Research Paper

Trails on tribal lands in the United States

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HIGHLIGHTS

- Trail systems aid economic development, public health, and safe transportation in Indian Country.
- Trail systems help protect American Indian cultural identity and natural heritage.
- Trail systems restore physical and spatial connectivity in Indian Country.
- Land tenure patterns and obstacles to funding impede trail development.

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ABSTRACT

This paper investigates the status of trails on American Indian lands in the United States and their contribution to quality of life in Indian Country. Although American Indians have been using trails for centuries and trails have been the subject of considerable scholarly inquiry, very little research explores community trails on American Indian land. However, such research could serve an important purpose: American Indian communities, and reservations in particular, face a suite of social challenges related to land tenure, economic disparity, health epidemics, and transportation safety. Meanwhile, the social benefits of community trails have been well documented. This paper seeks to fill this knowledge gap by describing the current existence and uses of trails on American Indian land; the benefits they bring to tribal and non-tribal users; the potential benefits of expanding trails; and potential obstacles to trail development. To develop this understanding, we conducted informational interviews with 21 tribal representatives and resource managers from across the United States. Our results shed light on the important role that trails can play in strengthening American Indian communities. We find that trails (1) help strengthen and preserve cultural identity and natural heritage; (2) directly address some of the most pervasive social challenges that American Indian communities face; and (3) spur the creation of constructive partnerships with individuals, organizations, and various levels of government. These results provide strong incentive for continued and improved funding and development of trails not only in American Indian communities but also on indigenous lands across the globe.

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1. Introduction

American Indians have used foot trails for millennia. Over time, these paths have been used for travel, trade, war-making, and venturing to sacred places. The continent was crisscrossed by an extensive network of trails made by American Indians at the time of first contact with Europeans (Blakeslee, 2006). However, as the influence of Western technology and worldviews began to transform traditional American Indian lifestyles, and as processes of dispossession separated Indians from their historical land bases,
these traditional trail networks began to fade or were converted to roads and highways that are not conducive for walking. In fact, the current transportation infrastructure follows historic American Indian trails closely (Vogel, 1985).

Notwithstanding the disappearance of traditional routes, trails continue to exist in Indian Country, a term that describes all land, on a reservation or otherwise, under federal jurisdiction and designated for Indian use (Pevar, 2004). In addition to the informal paths and routes, Indian Country also has professionally designed and planned trail systems. However, little research exists describing the characteristics, uses, benefits, planning, or development of contemporary trails on American Indian lands. Such research could serve an important purpose. Trails systems have been shown to improve quality of life in areas including resident health and fitness, access to natural areas, land use, transportation, and community physical and social connectivity (Erickson, 2006; Shafer, Lee, & Turner, 2000). Simultaneously, American Indian communities, and reservations in particular, face a suite of social challenges related to land tenure, economic disparity, health epidemics, and transportation safety. A question that remains unaddressed is how trails on and near tribal lands can help lessen these social challenges. Accordingly, this research is an initial investigation of the quality of life benefits conferred by trails in Indian Country. Quality of life (QOL) has been defined and conceptualized in numerous different ways (van Kamp, Leidlem, Marsman, & de Holland, 2003). We follow Machlis, Force, and Burch (1997) and Shafer et al. (2000) in conceptualizing QOL through the lens of human ecology. A human ecological approach to QOL articulates the interconnect- edness of the essential components of quality of life, as well as the interconnectedness of the natural, built, and social environments that are relevant to developing high quality of life in a given place (Bubolz, Eicher, Evers, & Sonja, 1980; Machlis et al., 1997). While the components of quality of life under consideration vary from analysis to analysis, interconnection and interdependence of these components is consistent across studies, underscoring the utility of the human ecological perspective (van Kamp et al., 2003).

A human ecological perspective on QOL is relevant to an investigation of trails because trails inherently integrate elements of natural, physical, and social environments. The integration of these environments is a common characteristic of greenways, which are multi-purpose corridors of ecological, recreational, cultural, and historical significance (Abern, 1995; Fábos, 2004; Sears, 1995). In urban or built environments, greenways help establish ecological connectivity or provide recreation and green spaces (Jennish, Külvik, & Kristiansen, 2004; Shafer et al., 2000). In rural environments, greenways serve similar functions while incorporating context-specific elements such as agricultural land, conservation of undeveloped land, and historical sites and artifacts (Yahner, Korostoff, Johnson, Battaglia, & Jones, 1995). Trails and trail systems are often recognized as greenways in both urban (e.g., Shafer et al., 2000) and rural settings (e.g., Yahner et al., 1995). In both settings, they serve multiple purposes in the realms of public health, recreation, economic development, and environmental conservation (Corning, Mowatt, & Chancellor, 2012). Greenways, and trails that serve as greenways, are thus elements of both ecological and cultural landscapes (Fábos, 2004; Sears, 1995; Yahner et al., 1995).

This research contributes to the perspective that trails are elements of cultural landscapes that confer important QOL benefits to users and communities. In an urban setting, Shafer et al. (2000) evaluated trail users’ perceptions of the economic, environmental, and social QOL benefits of trail systems, finding that health and fitness, accessible natural environments, recreational opportunities, land use patterns, pride in the community, and community identity were the most important benefits identified by users. In a more rural setting, Yahner et al. (1995) identify trails as important opportunities to educate users about local history, culture and landscapes. However, very little research explicitly investigates the QOL benefits conferred by trails in truly rural settings, much less rural Indian Country settings. This absence is significant, because quality of life is culturally relative (Marsella, Levi, & Ekblad, 1997). As such, the QOL benefits conferred by trails in one location cannot be assumed to be identical to the benefits conferred by trails in a culturally different location. In this paper, we develop the first review of contemporary trails in Indian Country and their contributions to residents’ quality of life. Our research is grounded in the major social challenges facing American Indians and the role that trails play in ameliorating those challenges. Given the current lack of research on trails in Indian Country, we take an exploratory approach to document (1) the status of existing trails; (2) the benefits those trails bring to tribal users; and (3) the opportunities and challenges associated with expanding trail systems. We begin with an overview of the major social challenges that negatively impact QOL in Indian Country communities.

