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A Guide to Bird Finding

WEST OF THE
MISSISSIPPI

(SOUTH DAKOTA CHAPTER)

BY

OLIN SEWALL PETTINGILL, JR.

A Privilege

We are honored by Dr. O. S. Pettingill's consent to allow us to make a pre-publication printing from his book, "A Guide To Bird Finding West of The Mississippi", to be published soon by Oxford University Press.

The author has made perhaps as many as seven trips across South Dakota and has done extensive ornithological research in the Black Hills. In addition to travels here as a lecturer on Audubon Screen Tours in recent years, he has visited many points in the state. So he has made contacts, acquaintances and friendships which were of material assistance in the compilation of this unusual publication. Naturally his many friends and fellow-members in SDOU take keen interest in this somewhat cooperative project.

Dr. Olin Sewall Pettingill, Jr., was born in Maine, graduated from Bowdoin College in 1930 and in 1933 received his Ph. D. degree from Cornell University. He came west to Carleton College in 1936 where he has been since that time. Since 1938 he also has been a member of the teaching staff of the University of Michigan Biological Station, a summer field station in northern Michigan.

Dr. Pettingill became a nationally known ornithologist in the years following the publication of his monograph on the American Woodcock. He has written a highly successful "Laboratory And Field Manual of Ornithology" and has been editor of the section on birds in **Biological Abstracts**. He assembled the information on birds of prey for **World Book Encyclopedia** and wrote the introduction to the section on birds in **The Book of Knowledge**. Dr. Pettingill has held most of the offices in the Wilson Ornithological Club, the country's second largest organization devoted to the scientific study of birds, and was secretary of the American Ornithologists' Union, the country's largest. In 1947 he was elected a life member of the latter. He

has recently been appointed a member of the board of directors of the Foundation for Neotropical Research.

In 1945 Dr. Pettingill left Carleton for one year to engage in one of the most interesting and exciting ornithological studies of our time: the whooping crane project, co-sponsored by the National Audubon Society and the Fish and Wildlife Service. The work entailed a rigorous and far-flung quest for the species, now one of the rarest of American birds. By boat, car, and plane, he followed the cranes from the Gulf Coast to the inner reaches of Canada and back again. His findings were of great value in the fight to save this diminishing bird from extinction.

As well known nationally as a wildlife photographer as he is an ornithologist, Dr. Pettingill was the photographer and script writer for eight films on birds produced by Coronet Instructional Films. A number of his pictures were incorporated in Walt Disney Productions' "Nature's Half Acre" and "Water Birds".

Dr. Pettingill has accepted a contract with Walt Disney Productions to film penguins and other wildlife on the Falkland Islands in the South Atlantic this fall and winter.

Dr. Pettingill's forthcoming book will complement his earlier volume, "A Guide To Bird Finding East of The Mississippi". We deem it a privilege to devote this issue of Bird Notes to that part of Dr. Pettingill's guide which relates to finding birds in South Dakota.

CREDIT TO AUTHOR AND PUBLISHER

From: A GUIDE TO BIRD FINDING WEST OF THE MISSISSIPPI. By Olin Sewall Pettingill, Jr. Illustrated by George Miksch Sutton. Oxford University Press, Inc., New York, 1953. Reprinted by permission.

A Guide to South Dakota Bird Finding

When the eastern bird finder plans a trip west, he should arrange to drive across South Dakota on US Route 14 or 16. No other crossing of the great interior plains of the United States demonstrates in so striking a manner the transition between east and west. First, the highways traverse level, productive farmlands with freshly painted buildings sheltered by groves of trees, with neatly fenced pastures for dairy herds, with spacious fields for grain, corn, and other crops—all in all, a panorama much the same as that of Illinois, Iowa, and Minnesota. But almost imperceptibly the scene changes: the terrain becomes more rolling and the farms less flourishing, the buildings shabbier and more exposed, the pastures more extensive, and the croplands more scattered. Then, almost halfway across the state the highways suddenly mount grassy, stone-strewn hills, plunge into the wide, deep valley of the Missouri River, and climb out in sweeping curves to the high range country that marks the beginning of 'the wide open spaces.' Over the steeply undulating grasslands the roads continue their course, dipping into draws (shallow ravines) and looping over ridges. A herd of cattle appears now and then. Occasionally visible in the distance is a fence or ranch house, but generally there is little evidence of human life. For a short distance the highways pass close to the northern rim of the Big Badlands, giving tantalizing glimpses of strange, light-colored spires and pinnacles. Finally, the Black Hills, an outer range of the Rocky Mountains, come into view; once the highways have entered the mountains, the range country ceases almost as abruptly as it began.

The changes in birdlife along Routes 14 and 16 are no less striking than the countryside transitions. From the Big Sioux River bottoms in eastern South Dakota, where Whippoor-wills, Least Flycatchers, Eastern Wood Pewees, Baltimore Orioles, Scarlet Tanagers, Rose-

breasted Grosbeaks, and Eastern Towhees are summer residents, the bird finder reaches by a journey of 360 miles the Poor-wills, Wright's Flycatchers, Western Wood Pewees, Bullock's Orioles, Western Tanagers, Black-headed Grosbeaks, and Spotted Towhees in the Black Hills. Between these two points, some of the changes in birdlife are evident from the moving car, and offer exciting opportunities for observation. In June, for example, male Lark Buntings in their handsome black and white livery are usually first seen along Route 14 just west of the Big Sioux River and steadily increase in numbers until, in the range country west of the Missouri, they are common. Time after time they flush from the road-shoulders or adjacent grasslands to repeat their aerial songs—ascending quickly to heights of 20 to 30 feet, bursting into a medley of tinkling notes, and spiraling down with stiff, butterfly-like wing movements. One year the estimated number of males seen on one trip between the Big Sioux River and the edge of the Big Badlands was 4,125, or roughly 15 per mile.

Physiographically, as well as ornithologically, South Dakota is divided into two nearly equal parts: an eastern and a western. The line of division roughly follows the Missouri River as it cuts down the middle of the state from North Dakota; consequently, South Dakotans frequently refer to the eastern and western parts of their state as the East River and West River, respectively.

