Research Bulletin 185
August 2014

Idaho Private Rangeland Grazing—Lease Arrangements

Neil Rimbey, L. Allen Torell, Stephanie Kane, Julie Gustanski, Joseph Kennedy, David Scarsella

University of Idaho
College of Agricultural and Life Sciences

Authors:
Neil Rimbey, Professor, University of Idaho; L. Allen Torell, Professor, New Mexico State University; Stephanie Kane, Institutional Research, Washington State University (former Manager, Social Science Research Unit, University of Idaho); Julie Gustanski, Principal/Senior Economist, Resource Dimensions, Inc.; Joseph Kennedy, Rural Appraiser, Resource Dimensions, Inc.; David Scarsella, Research Analyst, Resource Dimensions, Inc.

Acknowledgments:
Barbara Foltz and Monica Reyna, Social Science Research Unit at the University of Idaho, provided assistance with the telephone survey and data management during this project.

Cover: Courtesy of Idaho Rangeland Resource Commission.

Published and distributed by the Idaho Agricultural Experiment Station, Donn Thill, Director. University of Idaho College of Agricultural and Life Sciences, Moscow, Idaho 83844-2337.

Background

Rangelands encompass about half of Idaho's 52 million acres. These lands are not cultivated or irrigated and may include native and introduced trees, shrubs and herbaceous (grasses and forbs) vegetation. Much of this vegetation is grazed by domestic livestock and serves as habitat for wildlife. About two-thirds of the rangelands are in the public domain, under the management of agencies such as the Bureau of Land Management (BLM), the U.S. Forest Service (USFS) and other public agencies. Idaho Department of Lands (IDL) manages approximately 2 million acres of State Endowment Trust Lands, which generate income for the trust beneficiaries. These public and private rangelands help support an important segment of Idaho's economy -- domestic livestock production. Privately owned rangelands in Idaho amount to about 4.6 million acres (USDA-NASS, 2009) and provide important domestic livestock grazing resources as well as critical wildlife habitat. Private lands may be leased to others for grazing. Private grazing lease rates are gathered and published each year by the USDA National Agricultural Statistics Service (USDA-NASS 2014). These USDA lease rate estimates provide critical information used in the calculation of federal grazing fees and state land lease rates, as well as providing information to private landowners and lessees of the going lease rates in the state. However, little is known about the leasing details, services provided by the landowners and other critical factors that influence the rates.

This bulletin summarizes Idaho private rangeland grazing lease arrangements. The study was partially funded by the Idaho Department of Lands (IDL) and the survey results were first released as an internal IDL report (Resource Dimensions, Inc. 2012). An intensive lease-rate telephone survey was undertaken during the fall and winter of 2011-12. Data provided by the lessees and lessors of Idaho private rangelands were analyzed to determine frequency of responses, locational variation of lease rates and the services provided by the lessor, types of leases encountered and numerous other factors. Analyses revealed statistically significant factors that influence lease rates, along with regionally important differences.

Survey Procedures

The survey frame was obtained from a list of 4,365 individuals, businesses and organization who had paid an assessment fee or who had a relationship with the Idaho Rangeland Resource Commission (IRRC). Only 772 listings had phone numbers associated with them. Survey staff at the University of Idaho Social Science Research Unit (SSRU), whose primary role on the study was to develop and conduct the telephone survey, used online directories to look up phone numbers for every second and fifth listing without a number. Sample frames were then combined and checked for duplicates, resulting in 2,159 listings.

The final telephone survey instrument, as approved by IDL, went through several internal and external reviews and revisions prior to pre-testing. Survey research convention requires that when pre-testing survey instruments, they be administered to the types of respondents who would actually be participating in the study. A pre-test of 60 listings began on November 8, 2011. Once the survey instrument was finalized, a computer-assisted telephone interviewing (CATI) protocol was developed and pilot-tested, then finalized.

To increase the telephone survey response rate, one week prior to calls a postcard was mailed to potential respondents for whom a complete address was known. Postcards identified the survey's purpose, that calls

would be from the SSRU, and provided a toll-free number to call regarding questions about the survey. Postcards for the first survey wave were mailed on December 2, 2011; survey calls began on December 5, 2011. Postcards for the second wave were mailed January 9, 2012 with calls beginning on January 13, 2012. February 8, 2012 was the final day of calls.

SSRU telephone interviewers were required to complete a 4-hour training session in survey methodology, the use of the CATI software and phone etiquette, and a 1.5-hour online training program in human subject research and confidentiality practices developed by the U.S. Department of Health and Human Services. Each calling session was monitored by trained supervisors. Data were collected on Wincati telephone interviewing software[1].

A total of 373 respondents were determined to be eligible for and agreed to participate in the lease rate survey. Survey dispositions included 550 ineligible respondents (individuals who did not lease their land to anyone, nor leased land from anyone, or they had recently sold their land), 254 potential respondents with disconnected phone numbers for whom no new listing could be obtained from online directory listings, 106 potential respondents who refused to participate, and 685 potential respondents who were not reached either because no phone number could be obtained, or because they could not be reached after nine call attempts. The final adjusted response rate (AAPOR RR2) was 32.7%.[2] For comparison, a similar study conducted in 1992 (Rimbey, et al. 1992) had a response rate of 39%, and a survey of agricultural lease rates in the state had a response rate of 38.3% (Resource Dimensions 2010).

[1] Sawtooth Technologies, Inc. 2011. Wincati Version 4.1. Northbrook, IL.

[2] The American Association for Public Opinion Research (AAPOR) (2009). Standards Definitions: Final Disposition of Case Codes and Outcome Rates for Surveys, 4th Edition. Lenexa, KS: AAPOR. Available at: http://www.aapor.org/AM/Template.cfm?Section=Standard_Definitions&Template=/CM/ContentDisplay.cfm&ContentID=1819

Overview of Idaho Private Grazing Land Leases

The distribution of respondents across each of the five study regions, by county, is shown in Table 1. Because the study was partially funded by IDL, study regions closely follow IDL administrative areas (IDL 2014).

Several factors played into low actual respondent counts in a number of counties. In particular, several counties had a moderately small pool of potential participants. This is indicative of the extent and quality of grazing within these regions. Further, according to discussions with several County Assessors, it is representative of the pattern of private grazing lands leased. Overall, however, the total number of respondents met initial project goals for statistical reliability.

Table 1. Survey respondents by region and county.