1.1. The reservation system and modern land tenure

The reservation system has left an indelible mark on American Indian communities, substantially impacting economic development, the organization of land ownership, and behavior patterns and lifestyle choices. Beginning in the 1770s and extending beyond the 1860s, westward expansion by Euro-Americans forced American Indians to negotiate treaties that reduced their former territories, thereby confining their sovereignty to a system of reservations. This significant reduction in tribal lands was exacerbated by allotment policies, which began via treaties in the 1850s and were cemented in the General Allotment Act of 1887 (also called the Dawes Act, after its congressional sponsor). The Dawes Act divided collectively owned reservations into individual allotments. Under the provisions of the Dawes Act, lands not allotted to individual Indians were deemed “surplus lands” and sold to white settlers to build the US Treasury. Due to allotment policies, Indians were forced to cede almost 90 million acres—approximately two-thirds of their total land base—to non-Indian control (ILTF, 2012). The Dawes Act and other policies of dispossession have resulted in modern land tenure characterized by a mosaic of ownership types. This mosaic, known as checkerboarding, describes how reservation land is divided into a variety of ownership classes including individual Indian trust lands (i.e., allotments), non-Indian fee lands, and tribal trust and fee lands. While trust lands are under American Indian ownership, approval from the Secretary of the Interior is required to make any land use change decisions. This interferes with a tribe’s ability to make autonomous management decisions and impedes opportunities for economic development.

Allotted lands also suffer from fractured ownership, which results when ownership of a parcel is divided among the heirs of an original allottee without subdividing the land. As generations pass, ownership of a parcel is fractured repeatedly. For example, a single 80-acre parcel on the Lac Courte Oreilles Reservation in Wisconsin had 2285 owners. Fractured ownership requires the consent of the majority of owners before land is developed in any way, making it difficult to make use of these properties (ILTF, 2012).

1.2. Economic conditions

Reservations have historically offered very few economic opportunities to community members. As a result, American Indians have often been forced to move away from their communities to find work. By the 1980s, over 60 percent of American Indians lived off-reservation, often away from their land and culture (Lewis, 1995). Today, per-capita income for American Indians is significantly lower for those living on reservations than those not, and the per capita incomes of both American Indian groups are lower than...
all other United States citizens. The poverty rates among modern American Indians remain three times higher than the U.S. average (Taylor & Kalt, 2005).

Land tenure patterns characterized by checkerboarding and fractured ownership compound the economic disadvantages characteristic of the reservation setting. Both fractured ownership and trust land policies, requiring federal approval for land use changes, present significant obstacles to economic development projects. In doing so, they contribute to the persistence of high poverty rates on reservations. If these barriers were not in place, tribes would be much freer to explore economic development of their lands.

1.3. Health and lifestyle conditions

Health-related measures of quality of life reflect the economic under-development of many reservations. The welfare of Indians living on reservations lags severely behind those living off reservations, and the rest of the nation on the whole (Taylor & Kalt, 2005). Diabetes and cardiovascular disease (CVD) are among the leading causes of death in American Indian populations (Barnes, Adams, & Powell-Griner, 2010). The prevalence of obesity among American Indians—nearly 40 percent—increases the risk associated with these diseases, as obesity is a known risk factor for both conditions (Pleis & Lucas, 2009). Although physical activity plays a major role in reducing the prevalence of diabetes, CVD, and obesity among American Indians (Benjamin, Mayfield, & Gohdes, 1993), a 2009 study indicated that more than one-third of American Indian participants “did not meet current recommendations for physical activity” (Duncan, Goldberg, Buchwald, Wen, & Henderson, 2009).

Some cite the absence of the infrastructure necessary to lead a healthier lifestyle as a contributing factor (Berry, 2004). Across the board, the economic circumstances on reservations make effective health promotion in Indian Country a daunting task.

1.4. Transportation and safety conditions

Kolodinsky et al. (2013) suggest that resident mobility is an important factor in rural quality of life. Moreover, transportation options can be an important factor in accessing employment opportunities and maintaining social equity (Cebollada, 2009). However, economic disadvantages on reservations often lead to limited transportation options. Many reservations, and rural areas in general, consist primarily of isolated patches of open country with low population densities. Due to the large distances between areas of interest within these communities, transportation often requires a motor vehicle. This heavy reliance on cars, along with scarce resources for infrastructure development, has contributed to a shortage of walking paths or sidewalks within rural and reservation communities. Walking outside is approximately 13 percent less common among rural residents compared to suburban ones (Eyler, Brownson, BacaK, & Housemann, 2003). Often this is due to the relative dearth of proper infrastructure, such as sidewalks, crosswalks, bicycle accommodations, and trails, for bicycling and walking in rural areas (Parks, Housemann, & Brownson, 2003; Wilcox, Castro, King, Housemann, & Brownson, 2000).

