INVENTORY OF BIRDS

REPTILES AND AMPHIBIANS

ON THE

NATURE CONSERVANCY

PRESERVES AND EASEMENTS

IN THE

SOUTHERN BLACK HILLS

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by
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INVENTORY OF BIRDS, REPTILES AND AMPHIBIANS ON THE NATURE CONSERVANCY PRESERVES AND EASEMENTS IN THE SOUTHERN BLACK HILLS

BACKGROUND

The Nature Conservancy is a non-profit membership organization supported by over one million members and more than 1900 foundations and corporations. The contributions of individual members, foundations and corporate partners constitute 59% of the Conservancy's annual revenue, with the remaining amounts coming from investment income (30%), government contracts and grants (6%), leases, royalties and cause related marketing (3%) and private contracts and mitigation (2%).

Founded in 1951, The Nature Conservancy's mission is to preserve the world's diverse plants, animals and natural communities by protecting the habitats they need to survive. The Conservancy achieves this by purchasing the threatened land and waters that support these fragile ecosystems and endangered species. These parcels are either purchased outright or revert to The Nature Conservancy management through a number of conservation easement agreements.

During the late 1990's a number of properties in the southern Black Hills including the N.R. and Mary Whitney Preserve near Hot Springs, came under the management of the Black Hills Field Office of The Nature Conservancy. Since then a number of projects have been undertaken to achieve a baseline analysis of these areas and to inventory the natural resources of the areas.

Currently, The Nature Conservancy managers possess neither a comprehensive baseline inventory nor the information upon which to base monitoring of the property's bird, reptile and amphibian species utilizing preserve lands and waters. In recent years, the shift to protecting biodiversity through the preservation of functional ecosystems, has made reliable inventory and monitoring programs of critical importance to management. Without detailed information on the distribution, habitat requirements and relative abundance of native species, resource managers may only preserve that portion of the fauna which is highly visible or economically important. The current lack of information on the avifauna and herptefauna of these properties is a critical deficiency in fulfilling management's goal to identify and respond to potential issues necessary to achieve The Nature Conservancy's resource stewardship mission. For these reasons, Accipiter Biological Consultants was contracted by the South Dakota Natural Heritage Database Program to design and develop a property-wide inventory of birds, reptiles and amphibians currently occurring on two selected properties.

The two properties inventoried in this endeavor are described as follows:

1. The north side of the Cheyenne River from its intersection with SD Highway 44 northeast for approximately 13 miles to a point adjacent to the end of Road L-410 which traverses south off of the Brennan Road one mile west of its turnoff to Owanka. The area involved is on land belonging to the Circle Bar Ranch and is being managed under a conservation easement.
2. The areas adjacent to SD Highway 71 south from Hot Springs from Cascade Springs south to the point that the highway crosses the Cheyenne River. Portions of this area are under the ownership of The Nature Conservancy, while some areas have conservation easements attached to them.

CHEYENNE RIVER TRANSECT

This area was listed as a high priority area by The Nature Conservancy because of the possibility of a new railroad line traversing the area. The goals to be achieved for this area included surveying for the presence of Federal or state listed threatened or endangered species (particularly least terns, piping plovers and smooth soft-shelled turtles) and to inventory species of birds, reptiles and amphibians present on the parcel.

Habitats involved in this area include deciduous riverside riparian habitats, natural woody draws, man-planted windrows, rolling upland prairie and isolated pine covered ridges.

FIELD METHODS

The area was walked as a single 13-mile transect on July 19, 1999. All inventory work was accomplished on the north bank of the Cheyenne River on land belonging to the Circle Bar Ranch. The field crew of three was led by Thomas Hays of Accipiter Biological Consultants. All were trained in field identification of birds, reptiles and amphibians of the northern Great Plains.

Bird identification was accomplished by visual and auditory observation. Reptiles and amphibians were identified by visual observation and hand collecting. This method is proported to provide the largest number of individuals and species based on comparable inventory projects. Specific methods include carefully turning and replacing ground cover, time constrained hand-collecting, seining and dip netting of small ponds or streams within the area and visual surveys of aquatic habitats. Some hand-collecting was accomplished by raking small areas of forest floor debris and searching through piles of flood debris on appropriate plots. All plots were restored to their original condition to the greatest degree possible.

