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MILES, STEVE  
LAMBING AREAS AND EARLY LAMB

LAMBING AREAS  
AND  
EARLY LAMB SURVIVAL  
KAMLOOPS LAKE BAND  
(*Ovis canadensis californiana*)

by

✓ Steve Miles

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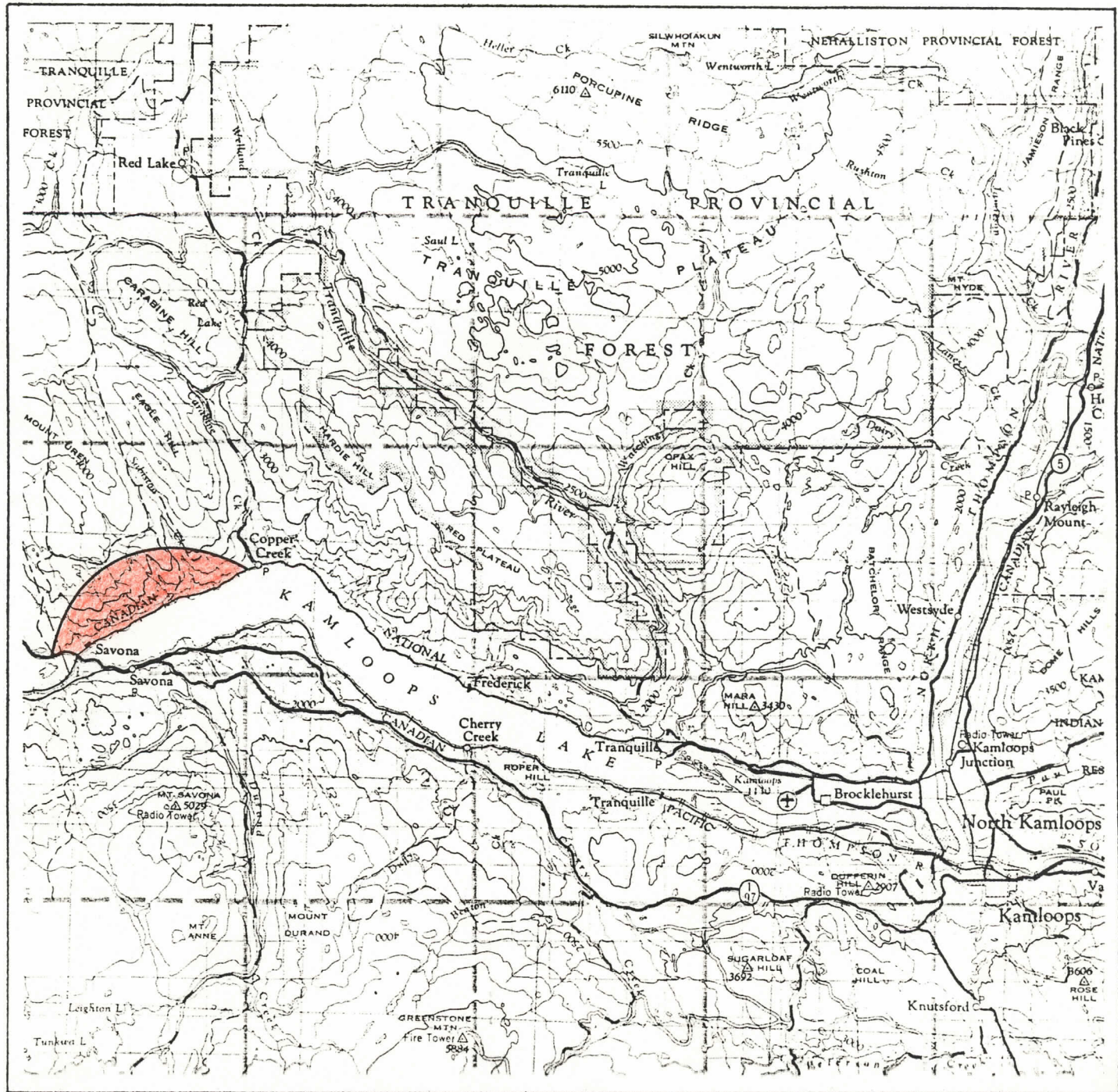
May 25, 1986

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# KEY MAP

N.T.S. MAP 92-1



STUDY AREA



SCALE 1:250 000

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## INTRODUCTION

During the period of May 1 to May 23, 1986, I observed a band of California Bighorn Sheep located on the north side of Kamloops Lake at the west end. The lambing period was underway when I arrived and newborn lambs were seen on May 22, indicating that lambing was still ongoing. This report presents my observations of the lambing band during this three week period. Included in the report is a brief description of the area, survey methods used and recommendations for further studies.

### 1.0 PURPOSE

The primary objective of this study was to determine the lambing areas being used by this band. Secondly, to monitor the band on a daily basis to determine the extent and causes of lamb mortality related to predation.

### 2.0 DESCRIPTION OF AREA

#### 2.1 Location

The study area is located on the north side of Kamloops Lake, directly across from Savona. Deadmans Creek to the west and Carabine Creek to the east, form the boundaries running north and south. The north shore of Kamloops Lake is the southern boundary and the northern boundary follows the IDF zonal forest, at an elevation between 2500 and 3000 feet.

## 2.2 Topography

In the lower elevations, strongly sloping, gullied terraces are characteristic. Above these, volcanic cliffs and talus slopes are dominant. The lower areas range from 10 - 30 degrees, to steep rock outcroppings of 35 - 90 degrees. Surface runoff has created many gullies in the sandy soil and dendritic drainage patterns reflect the underlying geologic structure. (Refer to Appendix I for photographs of the area).

## 2.3 Vegetation

The most xeric sites are dominated by Bromus tectorum, Opuntia fragilis and oxytropis spp. Artemisia spp. and Chrysothamnus nauseosus form the shrub layer on all the dry, lower elevation sites. Agropyron spicatum is the dominant grass occurring throughout the range utilized by the sheep. The tree canopy consists of widely spaced Pinus ponderosa, with Pseudotsuga menziesii growing in the draws and among the pine in some locations. Vegetation growth is limited by xeric and subxeric moisture regimes, due to low precipitation and high evaporation rates during the growing season. The patchy, well spaced forest cover reflects the harsh growing conditions in the area. (Refer to Appendix II for photographs showing the vegetation).

## 2.4 Weather

The weather during the survey was generally cloudy with sunny breaks. Scattered showers occurred on most days, usually in the early morning and mid-afternoon. Temperatures ranged from lows of 0 degrees C. to highs of 26 degrees C. On May 13, a few inches of snow fell in the early morning and had melted off by late afternoon. The wind usually blew from the east or southeast.

## 3.0 METHODS

On a daily basis, I drove from the base camp down to Savona, where I scoped the range from four different observation points. Each sighting was recorded in a notebook and plotted on photocopies of air photos. Once I located the lambing group, I drove up the Sabiston Lake road until I was directly above the sheep. Using camouflage clothing, I could usually stalk fairly close to the lambing band. Most of my observations were made looking through the camera or spotting scope. As I watched the sheep I periodically counted the group and noted the highest single count for that particular observation period. Each feeding area was examined later to determine what species were being utilized by the sheep.

#### 4.0 OBSERVATIONS

Although I did not observe any lambs being born, I did see lambs on the main bluff, directly across from Savona, that were barely able to stand and remained with the ewe on very isolated ledges on the uppermost, vertical walls. Within two days these lambs were able to move up and down the cliffs following their mothers. Eight young lambs were counted on the bluffs on May 1, indicating that lambing began approximately one to two weeks earlier.

Water for the lactating ewes is located approximately 700m away from the lambing bluff. This requires the ewes to climb down in elevation from 2200 feet to the draw just east of the bluff, at an elevation of 1500 feet, or to the lake shore at 1100 feet. During the survey I did observe them moving through a few draws that contain running water.

Feeding during the lambing period occurred on an alternate basis. A few ewes would feed while a few rested with the lambs and acted as sentinels at the same time. Ewes feeding never went more than 100 to 150 meters away from their lambs. The favoured foods were: various small herbs (unidentified), Oxytropis spp., Agropyron spicatum, Astragalus miser and Chrysothamnus nauseosus.

On two occasions I came too close to the sheep and they ran straight down the cliff and ran across the lower slopes non-stop for a

distance of about two kilometers. All the lambs were able to keep up, even the very young ones. The group was not content to stop until they were a long ways from me. On other occasions, they let me observe them from a distance, but became impatient after about an hour and moved off until they were out of sight. When I scared the group off the main bluffs, they ran towards Sabiston Creek and were joined part way by the rams, who I assume, took up a position in the rear as a form of protection. The rams moved at a slightly slower pace and stopped often to look back.

On several occasions I observed a ewe leading a group of older lambs over steep terrain in a kind of climbing practice session. The lambs seemed to never get enough of this kind of practice and often a lamb initiated a game of follow the leader and when he tired of the game, there was always another waiting to take over. The agility of the lambs increased on a daily basis and I was amazed at their boldness and early co-ordination.

During the survey, I watched magpies land on the back of a few sheep. The birds pecked at some type of external parasite on the shoulder and rump areas. In most cases, the sheep seemed to tolerate the birds, even to the extent of moving their necks in different positions as the birds pecked.

I did not observe any form of predation during the study period. All the coyote scats I came across were old and were found along cattle trails and roads, located above the lambing area. On the evening of May 21, I witnessed four dogs running cattle near the base camp. They chased the cattle from 7:00 p.m. until about 9:15 p.m. Dog tracks and feces were present on the lower portion of the lambing bluff, indicating that they might be running sheep. I reported this to the rancher and he indicated that this problem has been ongoing for two years.

#### 5.0 LIMITATIONS

The main limitation of the study was its length. Three weeks during the lambing period was much too short to determine if predation is a cause of early lamb mortality. The second major problem was finding and hiking to a spot where the band could be observed without my presence being known to them.