The lack of access to walking paths has serious implications for safety within rural communities. For example, the probability of an accident is two times more likely at a site without a sidewalk than at a site with sidewalks present (Ossenbruggen, Pendharkar, & Ivan, 2001). This is evident in the reservation town of Arlee, Montana, where new highway construction lackin pedestrian facilities bisected the community and made travel by foot or bicycle difficult (Deyo, Van Der Werff, Kelly, Burke, & Bohdan, 2011).

In summary, historical and current land tenure policies and politics, depressed economic conditions, health concerns, and a dearth of safe transportation options pose significant obstacles to a high quality of life in Indian Country. These obstacles are closely related to one another. Land tenure arrangements impede economic development, the absence of which is tied to public health concerns and limited and/or unsafe transportation. The interrelatedness of these challenges mirrors the interconnections of the economic, social, and environmental components of quality of life.

2. Methods

2.1. Research design and data collection

This research investigates the QOL benefits of trails in Indian Country across the United States. While our interests emerge from the QOL literature, very little has been written on trails or greenways in Indian Country. Accordingly, we designed our research to be exploratory in hopes that our results could guide more focused future research on the ties between trails and QOL in tribal communities. This exploratory approach enabled us to assess the existence and status of trails in Indian Country while also making a preliminary evaluation of the contributions of those trails to residents’ QOL. We used a combination of purposive and snowball sampling to identify representatives from American Indian tribes and/or communities with relevant knowledge about trails. Purposive sampling is an effective means by which to identify key informants, and snowball sampling is recognized as a method of sampling a network with few members who are spatially distant from one another (Bernard, 2011). To establish tribal contacts, we first reached out to the 33 tribally controlled colleges and universities associated with the American Indian Higher Education Consortium (AIHEC, 2010). In most cases, contacts at tribal colleges directed us to other individuals. Ultimately, most interviews were conducted with tribal planners, parks and recreation managers, biologists, and other experts associated with trails. The remaining interviewees were community educators or community business leaders.

Formal interviews were conducted with key informants following a semi-structured format. Each interview consisted of approximately 30 open-ended questions. To build a preliminary documentation of trails in Indian Country, we posed questions concerning the existence, use, benefits, and development of trails in Indian Country. We also posed several open-ended questions designed to elicit responses about the impact of trails on tribal community QOL. These questions were informed by a literature review identifying the major social challenges and QOL concerns facing American Indian communities. The development of our interview instrument was also informed by trail design work done with the Salish and Kootenai Tribes on the Flathead Reservation in Montana (Deyo et al., 2011). Interviews were held between December 2010 and February 2011. The majority of interviews (19) were conducted over the phone; two informants responded to the questions by email. If consent was given, interviews were recorded using a digital hand-held recorder. Interviews were documented through note taking if interviewees preferred not to be recorded. In reporting our results, interviewees’ names have been either given or withheld, in accordance with their individual preferences. The project was reviewed and deemed exempt by the authors’ university Institutional Review Board.

2.2. Data analysis

Interviews were transcribed and transcripts carefully reviewed by all members of the research team. Our qualitative analysis of interview data included identifying major themes and organizing content within a large spreadsheet, following the outline of our interview instrument. Major themes and sub-themes were identified through an iterative coding procedure, in which a hierarchical
Fig. 1. Map of Indian Country communities interviewed. Little Bighorn Battlefield National Monument is located on Crow Reservation. Members of the Inupiat Community of the Arctic Slope are located throughout Alaska’s North Slope Borough.

coding structure was refined through multiple rounds of coding (Miles & Hubermann, 1994). Identification of themes was informed by our review of the QOL literature and its relation to social challenges in Indian Country, and particularly Shafer et al. (2000), who describe the QOL benefits associated with greenway use. Our results capture the recurrent themes and poignant insights that emerged from this systematic analysis of our qualitative interview dataset.

3. Results and discussion

We conducted 21 interviews with individuals, representing a total of 18 sites in Indian Country (Fig. 1). Sites ranged from 3.1 to 230,035.2 km² (land area) and included 16 federally recognized reservations, one Alaskan borough with a 53.44% Alaska Native population (US Census, 2010b), and one national monument owned and operated by the National Park Service and situated on a federally recognized reservation. Interviewees represented 17 federally recognized tribes (Table 1). Of the 21 interviewees, 7 were tribal members and 14 were not. Interviewees held tribal positions in management, planning, scientific study, education, or business (Table 2). Of 18 sites in Indian Country, only 2 lacked trails altogether. The most common uses of trails included recreation, health and exercise, cultural practice, and transportation. Pedestrian and bike trails were the most common type of both trails, followed by snowmobile and ATV trails. Other trail types were less common (Table 3). The degree to which this documentation of trail existence and use is complete is in part dependent on interviewees’ knowledge, expertise, and recollection.

Most revealing are the qualitative results in which tribal representatives describe the purpose and uses of existing trails, the benefits of trails to their community QOL, and the considerations and challenges in developing trail systems in Indian Country. Descriptive results are grouped by social concern and major QOL component. While some trails from surveyed communities were designed and used for multiple purposes, this is not the case for all trails. This research documents the suite of current major trail uses and QOL benefits, without suggesting that all trails serve the same purposes or provide the same benefits. Theses results provide a summary of the array of trail uses and benefits in Indian Country. Readers will note that much of our discussion centers on the reservation context, as is consistent with the affiliation of interviewees.

