

LANDSCAPE, WATER, AND OUTDOOR RECREATION IN THE EASTERN SIERRA NEVADA

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The Sierra Nevada has appropriately become one of the major natural attractions in the western United States and assumes great importance in the outdoor recreation industry of California. This is due to some obvious factors—marvelous scenery, vast expanses of primitive mountain land, and large nearby population centers. But within local Sierran regions, less obvious qualities of the natural scene sometimes exercise considerable influence over the popularity and use pattern of an area. Such is the case with the eastern slope of the Sierra Nevada, where a minor physical change along the mountain crest has caused profound differences of landscape and hydrography to occur. These differences have, in turn, caused two contrasting patterns of recreational land use to exist side by side.

Although these physical differences have been briefly noted in geologic and hydrographic reports, and are readily discernible from detailed topographic maps¹, the resultant land use patterns have not heretofore been described in the literature. The data in this report were collected by the author while doing field work in the Owens River drainage area during 1960.

PHYSICAL DIFFERENCES OF THE EASTERN SLOPE

Due to the characteristic profile of the Sierra Nevada, with a long gradual western slope and a short, abrupt eastern escarpment, the crest of the range is very close to the eastern slope and plays an important role in that slope's use as a recreation area. Because of this proximity between the crest and the east slope, a seemingly minor change in the trend of the crest above Owens Valley causes the Eastern Sierra to have two basically different recreational functions.

From Mt. Whitney, the crest assumes a general, near-northerly direction for some forty miles. But at a peak called the Thumb, west of the town of Big Pine, the direction of the crest shifts slightly, veering more to the northwest, in a manner that substantially alters the nature of the Eastern Sierra watershed, (Figure 1).

Southern Section—The section of the eastern slope south of The Thumb consists of the great Sierran escarpment, an impressive granite wall marking the massive block upthrust that occurred along a fault zone at the western margin of Owens Valley. This is a region of great relief, rising nearly 11,000 feet from the valley floor to the crest. Valley glaciers were active here, leading out from the central ice cap that covered the higher elevations of the range, and they scoured numerous cirques in the summit

¹ Army Map Service topographic sheets (1:250,000) and U. S. Geological Survey topographic sheets (1:125,000).