The sheep were usually in an area where they could not be observed easily, such as the south face of the cliffs. Observations could only be made from across the lake where wind, heat waves and smoke were a problem. The distance across the lake is approximately 2200 meters and even with a 20x - 45x spotting scope, observation of the sheep was limited. Viewer eye strain was another factor that cut down on the hours of observation. Many hours were spent moving to a pre-planned observation point, only to have the sheep move into an

area where I could not view them. Even the most careful stalking was picked up by ewes watching the area as they rested. Usually there were four or five ewes bedded, acting as lookouts, while the others moved around feeding.

## 6.0 CONCLUSIONS

From the daily observation maps, I determined that approximately 175 ha. of the area is used by the lambing band, in two separate areas, on a preference basis. These areas contain the best escape terrain with feeding areas nearby. By plotting all the locations that the lambing band occupied during the study, I have estimated that approximately 400 additional hectares form the area used by the lambing band on a secondary basis. (Refer to Appendix II for a map showing these areas).

A total of 17 lambs were seen during the study period and a few newborn lambs were seen during the count on May 23. The count figures indicate that there are approximately 32 ewes and 19 lambs in the study area. Unfortunately, the count figures do not show the number of yearlings that survived through the past winter. This is the critical factor in determining the lamb survival rate and more accurate data is needed before any inferences can be made. The count figures over the last few years do not provide enough detail concerning the sex/age structure of the band.

## 7.0 RECOMMENDATIONS

The method of using multiple transect counts is a very good system, but has some limitations. These are: terrain, vegetation cover, observer experience, position and distance of observations, distance between transects and timing of various observers as they walk down their transects. I think that a few improvements could be made that would increase the accuracy and usefulness of the data. Firstly, more, experienced people are needed. If each transect was covered using two people, one equipped with a spotting scope and tripod, one person could count while the other recorded the data. This system would require that one person be experienced in this type of survey, while the other would not need to be.

Radio contact between groups could be a definite advantage by allowing one group to contact another with reference to observing a group of sheep from two different points and comparing the count data at the end of the day. The timing of movement down slope should be better co-ordinated to reduce the chance of missing a group of sheep as they move away from one observer and go behind a person that has moved down beyond the observers on other transects.

I think that a meeting of all people involved should take place a day or two before the count. A review using slides, to show various sexes and ages, would be helpful to point out the things to look for when counting. I realize that it takes a lot of organizing to plan

the count, but I am sure that there are many people, such as members of local Fish and Game Associations, who would be interested in participating.

When more accurate population statistics are collected, management decisions and plans will be more effective in maintaining this population of California Bighorn Sheep.

APPENDIX I

Lambing Bluffs



Lambing Bluffs, Viewed from Savona



Central Portion of Range

Western Part of Range

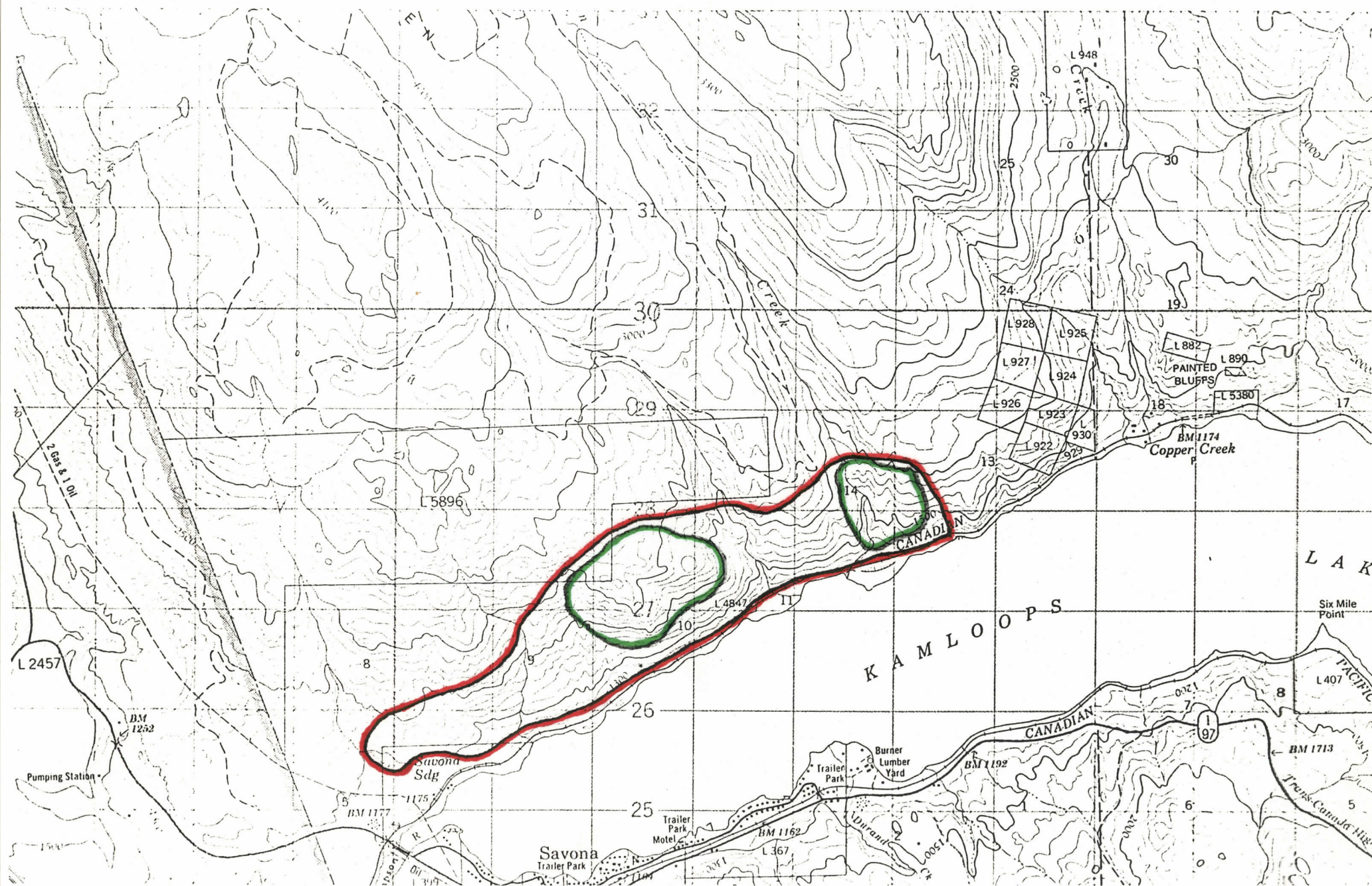


Eastern Part of Range

Lower Elevation Grassland



APPENDIX II

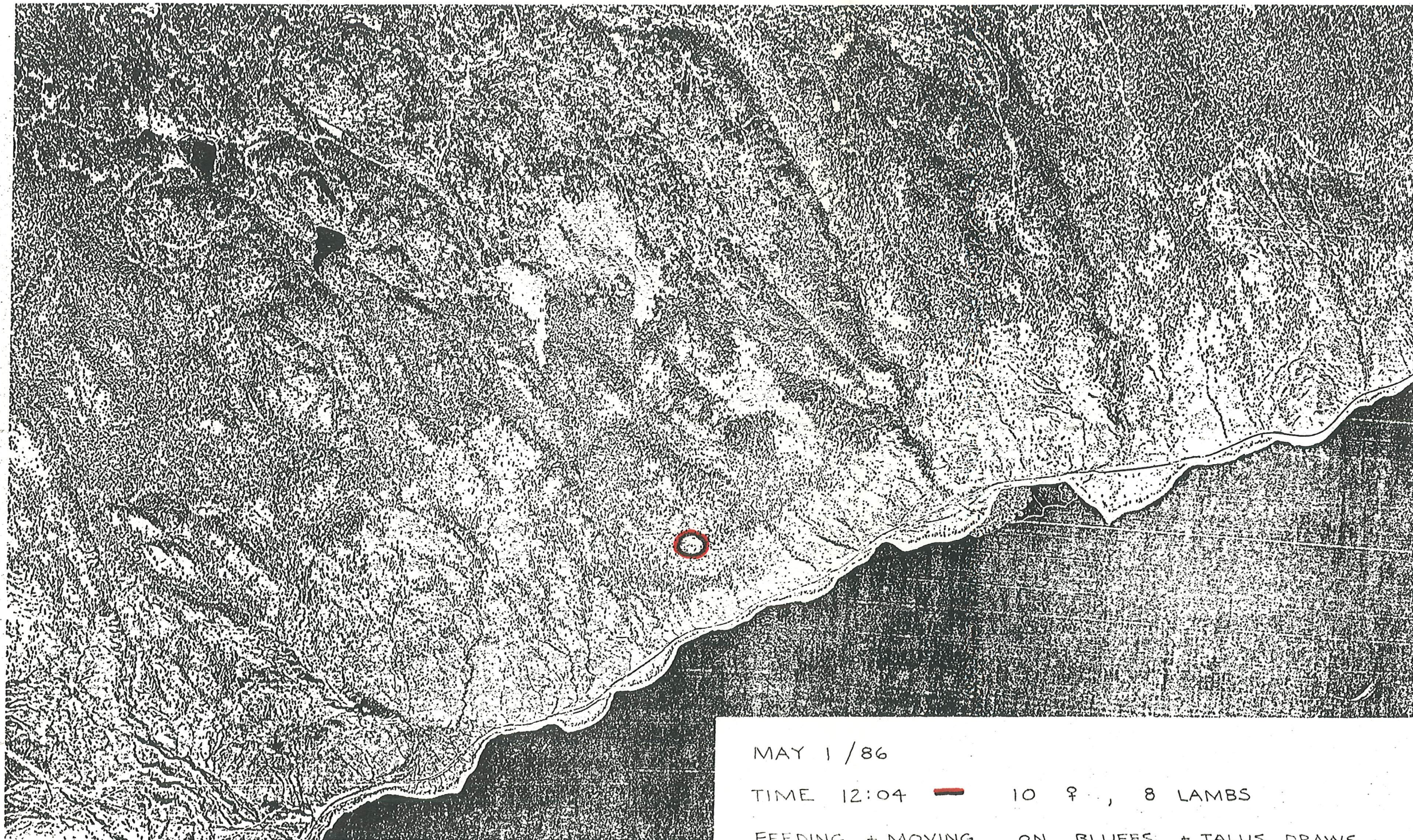


OCCUPANCY AREAS OF EWE / LAMB GROUP(S)  
(May 1—May 23 , 1986)

█ PRIMARY (175 ha.)