Region/County	Grand Total	Region/County	Grand Total
Eastern	**143**	**Southwest**	**52**
Bannock	3	Ada	6
Bear Lake	13	Boise	5
Bingham	12	Canyon	3
Bonneville	15	Elmore	18
Butte	8	Gem	6
Caribou	12	Owyhee	12
Clark	16	Payette	2
Custer	13	**Payette Lakes**	**41**
Franklin	3	Adams	20
Fremont	4	Valley	6
Jefferson	1	Washington	15
Lemhi	26	**Northern**	**30**
Madison	2	Bonner	3
Oneida	6	Boundary	2
Power	6	Clearwater	4
Teton	3	Idaho	10
South Central	**46**	Latah	3
Blaine	14	Lewis	3
Camas	5	Nez Perce	3
Cassia	15	Shoshone	2
Gooding	2		
Jerome	0	**Region Not Reported**	**3**
Lincoln	5		
Minidoka	1		
Twin Falls	4	**Grand Total**	**315**

Data Limitations

The study region and county where each lease is located were used to allocate leases to different regions of the state. Respondents were asked to pick the two most representative leases and provide additional detail. The question in the survey was "*In what Idaho county is the first (or second) lease held.*" The location of the lease(s) relative to a nearby town was given, however it was not always clear what county the selected lease(s) was in. When not clear about county location, the county where this nearby town was located was used to define county location. The region coding is correct; however, in a few instances the exact county within that region may be incorrectly recorded as an adjacent county.

Several issues were encountered for statistical analysis of the data and for evaluating factors influencing grazing lease rates. Most notably, while survey respondents reported how leases were structured and charged, 97 respondents did not report what they paid for the lease. Calculating a dollar per AUM lease rate when only a total payment was given proved to be problematic because acreages were very broadly defined and aggregated across multiple leases. This nonresponse in lease payment amount limited our ability to convert to a common measure or standard of payment ($/head, $/AUM, $/acre, etc.) for comparison and analysis purposes. Dollar per acre lease rates could not accurately be computed and were reported for only 16 leases. Further, given the problems in computing acreages on a particular lease, the number of acres per AUM could not be computed to use as an indicator of lease quality.

Total Number of Leases

Private grazing lease information was gathered for 315 lease parcels with data reported by 239 individuals. Lease statistics were reported by 163 individuals for one parcel of land only, 76 individuals for a second parcel of land, and two people described 3 leases as both a lessee and lessor. Of the total 315 leases, 211 (67%) were reported from the lessee perspective and 104 (33%) were lessors (Table 2).

The majority of leases were between non-related individuals or groups. Inclusion of subleasing provisions in the lease was not common.

Table 2. Number of grazing leases in the survey, by type.

Description	Eastern	Northern	Payette Lakes	South Central	Southwest	All Regions
Respondent Type						
Lessor	35.0%	40.0%	19.5%	28.3%	38.5%	33.0%
Lessee	65.0%	60.0%	80.5%	71.7%	61.5%	67.0%
Number reporting	143	30	41	46	52	315
Leases To/From?						
Non-related individual or group	80.4%	80.0%	97.4%	80.4%	92.3%	84.7%
Relative or related group	18.2%	20.0%	2.6%	19.6%	7.7%	14.7%
Other	1.4%	0.0%	0.0%	0.0%	0.0%	0.6%
Number reporting	143	30	39	46	52	313
Subleasing Provisions						
Yes	0.7%	3.3%	4.9%	0.0%	7.7%	2.5%
No	34.3%	33.3%	14.6%	28.3%	30.8%	30.2%
Refused	65.0%	63.3%	80.5%	71.7%	61.5%	67.3%
Number reporting	143	30	41	46	52	315

Private Grazing Lease Characteristics

The survey was developed to specifically identify the range of terms, characteristics, and conditions for private grazing land leases in the five study regions. Responses to these questions are summarized in tables separately by region and land type. Most responses were consistent across regions, though tests were not conducted to determine if statistical differences exist. Summary tables include all 315 leases with three of the leases unclassified as to the IDL region location. As described in more detail below, the amount of native rangeland, improved rangeland, cropland and irrigated land included with each lease varied both within and between regions; thus, statistics include leases with various mixtures of native and improved lands.

The majority of leases (67.8%) were structured with automatic annual renewal (Table 3). The average term for the lease varied from three to five years for the five study regions, averaging four years across all leases. Slightly more than 50% of the lease agreements were written. About 80% of the leases had been renewed within the past three years, at least with respect to lease rate. There was no correlation ($P = 0.84$) between the length of the agreement and whether the lease was written or verbal.

Table 3. Typical lease arrangements and renewal terms, by region

	Eastern	Northern	Payette	South Central	Southwest	All Regions
Last Year Lease Renewed (%)						
2012	7.1%	3.4%	10.3%	2.2%	5.9%	6.1%
2011	67.4%	65.5%	82.1%	67.4%	60.8%	68.0%
2010	7.8%	6.9%	0.0%	8.7%	9.8%	7.1%
2009	5.7%	6.9%	2.6%	2.2%	7.8%	5.5%
2008	4.3%	10.3%	2.6%	4.3%	3.9%	4.5%
2007	1.4%	0.0%	0.0%	2.2%	3.9%	1.6%
2006	1.4%	3.4%	0.0%	0.0%	0.0%	1.0%
2005	0.0%	0.0%	0.0%	2.2%	3.9%	1.0%
2004	0.7%	0.0%	0.0%	4.3%	2.0%	1.3%
Prior to 2004	4.3%	3.4%	2.6%	6.5%	2.0%	3.9%
Number reporting	141	29	39	46	51	309
Lease Arrangement						
Written	52.8%	50.0%	55.0%	58.7%	46.2%	52.4%
Verbal	47.2%	50.0%	45.0%	41.3%	53.8%	47.6%
Number reporting	142	30	40	46	52	313
Renewal Arrangement						
Automatic Renewal each Year	68.8%	73.3%	61.5%	71.7%	62.7%	67.8%
Specified Number of Years	31.2%	26.7%	38.5%	28.3%	37.3%	32.2%
Number reporting	138	30	39	46	51	307
Term of Lease (Years)						
Average	4.5	3.0	2.7	5.2	4.5	4.2
Standard Deviation	13.9	5.1	4.5	11.1	5.1	10.8
Number reporting	136	26	38	42	49	294
Distribution (Years)						
1	64.0%	76.9%	68.4%	54.8%	53.1%	62.6%
2	5.1%	0.0%	2.6%	0.0%	0.0%	2.7%
3	5.9%	3.8%	7.9%	11.9%	8.2%	7.5%
4	1.5%	0.0%	0.0%	4.8%	0.0%	1.4%
5	9.6%	3.8%	7.9%	4.8%	10.2%	8.2%
6	0.0%	3.8%	0.0%	0.0%	4.1%	1.0%
7	0.0%	0.0%	0.0%	4.8%	2.0%	1.0%
8	1.5%	3.8%	0.0%	2.4%	0.0%	1.4%
10	5.9%	3.8%	2.6%	7.1%	14.3%	6.8%
> 10 Years	6.6%	3.8%	5.3%	7.1%	8.2%	6.5%

Average distance from the respondent's base (i.e. ranch headquarters) to the lease was highly variable, averaging 26 miles ± 32 (Table 4). Distance to the lease was skewed to the low end.

