Landscape changes and effects of ecosystem-based management

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Landscape Descriptions from General Land Office Surveyors

"The uplands…are covered with bunch grass, which grows here in great profusion."

(Ingalls 1871; T33N, R09)

"The rolling land or hills covered with nutritious bunch grass, and affords a splendid range for stock."

(Ingalls 1871; T33N, R10E)

"The northwestern portion is mostly hilly, but the soil is generally good and yields a heavy coat of bunch grass."

(Ingalls 1871; T34N, R10E)

Vegetation Types and Species Composition

LNF Forest Reconnaissance Reports, 1911-1916

- **Pine Flats:** 100% Yellow Pine [PP and JP]
- **Pine Slopes:** YP = 55-86%; WF = 8-37%; I-C = 1-13%; SP = <1-4%
- **Fir Slopes:** WF dominant; w/ YP, I-C and SP
- **Brush**

Estimates of Tree Density
Eastside Pine Forests

	Forest Reports 1911, 1912, 1915	ELRD data (1946)	BMEF (Dolph et al 1995; Oliver 2001)	Oregon/ BMEF (Youngblood et al 2004)	Oregon (Munger 1917)
Avg TPA ≥12" dbh	5-30	21	24	20	20-30 "fully stocked"
Canopy Closure (%)	---	21 [calculated]	22	---	25 [calculated]

Spatial Pattern

"Yellow-pine stands are so irregular in density… there are usually openings in the forest, groups of young growth, glades, or barren spots...". **(Munger 1917)**

"The natural landscape pattern of ponderosa pine forests was a seemingly unbroken parkland of widely spaced tree clumps and continuous herbaceous understory." **(Agee 1993)**

