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(E76-10227) USE OF LANDSAT IMAGERY FOR WILDLIFE HABITAT MAPPING IN NORTHEAST AND EASTCENTRAL ALASKA Progress Report (Alaska Univ., Fairbanks.) 4 p HC 3.50 CSCL 06C

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Submitted by:

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Contract No.: NAS5-20915

Investigation No. 22280

Title: Use of LANDSAT imagery for wildlife habitat mapping in northeast
and eastcentral Alaska

Lent, Peter C. et al

Type II Progress Report No. 3, March 8, 1976

A. Problems: None

B. Accomplishments: Portions of scenes 1734-20471, 1408-20435, 1408-20430, 1407-20374, 1771-20513, 1771-20515, and 1422-20203 within game management Unit 20 were analyzed. The same techniques previously used for analysis of scenes 1029-20383 and 1408-20435, namely clustering followed by maximum likelihood classification, were utilized. Full resolution LP maps (approximately 1:18,500 scale) were produced and will be used for summer field work. Total processing to date encompasses a composite total of about 4.3 entire scenes. This completes classification processing for this project.

The vegetation types emerging from the analysis of scenes 1029-20383 and 1408-20435 (see Tables 1 and 2; Appendices I and II; Report No. 2) were evaluated as winter and summer range for moose. Class combination reduced habitat categories to nine (Tables 1 and 2). Three high interest areas were selected where Department of Fish and Game biologists have recently or are currently involved with intensive moose range investigations. These areas are the Japan hills, the Blair Lakes - Clear Creek Butte region of the Tanana Flats, and the area south of the Alaska Highway between the Johnson and Little Gerstle Rivers.

Color maps products (1:63,360 scale) of these areas were produced. Each of the habitat categories were portrayed a different color and separate maps were prepared for summer and winter ranges. Selected geographic features such as contours, streams, and major trails were superimposed on the color products for geographical orientation. These products will be used and extensively evaluated by Alaska Department of Fish and Game biologists. The scale selected will permit direct comparison with habitat maps of these areas previously prepared from aerial photography. Production of these map products at this time will provide Alaska Department of Fish and Game biologists one more field season to gain experience with this type of product, evaluate them critically, and re-examine their own habitat interpretations. Thus, by next Fall, they will have a stronger experience basis for thematic interpretations and at that time, final map products for the entire Game Management Unit will be produced.

Concurrently, Alaska Cooperative Wildlife Research Unit field crews will obtain ground and aircraft reconnaissance data for definition of categorical analyses recently completed on six additional scenes.

Final thematic interpretations, preparation of final map products, and the final report are scheduled for completion next Fall. The project should be completed according to schedule in early 1977.

C. Significant Results: Winter and summer moose range maps of three selected areas have been produced (1:63,360 scale). The analytic approach utilized is very similar to that described by Fleming, Berkebile and Hoffer (1975) as "modified clustering". Preliminary indications are this method is not only more accurate but considerably less expensive than "supervised" classification techniques.

D. Publications: None

E. Recommendations: None

F. Funds Expended: \$31,000

G. Data Use:

H. Aircraft Data: None

Literature Cited:

Fleming, M.D., J.S. Berkebile, and R. M. Hoffer. 1975. Computer-aided analysis of LANDSAT -1 MSS data: A comparison of three approaches, including a "modified clustering" approach. LARS Information Note 072475, Purdue Univ. 7pp.

Table 1

Cluster classes for scene 1029-20383

Cluster Identifier	Winter	Summer	Brief Descriptor	Color
1	2	2	Birch-white spruce forest (birch dominant)	(8) Lt. green
2	4	4	Black spruce heath	(18) Brown
3	8A	8A	Light colored mud and rock	(2) White
4	9	9	Agricultural fields	(5) Gray
5	1 (7)	2	Early successional fire recovery; birch willow	(8) Lt. green
6	2	2	Mature aspen forest	(7) Red
7	4 (18)	7	Black spruce bog	(8) Lt. green
8	2	2	Mature birch	(1) Black
9	3	3	Upland white spruce/birch (spruce dominant)	(18) Brown
A	4	4	Black spruce-birch heath	(8) Lt. green
B	3	3	Mature white spruce	(10) Dk. Green
C	6	6	Upland brush-alder	(18) Brown
D	7 (1)	1	Moist tundra	(10) Dk. Green
E	7 (1)	1	Eriophorum tussock meadow	(25) Orange
F	2	2	Cottonwood	(7) Red (1) Black
G	8A	8A	Mud and silt	(7) Red (1) Black
H	5	5	Alpine tundra	(8) Lt. Green
I	4 (18)	7	Black spruce-tamarack muskeg	(2) White
J	8	8	Deep water	(3) Yellow
K	9	9	Agricultural fields	(1) Black (18) Brown
L	9	9	*	(11) Blue
M	8	8	Silty water	(5) Gray
N	8	8	Shallow clear water	(5) Gray
O	8A	8A	Gravel	(20) Tan
P	9	9	* Granite outcrops	(12) Blue
Q	8A	8A	Gravel	(2) White
R	9	9	*	(5) White

* Denotes classes which are too infrequent for accurate definition

Table 2
Cluster classes for scene 1408-20435

Cluster Identifier	Winter	Summer	Brief Descriptor	Color ()
1	4	4	Black spruce heath	(18)
2	3	3	Mixed spruce	(18)
3	2	2	Birch-spruce forest	(8)
4	4	4	Black spruce-birch heath	(18)
5	8	8	Deep water	(11)
6	2	2	Mature birch	(8)
7	9	9	Undefined	(5)
8	9	9	Undefined	(5)
9	8	8	Silty water	(20)
A	2	2	Aspen forest	(8)
B	9	9	Undefined	(5)
C	8	8	Vegetation-water interface; combine with P	(12)
D	9	9	Undefined; probably cloud	(5)
E	8A	8A	Unvegetated mine tailings	(2)
F	1 (7)	2	High brush willow	(8)
G	8A	8A	Very sparsely vegetated sand and gravel	(2)
H	8A	8A	Light colored rock	(2)
I	1 (7)	2	Vegetated mine tailings	(8)
J	8A	8A	Mud and silt	(2)
K	8A	8A	Moderately vegetated mine tailings	(2)
L	4	4	Closed canopy spruce-birch forest	(10)
M	2	2	Mixed deciduous forest	(8)
N	8A	8A	Sparsely vegetated mine tailings	(2)
O	8	8	Shallow water	(4)
P	2	2	Mid-successional birch	(12)
Q	(no Eriophorum tussock #7)	(no # 1, 7, 5, 6)		(8)
	(no alpine tundra on the list #5)			
	(no upland brush-alder #6)			
	(no agr. field #9)			