The north bank of the Cheyenne River was the norm for this transect. Where the river traversed other habitats, short side-trips were made into the other habitat for inventory purposes. With the exception of the prairie habitat, all other habitats were small (less than 5 acres per parcel) and fragmented with few to no natural corridors to connect fragments.

RESULTS

The following birds species were observed on this parcel during the survey:

1. Great Blue Heron	*Ardea herodias*	State Monitored
2. Canada Goose	*Branta canadensis*	
3. Mallard	*Anas platyrhynchos*	
4. Turkey Vulture	*Cathartes aura*	
5. Red-tailed Hawk	*Buteo jamaicensis*	
6. Ferrugiouous Hawk	*Buteo regalis*	State Monitored
7. Golden Eagle	*Aquila chrysaetos*	State Monitored
8. Northern Harrier	*Circus cyaneus*	
9. Prairie Falcon	*Falco mexicanus*	State Monitored
10. American Kestrel	*Falco sparverius*	
11. Sharp-tailed Grouse	*Pedioecetes phasianellus*	
12. Ring-necked Pheasant	*Phasianus colchicus*	
13. Wild Turkey	*Meleagris gallopavo*	
14. Piping Plover	*Chanadrius melodus*	Federally Listed
15. Killdeer	*Charadrius voiciferus*	
16. Common Snipe	*Capella gallinago*	
17. Upland Sandpiper	*Bartramia longicauda*	
18. Spotted Sandpiper	*Actitis macularia*	
19. Mourning Dove	*Zenaidura macroura*	
20. Black-billed Cuckoo	*Coccyzus erythropthalmus*	
21. Great Horned Owl	*Bubo virginianus*	
22. Common Nighthawk	*Chordeiles minor*	
23. Belted Kingfisher	*Megaceryle alcyon*	
24. Northern Flicker	*Colaptes cafer*	
25. Red-headed Woodpecker	*Melanerpes erythrocephalus*	
26. Hairy Woodpecker	*Dendrocopos villosus*	
27. Downy Woodpecker	*Dendrocopos pubescens*	
28. Eastern Kingbird	*Tyrannus tyrannus*	
29. Western Kingbird	*Tyrannus verticalis*	
30. Say's Phoebe	*Sayornis saya*	
31. Western Wood Pewee	*Contopus sordidulus*	
32. Horned Lark	*Eremophila alpestris*	
33. Bank Swallow	*Riparia riparia*	
34. Barn Swallow	*Hirundo rustica*	
35. Cliff swallow	*Petrochelidon pyrrhonota*	
36. Blue Jay	*Cyanocitta cristata*	
37. Black-capped Chickadee	*Parus atricapillus*	
38. White-breasted Nuthatch	*Sitta carolinensis*	
39. Red-breasted Nuthatch	*Sitta canadensis*	
40. House Wren	*Troglodytes aedon*	
41. Gray Catbird	*Dumetella carolinensis*	

42. Brown Thrasher	*Toxostoma rufum*
43. American Robin	*Turdus migratorius*
44. Mountain Bluebird	*Sialia currucoides*
45. Townsend's Solitaire	*Myadestes townsendi*
46. Loggerhead Shrike	*Lanius ludovicianus*
47. European Starling	*Sturnus vulgaris*
48. Red-eyed Vireo	*Vireo olivaceus*
49. Warbling Vireo	*Vireo gilvus*
50. Yellow Warbler	*Dendroica petechia*
51. Common Yellowthroat	*Geothlypis trichas*
52. Yellow-breasted Chat	*Icteria virens*
53. Black-headed Grosbeak	*Pheucticus melanocephalus*
54. Rufous-sided Towhee	*Pipilo erythrophthalmus*
55. Lark Bunting	*Calamospiza melanocorys*
56. Savannah Sparrow	*Passerculus sandwichensis*
57. Grasshopper Sparrow	*Ammodramus savannarum*
58. Vesper Sparrow	*Pooecetes gramineus*
59. Lark Sparrow	*Chondestes grammacus*
60. Chipping Sparrow	*Spizella passerina*
61. Field Sparrow	*Spizella pusilla*
62. Song Sparrow	*Melospiza melodia*
63. Western Meadowlark	*Sturnella neglecta*
64. Red-winged Blackbird	*Agelaius phoeniceus*
65. Bullock's Oriole	*Icterus bullockii*
66. Brewer's Blackbird	*Euphagus cyanocephalus*
67. Common Grackle	*Quiscalus quiscula*
68. Brown-headed Cowbird	*Molothrus ater*
69. American Goldfinch	*Spinus tristis*
70. House Sparrow	*Passer domesticus*

