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PROPOSAL

REMOTE SENSING LAND COVER INVENTORY

FOR

Taylor Ranch Wilderness Research Station

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I. Significance and Objectives

1. To provide baseline data for many research projects by compiling spatial resource data into a GIS (Geographic Info. System.)
2. To provide researchers with easy access to resource information of related importance.
3. To conduct spectral class regrouping for various projects, with automated acreage compilation capabilities.
4. To have the capability to study large areas through temporal monitoring.
5. To provide data which otherwise would be difficult to acquire due to the area's rugged terrain and remoteness.
6. To capitalize on the opportunity to study an ecosystem in a near natural condition.
7. To assess environmental conditions with no on-site impact.

?? Unclear as to what -- some whats are not possible unless one digitizes from ground measures then there's some degree of ground impact -- eg. weather station to measure micro-climate, then isohyet's can be digitized for GIS.

II. Related Previous Work:

Over the past several years Landsat database systems have been applied to projects calling for extensive habitat analysis. The following studies involved ERSAL and have utilized Landsat capabilities:

1. Leckenby, D.A.; Isaacson, D.L.; Thomas, S.R. 1985. Landsat application to elk habitat management in northeast Oregon. Wild. Soc. Bulletin 13(2):130-134.

2. Isaacson, D.L.; D.A. Leckenby; C.J. Alexander. 1982. The use of large-scale aerial photography for interpreting Landsat digital data in an elk habitat-analysis project. Journal of Applied Photographic Engineering. Vol. 8, No. 1:51-57.

3a. Leckenby, D.A. and A.W. Adams. 1981. Eastern Oregon cover study -- interim report. Oregon Department of Fish and Wildlife Research Development Section. Information Report Series, Wildlife Number 80-1.

3b. ← { ODFW Wildl. Res. Rep. 14 is also a reference -- better!

4. Isaacson, D.L.; C.J. Alexander; B.J. Schrumpf; and R. Murray. 1980. Analysis of association of Landsat spectral classes with ground cover classes in wildland inventories. Proceedings of Symposium of Remote Sensing for Natural Resources. pp. 180-191. University of Idaho, Moscow, September 10-14, 1979.

5. Murray, R. and D.A. Leckenby. 1985. Elk habitat evaluation using distance mapped Landsat data. pp. 346-355 In Proc. Pecora 10. Remote Sensing in forest and range resourc. Manage. 20-22 Aug. Fort Collins, Colo.

III. Study Area:

The study area includes the lower half of the Big Creek drainage and its tributaries, and a 20-mile segment of the Middle Fork of the Salmon River. The western side is bounded by Acorn Butte and Lookout Mountain, the northern edge by Cold Meadows and Cottonwood Butte, the east side by the summit of the Bighorn Crags, and the Shellrock Ridge forms the

southern boundary. This is an area of approximately 400 square miles, corresponding with eight U.S.G.S. quadrangle maps.

The areas topography is typified by steep, rocky canyons and forested ridges. Big Creek is oriented west to east with tributary streams entering from the north and south. Vegetative cover varies from extensive low elevation grasslands to continuous Douglas fir forests at higher elevations. Precipitation at the Taylor Ranch is approximately 15 inches annually. Temperature extremes range from -25 degrees F in winter to over 100 degrees F in summer.

The Taylor Ranch Wilderness Research Station is situted in the middle of the study area and is the point of access. A variety of wildlife, range, and archeology research projects have been conducted from this site.

IV. Methods:

The computer analysis will be conducted at the Environmental Remote Sensing Applications Laboratory (ERSAL) which was established in 1972 to conduct development and applications for satellite-based remote sensing. Since 1972, ERSAL projects have emphasized the applications of Landsat multispectral scanner data to wildlife and other natural resource management. ERSAL staff have gained a broad detailed understanding of the spectral characteristics of many natural features (soil, rock, water, vegetation). Considerable insight and experience have also been gained with the development of computerized techniques for analysis of spectral data.

The procedures will be as follows:

1. Search available Landsat data for applicability.

2. Select the appropriate Landsat scene.

3. Apply computer reformatting to the appropriate scene.

4. Windowing out study area.

5. Use computer to statistically define spectral classes. ~~PIXIS~~ PIXSYS unsupervised classification

6. ~~Pr~~Preform initial grouping according to land cover types. ← This must be done primarily by resource people on ~~ground~~ project.

7. Produce line printer Landsat maps conforming to 7.5' U.S.G.S. quadrangle maps.

8. Conduct ground truthing (checking/verification) with aerial photos and plot samples.

9.a. Produce final ~~c~~land cover maps.

9.b. Distance transform

10 Computer files corresponding to quadrangle maps will be made accessible to remote users through the use of a terminal/telephone dial-up system.

V. Future Applications

1. Map land cover types. ~~aren't~~ these already done in IV 6,8,9 to above?

2. Produce acreage tabulation of habitat types. " " "

3. Determine cover to forage ratios. ✓

4. Develop distance to edge maps. ✓ Should be part of section IV.

5. Assess habitat components to determine percentage of total area on a seasonal basis. - Digitizing of seasonal ranges necessary.

6. Determine habitat utilization versus availability to assist radio telemetry projects.

7. Obtain photographs corresponding to quadrangle maps for infrared, thermal infrared, and color imagery for future use at the Taylor Ranch Research Station. ← Not an application!

VI. Budget:

A. Estimated ERSAL Budget

Salary for 2.5 months		$ 6,000
Personnel Benefits 31%		1,860
Services and Supplies		
- Landsat computer tapes		1,000
- Computer Ser./Data Processing		1,300
- Infrared aerial photographs		300
- Other services (telephone, xerox, etc.)		200
- Travel		600
Total Direct Costs	$11,260	
Total Indirect Costs (at 34% of Direct Costs)	$ 3,828	
Total	$15,088	

State [illegible] required on salaries -- "overhead" for personal services.

← if new data must be purchased!

what scale?

} overhead for OSU alone??

B. Taylor Ranch Staff Budget

Salary for 2 months	3,000
Travel to ERSAL lab	500
Miscellaneous expenses	200
	$18,788