

A Brief Environmental Profile of Turner Ranches



INTRODUCTION

In 1989, a well-known media mogul and billionaire from Atlanta, Georgia purchased just over 100,000 acres of some of the most prized land in Southwest Montana. This was his second land purchase in the state, and would eventually become a key part of a grand ecological and agricultural experiment unrivaled in scale or ambition. Ted Turner would, over the next few decades, become the largest private land holder in the US, raise commercial bison herds which far outnumber the number of bison in the wild, complete the largest native trout restoration project in the lower 48 states, and protect or restore habitat for numerous other endangered or threatened species (Wilkinson 2013, Kossler 2014).

Turner Enterprises, Inc. (TEI) is the private company that manages these extensive land, livestock, and infrastructure holdings. They currently oversee more than two million acres and 50,000 bison in the Western US. The impact of such large operations is undeniably huge. TEI has lead the way in both creating and defining the bison industry (Wilkinson 2013, Lukla 2006). In conjunction with their ranching operations, TEI has also sought to conserve and restore vast acreages of vital wildlife habitat on their ranches. An in depth examination of this company and their progressive experiment provides an opportunity to not only assess the environmental

impact of their work, but also to gain insight into the beginnings of a paradigm shift in land management practices in the West.

LITERATURE REVIEW

A broad and multidisciplinary review of literature was conducted in order to gain context for the environmental evaluation of TEI. Historical studies were examined to provide an understanding of historical land use patterns and relationships between humans and bison. Sociological literature provided various perspectives on how modern ranchers and consumers interact with bison and the broader environment. Ecological studies illuminated the important interactions between bison and other non-human species and the physical world. Research in each of these areas was critical to gaining a deep understanding of how TEI interacts with, and alters with the environment.

Bison are widely recognized by both sociologists and ecologists as a species of huge importance in the prairie socio-ecosystems they historically inhabited (Knapp, Blair, Briggs, and Collins 1999; Fuhlendorf and Engle 2001; Soule, Estes, Miller, and Honnold 2005; Moloney 2011; Mann 2002). The arrival of European Americans and subsequent slaughter of countless bison upended Native Americans' traditional lifestyle, disrupted ecosystem functions, and allowed broad swaths of the American West to be sold to European American settlers who began farming or ranching. This drastically altered the landscape as vast acreages were plowed and mono-cropped or fenced in and trampled by cattle (Freilich, Duda, Freeman, and Cafaro 2003). Recent archeological and ecological research suggests that Native Americans may also have manipulated landscapes on a large scale to "grow bumper crops of elk, deer and bison

(Mann 2002).” There is no doubt, then, that humans have played a large role in shaping the American West across the spans of history.

Settling of the West by European Americans resulted in the importation of drastically new and different ecosystem management practices. Bison were killed to the brink of extinction and replaced with domestic cattle, grasses were plowed under and replaced with grains, open range was fenced in, and massive amounts of water were diverted or impounded. Cattle ranchers also decimated predator and rodent populations, physically fragmented ecosystems, introduced herbicides and invasive species, and prevented fires (Freilich et al. 2003). This allowed short term productive gains in cattle output, but negatively impacted a broad range of wildlife and general ecosystem conditions (Ward 1993; Freilich et al. 2003).

The American West was defined for more than a century by resource extraction and land reclamation, but in recent decades, a transition from an extractive economy to a service based economy has occurred. This is once again changing paradigms about rangeland management, which has brought tension back to the social landscape (Robbins and Meehan 2009). Recognition of the problems produced by the agricultural treadmill of production has led some landowners and academics to rethink environmental management strategies. In particular, reintroduction of bison has been an area of particularly heated discussion (Ward 1993; Popper and Popper 1994; Fuhlendorf and Engle 2001; Maczko, Tanaka, Smith, Garretson-Weibel, Hamilton, Mitchell, Fults, Stanley, Loper, Bryant, and Brite, Jr. 2012; Truett, Phillips, Kunkel, and Miller 2001).