Past Land Uses…

1915, Summit Lake, ELRD

...And Changing Conditions

2003, Summit Lake, ELRD

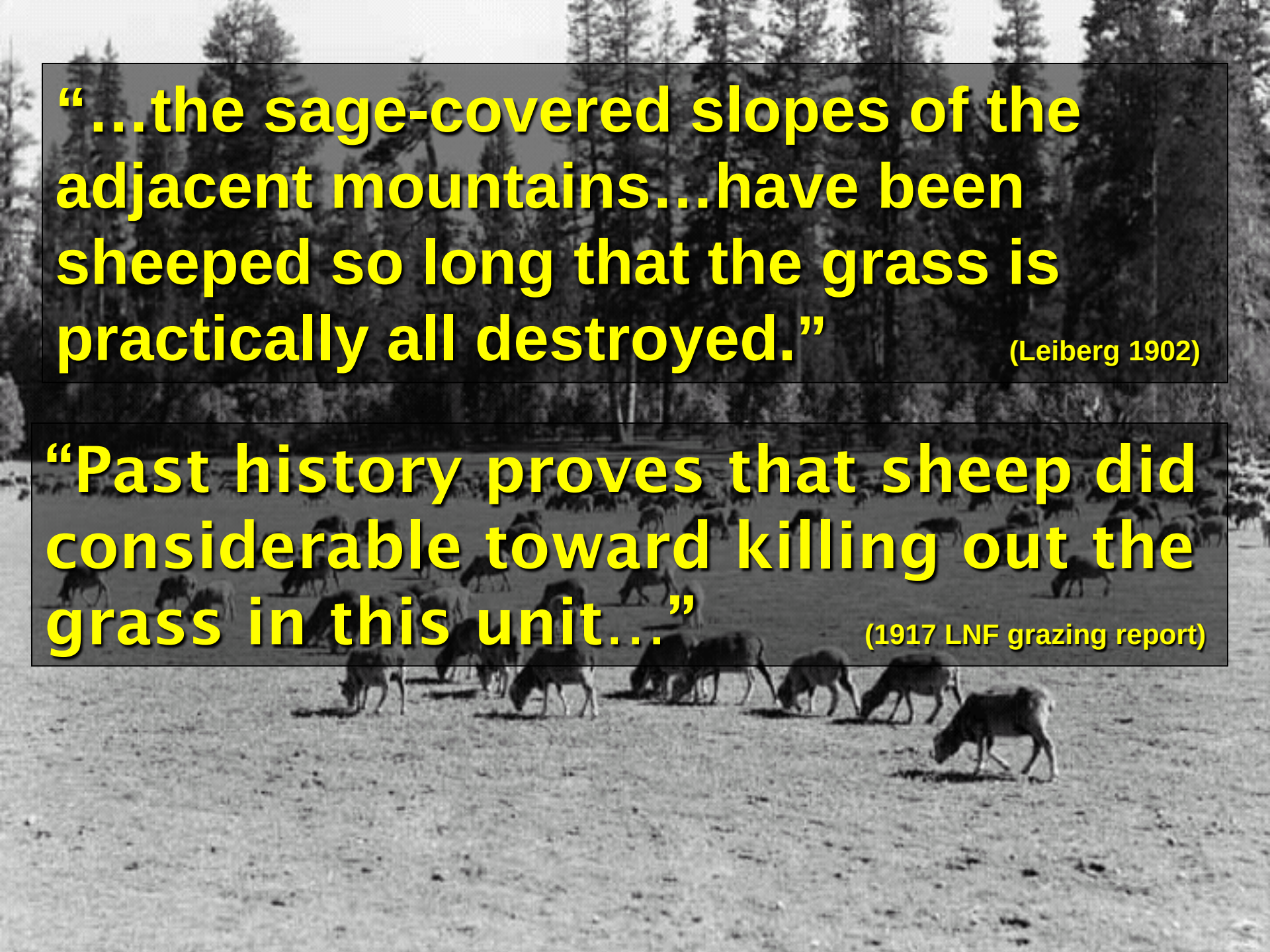
Livestock Grazing

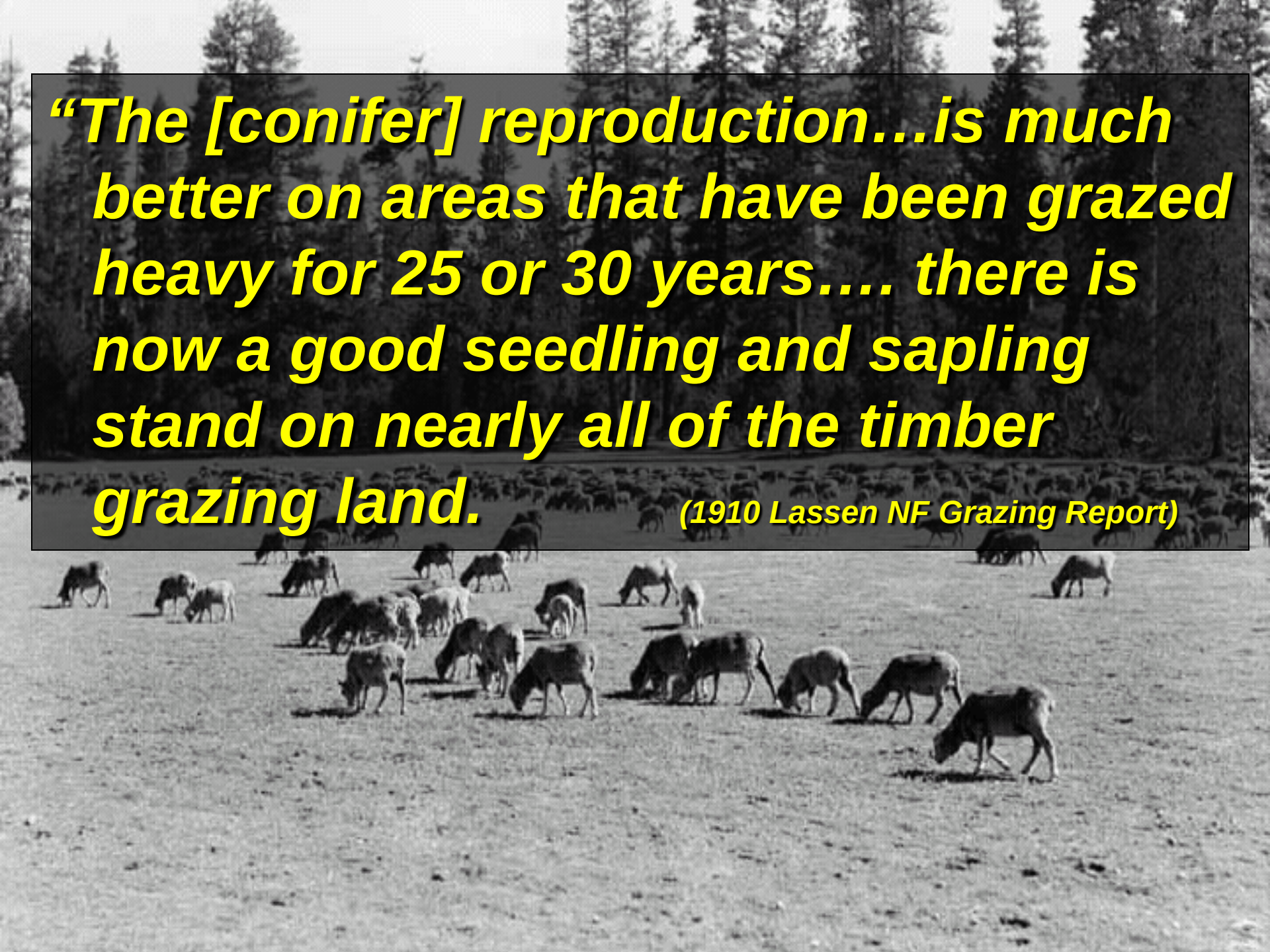
"Earliest records of grazing at Harvey Valley date from 1870…, companies would trail to Harvey Valley 40,000-50,000 head of sheep…. In addition…there was an average of 50,000 head of sheep trailed across this allotment each spring…"

