regions affect the health and safety of indigenous men, women, children, and LGBTTTQ people?
- How might existing gendered social networks in indigenous communities strengthen community resilience in the face of climate change?

### Unemployment, Poverty, and Impacts on Tribal Economies

- How might subsistence activities, local businesses, and industries that sustain indigenous communities be vulnerable to climate change in ways that intersect with how gender operates in these communities? Are there heavily gendered industries that may be affected or strengthened by climate change?



- What strategies are indigenous communities pursuing to ensure economic resilience in a climate change context? How is gender playing a role in these strategies?

## **Culture: Impacts on Traditional Species, Places, and Relationships**

- What traditional cultural resources are particularly vulnerable to climate change? What relationships do indigenous men, women, and LGBTTTQ people have with these traditional cultural resources? How might impacts on these resources have gendered repercussions? How might these resources be protected in the face of climate change?
- How are traditional gendered responsibilities and knowledge being fostered and protected? How might traditional gendered responsibilities and knowledge be incorporated into strategies to protect traditional cultural resources in the face of climate change?
- How are the voices, scholarship, and actions of indigenous leaders, scholars, and activists of all genders being fostered within (and outside of) indigenous communities? What role can decolonized methodologies play in indigenous climate change research and initiatives?

There are gaps in the literature at the intersection of indigenous peoples, gender, and climate change. There is limited research on the gendered vulnerabilities of indigenous peoples to climate change in the United States. Even less research has explored the vulnerabilities and potential contributions of LGBTTTQ communities, indigenous or otherwise, in a climate change context. There has also been little exploration into the roles that gendered knowledge, gendered responsibilities, and gender-based activism, scholarship, and leadership may play in enhancing climate change resilience. Indigenous communities seeking to meaningfully incorporate gender into climate change initiatives can benefit from culturally appropriate research further exploring these topics. Decolonized research methodologies, in which indigenous women, men, and LGBTTTQ researchers or communities drive the research process, can ensure that research is culturally appropriate and beneficial to the indigenous communities it intends to serve. Furthermore, to address these gaps in the literature, federal funds for climate change research involving indigenous communities should support research proposals that include gender and LGBTTTQ issues.

Ensuring adequate gender justice in climate change programs, policies, and initiatives is critical to all communities, particularly for communities in which gender roles, gendered knowledge, and gendered responsibilities have been compromised by colonization. As climate change advances, indigenous peoples

can strengthen climate change initiatives by addressing gendered impacts and harnessing gendered resilience within their communities. In this way, community responses to the extraordinary challenges ahead can be a platform for re-empowerment and resilience.

## Acknowledgments

The authors thank Linda Kruger, research social scientist, U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, for her support throughout the development of this publication. We also thank our three expert reviewers for their invaluable critiques and contributions: Elaine Enarson, independent scholar, Disaster Studies; Mark Carey, Robert D. Clark Honors College, University of Oregon; and Mishuana Goeman, vice chair and associate professor of Gender Studies, University of California–Los Angeles.

## References

- Aaniiih Nakoda College. 2014.** Aaniiih Nakoda College Extension Program. [http://www.ancollege.edu/?page=sponsored\\_programs/extension](http://www.ancollege.edu/?page=sponsored_programs/extension). (July 16, 2014).
- Aguilar, L. 2013.** A path to implementation: gender-responsive climate change strategies. In: Alston, M.; Whittenbury, K., eds. *Research, action and policy: addressing the gendered impacts of climate change*. Dordrecht, The Netherlands: Springer: 149–157. Chapter 11. <http://dx.doi.org/10.1007/978-94-007-5518-5>. (August 8, 2013).
- Alaska Native Science Commission [ANSC]. 2011.** What is traditional knowledge? [http://www.nativescience.org/html/traditional\\_knowledge.html](http://www.nativescience.org/html/traditional_knowledge.html). (July 12, 2014).
- Alaska Native Tribal Health Consortium Center for Climate and Health [ANTHC]. 2011.** Climate change in Kivalina, Alaska: strategies for community health. <http://www.anthctoday.org/community/reports.html>. (June 27, 2013).
- Allen, P.G. 1992.** *The sacred hoop: recovering the feminine in American Indian traditions*. Boston, MA: Beacon Press. 336 p.
- Alston, M. 2013.** Introducing gender and climate change: research, policy and action. In: Alston, M.; Whittenbury, K., eds. *Research, action and policy: addressing the gendered impacts of climate change*. Dordrecht, The Netherlands: Springer: 3–14. Chapter 1. <http://dx.doi.org/10.1007/978-94-007-5518-5>. (August 8, 2013).

- Amnesty International USA. 2007.** Maze of injustice: the failure to protect Indigenous women from sexual violence in the USA. <http://www.amnestyusa.org/our-work/issues/women-s-rights/violence-against-women/maze-of-injustice>. (July 7, 2014).
- Anderson, M.K. 2005.** Tending the wild: Native American knowledge and the management of California's natural resources. Berkeley, CA: University of California Press. 555 p.
- Arctic Climate Impact Assessment [ACIA]. 2004.** Impacts of a warming Arctic. Cambridge, United Kingdom: Cambridge University Press. <http://www.acia.uaf.edu/pages/overview.html>. (August 1, 2014)
- Arora-Jonsson, S. 2011.** Virtue and vulnerability: discourses on women, gender and climate change. *Global Environmental Change*. 21: 744–751.
- Arquette, M.; Cole, M.; Cook, K.; LaFrance, B.; Peters, M.; Ransom, J.; Sargent, E., Smoke, V.; Stairs, A. 2002.** Holistic risk-based environmental decision making: a native perspective. *Environmental Health Perspectives Supplements*. 110.
- Aguilar, L. 2009.** Training manual on gender and climate change. San José, Costa Rica: International Union for Conservation of Nature (IUCN) and United Nations Development Programme. 262 p. <https://portals.iucn.org/library/efiles/documents/2009-012.pdf>. (September 17, 2015).
- Ball, J. 2009.** Fathering in the shadows: indigenous fathers and Canada's colonial legacies. *Annals of the American Academy of Political and Social Science*. 624: 29–48.
- Barker, J. 2008.** Gender, sovereignty, rights: native women's activism against social inequality and violence in Canada. *American Quarterly*. 60: 259–266.
- Bay Area American Indian Two-Spirits [BAAITS]. 2015.** Organizational description. <http://www.baaits.org/#!about/c10fk>. (May 18, 2015).
- Bennett, T.M.B.; Maynard, N.G.; Cochran, P.; Gough, R.; Lynn, K.; Maldonado, J.; Voggeser, G.; Wotkyns, S.; Cozzetto, K. 2014.** Indigenous peoples, lands, and resources. In: Melillo, J.M.; Richmond, T.C.; Yohe, G.W., eds. *climate change impacts in the United States: the third national climate assessment*. U.S. Global Change Research Program: 297–317. Chapter 12. doi:10.7930/J09G5JR1 <http://nca2014.globalchange.gov/report/sectors/indigenous-peoples>. (December 23, 2014).