The reintroduction of bison has received a lot of attention for several reasons. Ecologists point towards the species' important role in prairie ecosystems, highlighting mutualistic relationships with numerous other species, including several endangered species. Ecologists view bison as a keystone species, an animal or plant that directly affects the well-being of numerous other species (Knapp et al. 1999). Such keystone species are vital for healthy ecosystems. In filling this role, bison help maintain or increase heterogeneity on rangelands, which in turn increases ecosystem resilience (Knapp, Blair, Briggs, and Collins 1999; Fuhlendorf and Engle 2001; Truett 2001). Many researchers also recognize the historical importance of bison to Native Americans as both a resource and cultural icon (Moloney 2008). Efforts to return bison to the prairie to serve these functions once again are underway on several Native American reservations (Popper and Popper 1994). Additionally, some ranchers have begun raising bison for commercial interests, as the market for bison meat has expanded in recent years (Wilkinson 2013; Kossler 2014).

Bison ranching has gained popularity largely due to ecological and human health reasons. Bison are well adapted to the North American Plains, so they require less active management than cattle. Food and water sources can be a problem for cattle during winter months, but bison consume a broader range of grasses, are willing to dig through snow to access food, and can utilize snow as a water source (Feist 2000). Additionally, bison forage farther from water sources, and therefore degrade waterways less than cattle (Kohl, Krausman, Kunkel, and Williams 2013). Some consumers prefer bison meat to beef because of real or perceived health benefits. Bison meat typically has low fat, low cholesterol and high protein content compared to beef, and most bison are often raised without the use of antibiotics or

growth hormones Most bison, however, are grain fed in feedlots before slaughter, although grass-fed only bison meat is available (Rule, Broughton, Shellito and Maiorano 2002; Lukla 2006; Wilkinson 2013; Kossler 2014). Despite the documented ecological and health benefits of bison, and bison meat remains a small fraction of the US food industry. *Annual* consumption of bison is less than half the *daily* consumption of cattle (Wilkinson 2013).

Opposition to or ambivalence towards bison is common in the ranching community (Wilkinson 2013, Kossler 2014). Ranchers are generally conservative and slow to change management practices (Burton 2004, Richards, Lawrence and Kelly 2005). Strong traditions of cattle ranching, perceived costs associated with both bison ranching, and ambivalence towards academics may prevent ranchers from electing to raise bison (Popper and Popper 1994; Richards et al. 2005; Wilkinson 2013). Ranchers generally hold production oriented paradigms, despite years of academic researches proclaiming the arrival of post-productive agriculture in rich countries (Mather, Hill and Nijnik 2006, Lukla 2006). This paradox led to Lukla's "hybrid agriculture" theory, which recognizes the dualism at play in the bison industry. Here, we witness the combination of a historically non-domesticated species with limited production-oriented agricultural strategies. The result is a theoretical middle-ground, where the value of non-human species is recognized, yet traditional pastoralist practices and paradigms are preserved to some degree (Lukla 2006). This creates a spectrum of viewpoints that effectively bridge the gap between the Human Exceptionalism Paradigm (HEP) and Deep Ecology.

Interactions between bison, humans, and the environment are complex and ever changing. Over the last several hundred years, drastic changes to the environment have

occurred, and human relationships with bison have changed too. TEI is once again changing how humans relate to bison, and therefore is worthy of deeper investigation.

METHODS

In an effort to gain insight into how TEI operates its ranches and the effect the business has on the environment, I utilized a multifaceted research approach. A site visit was conducted to examine the effects of bison ranching on aquatic habitat and the many species that rely on such habitat. Additionally, personal interviews were conducted with individuals who have spent much of their careers working in the fields of ranching and conservation. Finally, aerial imagery was gathered to track the effects of various human actions on the physical landscape over the course of nearly 60 years.

Site Visit

On September 6, 2014, a tour of the Flying D Ranch was conducted with experienced fluvial geomorphologists. The Spanish Creek area of the ranch was examined thoroughly; although this represents just a small portion of the ranch, it is of high ecological value due to the importance of the stream in providing trout and beaver habitat, and the presence of bison grazing areas nearby. Several reaches of the stream were examined in detail, by walking the banks or across the channel. Flora and fauna interactions surrounding the stream corridor were observed. Spanish Creek was assumed to be a 'typical' mountain stream on a TEI ranch, as it has not been managed significantly differently than other stream corridors, and contains a range of habitat zones.

Aerial Imagery

Aerial imagery was collected from several sources to examine the effects of development and redevelopment in the last 60 years. Data was gathered from the Flying D Ranch area, and Lone Peak and Pioneer Mountain area to be utilized for comparative purposes. Similar scales were utilized, and images have been cropped to similar aspect ratios for greater clarity.

