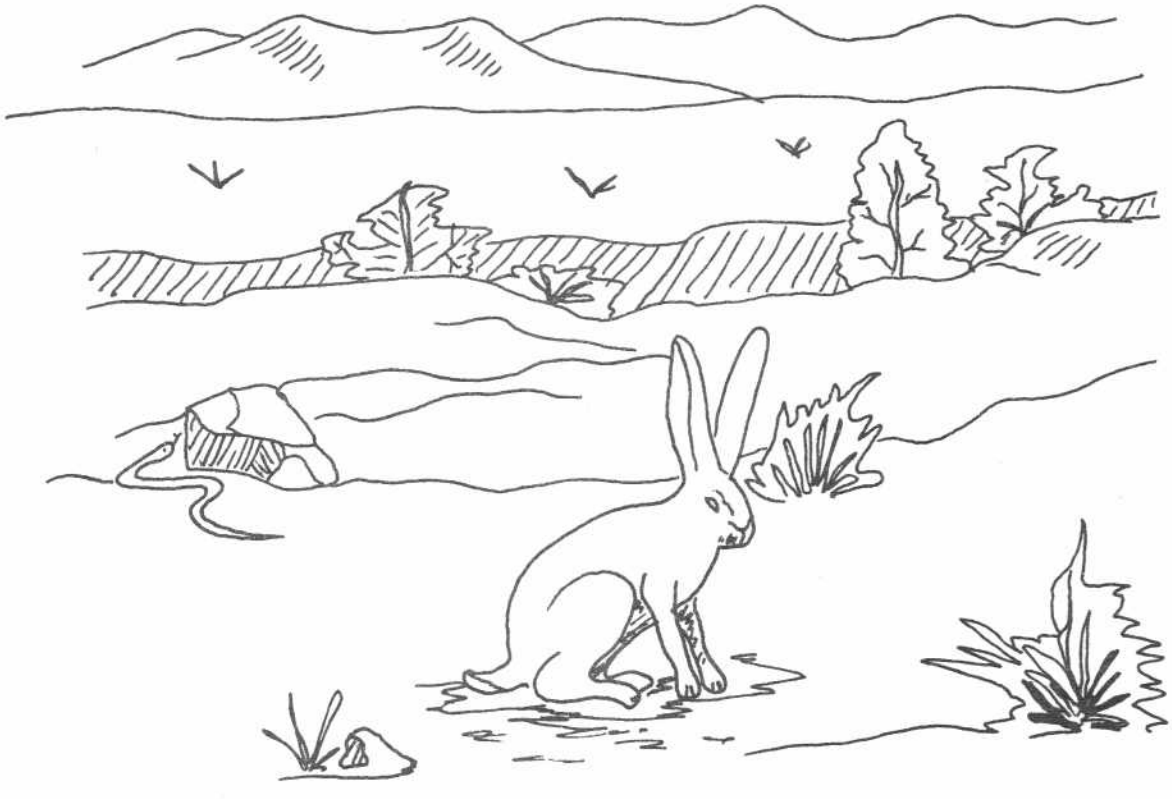
DUGWAY DESERT TOUR

18 June 1983



GUIDES

Dr. J. Clifton Spendlove
Carol C. Spendlove
Rich LeClerc
Monica LeClerc

HAZARD NOTICE

Particular care must be taken in two locations of our tour: Wilson Health Springs and Gold Hill.

1. Wilson Health Springs is a geothermal area with highly unstable footing. Heavy mud, quicksand and extremely hot springs (up to 180° F) make the area particularly hazardous. In touring this area, it is imperative that young children are carefully attended. You must stay on the road or trail at all times. No one must venture beyond the first large pool. The temperature of this pool is 115° - 120°F and the crusted edge may crumble if stepped on. For this reason, do not approach the edge of the pool. In all cases, instructions of the guide must be strictly followed.

2. Gold Hill is hazardous from the standpoint of deep mine shafts, old buildings and rattlesnakes. Again, your people should be carefully attended. The Gold Hill mercantile building could collapse and cause serious injury. For this reason, view it only from the outside.

Do not walk on coverings of mine shafts or approach their edge. These shafts may be over 100 feet deep.

Remember, this is the rattlesnake season. Gold Hill is known to have these snakes in the vicinity. Do not bother snakes and they will not bother you. Take particular care when walking through brush and shrub areas of Gold Hill. Snakes can best be avoided by staying on the road.

Although Gold Hill appears to be the worst area for rattlesnakes, they may be found at any of the stops, so watch carefully where you walk.

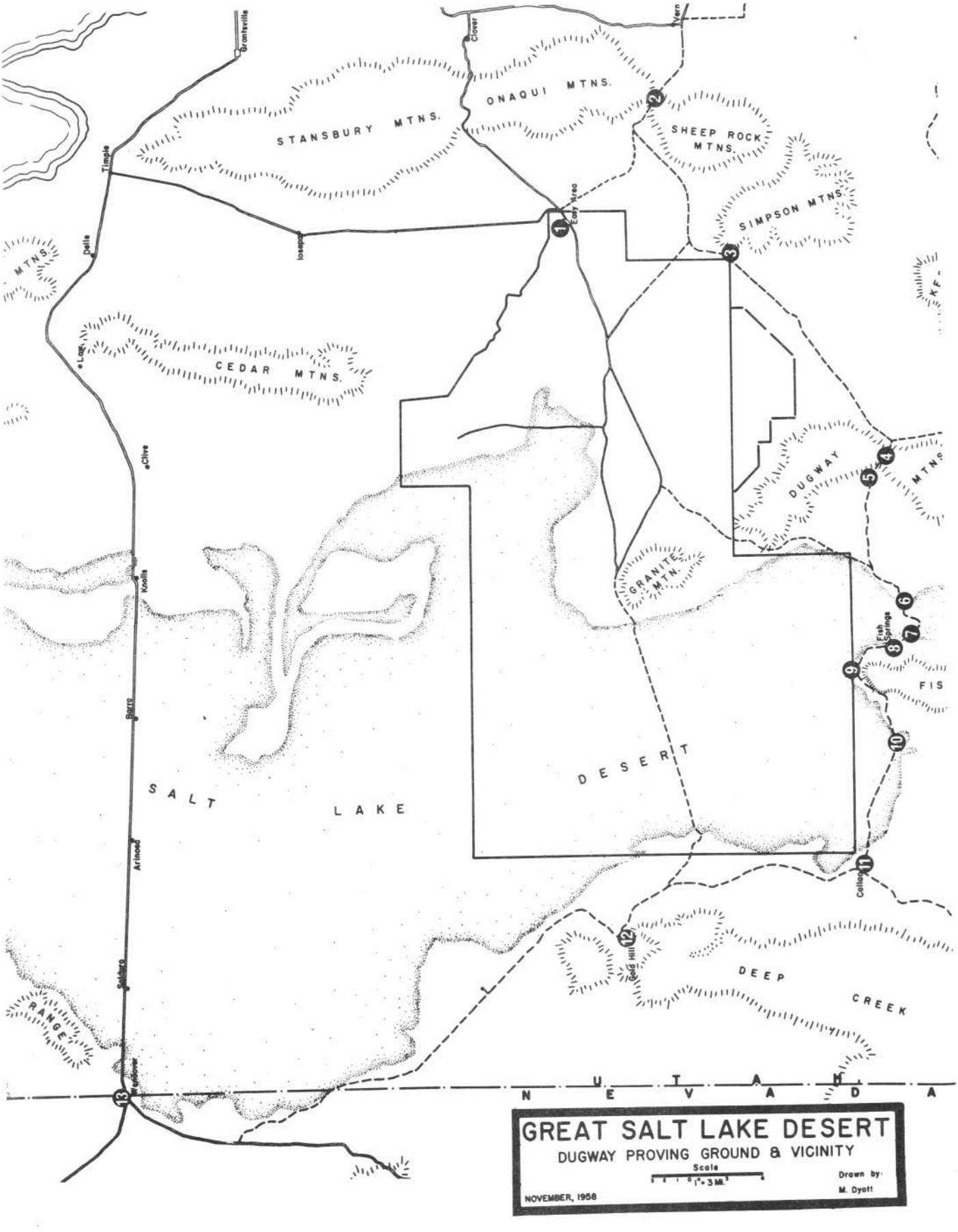
Schedule

Map No.	Location	Activity	Time
1	Officer's Club Parking Lot	Depart	0600
2	Lookout Pass	History, Indians, and vegetation	0630
3	Simpson Springs*	History, vegetation, insects, and mammals	0730
4	Dugway Pass	Histroy and vegetation	0830
5	Road to Geode Beds	Geology	0850
6	Black Rock	History	0930
7	Telegraph Pole	History, vegetation, and Indians	0950
8	Fish Springs*	Tour and wildlife	1000
9	Wilson Health Springs	Geology, history, and microorganisms	1130
10	Boyd Station	History	1300
11	Callao*	Lunch, history, trees, and birds	1330
12	Gold Hill*(and vicinity)	Ghost town, history, and geology (flowers)	1600
13	Wendover	Dinner, history, and gambling	1800
		Leave	2030
1		Arrive	2330

*Restroom (some primitive) facilities

<u>One shrill blast</u> on the whistle means to pay attention

<u>Two shrill blasts</u> means to board the bus.