Lessees and lessors indicated they held an average of four private land leases. The Eastern region had an average of six leases per individual (Table 4). Fifty survey respondents indicated some of their leases included IDL lands. Ninety-one leases also included lands leased from other agencies including the BLM and USFS. Information on the size or nature of lease characteristics with other public land agencies is outside the scope of this study and was not reported.

Table 4. Distance to lease and total number of leases held

Description	Eastern	Northern	Payette Lakes	South Central	Southwest	All Regions
Distance from base to lease (miles)						
Average	27	29	25	24	26	26
Standard Deviation	37	28	32	28	25	32
Minimum	0	0	0	0	0	0
Maximum	200	100	130	100	90	200
Number reporting	143	30	41	46	52	311
Private Leases in Idaho						
Average number of leases per lessee/lessor	6	2	1	4	3	4
Number reporting	143	30	41	46	52	315
Non-private leases in Survey						
Total number of IDL leases	21	4	6	8	10	50
Total number of other agency leases	44	7	12	13	14	91

On about 73% of total leases, lessors held the water rights (Table 5). Lessee responses were excluded from this calculation as we believe they would not be expected to have a thorough understanding of water right issues on parcels they lease. About 66% of total leases do not control public access to the property.

Table 5. Water rights and control for public access to lease

	Eastern	Northern	Payette Lakes	South Central	Southwest	All Regions
Lessor hold water rights?						
Yes	78.0%	75.0%	62.5%	76.9%	65.0%	73.1%
No	22.0%	16.7%	37.5%	23.1%	35.0%	26.0%
Refused	0.0%	8.3%	0.0%	0.0%	0.0%	1.0%
Is public access to lease controlled?						
Yes	30.8%	46.7%	26.8%	30.4%	30.8%	31.8%
No	68.5%	53.3%	65.9%	65.2%	67.3%	66.0%
Refused	0.7%	0.0%	7.3%	4.3%	1.9%	2.2%

Respondents indicated that the carrying capacity of a lease is principally determined by climatic conditions and vegetation availability, or through the use of historic records (Table 6). Some leases used multiple ways to calculate carrying capacity. Likewise, multiple water sources were reported on some leases. Typically, natural sources of water were used on reported leases; however, motor driven wells were used on about 14% of all leases. The location of the water source on native versus improved lands was not defined in the survey. However, there was a negative correlation (r = -0.41) between the percent of the leased land that was designated as native rangeland and the use of a well as a water source. Motorized wells tended to be used more often when improved or irrigated lands were also included with the lease.

Table 6. Carrying capacity and water sources, by type

	Total instances	% of total
How is carrying capacity determined?		
Climatic conditons and vegetation availability	144	40.6%
Use of historic property records	128	36.1%
Negotiated with lessor	59	16.6%
Other	24	6.8%
Water sources on lease		
River, stream or creek	68	36.4%
Spring	58	31.0%
Motor-driven well	27	14.4%
Lake or pond	23	12.3%
Other	5	2.7%
Haul water	4	2.1%
Wind-powered well	2	1.1%

Nearly 80% of all leases were only for beef cattle, specifically cow-calf pairs. Yearlings comprised an average of 12% of leases. Sheep are grazed primarily in the South Central and Southwest regions (Table 7). The grazing system types were split about evenly with season-long, rest-rotation and short duration each employed on about 30% of leases in each region. Most lease structures do not require the lessee to report range conditions after grazing.

Table 7. Livestock and grazing system, by type

Description	Eastern	Northern	Payette Lakes	South Central	Southwest	All Regions
Livestock Type						
Cow-calf	83.0%	86.2%	82.5%	67.4%	70.6%	78.7%
Cow-calf, Sheep	2.1%	3.4%	0.0%	10.9%	7.8%	4.2%
Cow-calf, Yearlings	0.7%	0.0%	2.5%	2.2%	2.0%	1.3%
Yearlings	12.8%	10.3%	15.0%	10.9%	7.8%	11.9%
Sheep	0.7%	0.0%	0.0%	8.7%	9.8%	3.2%
Horses	0.7%	0.0%	0.0%	0.0%	2.0%	0.7%
Grazing System Type						
Season-long	28.7%	30.0%	26.8%	21.7%	26.9%	27.3%
Deferred	6.3%	6.7%	4.9%	10.9%	5.8%	6.7%
Rest-rotation	28.0%	30.0%	29.3%	26.1%	23.1%	27.3%
Short duration	28.7%	26.7%	34.1%	28.3%	34.6%	30.2%
Other	3.5%	3.3%	0.0%	10.9%	3.8%	4.1%
Refused	4.9%	3.3%	4.9%	2.2%	5.8%	4.4%
Report range conditions required after grazing?						
Yes	17.5%	16.7%	26.8%	13.0%	11.5%	17.1%
No	82.5%	83.3%	70.7%	87.0%	88.5%	82.5%
Refused	0.0%	0.0%	2.4%	0.0%	0.0%	0.3%

Length of the grazing season varied from less than 30 days to yearlong. The majority of grazing animals were on the lease for less than 150 days (Table 8). Most of the grazing occurred during Q2 (i.e. 2nd quarter) and Q3 with 4% of the grazing days in Q1, 33% in Q2, 45% in Q3, and 18% in Q4. These percentages were consistent across cow-calf, yearling, and sheep producers except none of the sheep producers grazed the leased parcel during Q1.

Table 8. Length of grazing season

Length of Grazing Season (days)	Eastern	Northern	Payette	South Central	Southwest	All Regions
0-30	21.0%	23.3%	22.0%	13.0%	13.5%	18.7%
30-60	12.6%	3.3%	12.2%	10.9%	19.2%	12.4%
60-90	8.4%	3.3%	9.8%	13.0%	21.2%	11.1%
90-120	11.2%	23.3%	4.9%	17.4%	7.7%	11.7%
120-150	23.1%	20.0%	14.6%	8.7%	11.5%	17.5%
150-180	14.7%	16.7%	14.6%	21.7%	13.5%	16.2%
180-210	5.6%	6.7%	17.1%	10.9%	11.5%	8.9%
210-240	2.8%	0.0%	0.0%	2.2%	0.0%	1.6%
240-270	0.7%	0.0%	2.4%	0.0%	1.9%	1.0%
270-300	0.0%	0.0%	2.4%	2.2%	0.0%	0.6%
360-390	0.0%	3.3%	0.0%	0.0%	0.0%	0.3%

Native rangeland was the predominant category of land on the leases in each region (Table 9). About 45% of the leases included only native rangeland while 22% of the leases did not include any native rangeland acreage. The majority of the leases had a mixture of native rangeland, improved seeded species, cropland and irrigated pasture. Twenty of the 315 leases were comprised of over 90% irrigated pasture.