Personal Interview

The General Manager of Western Properties at TEI, Mark Kossler was interviewed to gain further insight into the company's ranching operations. Kossler managed the Flying D Ranch for TEI for nearly a decade before moving to New Mexico to manage the Vermejo Park Ranch, another holding of TEI. He now oversees management of all TEI's western properties, which consists of 16 ranches totaling approximately 1.8 million acres (Kossler, 2014). This interview was conducted on November 10, 2014 at TEI's western offices in Bozeman, Montana. The general interview guide approach was employed for this interview (Turner III 2010), allowing flexibility of questions and phrasing, which was selected in order to create a more personable atmosphere, and to allow further investigation of topics which emerged through the course of the conversation.

RESULTS

Site Visit

Access to a portion of TEI's ranching land provided a valuable firsthand experience of the impact of ranching, and a perspective on what can be done to mitigate or eliminate those impacts. Impacts of ranching were causing habitat degradation in many areas. There were, however, also many areas that exhibited high quality habitat. Figure 1, below, shows a figure from Byington, Moss and Westhusin's 2014 study, which found reaches on Spanish Creek of both low and high riparian ecosystem health, shown in red and green respectively. The same study also found that signs of beaver activity on Spanish Creek were strongly positively correlated with riparian health.



Figure 1: Riparian Health Heat Map (Byington, Moss, and Westhusin 2014)

Aerial Imagery

Aerial photographs (Figures 3-10) collected from nearby sites reveal contrasting development patterns that typify Robbins and Meehan's "New West." In the Lone Peak and Pioneer Mountain area, the photographs show an ecologically connected landscape in 1947, which is clear cut in areas to create Big Sky ski area by 1976. By 1995, photographs show expansion of Big Sky, and extensive clear cutting of private land adjacent to the ski area. Finally, by 2011, development of the Yellowstone Club has resulted in the creation of entirely new ski runs, the development of roads to connect dozens of expansive homes, and the creation of a golf course. The landscape is almost unrecognizable, if not for the rocky ridges of Lone Peak and Pioneer Mountain.

In contrast, at the Flying D, we see little development at all. Photographs show the emergence of stark fence lines in 1976 which are challenging to find by 1995. A pond has also been constructed during this time in the center-right area of the photos. The photographs also show minor road development, and slight changes in the flow route of Spanish Creek, which runs through the center of the images.

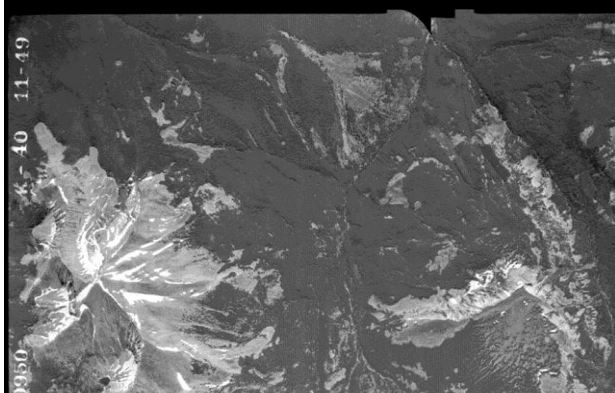


Figure 2: Lone Peak and Pioneer Mountain, 1947 (USBR 1947a)

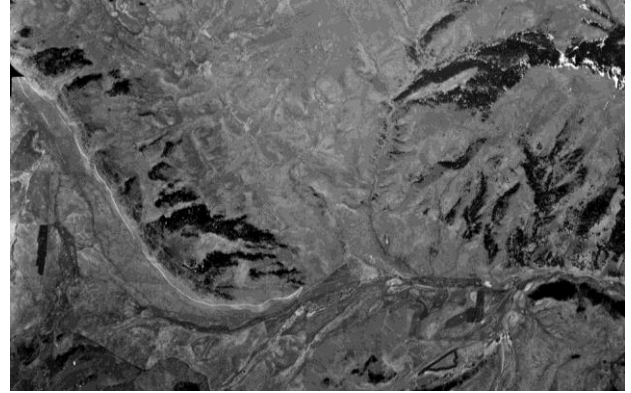


Figure 5: Flying D Ranch, 1947 (USBR 1947b)