- BigFoot, D.; Funderburk, B. 2011.** Honoring children, making relatives: the cultural translation of parent-child interaction therapy for American Indian and Alaska Native families. *Journal of Psychoactive Drugs*. 43: 309–318.
- Bishop, R. 2005.** Freeing ourselves from neocolonial domination in research. In: Denzin, N.K.; Lincoln, Y.S., eds. *The SAGE handbook of qualitative research*. Thousand Oaks, CA: Sage Publications: 109–138.
- Blackwood, E. 1997.** Native American genders and sexualities: beyond anthropological models and misrepresentations. In: Jacobs, S.E.; Thomas, W.; Lang, S., eds. *Two-spirit people: Native American gender identity, sexuality, and spirituality*. Urbana, IL: University of Illinois Press: 284–296. Chapter 20.
- Booth, S.; Zeller, D. 2005.** Mercury, food webs, and marine mammals: implications of diet and climate change for human health. *Environmental Health Perspectives*. 113: 521–526.
- Brave Heart, M.Y.H.; Elkins, J.; Tafoya, G.; Bird, D.; Salvador, M. 2012.** Wicasa Was’aha: restoring the traditional strength of American Indian boys and men. *American Journal of Public Health*. 102.S2: S177–S183.
- Brody, A.; Demetriades, J.; Esplen, E. 2008.** Gender and climate change: mapping the linkages, A scoping study on knowledge and gaps. Brighton, United Kingdom: University of Sussex. 36 p.
- Bronen, R. 2011.** Climate-induced community relocations: creating an adaptive governance framework based in human rights doctrine. *NYU Review of Law and Social Change*. 35: 356–406.
- Brubaker, M.; Berner, J.; Chavan, R.; Warren, J. 2011.** Climate change and health effects in Northwest Alaska. *Global Health Action*. 4: 1–5.
- Bruce, L.; Harries, K. 2010.** The Anishinabe Kweag were bound to protect the water for future generations. *Women & Environments International Magazine*. Issue 82/83: 6.
- Burkett, M. 2011.** The Nation Ex-Situ: on climate change, deterritorialized nationhood and the post-climate era. *Climate Law*. 2: 345–374.
- Calhoun, A.; Goeman, M.; Tsethlikai, M. 2007.** Achieving gender equity for American Indians. In: Klein, S.S., ed. *Handbook for achieving gender equity through education*. 2<sup>nd</sup> ed. Mahwah, NJ: Lawrence Erlbaum Associates: 525–551. Chapter 25.

- Cameron, E.S. 2012.** Securing indigenous politics: a critique of the vulnerability and adaptation approach to the human dimensions of climate change in the Canadian Arctic. *Global Environmental Change—Human and Policy Dimensions*. 22: 103–114.
- Centre for Indigenous Environmental Resources [CIER]. 2007.** Climate change impacts on abundance and distribution of traditional foods and medicines—effects on a First Nation and their capacity to adapt. 29 p. [http://www.tribesandclimatechange.org/docs/tribes\\_498.pdf](http://www.tribesandclimatechange.org/docs/tribes_498.pdf). (September 4, 2013).
- Chávez, K.R. 2011.** Identifying the needs of LGBTQ immigrants and refugees in southern Arizona. *Journal of Homosexuality*. 58: 189–218.
- Childs, J.B. 2008.** Compass of compassion: reflections on a Choctaw vision of alliances and unrecognized peoples following Katrina. *American Indian Culture and Research Journal*. 32: 85–91.
- Chrystos. 1995.** *Fire power*. 1<sup>st</sup> ed. Vancouver, BC, Canada: Press Gang Publishers. 131 p.
- Collins, R.K. 2008.** Missed by the mass media: the Houma, Pointe-au-Chien, and Hurricanes Katrina and Rita. *American Indian Culture and Research Journal*. 32: 43–53.
- Colombi, B.J. 2012.** Salmon and the adaptive capacity of Nimiipuu (Nez Perce) culture to cope with change. *The American Indian Quarterly*. 36: 75–97.
- Confederated Tribes of the Umatilla Indian Reservation [CTUIR]. 2010.** Comprehensive plan. <http://www.umatilla.nsn.us/Comprehensive%20Plan.pdf>. (April 4, 2014).
- Consedine, N.S.; Skamai, A. 2009.** Sociocultural considerations in aging men’s health: implications and recommendations for the clinician. *Journal of Men’s Health*. 6(3): 196–207.
- Corwin, A.I. 2009.** Language and gender variance: constructing gender beyond the male/female binary. *Electronic Journal of Human Sexuality*. <http://www.ejhs.org/Volume12/Gender.htm>. (August 1, 2014).
- Coté, C. 2010.** *Spirits of our whaling ancestors: revitalizing Makah and Nuu-chah-nulth traditions*. 1<sup>st</sup> ed. Seattle, WA: University of Washington Press; Vancouver, BC, Canada: University of British Columbia Press. 288 p.

- Cranford-Gomez, L.R. 2008.** Brackish bayou blood: weaving mixed-blood Indian-Creole identity outside the written record. *American Indian Culture and Research Journal*. 32: 93–108.
- Crenshaw, K. 1989.** Demarginalizing the intersection of race and sex: a black feminist critique of antidiscrimination doctrine, feminist theory and antiracist politics. *University of Chicago Legal Forum*. 140: 139–167.
- Crenshaw, K. 1991.** Mapping the margins: intersectionality, identity politics, and violence against women of color. *Stanford Law Review*. 43: 1241–1299.
- Cudworth, E.; Hobden, S. 2011.** Beyond environmental security: complex systems, multiple inequalities and environmental risks. *Environmental Politics*. 20: 42–59.
- Cunsolo Willox, A.; Landman, K.; Harper, S.L.; Edge, V.L.; Houle, K.; Ford, J.D. 2013.** The land enriches the soul: on climatic and environmental change, affect, and emotional health and well-being in Rigolet, Nunatsiavut, Canada. *Emotion, Space and Society*. 6: 14–24.
- Cuomo, C. 2011.** Climate change, vulnerability, and responsibility. *Hypatia*. 26: 690–714.
- Dardar, T.M. 2008.** Tales of wind and water: Houma Indians and hurricanes. *American Indian Culture and Research Journal*. 32: 27–34.
- David, E.; Enarson, E. 2012.** The women of Katrina: how gender, race, and class matter in an American disaster. Nashville, TN: Vanderbilt University Press. 272 p.
- Deer, S. 2009.** Decolonizing rape law: a Native feminist synthesis of safety and sovereignty. *Wicazo Sa Review*. Fall 2009: 149–167.
- Denetdale, J. 2008.** Carving Navajo national boundaries: patriotism, tradition, and the Diné Marriage Act of 2005. *American Quarterly*. 60: 289–94.
- Denton, F. 2002.** Climate change vulnerability, impacts, and adaptation: Why does gender matter? *Gender & Development*. 10: 10–20.
- D’Oney, J.D. 2008.** Watered by tempests: hurricanes in the cultural fabric of the United Houma Nation. *American Indian Culture and Research Journal*. 32: 11–26.
- Driskill, Q. 2010.** Doubleweaving two-spirit critiques: building alliances between Native and queer studies. *GLQ*. 16: 69–92.