The following reptile and amphibian species were observed on this parcel during the survey:

1. Great Plains Toad	*Bufo cognatus*
2. Woodhouse's Toad	*Bufo woodhousei*
3. Boreal Chorus Frog	*Pseudacris trisriata maculata*
4. Spiny Soft-shelled Turtle	*Trionyx spiniferus*
5. Plains Hognose Snake	*Heterodon nasicus nasicus*
6. Eastern Yellowbelly Racer	*Coluber constrictor flaviventris*
7. Bullsnake	*Pituophis melanoleucos sayi*
8. Red-sided Garter Snake	*Thamnophis sirtalis parietalis*
9. Plains Garter Snake	*Thamnophis radix*
10. Prairie Rattlesnake	*Crotalus viridis viridis*

SUMMARY

In general, the habitats found in this parcel appear to be healthy and capable of sustaining populations of the birds, reptiles and amphibians found within them. A notable exception would be several decadent riparian stands. These former riparian stands are no longer reproducing, presumably due to erosion of the banks of the Cheyenne River. These stands are now 4 to 12 feet above the surface of the river and are no longer periodically flooded, as they were in the past, by spring runoff and precipitation events.

Four state monitored species were located on the parcel and are identified in the chart above. Habitat for each of these species does not seem to be in danger of decrease at present. None of these species are listed as threatened or endangered in South Dakota.

One Federally listed bird species was found during the survey. A single Piping Plover, a bird listed as threatened by the Endangered Species Act, was located in section 27, approximately three miles from the eastern end of the transect. This bird showed no breeding behavior and was observed foraging along an area of mud flat. When the bird observed us, it flew down river to the northeast and was not observed again, even though our transect sent us in the same direction. The total observation time exceeded twelve minutes and all three observers were able to note pertinent field markings. No suitable habitat was observed along this stretch of the Cheyenne River to accommodate breeding for this species. It is presumed that this individual was a second year non-breeding bird or part of a pair whose nesting was previously disrupted in another area. The species is known, in South Dakota, to wander the various river systems of the state in late summer and fall, after breeding takes place. This observation should be treated as an isolated observation and not as an indicator of a "population" of this species on this property.

RECOMMENDATONS

As stated above, most of the available habitats on this parcel appear healthy. The native riparian habitat could be supplemented in several areas where the river bank forms a gradual slope to the river and may flood in times of high water. These areas could be planted in Cottonwood, Green Ash, Box Elder, American Plum, Chokecherry or other native riparian plants as future habitat. In addition, the area should be planted in native grasses down to the water to prevent erosion of the bank. Vegetative diversity should be encouraged in all upland areas of the parcel.

An added recommendation would be to avoid the use of chemical insecticides and non-biodegradable herbicides anywhere in the easement boundaries. All of the native amphibians, aquatic reptiles and many of the bird species found in the area could be adversely affected by these chemicals.

CASCADE CREEK WATERSHED

This area was listed as a high priority area by The Nature Conservancy because of the recent purchase of much of the area for the N.R. and Mary Whitney Preserve. The goal to be achieved for this area was to inventory species of birds, reptiles and amphibians present on the parcel.

Habitats involved in this area include deciduous streamside and riverine riparian habitats, natural woody draws, man-planted windrows, rolling upland prairie, streamside prairie, isolated pine covered ridges, marshy wetlands and man-made pond areas.

FIELD METHODS (BIRDS)

Three field methodologies were utilized to inventory the birds on this parcel:

1. Variable Radius Point Counts were established at fourteen permanent positions covering the various habitats in the survey area. These counts provide a stratified random sampling of habitats within the preserve's natural zone lands and waters. The survey procedures and methods used by Accipiter Biological Consultants follow those published by the US Forest Service's Southern Research Station and is consistent with the guidelines of the monitoring working group of the Partners in Flight Neotropical Migratory Bird Conservation Program. Each point count is characterized by a center point from which all birds, seen and heard, within a five minute span are inventoried. This series of counts were surveyed in November 1999, April 2000 and June 2000.
2. Roadside surveying was accomplished by utilizing SD Highway 71 as a transect through the study area. While driving along the transect, all birds seen or heard were inventoried. Stops were made at least every ¼ mile or with each change in roadside habitat through the length of the transect. This transect was surveyed a total of six times during the time frames listed above.
3. Hiking transects were surveyed into at least two examples of each available habitat in the area. In those habitats where size allowed, a 100 meter transect was run randomly through the habitat. In smaller or fragmented habitats a transect was walked through the center of the habitat and then around the periphery of the habitat block. These transects were replicated in November 1999 and June 2000.

