

Chapter 4
OTHER GLACIERS OF CONTERMINOUS UNITED STATES

by

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* An earlier summary was given in Pt. 3, Ch. 2b, "Other
Glaciers of the United States," by Camilla McCauley, 3 pp.
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Hemisphere, Amer. Geog. Soc., N. Y., 1958, mimeo.

Introduction

In addition to the glaciers located in the Olympics, Cascades, Sierra Nevada, and American Rockies, a few small glaciers exist on scattered peaks and ranges in the conterminous United States. These areas include (1) the Salmon-Trinity Alps of the Klamath Mountains of California, (2) the Willowa Mountains of Oregon, and (3) Wheeler Peak in Nevada.

Salmon-Trinity Alps

The Salmon-Trinity Alps comprise a small area of alpine terrain in the southern part of the Klamath Mountains of northern California and southwestern Oregon, at about 41°N. The Klamath Mountains connect the Coast Ranges and the Cascades. Thompson Peak (8936 ft.; 2681 m.) is the highest point. The maximum local relief is about 1200 m. (Sharp, 1960, p. 306).

In the central high country of the Trinity Alps are sloping rock surfaces which have been extensively glaciated. These surfaces are found above the level of formerly ice-filled valleys. Striations, scoured and plucked rock surfaces, and schrund lines show that the sloping surfaces were formed by a mantle or carapace of ice, possibly no more than 60 to 90 m. thick, that flowed toward the valley glaciers. The prominent schrund lines associated with the surfaces define the upper and lateral limits of the ice carapaces. Surfaces of this type are better developed in the Trinity Alps than in most other glaciated mountain ranges of the western United States (Sharp, 1960, p. 336).

The high massifs of the "Alps," from which glaciers flowed, consist chiefly of stocks of quartz diorite, granodiorite, and quartz monzonite. The glaciers carried debris from these relatively light-colored, intrusive bodies onto the surrounding terrain of dark-colored metamorphic rocks (Sharp, 1960, pp. 306-308).

The present-day snowline lies at 2250 m. and the climatic snowline at 3000 m. (Sharp, 1960). At present, only two small bodies of vestigial glacial ice remain in the Trinity Alps (Sharp, 1960, p. 337). One is located at about 2550 m. on the north side of Thompson Peak at the head of Grizzly Creek, and the other is 0.9 km. east of Thompson Peak on the north side of Sawtooth Ridge. The latter glacier lies at the head of Thompson Creek between 2490 and 2520 m. Each glacier covers about .04 sq. km. Meier (1960, pp. 425-426) gives similar data, although the two he lists show a total area of 0.3 sq. km., located at an estimated altitude of 2600 m.

On September 1, 1956, after a year of considerable residual snow, the glaciers were largely snow-covered. In drier years 30 to 40 percent of the ice may be exposed at times during the summer (Sharp, 1960, p. 337). Fresh, bouldery moraines, indicating greater activity and size in the immediate past, are found a short distance beyond the ice margins of both glaciers. The glaciers display crevasses, and consist of somewhat dirty ice in crystals up to 2.5 cm. in diameter (Sharp, 1960, p. 337).

The Trinity Alps may contain other vestigial glaciers, but the possibility seems slight except perhaps above Lake Josephine (Sharp, 1960, p. 337). The glaciers of the Trinity Alps are easily the lowest existing glaciers in California (Sharp, 1960, p. 338).

Glacier Variations in the Trinity Alps

In the Trinity Alps, Sharp (1960) assigned a probable post-Hypsithermal age to a three-fold sequence of small, fresh-appearing moraines. Small glaciers up to 1.5 km. long built the outermost and oldest moraines, which may be two or three thousand years old. The youngest moraines are

thought to date to the mid-19th century (Porter and Denton, 1967, p. 185).

Wallowa Mountains

Two or three small glaciers were known to exist in the Wallowa Mountains in northeastern Oregon as of the early 1940's (McCauley, 1958, p. 3.2b.1). They were found on Eagle Cap (2903 m., 9675 ft.); on the Matterhorn, and near Glacier Lake Cirque. No more recent information concerning the existence or status of these glaciers has been located.

Wheeler Peak

Wheeler Peak (3919 m., 13,063 ft.) is in eastern Nevada at 38°59'N, 114°19'W, and is the second highest point in Nevada (Kramer, 1962, p. 11). An ice body on Wheeler Peak was discovered by William Eimbeck of the U. S. Coastal Survey (U. S. Geological Survey, 1883-84) in 1883; in 1955 it was found to be an active glacier exhibiting bergschrunds and crevasses (Heald, 1956). It is probably the only true glacier in the entire Great Basin, an area that is generally too arid for the existence of glaciers.

The glacier lies in a deep cirque on the north side of Wheeler Peak. The cirque is about 1.6 km. long and 300 to 450 m. wide (Kramer, 1962, p. 11), and its walls are 450 to 600 m. high. In 1955 the glacier terminated about 1 km. down the cirque, and its largest dimension probably was less than 600 m. The ice in the western section was apparently stagnant. Meier (1961, p. 426) listed one "Size Class I" glacier on Wheeler Peak. The total area of the glacier was 0.2 sq. km. and its altitude was about 3600 m. More recent information about the existence or condition of this glacier is not available.

Other Glaciers of the United States

References Cited

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Additional References

Arno, Steve (1966) Existing Glaciers in the Conterminous United States. School of Forestry, Univ. of Montana, unpubl. ms., 32 pp.

* An asterisk indicates that the map is listed in greater detail by author in the Map References.

Map References

Trinity Alps, California

Series

U. S. Geological Survey, Washington. Western United States, 1:250,000. Series V501. Contour interval 200 ft.
NK 10-8 Weed, 1963
10-11 Redding, 1960

U. S. Geological Survey, Washington. 15 Minute Series (Topographic), 1:62,500. Contour interval 40 ft.
Cecilville, 1955
Helena, 1951
Minersville, 1950

Maps in Books, Journals, Monographs, etc.

Sharp, Robert P. (1960)
Fig. 1, p. 307.

Location of Trinity Alps and Terminal Position of Trinity Alps Glaciers, [1:250,000].

Wallowa Mountains, Oregon

Series

U. S. Geological Survey, Washington. Western United States, 1:250,000. Series V501. Contour interval 200 ft.
NL 11-8 Grangeville, 1959

U. S. Geological Survey, Washington. 15 Minute Series (Topographic), 1:62,500. Contour interval 80 ft.
China Cap, 1965
Eagle Cap, 1954

Wheeler Peak, Nevada

Series

U. S. Geological Survey, Washington. 15 Minute Series (Topographic), 1:62,500. Contour interval 40 ft.
Wheeler Peak, 1950