- Dunn, C. 2008.** The last Indian in the world. *American Indian Culture and Research Journal*. 32: 79–84.
- Farrer, C.R. 1997.** A “berdache” by any other name...is a brother, friend, lover, spouse: reflections on a Mescalero Apache singer of ceremonies. In: Jacobs, S.E.; Thomas, W.; Lang, S., eds. *Two-spirit people: Native American gender identity, sexuality, and spirituality*. Urbana, IL: University of Illinois Press: 236-251.
- Ford, J.; Smit, B. 2004.** A framework for assessing the vulnerability of communities in the Canadian arctic to risks associated with climate change. *Arctic*. 57: 389–400.
- Freedman, J. 2010.** Mainstreaming gender in refugee protection. *Cambridge Review of International Affairs*. 23: 589–607.
- Gates, T.G. 2011.** Why employment discrimination matters: well-being and the queer employee. *Journal of Workplace Rights*. 16: 107–128.
- Gender Spectrum. 2014.** Understanding gender. <https://www.genderspectrum.org/quick-links/understanding-gender/>. (December 12, 2014).
- Gendron, T.; Maddux, S.; Krinsky, L.; White, J.; Lockeman, K.; Metcalfe, Y.; Sadashiv, A. 2013.** Cultural competence training for healthcare professionals working with LGBT older adults. *Educational Gerontology*. 39: 454–463.
- Gilles, K. 2012.** What is gender? And why is it important? Interagency Gender Working Group. <http://www.igwg.org/Articles/whatisgenderjanuary2012.aspx>. (June 5, 2013).
- Glazebrook, T. 2011.** Women and climate change: a case-study from northeast Ghana. *Hypatia*. 26: 762–782.
- Goeman, M.R. 2013.** *Mark my words: Native women mapping our Nations*. Minneapolis, MN: University of Minnesota Press. 260 p.
- Goeman, M.R.; Denetdale, J.N. 2009.** Guest editors’ introduction: Native feminisms: legacies, interventions, and indigenous sovereignties. *Wicazo Sa Review*. 24: 9–13.
- Grahn, J. 1984.** *Another mother tongue: gay words, gay worlds*. Boston, MA: Beacon Press. 341 p.
- Gray, L.; Mason, R. 2009.** Copenhagen summit: rich nations guilty of ‘climate colonialism’. London: The Telegraph. <http://www.telegraph.co.uk/news/earth/copenhagen-climate-change-confe/6771129/Copenhagen-summit-rich-nations-guilty-of-climate-colonialism.html> (November 16, 2015)

- Green, J. 2007.** Taking account of aboriginal feminism. In: Green, J.A., ed. Making space for indigenous feminism. Black Point, Nova Scotia, Canada: Fernwood Publishing: 20–32.
- Grossman, Z.; Parker, A, eds. 2012.** Asserting Native resilience: Pacific Rim indigenous nations face the climate crisis. Corvallis, OR: Oregon State University Press. 240 p.
- Hanna, J.M. 2007.** “*Oncorhynchus*” spp: climate change, Pacific Northwest tribes, and salmon. *Natural Resources & Environment*. 22(2): 13–17.
- Hansen, T. 2014.** Kill the land, kill the people: there are 532 Superfund sites in Indian Country! Indian Country Today Media Network. <http://indiancountrytodaymedianetwork.com/2014/06/17/532-superfund-sites-indian-country-155316?page=0%2C0>. (July 14, 2014).
- Harris, C. 2004.** How did colonialism dispossess? Comments from an edge of empire. *Annals of the Association of American Geographers*. 94: 165–182.
- Hoffman, N.D.; Freeman, K.; Swann, S. 2009.** Healthcare preferences of lesbian, gay, bisexual, transgender and questioning youth. *Journal of Adolescent Health*. 45: 222–229.
- Hoover, E. 2013.** Cultural and health implications of fish advisories in a Native American community. BioMed Central Ltd. <http://www.ecologicalprocesses.com/content/2/1/4>. (September 12, 2013).
- Huntington, O.; Watson, A. 2012.** Interdisciplinarity, Native resilience, and how the riddles can teach wildlife law in an era of rapid climate change. *Wicazo Sa Review*. 27: 49–73.
- Intergovernmental Panel on Climate Change 1 [IPCC 1]. 2001.** Polar regions (Arctic and Antarctic)—16.2.8.1. Impacts on indigenous peoples. Contribution of working group II (Impacts, adaptation and vulnerability) in the Third Assessment Report of the Intergovernmental Panel on Climate Change. 2001 <http://www.ipcc.ch/ipccreports/tar/wg2/index.php?idp=612#16281>. (August 8, 2013).
- Intergovernmental Panel on Climate Change 2 [IPCC 2]. 2001.** Vulnerability to climate change and reasons for concern: a synthesis—19.3.4.2. Indigenous communities. Contribution of working group II (Impacts, adaptation and vulnerability) in the Third Assessment Report of the Intergovernmental Panel on Climate Change. 2001 <http://www.ipcc.ch/ipccreports/tar/wg2/index.php?idp=671>. (August 8, 2013).