FIELD METHODS (REPTILES AND AMPHIBIANS)

Due to the diversity of this parcel's amphibian and reptile fauna and the range of habitats involved, multiple methods were necessary to obtain an adequate inventory of these species. This study employed seven sampling approaches; general herpetological collecting or observation, minnow traps, turtle traps, coverboards, audio frog calling surveys, road surveys and drift fences utilizing pitfall traps and/or funnel type live traps.

General Herpetological Collecting or Observation

This methodology was explained previously in this report.

Minnow Traps

Minnow traps are an effective means of capturing aquatic amphibians and reptiles, especially tadpoles, salamanders, salamander larvae and aquatic snakes. They can be set in most aquatic situations, but appear to be most effective in ponds or swamps with shallow waters. Traps are set near the shoreline, in water deep enough to at least cover the funnel openings. The traps are set from 5-10 meters apart and are checked daily.

Turtle Trapping

Many species of turtles cannot be effectively sampled by hand collecting. Consequently, an active live trapping program was established in several aquatic habitats on preserve waters to adequately sample these reptiles. This method consists of setting nylon mesh hoop-type turtle traps in appropriate habitats. The traps are baited with sardines or fish flavored dog food and are checked hourly while set.

Coverboards (Artificial Shelters)

One of the major disadvantages of minnow, turtle and other "active" traps is that they must be set and monitored on a continual basis. An alternative method of inventorying herpetological communities involves the use of artificial shelters established in systematic arrays in various habitats. This method was originally developed by Fitch (1975) and has been utilized extensively to sample reptile and amphibian populations nationwide in a variety of habitats. The major advantages of this approach are that they require no maintenance and they can be checked whenever time permits. These shelters are very effective in sampling salamanders, lizards, snakes and frogs. The coverboards for this study were ½ inch sheets of exterior plywood cut to 2 foot by 4 foot dimensions. Arrays were set out in all habitats with 10 coverboards to an array.

Frog Breeding Surveys

The fact that anuran amphibians congregate for breeding allows for highly effective inventories of these species. These surveys involve the systematic survey of major aquatic habitats during the primary breeding seasons for these species in early spring and early summer.

Sites established under this approach are surveyed by spot lighting at night and by use of an automated data collection technique consisting of using a programmable timer combined with a tape recorder to record frog calls and choruses. The recordings are then taken back to the home station for analysis of calling species.

Road Surveys

Many amphibians and reptiles routinely cross roads during their daily activities and investigators have found this approach to be a most effective method of sampling many terrestrial snakes, lizards, turtles, frogs and toads, as well as many semi-aquatic snakes. This approach has been used to successfully census and monitor amphibians and reptiles throughout the country and provides a transferable approach for use on The Nature Conservancy's lands. The sampling scheme for this approach consists of driving at slower speeds (10-25 miles per hour) and observing the amphibians and reptiles crossing or otherwise utilizing the roadway.

Drift Fences

Drift fences are frequently a most productive method of inventorying herpetological communities. Equipped with either pitfall traps, funnel traps or both, studies show that the productivity of drift fences is significantly higher than hand-captures in some habitats (Gibbons 1988). These arrays were developed using 10 inch aluminum flashing for drift fence material with plastic 5-gallon pails embedded in the ground so that the top was flush with the ground surface being used for pitfalls. Pitfall traps were installed such that lids could be affixed to the pails during times when the traps could not be monitored. Aluminum screen funnel traps and plastic funnel traps used by commercial snake breeders were used to augment the trapping effort at the drift fence sites.