Eastern South Dakota is for the most part a continuation southward of the Drift Prairie of North Dakota, with elevations decreasing from about 1,500 feet in the north to 1,200 feet in the south. The surface is flat to gently rolling except near the Minnesota boundary, where the low hills and ridges of the Coteau des Prairies arise. An abundance of lakes and sloughs characterizes the topography of the northeastern corner of the state; many of these are shallow, with a rich growth of marsh

vegetation (see under Aberdeen and Waubay), and provide some of the finest breeding grounds for water-birds and waterfowl in the state. Meandering southward through eastern South Dakota, and parallel to the Missouri, which they eventually join, are two prominent rivers, the James and the Big Sioux, the latter forming part of the state's eastern boundary. Most of eastern South Dakota was originally tall-grass prairie. Willows, cottonwoods, elms, hackberries, boxelders, maples, oaks, basswoods, and ashes occurred—and to some extent still occur—in strips along rivers and streams and in groves around some of the lakes. In the bottomlands of the Big Sioux and Missouri Rivers in the southeastern corner of the state there are a few forests of considerable extent in which the trees attain impressive height and density. Birdlife inhabiting the forest growth in eastern South Dakota is principally eastern in composition, whereas the birdlife of the open country contains many species of western affinities.

Western South Dakota is situated on the Missouri Plateau, a part of the high Great Plains, whose deeply rolling surface suggests a greatly rumpled carpet. The extreme eastern portion of the Plateau is dissected by the Missouri River; thus a strip of the Plateau 15 to 25 miles wide bounds the Missouri River on its eastern side. The western portion is broken by several big rivers, including the Cheyenne and the White, which empty into the Missouri. Elevations of the Missouri Plateau range from 1,400 feet along the Missouri to 3,500 feet near the western boundary. Owing to low rainfall, the soils are relatively dry, produce only a short-grass vegetation, and are normally unsuited to crop production; much of western South Dakota serves, therefore, as grazing land for cattle. Various shrubs, such as wolfberry, silverberry, buffaloberry, sumac, and wild rose, grow in moist draws and hollows, or along streams and riverbeds, where there are also a few willows, cottonwoods, bur oaks, boxelders, and other trees. In these environments may be expected an interesting variety of birds, including the Yellow-breasted Chat, Bullock's Oriole, Lazuli Bunting, and Spotted Towhee.

The Missouri Plateau is interrupted by three distinct regions of irregular surface. The first, in the northwest, in the so-called antelope country (see under Belie Fourche), where picturesque, flat-topped buttes rise to heights of 400 to 600 feet above the plains. A part of this country is noted for its 'gumbo' surface. The second region, in the south, comprises the remarkable Big Badlands (see under Wall), where the plains have been weirdly dissected by erosion. The third region, in the southwest, is the Black Hills, which occupy a section of the Plateau roughly 125 miles long (in a north/south direction) and 60 miles wide. They are not hills but mountains—the highest in North America east of Denver—with a magnificence surpassing their elevation. Unless seen in silhouette they are not 'Black' but deep green, sometimes with tints of purple and blue from their forest covering. Completely surrounded by the Missouri Plateau and more than 100 miles east of the Rocky Mountain, of which they are physiographically a part, the Black Hills have an island-like separateness that gives them a distinct regional character. Ornithologically they are so distinct from South Dakota as a whole that they warrant separate consideration. The reader is, therefore, referred to a special account of the Black Hills under Rapid City.

Although the great majority of birds in South Dakota are not state-wide in their distribution (e.g. many woodland-shrub species found east of the Missouri do not occur regularly west of the River, and vice versa), the following species breed more or less regularly throughout the state (or in regions indicated) in timbered areas, or in the open country (prairie grassland, pastures, fallow fields, meadow-like lowlands, brushy places, and dooryards):

TIMBERED AREAS

- Black-billed Cuckoo
- Screech Owl
- Hairy Woodpecker
- Downy Woodpecker
- Blue Jay
- Black-capped Chickadee
- White-breasted Nuthatch
- Red-eyed Vireo
- Warbling Vireo

Oven-bird
American Redstart

OPEN COUNTRY

Swainson's Hawk
Greater Prairie Chicken (uncommon)
Sharp-tailed Grouse
Ring-necked Pheasant
Killdeer
Upland Plover
Mourning Dove
Red-headed Woodpecker
Eastern Kingbird
Western Kingbird
Eastern Phoebe
Say's Phoebe (West River)
Horned Lark
Tree Swallow
Barn Swallow
American Magpie
House Wren
Catbird
Brown Thrasher
Eastern Bluebird
Mountain Bluebird (West River)
Loggerhead Shrike
Yellow Warbler
Yellow-throat
Bobolink
Western Meadowlark
Orchard Oriole (southern South Dakota)
Common Grackle
Cardinal (southeastern South Dakota)
Blue Grosbeak (southern South Dakota)
Indigo Bunting
Dickcissel
Common Goldfinch
Lark Bunting
Savannah Sparrow
Grasshopper Sparrow
Vesper Sparrow
Chipping Sparrow
Clay-colored Sparrow
Field Sparrow
Song Sparrow
Chestnut-coollared Longspur

Migration in South Dakota, which lies across the central flyway, is dominated by the spring and fall movement of waterbirds and waterfowl. In eastern South Dakota, geese steal the show as they gather in immense numbers along the valleys of the Big Sioux and James Rivers. Farther west, Sandhill Cranes are frequently observed along the Missouri Valley from the North Dakota line south as far as Pierre and Chamberlain, where their overland

route southward into Nebraska apparently begins. Throughout eastern South Dakota, ducks and shorebirds are abundant on suitable lakes, ponds, and sloughs. Long-billed Curlews and Avocets are conspicuous transients in western South Dakota, where they loiter and feed in the shallow margins of rivers. In a very few places, such as the Lacreek National Wildlife Refuge (see under Martin) both of these splendid shorebirds remain as summer residents. A few hundred White Pelicans nest in the state (see under Aberdeen and Martin), but a far greater number pass through in spring and fall, when they may often be observed on many of the larger lakes. Among the passerine birds the Harris' Sparrow is a common to abundant transient throughout South Dakota, as are the American Pipit, Tennessee Warbler, Orange-crowned Warbler, Myrtle Warbler, Black-poll Warbler, White-crowned Sparrow, White-throated Sparrow, and Lincoln's Sparrow. In South Dakota, the main migration flights may be expected within the following dates: waterfowl, 25 March—20 April, 5 October—15 November; shorebirds, 1 May—1 June, 1 August—25 September; landbirds, 20 April—25 May, 20 August—10 October.