- Intergovernmental Panel on Climate Change [IPCC]. 2007.** Polar regions (Arctic and Antarctic)—15.2.2.4 Human populations. Contribution of working group II (Impacts, adaptation and vulnerability) to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. 2007 [http://www.ipcc.ch/publications\\_and\\_data/ar4/wg2/en/ch15s15-2-2-4.html](http://www.ipcc.ch/publications_and_data/ar4/wg2/en/ch15s15-2-2-4.html). (August 8, 2013).
- Intergovernmental Panel on Climate Change [IPCC]. 2014.** Summary for policymakers. In: *Climate change 2014: impacts, adaptation, and vulnerability. Part A: global and sectoral aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.*
- Jacob, M.M. 2013.** *Yakama rising: indigenous cultural revitalization, activism, and healing.* Tucson, AZ: University of Arizona Press. 152 p.
- Jacobs, S.E.; Thomas, W.; Lang, S. 1997.** Introduction. In: Jacobs, S.E.; Thomas, W.; Lang, S., eds. *Two-spirit people: Native American gender identity, sexuality, and spirituality.* Urbana, IL: University of Illinois Press: 1–20.
- Jaimes, M.A., ed. 1992.** *The state of Native America: genocide, colonization, and resistance.* South End Press. 465 p.
- Johnsen, D. 2009.** Salmon, science, and reciprocity on the northwest coast. *Ecology and Society*. 14: 1–11.
- Johnson, L. 2010.** The fearful symmetry of Arctic climate change: accumulation by degradation. *Environment and Planning D: Society and Space*. 28: 828–847.
- Jolivet, A. 2008.** Introduction: beyond invisibility and disaster. *American Indian Culture and Research Journal*. 32: 3–9.
- Kauanui, J.K. 2008.** Native Hawaiian decolonization and the politics of gender. *American Quarterly*. 60: 281–287.
- King, C.R. 2008.** George Bush may not like black people, but no one gives a dam about indigenous peoples: visibility and Indianness after the hurricanes. *American Indian Culture and Research Journal*. 32: 35–42.
- Kingston, D.M.; Marino, E. 2010.** Twice removed: King Islanders’ experience of “community” through two relocations. *Human Organization*. 69: 119–128.
- Kleinfeld, J.; Andrews, J.J. 2006.** The gender gap in higher education in Alaska. *Arctic*. 59: 428–434.
- Klopotek, B.; Lintinger, B.; Barbry, J. 2008.** Ordinary and extraordinary trauma: race, indigeneity, and Hurricane Katrina in Tunica-Biloxi history. *American Indian Culture and Research Journal*. 32: 55–77.

- Kuhlmann, A. 1992.** American Indian women of the Plains and Northern woodlands. *Mid-American Review of Sociology*. 16: 1–28.
- Kukarenko, N. 2011.** Climate change effects on human health in a gender perspective: some trends in Arctic research. *Global Health Action*. 4: 7913.
- Laczko, F.; Aghazarm, C., eds. 2009.** Migration, environment and climate change: assessing the evidence. Geneva, Switzerland: International Organization for Migration. [http://publications.iom.int/bookstore/free/migration\\_and\\_environment.pdf](http://publications.iom.int/bookstore/free/migration_and_environment.pdf). (August 6, 2013).
- LaDuke, W. 1999.** All our relations: Native struggles for land and life. Cambridge, MA: South End Press. 243 p.
- LaDuke, W. 2007.** Minnesota’s Manoomin gets legal state protection. News from Indian Country. <http://www.indiancountrynews.com/index.php/news/119-editorialletters/853-laduke-minnesotas-manoomin-gets-legal-state-protection>. (August 1, 2014).
- LaFortune, R. 2010.** Two spirit activism: mending the sacred hoop. *Tikkun*. 25: 46.
- Lang, S. 1997.** Various kinds of two-spirit people: gender variance and homosexuality in Native American communities. In: Jacobs, S.E.; Thomas, W.; Lang, S., eds. *Two-spirit people: Native American gender identity, sexuality, and spirituality*. Urbana, IL: University of Illinois Press: 100–118. Chapter 4.
- Lee, M. 2003.** “How will I sew my baskets?”: women vendors, market art, and incipient political activism in Anchorage, Alaska. *American Indian Quarterly*. 27: 583–592.
- Leichenko, R. 2003.** Does place still matter? Accounting for income variation across American Indian tribal areas. *Economic Geography*. 79: 365–386.
- Lynn, K.; Daigle, J.; Hoffman, J.; Lake, F.; Michelle, N.; Ranco, D.; Viles, C.; Voggesser, G.; Williams, P. 2013.** The impacts of climate change on tribal traditional foods. *Climatic Change* (special issue). <http://link.springer.com/article/10.1007/s10584-013-0736-1>. (August 19, 2013).
- Lynn, K.; MacKendrick, K.; Donoghue, E. 2011.** Social vulnerability and climate change: synthesis of literature. Gen. Tech. Rep. PNW-GTR-838. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 70 p. [http://www.fs.fed.us/pnw/pubs/pnw\\_gtr838.pdf](http://www.fs.fed.us/pnw/pubs/pnw_gtr838.pdf). (August 19, 2013).

- Maldonado, J.K.; Colombi, B.J.; Pandya, R.E., eds. 2014.** Climate change and indigenous peoples in the United States: impacts, experiences and actions. Heidelberg, New York; Dordrecht, London: Springer. 174 p.
- Maldonado, J.K.; Shearer, C.; Bronen, R.; Peterson, K.; Lazrus, H. 2013.** The impact of climate change on tribal communities in the US: displacement, relocation, and human rights. *Climatic Change* (special issue). <http://link.springer.com/article/10.1007/s10584-013-0746-z>. (September 6, 2013).
- Maracle, L. 1996.** *I am woman: a Native perspective on sociology and feminism*. Vancouver, BC: Press Gang Publishers. 146 p.
- Marshall, A.G. 2006.** Fish, water, and Nez Perce life. *Idaho Law Review*. 42: 763–793. [http://heinonline.org/HOL/Page?handle=hein.journals/idlr42&div=26&g\\_sent=1&collection=journals](http://heinonline.org/HOL/Page?handle=hein.journals/idlr42&div=26&g_sent=1&collection=journals). (August 21, 2013).
- Matsinhe, D. 2007.** Quest for methodological alternatives. *Current Sociology*. 55: 836–856.
- Mayer, L. 2007.** A return to reciprocity. *Hypatia*. 22: 22–42.
- Maynard, N. 1998.** Native peoples—Native homelands climate change workshop: lessons learned. AGU fall meeting abstracts. <http://downloads.globalchange.gov/nca/ncal/native.pdf>. (August 1, 2014).
- McBeath, J.; Shepro, C.E. 2007.** The effects of environmental change on an arctic native community evaluation using local cultural perceptions. *American Indian Quarterly*. 31: 44–65.
- McGregor, D. 2005.** Traditional ecological knowledge: an Anishnabe woman’s perspective. *Atlantis: Critical Studies in Gender, Culture & Social Justice*. 29: 103–109.
- McNamara, K.E.; Westoby, R. 2011.** Solastalgia and the gendered nature of climate change: an example from Erub Island, Torres Strait. *EcoHealth*. 8: 233–236.
- McNutt, D. 2012.** Effects of climate change on women’s and children’s health. In: Zoltán Grossman, Z.; Parker, A., eds. *Asserting native resilience: Pacific rim indigenous nations face the climate crisis*. Corvallis, OR: Oregon State University Press: 102–105.