3.1. Repairing spatial and cultural fragmentation

With low population densities and limited transportation options, reservation communities are often spatially diffuse. Trails serve as infrastructure that creates physical connections between community members and valuable social centers, helping to lessen these divisions. On the Blackfeet Reservation in Montana, trails designed to improve health and fitness are also valued for connecting disparate community members to one another across the land. Similarly, the Lac Court Oreilles Reservation in Wisconsin received a Safe Routes to School grant to connect a series of existing unofficial trails, enabling children to access schools within the community. After the Winnebago Reservation in Nebraska built a trail connecting important areas within the community, a tribal representative noted that people used the trail to travel to work and access human services such as the BIA office.

Interviewees noted that trails also offer a unique opportunity to strengthen cultural ties. Trail systems can provide a venue to share traditional practices, historical sites, culturally important
species, and ecological stories. For the Inupiat in Alaska, trails afford access to territory for whaling and caribou hunting, both important cultural practices. A representative of the North Slope Borough of Alaska highlighted the importance of whaling as a community event: “The whole community really gears up to do whaling...you are either on a [whaling] crew or you know someone who is on a crew and you do whatever you can to help because it feeds the community for the whole year. So it’s something that everyone participates in one way or another. It impacts everyone, and is very important” (B. Thomas, personal communication, February 10, 2011). On the Lummi Indian Reservation in Washington, trails help strengthen cultural traditions, as walking has been the traditional method of transport for centuries.

Many interviewees identified Indian Country trails as an opportunity to educate the community about culture and natural resources. A representative from the Rosebud Reservation in South Dakota emphasized the value of trails to education: “I see education being the greatest asset that trails could bring. I remember as a child you would have to travel off the reservation to have access to outdoor educational opportunities. Trails would be a

<table>
<thead>
<tr>
<th>Reservations and other land areas (n = 18)</th>
<th>Type of site</th>
<th>Associated federally recognized tribe</th>
<th>State</th>
<th>Land area (km²)</th>
<th>Trails (Y/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Little Bighorn Battlefield National Monument</td>
<td>National Park Service</td>
<td>Crow Tribe of Montana</td>
<td>MT</td>
<td>3.1²</td>
<td>Y</td>
</tr>
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<td>Bay Mills Indian Community Federal Indian Reservation</td>
<td>Federal Indian Reservation</td>
<td>Bay Mills Indian Community</td>
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<td>Y</td>
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<td>Lummi Reservation</td>
<td>Federal Indian Reservation</td>
<td>Lummi Tribe of the Lummi Reservation</td>
<td>WA</td>
<td>53.5</td>
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<td>Lac Courte Oreilles Reservation</td>
<td>Federal Indian Reservation</td>
<td>Lac Courte Oreilles Band of Lake Superior Chippewa Indians of Wisconsin</td>
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<td>280.5</td>
<td>Y</td>
</tr>
<tr>
<td>Fond du Lac Band of Lake Superior Chippewa</td>
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<td>Minnesota Chippewa Tribe</td>
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<td>Rocky Boy's Reservation</td>
<td>Federal Indian Reservation</td>
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<td>Winnebago Tribe of Nebraska</td>
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<td>Winnebago Tribe of Nebraska</td>
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</tr>
<tr>
<td>Menominee Nation</td>
<td>Federal Indian Reservation</td>
<td>Menominee Indian Tribe of Wisconsin</td>
<td>WI</td>
<td>920.7</td>
<td>N</td>
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<td>Northern Cheyenne Reservation</td>
<td>Federal Indian Reservation</td>
<td>Northern Cheyenne Tribe of the Northern Cheyenne Indian Reservation, Montana</td>
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<tr>
<td>White Earth Indian Reservation</td>
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<td>Minnesota Chippewa Tribe</td>
<td>MN</td>
<td>2842.7</td>
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<tr>
<td>Lake Traverse Reservation</td>
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<td>Sisseton-Wahpeton Oyate of the Lake Traverse Reservation, South Dakota</td>
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<td>Rosebud Reservation</td>
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<td>5106.2</td>
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<td>Blackfeet Indian Reservation</td>
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<tr>
<td>Pine Ridge Reservation</td>
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<td>Oglala Sioux Tribe</td>
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<td>Tohono O'odham Reservation</td>
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<td>Tohono O'odham Nation of Arizona</td>
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<tr>
<td>Navajo Nation</td>
<td>Federal Indian Reservation</td>
<td>Navajo Nation, Arizona, New Mexico &amp; Utah</td>
<td>AZ</td>
<td>62495.3</td>
<td>Y</td>
</tr>
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<td>North Slope Borough of Alaska Borough of the State of Alaska (county equivalent)</td>
<td>Borough of the State of Alaska (county equivalent)</td>
<td>Inupiat Community of the Arctic Slope</td>
<td>AK</td>
<td>230035.5</td>
<td>Y</td>
</tr>
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Table 2
Tribal affiliation and occupation of interviewees.

<table>
<thead>
<tr>
<th>Tribal affiliation</th>
<th>Occupation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tribal member</td>
<td>7</td>
</tr>
<tr>
<td>Non-tribal member</td>
<td>14</td>
</tr>
<tr>
<td>Natural resource managers/directors</td>
<td>4</td>
</tr>
<tr>
<td>Planners</td>
<td>4</td>
</tr>
<tr>
<td>Biologists/scientists</td>
<td>4</td>
</tr>
<tr>
<td>Park/monument administrators</td>
<td>3</td>
</tr>
<tr>
<td>Educators</td>
<td>3</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
</tr>
</tbody>
</table>

Table 3
The purposes, uses, and types of existing trails in Indian Country. Trail purposes or uses are not exclusive; for instance, a trail could be used simultaneously for recreation, transportation, and tourism.