South Dakota's severe winters are not conducive to good bird finding. Except in unusually mild winters, most streams and other bodies of water freeze over, thereby excluding all birds dependent upon them. In making their Christmas counts in the vicinity of Sioux Falls, members of the Sioux Falls Bird Club usually manage to find between 30 and 40 species. Their counts, as well as those made by others elsewhere in the state, almost always include the winter-resident Rough-legged Hawk, Slate-colored Junco, and American Tree Sparrow, in addition to permanent residents. Since very few observations on winter birdlife in the Black Hills have been made, it is impossible to indicate with any certainty the species that reside there between fall and spring.

The South Dakota Ornithologists Union may be contacted through the South Dakota Department of Game, Fish, and Parks in Pierre. The principal activities of this young organization are an annual meeting, usual-

ly held in May in a different part of the state, and the publication of South Dakota Bird Notes, a quarterly journal.

ABERDEEN. One of the most highly recommended places for bird finding in the lake country of north-eastern South Dakota is the SAND LAKE NATIONAL WILDLIFE REFUGE (21,451 acres), which extends along the James River southward for about 20 miles from a point within a few miles of the North Dakota line. Two low dams across the James River within the property have created a total water surface of about 10,500 acres. Bulrushes, quillreeds, smartweeds, and other emergent plants, including small patches of cattails, grow profusely where the water is shallow, producing a dense marsh vegetation. The adjacent relatively flat uplands are chiefly grass-covered, except where they have been cultivated to produce feed for transient waterfowl populations, or planted with trees for shelter purposes. There is a sparse native stand of trees near the original borders of the River.

The hordes of transient waterfowl that appear on the Refuge in the spring present a remarkable spectacle. About 20 March, or soon thereafter, come the first of the geese, and during the remainder of the month their numbers increase steadily. Between 1 and 10 April, and occasionally later, they reach a peak abundance, numbering 250,000 or more individuals. The greatest number are Blue Geese, followed (in order of decreasing numbers) by Snow Geese, Canada Geese (including all races), and White-fronted Geese. While the goose population is building up, thousands upon thousands of ducks appear daily until they reach maximum concentration—exceeding 150,000, with Mallards and Pintails predominating. Usually a few Whistling Swans stop briefly.

The waterfowl and waterbirds attracted to the Refuge for nesting purposes are notable for both variety and abundance. Several pairs of Canada Geese are summer residents, and the following ducks nest commonly: Mallards, Gadwalls, Baldpates, Pintails, Blue-winged Teal, Shovelers, and Ruddy Ducks. As many as 500 pairs of White Pelicans and 700 pairs of Double-crested Cor-

morants have established a colony on a treeless island (hatching takes place in early July). There are also several colonies of Franklin's Gulls, totaling thousands of adults, in different sections of the marshes. Other birds nesting in the marshes, or in their immediate vicinity, are the Horned Grebe, Eared Grebe, Western Grebe, Pied-billed Grebe, Black-crowned Night Heron, American Bittern, Least Bittern, Sora, Coot, Wilson's Phalarope, Forster's Tern, Common Tern, Black Tern, Long-billed Marsh Wren, Yellow-headed Blackbird, and Red-wing.

To reach the Sand Lake Refuge from Aberdeen, drive north on US Route 281 to Barnard (19 miles distant), turn east on State Route 10, and go straight ahead for 9 miles to a junction with a road on the right, which leads to headquarters. There is a Refuge directional sign at the junction. Route 10 from Barnard goes north from the junction near headquarters and east across the mid-section of the Refuge (including the flooded James River) to Houghton.

If the bird finder is especially interested in the spring migration of geese, he should in addition to viewing the aggregations in the Sand Lake Refuge, visit PUTNEY SLOUGH, southeast of the Refuge. To reach it from Aberdeen, drive 20 miles east on US Route 12 to the junction with State Route 37, and then turn left (north); 16 miles north of the junction the highway crosses the eastern part of the Slough—a vast marshy area. At the height of the goose migration, immense numbers can usually be seen from the highway, or from section-line roads that lead away from the highway on both the north and south sides of the Slough.

ARLINGTON. In May, June, and July, bird finders traveling through eastern South Dakota on US 14 will notice, west of Arlington, many Franklin's Gulls searching for insects on the farmlands. If the farmers are plowing, Gulls will be eagerly following them overhead and dropping frequently into the newly made furrows for earthworms and grubs. The majority of the Gulls undoubtedly nest at LAKE PRESTON north of the highway. One colony usually occupies the marshy western extremity

of the Lake, and may be viewed by turning north from Route 14 half a mile west of the town of Lake Preston, and driving 2 miles; the west end of the Lake will be seen on the right. The colony can be located from the shore by watching the birds as they go to and from their nests in the deep vegetation.

Two and a half miles southeast of Arlington, US Route 14 dips down to cross MUD LAKE on a grade. This small body of water is quite shallow, with marshy shores and a sparse growth of bulrushes. The road grade is an excellent vantage point for observing Mud Lake's summer-resident birds, which include Horned Grebes, Pied-billed Grebes, Mallards, Pintails, Blue-winged Teal, Ruddy Ducks, Coots, Black Terns, Yellow-headed Blackbirds, and Red-wings.