█ SECONDARY (390 ha.)

APPENDIX III



MAY 1 / 86

TIME 12:04  10 ♀, 8 LAMBS

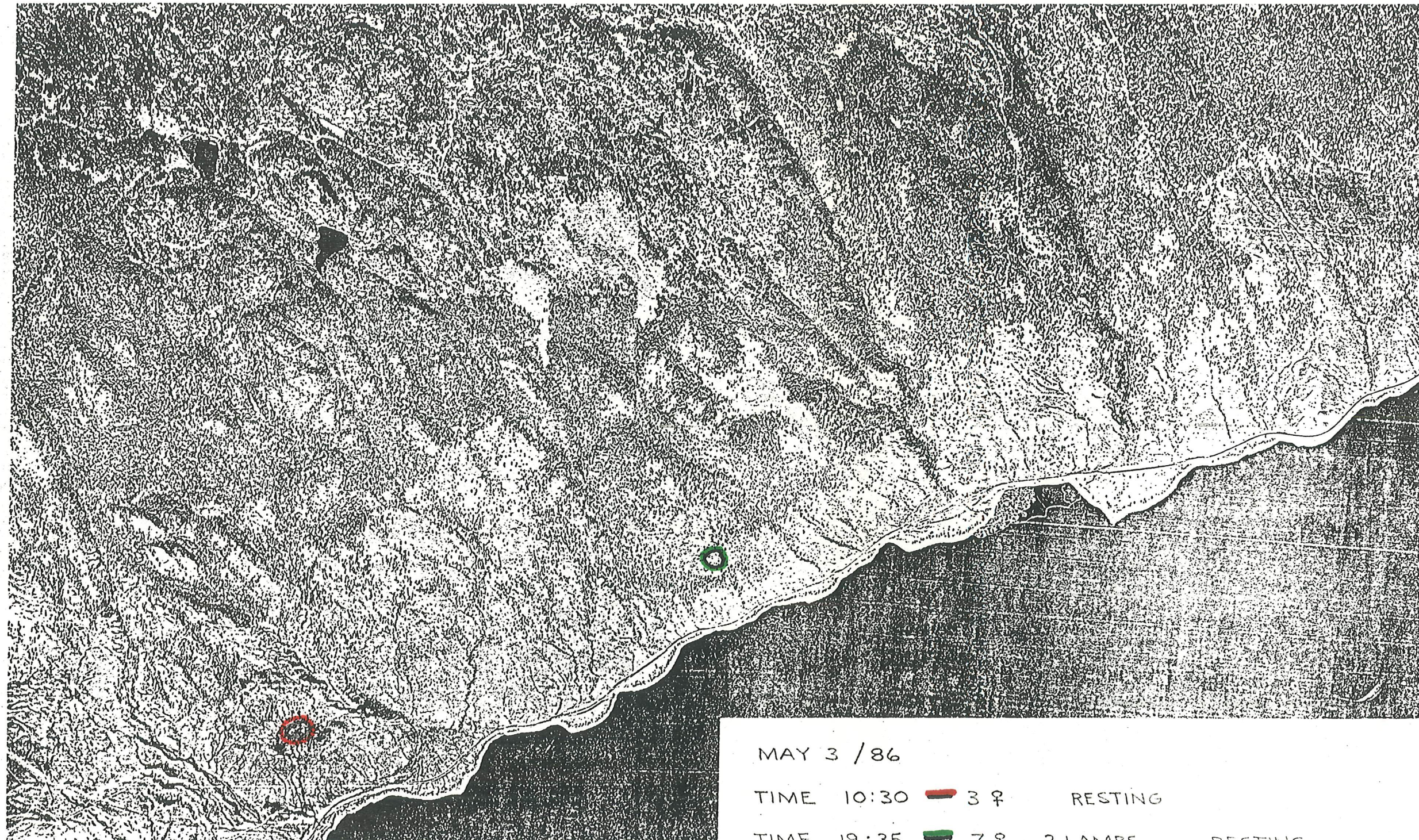
FEEDING + MOVING ON BLUFFS + TALUS DRAWS