GREAT SALT LAKE DESERT

DUGWAY PROVING GROUND & VICINITY

Scale 0 1" = 3 MI.

Drawn by: M. Dyott

NOVEMBER, 1958

#2

Indian Culture

The vicinity has supported four Indian cultures: the Early Desert Archaic, the Late Desert Archaic, the Fremont, and the Numic.

The Early Desert Archaic Culture occupied sites (generally caves) around the marshy shorelines of Lake Bonneville circa (ca) 11,000 years before present (BP) to ca. 5,600 BP. These sites contain artifacts suggestive of nearly year-round habitation.

The Late Desert Archaic Culture sites (ca. 5,600 BP to ca. 2,600 BP) are characterized by a shift to upland settlements. This migration is attributed to the loss of marsh areas, associated with the gradual recession of Lake Bonneville. Stone implements remained largely unchanged in the Early and Late Desert Archaic cultures.

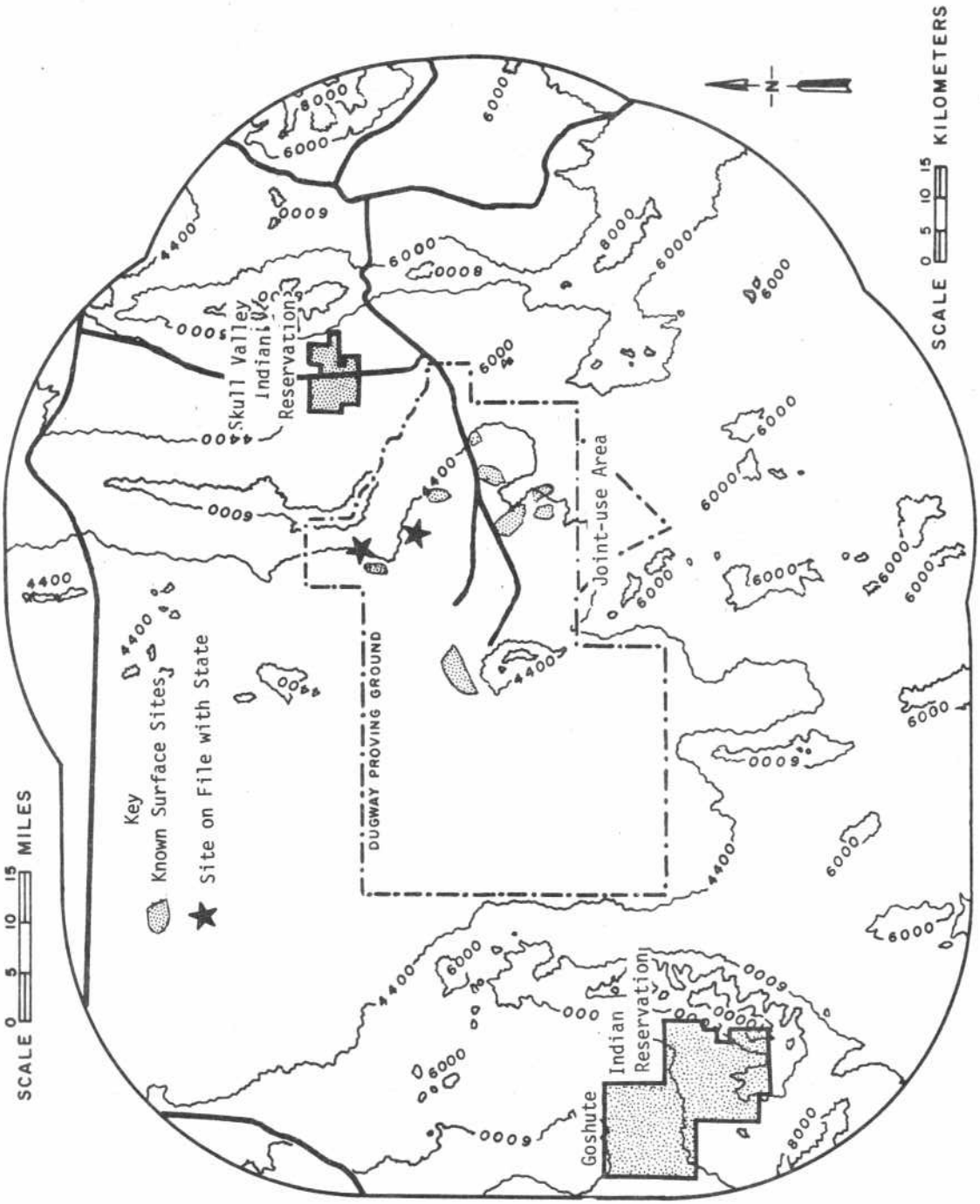
The Fremont Culture probably appeared in the area ca. 1,300 BP and lasted until ca. 600 BP. This suggests a gap in the occupation of the eastern Great Basin of approximately 1,300 years. The local hallmark of the Fremont Culture is several village sites in Tooele Valley, where horticulture apparently played a major role. The villages were supported by several temporary-use sites around the southern shores of the Great Salt Lake. Pottery and the bow and arrow were introducted during the time of the Fremont Culture.

The last Indian culture was the Numic-speaking peoples (Shoshonians) who appeared in northern Utah about 100 to 200 years before the close of the Fremont Culture. Characterized by stone points, pottery type, and a unique artifact (the "promontory peg"), this culture was apparently able to adapt to the increasingly arid conditions of the area, while the horticulturally-oriented Fremont people were not.

Other than the village sites in Tooele Valley, the only major archeological sites in the vicinity are the approximately 200 surface sites report from the dunes area of DPG (See Map). These sites are thought to represent Archaic and Fremont campsights (hearth areas) established around the edge of the marsh now occupied by the Great Salt Lake Desert. These sites are associated with chipping detritus and stone artifacts (e.g., arrowpoints, arrowpoint scrappers, and pendants) and with pottery shards found at only 21 locations. No scientific excavation of these sites has been organized, and they represent one of the larger mysteries in the archaeology of the vicinity. Several digs are being planned. Volunteers from Dugway will be needed. If you are interested contact either Dr. Spendlove or Dr. Pinkham. A cave apparently used for habitation (and in which artifacts have been found) is north of Wig Mountain.

The Federal Antiquites Act of 1906 and subsequent legislation prohibits the removal of Indian artifacts from their in situ location on Federal lands without Permission from the Department of the Interior.

(See Map) Two Indian reservations are in the DPG vicinity; the Goshute Reservation, with approximately 150 Goshute Shoshoni Indians, and the Skull Valley Indian Reservation, with approximately eight Goshute Shoshoni Indians (1970 census).



Cultural Resources in the Vicinity Associated with Indians

Habitats

#3

The Barren Salt Flats are essentially devoid of life.

The Great Basin Desert Scrub plant community is formed between 4000 and 5000 feet in the vicinity. Dominant plants include pickleweed, salt grass, shadscale, gray molley, greasewood, rabbit brush, squirrel tail, and rice grass.

The Sagebrush plant community is partly in the valleys but extends up the lower slopes of the mountains. Generally it occurs between 4500 and 6000 feet. Dominant plants include various species of sagebrush (especially big sage), Mormon tea, halogeton. bluebunch wheatgrass, Great Basin wild rye, chestgrass, and Sandberg bluegrass.

The Pinon-Juniper Woodland plant community consists mostly of Utah Juniper and pinon pine. It ranges from about 5500 to 8000 feet on the lower slopes of the mountains. Sages, rabbitbrush, needlegrass, and dropseed are sub-dominant plants.

The Submontane Shrub plant community consists of Gamble oak, squawbush, dwarf maple, chokecherry, serviceberry, snowberry, mountain mahogeny and cliffrose. It occurs in mountains between 7500 and 9000 feet where moisture conditions are appropriate.

The Spruce Fir Forest plant community grows between 7000 and 11,000 feet; that is, along the mountain tops. Englemann spruce, Douglas fir, white fir, aspen and big-tooth maple occur here.

The Cultivated Field is a variable plant community in that several species are grown. However, each field usually consists only of one species.

The Alkaline Marsh, Desert Lake, and Pond plant community occurs on moist areas in low spots on valley floors. Dominant plants include phragmites (reed), sedges, cattails, rushes (tules) and tamarix.