BELLE FOURCHE. North of the Black Hills in northwestern South Dakota, US Route 85 passes northward from Belle Fourche (pronounced bel' foorsh') to the North Dakota line, over a sparsely settled and almost desolate plain from which rise numerous buttes. Often it is referred to as antelope country because herds of the pronghorn antelope are of common occurrence. For the first 40 miles the highway traverses the 'gumbo belt,' where the clay soil, when wet, produces the 'clingiest mud in the world.' Sod is non-existent; what there is of grassy cover is extremely thin. Bird-life is consequently scarce. In draws and near creeks however, grasses tend to attain greater density, frequently forming thick clumps. The bird finder should inspect these situations, since they often prove to be the habitats of Brewer's Sparrows. The birds are best located by stopping the car near likely spots and listening for the song. After the first 40 miles, the highway passes over well-grassed prairie, used principally for grazing. Birds to be seen commonly along the way include Lark Buntings and Chestnut-collared Longspurs. Small lakes and sloughs in sight from the road have surprising concentrations of birds such as Gadwalls, Pintails, Ruddy Ducks, Coots, and Wilson's Phalaropes. Adjacent to this 100-mile stretch of highway between Belle Fourche and the North Dakota line are several spots used by Sage Grouse for their April courtship per-

formances, but it is impractical to attempt route directions here. The bird finder desiring to witness these astonishing displays may obtain the necessary information from the state game warden in Belle Fourche.

BROOKINGS, SOUTH DAKOTA STATE COLLEGE, located in this attractive town in southeastern South Dakota, offers a course in ornithology during the spring quarter and has an ornithological collection of 225 mounts, 200 study skins, and 300 egg sets. The course is given, and the collection housed in the Horticultural Building. There are approximately 600 volumes on birds in the College library.

One of the favorite bird-finding areas near Brookings is OAKWOOD LAKES STATE PARK (3,800 acres, of which 3,000 are water). There are two shallow prairie lakes, Lake Oakwood and Lake Tetonkaha, surrounded by marshes containing bulrushes, bur reeds, and quillreeds. Predominating in the woody growth around the Lakes are cottonwoods, elms and hackberries, mixed with a few hawthorns, plums, and chokecherries.

Although various geese, ducks, and shorebirds are attracted to the Lakes in migration, the best time for a visit to the area is from June to September, when common breeding birds include the Pied-billed Grebe, Western Grebe, Coot, Belted Kingfisher, Yellow-shafted Flicker, Red-headed Woodpecker, Baltimore Oriole, Yellow-headed Blackbirds, and Red-wing. On the southwest shore of Lake Oakwood is a large rookery of Double-crested Cormorants and Black-crowned Night Herons. Some of the birds nest in emergent dead trees a quarter of a mile from shore.

To reach the Park, drive west from Brookings on US Route 14 for 7 miles to Volga, turn north on an unnumbered road for 7 miles, then turn west and follow a gravel road around the south shores of both Lakes and one mile beyond. Here signs direct one to the picnic area, where there are tables and fireplaces.

MARTIN. In the extreme southwest-central part of the state, on the northern margin of the Nebraska sandhills, and in the valley of the South Fork of the White River, is the LACREEK NATIONAL WILD-

LIFE REFUGE (9,442 acres), a productive spot for bird finding. Half of the acreage comprises a series of pools and bordering marshes formed by impounding the waters of Lacreek Creek, a tributary of the South Fork; the other half consists of rolling prairie grassland with scattered willow thickets and small groves of cottonwoods and elms. In late June and early July, large numbers of ducks, representing 8 to 10 species, may be found in the marshes with their broods. A colony of White Pelicans (about 25 pairs) and Double-crested Cormorants (200 pairs) occupies a 2-acre, treeless island in one of the pools. Hatching is usually completed early in July. Among the various birds nesting in the marshes are the Western Grebe, Pied-billed Grebe, Black-crowned Night Heron, American Bittern, Forster's Tern, Black Tern, Long-billed Marsh Wren, and Yellow-headed Blackbird. The grassy edges of the pools are attractive to a few nesting pairs of Willets, Avocets, and Wilson's Phalaropes. Sharp-tailed Grouse are common on the surrounding stretches of prairie, where it is usually possible to see a few breeding pairs of Long-billed Curlews and Upland Plovers. Lark Buntings are usually abundant summer residents in the vicinity; small colonies of Cliff Swallows are frequently established under the eaves of Refuge buildings or under the superstructures of the water-control gates.

Many thousands of Mallards, Gadwalls, Pintails, Blue-winged Teal, Shovelers, and smaller numbers of other ducks appear on the pools during their migrations in spring (March—early April) and fall (October—November). Not infrequently 10,000 or more Mallards and a few American Golden-eyes and American Mergansers winter in the Refuge staying on the open water below the spillways, or in spring-fed channels. Both the Golden and the Bald Eagles are observed regularly during the winter, and an occasional Prairie Falcon is seen in flight over the area.

The Lacreek Refuge may be reached from Martin by driving south on State Route 73 for about 6 miles to a Refuge directional sign, then turning east and proceeding for 7 miles to headquarters. Nearly all parts of

the Refuge are readily accessible by roads and trails.

MURDO. US Route 16 traverses the vast stretch of rolling plains between Chamberlain on the Missouri and the Black Hills. Between Murdo and Kadoka the highway is not far north of the **WHITE RIVER VALLEY**, where there are interesting spots for bird finding. One of the best is reached by proceeding west on Route 16 from Murdo for 21 miles to the little hamlet of Stamford, and turning left (south) on a dirt road, which, after about 7 miles, drops down into the Valley. On the moderately high bluffs, where there are low shrubs in scattered patches, Blue Grosbeaks are surprisingly numerous. Lark and Field Sparrows occupy the same environment. Close to the White River, amid thin stands of cottonwoods, willows, boxelders, and shrubby thickets, one may locate without much difficulty such birds as Catbirds, Yellow-breasted Chats, Orchard and Bullock's Orioles, Spotted Towhees, and Clay-colored Sparrows.