<table>
<thead>
<tr>
<th>Trail purpose and/or use</th>
<th>Times mentioned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recreation</td>
<td>10</td>
</tr>
<tr>
<td>Health and exercise</td>
<td>8</td>
</tr>
<tr>
<td>Cultural practice</td>
<td>6</td>
</tr>
<tr>
<td>Transportation</td>
<td>6</td>
</tr>
<tr>
<td>Safety</td>
<td>4</td>
</tr>
<tr>
<td>Tourism</td>
<td>4</td>
</tr>
<tr>
<td>Physically connecting communities</td>
<td>3</td>
</tr>
<tr>
<td>Research</td>
<td>1</td>
</tr>
<tr>
<td>Economic development</td>
<td>1</td>
</tr>
<tr>
<td>Education</td>
<td>1</td>
</tr>
<tr>
<td>Subsistence activities</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>45</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Trail type</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Pedestrian/bike</td>
<td>16</td>
</tr>
<tr>
<td>Snowmobile/ATV</td>
<td>8</td>
</tr>
<tr>
<td>Animal</td>
<td>4</td>
</tr>
<tr>
<td>Logging roads, fire roads, fire breaks</td>
<td>3</td>
</tr>
<tr>
<td>Nature</td>
<td>1</td>
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<tr>
<td>Total</td>
<td>28</td>
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way to get people to be more aware of their surroundings” (E. Boyd, personal communication, January 25, 2011). Several other interviewees, including a representative from Northern Cheyenne Reservation, expressed a desire to incorporate educational components, such as kiosks and interpretive signs, into trail systems in historic areas. A member of the Bay Mills Indian Community in northern Michigan described the tribe’s desire to create an educational area within culturally important homestead sites on the reservation that could be accessed by a series of trails. The educational area would include cultural and historical information and would be used primarily for fieldtrips by local schools. Integrating trail and curricular design could enhance the curricula of schools and serve as a means of engaging youth and other visitors with the land and its ecology, tribal history, and cultural values.

Connecting people across spatial divisions and ownership boundaries could strengthen disadvantaged communities and protect threatened cultural ties by providing access to important sites within a shared cultural landscape. While no literature exists describing the use of trail systems to reconnect spatial and cultural connectivity on reservations, some inferences can be gleaned from research on trails and greenway planning in other contexts. Much of the greenway literature discusses land fragmentation in terms of landscape ecology: greenways link islands of protected habitat and allow for migration of plants and animals, thus connecting a fragmented landscape for the benefit of the ecosystem (Erickson, 2006). A human ecological perspective reinforces the importance of creating connected cultural as well as natural systems (Steiner, 2002). Within the urban context, greenways and trail systems often occur across mixed ownership and can be used to connect to existing green spaces (Erickson, 2006). In the rural context of Indian Country, the spatially diffuse population and checkerboard ownership characterizing many reservations can be considered a form of socio-cultural fragmentation. While planning trail systems on reservations presents a challenge, trails offer a way of re-creating traditional patterns of movement or re-aligning community connections that have been severed by changes in land tenure. A reservation trail system could be used to connect tribal government offices, health and community centers, schools, powwow grounds, culturally important natural areas, and even sacred sites. By encouraging community engagement and a shared local identity, trail systems can build not only physical but also social connections between distant communities (Lee, 1999; Price & Stoneham, 2001; Tabbush & O’Brien, 2003).

Repairing spatial and cultural fragmentation offers other QOL benefits associated with community engagement. Even when trails are not essential to subsistence or cultural practices, the participation of local volunteers can cultivate a sense of stewardship of the land and infrastructure. On the Blackfeet Reservation in Montana, a youth program installed benches, and a volunteer group paid for and installed exercise areas along the trails. A Blackfeet representative noted that involving local youth groups and volunteers helped promote community ownership of the walking park where trails were constructed. On the Rosebud Reservation in South Dakota, a local chapter of the Boy Scouts of America built two trails that lead from the highway to natural areas. The Boy Scouts continue to maintain the trails, which provide access to natural areas for trips and allow the troop to earn merit badges. In addition to enhancing a sense of community ownership of trails, volunteer participation may raise awareness about trails and in doing so increase trail usage by community members. The development of community pride as a QOL benefit conferred by greenways is consistent with the findings of Shafer et al. (2000).

As suggested by several interviewees, trail development and maintenance projects enable youth to engage with their community, while historical and cultural trails offer youth opportunities to learn about and develop their own cultural identity. Using trails to create connections to land and community may have particular QOL benefits for American Indian youth. Zwick and Miller (1996) found that when a culturally sensitive, activity-based outdoor science curriculum was implemented with fourth grade students, American Indian students had significantly higher achievement scores than students in a control group who did not receive the culturally sensitive curriculum. Community entrenchment and engagement in traditional cultural values is one of the strongest predictors of resilience and well-being among American Indian youth (LaFromboise, Hoyt, Oliver, & Whitbeck, 2006). Moreover, the benefits of engaging youth with their cultural heritage extend to the entire community. As Western influence exacerbates a loss of diversity and cultural identity in American Indian communities, many scholars believe the continued survival of cultures depend upon “educating young people in their own language and customs” (Lewis, 1993). These findings suggest that in Indian Country, QOL benefits from trails are directly associated with strengthening marginalized and threatened cultures. Trails may also improve QOL in spatially diffuse rural areas by providing physical connections between members of the same community and the same culture.