RESULTS

The following birds species were observed on this parcel during the survey:

1. Pied-billed Grebe	*Podilymbus podiceps*	
2. Great Blue Heron	*Ardea herodias*	State Monitored
3. Canada Goose	*Branta canadensis*	
4. Mallard	*Anas platyrhynchos*	
5. Blue-winged Teal	*Anus discors*	
6. Turkey Vulture	*Cathartes aura*	
7. Red-tailed Hawk	*Buteo jamaicensis*	
8. Swainson's Hawk	*Buteo swainsoni*	State Monitored
9. Rough-legged Hawk	*Buteo lagopus*	
10. Ferruginous Hawk	*Buteo regalis*	State Monitored
11. Golden Eagle	*Aquila chrysaetos*	State Monitored
12. Bald Eagle	*Haliaeetus leucocephalus*	Federally Listed
13. Northern Harrier	*Circus cyaneus*	
14. Prairie Falcon	*Falco mexicanus*	State Monitored
15. American Kestrel	*Falco sparverius*	
16. Sharp-tailed Grouse	*Pedioecetes phasianellus*	
17. Wild Turkey	*Meleagris gallopavo*	
18. Sora	*Porzana carolina*	
19. American Coot	*Fulica americana*	

20. Killdeer	*Charadrius voiciferus*
21. Common Snipe	*Capella gallinago*
22. Upland Sandpiper	*Bartramia longicauda*
23. Spotted Sandpiper	*Actitis macularia*
24. Mourning Dove	*Zenaidura macroura*
25. Black-billed Cuckoo	*Coccyzus erythropthalmus*
26. Great Horned Owl	*Bubo virginianus*
27. Common Nighthawk	*Chordeiles minor*
28. Belted Kingfisher	*Megaceryle alcyon*
29. Northern Flicker	*Colaptes cafer*
30. Red-headed Woodpecker	*Melanerpes erythrocephalus*
31. Hairy Woodpecker	*Dendrocopos villosus*
32. Downy Woodpecker	*Dendrocopos pubescens*
33. Eastern Kingbird	*Tyrannus tyrannus*
34. Western Kingbird	*Tyrannus verticalis*
35. Say's Phoebe	*Sayornis saya*
36. Western Wood Pewee	*Contopus sordidulus*
37. Horned Lark	*Eremophila alpestris*
38. Bank Swallow	*Riparia riparia*
39. Northern Rough-winged Swallow	*Stelgidopteryx ruficollis*
40. Barn Swallow	*Hirundo rustica*
41. Cliff swallow	*Petrochelidon pyrrhonota*
42. Blue Jay	*Cyanocitta cristata*
43. Black-billed Magpie	*Pica pica*
44. Common Crow	*Corvus brachyrhnchos*
45. Black-capped Chickadee	*Parus atricapillus*
46. White-breasted Nuthatch	*Sitta carolinensis*
47. Red-breasted Nuthatch	*Sitta canadensis*
48. House Wren	*Troglodytes aedon*
49. Canyon Wren	*Catherpes mexicanus*
50. Gray Catbird	*Dumetella carolinensis*
51. Brown Thrasher	*Toxostoma rufum*
52. American Robin	*Turdus migratorius*
53. Swainson's Thrush	*Hylocichla ustulata*
54. Mountain Bluebird	*Sialia currucoides*
55. Townsend's Solitaire	*Myadestes townsendi*
56. Cedar Waxwing	*Bombycilla cedrorum*
57. Loggerhead Shrike	*Lanius ludovicianus*
58. European Starling	*Sturnus vulgaris*
59. Solitary Vireo	*Vireo solitarius*
60. Red-eyed Vireo	*Vireo olivaceus*
61. Warbling Vireo	*Vireo gilvus*
62. Yellow Warbler	*Dendroica petechia*
63. Yellow-rumped Warbler	*Dendroica coronata*
64. Ovenbird	*Seiurus aurocapillus*