RAPID CITY. Too many transcontinental motorists think of the **BLACK HILLS** as mere foothills of the Rocky Mountains. If the traveler comes across the South Dakota plains, the Black Hills only foreshadow the greater sights to come; if he comes from the Tetons, the Big Horns, or Yellowstone National Park, the Hills are an anticlimax. In either event, he hurries on—perhaps after glancing at the great faces on Mt. Rushmore—never realizing that he has missed an area with superb scenery, remarkable geological attractions, abundance of wildlife, and a history as colorful and romantic as that of any region of the west. Though motorists will doubtless continue to give the Black Hills only passing notice, may the touring bird finder know better! In this mountain range—from edge of plains to crests of ridges—there awaits an exciting avifauna.

The Black Hills, rising about 4,000 feet above the Missouri Plateau, present a varied landscape. On the eastern and southern limits of the range are hogback ridges, interrupted at intervals by water gaps where streams escape to the surrounding plains. Between the ridges, many of which have precipitous escarpments

of red sandstone, and the main mass of the range lies the Red Valley, averaging about 2 miles in width. The main mass is domelike, its eastern side dipping rather suddenly toward the Red Valley, its western side declining gently to the plains. Owing to prolonged erosion, the eastern half of the range has features that are unforgettably picturesque. Deep canyons and rugged intercan-
yons ridges are everywhere, while the southeastern section is dominated by granite knobs, spires, pinnacles, and bold mountain forms, culminating in Harney Peak, the highest with an elevation of 7,242 feet.

Because of their elevation, the Black Hills have a heavier rainfall than the surrounding plains, a fact that is reflected by their dense forest cover. A greater variety of birds is, therefore, to be expected. The predominating tree throughout the Black Hills is the ponderosa pine, often growing in pure stands; two other pines, the limber and lodgepole, are present in limited numbers. Mixed with the pine, especially in the ravines, are a few deciduous trees, principally the quaking aspen and white birch. Breeding birds commonly associated with these forests and consequently widespread in the Black Hills are the Western Flycatcher, Western Wood Peewee, White-breasted Nuthatch (uncommon), Olive-backed Thrush, Townsend's Solitaire, Solitary Vireo, Audubon's Warbler, Oven-bird, Macgillivray's Warbler (usually in ravines), Western Tanager, Pine Siskin, Red Crossbill, White-winged Junco, and Chipping Sparrow. (Red-naped) Common Sapsuckers are numerous wherever there are aspens. Along the streams at higher elevations and on cool north slopes are a few pure stands of white spruce. Although birds attracted to the spruces include many species that are also attracted to the pines, an vice versa, generally the Canada Jay, Red-breasted Nuthatch, Brown Creeper, and Golden-crowned Kinglet more commonly occur in the spruces. On some of the drier ridges of the foothills (e.g. the hogback ridges on the east and south) grow mountain junipers that provide suitable habitats for Pinyon Jays.

Quite a different variety of breeding birds is found in the deciduous woods on the floors of the wider

valleys and canyons and along the streams emerging upon the plains. Among the willows, cottonwoods, aspens, American elms, bur oaks, and boxelders, with their shrubby undergrowth and bordering thickets, occur the Wright's Flycatcher, Catbird, Brown Thrasher, Veery, Red-eyed and Warbling Vireos, Yellow Warbler, Yellow-breasted Chat, American Redstart, Bullock's Oriole, Black-headed Grosbeak, Indigo and Lazuli Buntings, Common Goldfinch, Spotted Towhee, Clay-colored Sparrow, and Song Sparrow (uncommon).

Breeding in suitable situations in many parts of the Black Hills are the following species: in the steep-walled canyons, or near precipitous slopes, the White-throated Swift and Rock Wren; along swift-flowing streams, the Dipper; in grassy stretches of the Red Valley and elsewhere, the Sharptailed Grouse, Horned Lark, Western Meadowlark, Grasshopper Sparrow, and Vesper Sparrow. Other birds likely to be seen near dwellings or near roads through open country are the Turkey Vulture, Red-tailed Hawk, Swainson's Hawk, Ferruginous Hawk, Golden Eagle, (a few), Sparrow Hawk, Red-headed Woodpecker, Eastern and Western Kingbirds, Eastern and Say's Phoebes, Violet-green Swallow, American Magpie, House Wren, Eastern and Mountain Bluebirds, Loggerhead Shrike, Brewer's Blackbird, and Lark Bunting.

Rapid City, lying in the gap between the hogback ridges where Rapid Creek enters the plains, is a convenient place from which trips may be taken to the places that have the most interesting birds and, fortunately, also the greatest scenic appeal.

Overlooking Rapid City from the west is HANGMAN'S HILL, a ridge that has a few rather stunted pines, junipers, and oaks along the crest but is for the most part treeless, the slopes being covered with grasses and scattered shrubby thickets. Skyline Drive, reached by driving west from Quincy Street and turning right, passes up Hangman's Hill to Dinosaur Park. Flickers (mostly hybrids between the Yellow-shafted and Red-shafted) and noisy Pinyon Jays should be looked for in the scrubby trees along the Drive. In Dinosaur Park (where there are five life-sized figures of prehistoric reptiles fash-

ione in cement) Lark Sparrows are common nesting birds. On the slopes of the ridge, especially on the west side, below Skyline Drive, one may hear or see Western Meadowlarks, Spotted Towees, Grasshopper Sparrows, and Field Sparrows.

