

RANCH MANAGEMENT AND OWNERSHIP DYNAMICS IN THE NORTHERN GREAT PLAINS

A REPORT TO THE WORLD WILDLIFE FUND'S SUSTAINABLE RANCHING INITIATIVE

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1. INTRODUCTION

This report responds to the World Wildlife Fund’s interest in assessing and analyzing ranch management and ownership trends in the Northern Great Plains (NGP). The NGP is a priority area for the World Wildlife Fund due to the extent of intact grasslands in the region—its 182 million acres is one of four major temperate grasslands in the world. Energy development, expansion of crop production, and fragmentation of communities and land ownership all represent threats to the resilience of the grasslands and ranching-based communities. In response, WWF established the Sustainable Ranching Initiative (SRI), a program focused on supporting ranchlands with the goal of encouraging practices that limit further losses and fragmentation of the grassland ecosystem.

As the SRI grows and develops, WWF seek data and analysis that address the ways that ranchers are encountering and responding to emerging opportunities and challenges at the nexus of market, policy, and environmental trends. In response, we developed this assessment of current trends in ranch ownership and management with attention to drivers of change and responses from a variety of types of ranch operations. Specifically, we considered four questions about ranching in the U.S. portion of the NGP:

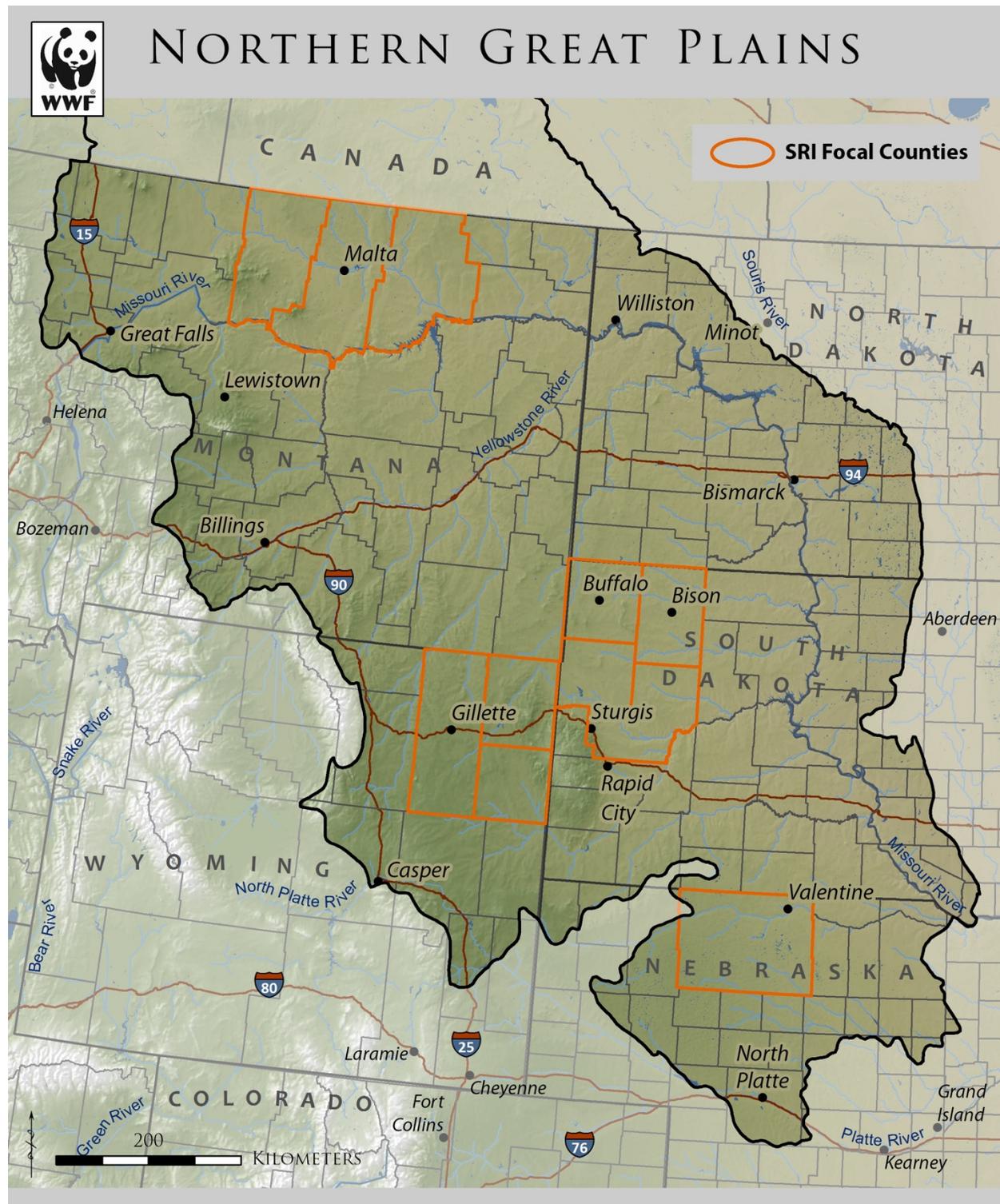
- What is the broader socioeconomic and land ownership context for ranching in the NGP?
- What is the range of ranching operational strategies in the NGP?
- What constraints and opportunities are most significant to ranchers in the current market and policy environment with regard to the resilience of their operations?
- How does the nature of threat and opportunity differ for distinct types of ranch operations in the NGP region? What are the corresponding implications for SRI strategies?

To answer these questions, this assessment pursued a mixed methods research approach. A broad survey of socioeconomic trends based on publicly available data describes the context for ranching in the 35 counties that make up the U.S. portion of the NGP. A focused assessment of land tenure dynamics based in cadastral and land sales data in selected counties provides insights into patterns of ownership among large ranches and rates of land ownership change. In-depth interviews with ranchers and local experts in seven counties selected from core SRI areas

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in Nebraska, South Dakota and Montana sought detailed information on how ranchers understand and respond to the current environment. Lastly, we conducted a modified Delphi Survey to vet and refine key findings from this report with regard to the impacts of possible strategies. Six experts in ranch economics and policy reviewed and critiqued a set of scenarios developed in collaboration with the SRI team.

This report is organized as follows. Section 2 briefly reviews previous research addressing threats and opportunities facing ranchers and approaches to categorizing ranch operations. Section 3 addresses the regional socioeconomic context and trends in land tenure and includes a discussion of approaches to monitoring and assessing community resilience. Section 4 reports from the field-based assessment of ranching in the NGP. It includes a discussion of the range of operational strategies in the NGP and the constraints, opportunities, and challenges identified by ranchers. Section 5 summarizes the results of exploring future scenarios with regional experts. While implications for conservation are highlighted throughout the report, the final section summarizes those observations.



Map 1. SRI Focal Counties

2. LITERATURE AND BACKGROUND

We conducted a brief literature review to ground the research approach in scholarship relevant to questions of drivers of land conversion, transition and succession dynamics and typologies of agricultural operators, and rural community resilience.

LAND CONVERSION

Land price, commodity markets, federal subsidies, soil quality, water availability, development pressures, and individual preferences and values are primary factors influencing conversion of grassland to crop production in the Northern Great Plains. According to Janssen et al (2015) the value of range and pasture land in South Dakota has increased at double-digit rates in four of the last six years. Cropland values have fallen off by 4.8% over the last two years, likely due to recent declines in crop commodity prices. The recent drop-off, which contrasts sharply with steep gains of the mid to late 2000's, may ease pressure on grass and rangeland going forward. High crop profitability during the last decade appears to have had the greatest impact on the development of marginal crop land. Research on a potential bubble in the Iowa agricultural land market (Olsen and Stokes 2014) found increasing prices and competition for more marginal agricultural land, but not on the better and best quality farmland. This was attributed to the lower relative price of marginal farmland that encouraged a greater number of bidders, resulting in a spike in prices. A similar dynamic, though attributable to different factors, was observed throughout the eastern portion of the Midwest. Emil and Greene (2014), utilizing a land use/land cover analysis, observed that suburban expansion in the eastern Midwest correlated with rangeland loss in the western portion of the Midwest. They noted this newly converted cropland was agriculturally marginal and heavily reliant on irrigation.

Beside commodity prices, crop subsidies and insurance programs affect whether land marginal for crop production is converted or not. Hongli et al (2012) assert that literature on the land-use effects of federal subsidy programs has not adequately analyzed areas where potential land-use changes may have the largest impact: arid, marginal land on the edge of the western Great Plains. Focused on 17 counties in central and north central South Dakota, they designed simulations using farm-level data to study the effects of eliminating crop subsidies and the effects of Sodsaver on potential crop conversion. They concluded that land at risk for conversion as a function of crop subsidies is agriculturally marginal with low-yield productivity. Lower prices

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and crop insurance attract speculative agricultural investment and put these marginal lands at risk for conversion. A USDA-ERS report (Classen 2011), utilizing county-level data for all 77 counties in South Dakota, found that farm programs have a “modest but measurable effect” on grass and rangeland conversion in South Dakota. There is general agreement (Classen et al 2011; Sylvester et al; Turner et al 2014) that the current structure and balance of farm and crop subsidies favors crop production over cattle production. And when coupled to the local geographies of soil, water, climate, land use and social histories, federal conservation and subsidy programs often prove inadequate to the task of creating outcomes that benefit local ranching communities and ecologies. Investigating how individual and community values interact with land use decision-making, crop conversion, and conservation outcomes, Turner and Turner et al (2014a,b) noted distinct differences in the land ethics of ranchers and farmers. Data collected in interviews and focus groups indicated that farmers tended to weigh economic factors more heavily in land use decision-making than ranchers. While ranchers considered noneconomic factors, such as the ecological impact of their land use practices, as important, or more important, than strictly economic considerations—indicating that ranchers are potentially strong partners for grassland conservation.

TRANSITION

Transition is a critical factor in the success, longevity, and failure of individual ranches and ranching communities. The process of transitioning a ranch from one generation to the next involves complex financial, economic, and familial dynamics. Closely linked to these dynamics are a range of socio-cultural norms and aspirations that are common to rural, sometimes isolated, communities. Changing ownership trends in rural and agricultural geographies have a direct effect on the transition and succession of ranching operations. Capital and wealth flowing into ranching communities from outside over the last 20 years, often in the form of amenity buyers and absentee owners, has altered ownership characteristics, created incentives to sell rather than pass on a ranch, and priced out other agricultural producers (Brunson and Huntsinger 2008; Gosnell and Travis 2005; Haggerty and Travis 2006). Lequieu (2015) found, that among dairy farmers in Wisconsin, the desire to pass the family operation to the next generation is often in tension with the financial considerations of retirement and the profit that could be realized from the sale of land. In this environment, Inwood and Sharp (2012) found that agricultural producers operating at the Rural-Urban Interface utilized three strategies for incorporating the next generation: expansion (acquiring land), intensifying (developing more

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production), and stacking (creating new enterprises). Of the three, expansion was used least often.

From a conservation perspective, the effects of rising land prices and changing ownership trends appear to be mixed. While amenity buyers and absentee owners may value “conservation,” especially wildlife, they are much less likely to be directly involved in managing the land and resources (Haggerty and Travis 2006; Mendham and Curtis 2010; Petrzalka et al 2013). While this dynamic may provide some leasing opportunities for ranchers there is evidence that ranchers who lease are less inclined to manage the land as attentively (e.g. invasive weeds) and less likely to make improvements on leased land (Brunson and Huntsinger 2008).

CATEGORIZING AGRICULTURAL OPERATIONS

Typologies are useful for classifying the characteristics, practices, motivations, and tendencies of landowners. They provide a synthetic framework that makes conceptual organization of diverse populations accessible. Typologies are necessarily coarse and lack descriptive subtlety, but what one loses in nuance one gains in definition.

Employing a randomized survey of public land permittees that queried respondents on a range of goals and objectives, Gentner and Tanaka (2002) developed an influential typology of U.S. ranchers. While their typology was weighted most heavily toward economic classification their study addressed 24 different attributes. Thus the results revealed a range of noneconomic values which also influenced rancher decision-making. The USDA’s Economic Research Service’s Farm Classification is a basic typology utilizing (see, Haggerty 2008 for an example) operation size and source(s) of income to define types of farms. Kachergis et al’s (2013) typing of Wyoming ranches according operational characteristics, management decisions and practices represents a third kind of typology. Based on rancher responses to a list of survey questions, results indicated a diverse range of practices and operational characteristics.

Our typology is a synthesis of the three types discussed above (value-based, income-based, operation-based), adapted and modified from Gosnell and Travis (2005). We had two goals in developing our typology: identify changes in land ownership and identify rancher categories most affected by current socioeconomic trends. Besides consultation with the literature, we relied on preliminary interviews with a variety of agricultural professionals, academic experts, and

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ranchers to gain information on typical and atypical characteristics of landowners in the NGP focal geographies.

A shortcoming of our typology is that it did not allow for adequate differentiation based on ranch size. Interviews in the field revealed that operation size was often correlated with viability and financial security. Furthermore, we discovered that age of the ranching operation (with respect to the years under current management) may be a vital factor influencing sustainability dynamics, arguably more important than type of operation. This is discussed in section 4.

LANDOWNER TYPOLOGY

TRADITIONAL RANCHER/FARMER: *generally a full-time owner-operator raising cattle or crops without the aid of an operation manager; owns and/or leases land in varying percentages; spouse may or may not be employed offsite, but operator generally does little to no work outside of the operation; majority of income derived from the operation; generally comes from a farm/ranch family or marries into one*

TRADITIONAL RANCHER/FARMER—MIXED OPERATION: *generally a full-time owner-operator raising cattle and crops without the aid of a ranch manager; generally owner-operators will rely more heavily on either crop or cattle production for majority of income; owns and/or leases land in varying percentages; spouse may or may not be employed offsite, but operator generally does little to no work outside of the operation; majority of income derived from the operation; generally comes from a farm/ranch family or marries into one*

YOUNG/BEGINNING RANCHER/FARMER: *generally a part-time operator, or has recently gone full-time, raising cattle or crops on his/her own or in partnership with relatives; may own or lease cattle; may own or lease land in varying percentages; may or may not work off-site; majority of income may or may not come from the operation; generally, though not always, comes from a ranch/farm family or marries into one*

AMENITY BUYER: *purchases a ranch for ambience, recreation (hunting), and other amenities, not primarily for agricultural production; may have an interest in ranching but generally hires a ranch manager for day-to-day operations; may lease land to local ranchers; majority of personal income comes from off-ranch sources; economic viability is rarely an issue*

INVESTOR: *buys primarily for investment opportunity; may or may not intend to resell in the short-term*

CORPORATION: *ranch or farm is operated by a manager*

CONSERVATION ORGANIZATION: *buys ranch with the intent to manage for habitat and wildlife*

OTHER: *includes state and federal land management agencies, tribal lands*

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COMMUNITY RESILIENCE

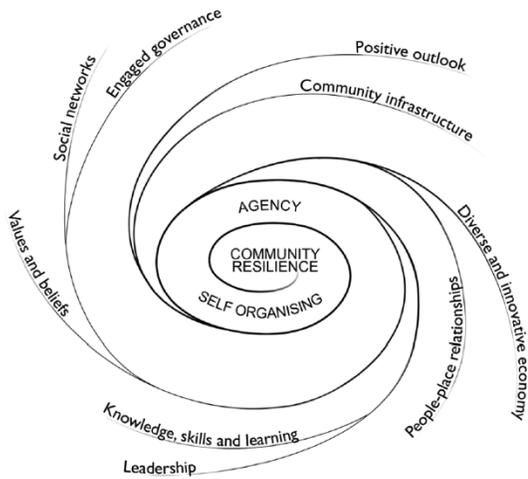


Figure 1. Community resilience as a function of the strengths or characteristics that have been identified as important, leading to agency and self-organization.