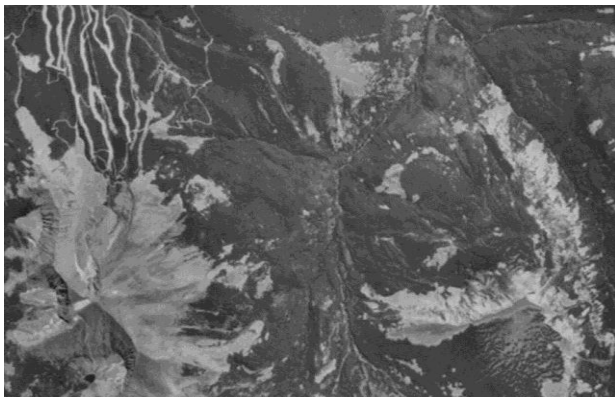


Figure 3: Lone Peak and Pioneer Mountain, 1976 (USGS 1976a)

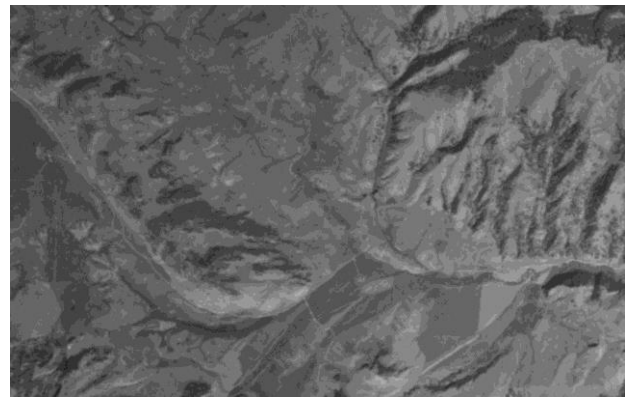


Figure 6: Flying D Ranch, 1976 (USGS 1976b)

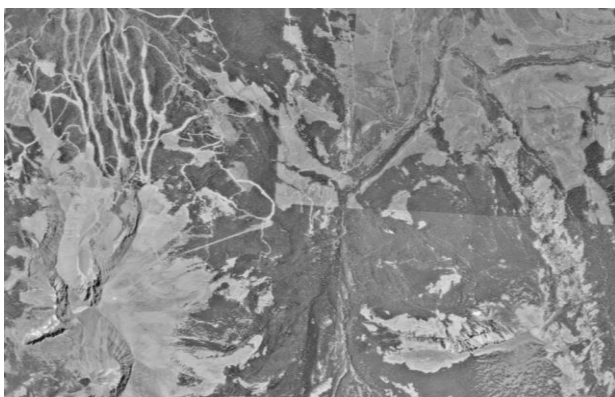


Figure 4: Lone Peak and Pioneer Mountain, 1995 (USGS 1995a)

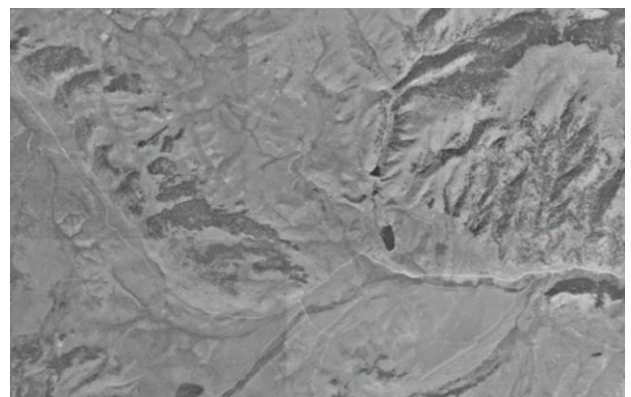


Figure 7: Flying D Ranch, 1995 (USGS 1995b)



Figure 8: Lone Peak and Pioneer Mountain, 2011 (USDA 2011a)



Figure 9: Flying D Ranch, 2011 (USDA 2011b)

Personal Interviews

An interview with Mark Kossler provided insight into the attitudes, actions, impacts and sustainability of TEI. The company has adopted the New Ecological Paradigm (NEP), but remains heavily influenced by capitalist economic systems. Numerous projects of ecological value have been completed, including numerous stream restorations, and species reintroductions or removals. Additionally, the company has ingrained ecological responsibility in their day-to-day decision making processes. These actions have proved higher quality habitat for numerous species, including humans. TEI has also become a model for sustainable ranching, taking a long-term view of operational planning and management. Part of this sustainability effort includes remaining profitable so the ranches are not dependent on outside revenue sources. In many ways, TEI exhibits the paradigm shift called for by Smith, Lopes and Carrejo.