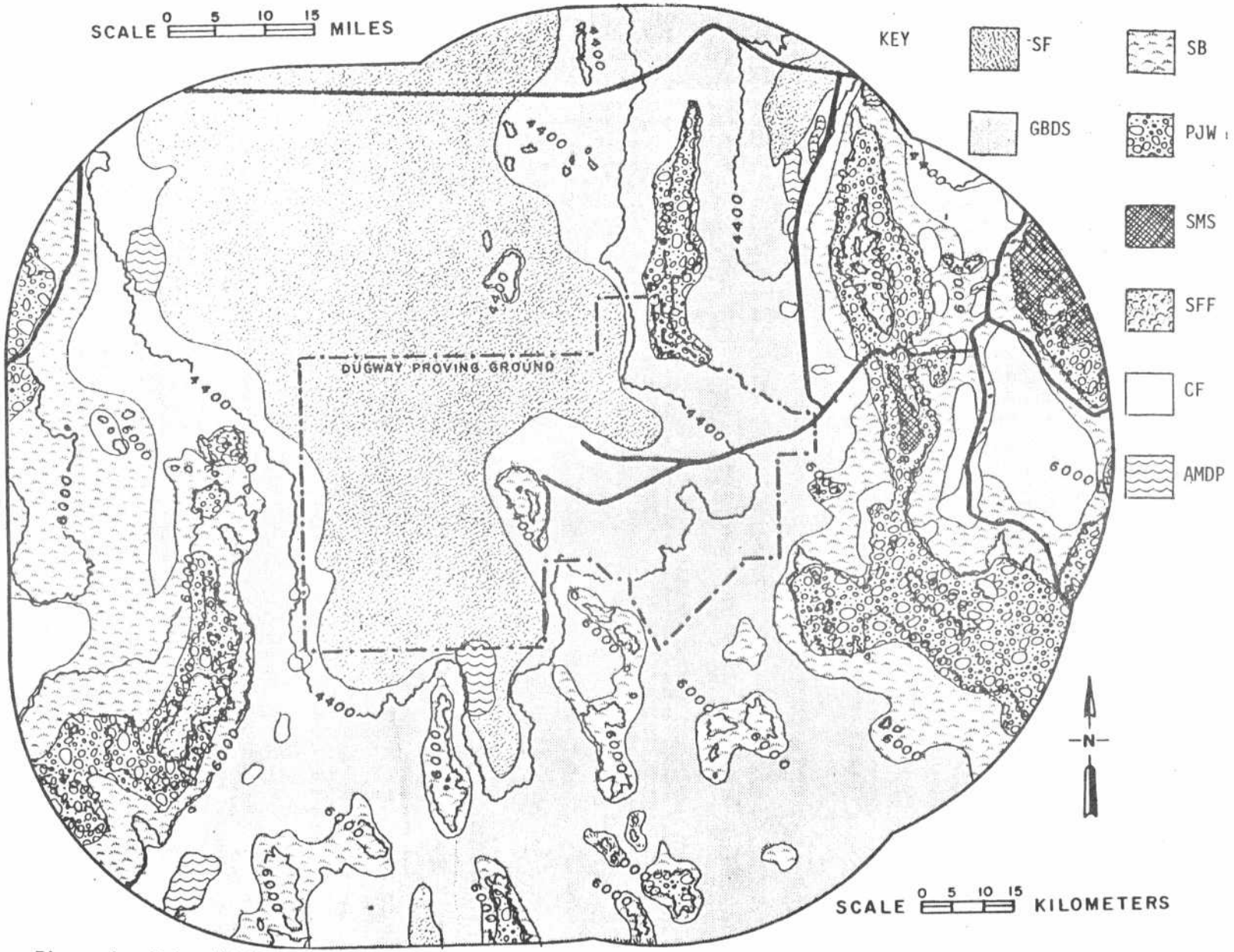
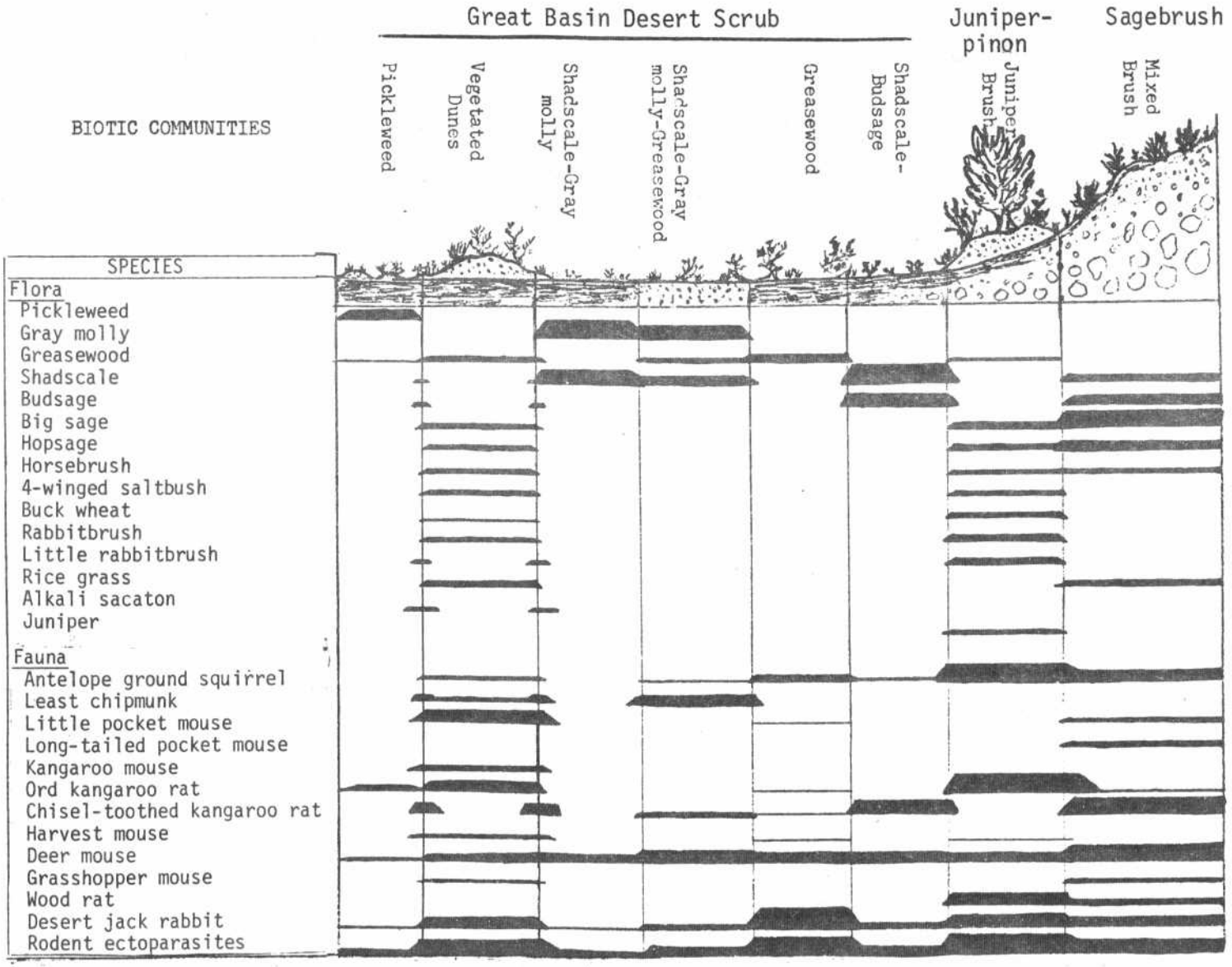
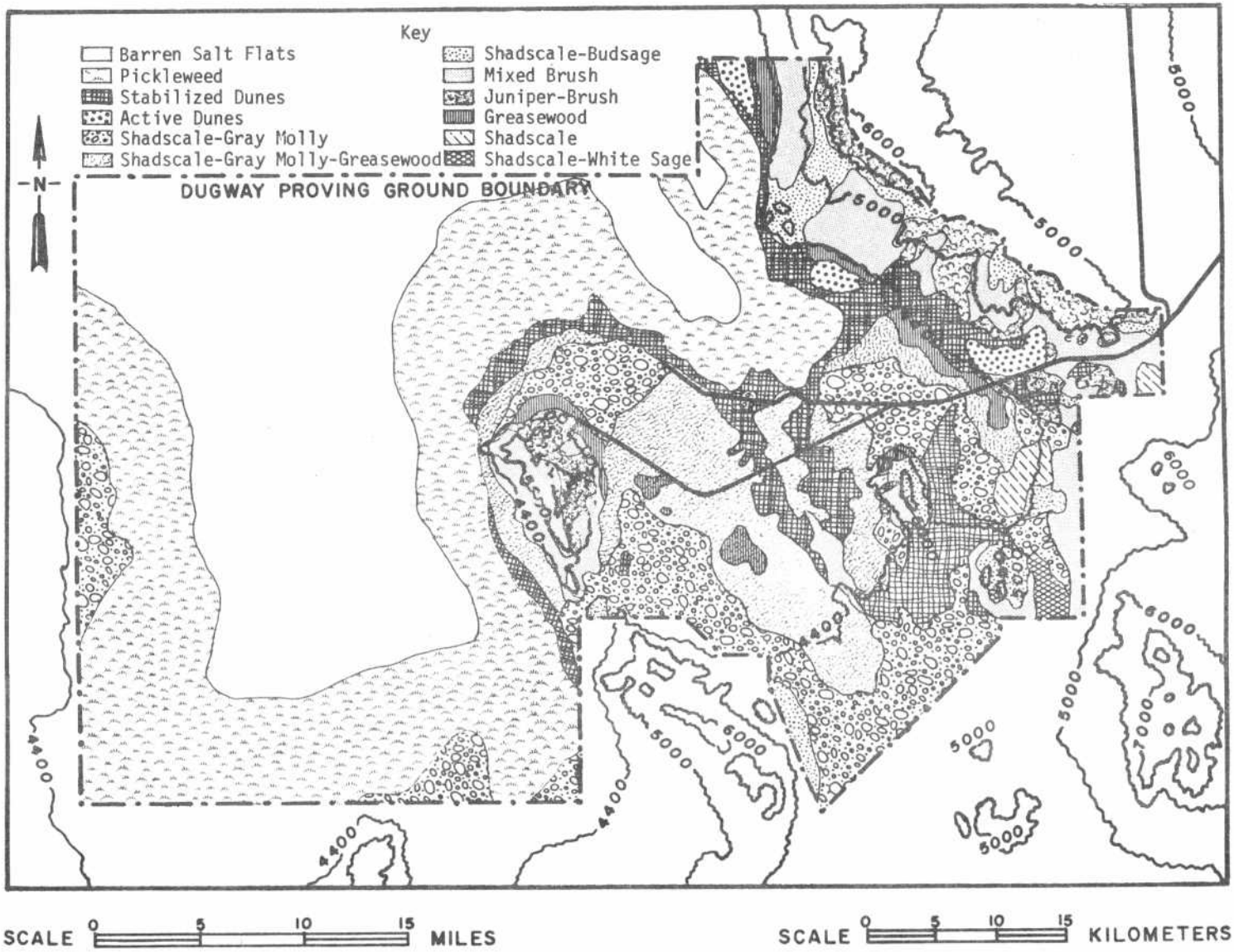