Figure 2. Reproduced from Berkes and Ross, 2013, p. 14

infrastructure; and others (see Figure 1). Many see community resilience as a newer, better version of concepts like of community capacity or sustainability because of the emphasis on transformability, adaptation and dynamic change. The momentum behind community resilience discussions in both the academic and the policy arenas comes from concerns about resilience to climate change impacts, although community resilience scholarship has a history of engaging with other kinds of disruptions and shocks, like economic downturns.

The NGP region is encountering, and is likely to continue to encounter, a number of stressors driven by forces from outside the region: increasing land values associated with new kinds of agricultural interests, drought and other climate change-driven extreme weather patterns, and energy development. Scholars have documented the importance of resilience at the individual and community levels in the ability to manage significant stressors present in rural communities, such as drought (Chenoweth & Stehlik, 2001). Public health scholarship observes that resilient communities may have healthier people (Carver, 1998; Kulig et. al., 2005). Notably, much of the research on rural community resilience cited here is based in large, extensive grassland regions in Queensland, Australia and Alberta, Canada.

Based on the insights of community resilience scholarship and practice, **this report proceeds from a basic assumption that resilient rural communities present an important conservation**

Rural community resilience is a useful framework for considering the grassland sustainability challenge in the Northern Great Plains. Although definitions vary, community resilience generally refers to the networked assets that enable communities to cope, adapt to or transform though change. Networked assets at the core of community resilience include things like a diverse and engaged economy; knowledge, skills and learning; people-place connections; community

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priority for the NGP region. Rural NGP communities should feature diversity within the agricultural economy, including the size and status of agricultural operations, as this creates opportunities to enhance many of the assets shown in Figure 1: leadership, knowledge, innovation, willingness to embrace change, social networks and opportunities for social learning. Based on this framework, this report attends to concerns about community resilience and in particular the ability to attract and retain emerging ranchers as part of the land management cohort in the NGP.

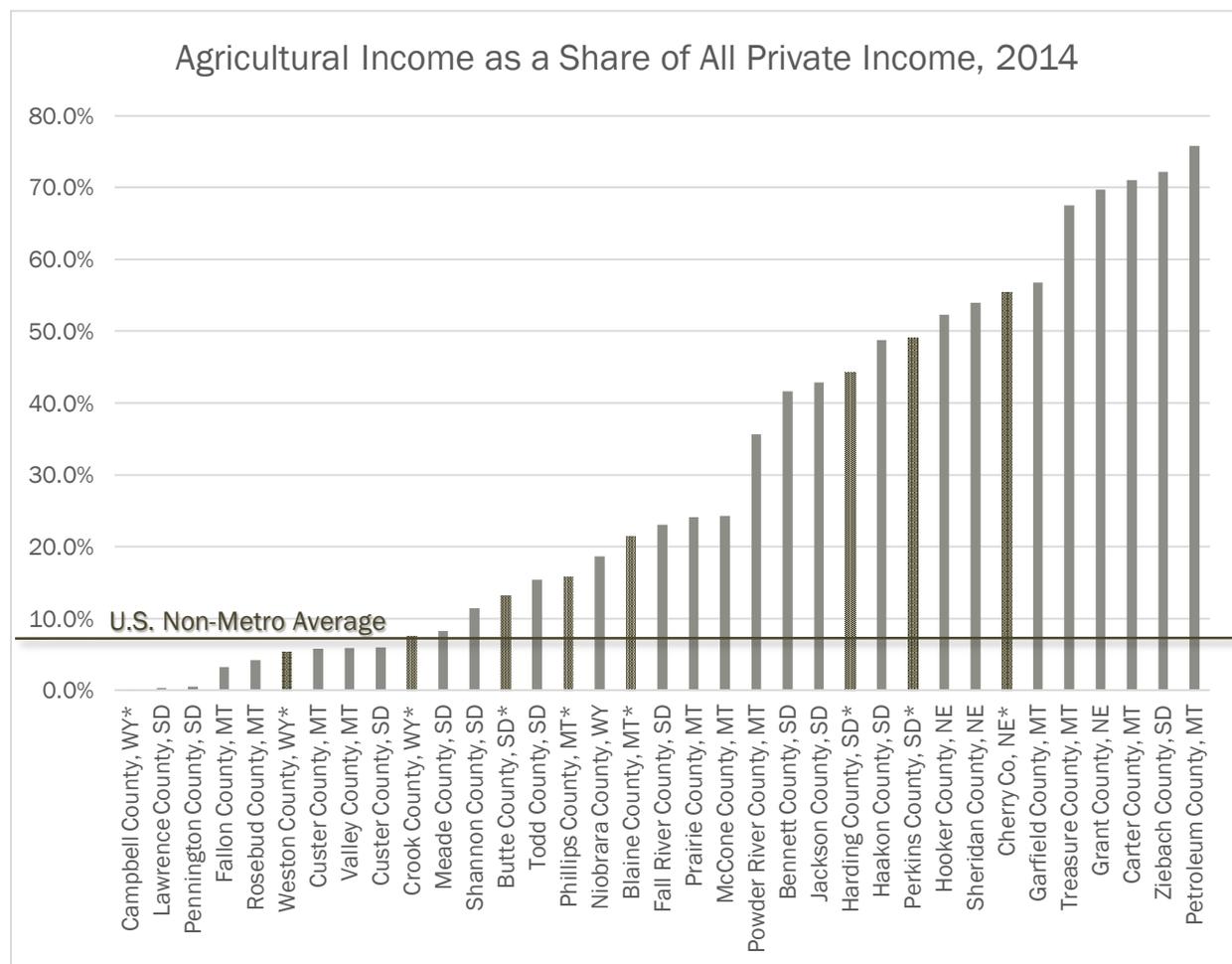
3. COUNTY-LEVEL SOCIOECONOMIC AND LAND OWNERSHIP TRENDS

KEY SOCIOECONOMIC FEATURES OF THE REGION

As a region, the 35 NGP counties in the United States demonstrate unique socio-economic qualities associated with being highly rural and agricultural in nature, and having a high number of Native American reservations in the area. A set of charts and figures communicating data on key social and economic indicators at the county level is provided as a supplement to this report. From this larger dataset, we highlight three key trends: the region's exceptional degree of dependence on agricultural income relative to the rest of the country; the high barriers to entry for new ranchers; and volatility in agricultural income and commodity values over time. (Nb. The 9 SRI focal counties are indicated in the following charts.)

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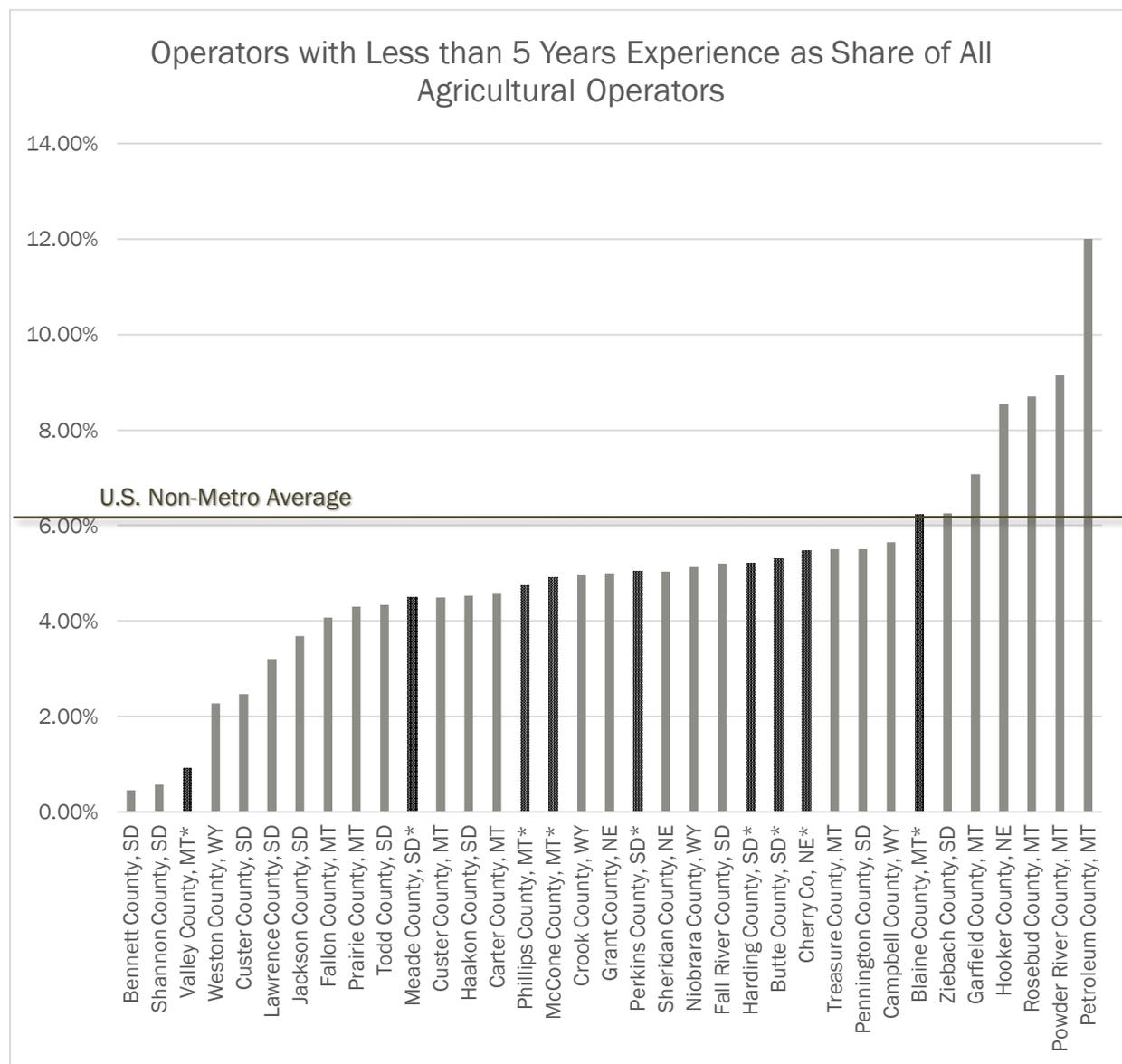
FIGURE 2. HIGH DEPENDENCE ON AGRICULTURAL INCOME IN 35 NGP COUNTIES



Source: US Bureau of Economic Analysis, Local Area Personal Income, Table CA45 Farm Income, Accessed 3/2016. *SRI Priority Counties marked in pattern.

This chart describes earnings derived from farm employment, including farm (and ranch) proprietors, and agricultural earnings as a share of all labor earnings. The dark gray horizontal line marks the average value for non-metro counties in the U.S. This chart demonstrates the importance of agricultural income in the study counties, and corresponds with other measures of the role of agriculture in the economy. It is important to recognize that private (labor) earnings are not total income in most places, as many counties have significant dependence on non-labor income. Non-labor income, primarily transfer payments from the government such as age and hardship related payments, composes 40% of all income in Treasure County, MT for example.

FIGURE 3. HIGH BARRIERS TO ENTRY FOR NEW OPERATORS IN 35 NGP COUNTIES

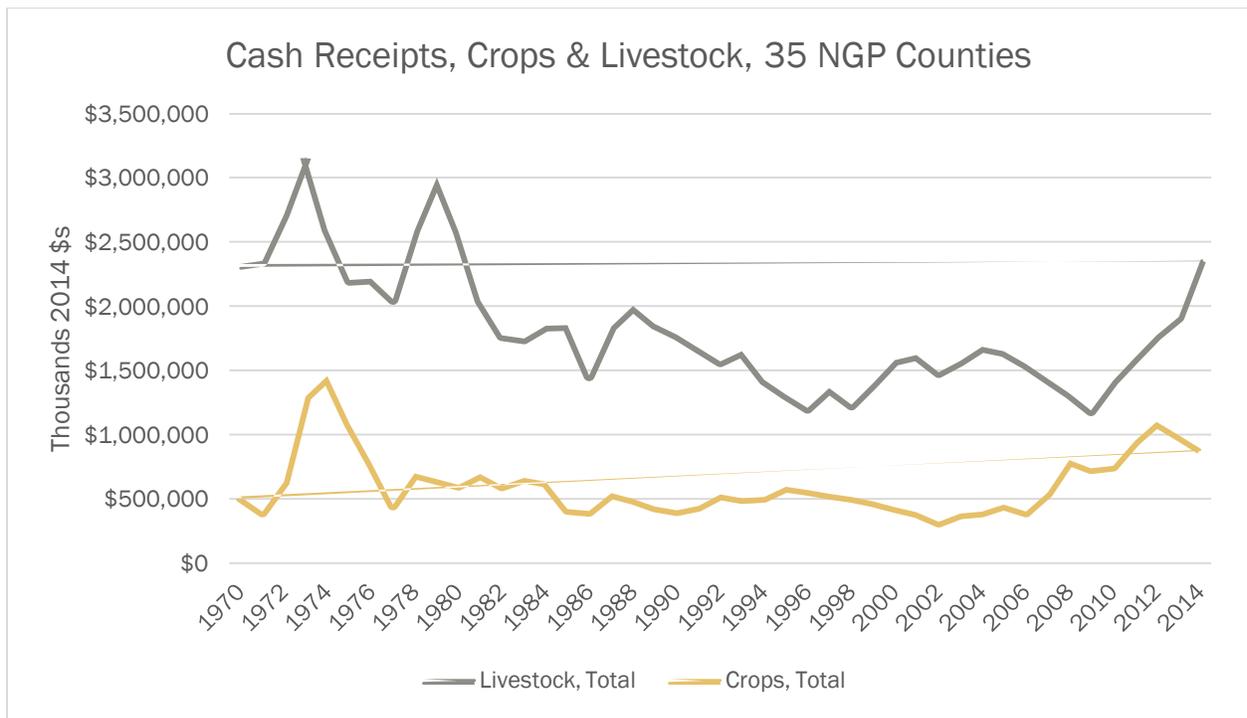
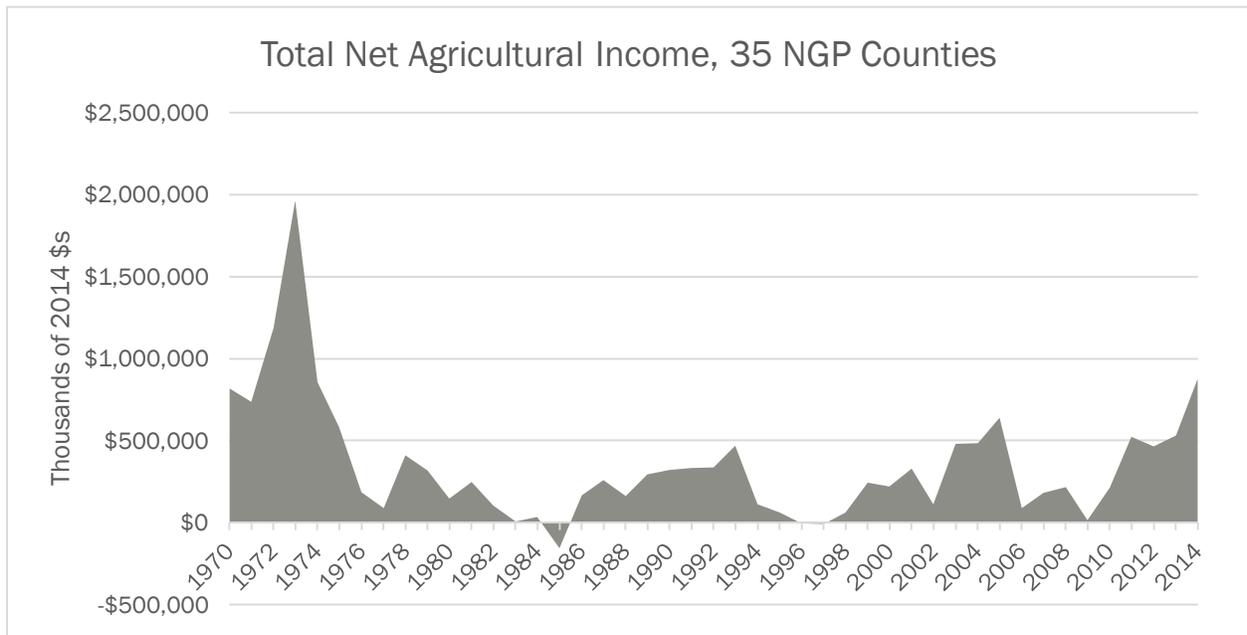


Source: USDA Census of Agriculture, 2012. *SRI Priority Counties marked in pattern.