The paradigm adopted by Mark Kossler and TEI is highly progressive, especially for the ranching community. TEI recognizes the interconnectedness of species, and their intrinsic value. According to Kossler, “Most of ranches Ted bought were bought either for recreation, or to run bison on them, or they have conservation attributes that he was interested in. And so, almost

every ranch has got something it that concerns conservation - [something] that could be a [conservation] project.” These three interests of Turner’s; recreation, bison and conservation, are so interwoven it can be challenging to differentiate them at time. Recreational hunting and fishing, horseback riding, hiking, and raising bison all necessitate some degree of environmental protection and conservation of species of interest. At the same time, TEI’s ranching business remains a staunchly capitalist enterprise. The ranches are run for profit, and are financially separate from Turner’s charitable efforts. According to Turner himself, balancing the economic and ecological is a challenge, but the two are not mutually exclusive. In his introduction to Wilkinson’s *Last Stand*, Turner states, “On my lands, I have set out to prove that the polemic of environment versus economy is a false dichotomy.” This paradigm has allowed TEI to confront Schnaiberg’s “Treadmill of Production” and Foster’s “Absolute General Law of Environmental Degradation Under Capitalism,” and has provided the optimism required to undertake grand environmental projects.

The ranches of TEI have participated in numerous ecological restoration projects. On the Flying D, they worked with the State of Montana on an 8-year project to restore native trout populations on Cherry Creek. At the time, this was the largest native trout restoration effort in the lower United States, but TEI has since begun an even larger project in New Mexico, where they are restoring 120 miles of stream. They have also worked to restore populations of many species, many of which are endangered or threatened, including tortoises, ferrets, prairie dogs, swift foxes, wolves, elk and condors. It is important to note here that much of this work has been funded through partnerships with a variety of state and local governments and non-

profits, including the Turner Endangered Species Fund. The ranches are heavily involved in this work, but they are not the sole providers of financial resources or ecological expertise.

The main focus of TEI's ranchers is, of course, raising bison for slaughter. Kossler describes his work, saying, "The reality is we're in the grass business. We manage habitat – a good home for lots of things, bison being one of them. And yes, our end product is bison." One of the most important aspects of managing the ranch habitat is attention to weeds. Kossler says;

"In a perfect world we wouldn't do anything with noxious or invasive weeds, but the reality of it is that they're here, and they have the potential to significantly change ecosystems and habitat; so ranch by ranch we have varying levels of weed control for noxious or invasive weeds. We are proactive, many of these weeds we're going to live with long term, but we don't want them to take over more acreage than they have or to crowd out more of the native vegetation. We look at biological control all we can - probably longer term ways to live with noxious weeds than chemicals - although we certainly do use chemicals."

Water is another key resource that TEI ranches actively manage. This has proved challenging, as water is a vital resource for nearly every species present at TEI's ranches. TEI ranchers' water usage is constrained by legal limitations, Kossler explains;

"The reality is that water rights are a property right. The way our water laws are set up, you have to use the water right to have it . . . In Montana we have converted some of our water rights to [be] "instream [water rights]". Montana changed [water laws] so that you can

maintain those water rights using it for instream, recognizing that it's a beneficial use . . . Other places we've continued to irrigate and use water to maintain those water rights."

Another situation where TEI has encountered legal limitations was a natural gas development project on a ranch in New Mexico. Land rights are sold separately from mineral rights in the state, so when Turner purchased the 920 square mile Vermejo Park Ranch, Penzoil Corp. retained mineral and gas extraction rights. These rights were later sold to another company, who developed 970 gas wells on the property. Kossler says, "[W]e couldn't stop [development of the gas wells] from happening, so the best thing we could do was maintain control of how it was done." A clause in the land purchase contract that gave TEI some power in dictating development methods allowed TEI to require environmentally sensitive development, which, according to Kossler, has preserved important elk habitat and kept the elk on the ranch.

TEI ranches are also attentive to energy usage concerns. Kossler says TEI is monitoring energy usage and examining options to reduce usage and increase energy efficiency. Older systems are being updated with more energy efficient ones in many cases. TEI ranches have also installed solar panels; Kossler says the Vermejo Park Ranch is run "almost totally on solar energy." The Vermejo Park Ranch is also the site of a 320 acre, 30 megawatt solar facility that is part of Turner Renewable Energy, another division of TEI.