3.2. Economic development and tourism

Several tribal representatives expressed hopes that trails could help bolster tourism and thereby aid in economic development. As tourist attractions, trail systems could lead visitors to reservation businesses and employ tribal member as guides, trail developers, educators or maintenance workers—thus deepening the economic benefits to the reservation. For many communities, linking Indian Country trails to other nearby trails is an important component of tourism development. A representative from the planning department of the Fond du Lac Band of Lake Superior Chippewa in Minnesota stated: “[we are] hoping to connect our [trail] system to existing trails outside the reservation; if we do that then we can start bringing people to the reservation, to our casino, to our businesses” (personal communication, January 2011). The Fond du Lac of Lake Superior Chippewa Reservation is one of many reservations in the Midwest using trails designed for motorized users to attract tourists to reservation businesses and to reap associated economic benefits; the Lac Courte Oreilles Reservation (Wisconsin), the Bay Mills Indian Community (Michigan), and the White Earth Indian Reservation (Minnesota) have also connected their reservations to regional snowmobile trails. The Fond du Lac Band of Lake Superior Chippewa plan to connect their trails to a nearby casino, offering another attraction for tourists to visit. Mike Swan of the White Earth Reservation in Minnesota spoke of a similar approach in their community: “snowmobile trails hook up with our tribal casino and hotel, and people stay right there and then get on the trails and go out for the day” (personal communication, January 25, 2011).

Trails centered around natural attractions, including scenery, songbirds, and native plants, can bring tourists and revenue to Indian Country communities. This may be as simple as charging an entry fee. The Game, Fish, and Parks Department of the Rosebud Reservation in South Dakota has implemented a program in which reservation visitors pay a fee for a “habitat stamp” that allows them to hunt on the reservation (E. Boyd). Similarly, the Santee Sioux Reservation in North Dakota charges a small fee for access to horseback riding trails, and the Navajo Nation in Arizona offers a recreational use permit for hikers and backpackers in their Little Colorado River Park (tribal representative, personal communication, January 2011). Expressing hopes for similar economic development opportunities, Mark Roundstone of Northern Cheyenne Reservation explained that “We have over 480 [species of] songbirds… it would be ideal if we could partner with an organization like the Audubon Society to see if they would help us develop what we have called nature trails. Birders don’t do any damage to
their environment, they come in the morning and evening, sit, and take pictures, and then they leave. We have always wanted to take advantage of this [economic] opportunity, but have not been able to” (personal communication, December 3, 2010).

The emergence of trails as an important economic opportunity stands in contrast to the findings of Shafer et al. (2000), who report economic development and new business growth as relatively unimportant QOL benefits derived from greenways. This discrepancy highlights the contextual nature of the QOL benefits conferred by greenways and trail systems. Schafer et al. conducted their research in an urban setting that presumably has a diverse economy. In contrast, Indian Country, with its rural setting and under-developed economy, could realize significant economic gains from developing trail systems for the purpose of tourism (Barr et al., 2012). In best-case scenarios, community-based tourism has increased local employment opportunities, spurred the growth of local business, and contributed to ecological restoration (e.g., Hipwell, 2007).

While various tribes have benefitted from tourism programs that share their cultural and natural features with guests, careful consideration must be given to the development of tourism. If done well, trails could provide an opportunity to educate visitors about natural history and local culture by incorporating educational signage or connecting trails to cultural centers. However, certain sites, particularly sacred areas, may not be appropriate for public access. Some American Indians fear that attracting outsiders who want to experience their lands, natural resources, and even cultures may detract from the purity of their traditions. A representative of the Rosebud Reservation in South Dakota commented that “there is a big difference between tourism and selling your culture; yes, we may have recreational opportunities and would like to entice people to come to the area, but we don’t want them disturbing our sacred sites” (E. Boyd). Though trails sometimes afford unwelcome access to sacred places, they could also prove a useful tool for controlling access to those same areas. For instance, on the Santee Sioux Reservation in North Dakota, off-reservation horseback riders are asked to report to the tribal offices, which inform them where it is appropriate to ride (tribal representative, personal communication, January 13, 2011). Appropriate signage can help prevent ecological damage caused by visitors straying off established paths (Bradford & McIntyre, 2007) and could also be used to protect cultural sites from public access. If trails are designed to avoid sensitive locations and are equipped with a clear system for route-finding, then they may mitigate unwanted access to certain areas. The use of trails to control or limit access to certain areas would allow Indian Country communities to realize the economic and QOL benefits of trail and recreation-based tourism without compromising culturally sensitive or sacred sites.

3.3. Transportation safety and health

Economic conditions on reservations also contribute to dangerous transportation scenarios. On the Northern Cheyenne Reservation, the high unemployment rate and lack of public transportation forces many people, unable to afford cars, to walk along roads or hitchhike between communities. A community representative noted that with pedestrians on the road, “safety issues arise because the roads are narrow and vehicles travel quickly.” Trails help mitigate these dangerous conditions. Safety was the driving force for the construction of the Haxton Way Pedestrian Trail on the Lummi Indian Reservation in Washington. The Haxton Way project manager noted that construction of trail system was motivated by “complete safety, utter safety...there have been too many deaths on that road.” In addition to reducing risk and improving safety, trails offer alternative transportation routes for people without cars or access to public transport. On the Winnebago Reservation in Nebraska, for instance, community members use trails as alternative transportation routes to go to work and to access social services. Similarly, the Fond du Lac Band of Lake Superior Chippewa in Minnesota is planning pedestrian and bike trails to provide an alternative for community members who currently walk along the shoulder of the highway to the administrative hub of the reservation. By implementing trail systems, Indian Country communities are addressing important safety concerns while also providing transportation routes that enable more equitable access to areas within the reservation.