(1963 Harvey Valley Allotment Mgt Plan)

1909: 132,464 head of sheep estimated to have grazed LNF for 6,056,729 "sheep days".

(1909 LNF grazing report)

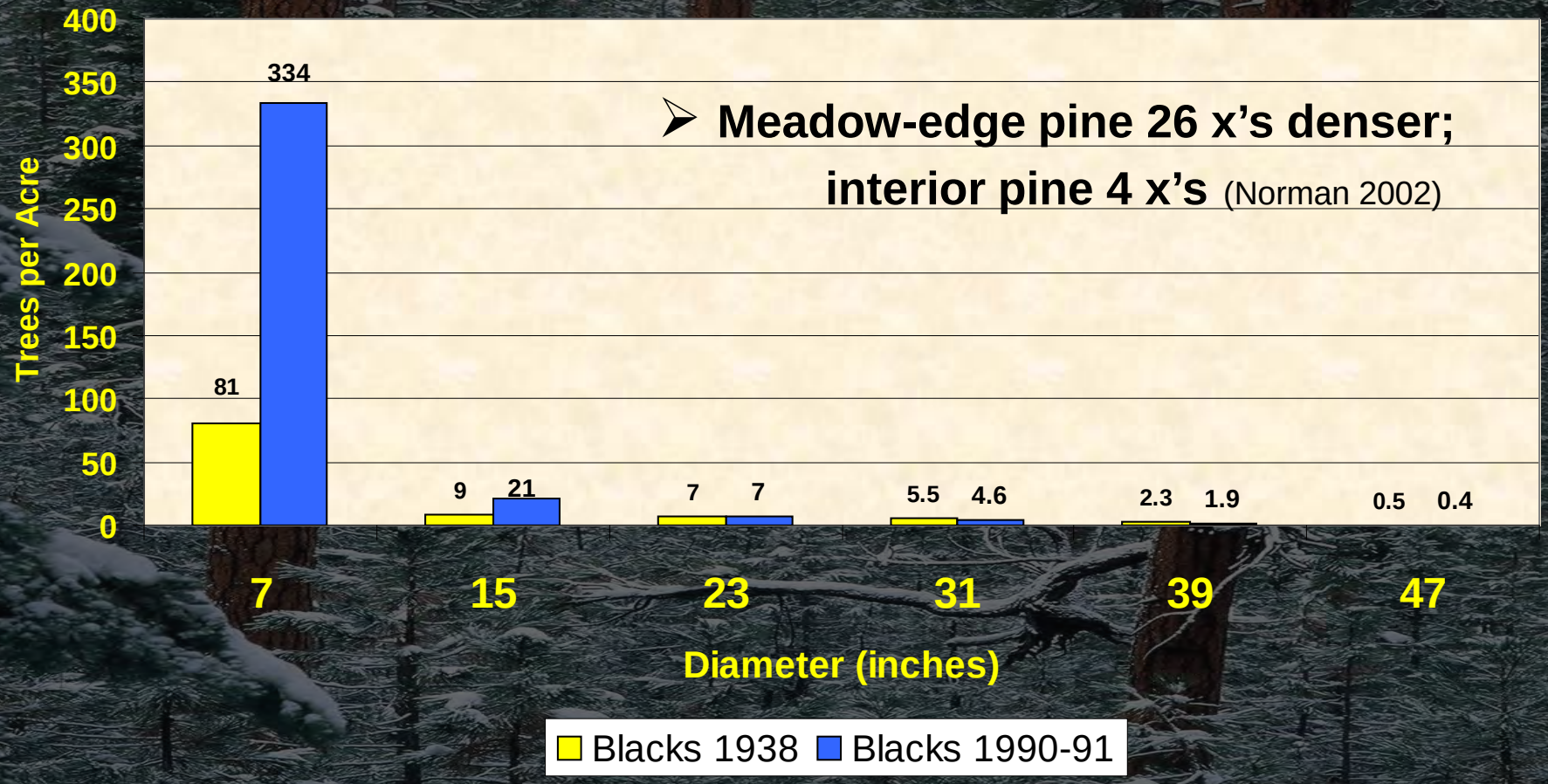

"…the sage-covered slopes of the adjacent mountains…have been sheeped so long that the grass is practically all destroyed."
(Leiberg 1902)
"Past history proves that sheep did considerable toward killing out the grass in this unit…"
(1917 LNF grazing report)