65. MacGillivray's Warbler	*Oporornis tolmiei*
66. Common Yellowthroat	*Geothlypis trichas*
67. Yellow-breasted Chat	*Icteria virens*
68. American Redstart	*Setophaga ruticilla*
69. Black-headed Grosbeak	*Pheucticus melanocephalus*
70. Lazuli Bunting	*Passerina amoena*
71. Rufous-sided Towhee	*Pipilo erythrophthalmus*
72. Savannah Sparrow	*Passerculus sandwichensis*
73. Grasshopper Sparrow	*Ammodramus savannarum*
74. Vesper Sparrow	*Pooecetes gramineus*
75. Lark Sparrow	*Chondestes grammacus*
76. Dark-eyed Junco	*Junco hyemalis*
77. Tree Sparrow	*Spizella arborea*
78. Chipping Sparrow	*Spizella passerina*
79. Field Sparrow	*Spizella pusilla*
80. White-crowned Sparrow	*Zonotrichia leucophrys*
81. Song Sparrow	*Melospiza melodia*
82. Western Meadowlark	*Sturnella neglecta*
83. Red-winged Blackbird	*Agelaius phoeniceus*
84. Orchard Oriole	*Icterus spurius*
85. Bullock's Oriole	*Icterus bullockii*
86. Brewer's Blackbird	*Euphagus cyanocephalus*
87. Common Grackle	*Quiscalus quiscula*
88. Brown-headed Cowbird	*Molothrus ater*
89. Western Tanager	*Piranga ludoviciana*
90. Pine Siskin	*Spinus pinus*
91. Red Crossbill	*Loxia curvirostra*
92. American Goldfinch	*Spinus tristis*
93. House Sparrow	*Passer domesticus*

The following reptile and amphibian species were observed on this parcel during the survey:

1. Tiger Salamander	*Ambystoma tigrinum*
2. Plains Spadefoot	*Scaphiopus bombifrons*
3. Great Plains Toad	*Bufo cognatus*
4. Woodhouse's Toad	*Bufo woodhousei*
5. Northern Leopard Frog	*Rana pipiens*
6. Boreal Chorus Frog	*Pseudacris triseriata maculata*
7. Western Painted Turtle	*Chrysemys picta belli*
8. Common Snapping Turtle	*Chelydra serentina*
9. Plains Hognose Snake	*Heterodon nasicus nasicus*
10. Eastern Yellowbelly Racer	*Coluber constrictor flaviventris*
11. Bullsnake	*Pituophis melanoleucas sayi*
12. Wandering Garter Snake	*Thamnophis elegans vagrans*
13. Red-sided Garter Snake	*Thamnophis sirtalis parietalis*

14. Plains Garter Snake *Thamnophis radix*
15. Prairie Rattlesnake *Crotalus viridis viridis*

SUMMARY

In general, the habitats found in this parcel also appear to be healthy and capable of sustaining populations of the birds, reptiles and amphibians found within them. For the most part, riparian habitats on this parcel are still intact.

Five state monitored species were located on the parcel and are identified in the chart above. Habitat for each of these species does not seem to be in danger of decrease at present. None of these species are listed as threatened or endangered in South Dakota.

One Federally listed bird species was found during the survey. A single adult Bald Eagle, a bird listed as threatened by the Endangered Species Act, was located near the confluence of Cascade Creek and the Cheyenne River in November 1999. This bird was, no doubt, a winter transient into the area and should not be considered an indicator of a permanent population. Bald Eagles frequently winter along rivers and streams in the Black Hills.

Although no individuals were observed, suitable habitat exists on this parcel for Black Hills Red-bellied Snakes and Pale Milk Snakes. The Black Hills Red-bellied Snake is a candidate species for Federal listing as a threatened species. While these species may actually be fairly common on their habitat in the area, inventory techniques often miss them due to their behavioral patterns. The Red-bellied Snake is most often seen after rain or periods of high humidity (These did not occur during the survey period.), while the Pale Milk Snake is primarily nocturnal and somewhat fossorial (living underground) during the day.

RECOMMENDATIONS

As stated above, most of the available habitats on this parcel appear healthy. Accipiter Biological Consultants applauds The Nature Conservancy's plans to expand wetland area in the northern section of the parcel. This should expand habitat for a number of reptile, amphibian and bird species. In addition, all efforts should be made to maintain the diversity in plant species and communities in this area.

Again, an added recommendation would be to avoid the use of chemical insecticides and non-biodegradable herbicides anywhere in the preserve boundaries as all of the native amphibians, aquatic reptiles and many of the bird species found in the area could be adversely affected by these chemicals.