A few miles west of Rapid City are two beautiful spots; DARK CANYON and SOUTH CANYON. Both have a winding course and rushing transparent streams; both are walled by cliffs with irregular strata and numerous crags; both have deciduous trees and shrubs along the streambeds, pines and scattered junipers on the rims. Dark Canyon is the more spectacular, for the cliffs are higher and, in places, the opposing walls draw so close together as to prevent the sun's rays from reaching the floor except for a brief period each day. A pair of Prairie Falcons and a pair of Duck Hawks are known to nest in inaccessible niches not far from each other on one of the highest cliffs. Far up on nearly all of the cliffs Canyon Wrens are common, their presence revealed by their distinctive song—a series of melodious, cascading notes. Sheer walls are less frequent in South Canyon, many of the slopes being more gradual and at the same time more thickly covered with pines, but Canyon Wrens are nevertheless in evidence. The outstanding ornithological feature of South Canyon, however, is the Poor-wills, which may be heard chanting regularly during June and July evenings. Birds likely to be seen or heard in both Dark and South Canyons include the Sharp-shinned Hawk, Cooper's Hawk, Pigeon Hawk (one pair recently nested in South Canyon), Great Horned Owl, Long-eared Owl, White-throated Swift, Lewis' Woodpecker, Blue Jay, Pinyon Jay, Rock Wren, Dipper, and Lark Sparrow.

Dark Canyon is reached by taking the Rim Rock Trail (no route number), which branches south from US Route 14 just west of Baken Park in Rapid City. After passing Canyon Lake, the State Fish Hatchery, and the entrance of the drive to Nameless Cave, the road forks at a point 4.9 miles from the city. The left road enters the mouth of Dark Canyon and should be followed if one wishes to look for birds along Rapid Creek in the depths of the gorge.

The right-hand road, which is a continuation of Rim Rock Trail (unpaved and very slippery in wet weather), climbs to the north rim of Dark Canyon and follows the canyon westward. Splendid views of the gorge and distant peaks are obtainable all along the way. Stop the car and walk out on one of the spurs that jut into the chasm: there may be Pinyon Jays in the conifers; falcons, swifts and wrens on the cliffs below.

South Canyon is reached by turning west from US Route 14 at a point 2.4 miles from Rapid City, where a sign indicates the direction of the Canyon and the villages of Nemo and Roubaix beyond. After 1.7 miles, the road enters the Canyon and ascends through it for 4 miles or so. Bird finding is good almost anywhere from the roadside to the highest slopes.

A trip during June and July southwest of Rapid City into the most rugged part of the Black Hills is rewarding ornithologically because it provides the opportunity to study the avifauna of typical pine forests in the Black Hills. Proceed 22 miles south on US Route 16 to the Mt. Rushmore Memorial Highway, which turns west one mile south of Keystone and climbs circuitously for 3 miles to a parking lot in the MOUNT RUSHMORE NATIONAL MEMORIAL (1,278 acres). A few steps from the car, a height of ground affords a dramatic view of the faces of four United States Presidents—Washington, Jefferson, Lincoln, and Theodore Roosevelt—carved in heroic proportions on the towering granite shoulder of Mt. Rushmore (6,040 feet in elevation). White-throated Swifts nest in lofty crevices near these immense sculptures and can be seen frequently as they dash back and forth. Western Wood Pewees, Solitary Vireos, Audubon's Warblers, Western Tanager, and White-winged Juncos are some of the birds that can be heard in the general vicinity.

From Mt. Rushmore, follow the Memorial Highway westward over a twisting narrow road through lovely pine forest passing Horse Thief Lake and wide vistas of HARNEY PEAK, in the distance to the left. Frequent stops should be made along the way to search and listen for Western Flycatchers, Olive-backed Thrushes, Solitaires, Oven-birds, Macgillivray's

Warblers, Pine Siskins, and Red Crossbills. On reaching US Route 85A, which is about 12 miles from the parking space in the Mt. Rushmore Memorial, bear left, drive 4 miles southward, and bear left again in the Needles Highway. This soon passes Sylvan Lake. If one wishes to climb Harney Peak, the trail, which is very easy to follow, begins at the campground on the northeastern edge of the Lake. Birds along the trail are about the same as those in the Mt. Rushmore Memorial, around Sylvan Lake, and at points between, although Red-breasted Nuthatches and Golden-crowned Kinglets are more numerous here. As the summit is approached, the trail leads out of the tree growth onto bare rock surfaces. (There are no timber-line or alpine conditions comparable to those on the higher peaks in the Rocky Mountains.) Birds are relatively scarce, but one is quite likely to see Turkey Vultures, Red-tailed Hawks, White-throated Swifts, and Violet-green Swallows in flight above or below the trail. Mountain Bluebirds and White-winged Juncos are the most common birds about the summit. Situated on the highest point is a glass-enclosed fire-lookout (occupied by a fire warden most of the summer) from which one may obtain a breathtaking view of the southern Black Hills and outlying plains, and observe the mountain goats that have thrived on Harney Peak since their introduction a number of years ago.

The drive on the Needles Highway beyond Sylvan Lake provides an exciting scenic climax to the trip. One and a half miles beyond Sylvan Lake the road enters a tunnel in a tremendous granite promontory and emerges upon the NEEDLES—gigantean knobs, pinnacles, spires, and other strangely shaped rock masses reaching skyward. A few Audubon's Warblers and Western Tanagers inhabit the scattered, somewhat stunted pines at their bases; White-throated Swifts and occasionally a Duck Hawk or two cut across the deep abysses between them; but in general this uncanny place is not attractive to birds.

Unquestionably the best place for bird finding, if not for sight seeing, in the Black Hills is SPEARFISH CANYON, far to the northwest of Rapid City. Extending for 21 miles

in a north-south direction between Cheyenne Crossing and the town of Spearfish, the Canyon is comparatively open in its upper part near Cheyenne Crossing, but farther on it begins to deepen, the light-colored sandstone and limestone walls becoming increasingly steep and close together. Clear, cool Spearfish Creek, descends rapidly through the chasm, and is joined about 4 miles above Spearfish by the waters of Bridal Veil Falls, which spill over the face of the east wall from a considerable height. As in Dark and South Canyons, White-throated Swifts, Dippers, Canyon Wrens, and Rock Wrens are present, but the superiority of Spearfish Canyon as a place for bird finding is due in large measure to the extensive forest growth—the spruces, sometimes in pure stands, sometimes mixed with pines, that occur along Spearfish Creek in the upper part of the Canyon, the deciduous trees and shrub thickets that occur along the Creek toward the southern part. Thus Spearfish Canyon attracts a wide variety of breeding birds, as the following selected list indicates: Saw-whet Owl, Common Sapsucker, Three-toed Woodpecker, Wright's Flycatcher, Western Flycatcher, Canada Jay, Black-capped Chickadee, White-breasted Nuthatch, Red-breasted Nuthatch, Brown Creeper, Olive-backed Thrush, Veery, Townsend's Solitaire, Golden-crowned Kinglet, Warbling Vireo, Macgillivray's Warbler, American Redstart, Western Tanager, Black-headed Grosbeak, Lazuli Bunting, Evening Grosbeak, Purple Finch, Red Crossbill, Spotted Towhee, and White-winged Junco.