Table 9. Categories of land, by region

Study Region	Native Rangeland	Improved Rangeland	Crop aftermath	Irrigated Pasture	Other
Eastern					
Average (%)	62.9	12.6	7.0	13.9	2.9
Standard Deviation	43.1	29.1	21.6	28.9	14.6
Northern					
Average (%)	68.4	15.3	5.1	0.8	6.7
Standard Deviation	38.5	27.7	11.6	4.6	21.7
Payette Lakes					
Average (%)	64.1	11.2	9.6	14.1	1.0
Standard Deviation	38.0	23.9	22.2	33.5	4.5
South Central					
Average (%)	57.4	28.6	5.4	8.4	0.0
Standard Deviation	43.1	39.3	21.7	24.7	0.0
Southwest					
Average (%)	72.7	15.0	2.0	4.3	5.3
Standard Deviation	37.9	31.3	8.9	16.0	20.6

Only 16 leases reported a cost share agreement for property maintenance or operation expenses. For the respondents providing detail, the cost sharing ranged from 10% to 90%, with a 50/50 split most prevalent. No leases were reported to have a minimum guaranteed weight gain, and two leases were reported to have a death loss guarantee or adjustment.

Table 10 provides the expense share each party paid. Real estate taxes were largely the responsibility of the lessor. Equipment maintenance, cattle doctoring, salt costs and nutritional supplements and liability insurance were largely paid by the lessee. Noxious weed control was not reported, or respondent refused to address, for two-thirds of leases. It is likely that noxious weed control was not of major concern for those not responding to this question, but we are unsure of the cause for the high nonresponse rate for the question. Responses to all service related questions were very similar by region.

Table 10. Cost allocation / share for improvements and management expenses

Description	Lessor Provides	Lessee Provides	Both provide	Irrelevant to the lease	Refused or Not reported	Total Reporting
Provide building/replace equipment (e.g. fence, water)	36.8%	35.2%	6.7%	20.3%	1.0%	315
Maintain equipment (e.g. fence, water)	26.0%	48.9%	4.1%	20.0%	1.0%	315
Control livestock, pasture moves, doctor cattle	13.7%	79.4%	2.9%	3.2%	1.0%	315
Provide salt	11.4%	84.4%	1.6%	1.6%	1.0%	315
Provide nutritional supplements	8.6%	78.1%	1.3%	11.1%	1.0%	315
Haul water	20.3%	14.0%	2.5%	61.9%	1.3%	315
Provide utilities	15.9%	19.0%	0.6%	63.5%	1.0%	315
Provide liability insurance	27.9%	46.7%	7.0%	17.1%	1.3%	315
Provide noxious weed control	15.6%	7.0%	3.8%	6.7%	67.0%	315
Pay land taxes	92.1%	3.8%	1.3%	1.9%	1.0%	315
Other	1.0%	1.0%	0.3%	82.2%	15.6%	315

Some type of rate on a $/livestock unit basis was the arrangement for over half of the leases. A lump sum payment was also common whereas charging on a $/acre basis was not. Lump sum payments were employed most in the Eastern, Southwest and Northern regions (Table 11). The majority of lease payments are made after grazing, but a significant number of respondents in each region report that payments are split (before and after grazing). Typically, the lease rate is established through market conditions and negotiation.

Table 11. Lease characteristics, by region

	Eastern	Northern	Payette	South Central	Southwest	All Regions
How do you charge/pay for lease?						
$/animal basis	45%	40%	66%	65%	48%	51%
$ per head per month	18%	7%	24%	39%	29%	23%
$ per AUM	20%	33%	15%	17%	17%	19%
$ per head per day	7%	0%	27%	9%	2%	8%
Other						
Lump sum payment	46%	47%	22%	22%	40%	38%
$ per acre	6%	3%	2%	4%	6%	5%
Trade of commodity	1%	7%	5%	4%	2%	3%
$ per lb of gain	0%	3%	5%	2%	0%	1%
Refused	1%	0%	0%	2%	4%	2%
When is the lease for the parcel paid?						
Before grazing	14%	20%	10%	20%	25%	17%
After grazing	52%	57%	56%	50%	44%	51%
Split payment	29%	13%	27%	24%	23%	26%
Other	5%	10%	5%	7%	6%	6%
Refused	0%	0%	2%	0%	2%	1%
How was the lease rate established?						
Going rate in area	31%	17%	41%	46%	35%	33%
Historic rate	8%	13%	5%	7%	12%	9%
Negotiated rate	54%	57%	54%	37%	48%	51%
Other	7%	10%	0%	11%	4%	6%
Refused	0%	3%	0%	0%	2%	1%

The average 2011 $/AUM lease rate across the five IDL management regions was $16.04/AUM (Table 12). The $/AUM rate reported by NASS (USDA-NASS 2012) during 2011 was $16.00/AUM across the 11 western states and $14.50/AUM in Idaho. Lease rates were highly variable, ranging from $7/AUM to over $30/AUM. Only five leases reported a rate less than $10/AUM and six leases had a rate over $25/AUM. The survey average and NASS-reported rates for Idaho were not statistically different. Lease rates in the Eastern and Payette Lakes areas were statistically higher than the other three areas.

Table 12. Mean lease prices reported, by region

	Reported AUM	Average of AUM reported	Standard Deviation of AUM reported
Study Region			
Eastern	54	$17.17	$4.48
Northern	13	$14.58	$6.05
Payette Lakes	22	$17.36	$3.70
South Central	25	$14.43	$3.45
Southwest	18	$14.13	$3.27
Not Reported	2	$18.25	$13.79
Grand Total	*134*	*$16.04*	*$4.53*
Livestock Type			
Cow-Calf	110	$15.73	$4.04
Cow-Calf, Sheep	4	$14.25	$3.30
Cow-Calf, Yearlings	1	$18.30	-
Sheep	3	$8.93	$1.20
Yearlings	16	$19.84	$5.75
Grand Total	*134*	*$16.04*	*$4.53*

Private Grazing Sublease Characteristics

Respondents were also asked questions relative to subleasing in Idaho. Specifically, we were concerned with those who leased forage from an individual or other entity, who then leased that forage to or managed the livestock for another individual or entity. Thirty-three respondents (8.8%) indicated that they subleased properties to or from another individual or entity.

Relative to the type of land included in the sublease, the majority of respondents indicated the land as privately owned (14), while 12 respondents identified another ownership pattern; seven did not respond to the question. Average private land parcel size was 416 acres (*n = 13*). Three respondents identified other land ownerships included in the lease (with an average parcel size of 656 acres). Only one sublease respondent identified IDL lands as included in the sublease.

The majority of the subleases were seasonal in nature (*n = 18*) as opposed to year-long subleases (*n = 7*). There were eight non-responses to this question.