Figure 1. Major Habitats in the Vicinity



The Qualitative and Quantitative Populations of the Biotic Communities of Dugway Proving Ground. This Chart Shows the Distribution and Density of the Major Plants, Rodents, Rabbits and Ectoparasites



Plant Communities of U.S. Army Dugway Proving Ground

#4

Historical Sites

The vicinity has a rich history. In 1827, one of the first explorers of Utah, Jedediah Smith, returned from a journey of exploration in California through what is now Dugway Proving Ground (See Map). His route probably was followed by wagon freighters after the 1850's. In the early 1900's part of his route through DPG became part of the Lincoln Highway (see below).

The next explorer to penetrate the vicinity was John Charles Fremont. In 1845, on his third trip into Utah, Fremont made the first known crossing of the Great Salt Lake Dessert, giving Pilot Peak its famous name.

Fremont's trail was followed in the spring of 1846 by a small party including James Clyman and Lansford W. Hastings, eastbound from California. The Clyman party crossed the Cedar Mountains through a south route.

Later in 1846, William H. Russell and Edwin Bryant led a small party of pioneers on muleback through the vicinity. Independent in nature, this party loboriously traversed the Stansbury Range through Willow Canyon and took a south route over the Cedar Mountains.

Later in 1846, after considerable loss of livestock, Hastings led a party of pioneers through the vicinity along the trail he had earlier taken with Clyman, except that Hastings went around the north end of the Cedar Mountains and continued to California.

A month later, the famous Donner-Reed party crossed the Great Salt Lake Desert after attempting to take a "shortcut" over the Wasatch Mountains. The party was stranded by winter in the Sierra Nevada Mountains. Only 47 of the original 87 members reached California alive.

In 1849, Captain Howard Stansbury passed through the vicinity on his circumexploration of the Great Salt Lake. In the spring of 1854, after the earlier loss of their leader, Captain J.W. Gunnison, Lieutenant E.G. Beckwith led a party through what is now DPG on an exploration for a Pacific railway route.

The last exploration party to pass through the vicinity was headed by Captain J.H. Simpson, who was attempting to locate new wagon roads west from Camp Floyd. Exploring as far west as the Dugway Mountains in the spring of 1858, Captain Simpson completed his task in 1859.

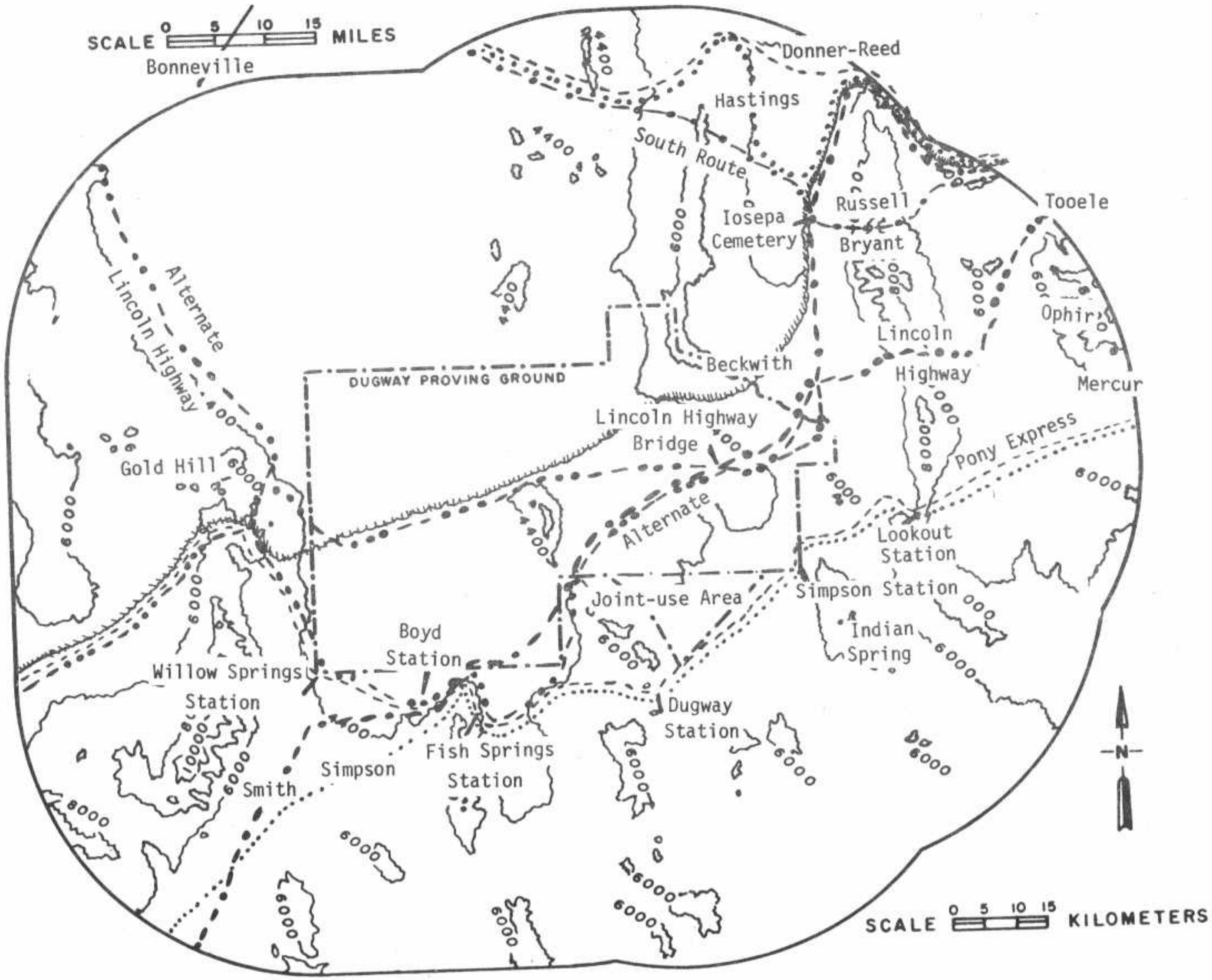
The name "Dugway" is derived from a method used by the early pioneers to mover their praire schooners and Conestoga wagons through the mountains. Lacking roads, the pioneers would dig a slope or grade through a pass. Then the oxen would pull the wagons up the "slope", "grade" or "dugway".

Between 1860 and 1867, the Pony Express passed just south of DPG, with stations approximately every 16 km. A replica of the station at Simpson Springs has been constructed by the Bureau of Land Management. Lookout Station at Lookout Pass is well known for the cemetary containing the remains of three travelers and four dogs. Station remains exist at Simpson Springs, Dugway, Fish Springs, Boyd and Willow Springs. Only markers exist at the other stations.

The major occupations in the vicinity have been sheep and cattle raising and mining. Some of the mining communities were quite large during their heyday but are now ghost towns (Indian Springs or Erickson, 1894) or are mere shawdows of their former greatness (Ophir, 1870; Mercur, 1871; and Gold Hills or Clifton, 1892).

The Utah State Register of Historical Sites includes several sites from the vicinity: (1) the Pony Express Route and stations; (2) the first Tooele County Courthouse, built in 1867, which is one of the few remaining century-old civic buildings in the state; (3) the Ophir Town Hall and Fire Station (1870), which stands as a reminder of the boom days of the 1870s; (4) the Iosepa Cemetary, which is one of the few remains of a colony of Polynesian people converted to Mormonism and gathered in the land of Zion (Iosepa was settled in 1889 and was an important community in Skull Valley until 1917, when most of the surviving inhabitants returned to the islands), and (5) Bonneville Salt Flats Raceway, which has been used since 1925 for land speed racing.

In addition, a bridge adjacent to Ditto Technical Center is the last structural vestige (in the vicinity) of the Lincoln Memorial Highway (ca. 1919), the first coast-to-coast highway in the U.S. The bridge has been placed on the National Register of Historical Places.



Historical Features in the Vicinity

#5

THE DUGWAY GEODE

John W. Barry

One of the most interesting and attractive mineral forms found in Utah is the geode--a spherically-shaped rock with an agate lining and quartz crystals. Solid type geodes are called nodules or thundereggs. The method of formation of geodes is not known for certain.

