

*July 16*

ASSESSING ELK TRAIL AND WALLOW IMPACTS  
IN MOUNT RAINIER NATIONAL PARK

Quarterly Progress Report  
for Period  
July 1 through September 30, 1986

Submitted to

National Park Service  
Pacific Northwest Region

By

Environmental Remote Sensing Applications Laboratory  
Oregon State University

October 15, 1986

ASSESSING ELK TRAIL AND WALLOW IMPACTS  
IN MOUNT RAINIER NATIONAL PARK

I. INVESTIGATORS

William Ripple, Principal Investigator  
Barry Schrumpf, Co-Principal Investigator  
Edward Starkey, Co-Principal Investigator

II. SUMMARY OF OVERALL PROGRESS

Work continued on a remote sensing system to monitor trails caused by elk in Mount Rainier National Park. The following is a summary of the progress from July 1, 1986 through September 30, 1986. The activity in this quarterly period involved: 1) the acquisition of new large scale aerial photography; 2) a project meeting with Mount Rainier Park Staff; and 3) field work in the basin north of Fremont Lookout.

Aerial Photography Acquisition

174 natural color aerial photographs were obtained from a flight on August 14, 1986. Nine flight lines were located in the northeastern part of the Park. The scale of the 9"x9" color negatives is approximately 1:6,000. See the attached flight map for additional information on the location of the flight lines. Due to alignment problems, flight line 5E was reflown on September 4, 1986.

### Project Meeting

A meeting was conducted with the staff at Mount Rainier National Park in mid-September. After reviewing the new aerial photography, the Mount Rainier staff selected ten sites on the 1986 photography which will serve as permanent photo-plots for the elk trail monitoring system. Table 1 shows the 1986 and 1985 photography frame numbers associated with these selected sites. Six of the sites have photographic coverage from both years. The sites were selected with consideration given to the following factors:

- 1) Percent forest canopy coverage. Sites were chosen that were relatively open and free from large areas of closed forest canopy.
- 2) Distance to photo edges. Sites near the edge of the photographs were avoided since radial distortion is greatest near the photo edges.
- 3) Elk habitat. Sites were selected only if they appeared to be in areas of favorable elk habitat.

The meeting concluded with a training session provided to Stan Schlegal of the Park Staff on the interpretation and delineation of elk trails on the furnished enlarged aerial photographs.

---

<u>Place Name</u>	<u>1986 Frame Number</u>	<u>1985 Frame Number</u>
1. Fremont Lookout North	7E-4	4-16
2. Green Park	6E-5	3-10
3. Burnt Park	4E-3	1-11
4. Vernal Park	8W-6	5-7
5. Elysian Fields West	7E-3	4-1
6. Bear Park	5E-13	3-19
7. Sluiskin Mountain	6W-7	
8. Fawn Ridge	1-8	
9. Slide Mountain	3-6	
10. No Name Park	3-2	

---

Table 1. Locations and frame numbers associated with the photo-plot sampling sites selected by Mount Rainier National Park Staff.

#### Field Work

Field work for ground data collection was conducted in September, 1986 in the basin north of Fremont Lookout. An overlay of delineated elk trails was produced and removed from the photograph before the field trip. The field method involved a complete canvassing of the entire Fremont North photo-plot. Each trail that was discovered was delineated on the photo enlargement. Oblique 35mm photographs were acquired for each trail. Trail width measurements were taken at points five meters from the ends of each trail and at the approximate midway point between the ends of each trail. The line intercept method was used to record the extent of any vegetation that intercepted the tape measure as it lay across each trail.

### III. WORK FOR SUCCEEDING QUARTERLY PERIOD

- 1) Conduct an accuracy assessment for the Fremont North site using the ground data collected in September of 1986.
- 2) Establish additional baseline data on elk trails in the 10 photo-plots on the 1986 photography and the 6 paired photo-plot samples on the 1985 photography.
- 3) Compile data listing the visible presence and absence of elk trails for each of the 174 photo frames.



Attachment 1. 1986 Flight Lines Over Mount Rainier National Park.