Services or tasks undertaken with subleases of grazing lands are important considerations in determining comparable lease rates and understanding terms of a lease. Commonly, manager-provided tasks corresponded to items that you would expect with private landowners (Table 13). Land managers paid

land taxes, provided noxious weed control, allowed access to buildings and other facilities on the parcel, supplied salt and maintained and replaced equipment. Items such as providing nutritional supplements, utilities, liability insurance and irrigation water were fairly evenly split between land manager-provided and not being a component of the sublease. Water hauling, marketing of livestock, winter feeding, branding/marking livestock and transportation of livestock were generally not provided by the manager or not included with the lease. The lack of lease rate information and minimal responses to this set of questions precluded further analysis, as respondents were not queried regarding fees charged for subleasing. However, it is indicative that subleases have a very minor presence in the Idaho rangeland grazing markets (as evidenced by only 33 sublease respondents from the total survey sample of 373 private grazing leases). Lease rates paid and ranch location of the sublease were not provided by those responding to questions about subleasing.

Table 13. Sublease services provided

Description	Manager Provides	Manager Does Not Provide	Not Provided or Not Reported
Access to buildings, corrals, etc.	57.6%	12.1%	30.3%
Replaced equipment	54.5%	15.2%	30.3%
Maintained equipment	57.6%	12.1%	30.3%
Provided salt	48.5%	21.2%	30.3%
Provided nutritional supplements	33.3%	36.4%	30.3%
Hauled water	18.2%	45.5%	36.4%
Provided utilities	30.3%	33.3%	36.4%
Provided liability insurance	33.3%	30.3%	36.4%
Provided noxious weed control	51.5%	15.2%	33.3%
Provided irrigation water	30.3%	30.3%	39.4%
Paid land taxes	60.6%	6.1%	33.3%
Branded/marked livestock	27.3%	39.4%	33.3%
Provided winter feed for livestock	24.2%	39.4%	36.4%
Transported/shipped livestock	30.3%	39.4%	30.3%
Marketed livestock	18.2%	51.5%	30.3%
Other services	0.0%	30.3%	69.7%

Lease Rate Analysis

Data gathered through the survey were analyzed to determine statistically significant factors that influence private grazing lease rates and their magnitude. This section summarizes the analysis and results of this component of the study. The goal of the statistical analysis was to determine how grazing lease rate (dependent variable expressed in $/AUM) is influenced by services provided or undertaken with the lease, regions of the state and other independent variables specified in the statistical analysis. We used a commonly-accepted technique known as regression analysis to estimate the statistically significant independent variables and the magnitude their influence on the lease rate.

Econometric Model Variable Definitions

Sample size, limited variability of some explanatory variables, and the data limitations detailed earlier meant that the statistical model could consider only $/AUM lease rates as the dependent variable, and some potential explanatory variables could not be considered. Numerous variables were recorded in the survey that measured relevant potential lease price-influencing factors. It would be expected, for example, that grazing lease rates would increase depending on the type and productivity of land included on the lease (native rangeland versus other more productive land types); regional location of the lease; type of livestock grazing the lease; season of grazing; cost influencing factors such as distance to the lease; and especially landowner services provided. These are potential explanatory variables in the statistical model. Previous studies have considered only the landowner services component and regional lease rate differences (Torell and Bledsoe 1990, Rimbey et al. 1992, Bioeconomics Inc. 2011). In this study a systematic analysis of many factors potentially influencing lease rates was made for key variables recorded in the lease rate survey. Potential explanatory variables are discussed by general category, starting with what has been shown to be a consistent and important factor, landowner services provided.

Landowner Services Provided

Eleven different categories of services were recorded in the survey, ranging from the provider of buildings, fencing and equipment; maintenance of facilities, equipment, and range improvements; control and daily management of cattle; to hauling water. As shown in Table 10, four of these service categories were for the most part irrelevant on the lease (noxious weed control, water hauling, provision of utilities, and other). Further, the landowner nearly always paid the land taxes. No attempt was made to include these services in the model because there were not enough observations and variability in the sample to obtain meaningful and reliable results. Dummy variables were assigned to the other services (DPEQUIP = provide equipment, DMEQUIP = maintain equipment, DCONTROL = control livestock movement, DSALT = provide salt, DSUPPL = provide supplements, DINSUR = provide insurance). The service dummy variables were coded as a 1 when the lessor provided the service, a zero when the lessee provided it, and a 0.5 when both the lessee and lessor jointly provided it. This assumes any joint effort was equally split between the landlord and tenant. If the landlord provided these services to the tenant, a positive sign for the parameter estimate would be expected, and numerous studies have found landlord-provided services to be an important determinant of private grazing lease rates. As described by Bartlett et al. (2002, p. 429), six different New Mexico studies and two in Idaho considered the value of landlord-provided services using regression models. A recent study developed a similar model for Montana (Bioeconomics Inc. 2011).

Quality of Lease

Data limitations described earlier regarding acreage calculations precluded calculation of the pre-planned variable for measuring the grazing quality of the lease, which was to calculate the average number of acres required per AUM of grazing capacity. Other variables in the survey that provided indications of lease quality were the proportion of the lease designated as native rangeland (NATIVE), improved rangeland (IMPROVED), crop aftermath (CROP), and irrigated pasture (IRRIGATED). The land type variables sum to 100 percent. Excluding NATIVE from the model (i.e. no dummy variable is included for NATIVE) means parameter estimates for other land type variables reflect an adjustment in AUM price when a larger proportion of the acreage was in that land class.

Parcel Size and Distance

Similar to land values in general, per head lease rates might be expected to decrease with lease size while total payments for the lease increases. The number of AUMs included with the lease was used to evaluate potential price influences for size of lease. Both linear and log specifications were considered in the analysis. In this type of analysis, alternative specifications of the model are undertaken. In some cases (as detailed here in the final model specification) a linear relationship exists and is the best formulation of the relationship between the dependent variable and the independent variables. In other cases, non-linear (logarithmic, or log) specifications provide for better specification of the relationship. These non-linear specifications were determined to be not as appropriate in this in this analysis.

Inconvenience and operating costs increase as distance to the lease increases, and tenants far from the leased parcel may be more inclined to pay the landlord for daily care of livestock, the effect of which would be captured in the service variables. The distance variable was considered in both linear and log form to evaluate whether there were additional lease rate influences when the tenant resided further from the lease. Expectations were that distance would not have a price influence with 64% of the leases located within 20 miles of the leased parcel (Table 4).

Lease Renewal, Length and Terms of Lease

The length of time that the lease agreement was made or renewed may influence lease rates if older leases fall behind the current market. This could not be evaluated in this study because most leases were recently negotiated. Current year renewal (2011-12) included 75% of the leases studied and over 90% had been renewed since 2008 (Table 3). Sixty-four percent of the leases were negotiated on an annual basis (Table 3). The sample had little variability in lease renewal terms and lease length. Given limited variability in the length of the leases, this factor was not considered in the regression analysis.

A dummy variable (DWRITTEN) was used to evaluate whether having a written or oral lease arrangement affected the lease price (written = 1, oral = 0). A written agreement might indicate a more professional lease arrangement with an expected positive sign for the regression parameter.

Related individuals are usually thought to receive a price discount relative to the market (Libbin et al. 1993). A dummy variable was defined to be one if the lease was between related individuals or groups and zero otherwise. A dummy variable was also defined to evaluate whether reported lease rates were

different when a landlord (DLANDLORD = 1) reported for the parcel instead of the tenant (DLANDLORD = 0).