It is clear from speaking with Kossler that TEI ranches have a large impact on the environment. Numerous restoration projects have been undertaken with the help of a number of different partnering groups. The realities raising bison have influenced management decisions surrounding natural resource consumption, and legal constraints have constrained

management decisions at times. By situating this information gathered from Kossler within a broader narrative, a greater understanding of the environmental impact of TEI's ranches can be gained.

DISCUSSION

The wide range of parties interested in bison has created tension and conflict over management practices. People see bison as a romantic icon of the old west, a cultural icon of indigenous peoples, a valuable resource, a nuisance, and/or a keystone species. Bison cannot simultaneously fill all of these roles, however. The romantic "wild" perception of bison is undermined when they are confined by fences in feedlot and shipped for slaughter. At the same time, demand for bison meat is rising (Lukla 2006; Wilkinson 2013). TEI ranches seek satisfy this demand in an ecologically sensitive manner.

Aerial imagery shows that the Flying D Ranch, where approximately 10% of TEI bison reside, has maintained or increased habitat connectivity over the last 60 years. In contrast, at Lone Peak and Pioneer Mountain show extensive habitat fragmentation and resource consumption. This contrast is particularly striking, because Turner nearly acquired much of the Lone Peak and Pioneer Mountain land pictured shortly after he purchased the Flying D Ranch, but the deal fell through, and the land was instead sold to Tim Blixseth (Wilkinson, 2013). The contrast in development allows us to see two alternatives for land management.

It is clear that TEI ranches are far more environmentally sensitive than Blixseth's development. In Kossler's view, the fragmentation of habitats through development shown

here is “the biggest thing affecting the West.” Development of ranchettes and McMansions is resource intensive and degrades broad swaths of important habitat. The presence of bison and cattle, while it does negatively affect wildlife habitat in some ways, is significantly less disruptive to wildlife than development of homes (Robbins and Meehan 2009; Ware, Terletzky, and Alder 2014).

TEI has created an environmentally sensitive ethic by creating a space where alternative visions can be realized. Huge restoration projects have been envisioned, planned, and realized. Species on the brink of extinction have gained valuable habitat with the help of TEI’s ranches. While much of this work is the result of collaboration with other groups, little of it would have been possible without the ranches and their staff. All of this stems, in part, from a paradigm shift among TEI employees. They have adopted the NEP, and place themselves as one species of many in a global ecological system where all species are interconnected. TEI also expresses the sustainability paradigm shift that Smith et al. call for. Kossler says, “Ted’s view is much longer [than many land developers’]. He creates lasting values that are based on the conservation value of a property then enhances them over time.” This long term view and enhancement of conservation value provide an ideological methodology to escape the cycles of destruction Smith et al. reference. The adoption of these paradigms makes TEI managers more progressive than most other ranchers (Burton 2004, Richards, Lawrence and Kelly 2005).

A site visit and conversation with TEI’s western properties manager Mark Kossler revealed many negative environmental impacts as well. Streams on TEI properties are degraded in many places; the company also consumes energy, produces greenhouse gasses, uses

pesticides frequently, and diverts water from natural flow paths. These issues stem from a combination of historical factors, legal constraints, and conscious management decisions. Viewing TEI as an actor confined by existing power structures and historical contexts, TEI has pushed the boundary of what is possible. TEI ranches have brought back many species that ecologists value for their importance in maintaining healthy ecosystems (Knapp et al. 1999; Truett et al. 2001; Collen and Gibson 2001; Stoffyn-Egli and Willison 2011). Managers have addressed each of Freilich et al.'s six points of critique regarding the negative ecological effects of ranching. This puts TEI on the leading edge of ecologically sensitive ranch management. Sociologists have been debating the shift to post-productivism for years (Ward 1993; Burton, 2004; Mather et al. 2006; Lukla 2006), but TEI shows such a shift is indeed happening. In Turner's words, "I'm not interested in maximizing profit at the expense of other values (Wilkinson 2013)." TEI's ranching operations are far from benign, but they are an improvement on existing land management practices both ecologically and sociologically.

Change to social systems comes slowly and incrementally. With this in mind, TEI seems, from an environmental perspective, to be moving slowly and incrementally in a direction that preserves habitat for human and non-human species. The ranches have, while staying economically profitable, provided high quality habitat for wildlife, actively facilitated endangered or threatened species recovery, and provided quality food for human consumption. In this light, we see TEI as an imperfect system, but one that improves on the current ranching model.

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