"The [conifer] reproduction…is much better on areas that have been grazed heavy for 25 or 30 years…. there is now a good seedling and sapling stand on nearly all of the timber grazing land.
(1910 Lassen NF Grazing Report)

BMEF Plot Data

Changes in Tree Density by Diameter Class

1938 to 1990-91 (Dolph et al 1995)

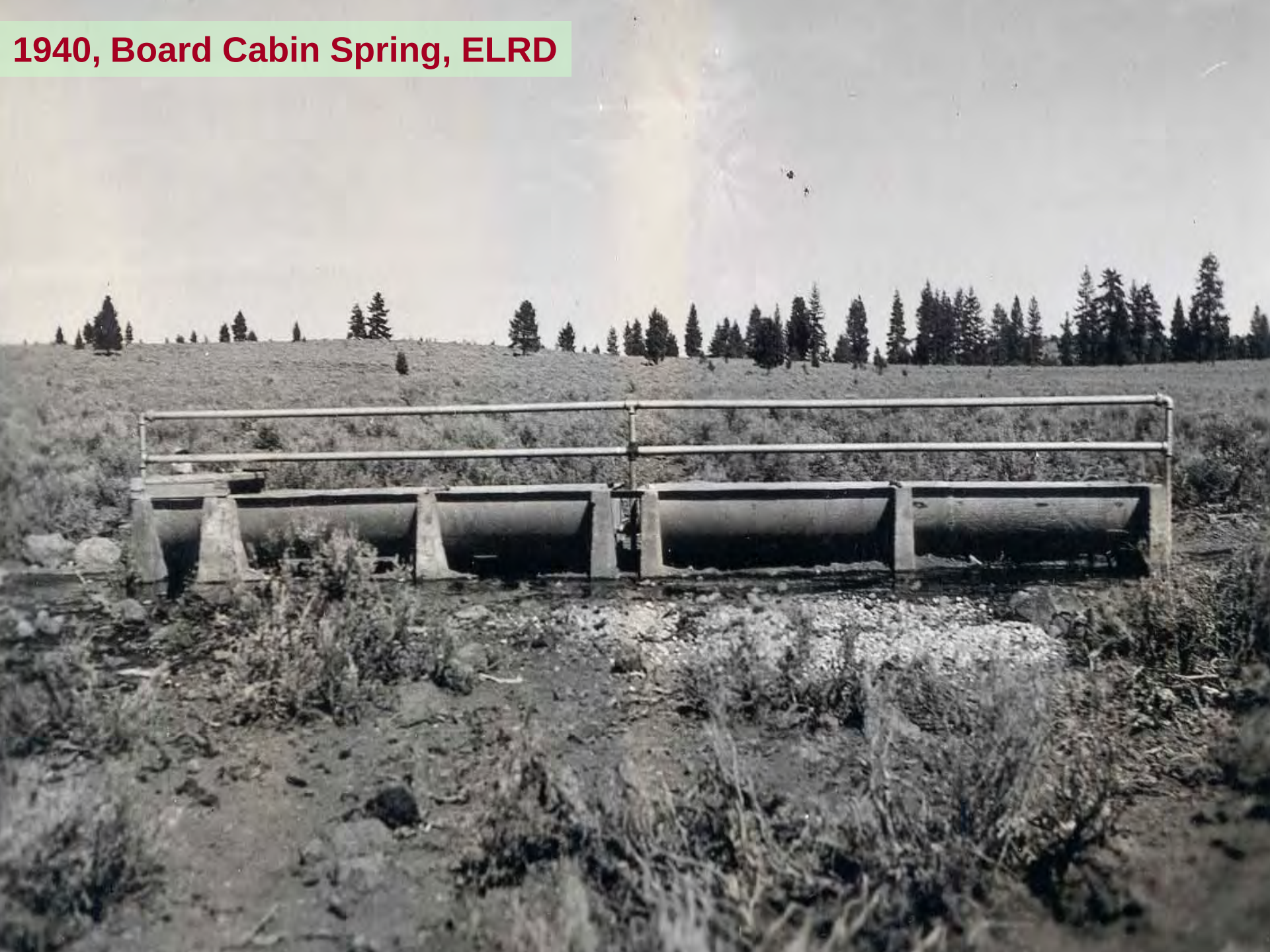


- **Meadow-edge pine 26 x's denser; interior pine 4 x's** (Norman 2002)