Grazing Season, Length of Grazing Period and Livestock Class

Survey respondents were primarily cow-calf producers (Table 7). Of the 132 leases considered in the statistical analysis only 7 leases included sheep on the leased parcel and 17 had yearlings. We considered a separate dummy variable for when yearlings were present and when sheep were present on the lease.

We considered the percentage of days that grazing occurred in each of the four quarters as potential explanatory variables. The 3rd quarter was excluded so seasonal variables measured price differences relative to this quarter. It might be expected that a premium price would be paid for the lease when winter grazing was allowed. Winter feed is a major production expense and grazing alternatives to feeding hay may justify a premium lease price. Similar premiums might also occur in periods in which hay is the only alternative feed source (e.g. early spring and late fall seasons). The total number of days grazed on the lease was also considered as a potential explanatory variable.

Lease Regions

Regional differences in lease rates were tested in the multiple regression model by assigning dummy variables for each area (DEAST, DSW, DSC, DNORTH, and DPAYETTE). The dummy variables were coded as a one when the lease was located in the designated region, zero otherwise. The south central area was initially excluded from the regression model such that included regional dummies measured price differences relative to this area. Statistically insignificant dummy variables were then removed and any remaining regional dummies measure value relative to all excluded regions. When regional dummy variables were not statistically different, this suggests lease rates were not different between regions and no regional adjustment is needed or warranted.

Control of Recreation Access

We considered two alternative dummy variables for restricted lease access. LACCESS was set to one when the landlord indicated he/she controlled access, 0 otherwise. Similarly, TACCESS was one when the respondent was a tenant and indicated that they controlled access, 0 otherwise. Potential interpretation problems exist given the separate questions asked the landlord and tenant. Just because the tenant indicated he/she did not control access does not mean the landlord did, or vice versa. It would be expected that when access was restricted, a higher lease rate would be paid. It is widely stated that one of the reasons a lower grazing fee is justified on public lands is because of multiple uses and the nuisance that creates for grazing on the allotment or lease.

Results

The dependent variable of the hedonic model was the $/AUM lease rate. Missing values for some of the explanatory variables meant 127 leases were included in the final regression model. The final model did not have problems with multicollinearity (independent or explanatory variables are correlated) or heteroscedasticity (unequal variance) based on statistical tests available in the SAS™ software. Residual plots indicated, however, that the regression model tended to over-predict relatively cheap leases and under-predict the most expensive leases. This has potential serious consequences with potential bias in the

regression parameter estimates. We believe the necessary exclusion of a quality variable like average acres/AUM for the lease caused this statistical problem. It would be expected that higher price leases would be of superior quality but as noted earlier, data limitations precluded calculation of the carrying capacity rating (AUMS/acre) for each lease. It should be noted that none of the earlier hedonic models about grazing lease rates included rangeland productivity or lease quality as an explanatory variable. This may partly explain why all of the studies had statistically significant regression results but a major amount of lease price variation remained unexplained by the model. Consistently low R^2 values across lease rate studies (< 30%) suggest that the market for forage leasing is not well-structured and precise, with many different criteria used by individuals when they agree on a lease rate.

The R^2 of the final model was estimated to be 26% (Table 14). Only six variables were found to be statistically significant at the 0.10 level. All of the other potential explanatory variables detailed above were systematically considered in alternative regression models but the other potential explanatory variables were not statistically significant.

Of the five lessor service categories that were relevant for the leases and had enough variability in the data to be considered in the model (DPEQUIP, DMEQUIP, DCONTROL, DSALT, and DSUPP), only DCONTROL was statistically significant. The hypothesis that the regression parameters for the other four service variables are jointly equal to zero could not be rejected. Significance of the DCONTROL variable suggests that when the lessor managed, moved and tended the livestock on the lease, the lease rate increased by $2.21/AUM. As a percentage of the mean lease rate paid ($16/AUM) this is a 14% increase in lease rate. DCONTROL was positively correlated with the four other service variables, with correlation coefficients ranging between 26% for provision of equipment to 66% for providing supplements. The DCONTROL variable likely captured some of the other service provision effects. As shown in Table 10, only 17% of the time was the landlord involved in the daily care of livestock, but a higher lease rate was charged when they did provide this service.

Statistical significance of service variables in other lease rate studies has varied, but service variables have not been consistently defined. Similar to the findings of this study, Torell and Bledsoe (1990) found daily control and care of cattle to be an important factor influencing lease rates, along with provision of livestock water on the lease. Rimbey et al. (1992) found two services to be statistically important for Idaho leases, lessor provision of improvement maintenance and liability insurance. A later study that combined data from Idaho, New Mexico and Wyoming (Rimbey et al. 1994) found care of cattle and maintenance of the water supply by the lessor to be important lease rate determinants. Bioeconomics Inc. (2011) found two service variables to be statistically significant, landowner participation in water development costs and fence maintenance activities. It is not clear what other service categories were considered in the Montana study that were not statistically significant and excluded from the model. While the definition of service categories and significance has varied across studies, results are consistent; if the lessor had a significant input in providing daily livestock care and improvement maintenance then lease prices are higher.

Table 14. Linear regression model results

Dependent Variable: Reported $/AUM lease rate					
Number of Observations Read					132
Number of Observations Used					127
Number of Observations with Missing Values					5

Analysis of Variance					
Source	DF	Sum of Squares	Mean	F Value	Pr > F
Model	6	654.27774	109.04629	7.17	<.0001
Error	120	1825.40359	15.21170		
Corrected Total	126	2479.68133			

Root MSE	3.90022	R-Square	0.2639
Dependent Mean	16.00511	Adj R-Sq	0.2270
Coeff Var	24.36857		

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	14.03544	0.58915	23.82	<.0001
Dcontrol	Daily Livestock Management	1	2.20824	0.85539	2.58	0.0110
DPayette	Payette Region	1	1.86688	1.03056	1.81	0.0726
Deast	Eastern Region	1	1.42954	0.81094	1.76	0.0805
Dyearlings	Yearlings on the lease	1	3.52751	1.07336	3.29	0.0013
Dsheep	Sheep on the lease	1	-2.58727	1.55796	-1.66	0.0994
Irrigated	% of land Irrigated	1	0.02161	0.01317	1.64	0.1035

Average lease rates in the Northern, South Central, and Southwest regions were not statistically different (Table 12). The regression results indicated this as well. The Eastern and Payette regions were found to have higher lease rates than the three other areas ($\alpha < 0.10$). The Payette region had lease rates that were $1.86/AUM more than the Southwest, South central and Northern areas. The Eastern region was $1.43/AUM higher in price than the three excluded areas.