Figure 3 uses 2012 agricultural statistics data to explore how many “new operators” are included in the agricultural operator cohort. It does not distinguish between cattle ranchers or other types of agricultural operators. This chart suggests that compared to the U.S. agricultural industry as a whole, the region faces significant barriers to entry in that the majority of counties are recruiting fewer than average new agricultural producers.

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FIGURES 4 & 5. AGRICULTURAL INCOME & MARKET VALUE TRENDS



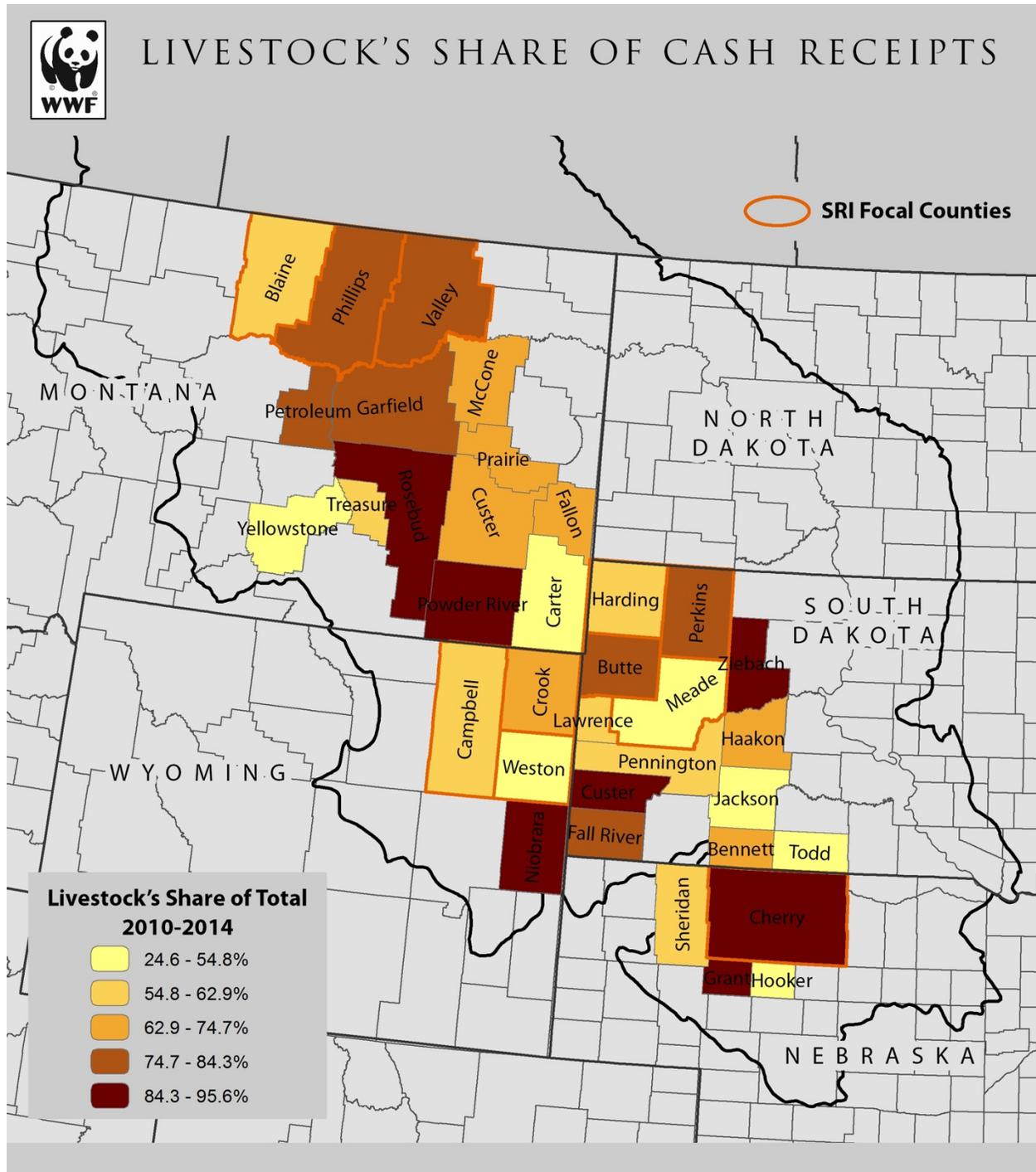
Source: US Bureau of Economic Analysis, Local Area Personal Income, Table CA45 Farm Income, Accessed 3/2016. For local area farm income, the BEA relies on a mix of data from USDA and state agricultural statistics offices including farm cash receipts, government payments, crop production, livestock stocks, and crop insurance indemnity payments by county.

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Figures 4 and 5 describe trends in net agricultural operation income and the cash value of crop and livestock products over the period 1970-2014. All values are adjusted for inflation using a standard consumer price index. 2014 is the most recent year for which data are available. (Note that the Y axes are different scales because the value (Cash Receipts) is gross whereas the figure on top represents net income).

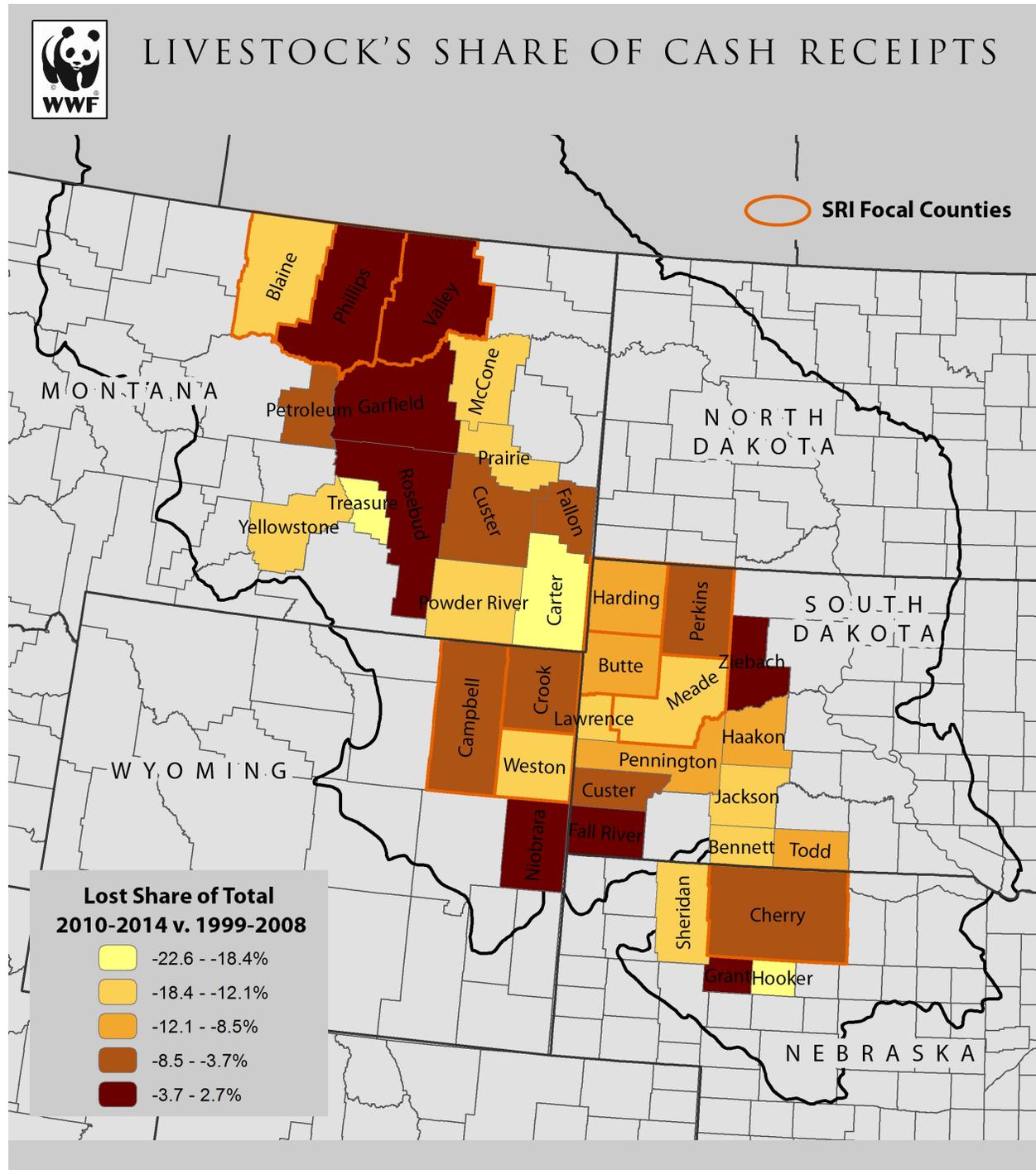
Figure 4 shows that volatility is endemic to the income trends in the region. In general Figure 4 is discouraging as it suggests little growth in overall productivity over a 40-year period. On the other hand, the recent uptick in agricultural incomes in the region between 2010-2014 is significant. Aggregate net agricultural income reached \$875 million in 2014, the highest it has been since 1974 (using inflation-adjusted values) by over \$200 million. This is all to say that recent high prices did produce real gains in the region, a point that has merit in the context of pressures and opportunities for ranch operators. The lines in Figure 5, which charts the value of cash receipts from the general categories of livestock and crops for the whole region, suggests that the uptick in net income came from both livestock and crop prices.

Figure 5 suggests that crop values have generally been increasing in their relative value to the regional agricultural economy (although these figures do not account for production costs). That is until 2014, when the two market values began to trend away from each other. This relationship will be important to watch in the future. To better understand the relationship between crop and livestock cash values at the local scale, we developed Maps 2 and 3. Map 2 charts counties according to the share of all cash receipts in agriculture commanded by livestock for the period 2010-2014. This effectively sorts the livestock-dependent from the crop-dependent areas. Map 3 offers a window on which counties have experienced change in the relative value of livestock versus crop receipts. The values shown are the change in livestock's share of receipts when the recent period (2010-2014) is compared to the 10 years prior to the recession (1999-2008). Production cost variables notwithstanding, this is one way to measure an incursion of the crop-farming economy in ranching areas.



Map 2. Counties by share of total private income from cash receipts from livestock sales.

Source: US Bureau of Economic Analysis, Local Area Personal Income, Table CA45 Farm Income, Accessed 3/2016. *SRI Priority Counties marked in bold.



Map 3. Counties by change in share of total private income from cash receipts from livestock sales.

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COUNTY TYPES

Another perspective on county types involves the pattern of agricultural operation sizes as reported to the agricultural census. In Figure 6 (next page), the distribution of agricultural operation sizes according to three cohorts is shown: lifestyle properties that are <260 acres; small properties that are 260-2,000 acres and large properties that are 2,000 acres. We have applied a generic description that sorts these counties into categories oriented toward influences on farm size and farm size distribution. These categories including the following:

Native American counties: areas with high amounts of Native American land ownership are likely to see smaller holdings.

Amenity and exurban influenced counties: more than 40% of farm operations fall into the lifestyle size category

Mixed farming and ranching counties: where crop agriculture is a significant component (40% or more) of farm operations

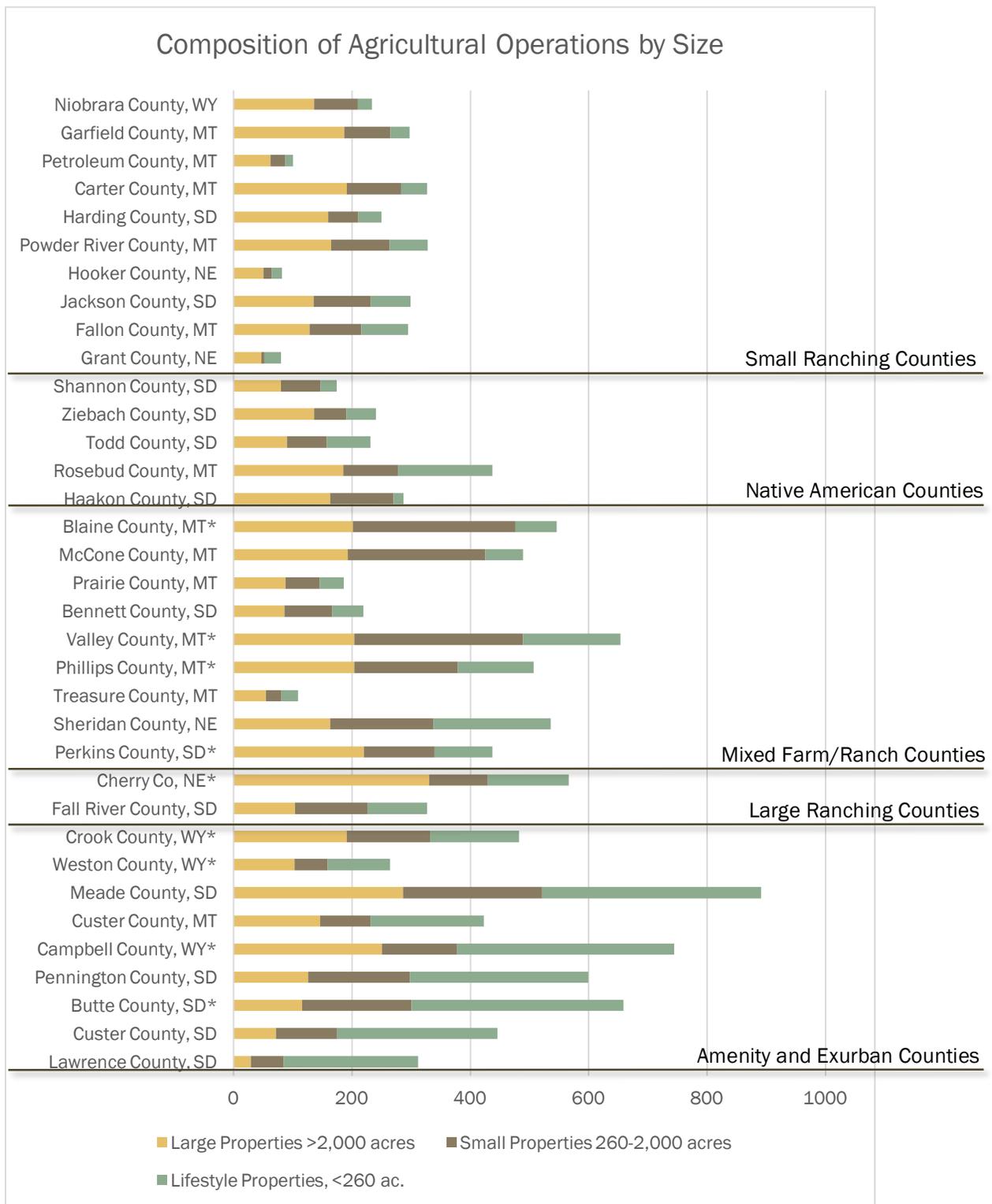
Small ranching counties: designated based on having fewer than 200 farm operations over 2,000 acres in size and few small and lifestyle sized farms and on the limited presence of crop farming

Large ranching counties: counties with more than 200 2,000-acre farm operations and a small mix of other sized holdings

In summary, the region has a mix of types of agricultural ownership among counties. The WWF NGP SRI Priority counties comprise this mix, but they do not include primarily Native American counties (although reservation land is significant in Phillips and Blaine counties, MT). While the region does not have the extreme amenity development pressures of other parts of the country, in areas like the Black Hills in South Dakota and near Custer National Forest in Montana, there are small rural parcels that feature in the agricultural land ownership mix. Exurban development is visible in areas near Sturgis, Rapid City and Belle Fourche, SD and Campbell County, WY that are within priority counties for the WWF SRI program.