- Melillo, J.M.; Richmond, T.C.; Yohe, G.W., eds. 2014.** Highlights of climate change impacts in the United States: the third national climate assessment. U.S. Global Change Research Program. 148 p. <http://nca2014.globalchange.gov/downloads>; [http://s3.amazonaws.com/nca2014/low/NCA3\\_Highlights\\_LowRes.pdf?download=1](http://s3.amazonaws.com/nca2014/low/NCA3_Highlights_LowRes.pdf?download=1). (December 24, 2014).
- Merchant, C. 2007.** American environmental history: an introduction. New York: Columbia University Press. 504 p.
- Mihesuah, D.A. 1996.** Commonalty of difference: American Indian women and history. *American Indian Quarterly*. 20: 15.
- Miranda, D.A. 2002.** Dildos, hummingbirds, and driving her crazy: searching for American Indian women's love poetry and erotics. *Frontiers: A Journal of Women Studies*. 23: 135–149.
- Mirzoeff, N. 2013.** The climate crisis is a debt crisis. *South Atlantic Quarterly*. 112: 831–838.
- Mokuau, N. 2002.** Culturally based interventions for substance use and child abuse among Native Hawaiians. *Public Health Reports*. 117: S82–S87.
- Morgensen, S.L. 2011.** Spaces between us: queer settler colonialism and indigenous decolonization. Minneapolis: University of Minnesota Press. 336 p.
- Murphy, M. 2013.** Chemical infrastructures of the St. Clair River. In: Boudia, S.; Jas, N., eds. *Toxicants, health and regulation since 1945*. London: Pickering & Chatto Publishers: 103–116.
- National Institute of Environmental Health Sciences [NIEHS]. 2010.** Endocrine disruptors. [http://www.niehs.nih.gov/health/materials/endocrine\\_disruptors\\_508.pdf](http://www.niehs.nih.gov/health/materials/endocrine_disruptors_508.pdf). (August 1, 2014).
- National Urban Indian Family Coalition [NUIFC]. 2009.** Urban Indian America: the status of American Indian and Alaska Native children and families today. [http://www.issuelab.org/resource/urban\\_indian\\_america\\_the\\_status\\_of\\_american\\_indian\\_and\\_alaska\\_native\\_children\\_and\\_families\\_today](http://www.issuelab.org/resource/urban_indian_america_the_status_of_american_indian_and_alaska_native_children_and_families_today). (August 8, 2013).
- Native Women's Association of Canada. 2007.** Aboriginal women and climate change. [http://www.laa.gov.nl.ca/laa/news/pdf/nwac-climate\\_change.pdf](http://www.laa.gov.nl.ca/laa/news/pdf/nwac-climate_change.pdf). (August 8, 2013).
- Natural Resources Defense Council [NRDC]. 1998.** Endocrine disruptors. <http://www.nrdc.org/health/effects/qendoc.asp>. (August 1, 2014).

- Navajo Nation Human Rights Commission [NNHRC]. 2014.** Navajo Nation Human Rights Commission hosting another public hearing in Shiprock NM, on violence against Navajo women and Navajo LGBTQ. Press release. [http://www.nnhrc.navajo-nsn.gov/PressReleases/2014/February/Press%20Release\\_02052014.pdf](http://www.nnhrc.navajo-nsn.gov/PressReleases/2014/February/Press%20Release_02052014.pdf). (July 10, 2014).
- Nebelkopf, E.; Penagos, M. 2005.** Holistic Native Network: integrated HIV/AIDS, substance abuse, and mental health services for Native Americans in San Francisco. *Journal of Psychoactive Drugs*. 37: 257–264.
- Nellemann, C.; Verma, R.; Hislop, L., eds. 2011.** Women at the frontline of climate change: gender risks and hopes. A rapid response assessment. United Nations Environment Programme, GRID-Arendal. [http://www.unep.org/pdf/rra\\_gender\\_screen.pdf](http://www.unep.org/pdf/rra_gender_screen.pdf). (August 8, 2013).
- Neumayer, E.; Plümper, T. 2007.** The gendered nature of natural disasters: the impact of catastrophic events on the gender gap in life expectancy, 1981–2002. *Annals of the Association of American Geographers*. 97: 551–566.
- Nicholls, N. 2006.** Detecting and attributing Australian climate change: a review. *Australian Meteorological Magazine*. 55(3): 199–211.
- Norgaard, K.M. 2004.** The effects of altered diet on the health of the Karuk people: a preliminary report. [http://karuk.us/press/2005/Health Effects of Altered Diet.pdf](http://karuk.us/press/2005/Health%20Effects%20of%20Altered%20Diet.pdf). (June 30, 2013).
- Northwest Indian College [NWIC]. 2014.** Traditional plants and foods. <http://nwicplantsandfoods.com/>. (July 16, 2014).
- Norton, A.T.; Herek, G.G. 2013.** Heterosexuals' attitudes toward transgender people: findings from a national probability sample of US adults. *Sex Roles*. 68: 738–753.
- Ohmagari, K.; Berkes, F. 1997.** Transmission of indigenous knowledge and bush skills among the Western James Bay Cree women of Subarctic Canada. *Human Ecology*. 25: 197–222.
- Pager, D.; Shepherd, H. 2008.** The sociology of discrimination: racial discrimination in employment, housing, credit, and consumer markets. *Annual Review of Sociology*. 34: 181–209.
- Parrotta, J.A.; Agnoletti, M. 2012.** Traditional forest-related knowledge and climate change. In: Parrotta, J.A.; Trosper, R.L., eds. *Traditional forest-related knowledge: sustaining communities, ecosystems and biocultural diversity*. Dordrecht: Springer: 491–534.