Spearfish Canyon may be reached from Rapid City by driving westward over Rim Rock Trail to US Route 85A, turning right and following 85A to Cheyenne Crossing. The distance from Rapid City is about 58 miles. From Cheyenne Crossing, Route 85 continues west and south along the west branch of Spearfish Creek through a delightful valley forested with spruce and pine. Along the first 5 miles of this highway, and in Hellsgate and Deadhorse Gulches, whose entrances are passed on the right, bird finding is very productive. The Spearfish Canyon Road (State Route 89) begins on the right at Cheyenne Crossing and follows Spearfish Creek into the Canyon. Bird finding along the Road that goes down the

Canyon to Spearfish is as good in one place as in another. Nearly every bridge crossed has a pair of Dippers nesting beneath it. While going through the deepest part of the gorge, stop the car now and then to listen for Canyon Wrens singing far up on the lofty cliffs. At a spot called Savoy (the location of the Latchstring Inn), 5.5 miles down from Cheyenne Crossing, walls of limestone attain heights of 1,000 feet or more. Veeries, Warbling Vireos, Lazuli Buntings, and Black-headed Grosbeaks occupy the deciduous trees and shrubs near the stream. Before continuing down the Canyon past Bridal Veil Falls to Spearfish, take a side trip by turning left at Savoy on a narrow road that follows the winding course of Little Spearfish Creek. After one mile, a short path leads from a parking lot on the left to Roughlock Falls. It is almost a certainty that a pair of Dippers will have a nest behind this 30-foot drop of water and will be searching for food in the series of cascades below. About 4 miles beyond the Falls the road forks. Take the right fork and, a little later, the next left; this climbs rapidly to the crest of Cement Ridge, where there is a fire-lookout (just over the state line, in Wyoming). Townsend's Solitaires are fairly numerous in the pine woods. The higher slopes though treeless, are richly matted with wildflowers—balsam roots, larkspurs, lupines, chickweeds, bluebells, shooting stars, and pasqueflowers—which bloom profusely in June and July. From atop the Ridge the superlative view of the northern Black Hills is itself well worth the trip.

SIoux FALLS. In the farming country west of Sioux Falls, the largest city in the state, lie marshy lakes and potholes, considered by members of the Sioux Falls Bird Club to be the most exciting areas for bird finding in the vicinity. They are readily accessible by car; many of the birds can easily be seen from the car windows.

Drive west from Sioux Falls on US Route 16 for 11 miles to a crossroad; turn left (south) to WALL LAKE, which will soon appear on the right. Follow the section-line roads around the Lake. At the Girl Scout Camp on the east shore, Baltimore and Orchard Orioles are sum-

mer residents in the grove of trees and bordering shrubs. Bobolinks in the near-by pastures and haylands. Just southeast of the Lake, a section-line road crosses a marsh (no name) with cattails, quillreeds, and pickerelweeds, where, during the summer months, such birds may be observed as Pied-billed Grebes, Great Blue Herons, Black-crowned Night Herons, American Bitterns, Blue-winged Teal, Coots, Yellow-headed Blackbirds, and Red-wings.

Another marsh may be reached by turning right (north) from Route 16 at the aforementioned crossroad and taking the next road to the right, which crosses the marsh half a mile distant. Virginia Rails, Soras, Black Terns, and Short-billed Marsh Wrens are among the birds that nest commonly here.

Continue west on Route 16 for 4 miles beyond the crossroad that leads to Wall Lake, then turn north on a road to GRASS LAKE, on the left, 3 miles distant. At a point half a mile after turning north, the road passes (on the right) a shallow marsh with muddy shores and flats attractive to shorebirds in May, August and September. Between this point and Grass Lake are big fields (on the right), where thousands of Snow and Blue Geese stop to feed during the northward migration in late March. Grass Lake itself, an extensive marsh with open water, is attractive to many transient waterbirds and waterfowl. Whistling Swans in late March and White Pelicans in fall are the Lake's outstanding ornithological features.

The Sioux Falls Bird Club, whose members may be contacted through the Pettigrew Museum at North Duluth and 8th Streets, sponsors a series of lectures each year and conducts field trips in the spring and fall.

VERMILLION. The UNIVERSITY OF SOUTH DAKOTA MUSEUM, on the first floors of the west and north wings of the University's Administration Building, has the following ornithological materials, most of them from South Dakota: 571 mounts, 736 skins, and 430 egg sets.

WALL: Between the Cheyenne and White Rivers east and south of the Black Hills is a vast area where the semi-arid plains have been remarkably eroded, forming the Big Bad-

lands of South Dakota. Fine soft clays, capped by a thin sod, have been deeply dissected, producing a succession of V-shaped ravines with most of their walls oddly terraced by plates of sandstone. Between closely adjacent ravines there are sharp crests; between widely separated ravines there remain, as mesas or tablelands, the grassy uncut surfaces, 500 to 600 feet above the riverbeds. One of the most picturesque sections of the Big Badlands is now embraced by the BADLANDS NATIONAL MONUMENT (154,119 acres), which lies north of the White River and 60 miles east of the Black Hills. Here the plains have been cut by numerous tributaries of the White River. When they are looked down upon from the edge of the plains, or are viewed from the broad flat through which the White River wanders, the effect is startling. Between the innumerable ravines looms a veritable wilderness of sculptured formations that suggest spires, turrets, minerets, pyramids, domes, and giant tables. Nearly all have strata of different pale colors—buff, pink, gray, light green—which vary in intensity according to lighting conditions. On late, sunlit afternoons or early mornings when the sky is deep blue, they are at their brilliant best. US Route 16A, proceeding south from Wall, enters the Badlands Monument (about 7 miles from the town) and soon passes down over the the Great Wall into the strange wonderland of the Badlands. For 23 miles the highway winds southward and eastward through the heart of the Monument, giving the traveler every opportunity to view the array of formations. Before the highway ascends Cedar Pass and leaves the Monument, it crosses a section of the grassy flat of the White River and comes to the Cedar Pass Tavern and Cabins.