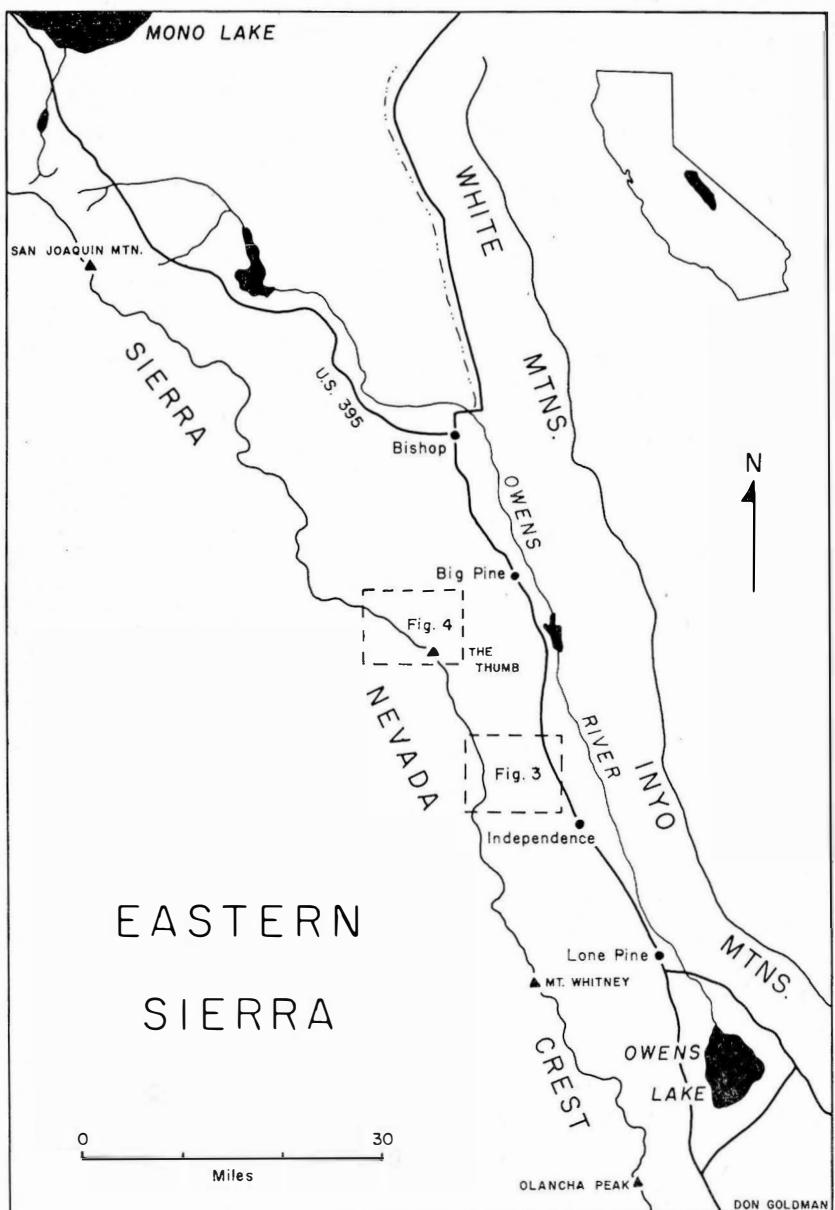


Figure 1

areas.² But due to the short slope and the resultant small catchment basins, relatively little ice collected. Because the escarpment is so steep, these small glaciers advanced only short distances before warmer air at the lower elevations melted them. Thus, while glaciation was reasonably intense in the upper elevations, the ice had little opportunity to modify greatly the lower canyons.

This section of the Sierra is a bare, rugged, windswept slope. There is almost no level land; trees are restricted for the most part to riparian locations in the steep canyons and to small glaciated platforms. Due to the combined influence of only moderate glaciation, small catchment basins,

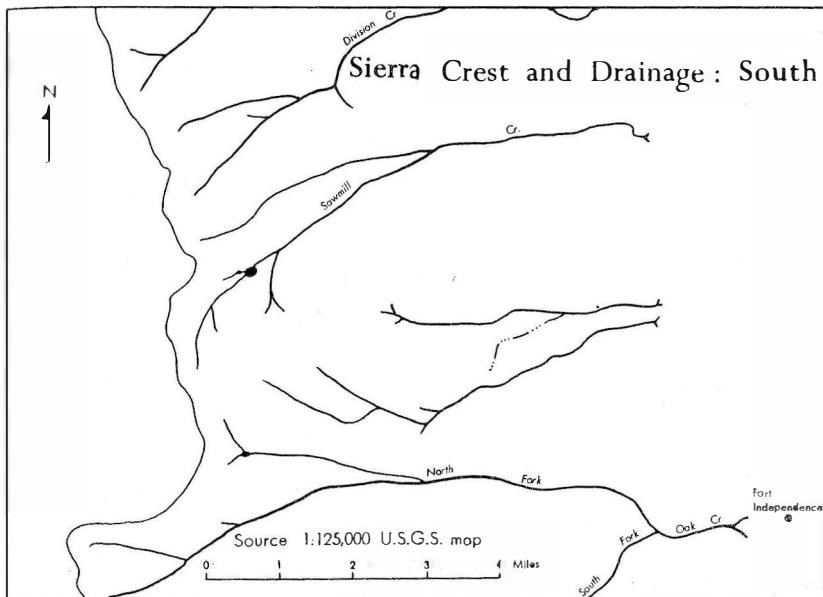


Figure 2—Drainage along the rugged escarpment is confined to a few torrential streams with little lake development

eastern exposed slopes, and exceptionally steep grades, the drainage from this portion of the crest is in a few streams with simple tributary patterns (Figure 2). Runoff is torrential; the streams cascade straight down slope with very few paternoster lakes and almost no calm stretches.

Northern Section—To the north of The Thumb, however, the picture is quite different (Figure 3). The Sierran fault plane is offset several miles to the west, with the vertical displacement apparently distributed along a number of parallel intermediate faults, causing a group of hills and peaks in the intervening area.³ The drainage areas of the streams, from Big Pine Creek northward, are therefore larger than their southern counterparts. But

² Eliot Blackwelder, "Pleistocene Glaciation in the Sierra Nevada and Basin Ranges," *Bulletin of the Geological Society of America*, Vol. 42, (December, 1931).

³ Adolph Knopf, *A Geologic Reconnaissance of the Inyo Range and the Eastern Slope of the Sierra Nevada, California*, U.S.G.S. Professional Paper #110, Government Printing Office, 1918.

what is equally important to the natural drainage is that much of this additional watershed consists of shaded northern slopes. Because of this combination of increased watershed area and more protected slopes, glaciation was of greater importance in these valleys as a landform modifier. In fact, Palisade Glacier, the only remaining glacier in the area under consideration, is located directly north of The Thumb, at a point where the crest has a decidedly east-west trend. The streams in this area have much more intricate drainage patterns with many staircase and paternoster lakes. Rather than cascading down a steep escarpment, they flow more leisurely into lower valleys. The yearly snow crop is more productive due to the shaded