Known throughout the U.S. as "Dugway geodes", they occur in great abundance on the western side of the Dugway Mountain Range of Tooele and Juab Counties, Utah. They were probably formed during the middle Tertiary Period (approximately 40 million years ago) when lava flows were common occurences in this area of Utah and southern Idaho. When cooled many of these lava flows formed rhyolite rock which has the greatest silica content of the normally encountered lava. Associated with many lava flows are gas or steam cavities resulting from releases of gaseous materials. When the lava cools many cavities remain in what now is rhyolite rock. This is the first stage in the geode formation.

With the cooling of the lava cracks form throughout. These cracks provide ideal reserviors for channeling solutions of minerals. The main mineral in this situation is the silica which is so commonly associated with rhyolites.

The silica is in the form of silica dioxide more commonly known as quartz. The quartz solutions flow throughout the cracks seeking a place to deposit the quartz. The cavities are an ideal place. The quartz is attracted to the inner cavity wall where it is deposited in layers as agate. This process is not continuous and it varies in intensity and degree of purity of the quartz solution. The different layers of banded agate found in many Dugway geodes is ample evidence of the various imparities within the quartz solution and of the interruptions of the depositing process. A slight change of the minerals within the solution will create a different color of agate banding. A pure solution of quartz could form glass clear quartz crystals upon the agate bands. Good examples can be found at the Dugway location.

The rhyolite lava rock also is altered to a slight degree during this process. Quartz is absorbed making the rhyolite stronger particularly along the outer faces of the cavity making the cavity a separate sphere. This generally culumanates the formation of the geode.

The geode now must be freed from the surrounding matrix of rhyolite rock. This is accomplished simply through erosion. Geodes can be found in gravels and sands as well as in desintegrated rhyolite which is pink and white clay. In other words, some can be found in their place of origin and some have been transported by water to other locations.

It must be remembered that these Dugway geodes were covered by the waters of Lake Bonneville after their formation. The chemical and mechanical actions of this water undoubtedly destroyed many, transported some, and caused calcarious material and debris to fill cavities of others.

These geodes vary widely from place to place at the Dugway location. Some are solid agate (nodules), some are filled with quartz crystal up to one-half inch long, some have amethyst crystals, some have bands of agate and crystals, while some even have a solid center composed of a common type opal.

Similar types of geodes have been found in Nevada, Oregon, California, and a much different geode is found in Kentucky, Ohio, Indiana, Illinois, Iowa, and other states. Geodes in these areas are formed within cavities in shale and limestone. The formation process is percolation of ground water into the rock depositing various types of minerals within the cavities. Calcium carbonate is often the common mineral which results in calcite-lined cavities. Carverns with their large formations of stalagmites and stalactites may be likened to a large geode. At Niota, Illinois, geodes have been found which contained a quartz of viscous bitumen oil within their crystal-lined cavity. The manner in which these geodes were formed is also unknown.

Geodes and nodules are sought after for their aesthetic value. They may be cut and polished and made into items such as bookends, jewelry, and various types of desk sets. They are highly valued by the mineral collector and lapidarist and can be found in collections all over the country.

#6

Geology

During the lower Cambrian period (approximately 600 million years ago), most of the DPG vicinity was beneath the sea. Portions of the Cedar and Dugway Mountains and all of the Simpson and Davis Mountains are situated over limestones, quartzites, and shales of Cambrian age. Mississippian limestones (approximately 300 million years old) are the next younger rocks found in mountains surrounding Dugway Valley. Granite Mountain and White Rock are granite intrusives of perhaps Tertiary age (approximately 80 million years ago), although some authors feel the former is of Cambrian age. Lava flows dating from the late Tertiary overlie parts of DPG. Depositions of sand and subsequent erosion indicate emergence of land masses with subsequent submersion beneaththe sea. Diastrophism (mountain formation and elevation) took place around 80 million years ago, and faulting continues to the present.

In the Pleistocene (100,000-10,000 years ago), precipitation was heavier than now, and huge freshwater lakes occupied the Great Basin. One of these, Lake Bonneville, covered much of the vicinity. Sedimentary deposits of Lake Bonneville, some of which are perhaps over 1,980 ft deep, are of extreme importance to the appearance of the vicinity. Granite Peak, Camel Back Ridge and Dugway Mountains, which rise abruptly from very level, broad valley floors, are the tallest portions of buried mountain ranges. The slope of valleys is slight, reducing erosion to a minimum. Mineral concentrations increased as Lake Bonneville shrank and the thin (usually less than 1½ inches) salt layers were deposited over the surface, creating the vast slat flats.

Old River Bed (now dry) extends northward from the Sevier Desert for about 45 miles to the edge of the Great Salt Lake Desert. It was created during the decline of Lake Bonneville. The north end of the river enters DPG with distinctive bluffs. In passes between mountains it is about 300 ft. deep.

Of more than 30 mining and mineral sites within the vicinity, only the Thomas Range Mines and those at Mercur are active on a measurable scale. However, in the past, the vicinity was the site of extensive mining. Five of the 20 largest metal mining districts in Utah are found in the vicinity (See accompanying Table and Figure). Considering that the vicinity covers approximately one eighth of the state, yet it contains one quarter of the mining districts, it becomes readily apparent that it was, and probably still is, a mineralogically rich area.

Gem stones and fossils are varied and abundant around DPG. Agate and other quartz deposits, goedes, obsidian (volcanic glass), onyx, sapphire, topaz, fossilized coral, crinoids, and brachiopods are collected by rockhounds.

Two known geothermal resource areas (KGRA) occur in the vicinity, one of these, once known as Wilson Health Springs, occurs on DPG.

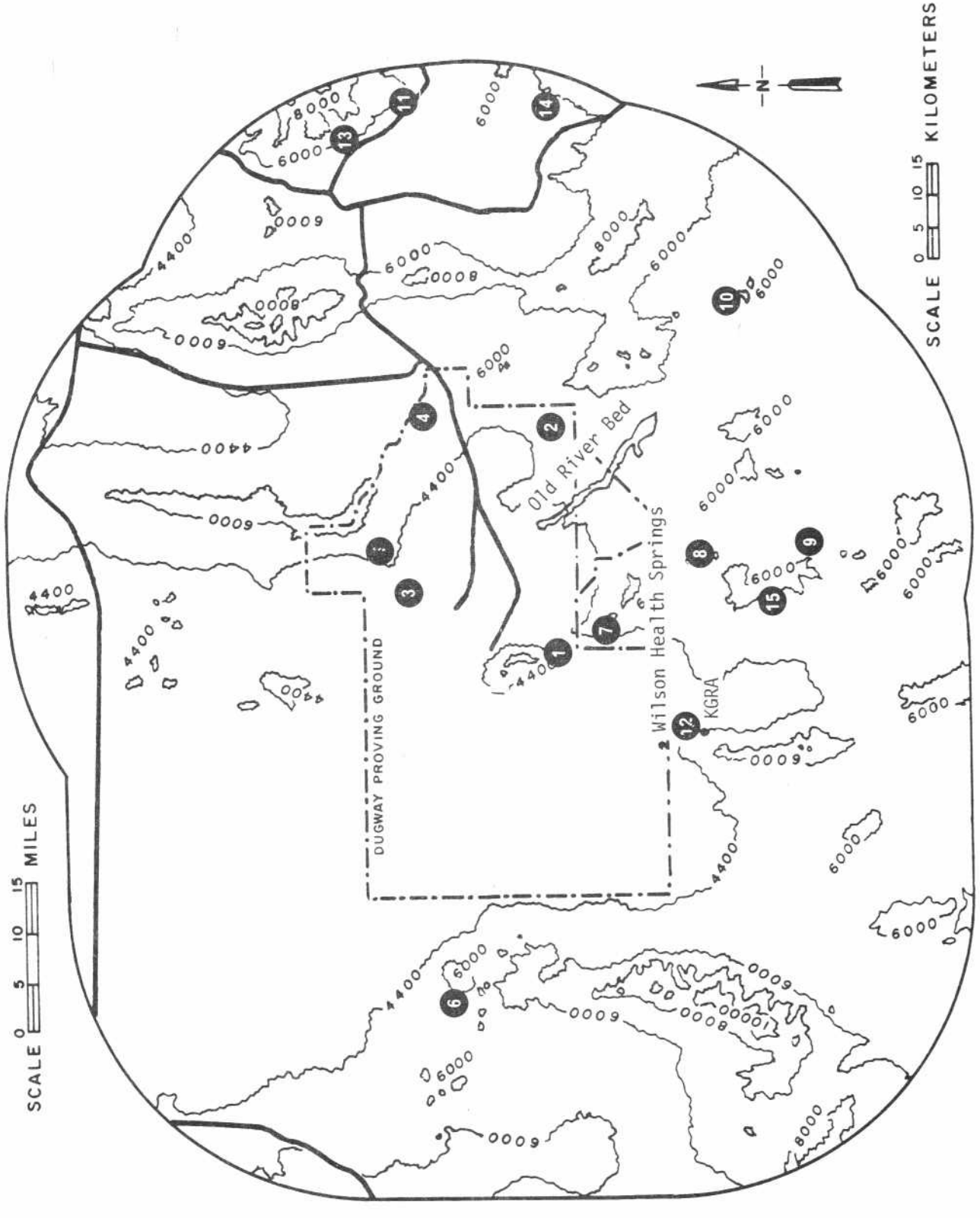
Data on the Major Geological Sites in the Vicinity