MAY 2 / 86

TIME 12:00 — 3 ♀ , 2 LAMBS

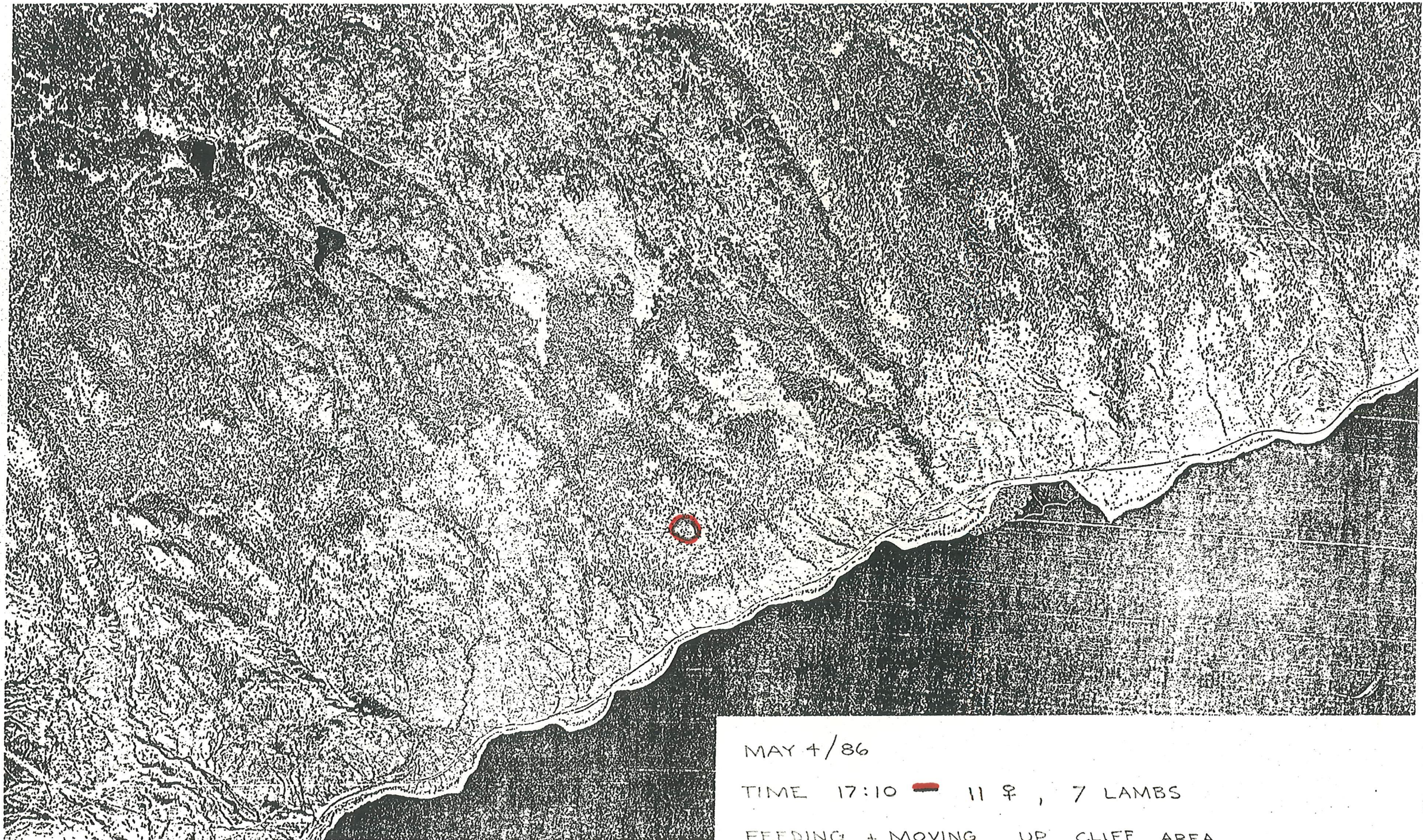
STANDING + RESTING ON UPPER CLIFF WALL



MAY 3 / 86

TIME 10:30 — 3 ♀ RESTING

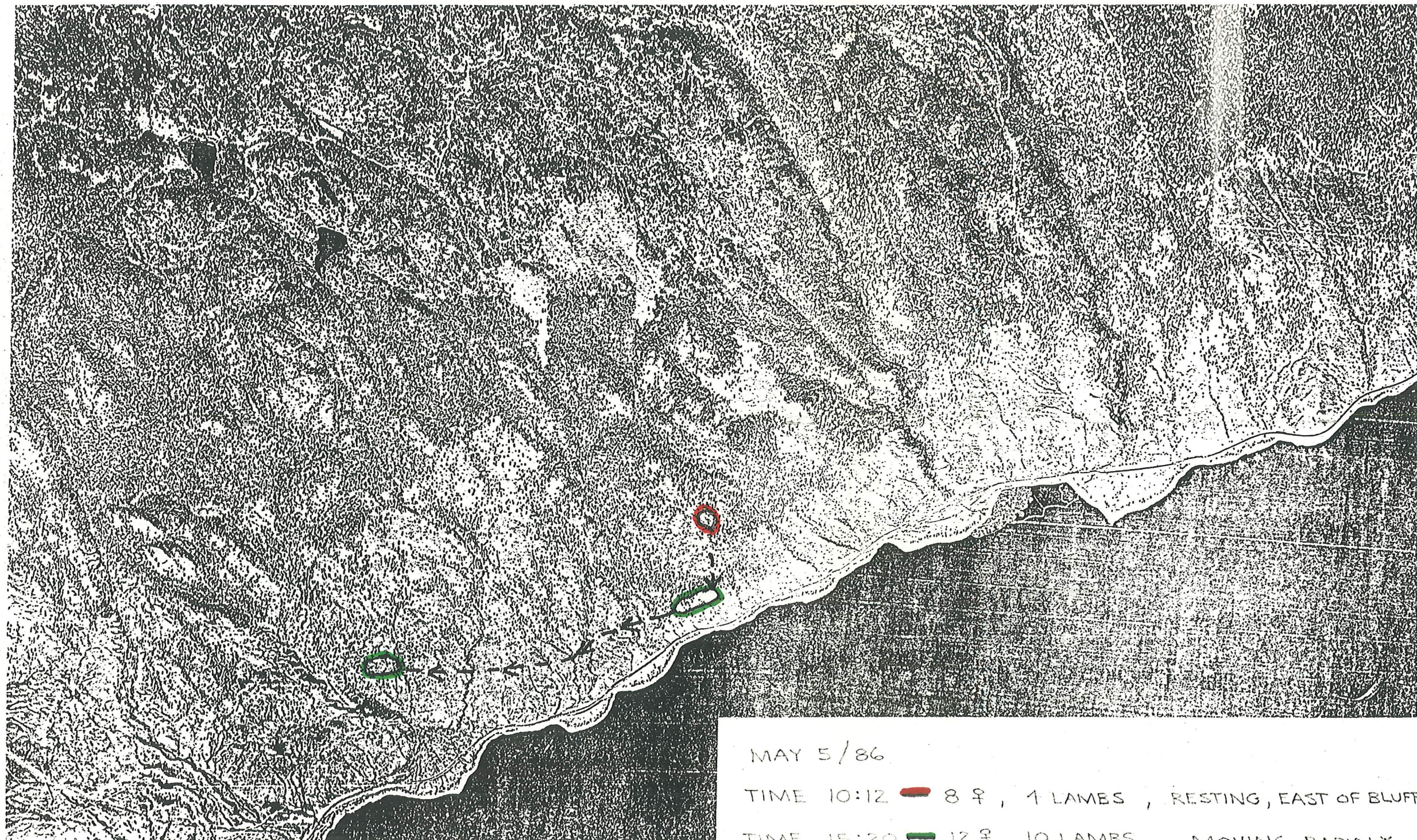
TIME 19:35 — 7 ♀ , 2 LAMBS RESTING



MAY 4/86

TIME 17:10 — 11 ♀ , 7 LAMBS

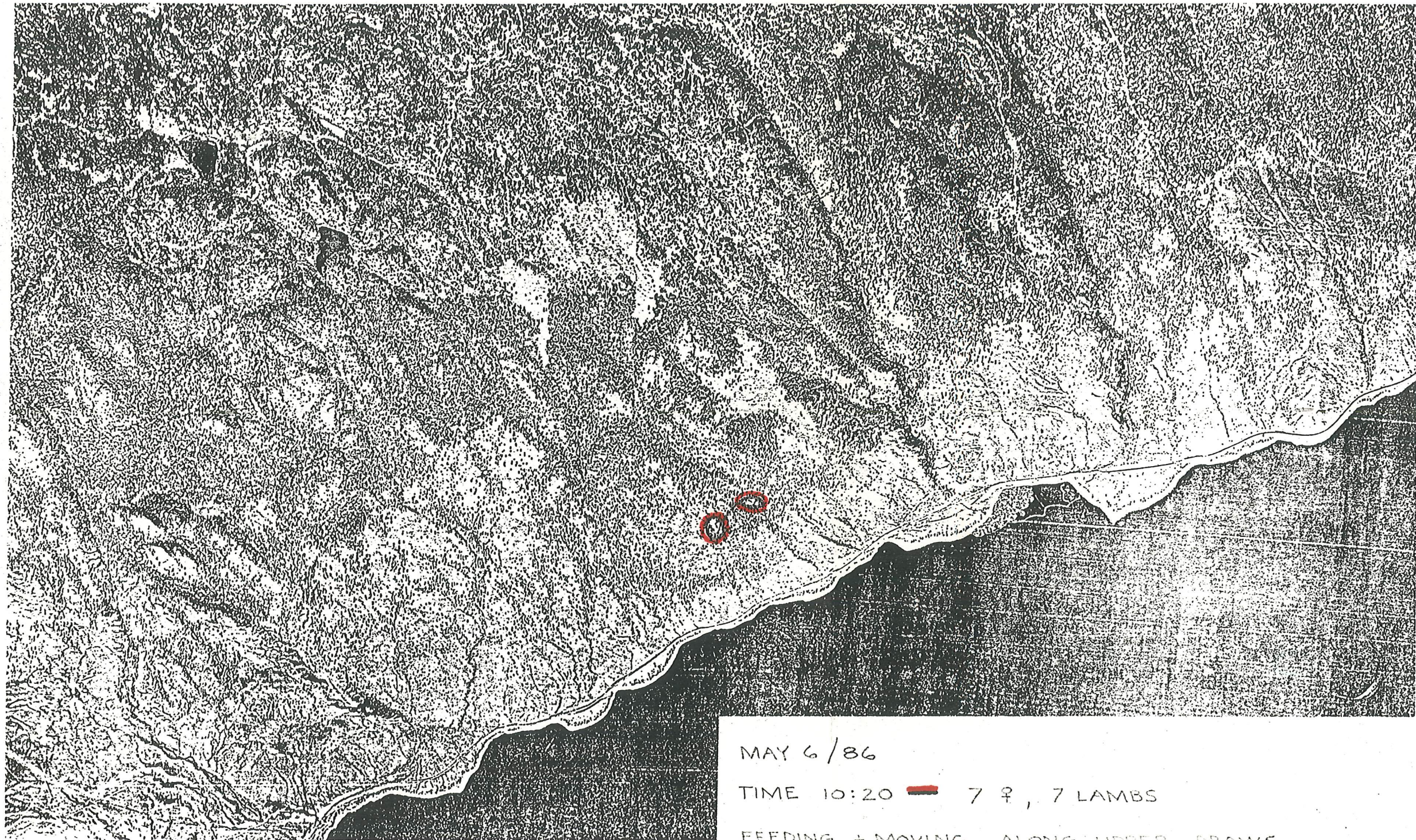
FEEDING + MOVING UP CLIFF AREA



MAY 5/86

TIME 10:12 — 8 ♀, 1 LAMBS, RESTING, EAST OF BLUFF

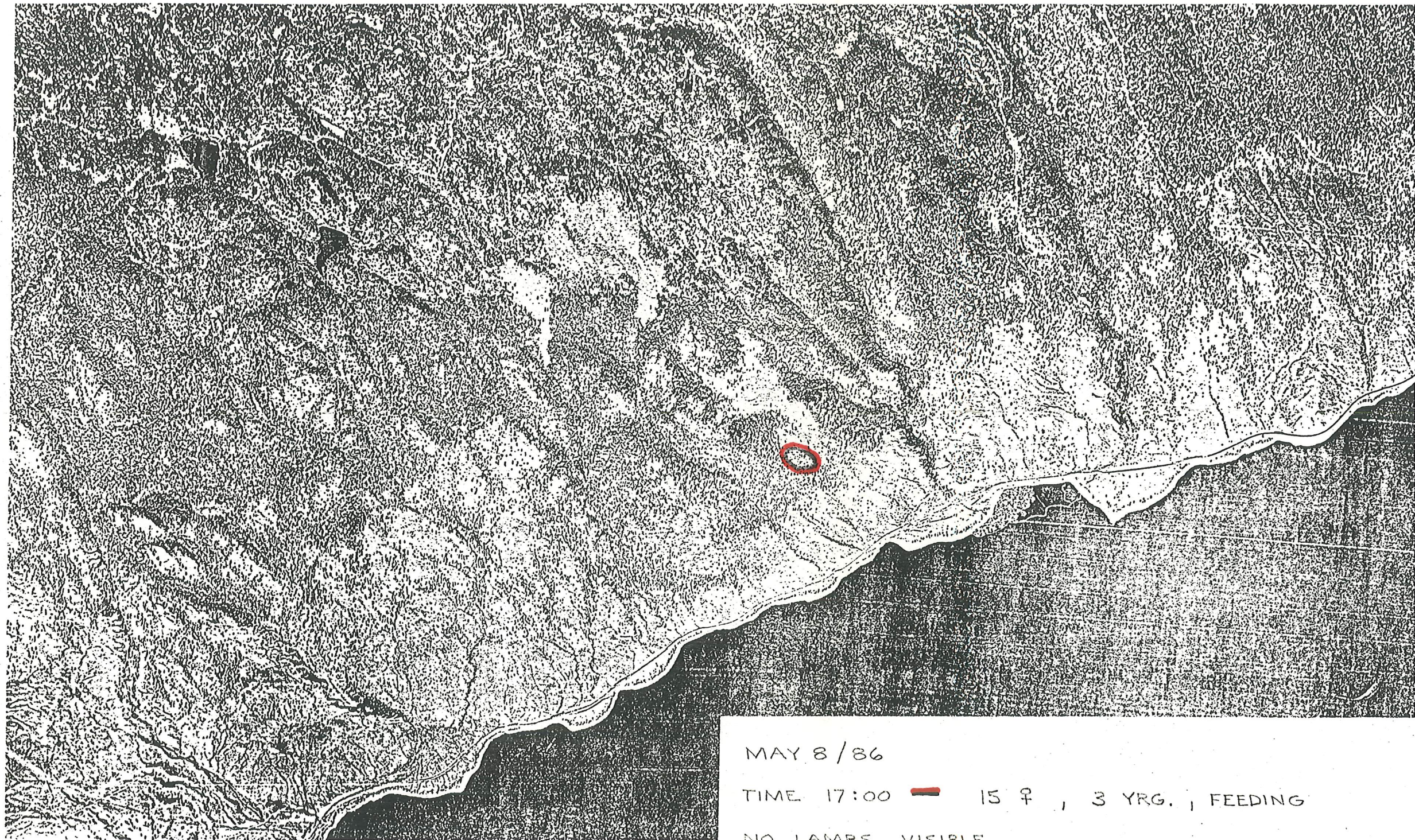
TIME 15:20 — 12 ♀, 10 LAMBS, MOVING RAPIDLY  
to 15:40  
OFF CLIFF, WHEN I CAME WITHIN 100 M.