Birdlife in the Badlands Monument is expectedly limited both in variety of species and in numbers of individuals, yet it is not without interest, especially to eastern bird finders in quest of their first glimpses of Rock Wrens, Say's Phoebes, and Mountain Bluebirds. Rock Wrens nest in fissures of the clay banks; Say's Phoebes and Mountain Bluebirds choose similar nesting sites, though at the Cedar Pass Tavern and Cabins they may be found

nesting under the eaves of buildings. Other birds to be seen commonly in the Badlands are Horned Larks and Western Meadowlarks, which occupy the flat of the White River, the tops of the tablelands, and the neighboring grassy plains; Lark Sparrows, which nest on the more gradual slopes where clumps of grasses and brush manage to gain foothold; and Cliff Swallows, which presumably find suitable nesting situations of their colonies on steeply cut banks with overhanging sandstone plates or sod.

WAUBAY. The name of this town in northeast South Dakota comes from a word in the language of the Sioux Indians meaning 'where wild fowl build their nests.' The name is indeed appropriate, for Waubay is situated in rolling prairie dotted with many potholes and lakes; much of the upland has the original prairie sod undisturbed by settlement, while the bodies of water, being in most cases shallow, have extensive beds of cattails, bulrushes, quillreeds, and sedges, which provide suitable cover for breeding waterbirds and waterfowl.

Waubay, 11 miles east of Webster, is on the south side of US Route 12. North of the town lies the WAUBAY NATIONAL WILDLIFE REFUGE (4,651 acres), reached by turning north from Route 12, 1¼ miles east of Waubay, and following a road (no route number) northward for 6½ miles past the Enemy Swim Indian School. A short distance beyond the schoolhouse, take the first turn left, which leads west to Refuge headquarters. The lookout tower near headquarters can be seen at the turn. The Waubay Refuge has several lakes and marshes serving as nurseries for Canada Geese and for many ducks, representing 12 species altogether. Certain of the marshes have the distinction of being among the southernmost breeding grounds of the Holboell's Grebe and American Golden-eye in the United States. Large numbers of Western Grebes nest here. One section of the Refuge is covered by a stand of native hardwoods and brush, another section by tall-grass sod that has never been plowed. Although bird finders are welcome to enter the Refuge, provided they first obtain permission at headquarters, the best places for

birds are not readily accessible by roads; therefore, they are advised to visit two other spots in the general vicinity that are very productive and more easily reached.

BITTER LAKE, south of the town of Waubay, may be approached from Route 12 by turning into Waubay at the directional sign and driving through the business section to the south edge of town, turning west for one mile, then turning south on a gravel road (in fair condition), which leads to the north shore of the Lake. From here the road leads south and southwest along the west shore, where a fine marsh merges with an undisturbed prairie. The nesting season extends from May through mid-July. Broods of ducks (e.g. Mallards, Pintails, Blue-winged Teal, Shovelers, Ruddy Ducks) are most numerous from 10 June to 1 July. Among the various marsh, shore, and upland birds to be looked for during the trip are the Pied-billed Grebe, American Bittern, Coot, Piping Plover, Upland Plover, Marbled Godwit, Avocet, Franklin's Gull, Forster's Tern, Black Tern, Common Nighthawk, Horned Lark, Long-billed Marsh Wren, Western Meadowlark, Yellow-headed Blackbird, Red-wing, Brewer's Blackbird, and Chestnut-collared Longspur.

RUSH LAKE is crossed at the south end by Route 12, 2.5 miles west of Waubay. From the road grade one may obtain excellent views of the open water and the marsh vegetation that gives the Lake its name. Black-crowned Night Herons nest on a wooded island 1.5 miles

north of Route 12. In the late spring and summer the Lake is occupied by a large population of waterbirds and ducks, the species being the same as those at Bitter Lake. If the water level is low in August and September, shorebirds are numerous on the muddy shores and flats. From spring to fall, a few White Pelicans can always be seen somewhere on the Lake.

Another good location is **HEDKE'S PASS**, a public shooting area owned by the State Game, Fish, and Parks Commission, between North Waubay and South Waubay Lakes. This is reached as follows: At a school 5 miles west of Waubay on Route 12, turn north on a gravel road and drive for about 3.5 miles to a point where a rather poor township road turns off west; turn onto this road. After 1.5 miles the road enters Hedke's Pass. To the left, in South Waubay Lake, is **CORMORANT ISLAND**, which has a nesting colony of Double-crested Cormorants (eggs by 1 June), also a few breeding Forster's Terns and, occasionally, White Pelicans. Geese, ducks, and shorebirds are usually abundant along the shores of both Lakes and in a marsh that lies about a quarter of a mile west of the Pass.

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A PROJECT

Dr. Pettingill's book embraces a vast area; hence the material relating to any one state is necessarily limited. Brief as the South Dakota chapter may seem, we think it exceedingly interesting and valuable. Now it has been suggested that SDOU develop a guide to bird finding in South Dakota to supplement Dr. Pettingill's book with further information about when and where to find our summer residents and with additional suggestions of places and times when migrants can usually be seen. Much accurate data, arranged somewhat like that in this Guide to Bird Finding, can be assembled quickly if members of SDOU will cooperate. The following blank page may help you.

The Editors