The ability of trail systems to serve an important transportation function carries important implications of planning initiatives in Indian Country. While trails and greenways serving as a means of transportation are relatively unimportant to QOL in urban areas (Shafer et al., 2000), trails and greenways may play a different role in rural areas. Studies have found that mobility is a more important factor in rural QOL than car ownership (Kolodinsky et al., 2013). This finding has positive implications for economically disadvantaged communities, such as those in Indian Country, whose residents may not be able to afford personal vehicles. Planning initiatives that focus on building “walkable” communities, through the incorporation of pedestrian and bike trails, sidewalks, and greenways, will better serve Indian Country communities than planning initiatives focused on individual motorized transportation. Safe routes for foot and non-motorized transportation will facilitate the development of community connectivity and provide access to businesses, human services, and community activities. By doing so, trail and greenway transportation has the potential to make a substantial positive impact on Indian Country QOL.

Walking trails have also been developed with the goal of improving public health. Mark Roundstone of Northern Cheyenne Reservation explained that “the main reason walking trails were developed was because of the high rates of diabetes, obesity and heart disease” (M. Roundstone). In an effort to reduce disease incidence, walking trails were built at the Indian Health Services office on Northern Cheyenne Reservation. Employees, who often use the trails during lunchtime, are compensated for their exercise time. On the Blackfeet Reservation in Montana, widely used walking trails address both health and safety concerns, by providing safe recreation areas away from the highway that are used by a population with a high prevalence of diabetes. Public health challenges such as diabetes and obesity have inspired an increasing number of tribes, including Rocky Boy Reservation in Montana and Winnebago Reservation in Nebraska, to invest in health-oriented community trail systems.

However, the economic challenges that characterize many reservations often hamper public health initiatives such as trail development. A representative from the Lac Courte Oreilles Reservation in Wisconsin lamented: “I don’t know how on a reservation you can expect people to be out exercising or hiking when their income levels are so low that they have to spend a lot of their time working...so that they can provide food. We plan a lot of activities like canoeing, and...people can’t go because they have children at home” (tribal representative, personal communication, January 7, 2011). Trails are by no means a panacea solution to the social challenges of Indian Country communities. To make the greatest possible contribution to QOL, trail-based projects must incorporate input from trail users and work in tandem with other initiatives that will enable and encourage residents to use trails (Shafer et al., 2000). Among health promotion actions, however, trail systems remain a highly cost-effective starting point for reservation communities. Public health research suggests “for every $1 investment in trails intended for physical activity, there was an estimated $2.94 in direct medical benefits” (Wang et al., 2005). Pedestrian or bicycle trails also enable youth to safely develop healthy lifestyle habits early in life. Lac Courte Oreilles Ojibwa Community College in
Wisconsin recently extended existing nature trails with the intent of promoting healthy, traditional lifestyles through activities such as snowshoeing. Health-related education is particularly important in Indian Country, given that low-income, rural populations are among the demographic groups least likely to meet exercise recommendations (Parks et al., 2003).

3.4. Funding and cooperative trail development

Despite the many benefits to be gained from trail systems, funding trail development in Indian Country remains a significant challenge. Many interviewees noted that their communities are planning trails or have the desire to do so, but nearly half cited funding as a major obstacle. Plans for educational trails in the Bay Mills Indian Community in Michigan have been forestalled by lack of funds. According to a representative of the Northern Cheyenne Reservation in Montana, the obstacles to funding are systemic in nature: “we don’t receive any kind of state or federal funding for… utilities on the reservation… Unlike off reservation communities, reservations do not receive state funding because [as sovereign nations] they do not pay taxes to the state” (M. Roundstone). Most federal recreation funds are split, according to various formulas, between the 50 states. Since reservation communities do not pay state taxes, states have little incentive to use their ration of federal funding on reservation projects. However, funding opportunities do exist. Multiple interviewees cited the Safe Accountable Flexible Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), federal transportation funds with earmarks for reservations; the 2009 American Reinvestment and Recovery Act (ARRA); and key collaborative partnerships as important funding sources. The Winnebago Tribe of Nebraska used ARRA funds to construct a mile long bicycle/pedestrian trail on their reservation. Additionally, a representative of the Lummi Indian Reservation in Washington noted that ARRA helped to fund the construction of the Haxton Way Pedestrian Trail. Many interviewees also cited state transportation enhancement programs, which are federal funds allocated to states with the purpose of strengthening the cultural, esthetic, or environmental value of the nation’s transportation system. However, each state allocates these funds differently.

Once funding is secured, American Indian communities must be creative in managing their resources. Many do so by leveraging partnerships with volunteer groups and government agencies. Communities collaborate with a wide array of groups, including community volunteers, church groups, Boy Scout troops, county governments, the Fish and Wildlife Service, college extensions, tribal and non-tribal health service departments, the Army Corps of Engineers, the BIA, and state agencies. However, such partnerships are not always easy to develop.

The land tenure patterns in Indian Country also pose challenges to trail development. A representative from the Rocky Boy’s Reservation in Montana expressed the frustrations derived from fragmented ownership when he spoke of accessing an important sacred site: “Before we can get to the Sweetgrass Hills, we have to ask private owners if we can go through their land to get over there. I often wonder, they say ‘freedom of religion’, but we have to ask to get to these places… that makes it hard on us Native Americans… If it was up to me, I’d make sure there was a [trail] that goes directly up there so we wouldn’t be harassed by anybody when we want to pray to the creator in the places where our elders [prayed] before the coming of the visitors that come from different parts of the world… they should respect our sacred sites” (tribal representative, personal interview, January 11, 2011).