MAY 6/86

TIME 10:20  7 ♀, 7 LAMBS

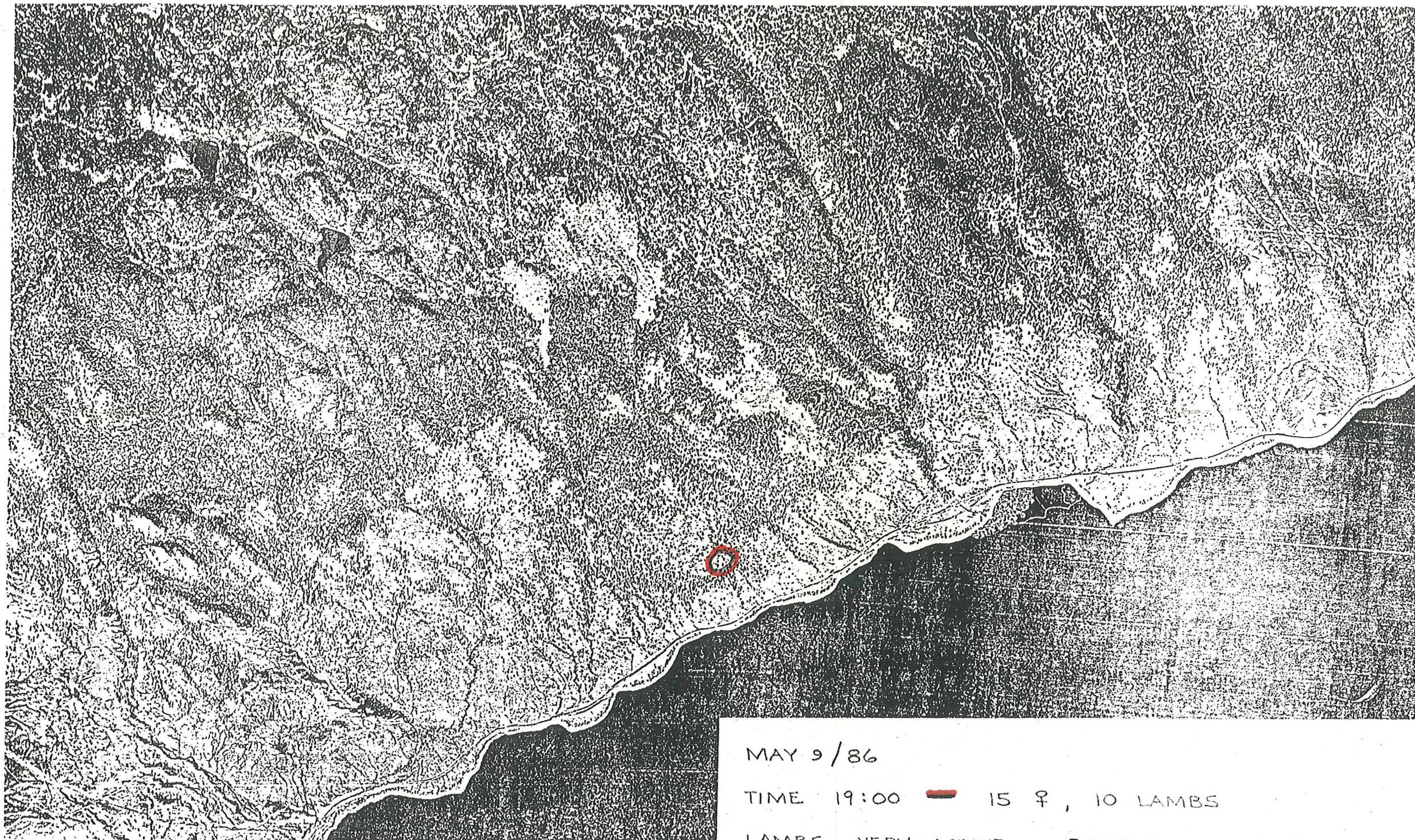
FEEDING + MOVING ALONG UPPER DRAWS



MAY 8/86

TIME 17:00 — 15 ♀ , 3 YRG. , FEEDING

NO LAMBS VISIBLE .



MAY 9/86

TIME 19:00 — 15 ♀, 10 LAMBS

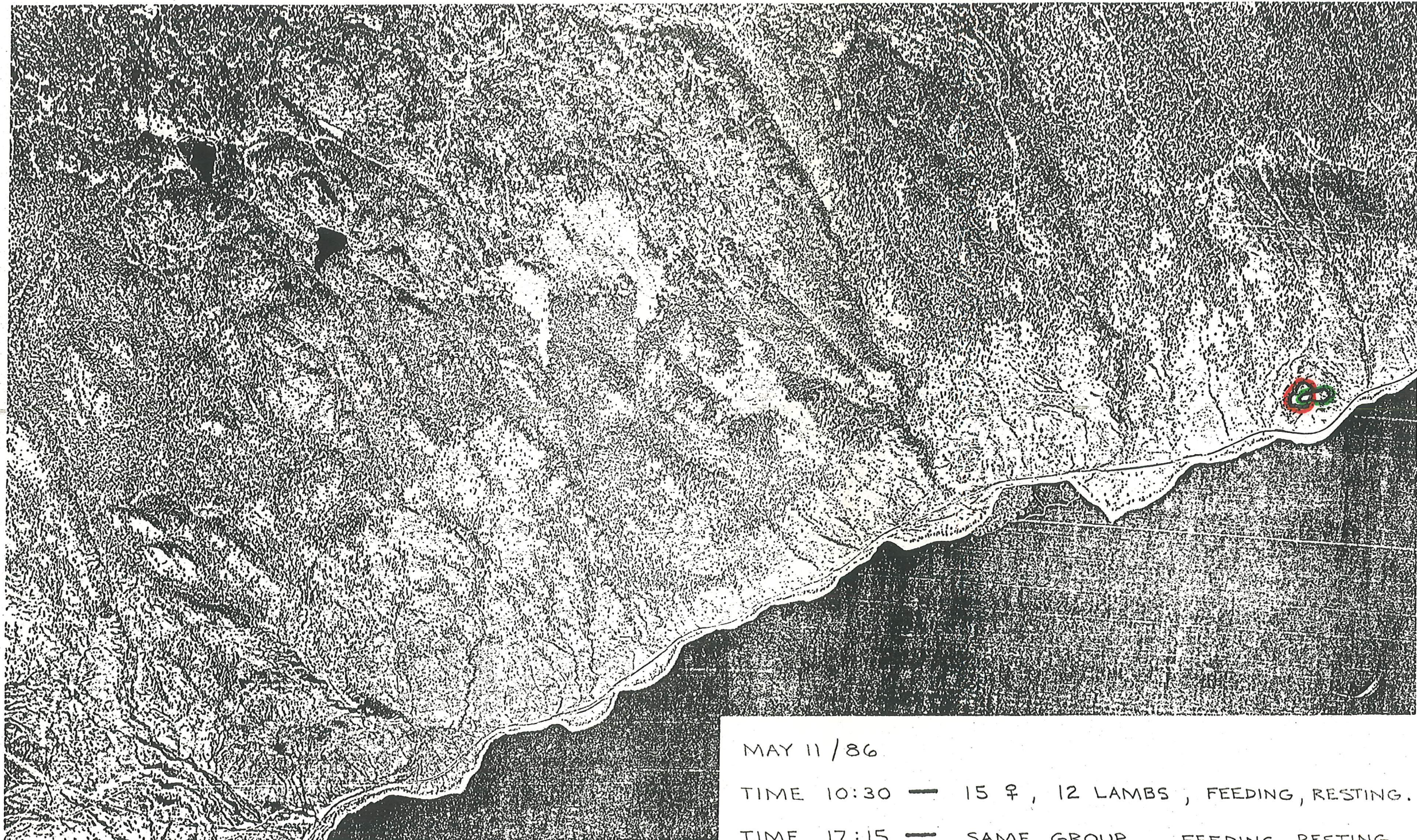
LAMBS VERY ACTIVE, RUNNING, CLIMBING,  
JUMPING, LED BY ONE EWE.