- Powless, B. 2012.** An indigenous movement to confront climate change. *Globalizations*. 9: 411–424.
- Prindeville, D. 2003.** Identity and the politics of American Indian and Hispanic women leaders. *Gender and Society*. 17: 591–608.
- Ramirez, R.K. 2008.** Learning across differences: Native and ethnic studies feminisms. *American Quarterly*. 60: 303–307.
- Ranco, D.J.; O’Neill, C.A.; Donatuto, J.; Harper, B.L. 2011.** Environmental justice, American Indians and the cultural dilemma: developing environmental management for tribal health and well-being. *Environmental Justice*. 4(4): 221–230.
- Ray, N. 2006.** Lesbian, gay, bisexual and transgender youth: an epidemic of homelessness. New York, NY: National Gay and Lesbian Task Force Policy Institute and the National Coalition for the Homeless. 189 p.
- Reo, N.J.; Parker, A.K. 2013.** Re-thinking colonialism to prepare for the impacts of rapid environmental change. *Climatic Change* (special issue). <http://link.springer.com/article/10.1007/s10584-013-0783-7#>. (September 6, 2013).
- Rhoades, E. 2003.** The health status of American Indian and Alaska Native males. *American Journal of Public Health*. 93: 774–778.
- Rifkin, M. 2011.** When did Indians become straight?: kinship, the history of sexuality, and Native sovereignty. New York: Oxford University Press. 436 p.
- Roberts, M. 2009.** War, climate change, and women. *Race, Poverty and the Environment*. 16: 39–41.
- Robichaux, B.D. 2012.** We like to think Houma women are very strong. In: David, E.; Enarson, E.P. eds. *The women of Katrina: how gender, race, and class matter in an American disaster*. Vanderbilt University Press: 43–46. Chapter 9.
- Roscoe, W. 1998.** *Changing ones: third and fourth genders in Native North America*. New York: St. Martin’s Press. 320 p.
- Ross, L. 1998.** *Inventing the savage: the social construction of Native American criminality*. 1<sup>st</sup> ed. Austin, TX: University of Texas Press. 326 p.
- Sangganjanavanich, V.F. 2009.** Career development practitioners as advocates for transgender individuals: understanding gender transition. *Journal of Employment Counseling*. 46: 128–135.

- Sarche, M.; Spicer, P. 2008.** Poverty and health disparities for American Indian and Alaska Native children—current knowledge and future prospects. *Reducing the Impact of Poverty on Health and Human Development: Scientific Approaches*. 1136: 126–136.
- Scarry, C.M.; Scarry, J. 2005.** Native American ‘garden agriculture’ in southeastern North America. *World Archaeology*. 37: 259–274.
- Shafer, M.; Ojima, D.; Antle, J.M.; Kluck, D.; McPherson, R.A.; Petersen, S.; Scanlon, B.; Sherman, K. 2014.** Great Plains. In: Melillo, J.M.; Richmond, T.C.; Yohe, G.W., eds. *Climate change impacts in the United States: the Third National Climate Assessment*. U.S. Global Change Research Program: 441–461. Chapter 19. doi:10.7930/J0D798BC <http://nca2014.globalchange.gov/report/regions/great-plains> (December 24, 2014).
- Shippentower, C. 2014.** Women’s food and climate change. Presentation at the Tribal Foods Summit, January 9, 2014, Portland, OR.
- Smit, B.; Wandel, J. 2006.** Adaptation, adaptive capacity, and vulnerability. *Global Environmental Change*. 16: 282–292.
- Smith, A. 2005.** *Conquest: sexual violence and American Indian genocide*. Cambridge, MA: South End Press. 250 p.
- Smith, L.T. [Smith L]. 2005.** On tricky ground: researching the Native in the age of uncertainty. In: Denzin, N.K.; Lincoln, Y.S., eds. *The SAGE Handbook of Qualitative Research*: 109–138.
- Stewart-Harawira, M. 2007.** Practising indigenous feminism: resistance to imperialism. In: Green, J.A., ed. *Making space for indigenous feminism*. Winnepeg, Ontario, Canada: Fernwood Publishing: 124–139. Chapter 19.
- Strickland, C.J.; Walsh, E.; Cooper, M. 2006.** Healing fractured families: parents’ and elders’ perspectives on the impact of colonization and youth suicide prevention in a Pacific Northwest American Indian Tribe. *Journal of Transcultural Nursing*. 17: 5–12.
- Sweet, V. 2014.** Rising waters, rising threats: the human trafficking of indigenous women in the circumpolar region of the United States and Canada. MSU Legal Studies Research Paper 12-01.
- Swinomish Indian Tribal Community [Swinomish]. 2010.** Swinomish climate change initiative climate adaptation action plan. [http://www.swinomish-nsn.gov/climate\\_change/Docs/SITC\\_CC\\_AdaptationActionPlan\\_complete.pdf](http://www.swinomish-nsn.gov/climate_change/Docs/SITC_CC_AdaptationActionPlan_complete.pdf). (August 9, 2013).

- Tebtebba Foundation. 2011.** Indigenous women, climate change and forests. Bagio City, Philippines: Tebtebba Foundations. <http://www.tebtebba.org/index.php/content/196-iw-cc-tfm>. (September 18, 2013).
- Terry, G. 2009.** No climate justice without gender justice: an overview of the issues. *Gender & Development*. 17: 5–18.
- Thomas, M. 2005.** Historic American Indian maple sugar and syrup production: boiling arches in Michigan and Wisconsin. *Midcontinental Journal of Archaeology*. 30: 299–326.
- Thomas, W. 1997.** Navajo cultural constructions of gender and sexuality. In: Jacobs, S.E.; Thomas, W.; Lang, S., eds. *Two-spirit people: Native American gender identity, sexuality, and spirituality*. Urbana, IL: University of Illinois Press: 157–173.
- Thornton, T.F. 1997.** Anthropological studies of Native American place naming. *American Indian Quarterly*: 209–228.
- Toledano, M. 2013.** A toxic tour of Canada’s Chemical Valley. *Vice*. <http://www.vice.com/read/a-toxic-tour-of-canadas-chemical-valley>. (July 14, 2014).
- Turner, N.; Clifton, H. 2009.** “It’s so different today”: climate change and indigenous lifeways in British Columbia, Canada. *Global Environmental Change—Human and Policy Dimensions*. 19: 180–190.
- UC Berkeley Gender Equity Resource Center. 2014.** Definition of terms. [http://geneq.berkeley.edu/lgbt\\_resources\\_definiton\\_of\\_terms#gender\\_queer](http://geneq.berkeley.edu/lgbt_resources_definiton_of_terms#gender_queer). (August 1, 2014).
- United Nations [UN] General Assembly. 1948.** Prevention and punishment of the crime of genocide. A/RES/260. <http://www.refworld.org/docid/3b00f0873.html>. (July 26, 2013).
- United Nations Development Programme [UNDP]. 2007.** Human Development Report 2007/2008—fighting climate change: human solidarity in a divided world. [http://hdr.undp.org/sites/default/files/reports/268/hdr\\_20072008\\_en\\_complete.pdf](http://hdr.undp.org/sites/default/files/reports/268/hdr_20072008_en_complete.pdf). (August 1, 2014).
- United Nations International Strategy for Disaster Reduction [UNISDR]. 2009.** Global assessment report on disaster risk reduction. Geneva, Switzerland: United Nations.