Weislander/Taylor No. 2a

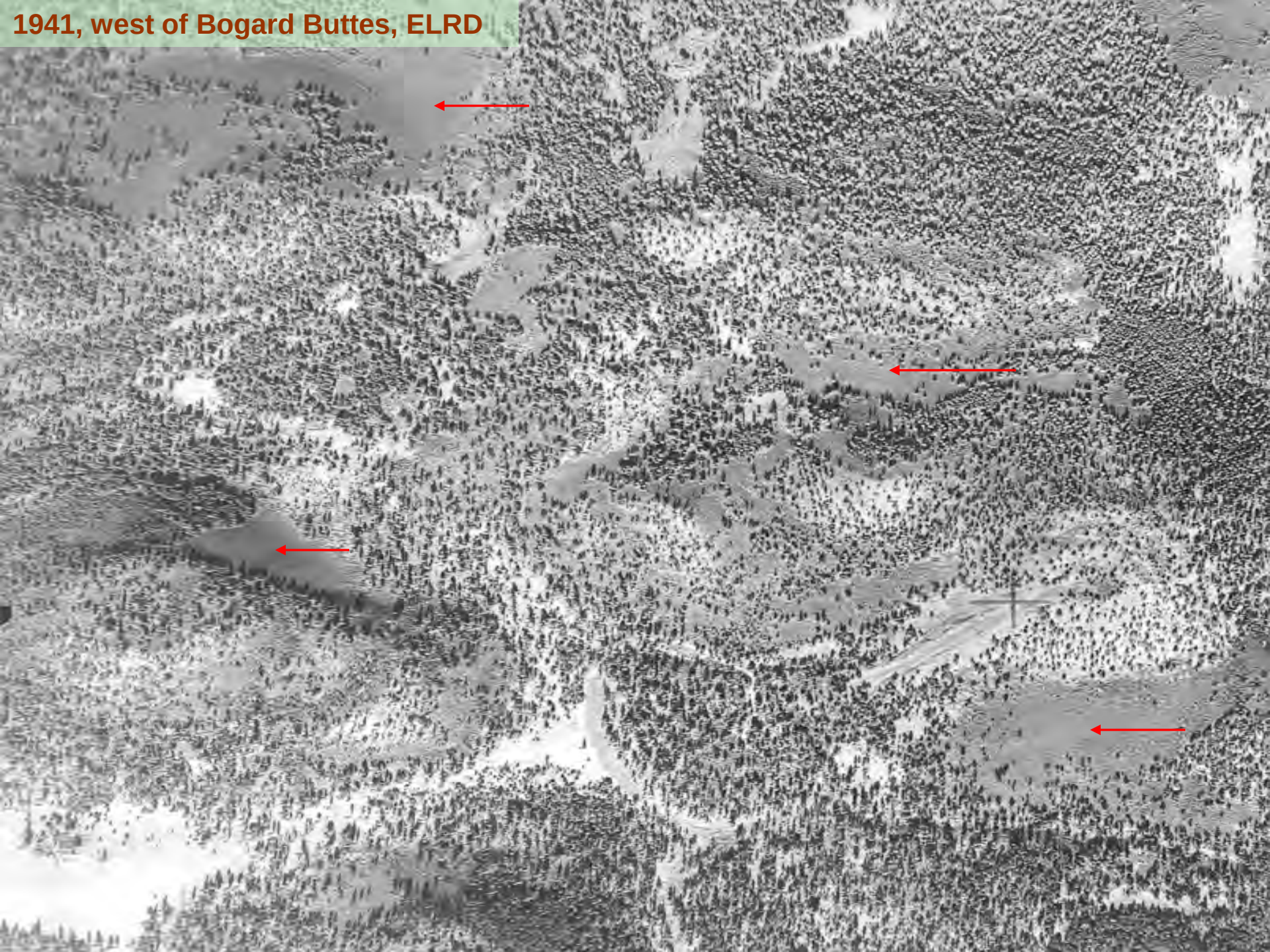
Weislander/Taylor No. 2b

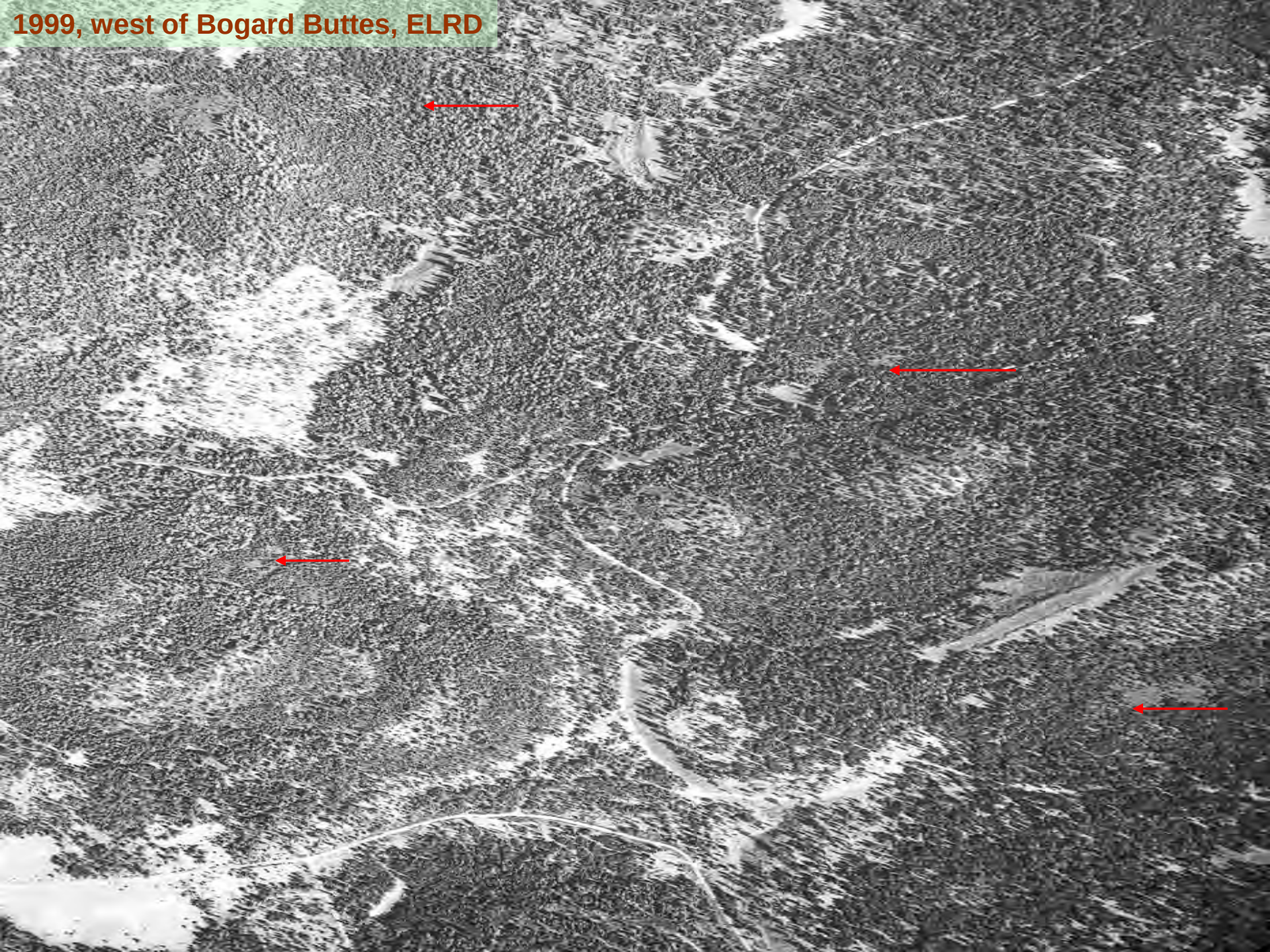
1940, Board Cabin Spring, ELRD

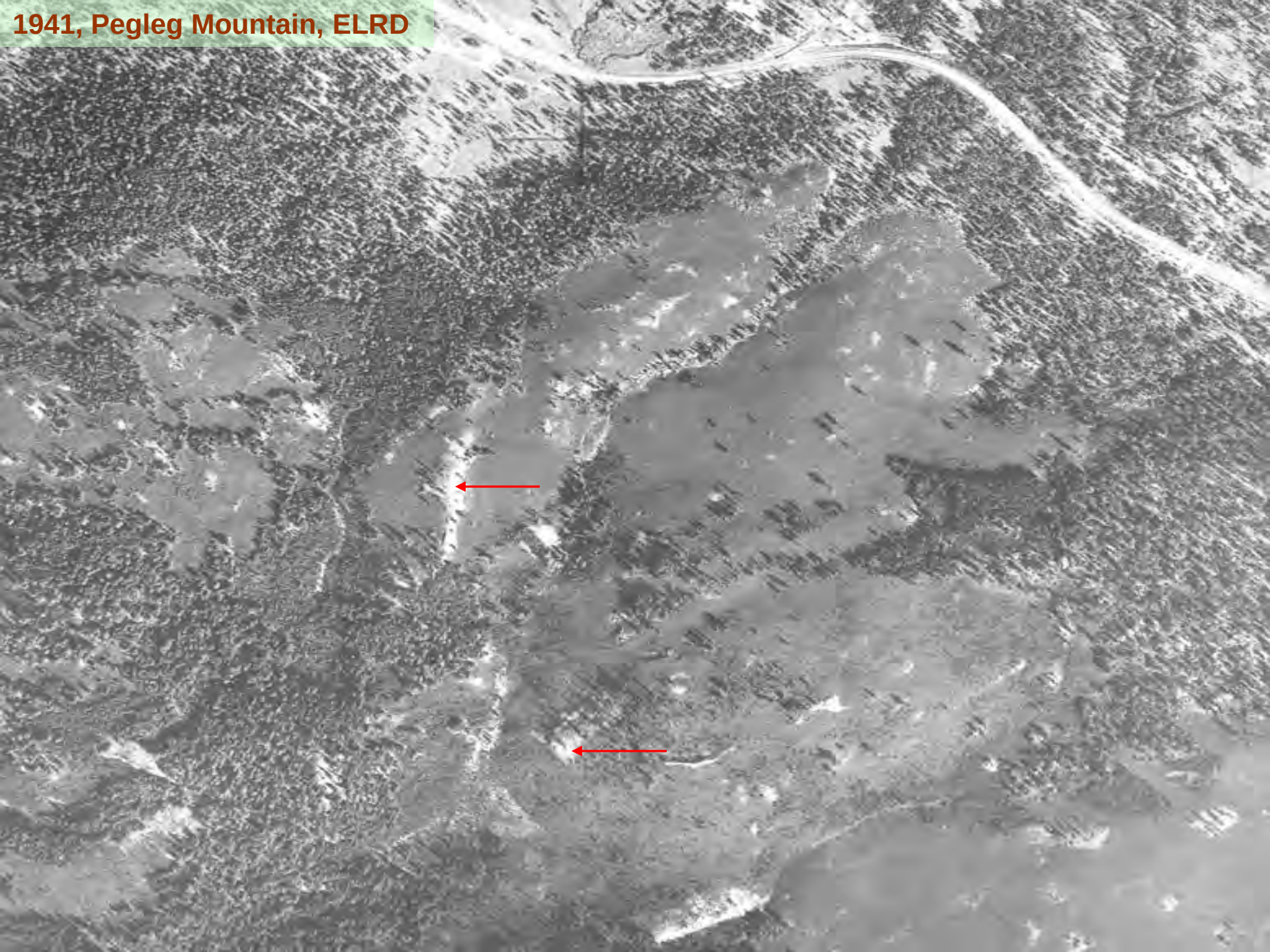


2003, Board Cabin Spring, ELRD

1941, west of Bogard Buttes, ELRD




1999, west of Bogard Buttes, ELRD


1941, Pegleg Mountain, ELRD


1999, Pegleg Mountain, ELRD

1916 Susan River, Eagle Lake RD


2003 Susan River, Eagle Lake RD

"The present extensive use of the virgin forests for grazing is possible only because, as a result of past fires, these forests are not fully stocked with timber. Fully stocked forest…contain little forage, because the trees occupy the space to the practical elimination of other plants."

(Show and Kotok 1924)

California Wildlife Habitat Relationships System

- Computerized database with habitat relationship models for over 600 vertebrate species in California.

1) Habitat elements (ie, snags, seeds, etc.)

CWHR *Habitat Elements*
Importance Categories

Essential: element that needs to be present for the species to be present.

Secondarily Essential: must be present, unless absence compensated for by the presence of another secondary element.

Preferred: enhances habitat suitability, but is not essential for the species to be present.