Map Number[a]	Site Name	Standing in State	Approximate Gross Value (millions)	Mineral/Fossil	Age/Formation
1	Granite Mountain			Beryllium, Fluorite, Quartz, Lead, Silver, Gold	Tertiary Igneous Extrusives
2	Simpson Buttes			Quartz Crystals	Cambrian
3	Wig Mountain			Horn Coral	Cambrian, Mississippian
4	Camp Tumbleweed			Agate(crystalline quartz)	Tertiary Igneous Extrusives
				Crinoids	Paleozoic, Oquirrh Formation (Fm)
5	Cane Springs			Agate(crystalline quartz)	Tertiary Igneous Extrusives
				Crinoids	Paleozoic, Oquirrh Fm
6	Gold Hill	12	9	Gold,Copper,Lead Zinc Silver,Beryllium,Tungston, Arsenic,Bismuth,Antimony, Coral,Brachiopods,Crinoids	Mixed Cretaceous
7	Dugway Range			Lead,Zinc,Silver,Copper	Veins in Mississippian or Pennsylvanian
8	Geode Bed			Dugway Geodes	Veins in Mississippian or Pennsylvanian
9	Topaz Mountain District			Topaz,Fluorspar, Apache Tears,Garnets,Agate	Tertiary Igneous Extrusives
10	Sheeprock Mountain			Quartz,Fluorite,Pyrite Replacement Gold,Thorium, Silver,Lead,Chalcopyrite, Manganese	Mixed

Data on the Major Geological Sites in the Vicinity (continued)

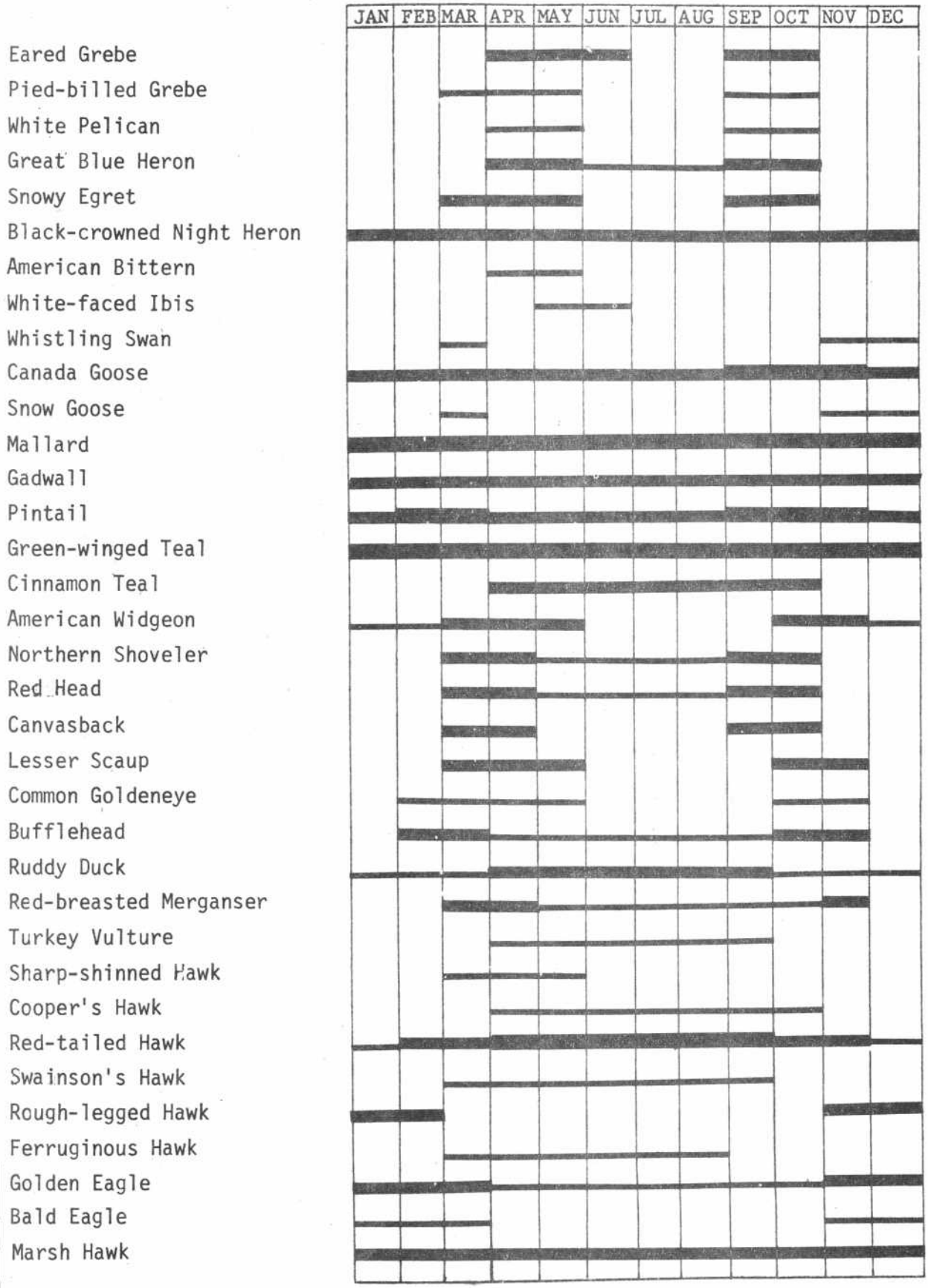
Map Number[a]	Site Name	Standing in State	Approximate Gross Value (millions)	Mineral/Fossil	Age/Formation
11	Mercur	8	41	Gold, Silver, Mercury	Veins in Mississippian
12	Fish Springs	15	6	Silver, Lead, Gold	Veins and replacement bodies in Lower Paleozoic
13	Ophir and Rush Valley	5	208	Lead, Silver, Zinc, Copper, Gold	Veins and replacement bodies in Mississippian
14	Tintic and North Tintic	3	871.5	Silver, Lead, Gold, Copper, Zinc, Halloysite, Manganese	Replacement bodies in Paleozoic
15	Thomas Range Mines			Fluorspar, Uranium, Beryllium	Ordovician, Silurian, Tertiary

[a]Refer to accompanying figure



Major Geological Sites in the Vicinity. Numbers Refer to pages 15 & 16.