- United Nations [UN]; Martínez Cobo, J.R. 1987.** Study of the problem of discrimination against indigenous populations. New York: United Nations.
- United Nations Office for the Coordination of Humanitarian Affairs (OCHA). 2009.** Monitoring disaster displacement in the context of climate change. The Internal Displacement Monitoring Centre (IDMC). <http://www.refworld.org/pdfid/4ab9cd4e2.pdf>. (September 18, 2015).
- United Nations Population Fund [UNPFA]. 2009.** Facing a changing world: women, population and climate. State of World Population 2009. <http://www.unfpa.org/swp/2009/>. (August 8, 2013).
- Valencia-Weber, G. 2011.** Three stories in one: the story of Santa Clara Pueblo v. Martinez. In: Goldberg, C.; Washburn, K.K.; Frickey, P.P., eds. Indian law stories. UNM School of Law research paper. 451–488. Chapter 14. <http://ssrn.com/abstract=2265946>. (August 11, 2013).
- Viles, C. 2011.** First Foods and climate change. Pacific Northwest Tribal Climate Change Project. <http://tribalclimate.uoregon.edu/tribal-profiles/>. (August 5, 2014).
- Voggesser, G.; Lynn, K.; Daigle, J.; Lake, F.; Ranco, D. 2013.** Cultural impacts to tribes from climate change influences on forests. Climatic Change (special issue). <http://link.springer.com/article/10.1007/s10584-013-0733-4>. (August 19, 2013).
- Wagner, S.R. 1996.** The untold story of the Iroquois influence on early feminists. <http://www.feminist.com/resources/artspeech/genwom/iroquoisinfluence.html>. (July 8, 2014).
- Wagner, S.R. 2001.** Sisters in spirit: Haudenosaunee (Iroquois) influence on early American feminists. Summertown, TN: Book Publishing Co. 127 p.
- Walschinski, D. 2014.** Radisson hosts 2<sup>nd</sup> food sovereignty summit. Kalihwisaks. <http://oneidanation.org/newspaper/page.aspx?id=39865>. (August 1, 2014).
- Weaver, H. 2009.** The colonial context of violence: reflections on violence in the lives of Native American women. Journal of Interpersonal Violence. 24: 1552–1563.
- Weisiger, M. 2007.** Gendered injustice: Navajo livestock reduction in the New Deal era. Western Historical Quarterly. 38: 437–455.

- Wenholdt Silva, J. 2012.** Cultural roots. The Kansas City Star Magazine. [http://www.nativefoodsystems.org/sites/default/files/documents/Cultural\\_Roots\\_Haskell.pdf](http://www.nativefoodsystems.org/sites/default/files/documents/Cultural_Roots_Haskell.pdf). (August 1, 2014)
- Wesche, S.; Chan, H.M. 2010.** Adapting to the impacts of climate change on food security among Inuit in the Western Canadian Arctic. *EcoHealth*. 7: 361–373.
- Whyte, K.P. 2013.** Justice forward: tribes, climate adaptation and responsibility. *Climatic Change* (special issue). <http://link.springer.com/article/10.1007/s10584-013-0743-2>. (August 19, 2013).
- Whyte, K.P. 2014.** Indigenous women, climate change impacts, and collective action. *Hypatia*. 29(3): 599–616.
- Wildcat, D.R. 2009.** Red alert! Saving the planet with indigenous knowledge. Golden, CO: Fulcrum. 128 p.
- Wildcat, D.R. 2013.** Introduction: climate change and indigenous peoples of the USA. *Climatic Change* (special issue). <http://link.springer.com/article/10.1007/s10584-013-0849-6>. (August 19, 2013).
- Wilkinson, C.F. 2005.** Blood struggle: the rise of modern Indian Nations. New York: Norton. 560 p.
- Williams, T.; Hardison, P. 2013.** Culture, law, risk and governance: contexts of traditional knowledge in climate change adaptation. *Climatic Change* (special issue). <http://link.springer.com/article/10.1007/s10584-013-0850-0>. (August 19, 2013).
- World Health Organization [WHO]. 2011.** Gender, climate change and health. 38 p. [http://www.who.int/globalchange/publications/reports/gender\\_climate\\_change/en/](http://www.who.int/globalchange/publications/reports/gender_climate_change/en/). (August 8, 2013).
- Zotti, M.E.; Tong, V.T.; Kieltyka, L.; Brown-Bryant, R. 2012.** Factors influencing evacuation decisions among high-risk pregnant and postpartum women. In: David, E.; Enarson, E., eds. *The women of Katrina: how gender, race, and class matter in an American disaster*. Nashville, TN: Vanderbilt University Press: 90–104. Chapter 14.

## Glossary

**Biological sex**—The physical structure of one’s reproductive organs that is used to assign sex at birth (Gender Spectrum 2014).

**Gender**—Socially constructed system of classification that ascribes qualities of masculinity and femininity to people, often based on their biological sex. Gender characteristics can change over time and are different between cultures (Gender Spectrum 2014).

**Gender binary**—Socially constructed notion of gender that accepts or recognizes only two genders: man and woman.

**Gender diversity**—Term that recognizes that many peoples’ preferences and self-expression fall outside commonly understood gender norms. Gender diversity is a normal part of human expression, documented across cultures and recorded history (Gender Spectrum 2014).

**Gender nonconforming** (also referred to as **gender variant**)—An individual who does not conform to their culture’s dominant notions of gender and gender roles, be it because of their appearance, their behavior, or their role in society.

**Gender roles**—Set of roles, activities, expectations, and behaviors assigned to females and males by society. The dominant Western culture in the United States recognizes two basic gender roles: masculine (having the qualities attributed to males) and feminine (having the qualities attributed to females). People who step out of their socially assigned gender roles are sometimes referred to as transgender. Throughout history, other cultures including various indigenous cultures prior to the colonization of present-day United States, have recognized three or more gender roles (Gender Spectrum 2014).