MAY 10 / 86

TIME 11:00 — EWE/LAMB GROUP , RESTING

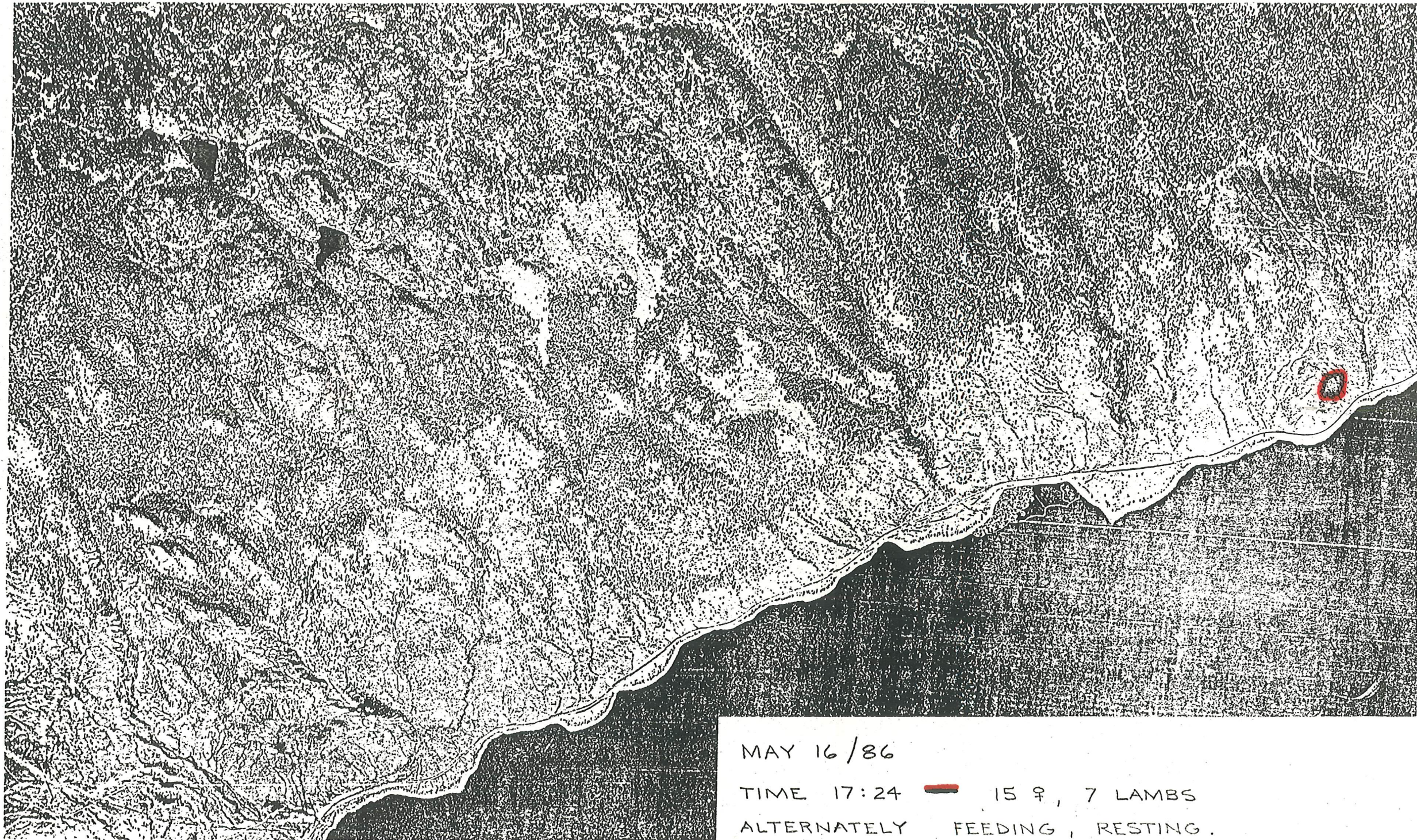
TIME 16:30 — 23 ♀/♂ MIXED GROUP , 17 LAMBS ,  
to 16:50  
SCARED BY MYSELF , RAN NON-STOP TO OTHER BLUFFS



MAY 11 / 86

TIME 10:30 — 15 ♀, 12 LAMBS, FEEDING, RESTING.

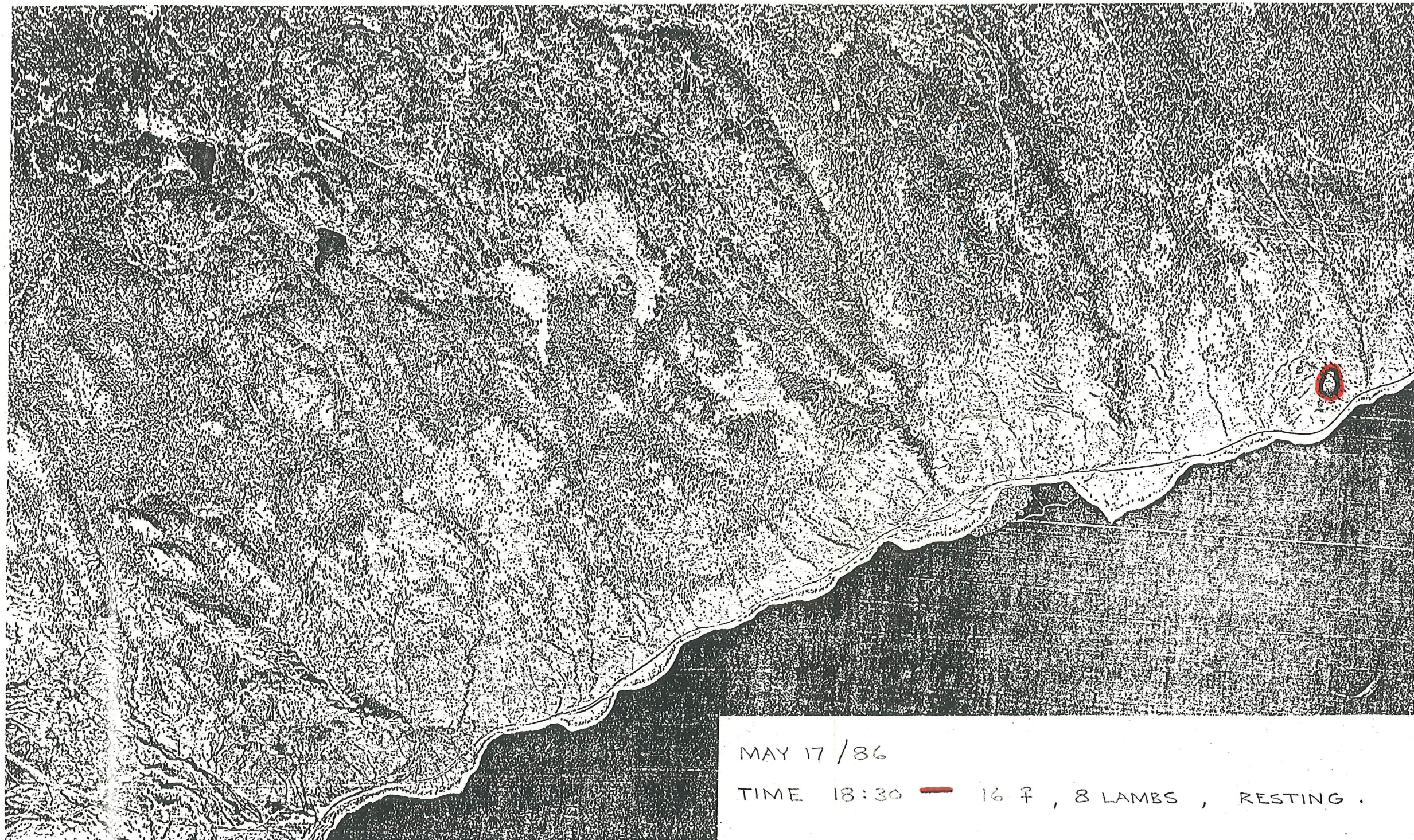
TIME 17:15 — SAME GROUP, FEEDING, RESTING.



MAY 16/86

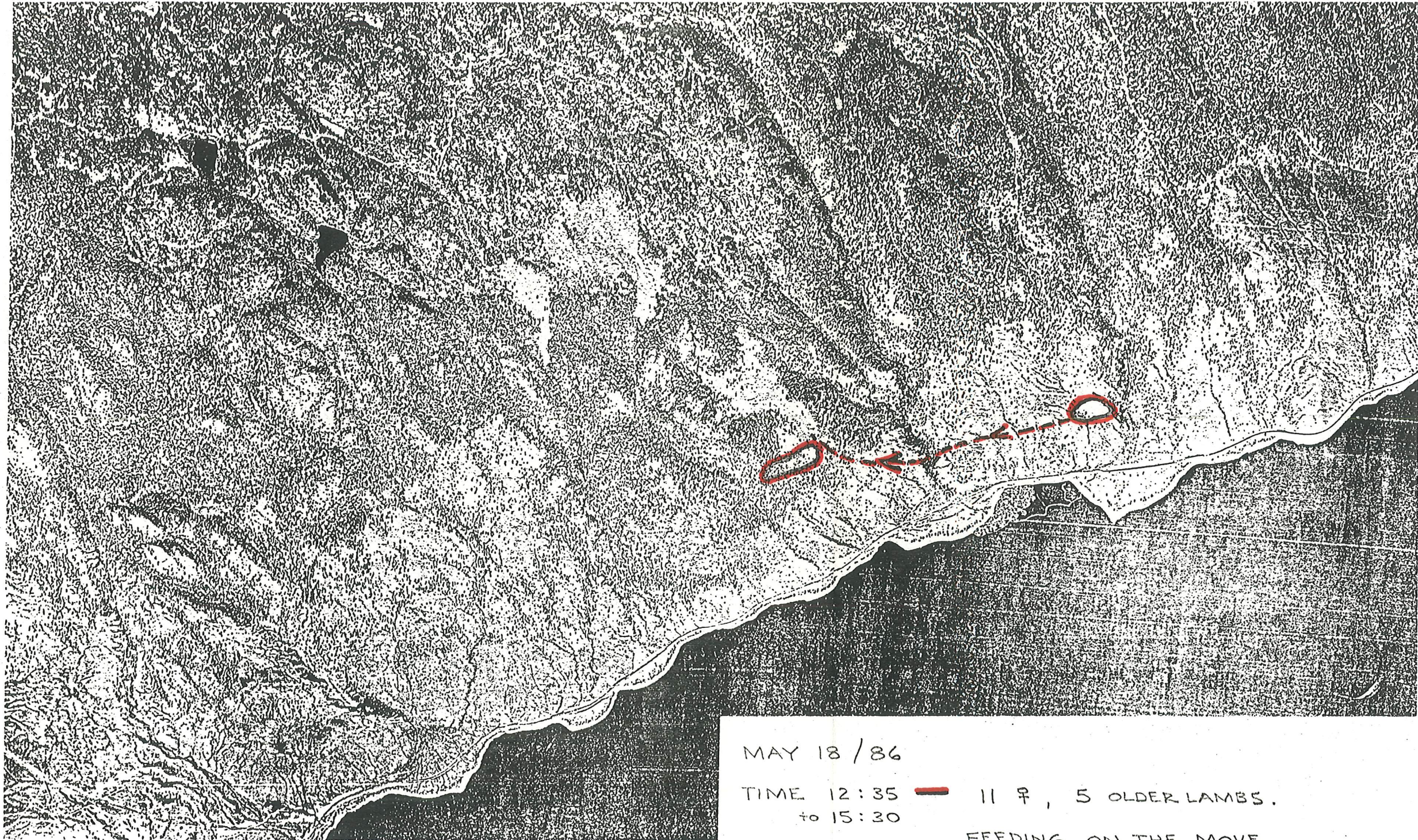
TIME 17:24  15 ♀, 7 LAMBS

ALTERNATELY FEEDING, RESTING.