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FIGURE 6. COUNTY AGRICULTURAL OPERATION OWNERSHIP PATTERNS



Source: USDA Agricultural Census, Table 8, Farm, Land in Farms, Value of Land and Buildings, and Land Use: 2012 and 2007. Accessed 4/2016.

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[INSERT MAP 3 HERE]

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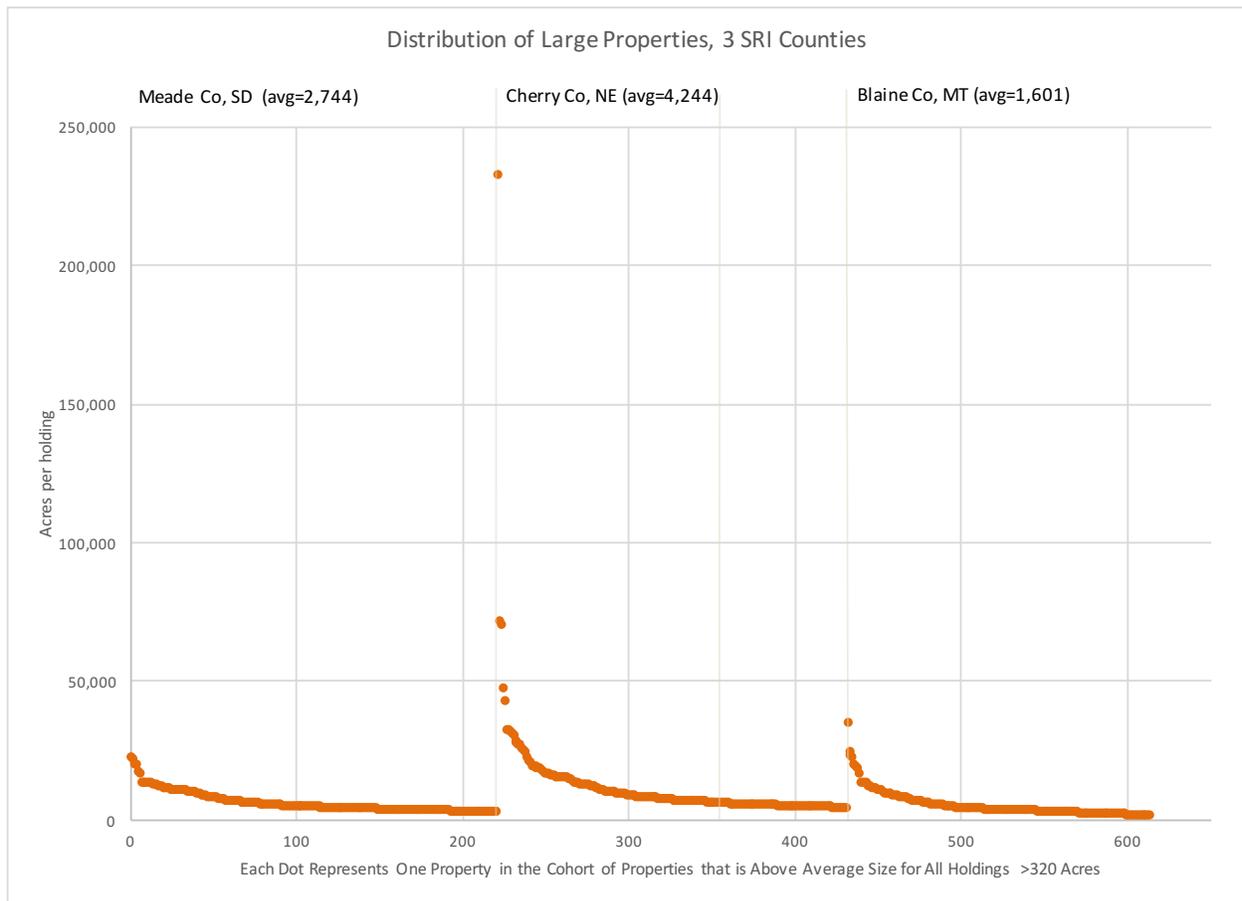
COUNTY LAND TENURE ANALYSIS

To understand patterns of land ownership beyond average agricultural operation size, which varies as a function of physical geography, we sought out descriptive information for selected SRI priority counties from cadastral records and land sales data. In the following section we report selected data for various counties in the 9 county SRI priority cohort. The variability reflects the major challenges associated with obtaining cadastral and sales data for these counties. More information about methods is available in the supporting documentation provided to WWF.

Figure 7 charts the distribution of large properties in 3 SRI priority counties. This chart is based on a manual effort to agglomerate cadastral data by mailing address and property owner, in order to develop a detailed roster of the total holdings of each counties largest landowners. We first conducted a basic agglomeration based on mailing addresses and from this dataset eliminated institutional landowners like state or federal governments. We derived an average property size within this cohort. Each dot in Figure 7 (next page) represents the holdings each property owner whose total owned acreage exceeds the average. The slope of the collected dots for each county corresponds to the size difference among large properties in each county. Where the slope is particularly steep, as in Cherry County, there are a few landowners who hold properties of sizes that dwarf the rest of the large landowning cohort. Where the slope is flatter, such as Meade County, there is a cohort of large landowners that have very equal sized properties. This coupled with information about the values of large landowners (see Tables 2 and 3) could be used as indicators to monitor social dynamics in the ranching communities of interest to WWF.

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FIGURE 7. LARGE RANCH SIZE DISTRIBUTION



Tables 2 and 3 suggest that among each county's 25 largest landowners, Traditional Ranchers are dominant, while Investors are especially active in Cherry County, Nebraska. The distribution of agricultural holdings mirrors this pattern, in terms of showing a high degree of inequality in Cherry County relative to Meade County. The two largest landowners in Cherry County, described by our informant as investors, control 8.4% of the private land in the county. In contrast, the two largest ranches in Meade County are close in size to one another and occupy only 2.1% of the total private farm land in the county.

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TABLE 2. 25 LARGEST LANDHOLDERS BY SIZE & TYPE, CA. DECEMBER 2015

Owner Type	Meade Co, SD		Blaine Co, MT		Cherry Co, NE	
	Number	Acres Held	Number	Acres Held	Number	Acres Held
Traditional Rancher	16	217,676	24	461,701	17	516,688
Investor	3	43,764	1	22,838	7	423,751
Amenity Owner	2	31,214				
Corporation	2	34,054				
Unknown	2	23,737			1	24,795
Total Acres top 25		350,446		484,539		965,235

TABLE 3. SELECTED LARGE LAND OWNERSHIP ATTRIBUTES, CA. DECEMBER 2015

	Meade County, SD	Blaine County, MT	Cherry County, NE
Number of Holdings > 320 acres	680	399	820
Average Holding Size >320	2,744	3,381	4,244
Median Size >320	1,685	1,601	1,949
Largest Ranch Size	22,479	61,801	232,492
Largest Ranch Owner	Lake Flat Land (I. Jordan)	S Bar B Ranch (J. Davies)	Turner RE
Second Largest Ranch Size	21,733	52,866	71,743
Second Largest Ranch Owner	Homestake Mining Co.	Sand Creek Ranch	Barta Land Co.
Total Acres Held by Top 2	44,212	114,667	304,235
Share of Private Land Held by Top 2	2.1%	5.2%	8.4%

Among the 680 owners of agricultural lands totaling 320 acres or more in Meade County, 75% have land holdings of less than 3,400 acres; the median holding is 1,685 acres. The county's 25 largest landowners control 484,539 acres among them, led by Traditional Ranchers (62% of total acreage held by top 25 landowners) while Investors, Amenity Owners and Corporations are also represented.

Among the 399 owners of parcels larger than 320 acres in Blaine County, 75% have land holdings of less than 3,874 acres; the median holding is 1,601 acres. Blaine County shows the least incursion by non-traditional entities in the large landowner cohort. That cohort is dominated by 24 traditional ranchers who control 462,000 acres between them, and one investor that owns about 23,000 acres.

Among the 820 owners of parcels larger than 320 acres in Cherry County, 75% have land holdings of less than 4,330 acres; the median holding is 4,244 acres. The county's 25 largest landowners control 965,234 acres among them, and are dominated by Traditional Ranchers,

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who control 54% of the acres (owned by the top 25 largest ranches), followed close behind by 7 investor owners that control 44%.

FARM & RANCH SALES

Tracking changes in farm and ranch ownership in the NGP region poses serious difficulties. While South Dakota and Nebraska make some level of land sales records available for limited time periods, Montana and Wyoming do not. What data South Dakota offers is very limited and Nebraska has only recent data available. More detailed discussion of data sources and methods have been provided to WWF as supporting documentation. We offer a brief discussion here of those trends in ownership change of large agricultural parcels (greater than 320 acres) in 5 counties for which some land sales data were available. Table 4 charts these trends for the period 2011-2015.

TABLE 4. OWNERSHIP CHANGE IN 5 COUNTIES

Attribute	Cherry Co., NE	Meade Co., SD	Butte Co., SD	Harding Co., SD	Perkins Co., SD
number farms (2012 ag census)	556	891	659	250	437
land in farms (2012 ag census)	3,609,327	2,032,553	1,134,603	1,467,327	1,630,875
average farm size (2012 ag census)*	6,637	2,281	1,722	5,869	3,732
Number of properties >320 ac.	820	680	N/A due to lack of cadastral/parcel data		
Total acreage in >320 holdings	2,434,176	1,333,674	N/A due to lack of cadastral/parcel data		
# properties >320 acres changing hands, 2011-2015	95	96	36	19	64
# acres changing hands, 2011-2015	246,662	152,424	58,812	42,734	110,708
Share of large properties changing hands	12%	14%			
Share of acreage in large holdings changing hands	10%	11%			
Share of all private, non-urban land changing hands	6.8%	7.3%	4.9%	3.2%	7.3%
value of land sales	\$83,815,835	\$27,009,021	\$11,605,372	\$5,088,180	\$24,593,113
average value per acre (land only)	\$339.80	\$208.00	\$265.00	\$134.00	\$261.00
Ratio: land sales to # of farms	0.17	0.11	0.05	0.08	0.15
*private land, does not include public land					

Gosnell, Haggerty and Travis (2006) established a process for documenting rates and volume of ownership change based on analyzing the cadastral database to tally the number and volume of large ranch holdings at a county level, a method that yields property ownership data that is a better point of comparison than the Census of Agriculture, but also highly intensive. With the baseline data on the number and volume of large properties, it is possible to compare reported sales to understand rate and volume of ownership change. This is not a fool-proof method as

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there are variations in the quality of cadastral records based on clerical errors. Sometimes judgment is required by the data analyst with regard to agglomerating parcels based on incomplete data. However, this is the only known way to conduct this research, and the method has been validated by peer-review. In this report, we are able to report this level of detail for Cherry Co., NE and Meade Co., SD only. Analyzing a period of high turnover in ranch properties in 10 counties in Montana and Wyoming adjacent to the Greater Yellowstone Ecosystem, Gosnell et. al. documented total turnover of 22% of the land in large agricultural holdings and 23% of the properties in the 10 counties in the period 1990-2001. The limited data that we have for the NGP focal counties (2 of 9) does indicate rates and volumes of ownership change approaching or exceeding those during the high turnover period for the GYE of the 1990s. As shown in Table 4, in a 5-year period, 12% of holdings greater than 320 acres in Cherry County changed hands and 10% of the land; in Meade, 14% of the holdings and 11% of the land.

We were able to conduct an inquiry into land buyers based on the typology used in this report (and based on the original Gosnell et. al. study) for one half of the sales that have taken place in Cherry County since 2006. Among 76 sales involving 194,000 acres, there were 19 investor buyers (25%) and 57 traditional ranchers. The investors were marginally more aggressive in the scale of their acquisitions: each investor averaged an acquisition of 3,405 acres compared to the average 2,268 acres in the average transaction involving a traditional rancher buyer. In Gosnell et. al.'s study of GYE land turnover, areas with the highest amount of non-traditional buying interest—such as the Upper Green River area of Wyoming (Sublette County)—showed investors and amenity buyers controlling nearly half of the purchases. Comparing these two studies, we can cautiously suggest that amenity- and investment-driven buying pressure in Cherry County during the past decade has been about half as strong as in the highest amenity GYE counties during the 1990s.

Table 4 includes additional data drawn from sales databases provided by Nebraska and South Dakota's departments of revenue. Because cadastral data was not available to repeat the Gosnell et. al. methodology, we compare the volume of ownership change to total land holdings in the county. The sales value information shown here comes from the detailed appraisal reports that separate land values from any other values, including buildings, water developments, fencing, and other agricultural improvements. This means that the sales data shown here do not offer points of comparison to the aggregate per acre values that we collected through interviews in the field (Section 4).

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These comparative data demonstrate a wide range of activity that appears to be in keeping with anecdotal observations collected in the field. For example, remote and sparsely populated Harding County, with its huge ranches, has the least amount of sales activity, in terms of the smallest number of recorded sales (19) and just 3.2% of private, non-urban land changing hands in transactions involving 320 acres or more. Recorded agricultural land prices in Harding County are very low, at an average of \$134 per acre.

Meade and Perkins counties show the largest sales activity by volume, at 7.3% each. They rank first (Meade, 96) and third (Perkins, 64) in terms of number of transactions involving 320 acres or more. Average prices in Meade are the second lowest in the 5-county cohort at \$208/acre, with Perkins ranking in the middle at \$261 per acre.

The ratio of discrete, arms-length transactions to the number of farms reported by the USDA provides another point of comparison. This ratio places Cherry County, NE at the top of list in terms of activity (.17) followed by Perkins County, SD (.15), Meade County, SD (.11), Butte County, SD (.06), and Harding County, SD (.01).

These data suggest a strong interest in land acquisition in Cherry County, where prices are triple what they are in Harding County (\$340/acre) and some 246,662 acres, or 6.8% of the private, non-urban land, changed hands between 2011 and 2015.