**Gender variant**—See *Gender nonconforming*.

**Gendered knowledge**—In many cultures, gender roles divide social responsibilities, activities and work based on gender. As such, knowledge related to these responsibilities, activities, and work is also gendered. Gendered knowledge refers to knowledge and experiences that are associated with the responsibilities, activities, and roles of a given gender. In Western cultures, knowledge attributed to masculine responsibilities, activities, and work has often been valued over knowledge attributed to feminine responsibilities, activities, and work. This has led to a lack of representation of women’s knowledge in social, political, and cultural initiatives. Gender activists working on climate change initiatives often seek to close this gendered knowledge gap by making space for underrepresented gendered knowledge in climate change planning and decisionmaking.

**Gynocracy**—A social system in which females have central socio-political roles, are figures of moral authority, and/or have control over property. Prior to colonization, this social system was characteristic of various indigenous cultures in the present-day United States. Today some of these indigenous cultures retain a gynocratic system, while others have been profoundly affected by the patriarchal forces of colonization. There are a number of indigenous communities and activists embarking on initiatives to restore power to indigenous women and reverse the impact of patriarchy on their communities.

**Indigenous**—Definitions of *indigenous* and what constitutes an indigenous community vary. For the purpose of this document, we use the definition put forth by Jose R. Martínez Cobo for the United Nations. It defines indigenous communities as “those which, having a historical continuity with pre-invasion and pre-colonial societies that developed on their territories, consider themselves distinct from other sectors of the societies now prevailing on those territories, or parts of them. They form at present non-dominant sectors of society and are determined to preserve, develop and transmit to future generations their ancestral territories, and their ethnic identity, as the basis of their continued existence as peoples, in accordance with their own cultural patterns, social institutions and legal system” (UN and Martínez Cobo 1987). When we refer to indigenous communities in the United States, we refer to peoples forming part of American Indian, Alaska Native, and Native Hawaiian populations, be they federally recognized, state-recognized, or unrecognized.

**Intersectionality**—A concept first highlighted by Kimberle Crenshaw (1989), intersectionality aims to more effectively analyze systems of oppression by taking into account the way in which these various systems, including racism, sexism, classism, heterosexism, ableism, etc., interact to affect the lived experiences of people. For example, the experiences of a woman of color cannot be examined only through the lens of racism, or only through the lens of sexism, but through a lens in which these two systems of oppressions intersect to create a particular lived experience for that woman of color.

**LGBTQ**—Acronym for “lesbian, gay, bisexual, transgender, queer.” In this publication, this acronym is used to refer to nonindigenous lesbian, gay, bisexual, transgender, and queer people.

**LGBTQTQ**—Acronym for “lesbian, gay, bisexual, transgender, two-spirit, queer.” In this publication, this acronym is used to represent a broad range of indigenous peoples and communities who in one or more ways do not conform to gender identities and roles, heteronormativity, or colonial concepts of gender and sexuality imposed by the dominant society.

**Patriarchy**—A social system in which men hold socio-political power and authority, control property, and dictate social organization. Patriarchal systems can have, and have had detrimental impacts on women and gender nonconforming people, through acts of disempowerment, discrimination, and violence. Patriarchy became the ruling social system in the United States as a result of European-American values, a fact that profoundly affected indigenous communities, especially those that are traditionally gynocratic.

**Resilience**—In the context of climate change, resilience refers to the ability of people and communities to cope with and recover from climate change impacts. The physical, economic, socio-political and cultural conditions of a person or community often intersect to define that person or community’s resilience in the face of climate change. However, resilience is not static and can be strengthened or weakened as physical, economic, socio-political, and cultural changes unfold. Some characteristics may be a source of both vulnerability (see *Vulnerability*) and resilience. For example, indigenous communities are more vulnerable to climate change impacts because of their dependence on and deep reciprocal relationship with specific plant and animal species whose range and distribution may change with the changing climate. Simultaneously, this deep reciprocal relationship with the land results in the development of indigenous knowledge and experiences that can inform climate change adaptation strategies and thus enhance the resilience of indigenous communities (UNISDR 2009, Wildcat 2009)

**Transgender**—Sometimes used as an umbrella to describe anyone whose identity or behavior falls outside of stereotypical gender norms. More narrowly defined, it refers to an individual whose gender identity does not match their assigned birth gender. Being transgender does not imply any specific sexual orientation (attraction to people of a specific gender.) Therefore, transgender people may additionally identify as straight, gay, lesbian, or bisexual (Gender Spectrum 2014).

**Two-spirit**— “The term two-spirit was chosen as an intertribal term to be used in English as a way to communicate numerous tribal traditions and social categories of gender outside dominant European binaries,” explains Driskill (2010: 72). The Bay Area American Indian Two-Spirits (BAAITS 2014) explain, “Two-Spirit refers to the commonly shared notion among many Native American tribes that some individuals naturally possessed and manifested both masculine and feminine spiritual qualities. American society commonly identifies Two-Spirit People as Gay, Lesbian, Bisexual or Transgender.” Based on BAAITS’ definition, “two-spirit” may serve as an umbrella term to refer to indigenous people who do not conform to the Western gender binary or heterosexuality.

**Vulnerability**—In the context of climate change, vulnerability refers to a person or community’s likelihood of exposure, as well as sensitivity to climate change impacts. Smit and Wandel (2006: 286) state, “...the vulnerability of any system (at any scale) is reflective of (or a function of) the exposure and sensitivity of that system to hazardous conditions and the ability or capacity or resilience of the system to cope, adapt or recover from the effects of those conditions.” A person or community’s vulnerability to climate change impacts depends on a number of factors including that person or community’s physical, socio-political, and cultural resilience (see *Resilience*). While, in a given location, a number of people may be exposed to the same climatic changes, physical, socio-political, and cultural conditions such as poverty, intersectional oppression, health limitations, lack of decisionmaking power, etc., may make some people more vulnerable to these changes and their associated impacts (Lynn et al. 2011, UNISDR 2009).

**Pacific Northwest Research Station**

<b>Web site</b>	<a href="http://www.fs.fed.us/pnw/">http://www.fs.fed.us/pnw/</a>
<b>Telephone</b>	(503) 808-2592
<b>Publication requests</b>	(503) 808-2138
<b>FAX</b>	(503) 808-2130
<b>E-mail</b>	<a href="mailto:pnw_pnwpubs@fs.fed.us">pnw_pnwpubs@fs.fed.us</a>
<b>Mailing address</b>	Publications Distribution Pacific Northwest Research Station P.O. Box 3890 Portland, OR 97208-3890



Federal Recycling Program  
Printed on Recycled Paper

---

U.S. Department of Agriculture  
Pacific Northwest Research Station  
1220 SW 3<sup>rd</sup> Ave.  
P.O. Box 3890  
Portland, OR 97208-3890

---

Official Business  
Penalty for Private Use, \$300