MAY 17 / 86

TIME 18:30 — 16 ♀ , 8 LAMBS , RESTING .



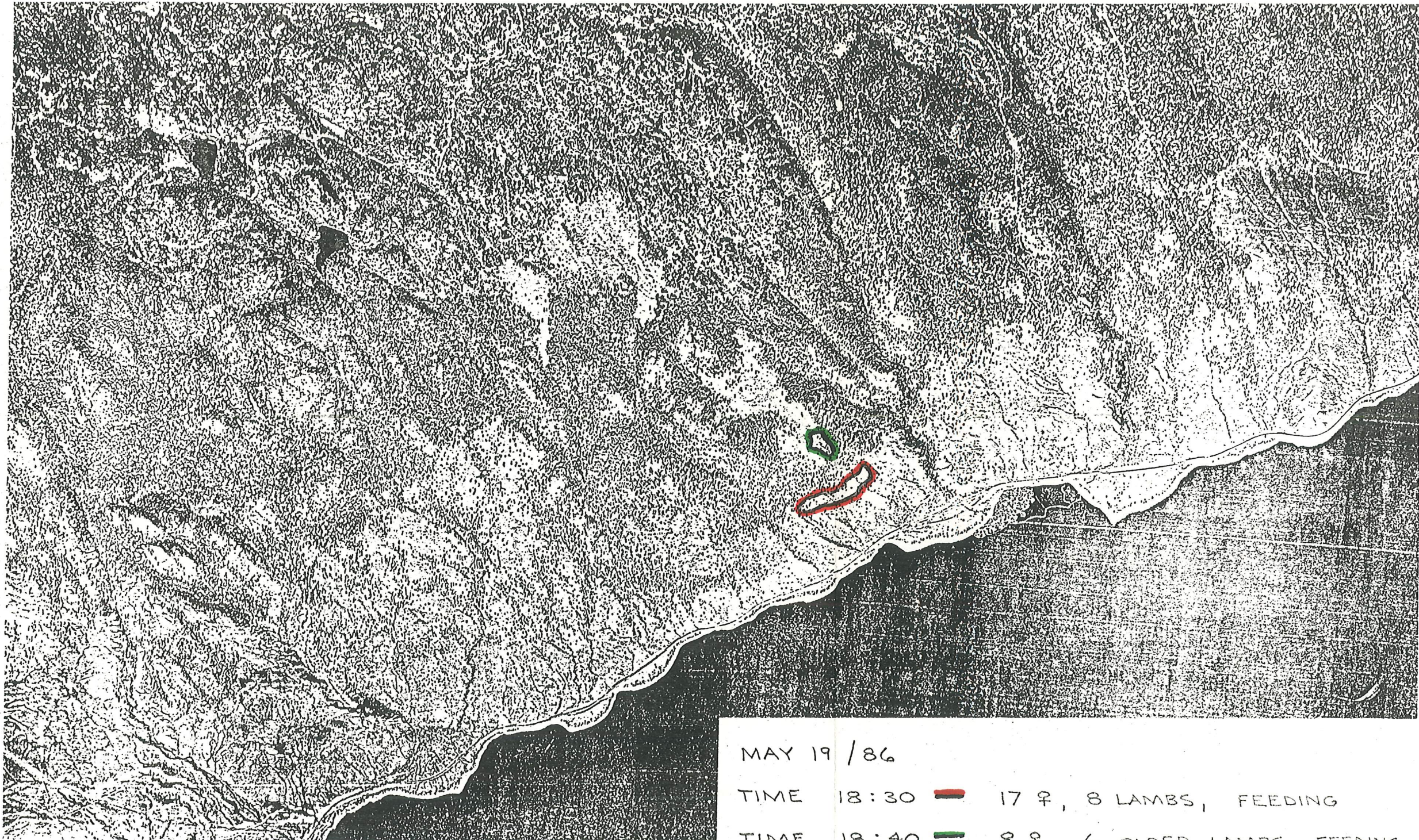
MAY 18 / 86

TIME 12:35  
to 15:30





11 ♀, 5 OLDER LAMBS.

FEEDING ON THE MOVE.

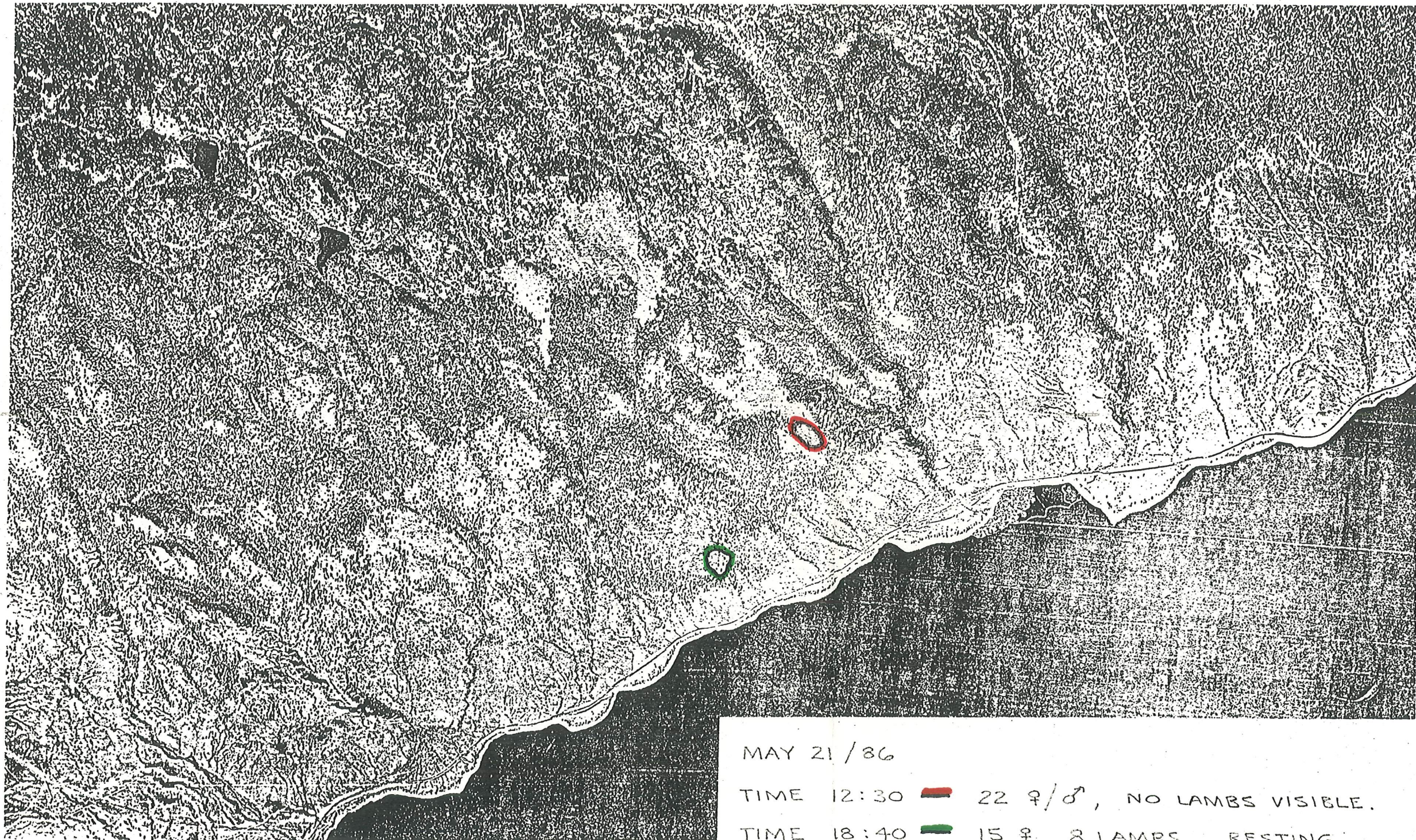


MAY 19 / 86

TIME 18:30  17 ♀, 8 LAMBS, FEEDING

TIME 18:40  8 ♀, 6 OLDER LAMBS, FEEDING.

NOTE: THESE ARE 2 SEPARATE GROUPS.