#1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Snowy Egret
Black-crowned Night Heron
American Bittern
White-faced Ibis
Whistling Swan
Canada Goose
Snow Goose
Mallard
Gadwall
Pintail
Green-winged Teal
Cinnamon Teal
American Widgeon
Northern Shoveler
Red Head
Canvasback
Lesser Scaup
Common Goldeneye
Bufflehead
Ruddy Duck
Red-breasted Merganser
Turkey Vulture
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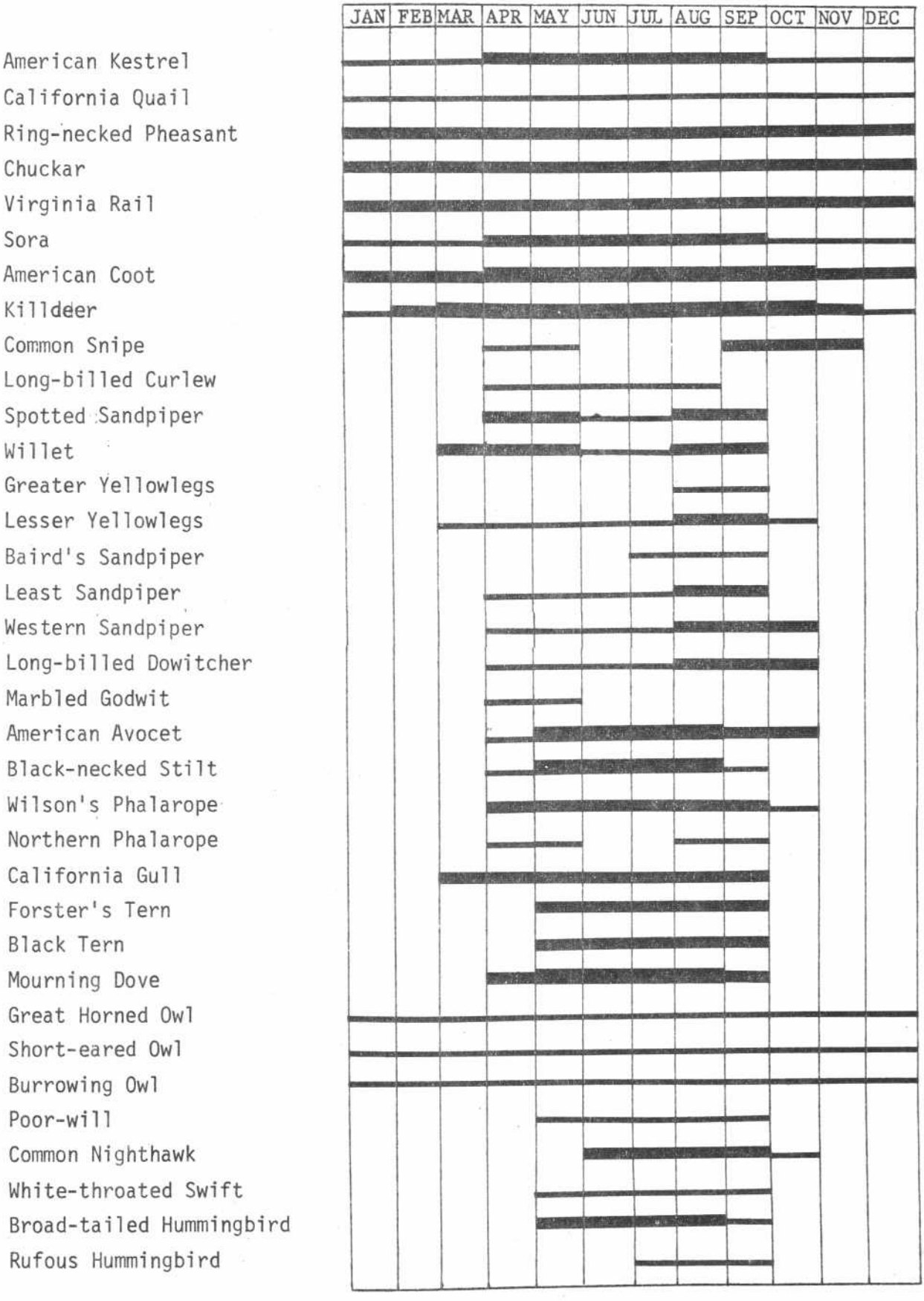
Swainson's Hawk
Rough-legged Hawk
Ferruginous Hawk
Golden Eagle
Bald Eagle
Marsh Hawk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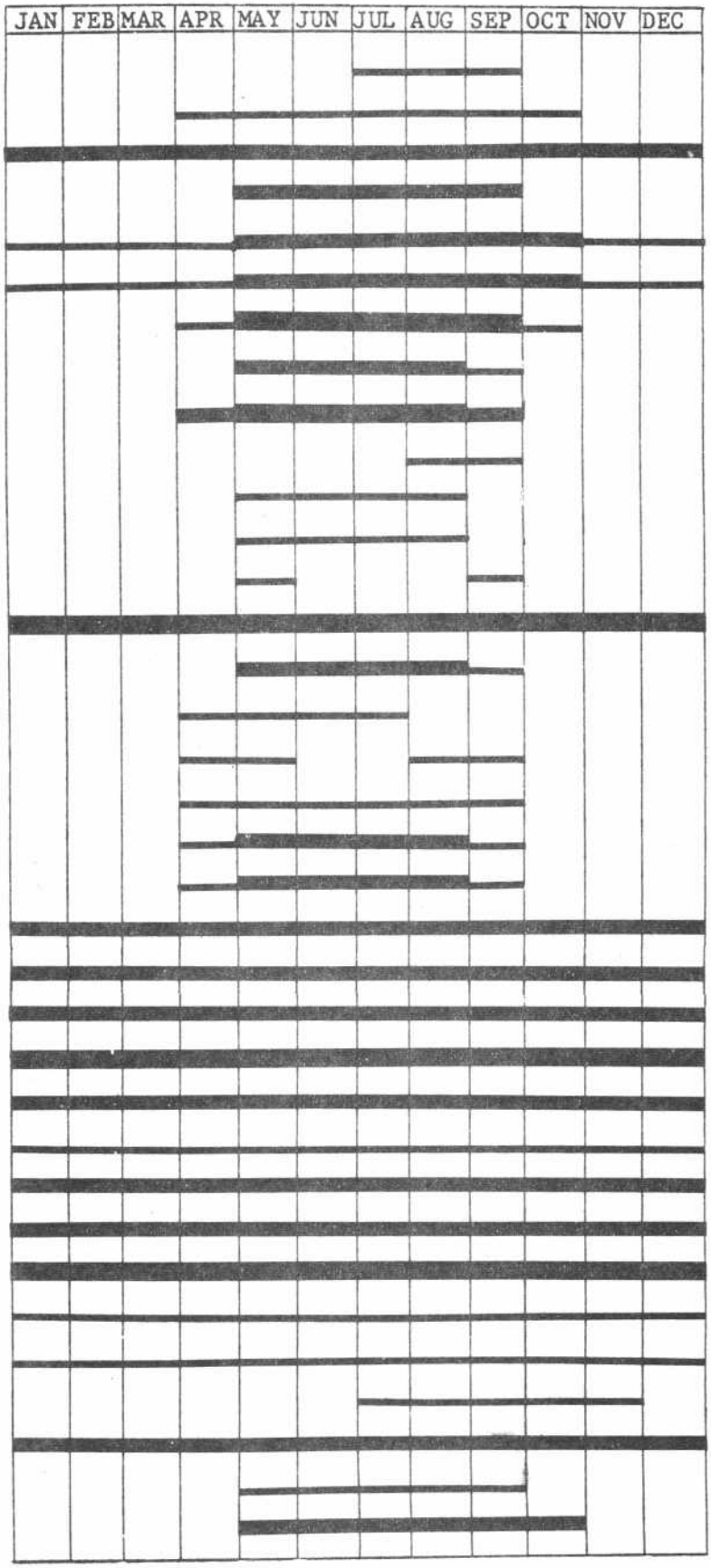
American Coot
Killdeer
Common Snipe
Long-billed Curlew
Spotted Sandpiper
Willet
Greater Yellowlegs
Lesser Yellowlegs
Baird's Sandpiper
Least Sandpiper
Western Sandpiper
Long-billed Dowitcher
Marbled Godwit
American Avocet
Black-necked Stilt
Wilson's Phalarope
Northern Phalarope
California Gull
Forster's Tern
Black Tern
Mourning Dove
Great Horned Owl
Short-eared Owl
Burrowing Owl
Poor-will
Common Nighthawk
White-throated Swift
Broad-tailed Hummingbird
Rufous Hummingbird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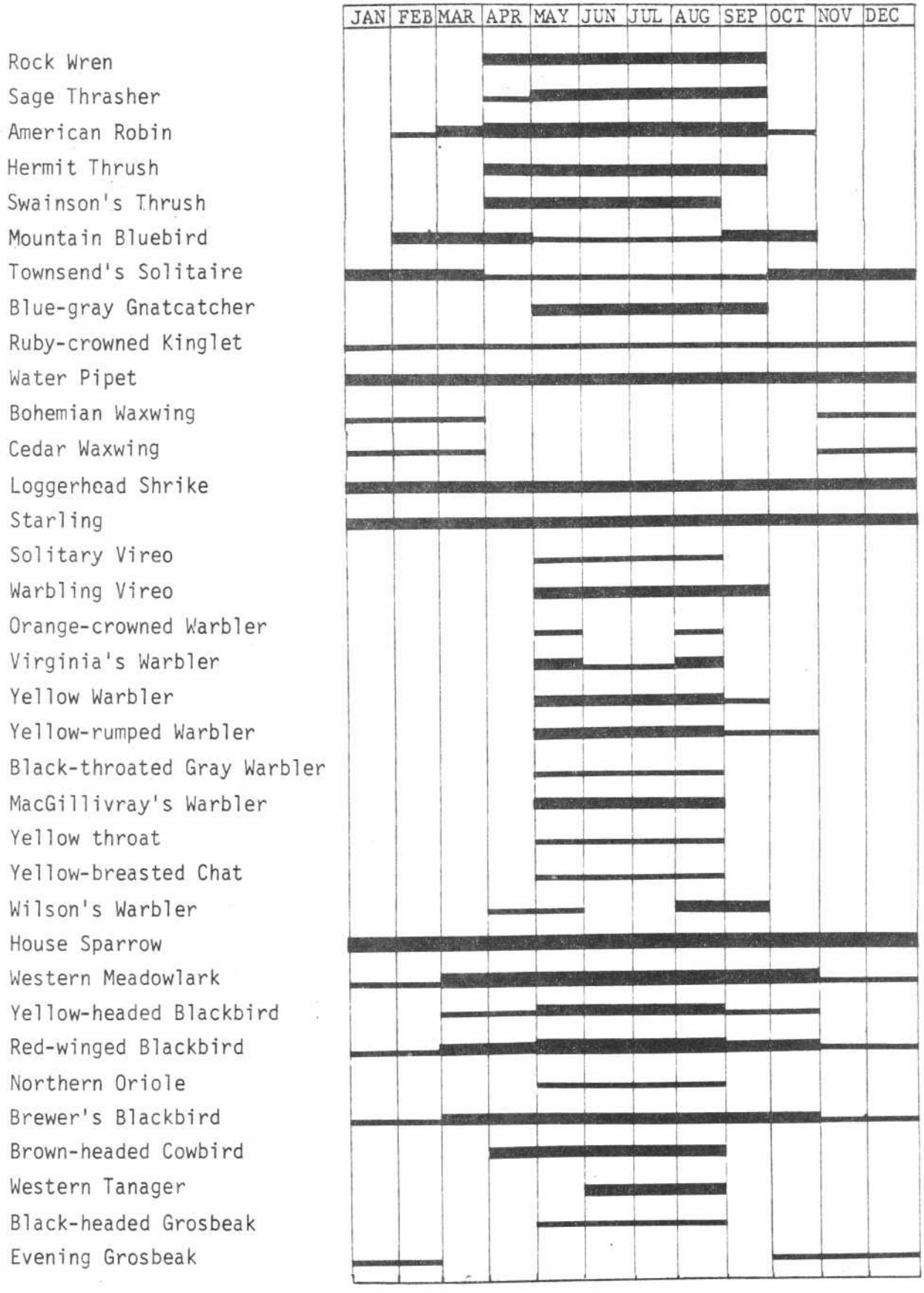
Hairy Woodpecker
Downy Woodpecker
Western Kingbird
Ash-throated Flycatcher
Say's Phoebe
Willow Flycatcher
Dusky Flycatcher
Gray Flycatcher
Western Wood Peewee
Horned Lark
Violet-green Swallow
Tree Swallow
Bank Swallow
Rough-winged Swallow
Barn Swallow
Cliff Swallow
Steller's Jay
Scrub Jay
Black-billed Magpie
Common Raven
Pinon Jay
Clark's Nutcracker
Black-capped Chickadee
Moutain Chickadee
Plain Titmouse
Common Bushtit
White-breasted Nuthatch
Red-breasted Nuthatch
Dipper
House Wren
Long-billed Marsh Wren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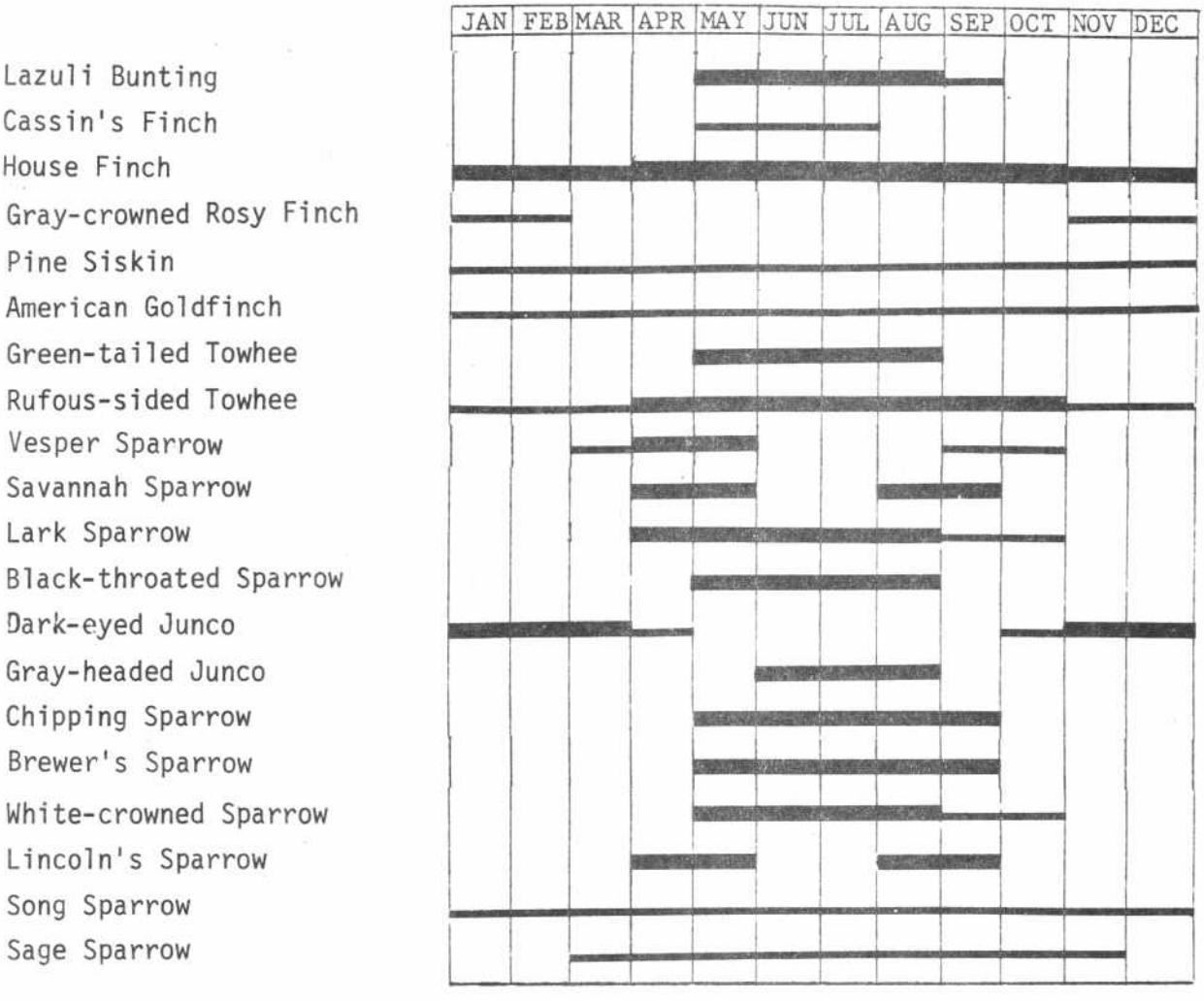
American Robin
Hermit Thrush
Swainson's Thrush
Mountain Bluebird
Townsend's Solitaire
Blue-gray Gnatcatcher
Ruby-crowned Kinglet
Water Pipet
Bohemian Waxwing
Cedar Waxwing
Loggerhead Shrike
Starling
Solitary Vireo
Warbling Vireo
Orange-crowned Warbler
Virginia's Warbler
Yellow Warbler
Yellow-rumped Warbler
Black-throated Gray Warbler
MacGillivray's Warbler
Yellow throat
Yellow-breasted Chat
Wilson's Warbler
House Sparrow
Western Meadowlark
Yellow-headed Blackbird
Red-winged Blackbird
Northern Oriole
Brewer's Blackbird
Brown-headed Cowbird
Western Tanager
Black-headed Grosbeak
Evening Grosbeak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Gray-crowned Rosy Finch
Pine Siskin
American Goldfinch
Green-tailed Towhee
Rufous-sided Towhee
Vesper Sparrow
Savannah Sparrow
Lark Sparrow
Black-throated Sparrow
Dark-eyed Junco
Gray-headed Junco
Chipping Sparrow
Brewer's Sparrow
White-crowned Sparrow
Lincoln's Sparrow
Song Sparrow
Sage Sparrow