FUTURE MONITORING & ASSESSMENT OPTIONS

In section 2 we provided a brief summary of the current literature on community resilience and stated the relevance of the framework to the sustainability challenge in the NGP. This section elaborates on ideas about how to assess and monitor community resilience. Community resilience refers to the presence of networked assets that enable communities to cope, adapt to or transform through change. Networked assets at the core of community resilience include things like a diverse and engaged economy; knowledge, skills and learning; people-place connections; and community infrastructure.

There are three possible approaches to observing community resilience: quantitative indicator approaches, quantitative survey approaches, and qualitative explorations. All have merits depending on circumstances and ideally work best in combination. The indicator approach borrows from approaches to measuring social vulnerability and is often considered the antecedent to resilience (Adger 2000). There are county-level social vulnerability indices for the

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US in operation, the best known is “SOVI” (<http://webra.cas.sc.edu/hvri/products/sovi.aspx>). Many of the counties in the WWF focal area scored in the top 20% for social vulnerability to environmental hazards based on the 2006-2010 index (see Appendix for map). There is always new work extending this indicator-based approach, for example, to better capture social capital features. One new index that can be applied at the county level includes data on: the number of religious institutions per capita; schools per capita; measures of education; measures of poverty and income inequality; and demographic measures such as the share of population over 65.

A drawback to WWF applying its own indicator approach is the data management and statistical analysis required (and the lack of reliability of some of the county-level data in these rural areas). The benefit is that the indicator selection could be fine-tuned to address the rural agricultural context. For example, economic data on farm income and expenses could provide good descriptions of exposure to annual income variability.

In addition, this study has established the potential to use parcel analysis to document social characteristics of the ranching community. The categorization of the top 25 owners in the cadastral data set according to our typology provides an ability to track trends across the geography and across time. If the composition of top owners by type of ranch operation or with respect to distribution of property sizes changes, this could be a good indicator of social and land use change.

There are also established survey questions that target perceived community resilience, meaning what people say about the assets of community resilience they observe in their communities. The approach with the longest track record comes from a Canadian public health researcher who has developed her model over two decades of work in rural communities that probably share similarities with (or are) communities within the WWF SRI work area. Judith Kulig’s index of perceived community resilience (IPCR) asks survey respondents to register their agreement with the following statements:

- The physical environment negatively affects my health
- People in my community help one another out
- Residents in my community feel isolated
- People in my community have similar values
- There is a sense of pride among people in my community

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- Leaders in my community listen to the residents
- My community has strong leadership

The trouble with surveys include increasingly poor response rates and consequential difficulty capturing a diverse sample. However, there are useful resilience assessments that focus on engaged qualitative data collection. The basic concepts behind the IPCR could inform focus groups and other structured conversations, such as those undertaken to develop and assess interventions in a part of rural Australia where agriculture-dependent communities with poor economic and social status face climate-driven threats (Buikstra et. al., 2010). This effort might reveal unknown or unexpected spaces that WWF and other NGOs could be helpful. The Resilience Alliance's toolkit for practitioner-driven resilience assessments also has a long track record in building adaptive capacity and transformation in rural communities facing natural resource dilemmas. (See http://www.resalliance.org/files/ResilienceAssessmentV2_2.pdf).

RECOMMENDATIONS:

- ❑ Develop a manual for rotating interns to conduct an assessment of patterns of large ranch ownership (types of top 25 and quartiles) on an annual basis to track change.
- ❑ As an outreach and community-building strategy, consider trialing a participatory resilience assessment approach merging the RA assessment method with focus groups and discussions around perceived community resilience; this is an excellent venue for engaging student workers and volunteers.
- ❑ Consider the benefits adding an index of county-level socio-economic variables to complement ecological monitoring, based on adapting social vulnerability models with modification to incorporate farm income data.
- ❑ Use the IPCR framework to inform and seed conversations about community well-being and aspirations in focal areas.

4. RANCHING & SUSTAINABILITY IN THE GREAT PLAINS

This section provides a lengthy discussion of the major barriers and challenges facing ranching from the perspective of ranchers interviewed in the region during the period November 2015 – March 2016.

METHODS

To gather data for this report we conducted 56 unique interviews with academics, extension specialists, private and public loan officers, NRCS agents, industry professionals, ranchers, farmers and others across the NGP. Relying on key contacts made in the initial phase of research, we utilized a “snowball” methodology to locate potential participants and further contacts. Based upon conversations and description of research goals, we asked contacts for references to ranchers and mixed farm/ranch operators who might be willing to participate. Beyond providing us with contacts we may not have had access to or known about otherwise, the primary advantage of this method was that ranchers, and others, were generally more willing to engage with the research knowing that the referral had been made by an associate or known community member. Using information gleaned during the preliminary phase of research as our basis, we selected the range of interviewees according to following criteria: geography/location, operational size, operational focus, tenure, and age cohort. We attempted to obtain a representation of the variation in these characteristics across the focal areas.

Despite its relative advantage for qualitative research in providing access to more and more “embedded” informants in a given community, one drawback of the snowball method is that the researcher is to some degree dependent upon a given contact’s particular interests and their interpretations of the research’s significance. This can potentially skew the population of available participants in a certain direction. For example, in Valley County, MT our key contacts were young—25 to 40 years of age. Their social connections and primary concerns vis-à-vis ranching directed us toward other emerging operators. As we were unable to make contacts with older, established operations, the qualitative data from Valley County primarily represents operators in the early phases of their careers as agricultural producers. However, this particular exigency proved beneficial as well. The age-cohort limitation of those interviews helped clarify the range of challenges confronting emerging ranchers and, by extension, the future sustainability of ranching in the NGP. Table 5 below delineates operators interviewed according

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owner-operation typology discussed in the introduction and the life-cycle typology discussed below.

TABLE 5. OPERATOR INTERVIEWEES BY GEOGRAPHY AND TYPE

<i>Geographies</i>	MT	SD	NE
<i>Life-cycle</i>			
<i>Emerging</i>	7	3	3
<i>Established</i>	4	8	6
<i>Transitioning</i>	1	1	1
<i>Operational type</i>			
<i>Traditional ranch/farm</i>	3	9	7
<i>Traditional ranch/farm-mixed op.</i>	2	1	0
<i>Young/beginning ranch/farm</i>	7	2	3

We utilized a semi-structured interview method. This enabled us to gather factual information while giving operators the freedom to expand upon or follow lines of thought elicited by particular queries. We relied on an interview guide organized into themes of inquiry, but intentionally left open-ended and flexible in order to tailor lines of questioning that were most relevant to the knowledge and experiences of the given operator. Interview times ranged from one hour to five hours, lasting between two and three hours on average. Interviews were recorded and extensive notes taken throughout.

We conducted interviews with a range of agricultural professionals in each of the focal counties. These included public and private lending officers, extension agents, livestock association staff, federal and state agricultural agency staff, ranch consultants, ag business owners, and realtors. We also interviewed people who did not necessarily live or work in the focal counties, but whose expertise, experience, or knowledge could provide insight on dynamics associated with ranching in the NGP.

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SETTING & THE RANGE OF OPERATIONAL STRATEGIES

While the NGP region has many homogenous physical and cultural characteristics—arid, annual moisture, extreme temperature variation, sparsely populated, and agricultural—there is striking variations in the geographies of the region. Agricultural land use in Montana’s focal geographies is broadly defined by a north-south gradient. The southern half of the Montana counties is primarily rangeland with a limited amount of crop production. Moving north of Highway 2 the soils become more suitable for farming and mixed ranch/farm operations and farms are common. According to informants, both farming and ranching in the region date back to the homesteading days of the late 19th and early 20th centuries. In South Dakota, Harding County is dry and predominantly rangeland. A relatively shallow aquifer, the Foxhills Formation, under most of the county provides agricultural producers with reliable water. Soils in the northeastern corner of Harding offer the only suitable ground for farming. Located within the Belle Fourche Irrigation District, southern Butte County has a mix of ranches, farms, and mixed-operations. As one moves north of Highway 212 ground and irrigation water become less available, the soils more marginal, and production predominantly shifts to ranching. Agricultural production in Meade County is defined by cattle production with a limited amount of farming in the southwestern corner. Both southern Butte and Meade Counties are facing land-use pressure from development along the I-90 corridor. Sitting atop the Oglala aquifer, Cherry County in the Sandhills region of Nebraska is unique in NGP ecology and geography. While still arid and dry, the ease of access to ground water is striking. Sandy soil makes most of the area unsuitable for crop production, though there are a few large farming operations in the northwest of the county.

There are of course more localized variations which skew from the general patterns touched on above. For example, operators along the far northern tier of the Montana counties, notably in Valley County, said the relative temperature of their locations is consistently cooler throughout the year than neighbors only 20 to 30 miles south. This alters the seasonality of their activities relative to their neighbors. Ranchers from the South Dakota focal counties, particularly those in southern and central Butte and Meade, often noted that they typically experience milder winter conditions than regional ranchers to the north and east. This affords them reduced winter feed costs and makes ranching more economical compared with other, colder areas in the region. According to informants land values were high across the region, ranging from estimates of \$650 per acre on the low end to as much as \$1200 on the high end. Acreage with good infrastructure and water improvements reportedly went for much higher.

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We observed a wide range of operation sizes and types across the NGP, from a young rancher in Valley County who had only recently secured a loan for a starter herd of 52 head and a lease of 400 acres to an owner with multiple farm and ranch enterprises operating on more than 22,000 acres in Blaine County. Variation in management strategies and decision-making did not appear to be defined solely by local geography, though mixed operations were observed more regularly in Montana than other areas. No mixed operations were observed in Cherry or Harding Counties. The majority of operations observed ran cow/calf pairs, though many did not do so exclusively and one's primary enterprise was breeding bulls. Operational strategies and decision-making appeared to be conditioned by several interacting factors. Some factors were relatively constant. Thus, whether these factors embodied a constraint or opportunity for the given operation, they were known and relatively predictable. Other factors were inherently variable and much more resistant to prediction. Available land base, operation size, labor, existing capital, equity and savings, weather conditions, cattle-market prices, hay, feed, other input and equipment costs were just some the factors involved.

Size, correlated with available land base and other related factors, seemed to act as a critical affordance or limitation on the range of strategies available for operations. Larger operations tended to be more diversified (e.g. sire production, farming and feed production enterprises, genetic/breed specialization and experimentation, broader range of cattle types and ages: steers, heifers, bulls, cows, calves). Smaller operations tended to be less diversified if they were diversified at all. With limited options and more vulnerable to the factors discussed above, smaller operations were relatively homogenous and likely to employ strategies that ensured and/or increased cash flow opportunities and reduced costs (e.g. selling or destocking because environmental conditions or high market prices, leasing land or cattle, running another owner's cattle in addition to their own, borrowing equipment). Mid-sized operations tended to show variance in strategy though they were generally less diversified than large operations. Typical cow/calf operations were relatively common, though a few were focused on breeding highly specific genetics for market favorability and/or local range and grazing conditions. Running cattle on a complicated mix of leased and deeded ground was common across operation sizes, but was particularly pronounced among mid-size ranches. Indeed, leasing land (private and public) or leasing out some portion of one's own land was the rule across the NGP. Several ranchers held leases two or more hours drive from their primary location.

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A LIFE CYCLE TYPOLOGY

After extensive time in the field we observed a definite pattern of distinction among ranch operations based on the status and age of the operation's current management. There appeared to be 3 consistent types. We define these as *emerging*, *established*, and *retiring*.

Emerging— primarily young and/or beginning operators; have transitioned into an existing operation of any size or are working to establish one; typically lease land and/or cattle; may own or have inherited a land base; are often, though not always, financially marginal, lacking capital and equity, have limited cash flow, and some access to financing; may have relatively few operational options

Established—established operations are generally viable and financially secure with an adequate or more than adequate land base and/or the means to lease or purchase land as needed; typically have steady cash flow, equity, and secure access to financing; have more operational options

Transitioning—operations on the verge of transition or retirement; may or may not have a transition plan in place; land, capital, assets may or may not be enough to execute transition plan as desired; operational options are variable though usually more limited than established operations and less limited than emerging operations

While these types are not discrete and there can be considerable crossover between them, we believe they help clarify important dynamics affecting the future of ranching in the NGP. Emerging ranchers, which can include smaller and more marginal operations, are dependent upon established and transitioning ranchers, among other actors and institutions, for opportunities. Transitioning ranchers are faced with complex decisions about how best to transition their operation while ensuring their retirement and heirs' needs are met. Established ranchers, frequently owning larger operations, are a critical link between emerging and transitioning. They are often in the best position to acquire land and leases and are usually able to plan for the future transition of their ranch. Operations owned by amenity buyer and investor types are likely best categorized within the established operation type, but with some significant overlap in the transitioning type. Amenity buyers in Meade and Butte counties, for example, may own some cattle or lease some of their land to a producer, but their primary value for the land is recreational, thus putting the operation and land into a transitional phase. An out of state

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investor type may have bought a ranch and significant acreage in Cherry County two or three decades ago, but having managed it as a viable cattle producing operation or lived on the ranch for a significant duration of time, the operation might be best classified as established.

CONSTRAINTS, CHALLENGES, AND OPPORTUNITIES

Overall, interviews with operators and ag professionals suggest confidence in the future of viability of ranching and private ranch management in the NGP. Barring eventualities such as wildly dramatic market fluctuations, severe and prolonged drought, or the implementation of government regulations that put access to public land grazing wholly out of reach, no well-established operators expressed any particular or concrete concerns when queried about the future sustainability of their operation. This does not mean that there are no challenges confronting the future of ranching and private stewardship of grassland in the NGP however. For emerging ranchers, particularly those who are unable to transition into a family operation, the future is far more uncertain and interviewees became noticeably more pessimistic when asked about the current conditions for emerging ranchers and what that might mean for the future of ranching in these small communities.

Below we consider the primary factors shaping the current conditions affecting private ranchland management and their implications for the future sustainability of grassland stewardship in the NGP.

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LAND PRICE AND ACCESS

According to interviews, the most noticeable dynamic affecting ranchland production across the NGP is the steady, and sometimes steep, rise in the price of private rangeland. A 2015 report (Janssen, Davis, Inkoom 2015) produced by South Dakota State University's extension service shows an approximate 47% increase in the value of native rangeland over the last 5 years within the South Dakota focal counties of this study. The value of pastureland reportedly increased by 58% during the same period. The SDSU report provides corroborating evidence to the consistent claim made by informants across NGP focal geographies that ranchland value has increased anywhere from 30-60% over the last decade.

What are the drivers of this sharp rise in land value? While the phenomenon of increasing land valuation appears common across the NGP, the dynamics and potential drivers are geographically varied according to interview data. An agricultural realtor and long-time resident of Cherry County, NE noted that the price of land began to rise steadily from 2000-2006 which correlated with what he characterized as relatively high "investor" interest in Sandhills grassland. However, he indicated that following the economic downturn of 2008 and beginning in late 2009/early 2010, the market value of ranchland in Cherry County "exploded." As but one example, he mentioned being involved in a transaction in the early 2000's where the land was sold for \$380 per acre, saying, "People thought that was crazy." In 2010 the same land sold for \$636 per acre and he asserted that in 2015 the same ground would have quickly sold for between \$800-900 per acre had it been on the market—over a 100 % increase in the valuation of the property in the last 10 to 12 years, if his speculation about its current sale value is correct. In Cherry County it is clear that capital from out of area and out of state has played some role in the increase of land prices. According to our data, approximately 10 of the 60 largest landowners are best characterized as investors—coming from out of county and out of state over the last 5 to 30 years to buy land.

