

**EXPLANATION**

Area covered by ice during the Deckard Flats readjustment—Stippling indicates areas of end moraines, thick till, and ice-contact deposits of Deckard Flats age. Areas covered by ice outside of Yellowstone National Park are not shown on this plate. Outline dashed where approximately located, queried where uncertain

Glacial striation formed by recessional Pinedale ice

Flow direction indicated by glacial scour, streaming, or molding feature of recessional Pinedale ice

Approximate line of transport of glacial erratics

Inferred thickness, in feet, and flow direction of Deckard Flats ice

Crests of Chico moraines and moraines backfilling Tom Miner Basin

Ice dam and lake sediments in tributary valley

Southern limit of abundant erratics of Precambrian rocks from the Beartooth uplift. Emplaced during Pinedale recession

\* Isolated erratics of Precambrian rocks from the Beartooth uplift—Probably carried southward prior to Pinedale full-glacial time; may have been later reworked. (See fig. 14.)

Conversion of feet to meters 1 ft = 0.3048 m			
feet	meters	feet	meters
100	30	5,000	1,524
200	61	6,000	1,829
300	91	7,000	2,134
400	122	8,000	2,438
500	152	9,000	2,743
600	183	10,000	3,048
700	213	11,000	3,353
800	244	12,000	3,658
900	274		

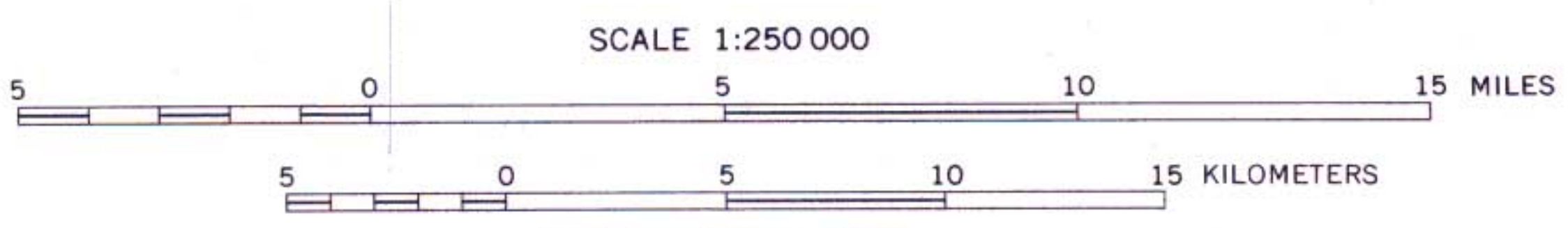
This map shows the area occupied by Deckard Flats ice in the northern part of Yellowstone National Park. The type area is east of Gardiner, Montana. A younger Deckard Flats phase is represented by moraines southeast of Mammoth Hot Springs—the Gardiner River Bridge moraines. Direction of movement of Deckard Flats ice was locally 60°–130° different from that under full-glacial conditions (pl. 1A). Differences were greatest where glaciers from icecaps on the Gallatin Range and Beartooth uplift moved into areas occupied under full-glacial conditions by the icecaps on the Yellowstone plateau.

North of the park several recessional features older than Deckard Flats indicate that the northern Yellowstone outlet glacier and not glaciers from local tributary valleys provided most of the ice to the outlet glacier. In addition to the glacial flow features aligned parallel to the Yellowstone valley (pl. 1A), the evidence showing that the outlet glacier was dominant over local tributary glaciers is: (1) morainal backfills, such as in the Tom Miner Basin area, (2) ice-dammed lake sediments in the tributary valleys, as along Sixmile and Emigrant Creeks, and (3) flow lines defined by transport of erratics at high levels across the mouths of tributary valleys, such as above Mol Heron and Bear Creeks.

Another recessional feature older than the Deckard Flats readjustment is shown on the northwest flank of the Washburn Range. Just below an altitude of 2,700 m (8,800 ft), striations and erratics of Precambrian rocks from the Beartooth uplift indicate that southwestward flow occurred after ice levels had diminished so that northwest flow across the range crest was cut off.

SOURCE AREA FOR DECKARD FLATS ICE ON BEARTOOTH UPLIFT

Base from AMS, Ashton, Idaho, Mont., Wyo., 1955; Billings, Mont., Wyo., 1954; Bozeman, Mont., Wyo., 1958; Cody, Wyo., 1955



CONTOUR INTERVAL 200 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1929  
1979 MAGNETIC DECLINATION AT SOUTH EDGE VARIES FROM 16°15' TO 15°30' EAST

Based on field work, 1965–1974, mostly shown on Pierce (1973a, b) and 1974a, b. Mapping of the Chico moraine modified from Horberg (1940, fig. 3) and Montagne (1970). Distribution of ice-dammed lake sediments along Emigrant and Sixmile Creeks modified from Montagne (1970). The line of transport of erratics across the valley of Mol Heron Creek modified from Weed (1893, pl. 1)

**DECKARD FLATS READJUSTMENT AND OTHER PINEDALE RECESSIONAL FEATURES, NORTHERN YELLOWSTONE NATIONAL PARK AREA, MONTANA AND WYOMING**