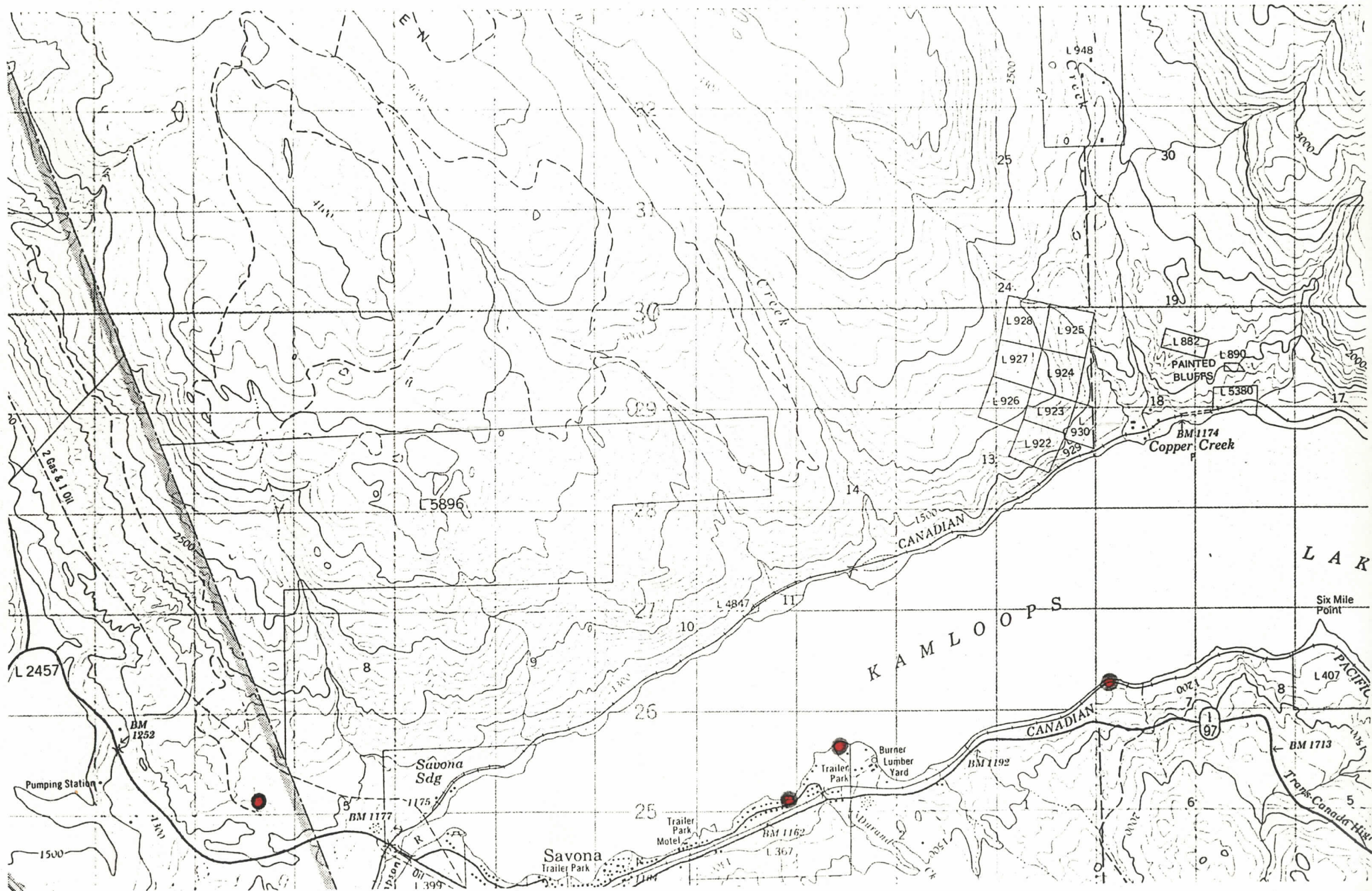


MAY 21 / 86

TIME 12:30 █ 22 ♀/♂, NO LAMBS VISIBLE.

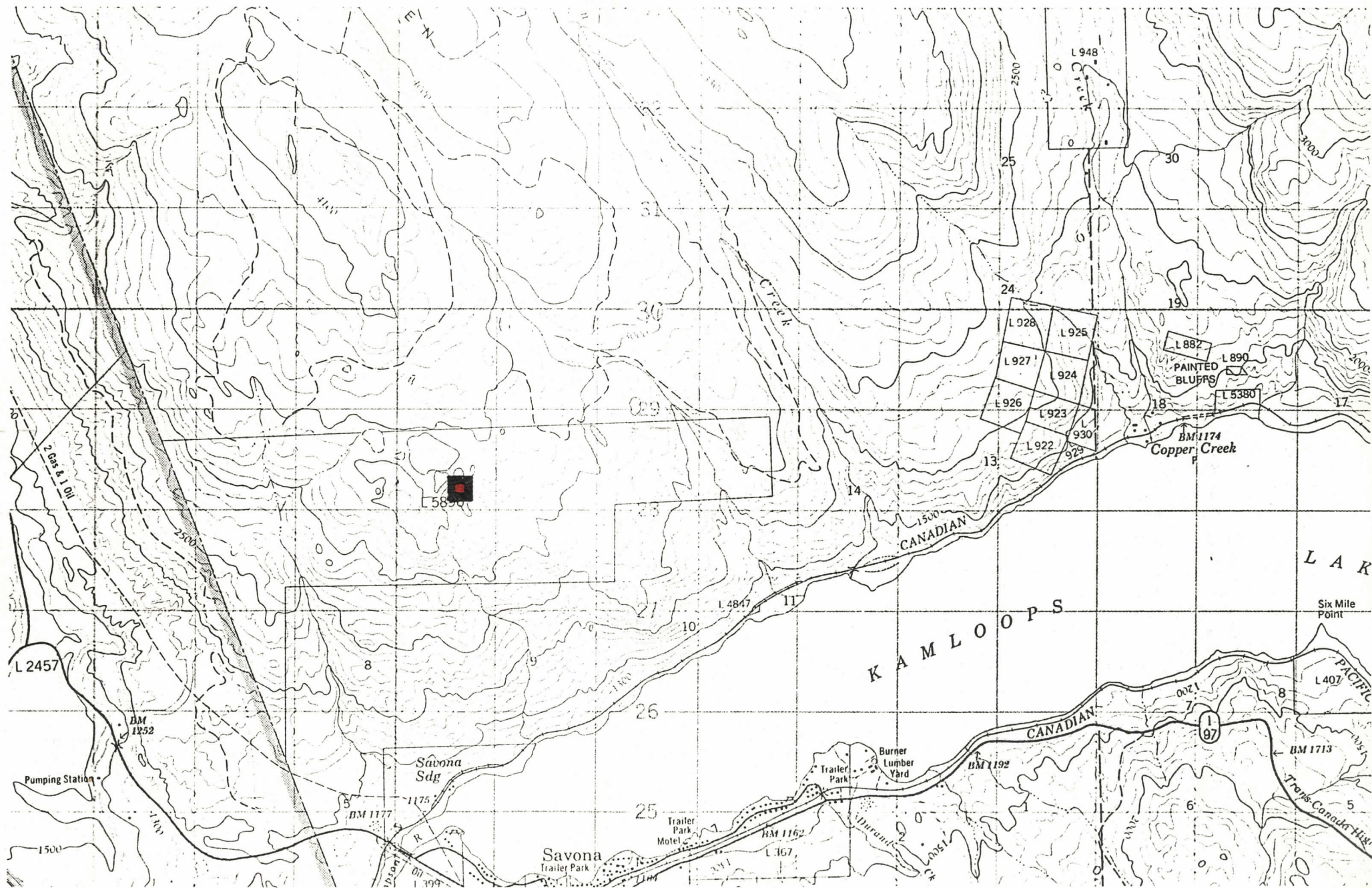
TIME 18:40 █ 15 ♀, 8 LAMBS, RESTING.

APPENDIX IV



OBSERVATION POINTS USED DURING THE SURVEY

APPENDIX V



LOCATION OF BASE CAMP

APPENDIX VI

## EQUIPMENT LIST

1. Thommen Altimeter
2. Pocket Stereoscope
3. B.C. Air Photos (80126, 235-239)
4. Bushnell Spotting Scope (20x-45x)
5. Pentax 35mm Camera  
85-205mm Lens
6. Suunto Clinometer
7. Motorola FM Radio (PT300)
8. Bushnell 8x40 Binoculars
9. Telescopic Tripod

APPENDIX VII

## Incidental Sightings

- 1 pair of common loons nesting on pond by base camp
- Barrows Goldeneye (pair), Mallards (2 pair) nesting on pond in lower western part of the meadow, just above the lambing bluffs
- Blue grouse - 1 female incubating 9 eggs
  - 1 female incubating 7 eggs
  - 1 male
- 1 male ruffed grouse
- Downy woodpeckers (1 pair)
- Meadowlarks
- Red-shafted flickers
- Wood thrushes
- Ravens
- Crows
- Magpies
- Clarks nutcrackers
- Strikers
- Mountain chickadees
- Chukars (2)
- Golden eagle (3) sightings
- Red-tailed hawk (1) sighting

## BIBLIOGRAPHY

- Angrove, K., and B. Bancroft, 1983. A guide to some common plants of the Southern Interior of B.C. Land Mgmt. handbook No. 7. 225 pp.
- Geist, V., 1974. Mountain sheep - A study in behaviour and evolution. University of Chicago Press, Chicago. 383 pp.
- Harper, W.L., 1984. Pregnancy rate and early lamb survival of California bighorn sheep (*Ovis canadensis californiana*) in the Ashnola Watershed, British Columbia. M.Sc. Thesis. University of B.C. 112 pp.
- Mitchell, W.R. and R. E. Green, 1981. Identification and interpretation of ecosystems of the western Kamloops Forest Region. Land management handbook, (ISSN 0229-1622; No. 2). Information Services Branch, M.O.F., Victoria, B.C.
- Nicholson, A.C., A. McLean, and T.E. Baker, 1982. Grassland ecology and classification. Symp. Proceedings. Info. Serv. Br. B.C. M.O.F., Victoria, B.C. pgs. 133 - 145.
- Spalding, D.J., 1973. A suggested population control method in a herd of California bighorn sheep. Unpublished report. Min. of Environment. B.C. Fish and Wildlife Branch. 10 pp.
- Steward, S.T., 1980. Mortality patterns in a bighorn sheep population. Bienn. Symp. North. Wild Sheep and Goat Council. 3rd Ed. pgs. 313-330.