Leases that were totally on irrigated lands were supposedly excluded from this survey. However, ranch units are included with the leases and include different kinds of land including BLM, USFS, IDL lands, seeded areas, and irrigated lands. Of the 315 leases included in the survey 64 leases included some percentage of the land area that was irrigated. Of the 127 leases included in the regression analysis, 24 had irrigated land on the lease and 7 were over 90% on irrigated land. The percentage of the lease that was irrigated was statistically significant ($\alpha = 0.10$). This would be expected given the superior production and reliability of irrigated lands relative to native rangeland. Initial design of the survey included a component to gather information on irrigated land. However, IDL requested that the survey be limited to rangeland leases. Further, NASS-reported pasture rents appear to be inflated for Idaho relative to other intermountain states because the state has a relatively high percentage of irrigated pasture and the increased amount and higher value of irrigated land in the state inflates reported pasture values. The parameter estimate for the IRRIGATED variable indicates that a 10% increase in the amount of irrigated land would increase $/AUM lease rates by about $0.22/AUM. A lease that was 100% on irrigated land would have an average lease rate that was $2.16/AUM more than a lease with native rangeland. As a very similar estimate for Montana, Bioeconomics Inc. (2011) found an irrigated lease to add an additional $2.27/AUM to lease price. Other variables that defined the percentage of the lease on improved (seeded) rangeland, or on crop aftermath, were not statistically significant ($\alpha > 0.39$) and excluded from the final model.

Excluding the animal class dummy variables (Dyearlings and Dsheep) from the model reduced the R^2 of the model to 18% (not shown in detail). Significance of the animal class dummy variables and the large change in R^2 means even with limited occurrence, when present, the $/AUM lease price was consistently higher when yearlings were included on the lease ($3.53/AUM) and lower when sheep were on the lease (-$2.59/AUM). The likely reason for this finding is that little attention is actually paid by forage lessees and lessors to the size and animal unit equivalency (AUE) level of the animals. That is, while it is standard to adjust for equivalency levels between animal classes (especially for sheep), in practice people may pay a per head rate without regard to size and forage consumption equivalency. In the analysis a cow/calf pair was considered to be 1 AUE, a yearling was 0.7 AUE and a sheep was 0.2 AUE (5 sheep per AU). Unless the survey respondent indicated they paid based on an AUM rate the conversion to an AUM rate used these equivalencies. Survey respondents may have had some other equivalency in mind and we expect that many yearling operators paid by the head with no adjustment in price for the reduced size of yearling cattle. This is explored in greater detail below where the model is used to estimate lease rates when various conditions exist. Nearly all of the yearling operators reported the lease rate on a $/head basis, with an average per head price of $13.83. Sheep producers generally reported the lease rate on a per sheep basis or as a lump sum payment (an average of $2.39/head). Other lease rate studies have adjusted to a $/AUM price basis (Bartlett et al. 2002, Bioeconomics Inc. 2011) but none of these studies considered whether the animal class on the lease influenced lease price.

Including the dummy variable for landlord control of recreation access was not significant ($\alpha = 0.11$), the parameter estimate was -1.55 and not positive as expected a priori. Tenant restriction of access was not significant ($\alpha = 0.17$). Thus, control of parcel access by either the landlord or tenant individually was not found to be an important factor in determining lease prices. A more direct question about whether outside uses were controlled on the lease, regardless of the person responsible for the monitoring, may have had a different result.

Many alternative price-influencing factors were also considered as additional explanatory variables in the hedonic analysis. Some of these factors may be significant with a larger and more varied sample, but in many cases lack of significance provides information as well. Most tenants lived close enough to the leased parcel that distance to the lease was not considered in price negotiations ($\alpha = 0.22$) and, may in fact explain why the parcel was leased by this individual. Season of grazing ($\alpha < 0.12$) and length of the grazing season ($\alpha = 0.49$) were not found to influence rental rates. Lease rates were apparently not biased by whether a landlord or tenant responded ($\alpha = 0.23$), and leases negotiated between related individuals were not found to be discounted relative to the market ($\alpha = 0.17$). It did not matter whether the lease was verbal or written ($\alpha = 0.55$).

The size of the lease as measured by AUMs on the lease did not appear to influence lease price when specified in either linear ($\alpha =0.86$) or log form ($\alpha = 0.89$). But, lack of complete information necessary to calculate AUMs on some of the leases limit the reliability of that conclusion. Other studies have also not found a discount in per AUM lease rates as lease size increases, though Torell and Bledsoe (1990) did find per acre rates were discounted as acreages increased. This may be because larger acreages were less productive and adjusting to a $/AUM basis accounts for these productivity differences. Rimbey et al. (1994) included a lease-price discount for the number of AUMs on the lease but it was not statistically significant in the model.

Pre-or post-payment of the lease made no difference to negotiated lease prices ($\alpha = 0.34$). This is in contrast to the $0.33/AUM payment timing adjustment included by Rimbey et al. (1992) for a 185-day grazing season when interest charges were in the 10% range. Similarly, in contrast to the findings of this study, in a major study about western public lands grazing, Tittman and Brownell (1984) found that rental rates were generally less when the payment was made prior to grazing.

For the most part Idaho grazing leases were not found to be negotiated as a sophisticated business arrangement. The leases were nearly evenly split between oral and written and most of the leasing agreements were negotiated annually (Table 3). Not surprising, and similar to the findings of other lease rate studies, a large amount of variation in lease prices remained unexplained. A significant equation was estimated but the R^2 of the model was only 26%. This is not unlike the findings of other statistical models about private grazing leases. One would have expected many of the other variables measured in the survey to play a role in lease prices. However, these variables are not present in the final regression model because they do not add additional explanatory power to the model beyond knowing the leasing region, the amount of irrigated land, the class of livestock on the lease, and whether the lessor provided a significant role in the daily care and management of livestock. We anticipate that had we been able to

include a measure of rangeland productivity as originally planned[3] that this would have improved the predictive power of the model.

Model Estimates of Lease Rates

The hedonic model can be used to estimate lease rates located in different regions with different animal classes and with or without daily livestock care provided. As an example, using the model parameter estimates from Table 14, consider the estimated 2011 lease rate for a 100% native range lease in Eastern Idaho with daily care of cattle not provided by the lessor, and running cow/calf pairs on the lease:

Predicted \$/AUM lease rate = $\widehat{\beta_0}$+ $\widehat{\beta_1}$ Dcontrol + $\widehat{\beta_2}$DPayette + $\widehat{\beta_3}$ Deast + $\widehat{\beta_4}$DYearlings + $\widehat{\beta_5}$ DSheep

+ $\widehat{\beta_6}$Irrigated

= 14.04 + 2.21 (0) + 1.87 (0) + 1.43 (1) + 3.53 (0) -2.59 (0) + 0.022 (0) = \$15.46/AUM.