Yet it is important to note that well-established operators, especially those operating on 10,000 acres or more, gave little indication of being unable to compete for or acquire land—when it was available. Interviewees indicated they were generally unconcerned with the overall number of investors buying land or competition from investor types. Rather they tended to express more concern with how little land was regularly available for purchase.

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In South Dakota interviewees noted a major factor driving up land prices over the last 10 years was agricultural money and investment coming from the eastern part of the state. Two perhaps more persistent and long-term factors affecting not only land price, but the use and character of the land itself are urban developmental pressures emanating from the I-90 corridor connecting Spearfish, Sturgis, and Rapid City, and amenity/recreation buyers. Operators in southern Meade and Butte Counties all mentioned both as predominant constraints on the future of ranching in these areas. Beyond feeling that many ranchers cannot compete with developers and amenity buyers for land on the open market, operators in southern Butte and Meade also spoke of conflicts with local county and city commissions over rural zoning issues and, as the operators see it, city governments' desire to expand jurisdiction over historically rural agricultural land to grow the tax base and help facilitate further urban/suburban development. While operators in the northern halves of Butte and Meade Counties, along with those in Harding County, confirm the general trend of increasing land prices they have not experienced similar pressures from development or amenity buyers.

Ranchers across the Montana focal areas also indicated that the price of land was a significant concern. Phillips County operators pointed to competition posed by the American Prairie Reserve and the APR's willingness to, as they perceive it, pay a "premium" to acquire land that would have otherwise been purchased by local operators and stayed in cattle production. Operators in Valley and Blaine Counties expressed frustration not only with the price of land, but the lack of available land for sale, which, they argued, intensifies competition and creates conditions that favor larger, more wealthy operations. Another factor interviewees noted, particularly in Blaine County, was the increasing adoption of organic farming by mixed-operators and farmers. The potential profits from organic crop production on land that has not experienced chemical inputs for 3 or more years can be significant (land formerly in CRP was an oft-cited example). A larger, well-established mixed-operator in Blaine County who owns an organic farming enterprise as part of his total operation pointed out that the difference in price between organic and conventional wheat can be between \$15 and \$19 per bushel.¹

Another significant factor affecting operators across the NGP is the price and availability of leases. The vast majority of operators interviewed for this research either lease ground from

¹ Comparing the price per bushel of conventional soft red winter wheat (SRW) and organic SRW over the 1st quarter of 2015 the operator's estimate appears accurate. Organic averaged \$22.50 while conventional averaged roughly \$5.60. See: <https://www.ams.usda.gov/mnreports/lsmqnof.pdf> And: <http://www.ers.usda.gov/data-products/wheat-data.aspx#25171> See Yearbook Tables, Table 1.

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another landowner or lease some portion of their own land to another operator. Many do both and some emerging ranchers run cattle entirely on leases. Most operators agreed that the cost of leases has increased noticeably over the last 5 years along with competition for access. Opinions were mixed on how negatively the rise in lease prices have affected their operations, or others' for that matter. Obviously smaller operations and those who operate only on leased ground are most vulnerable if prices continue to rise. Perhaps more worrying than rising price of leases, all but the largest and most secure operators expressed concern over the fundamental uncertainty of securing and holding leases. One rancher who owns over 10,000 acres, but is still reliant on leases for his operation articulated the anxiety many operators experience. "We lost a lease last fall. We found something, but we were searching very hard." Continued access to public land leases was also significant concern for some operators, primarily those in the Montana focal geographies where the BLM manages a significant percentage of the land base. Operators in Butte and Harding Counties, SD also noted that continued access to federal and state land leases was crucial for some operations.

CONSEQUENCES AND OUTCOMES

Given the current cost of land, most interviewees believe the most obvious consequence is likely to be that larger operations continue to expand while smaller, and perhaps even mid-sized, operations are likely to decrease in number. Of course, it is by no means certain that the value of agricultural land across the NGP will continue to increase at rates similar to the previous 5 to 10 years. Indeed, several informants, comprised of operators and ag-related professionals, expressed surprise that market valuation of ranchland had not yet plateaued or even declined slightly. Each of these informants expected greater price "elasticity" over the next two years. Still, if prices were to actually stabilize at current rates, or even decline by 10-20%, it is unlikely to dramatically alter the competitive conditions for most small and many mid-sized operations.

Located at opposite ends of the ranching spectrum, the two cohorts most directly affected by land prices in the NGP are emerging ranchers and transitioning ranchers on the verge of retirement. Undoubtedly emerging ranchers are affected more negatively by current land valuations. There was universal agreement among interviewees that this cohort, typically possessing little equity or collateral, cannot access the financing needed to purchase enough of a land base to cover the resulting debt load, much less make a living or turn a profit. Established ranchers, typically ranging from mid-50's-late 60's in age, frequently compared the predicament

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of emerging ranchers with that of their parents' and grandparents' generation who may have struggled, but nevertheless had the opportunity to buy enough land to derive a living from running cattle. Today, this is simply not possible without parents, relatives, or even neighbors helping young ranchers transition onto a land base of sufficient size. In Cherry County, for example, the local extension agent asserted that 500 head of cattle was the minimum needed to support a family (informants across the NGP consistently estimated 300 to 500 head as the necessary minimum). With land prices averaging within the range of \$800-\$1,100 per acre, according to multiple informants, the barrier to entry is clear.

For transitioning ranchers the situation is considerably different, but perhaps no less fraught. At current valuations the temptation to put some or all of their land up for bid is very strong. And, similar to emerging ranchers, family dynamics can play a significant role in ranchland ownership outcomes. These dynamics will be discussed in more detail below, but interviewees noted that the decision to sell all or part of a ranch to the highest bidder was rarely a straightforward matter of profit maximization. Whether or not children or grandchildren wanted to take over the operation, questions of fairness in the division of potential inheritance monies, having sufficient funds for retirement, and the desires of inheritors all determine the land's eventual ownership. Again, it appears that small, and at least some mid-sized, transitioning operators face greater difficulties in deciding how to manage the future of their ranch. For example, selling a 3,000-7,000 acre ranch on the open market could potentially provide a secure retirement and fair distribution of inheritance for the operator's heirs. Yet transitioning the ranch to one child or relative, which means adding another income to the operation's budget, securing the operator's retirement, and ensuring an equitable distribution of inheritance to all heirs may simply be more than the operation can bear.

It seems clear that smaller operations and emerging ranchers—there is likely to be crossover between these categories—are most vulnerable in an environment of high land prices. Yet for some ranches (e.g. larger operations; those with low debt/income ratios; operations possessing significant equity) high prices may provide greater security and stability. Operations with all or some of these characteristics are able to compete in a high-price environment, can secure financing for expansion or diversification more easily, and are much less vulnerable to the risks associated with high debt-loads. Moreover, while the complexities of transition, succession, and inheritance may still present more secure transitioning operators with hard choices, they are

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likely to have much more freedom and autonomy in planning a sustainable future for their operations.

CAPITAL, FINANCING, GOVERNMENT PROGRAMS: A QUESTION OF PROFITABILITY

The greatest constraint on the viability of ranching for many ranchers is profitability. Cost of land (purchase or lease price), capital/infrastructure costs, and input costs can easily overwhelm the income derivable from beginning and/or smaller operations. Considering the increasing costs associated with the above factors, especially land, the most prominent concern is how to ensure that ranching and grassland stewardship provides a secure and livable income for operators into the future.

Very few operators expressed demonstrative concern or frustration when asked about the availability of financing. For emerging ranchers, especially those lacking the opportunity to transition into an existing operation, loans acquired either through FSA programs or private lenders were indispensable. However, interviews with emerging ranchers, FSA and private lending officers revealed that, despite availability of relatively affordable loans and financing, the total loan amounts are rarely if ever enough to secure a viable, income-producing operation on their own. A private lending officer noted that the beginning FSA loan for young operators is usually no more than \$300,000. When asked if that amount was enough to start a viable operation she responded, "No, not usually." She went on to observe that the challenge for emerging ranchers as well as smaller operations was not financing per se, but the basic costs of living expenses versus the annual income derived from, for example, operations running 50-200 head of cattle on leased land with little to no land base of their own. A FSA officer in South Dakota noted that with land valued generally at 4 times over its agricultural income capacity, expanding an operation can be extremely difficult and younger operators are hit hardest by this trend.

A comment from an emerging rancher operating on the far margin of financial sustainability was echoed by other interviewees in various ways: "Our cash flow is worrying. My market prediction was off [even though] I thought I was being conservative. I estimated \$1,100 per calf, but we only got \$1,000 so that hurts. I think the packers got together and decided they were going to pay less." Whatever the reason for the estimated value of his calves not being in line with the actual market price, his concern is indicative of the risk and thin margin of profitability some ranchers face.

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Another factor is operator attitudes toward debt and risk. Certainly land base, equity, existing debt, along with other factors contribute to individual attitudes toward debt and financing. Nevertheless some operators appear more comfortable with the risks associated with carrying debt. An operator that transitioned into 7,000 acres through his mother 10 years ago, and who has since acquired another 4,000 acres, said: “We’ve got 11,000 acres and quite a lot of debt with that, but the debt don’t matter. If you’re not buying ground you’re selling.” Yet another operator in his early 20’s, who recently began working with his father on a family ranch of 7,000 acres, expressed serious reservations with the idea of taking on any debt whatsoever. This, despite the fact that the size of their operation is likely marginal for producing a second, viable stream of income.

Ranchers willingly admit, and accept, that ranching is inherently risky. Weather and market fluctuations are the most cited examples of the risks they contend with. However, no operators indicated that those risks, or any others, were actual deterrents to their continued ranching. This fact is undoubtedly one source of strength for the future sustainability of ranching in the NGP. Despite economic conditions being decidedly unfavorable for many emerging ranchers, our time spent in the field provided evidence again and again that while there are clear barriers to entry these barriers are by no means absolute deterrents. A FSA officer spoke of a rancher that he has worked with for 20 years who has grown his herd to 300 head over that time, but still has not found land that he can afford to buy. Yet he shows no signs of giving up.

One operator we interviewed began with a loan to buy 50 head of cattle in the early 1980’s. Over time he leased land and slowly increased his herd size. Approximately 10 years in he willingly, but with great trepidation, risked a large debt load to buy land and was eventually able to capitalize on that to acquire more acreage and cattle. When asked how long it took him to develop a viable cattle operation such that he no longer felt he had to work off-ranch, he said 20 years. His story is illustrative of several emerging ranchers we interviewed. People who at present own no land, have gone into debt to start a herd, plan to slowly increase their herd size, gain equity, and hope to purchase land in the future with little indication and no guarantee that buying enough ranchland to support a family will actually be possible. Future ranchers and the desire to ranch is there, but mechanisms and tools are needed to help secure the livelihoods of those operating at the margins of sustainability and profitability.

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The imbalance of federal subsidies, insurance, and programmatic support available to farming enterprises versus those available to ranchers was another dynamic operators and other key informants zeroed in. On the question of profitability, informants noted that crop insurance and subsidies can significantly smooth out annual farm profits and, in South Dakota for example, allow farmers to outbid ranchers for land. Some operators also claimed that conservation policies, along with farm policy, may be creating negative incentives for grassland conservation. A farming enterprise may be able to retire one piece of land into CRP and use some or all of the income to break ground somewhere else. A long-time FSA officer emphasized another imbalance created through government programs; this one in the ranching community itself. He noted that the CSP (Conservation Security Program) administered through the NRCS is paid by the acre (payment is capped at \$40,000 per year and \$200,000 in any five year period). Thus, the more acreage a rancher owns the more he or she is paid. This, he believed, gives undue advantage to already established and financially secure operations while smaller operations, if they are able to qualify at all, receive “virtually nothing.” He went on to point out that disaster programs also pay out by the acre. Smaller operations running on mostly leased ground receive very little compensation. Operators that run entirely on leased ground receive nothing. A more equitable balance of federal compensation and support not only between cattle producers and crop producers, but also between larger, well-established ranching operations and smaller, less secure operations could address some of the uncertainty presently confronting private-land ranching in the NGP.

TAXES

Property Tax is the primary source of revenue for local and state government in Nebraska. Tax amounts are determined by the market value of the property. Rising land prices have increased the already disproportionate tax burden carried by Nebraska ranchers, according to informants. Some also argued that because of Nebraska’s unique unicameral representative system, the interests of larger population centers “back east” overshadow the concerns of rural ranching communities.

In 2011 South Dakota began taxing land according to a scale of productivity value based on soil type. For some ranchers this change has sharply increased their yearly tax burden. Their

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ground/soil may be assessed a tax value that is not equitable with the profit productivity of ranching.²

RANCHES AND COMMUNITIES: CONNECTING PAST AND FUTURE

The dynamics of successfully transferring private ranchland and ranching operations to the next generation poses formidable challenges. These challenges and whether they can be managed successfully or not, have consequences for individual families, the small, often isolated communities of which they are part, and the future private stewardship of NGP grasslands. Excepting the rising price of ranchland, no other issue was highlighted more often by operators than the issue of transition, succession, and inheritance. Ownership transition draws together myriad, often conflicting forces. Economic, social, financial, and familial dynamics all influence whether and how a particular ranch transfers to the next generation. This became clear when we queried a particularly thoughtful rancher about what makes succession issues so vexed. He characterized it this way: “Succession is a point problem for a lot of other associated problems that people maybe have ignored. When the disposition of property becomes the issue a lot of other problems can come to the surface.” Another rancher noted that succession was not simply a big issue, but one that was always on-going and required continual monitoring. As time goes by a succession plan, assuming an operator has one, has to change. He noted that death, divorce, illness, and the changing aspirations of heirs, among other factors, can alter how land will transition.

Emerging ranchers consistently discussed several issues tied to transition that they found frustrating. They argued that older ranchers are frequently unwilling to retire. This can leave next generation in career limbo into their 30’s and even 40’s, unsure whether to give up and move in a different direction to support their families or continue waiting in the hope that part or all of the operation will become available to them. Besides being unwilling to retire, young operators noted that older ranchers were sometimes just as unwilling to relinquish operational decision-making which created tensions in the day-to-day management of the ranch and, occasionally, led to younger ranchers leaving the operation.

² A powerpoint presentation created by a tax assessor in Fall River County, SD describes the tax situation in detail. See Appendix Materials. The 2016 SD legislature has proposed several alternatives to remedy this. See <http://www.tsln.com/news/20604570-113/sd-cattlemens-legislative-update>

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As discussed above, high land valuations are a serious barrier to entry for emerging ranchers. They expressed particular frustration when transitioning ranchers put their land on the open market. Several noted that they had spoken with retiring ranchers who claimed to want to “work with a young guy” to transition their operation, but later sold the land to the highest bidder. The majority of emerging operators also expressed concern for the future of their small communities if the trend of large operation expansion continues. Old and young across the NGP, but notably in Cherry County and Valley County, worried about the aging demographics and decreasing populations of their small communities. Beyond the uncertainty of acquiring land and securing a livelihood from ranching, emerging operators with families also worried about the future availability of basic community services. Several young families in remote northern Valley County predicted the local K-12 school will close in the next few years due to decreasing enrollment. If it closes this will entail up to a 75-mile commute one way for these families.