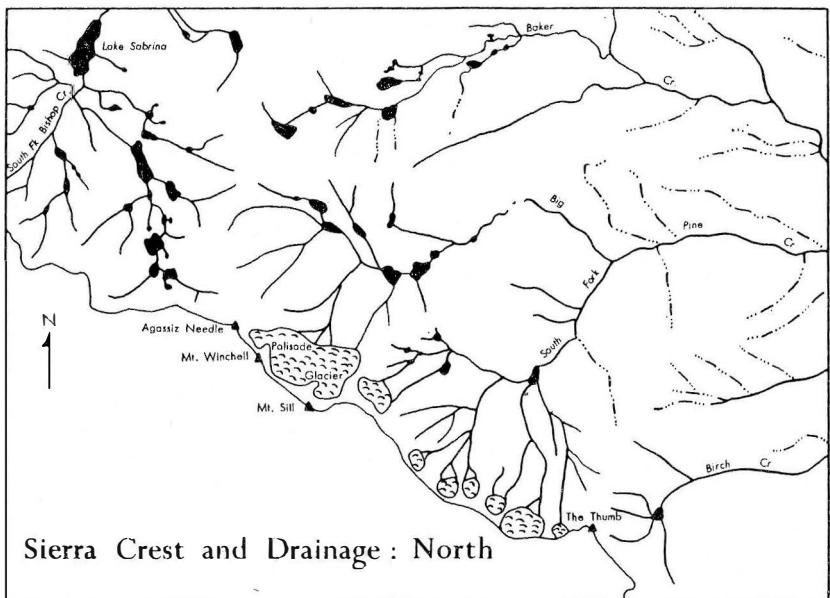


Figure 3—Drainage in the northern section is characterized by a great many lakes and an intricate tributary pattern.

northern exposure, resulting in a heavier, better regulated runoff. Large areas of relatively level land provide ample room for pine forests and many lakes and streams help make this an attractive mountain scene.

These, then, are two altogether different facets of the Eastern Sierra. The drainage patterns, a product of those landform, reflects their great dissimilarity. A comparison of the two maps (Figures 2 and 3) really illustrates this difference. The maps, of nearly adjacent areas, are at the same scale, and all drainage is shown. The dashed lines on Figure 1 indicate their proximity.

RECREATIONAL USE PATTERNS

Let us now analyze the recreational use of the Eastern Sierra in view of these contrasting physical settings. Because of the differences that characterize the two sections of the eastern slope, two different recreational patterns have developed. From The Thumb southward, the eastern slopes

serves basically as a transit area to the high country west of the summits; that is, it is an area that is traveled *through* rather than traveled *to*. However, from The Thumb northward, the eastern slope is itself the destination for sportsmen and vacationers, with a more complete recreational development than that found to the south. While these two functions are not mutually exclusive, they typify the two sections.

Southern Section—There is little along the steep escarpment to attract sportsmen or tourists. The torrential streams can be fished only by proficient anglers; game is scarce; campgrounds are hewed out of moraine-strewn platforms; and the terrain is rugged in the extreme. There are only six public campgrounds and almost no commercial resorts in this area. Just beyond the crest, however, in the headwaters of the westward-flowing Kern and Kings Rivers, is a wild, rocky, alpine region of lakes, streams, and meadows, comprising an extensive area of wilderness. That the southern section of the east slope serves as a transit area for those going into this remote back-country of the High Sierra is indicated by the road and trail pattern. A number of side roads leave Highway 395, which traverses the west side of Owens Valley at the foot of the mountains, and ascend the encarpment via the stream canyons. The trail system consists of a series of short switchbacking trails that lead directly from the ends of the several roads to the passes at the crest. In only a few instances do these roads and trails branch, and only then to offer a choice of routes to the crest rather than leading to east slope destinations. At the crest these eastern approaches connect with the intricate net of trails of the High Sierra. A further indication of the transit nature of this area is shown by the location there of six pack stations that provide animals for trans-crest pack trips.

Northern Section—North of The Thumb the entire complexion of the landscape changes, and so does its recreational use. Rather than being an area to cross enroute to other places, this northern section is itself rich in recreational resources. Because there are large areas of moderate topography, there is adequate space for recreation; game is more abundant; fishing is better; and the scenery is more pleasing. Although only six forest campgrounds are located in the southern section, the area between The Thumb and Mono Lake contain 46 of them.⁴ The numerous lakes and reservoirs in this area, many of which are accessible by road, are renowned for their excellent fishing. Pre-eminent among these is Lake Crowley, a major reservoir in the Los Angeles aqueduct system. As a result a fortuitous combination of cold water, extensive shoreline, and abundant natural fish food, this artificial lake has proven to be an exceptional fishery, providing some of the largest trout on record. Mammoth Mountain, a volcanic peak on the crest, combines an extremely heavy snowfall with long, well graded slopes to make one of the major ski resorts of the west.

Here again, a number of roads leaves Highway 395, which still lies along the foot of the mountains, and enters the range. But these side roads are more numerous than the southern ones, and they branch more frequently. Because this area has so much to offer the sportsman or tourist, the trail network, while still serving to transport hikers and riders over the crest, also distributes them by means of lateral trails to eastern slope des-

⁴ Public Campgrounds, Inyo National Forest, mimeographed brochure.

tinations. A further indication of the attractiveness of this area, in contrast to the southern section, is the existence here of a larger number of resorts, motels, and other commercial facilities for visitors. In addition to being in itself a recreation area, this region, as is the case in the southern section, also serves as a gateway to the high country west of the crest, as shown by the location there of nine pack outfits.