#9

EVENTS ASSOCIATED WITH THE LAST CYCLE OF LAKE BONNEVILLE

Lake Bonneville fluctuated several times during the Ice Age, each time reaching its maximum during the major precipitation corresponding to the maximum advances of the ice sheet.

During the last cycle, the maximum depth of 1190 feet was reached between 17,500 and 16,500 years ago. The enormous weight of the water at this time actually compressed the bedrock beneath Lake Bonneville!

As the ice sheet retreated, due to increasing temperatures and decreasing precipitation, two important things happened to cause the shorelines visible today: 1) The outlet to the north passed through Red Rock Pass in Cache Valley, Southern Idaho, which is characterized by alternating layers of hard and soft rock (see accompanying figures). After several thousands of years of slow erosion headward through a hard layer causing well-defined shorelines, the soft layer was encountered and erosion proceeded rapidly headward and downward. 2) As the water poured out of the basin, the weight of the water was removed, allowing the bedrocks beneath to rebound. It did so at rates that varied in the different parts of the lake so that now the shorelines may not be exactly horizontal.

The stand at the Lake Bonneville shoreline was short lived, as headward erosion finally reached a critical point and downward and headward erosion became catastrophic, unleashing the Bonneville Flood. Lowering of the Pass ceased in resistant bedrock at an altitude of about 4740 ft. Much of the 350 ft. lowering to the Provo shoreline was so rapid that shorelines deposited only shortly before, suffered little erosion, even at sites of high wave energy. Several hundred years later, an additional increment of downcutting lowered the threshold to a final altitude of about 4727 ft. It would appear that the 13 ft downcutting, which is evident basin wide, followed a rebound of bedrock, forming a conspicuous tufa-draped shore platform that is an almost unmistakeable signature of the Provo shoreline on headlands and comparable areas of steeply-shelving bedrock. Of the up to 236 ft. of rebound that is now evident in the central basin, about 24 percent apparently had taken place by the time of the Bonneville Flood and about 76 percent apparently has occurred since that time. Reversion to a closed-basin system controlled by a drier climate, seems to have been abrupt. A sometimes halting, but on the whole remarkably swift, decline of approximately 44 ft per century reduced Lake Bonneville to basin-floor levels, by about 11,000 yr B.P. Studies now under way suggest that surface water from the now-separate Sevier River to the south of the vicinity last flowed into the northern half of the Bonneville basin during Gilbert shoreline time, when overflow from a freshwater lake that existed about 10,300 yr B.P. in what is now the Sevier Desert, probably spilled across the controlling local rock layer and down what G.K. Gilbert termed the Old River Bed, to enter the remnant of Lake Bonneville that then occupied the Great Salt Lake Desert and contiguous lowlands.

Provisional Time-Stage Diagram for Late Quaternary Pluvial Lakes in the Northern Bonneville Basin