These issues highlight a core tension inherent to ranching culture and lifeways in the NGP. When discussing the dynamics and rationales that guide their decision-making on any number of operational questions, including how and why they might differ from their neighbors, quite a few ranchers emphasized “independence” as a primary explanation. This may indeed be accurate, but interviews revealed equal emphasis on the importance of communal bonds. Ranchers rely on one another for operational support and depend upon formal and informal community networks for all kinds of information relevant to their operation and those of their neighbors. Despite valuing the independence afforded by ranching and, in some cases, actually relishing the risks associated with it, ranchers and their families were keenly aware that the past and future success of their operations was interdependent with the few others who also make their living in such marginal and remote environments. This awareness may clarify points of vulnerability, but it does not necessarily or inevitably lead to optimal community outcomes when balanced against individual financial gain.

Emerging ranchers running profitable operations were emphatic that thoughtful planning on the part of the older generation—along with a desire to see the operation continue into the future—was the key factor in their current viability. When asked what made for a successful transition of ownership, an ag professional who works intimately with ranchers on finance and profitability said flatly: “When mom and dad want to do it.” This insight is applicable beyond the dynamics of immediate family however. To maintain the approximate numbers and diversity of ranch types seen currently in the NGP transitioning ranchers must be willing to work creatively with emerging

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ranchers and smaller operations in order for these communities to prosper into the future. This may mean accepting less for their land than they would otherwise receive on the open market. It might mean forgoing immediate payout from a land sale to give a beginning rancher or a smaller operation the opportunity to have a secure lease. For smaller ranches to maintain viability and have the capacity to successfully pass on the operation, ag professionals and operators noted that they have to be willing to diversify, develop multiple enterprises, and create the means for operational flexibility.

Securing the future of ranching in the NPG depends on the strength and resiliency of the communities in which they are embedded. Without viable opportunities for emerging ranchers to gain an economic foothold in the business of ranching, these communities, which are themselves dependent on the economics of agriculture, will not remain sustainable. Yet ranchers are also members of more distant regional and national communities, and no less dependent on them in many ways. A theme which came up frequently in interviews was public perceptions of ranchers, land stewardship, the cattle industry, and food production generally. The issue of public perception was raised by all rancher types, but was emphasized more often by emerging ranchers and younger ag professionals.

Old and young, established and emerging, tended to take issue with the perception that ranchers see land, grass, and cattle as nothing more than resources of personal economic benefit. Operators in Montana, who are more reliant on public land leases than those in South Dakota and Nebraska, were particularly sensitive to perceived public opinion which characterizes their use of public land as destructive and wasteful. Public land issues aside, many ranchers stressed their dependency on the land, soil, and water; that their relationship with ecological dynamics required diligent attention and care. Many spoke with pride about their grazing rotation systems. Several freely admitted that some ranchers demanded too much of the resources and had done damage over time, but they usually went on to assert that such careless operators typically ran themselves out of business and there were few of them left on the landscape.

Another important factor which ranchers did not explicitly note is the temporal dimension of their relationship with local ecologies, especially on multigenerational operations. The storehouse of meteorological, biological, and ecological observations and knowledge that develop over three, four, and five generations can be quite large. This information, stored within the ranchers

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themselves and passed on orally and through their practices, is a potentially valuable source of granular data on observable ecological changes at local scales. What's more, this information is neither conveniently nor easily replaced if it is lost due to changes in land ownership and tenure. While visiting a large, well-established operation in southern Cherry County the 5th generation owner took us on a drive across the ranch. As he graciously discussed the history of his family and the land, we momentarily marveled at the amount of water visible on the ranch. In response he began to discuss the rapidly changing hydrology of the local landscape—changes which he had seen in his lifetime, but also changes he deduced from information passed to him from his father and grandfather. He pointed to one relatively large body water to the south, saying it had appeared only within the last 15 years and was still expanding. A little later he called our attention to a hill in the distance. “See that hill? It used to blow sand constantly when I was a kid. We have a lot more grass in the Sandhills than we did 50 years ago, maybe than we've ever had.”

As noted above, younger interviewees appeared most concerned with the effects wider public perceptions may have on the future of ranching. A few expressed interest in actively addressing public perception and speculated on ways of doing so. We did not pursue questions as to why these emerging ranchers and young ag professionals emphasized this issue. However it is reasonable to infer that the younger cohort is more connected to social media—and the “wider world”—than their parents and certainly more so than their grandparents. Also, they will be the ones who must make a living in cattle production under rapidly changing sociocultural conditions. Thus, it is fitting that they consider how broad societal trends may affect their livelihoods. Whatever the reasons, they emphasized rancher stewardship of environmental resources, the care and consideration given to livestock well-being, the biological safety of beef produced in the NGP, the need to develop new or niche beef markets, and the potential for marketing the uniqueness of ranching lifeways to the wider public. On the last two points, one emerging rancher said: “The future may be to align your product with a certain breed or maybe your cattle are raised in a certain way. You know, people don't care what it costs if they like the story.” He is obviously referring to people within a certain socioeconomic range, but the larger point is tenable. The rapid growth of organic, fair trade, ethically sourced, and artisanal markets over the past two decades is a testament to the fact that many consumers want to know—and like—the “stories” of the products they buy.

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There is, of course, a flipside to the emphasis ranchers placed on public perceptions. One reason they discussed the issue as often as they did is the potential for public perception of beef production and rancher stewardship of grassland to deteriorate. As one young ag professional put it: “The consumer is not educated about meat production. The media is not accurate [about us] and puts us down...we need a bigger say [through multiple media] about how we raise our cattle.” Emerging and established ranchers were also anxious about competition from foreign beef production, particularly from South America. They consistently claimed that regulations on beef production in the U.S. are far more stringent than in many competing countries. They worried not only about the safety of foreign beef, but also about potential damage to the reputation of U.S. beef production should an outbreak of illness or disease emerge from beef produced elsewhere. Several ranchers decried the trend of vertical integration, evident in hog and poultry production, for ranching communities. They asserted this trend will hurt the profitability of cow/calf producers and that private, independent ranchers are unfairly associated with abuses and poor practices that sometimes occur in the packing industry.

IMPLICATIONS FOR PRIVATE GRASSLAND CONSERVATION

What then is the outlook for the conservation of grasslands in the NGP? Based upon the data gathered in this report the future for conservation of NGP private ranchlands is generally favorable. Nonetheless, there are real challenges to be met.

CONVERSION

Few informants saw crop conversion as a serious threat to ranching or grassland within the focal areas of this study. However, these data should be interpreted in light of the perspective the majority of informants brought to questions about the threat of crop conversion. Many ranchers, and ag professionals as well, did not address the issue at a large landscape scale. Rather their perspectives on conversion were frequently limited to a local and occasionally a regional scale. At those scales conversion does appear to be limited, marginal, and receding based upon recent downturns in commodity crop prices. Another factor to consider is the areas where informants most regularly noted some measure of conversion (Butte, Meade, Valley, and Blaine Counties) appear to have a consistent history of land moving in and out of crop production cyclically. One could interpret this to mean that informants in these areas do not perceive conversion as invasive or expansive, but rather part of the areas' history and cycles of agricultural production.

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Ranchers also tended to situate the threat of conversion within a general category of perceived threats to their particular operation. That is, they tended to characterize the threat posed by conversion as no different or more severe than others (e.g., high land values, increased competition for land base, market volatility and so on). Additionally, farming and mixed operations are historically well-established in the Montana focal counties, for example, and this also likely influenced informant perceptions on the threat of conversion. Based upon field data the area facing the most intense threat from conversion is Blaine County, MT, but this observation has to be interpreted in light of the selective geography addressed in the field interviews.

PRICE OF LAND

Land values pose the greatest challenge to private ranching in the NGP according to informants. Whether increasing land values pose a threat to the future of grassland conservation in the NGP is a more complicated question that goes beyond the scope of this report. The number and types of variables contributing to the complexity of this question shift according to geography. It is plausible to imagine a future in which land price continues to rise and many small and mid-size operations, unable to expand or compete, are bought out by larger operations. We found no reason to assume this would necessarily prove detrimental to conservation goals, presuming larger operations manage the land well. However, potential impacts to the small communities in which ranches are embedded could be significant if the population of emerging ranchers and smaller operations declines. Fewer private land and resource stewards, along with fewer active community members, could reduce community well-being and resilience. And a dearth of potential partners for grassland conservation could create uncertainties for conservation outcomes. Moreover, loss of diversity of types of operations could negatively affect ranching generally and also reduce the shared, communal knowledge base on which effective management of local grasslands, at least in part, depends. The negative effects on young, emerging ranchers is clear. High land price create a barrier to entry for those unable to transition directly into a viable operation. And while rising land valuations gives existing ranchers strong financial security into the future it can generate uncertainty around the eventual disposition of the land (and its value for grassland conservation), incentivizing the landowner or heirs to sell all or part of the land to the highest bidder. If land values continue to rise large family ranches are likely well-positioned to benefit, expand, and increase resiliency. However, the growth and

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expansion of the largest operations may prove detrimental to the viability of ranching communities as whole across the NGP.

CONNECTING WITH CONSUMERS & THE PUBLIC

A more subtle but perhaps no less pressing challenge involves public perceptions of ranching and the value the wider culture sees in cattle production, stewardship of grassland ecologies, and rancher contributions to the management and enhancement of a variety of ecosystem services. Ranchers are a key link in the complex web of relationships that connect the processes of the biophysical environment to the dynamics of human society writ large. In their day to day management of land and production of livestock they mediate the perceived dichotomies of environmental concern and social necessity. Yet this is not likely to be understood nor appreciated by the more dominant and urban sectors of society. While it might prove difficult to measure the effectiveness of any strategic response or initiative on this issue some consideration should be given to ways of promoting rancher stewardship of the NGP's natural resources to the public. Effective representations of the work private land ranchers do could serve to humanize urban society's more abstracted relationships with, but material dependence on, healthy ecosystems. Because of their reliance on the interlocking biophysical cycles that give rise to changing environmental conditions, and their exposure to a range of political and socioeconomic dynamics, it is perhaps useful to think of ranchers as analogous to "indicator species." That is to say, promoting the resiliency and viability of ranchers and ranching communities provides a concrete and representative human link between the health of grassland ecologies, socioeconomic prosperity and security, and the overarching goal of conserving the natural environment. Leveraging WWF's name and reputation as one of the world's leading conservation organizations to promote and publicize the mutual interdependence of sustainable ranching and grassland conservation could not only impact public perception and rancher support, it could also be influential in showing how responsible, on-going human relationships with natural resources can produce beneficial conservation outcomes.

5. FUTURE SCENARIOS AND NGP RANCHING

To understand how our typology of ranchers and landowners could be affected by a range of dynamics over the next 10 to 20 years we constructed 3 future scenarios, response questions, and a limited range of hypotheses for each. Six regional experts were asked to participate and offer insights on the scenarios. The experts were identified through preliminary and primary research and interviews. We interviewed or had conversations with each of them on themes relevant to their expertise prior to scenario testing. Experts were chosen with two objectives in mind.

1. Each focal geography be adequately represented by the selected experts. For scenario testing we selected two experts from Nebraska, two experts from South Dakota, one expert from Montana, and one expert from California. While not based in the NGP, the last expert has extensive experience working with ranchers in the region as a result of his work as a consultant.

2. Experts embody a range of knowledge and experience across the ranching and agricultural industry. To match this criteria we wanted each of the six to occupy an area on a spectrum that moved from a wide scale, bird's-eye of ranching dynamics (e.g. informed about regional, national, even international dynamics) to an intimate and more immediate view of ranching dynamics (e.g. informed about very local and/or day to day considerations of ranchers in the NGP). Two participants are or were industry executives working with state or national cattle associations. One participant works as a district conservationist for a federal resource management agency. Two participants are ranching consultants, one works privately while the other works through a local college extension program. One participant is a professor at a state university, specializes in range management, and works with the state extension program.

It is worth noting that while each expert was selected to match a given area of the spectrum discussed above, most had opinions, knowledge, and experience that ranged beyond this and were able to provide perspectives from a number of different positions along the spectrum. To conduct the survey we made the scenarios, questions, hypotheses, and typologies available for review several days prior to the scheduled interview. Each interview was scheduled for 30 minutes. Interviews were recorded and extensive notes taken during the interview. The experts were instructed to respond to the questions, discuss which if any of the hypotheses seemed most relevant to the given scenario, and identify which types were most relevant or implicated in the scenario. They were given freedom to respond in any way they wished. However, if they did

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not directly address the questions or hypotheses we guided them back to the scenario, restated or reworded it, and asked them to respond.

SCENARIO 1: COMPETITION FROM NON-RANCHING SECTORS & RISING LAND VALUES

The value of private ranchland in the Northern Great Plains has increased dramatically over the last ten years. One factor affecting the increase in land prices comes from non-agricultural interests buying land at and above market rates. In this scenario imagine non-agricultural interests continuing to purchase ranchland, driving up the market value over the next 10-20 years. Our preliminary research suggests a range of hypotheses regarding the impacts of this scenario for different types of ranch operations. Please consider and respond to the hypotheses listed below, with a focus on these questions:

- What about these dynamics suggest particular challenges or opportunities for the given type of farm or ranch operation?
- What are the likely outcomes for grass/ranchland conservation in this scenario?

HYPOTHESES

- Small and medium-sized owner operations (less than 10,000 acres) are unable to compete and are bought out, thus reducing the number diversity of operations in the NGP
- Small and medium-sized owner operations (less than 10,000 acres) are bought out, reducing the number and diversity of operations in the NGP, but larger owner operations (more than 10,000 acres) are able to compete and expand, thus maintaining a more than non-significant percentage of NGP grassland in ranching operations
- Neither small/medium or large owner operations are able to compete with non-agricultural interests, thus owner operations and management of grassland declines
- No difference from present conditions

EXPERT RESPONSES

Two chose hypothesis 2; two chose hypothesis 3; one each chose hypotheses 1 and 4.

However, the expert that chose hypothesis 1 believed that mid-size operations (5,000-10,000 acres) were likely to survive under scenario conditions. The expert that selected Hypothesis 4

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qualified his response in saying that # 4 is more likely in the near-term while #2 grows more likely over the long-term. All six agreed that young/beginning ranchers are most likely to be affected under Scenario 1 and four of those asserted that the traditional rancher/farmer could also be affected significantly.

KEY INSIGHTS

Three experts observed that current land prices are well beyond the actual productive capacity and real agricultural value of the land. Two noted this dynamic is a barrier for emerging ranchers and places a serious burden on the future of small and some mid-size ranches. One asserted somewhat counterintuitively that high prices are not creating economic pressures on ranchers and rangeland. Rather, he argued, succession/transition issues are creating pressure through incentivizing the next generation to “cash out.” Not unlike the above argument, another claimed that “land prices in and of themselves are not likely to drive people out of business.” He also believed that many small/mid-size operations were doing well. Two noted and were encouraged by evidence that larger ranches were able to expand, diversify, and create multiple enterprises. Lastly, one worried that “cultural biases” against ranchers and agricultural production could potentially be channeled into land-use policies that would negatively affect the future of ranching. He also claimed that non-agricultural buyers are not likely to possess the expertise to manage land. And he expressed concern over the potential imbalance between “well-managed” landscapes versus the trend toward “natural regulation” as a preferred management strategy.

Three experts thought increasing numbers of non-ag buyers may create more lease opportunities for ranchers. Lastly, one expert wondered whether conservation and stewardship of grass ecologies would suffer under Scenario 1 as ranchers try to get more productivity from smaller patches of land.