The estimated \$/AUM lease rate would increase by \$3.53/AUM to \$18.99/AUM if yearlings were on the lease. Recognizing that the analysis considered a yearling to be 0.7 AUE, the predicted \$/head lease rate for yearling cattle would then be \$13.29/AUM (\$18.99/AUM × 0.7 = \$13.29/head). This suggests, as noted above, that yearling cattle are in fact discounted in the market place but not by nearly as much as the 0.7 AUE commonly used for animal class conversion. The implied discount is 14% (1-(\$13.29/\$15.46)). In a similar way the estimated per AUM lease rate with sheep on the lease would be \$12.88/AUM and with 5 sheep per AUM the average per head lease rate would be \$2.58/head (\$12.88/AUM × 0.2 = \$2.58/head). If 6 sheep per AUM were used in the conversion the average \$15.46/AUM lease rate paid by cow/calf producers would be obtained. It appears that statistical significance of the animal class dummy variables is because common AUE conversion factors are not what is reflected in the private leased forage market.

Regional differences in lease rates can be estimated from the model by assigning a regional dummy variable a coding of one. Assuming cow/calf pairs on the lease, the \$/AUM lease rates estimate for the Payette Lakes area would be \$15.90/AUM while the Northern, South Central, and Southwestern areas would have the same lease rate estimate of \$14.04/AUM for a non-serviced lease (Table 15). If 10% of the land base on the lease was irrigated the estimated lease rate would increase by an estimated \$0.22/AUM (0.02246×10).

The model results are similar, but lease rates are less than what others have previously found as it relates to landlord services. Bartlett et al. (2002) summarized previous New Mexico and Idaho grazing lease studies and concluded that to estimate net forage value (excluding the value of landlord services) a downward adjustment to about 70% of the average reported NASS rate was required to account for the contributory value of lessor provided services. Hedonic models and competitively bid leases for Montana state trust lands supported that conclusion (Bioeconomics Inc. 2011). The hedonic results of this study suggest a lease discount to 12-14% when lessor services are not provided (Table 15).

[3]/An unanticipated survey response was that many survey respondents reported acreage totals across multiple leases such that the acreage included with each particular lease was not obtained so that a valid productivity rating could be computed.

Table 15. Estimated lease price ($/AUM) based on daily livestock care provided/not provided.

Daily Livestock Management	Eastern	Payette	South central	South West	Northern
Not Provided (a)	$15.46	$15.90	$14.04	$14.04	$14.04
Provided (b)	$17.67	$18.11	$16.24	$16.24	$16.24
Ratio (a/b)	88%	88%	86%	86%	86%

Summary and Conclusions

This bulletin summarizes findings from a major study on Idaho private rangeland grazing lease arrangements conducted in 2011-12. Lessees and lessors of private rangeland grazing were contacted in a telephone survey during the winter of 2011-12. Responses to the survey are summarized in this document. Results from the study indicate key factors related to Idaho grazing lease arrangements that should be of interest to lessees and lessors of rangeland forage, along with policy makers and public and private rangeland managers. Key results from the study reveal:

1. Idaho private rangeland grazing leases are generally informal, year-to-year arrangements. Grazing leases are about evenly split between written and oral arrangements. Lease terms are negotiated mostly on an annual basis.
2. The bulk of Idaho grazing leases that occur on native rangelands, are season-long or include some type of rotational grazing system (e.g. rest-rotation or short duration) and cover the grazing season, ranging from 1-6 months in duration. Most of the leases were cow-calf production systems.
3. Services provided by the lessor or undertaken by the lessee can impact the lease rate. In this study, the only statistically significant service was daily care of livestock and when the lessor provided care, lease rates increased by $2.20/AUM (about 20%).
4. The average rate charged for Idaho grazing leases in 2011 was $16.04/AUM, which was not statistically different from the published USDA-NASS rate of $14.50/AUM. There is large variability in rates reported in our study, although those in the Eastern and Payette Lakes regions were higher than the rest of the state ($1.42 and $1.86/AUM, respectively). Leases with yearling cattle and some amount of irrigated land showed increased lease rates.
5. Leases were paid on a $/head or lump sum basis and the terms generally favored payment occurring after the grazing season or a split between pre- and post-grazing.
6. Based upon the relative lack of sophistication in relation to grazing leases, it would appear that major educational efforts for livestock producers and others are appropriate to emphasize the importance of: a) written leases and, b) understanding common lease characteristics such as AU's, AUM's and animal weights or class of livestock grazing.

References

Bartlett, E. T., L. A. Torell, N. R. Rimbey, L. W. Van Tassell, and D. W. McCollum. 2002. Valuing grazing use on public land. *Journal of Range Management* 55:426-438.

Bioeconomics Inc. 2011. Montana trust land grazing lease rate valuation analysis: a report prepared for state of Montana Department of Natural Resources and Conservation, Trust Management Division. Missoula, MT: Bioeconomics, Inc. 69 p.

IDL. 2014. *Idaho Department of Water Resources Administrative Basins*. Available at: http://www.idwr.idaho.gov/WaterManagement/AdministrativeBasins/default.htm. Accessed March 13, 2014.

Libbin, J. D., W. B. Word, and L. Riley. 1993. New Mexico cash lease rates for 1992. Research report / New Mexico State University, Agricultural Experiment Station; 676: Las Cruces, N.M., New Mexico State University, Agricultural Experiment Station. p. 16.

Resource Dimensions Inc. 2010. State of Idaho Department of Lands Agriculture Market Rent Study. Gig Harbor, WA: Resource Dimensions Inc. Consulting Report prepared for Idaho Department of Lands. 136 p.

Resource Dimensions Inc. 2012. Idaho Department of Lands Grazing Market Rent Study. Gig Harbor, WA: Resource Dimensions Inc. Consulting Report prepared for Idaho Department of Lands. 188 p.

Rimbey, N. R., R. Krebill-Prather, and J. E. Carlson. 1992. Range and pasture forage: what's it worth? Moscow, ID: Univ. of Idaho Agr. Exp. Sta. Res. Ser. No. 92-3. 10 p.

Rimbey, N. R., L. A. Torell, E. T. Bartlett, and L. W. Van Tassell. 1994. Private grazing lease arrangements and their application to market price comparisons. *J. American Society of Farm Managers and Rural Appraisers* 58:125-129.

Tittman, P. B., and C. E. Brownell. 1984. Appraisal report estimating fair market rental value of public rangelands in the western United States administered by USDA-Forest Service and USDI-Bureau of Land Management: Volumes 1 and 2. Washington, D.C.: USDA-FS and USDI-BLM. 282 p.

Torell, L. A., and F. N. Bledsoe. 1990. 1989 New Mexico private grazing lease arrangements and costs. Las Cruces, NM: New Mexico State University Agricultural Experiment Station Research Report 651. 12 p.

USDA-NASS. 2009. *2007 Census of Agriculture, Volume 1, Chapter 2, state level data*. Available at: http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_2_US_State_Level/index.asp. Accessed October 23, 2011.

USDA-NASS. 2014. *Agricultural Prices Monthly, January issue*. Available at: http://usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documentID=1002. Accessed March 13, 2014.