Although numerous interviewees cited land tenure as a challenge to trail development, only one attributed the failure of a trail development project to land tenure. Building trails often necessitates negotiation with and the cooperation of various landowners, as the Inupiat of the North Slope Borough in Alaska have experienced. Robert Suydam of the North Slope municipal government described the trail planning process: “Since most of the land here is near Barrow—which is where we’ve installed [constructed trail segments] so far—is private land, we need to jump through hoops to get permission... and to make sure we’re working with the users to make sure we’re putting it in the right place” (personal communication, February 11, 2011). Personal relationships and partnerships have helped negotiate the challenges of complex land tenure patterns. Robert Pell, serving the Lummi Reservation in Washington, reached out to individual landowners: “There were a lot of personal conversations we had with the landowners... they had a lot of personal connections with deaths and lack of personal safety along those roads” (personal communication, January 2011). Leveraging personal connections to motivate landowner cooperation and participation helped the trail project move forward and may provide a positive example of how future negotiations might be handled on other reservations.

Despite these obstacles, the planning process associated with trails and greenways may itself increase social connectivity by encouraging and requiring interaction among different parties (Jongman et al., 2004). Additionally, partnerships with state agencies and NGOs have been recognized as effective channels through which to pursue both trail development and community-based tourism (Sproule, 1996). Greenways commonly traverse areas with numerous landowners. Other greenway planning efforts have shown that partnerships, public involvement, and regional coordination are essential to successful multi-jurisdictional greenway projects (Ryan, Fábos, & Allan, 2006).

4. Conclusions

Trails in Indian Country confer important QOL benefits to trail users and tribal communities. These benefits are derived from the unique position of Indian Country trails as elements of both the physical and the cultural landscape. By improving tribal member access to culturally significant sites and natural resources, trails serve as a conduit to maintain cultural practices. Trails in Indian Country may provide particular support for ecologically based practices, such as those involving harvest-based relationships with plants and animals. By providing an educational space in which to share traditions with younger generations, trails help to protect cultural heritage and promote cultural continuity. While trails and greenways often afford access to culturally and historically important sites, their role in Indian Country suggest that trails and greenways can be used to strengthen cultural heritage and values for historically and currently marginalized and disadvantaged cultural groups. Trails provide a space in which culture is shared, protected, and strengthened, conferring important QOL benefits to American Indian communities. These cultural dimensions of trails in Indian Country provide important means of continuing tribal cultural practices and knowledge. The cultural benefits of trails may be more significant in Indian Country than in other communities that are less politically and economically marginalized, or in communities for which culture is not as strongly tied to the physical landscape.

In strengthening culture, trails in Indian Country also strengthen community. Trail systems have the power to connect American Indians not only to their land and their culture, but also to one another across their land. As rural areas with spatially diffuse populations and limited economic means, reservations have limited physical infrastructure to connect disparate community members. This physical distance is compounded by land tenure patterns, such as checkerboarding and fractured ownership that exacerbate social
and cultural fragmentation. Greenways have long been recognized as a means to repair ecological fragmentation and build ecological connectivity. However, greenways also create social and cultural connections across a socially and culturally fragmented landscape. While the role of greenways as ecological corridors may be particularly important in urban areas characterized by built landscapes, the role of greenways as cultural corridors is particularly important in rural areas and marginalized communities. This underscores the importance of greenways as physical elements of the social and cultural landscape.

As part of the physical landscape, trails in Indian Country provide numerous QOL benefits. Many of these benefits address major social challenges facing Indian Country communities. Trails designed and used for tourism have the potential to spur much-needed economic development, while also building positive relationships with nearby communities. By physically connecting community members and services, trails provide important routes for rural transportation, access to schools, and social services. In doing so, trails also address key safety and equity concerns that have negatively impacted QOL in Indian Country. As in many other areas, trails provide space and pleasant places for physical recreation and exercise necessary to address conditions such as obesity and diabetes. These important QOL benefits are relevant not only to Indian Country, but also to the many rural communities facing similar challenges.

The challenges facing Indian Country communities are inherently interrelated. Poverty, economic under-development, and a lack of safe or affordable transportation options all compound social and cultural isolation created by spatially disparate populations and fragmented land tenure. The interrelation of these challenges suggests a need for integrated policy responses. Trails offer a relatively low-cost option to address some of the major QOL challenges in Indian Country. However, not all trails are developed or used for multiple purposes. Trails should be designed to explicitly account for multiple aspects of quality of life (Shafer et al., 2000). Moreover, to be most effective, trails should be implemented in tandem with other social initiatives. This study of trails in Indian Country has implications that extend beyond the United States. Indigenous peoples around the globe are faced with many of the same QOL issues highlighted in this paper, including cultural marginalization, complex land tenure systems, and economic under-development. Although the differences in the social, cultural, economic, and political conditions of indigenous communities worldwide are significant, trails and greenways may provide an avenue for QOL enhancement in indigenous communities outside the United States. Equally important, these results indicate that trails can provide significant QOL benefits for marginalized cultures, economically disadvantaged communities, and rural areas. In addition to surveys such as ours, case studies of specific trail projects are needed to build models for successful trail development. A deeper and more comprehensive understanding of trails on indigenous land could contribute directly to stronger and healthier indigenous communities worldwide.

References

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