CWHR *Habitat Elements*

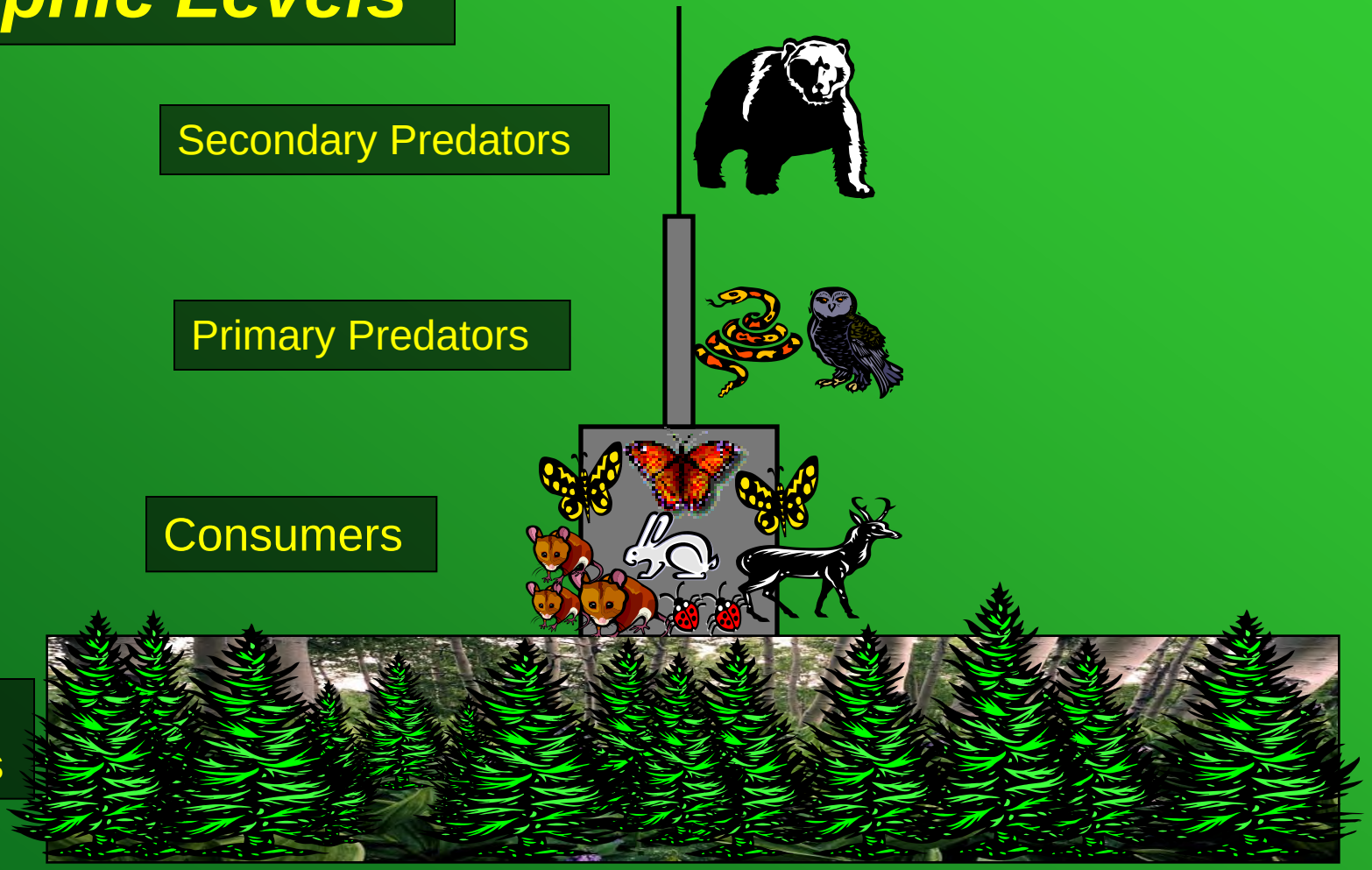
Importance Rank (# species)

[N= 124 habitat elements]

Habitat Element	Essential	Secondarily Essential	Preferred	Overall Rank
Insects (aquatic and terrestrial)	1 (318)	8 (83)	12 (151)	1 (552)
Terrestrial insects	3 (119)	2 (143)	10 (159)	2 (421)
Shrub layer (shrubs under trees)	10 (35)	1 (152)	1 (233)	3 (420)
Herbaceous Layer (grasses and forbs under trees)	4 (61)	4 (115)	4 (206)	5 (382)

Ecological Pyramid

Trophic Levels



Ecosystem Management

"The…use of ecological knowledge at various scales to produce desired resource values, products, services, and conditions in ways that also sustain the diversity and productivity of ecosystems." (USDA 1995)