ACKNOWLEDGEMENTS

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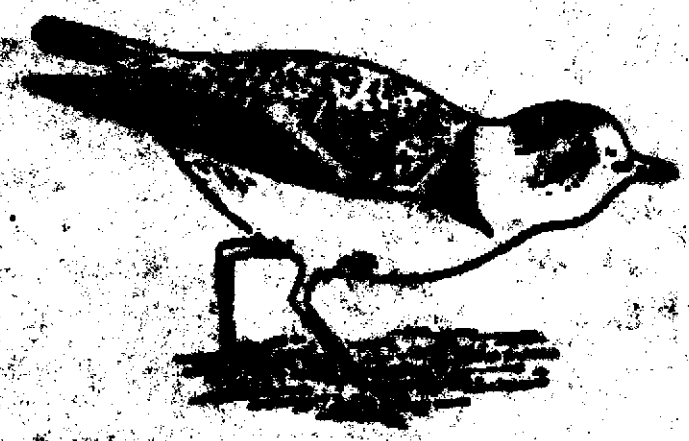
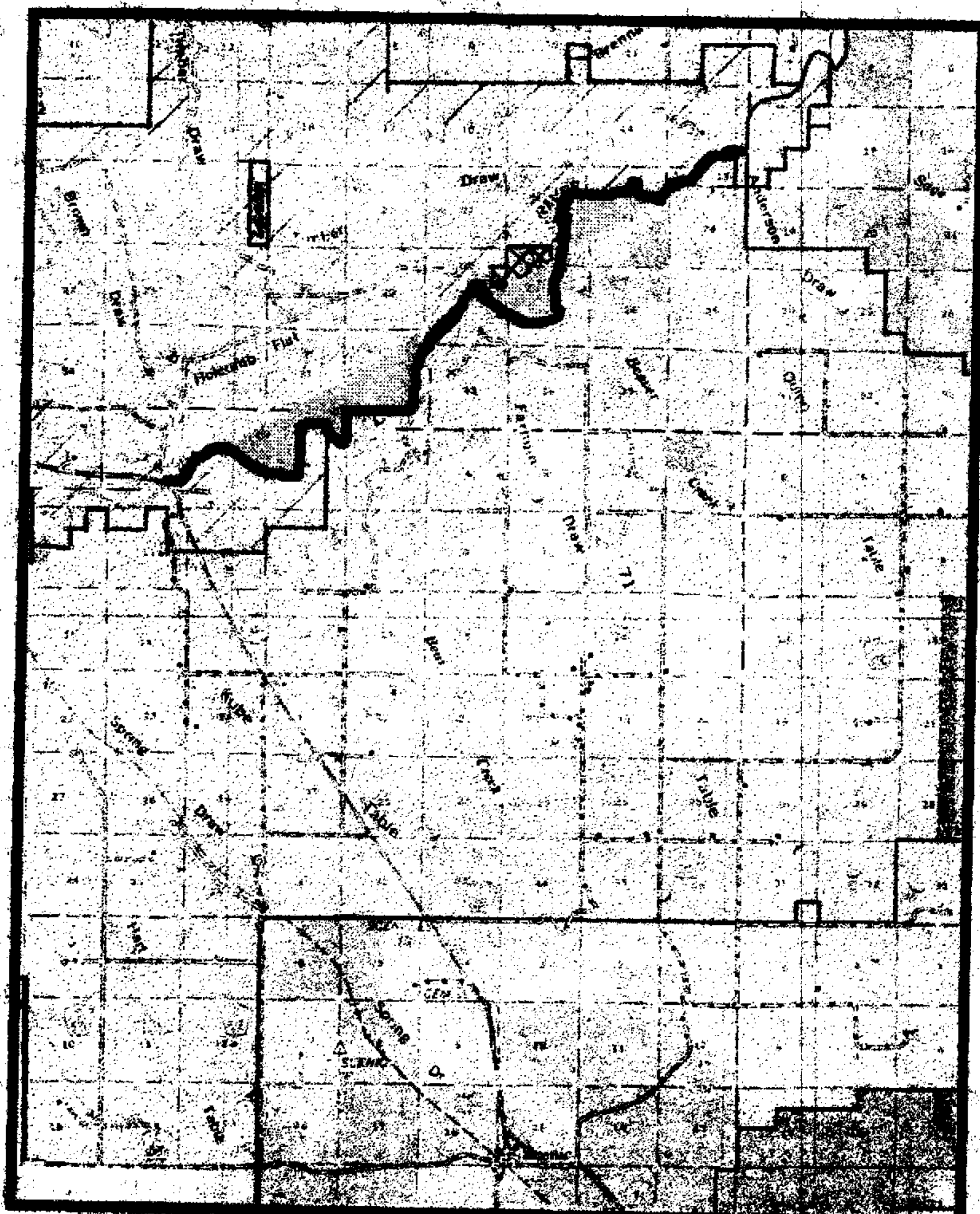