SCENARIO 2: HIGH COMMODITY PRICES ALL AROUND

Over the last few years commodity and energy prices have fallen from the highs of the mid-late 2000's, presumably slowing both energy exploration/development and the conversion of ranch/grassland into commodity crop production. In this scenario imagine energy and commodity prices rebounding and stabilizing at levels near their previous highs over the next 10-20 years. Our preliminary research suggests a range of hypotheses regarding the impacts of this

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scenario for different types of ranch operations. Please consider and respond to the hypotheses listed below, with a focus on these questions:

- What about these dynamics suggest particular challenges or opportunities for the given type of farm or ranch operation?
- What are the likely outcomes for grass/ranchland conservation in this scenario?

HYPOTHESES

- Little to no effects on traditional owner operations; owners are able to maintain and adjust to market conditions, thus maintaining ownership/management of private ranch/grasslands
- A measurable impact on traditional owner operations; competition and pressure from investors and other interests, but the characteristics of ownership and management of private ranch/grasslands remains within its present range
- A significant impact on traditional owner operations; competition from investors and other interests is intense; characteristics of ownership and management of private ranch/grasslands changes

EXPERT RESPONSES

Four experts chose hypothesis 1 while two chose hypothesis 2.

One expert qualified his choice of hypothesis 1 by noting that hypothesis 3 was more likely over the long-term. Another expert who selected hypothesis 2 stated that hypothesis 1 could be just as likely in the given scenario. The other expert who selected hypothesis 2 added the qualification that ownership of subsurface rights and the potential intensity of investor pressures mattered in this scenario.

Two experts believed none of the types were most likely to be affected under Scenario 2. One thought all were likely to be affected—as a high-price scenario offered the lowest-risk environment. Three believed traditional rancher/farmer and traditional mixed-operators were most likely to be affected while two of these three also thought investors could be included in that category of most likely to be affected.

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KEY INSIGHTS

In discussion, three experts felt the given scenario was an unlikely one, citing historical cycles of energy and commodity markets. Three also believed that high-prices would likely prove beneficial for ranchers overall. And, again, three experts also expressed concern for grass and rangeland conservation outcomes because: “anything [high prices, energy development] that drives people off the land does not bode well for the resource”; “high prices might increase the conversion or removal of CRP land”; “competition for energy leases could have an effect on resources.” Finally, one expert, echoing another’s concerns over tenure and the type of owner on the landscape, said: “Who owns the land or the operation is crucial. Local owners aren’t going to tear up the ground.”

SCENARIO 3: CONTINUED PRESSURES PLUS INTERVENTIONS

Land values, equipment, input, and other operational costs continue to rise creating barriers to entry for emerging operators and barriers to expansion for many existing operators. In this scenario imagine these conditions continue on their current trajectory for the next 15-20 years. Would the development and availability of new financial tools and low-cost capital/operating loans tied to grassland conservation and stewardship have a measurable impact on operators in the NGP? Our preliminary research suggests a range of hypotheses regarding the impacts of this scenario for different types of ranch operations. Please consider and respond to the hypotheses listed below, with a focus on these questions:

- What about these dynamics suggest particular challenges or opportunities for the given type of farm or ranch operation?
- What are the likely outcomes for grass/ranchland conservation in this scenario?

HYPOTHESES

- Little to no effects on traditional owner operations; owners are able to maintain and adjust to market conditions, thus maintaining ownership/management of private ranch/grasslands
- A measurable impact on traditional owner operations; competition and pressure from investors and other interests, but the characteristics of ownership and management of private ranch/grasslands remains within its present range

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- A significant impact on traditional owner operations; competition from investors and other interests is intense; characteristics of ownership and management of private ranch/grasslands changes

EXPERT RESPONSES

Half of the experts thought hypothesis 2 was most likely while the other half thought hypothesis 3 more likely. However, a respondent who ultimately selected # 2 noted that # 3 was perhaps just as likely.

All six believed Emerging Ranchers would be most impacted, with two adding the traditional rancher type, one adding the traditional rancher mixed-operation type, and one who believed all types would be impacted.

KEY INSIGHTS

Overall the response the scenario 3 was positive, sometimes enthusiastic. Two respondents noted that “cash flow” is a key factor for many operations and this scenario could be potentially beneficial for the margin vulnerabilities beginning and small operations contend with. Three experts believed this could assist with greater rancher land acquisition. All generally agreed that the demand for the tools described in the scenario is there, that ranchers are aware of ecological issues, and this could lead to better conservation outcomes. One noted the mix of philanthropic and private interest found in the scenario has “merit.” He went on to offer an example whereby large corporate lending institutions could perhaps be engaged through their philanthropic arms. Finally, one expert felt this could provide more opportunities for low-cost, low-input operations whose numbers, he believed, are increasing. There were caveats however.

- Sellers must be identified to work with buyers; some way is needed of “getting [seller] attention”
- Rules must be clear and much would depend on how the program is implemented
- May not help operations that are already unprofitable; could create “overleveraged” situations
- Buy-in from and coordination with local lending institutions should be pursued

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SUMMARY: SCENARIO TESTING

Unanimity of responses to the given hypotheses was greatest for scenario 2, but only slightly more so than for scenario 3. Responses to the hypotheses for Scenario 1 showed the most variation. Young/beginning ranchers was the type chosen most often to be affected under the three scenarios followed by traditional ranchers. A plausible interpretation for these results is that young/beginning ranchers and some traditional ranchers are both more exposed to the dynamics explored in these scenarios and more likely to be impacted—positively and/or negatively—by these dynamics in the future.

6. SUMMARY & CONCLUSIONS

This report offers data and analysis to inform strategic approaches to working with ranchers to achieve conservation objectives. Based on socioeconomic data for the region, land tenure analysis for a sample group of counties, and extensive field work, we addressed four questions.

WHAT IS THE BROADER SOCIOECONOMIC CONTEXT?

As a region, the 35 SRI focal counties in the United States demonstrate unique socio-economic qualities associated with their rural, agricultural nature and the high number of Native American reservations within the area. We document five types of counties in the area based on operation size distribution and relative influence of crop agriculture: Native American, Amenity- and Exurban-influenced, Large Ranching, Small Ranching, and Mixed Farming and Ranching counties. Within the SRI 9 priority counties, there is a mix of the four latter types.

Across this diverse region three key trends emerge with respect to agricultural income and demographics of the rural communities: the region's exceptional degree of dependence on agricultural income relative to the rest of the country; the high barriers to entry for new ranchers; and agricultural income volatility, within commodity sectors and across regional geographies.

WHAT IS THE RANGE OF RANCHING OPERATIONAL STRATEGIES IN THE NGP?

Ranchers in the NGP mostly base their operations on a yearly calf crop, although the region naturally has some exceptions such as operations that focus on breeding stock. The size of the mother cow herd and the extent to which ranches incorporate other agricultural products or business ventures are the most obvious ways that operations differ within the basic cow-calf model. Opportunities for additional crops or enterprises are to some degree related to location: ranches in northeastern Montana's wheat belt, for example, are more likely to mix farming and ranching. The cost of farming equipment necessitates that most operations that mix commodity crops with calves are large in scale, and indeed in our observation, the larger the operation, the more likely the agricultural operation was to be diversified across products beyond calves. Small operations are more typically vulnerable to the range of factors that affect NGP ranching generally. However local conditions and creative management can mitigate against this. Reliable groundwater, the potential for winter grazing, strategic and timely increase or reduction in herd size, and innovative work or lease arrangements with neighboring owners can help smaller

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ranchers retain viability. Larger operations, possessing capacity and equipment, are more likely to grow hay, alfalfa, and other feed for winter forage. This is particularly so in Montana, but operations in South Dakota and Nebraska with accessible ground water or located within irrigation districts grow forage as well. In some areas of the NGP it is possible for operators to graze into the winter, but reliability can be variable and winter feed purchase is often necessary. Another strategy employed by some ranchers is to move herds to leased farm ground where animals can feed on farm waste during the winter. While this reduces winter feed costs such leases can be hours away and ranchers lose daily oversight and management of their herd. Weather and moisture conditions during spring and summer are influential in operational decision-making. Reduced winter and spring moisture intensifies competition for pasture leases, increases local lease prices, and creates management uncertainties. Acquiring leases for summer pasture is an ongoing concern. General availability of leases and price, especially when coupled to potential low-moisture conditions, reduces operational flexibility and creates uncertainty and insecurity for seasonal and long term strategic decision-making.

WHAT CONSTRAINTS AND OPPORTUNITIES ARE MOST SIGNIFICANT TO RANCHERS?

Land values and challenges with profitability in an unpredictable market environment pose the greatest challenge to private ranching in the NGP according to informants. Rapid increases in land values in the NGP region reflect three distinct trends that differ by geographies within the region: pressure from investors focused on the intact, remote nature of large grassland ranches; pressure from investors focused on development opportunities near growing communities; pressure from buyers seeking opportunities to develop new cropland. The latter pressure—booming non-livestock agricultural commodity prices—is familiar and cyclical in the region’s longer history and appears recently to have undergone a predictable boom-bust cycle. From a conservation standpoint, a troubling aspect of this is that market dynamics associated with “plow-up” in the focal counties we studied appeared to favor marginal land in regions with available water resources. A rush to plow and irrigate marginal land represents a real threat to the ecological integrity of these already fragile grasslands. If crop and forage commodity prices continue to drop over the next few years, past history suggests these marginal cropping operations will revert back to pasture at some point, though likely with poorer ecological value.

Within the counties we studied, there does not appear to be a significant threat to the volume of grassland available to ranching enterprises in the region as a matter of total volume. However,

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the total available grassland acreage is certainly not growing. Market and land value trends continue to favor agglomeration of existing properties, with the number of ranches operating in that fixed body of core grassland declining over time. As ranches become larger, the range of choice for new and emerging ranches shifts, with acquisition of base property becoming increasingly untenable and complex lease-based operations becoming the path to entering the ranching business. The narrowing range of choices for emerging ranch operations exacerbates the significance and importance of choices made by transitioning ranchers with respect to selling or passing their properties on to heirs—choices that have become increasingly complicated with rapid increases in land values. Similarly, the role that non-traditional owners of large properties plays in shaping opportunities and experiences of new and emerging ranchers also grows in importance. If their properties can provide the land necessary for emerging ranchers to raise a herd that is the basis of a family livelihood, and the good management of a herd can provide the land management services sought by the landowner, there may be tremendous synergies. But this involves a rethinking about many aspects of the ranching model: for example, new ranchers would need to embrace identities as cow-owners and land management service providers, abandoning the longstanding “land and livestock” business model of previous generations. Amenity ranchers, investors, and other owner types would need to embrace identities as land owners and stewards of a local ranching legacy, rather than being cattlemen in their own right.

HOW DOES THE NATURE OF THREAT AND OPPORTUNITY DIFFER IN THE NGP REGION? WHAT ARE THE CORRESPONDING IMPLICATIONS FOR SRI STRATEGIES?

For ranches focused on cattle production as a livelihood, size and degree of establishment represent the strongest point of differentiation with regards to how vulnerable a given type of operation is to the key issues of increasing land values and income volatility. Data from multiple sources suggest that large, established operations are the most likely to be competitive in acquiring land that does come on the market, even at high prices. Large established operations also have the experience and cash flow to adapt and transform in response to abrupt developments such as a drought or market downturns. In contrast, small and mid-sized operations, and especially emerging operations, are much less competitive in the land market and have a narrower range of available operational responses to unexpected developments.

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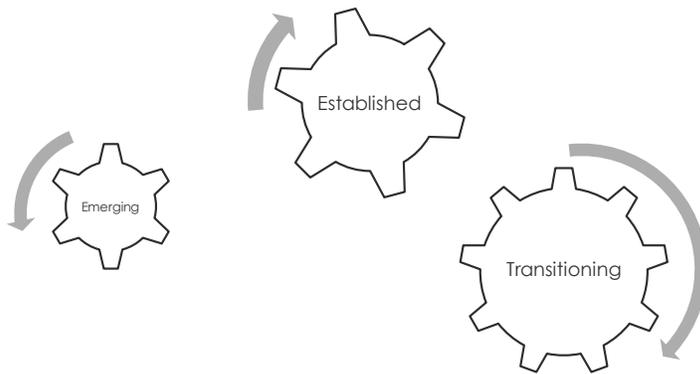
REFRAMING THE SUSTAINABILITY INTERVENTION

Based on these findings regarding agglomeration and the narrowing range of choice for those entering the ranching business, we see an opportunity to implement a new conceptual framework for the SRI to assist in vetting strategies and evaluating program outcomes. We suggest orienting sustainability strategies for ranches and communities around our life cycle and rancher typology, using the networked gears concept shown on the following page. Expanding diversity across types of ranchers (values, operations and, life cycles) and creating synergies among them opens up a new way of thinking about strategic development. Specifically, the questions at hand are: **does the program or activity ...**

- ❑ direct capital (human, financial, social) to resilient land uses?
- ❑ build and strengthen bridges at multiple scales: family, community, region, beyond?
- ❑ Lead to lasting informal institutions that support a culture of interdependency and stewardship?

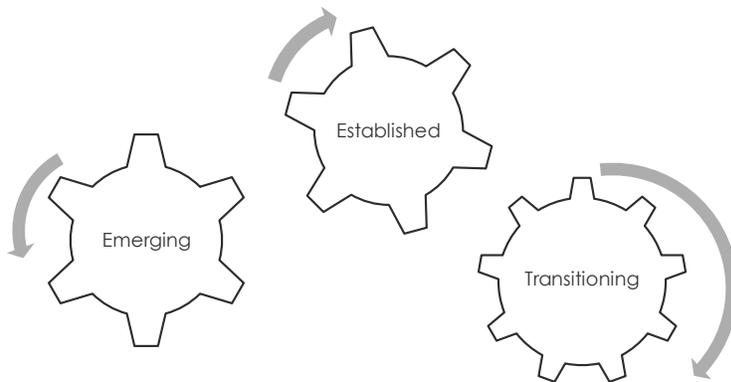
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The current social-ecological situation of ranches looks like this:



... emerging ranchers are a minority, the group of transitioning ranchers is growing and disproportionately powerful, and entities are often disconnected across life cycles and geographies.

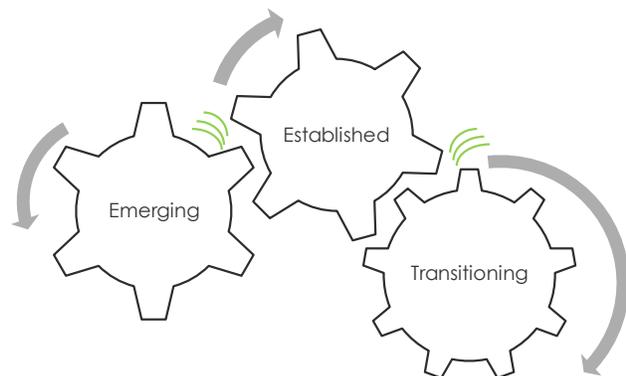
WWF SRI could focus on two remedies to this situation, first **EQUALIZING**



in order to create patterns of influence across these groups and more diversity among them. Here, the logic is that resilient rural communities are an important conservation priority for the NGP region. Resilient rural

NGP communities will feature a diverse portfolio with respect to size and status of agricultural operations because diversity—especially the presence of emerging operations—creates opportunities to enhance many of the assets that define resilient communities and responsible land uses: leadership, innovation, knowledge, willingness to embrace change, social networks and opportunities for social learning.

And second, **CONNECTING** across cohorts of ranches – at family, community and regional scales and across stages of development and rancher values. These connections might be facilitated by a coalition of established ranchers and bridge organizations (e.g. WWF and partners). Such connectivity is a feature of resilient communities and has the potential to enhance resiliency moving forward.



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