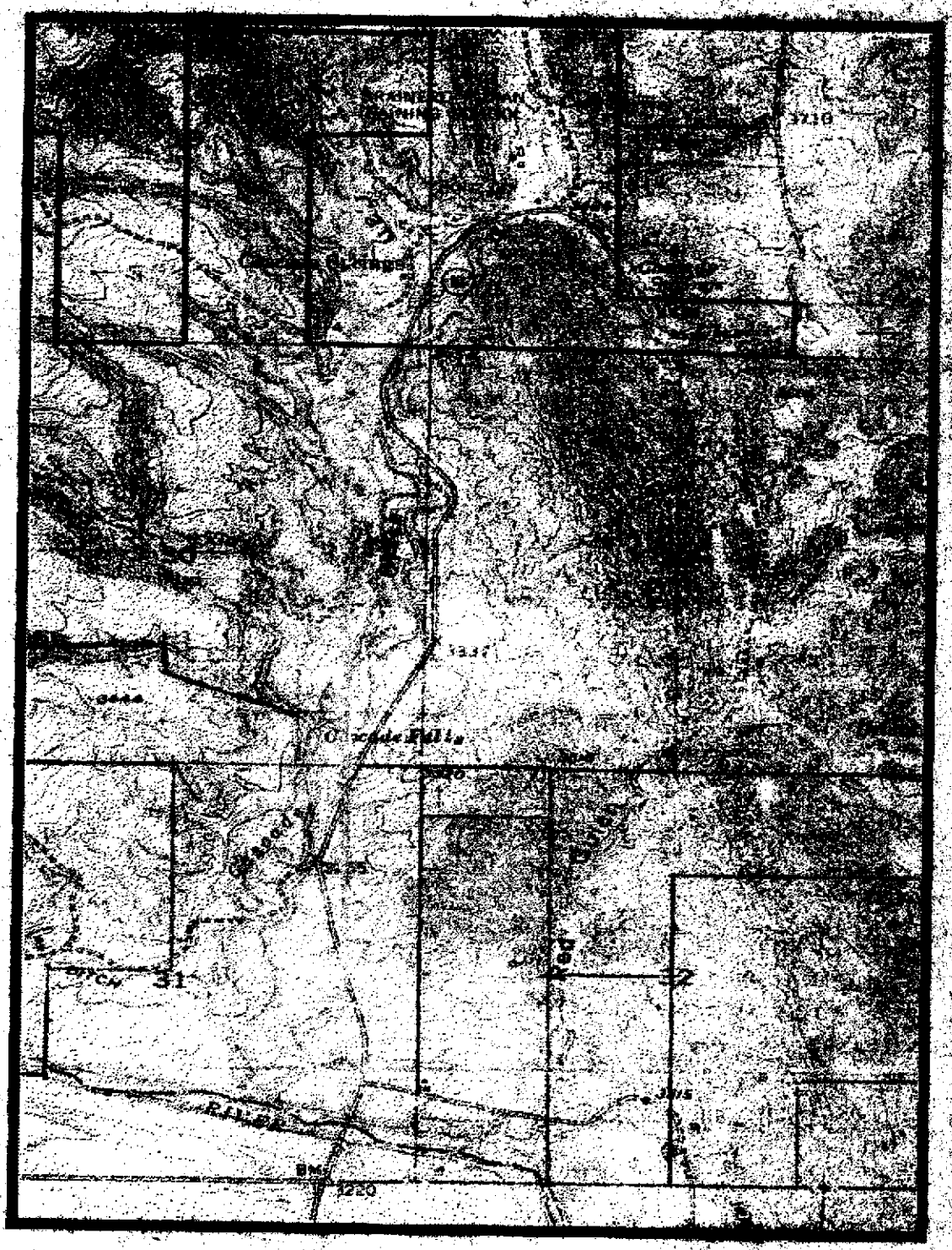


APPENDIX A

MAPS

THE CHEYENNE RIVER TRANSECT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