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## Federal Aid in Wildlife Restoration

Ronald A. Ryder

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FEDERAL AID IN WILDLIFE RESTORATION

FINAL REPORT

EIGHT YEAR HUNTER CHECK

SOUTH PLATTE MANAGEMENT AREA

(Project No. W-37-R-8, Game Bird Survey - Work Plan II, Job No. 2)

Compiled by

Ronald A. Ryder, Wildlife Technician

July, 1955

W-37-R

## PREFACE

This report represents a compilation, analysis and summarization of data collected on the South Platte Management Area and deals primarily with game bird data collected by personnel of Project W-37-R. History, general description, and methods of operation are discussed, and recommendations for future operations given.

Briefly, the South Platte Management Area is located in Logan and Sedgwick counties, comprising over 11, 400 acres of state-owned land in four separate segments. The largest segment (more than 12,000 acres of deeded and leased land) lies along the South Platte River from Proctor to Red Lion. This, and a second area of 240 acres, near the town of Sedgwick, known as Sedgwick Bar, were acquired using Federal Aid Funds, primarily for the purpose of providing wintering and resting sites for migratory waterfowl which frequent this section of northeastern Colorado in greater numbers in winter than anywhere else in the state. These areas are used as public shooting grounds during the regular open seasons. Most of the discussions in this report pertain to these two areas.

The third and fourth segments of the management area are Sand Draw, some ten miles south of Julesburg, and the Smith Property near Crook. Both were acquired to provide all-year habitat for upland game birds, primarily pheasants, with some of the land farmed on a percentage basis and part of the grain left standing for winter feed.

## ACKNOWLEDGMENTS

Most of the lands comprising the South Platte Management Area were acquired under the directorship of C. N. Feast with E. K. Brown as Federal Aid Coordinator. Since 1952 all acquisition, maintenance, and development has been under Thomas L. Kimball, Executive Director, with Laurence E. Riordan as Federal Aid Coordinator. From 1948 to 1953, George C. Steele was refuge custodian resident on the area. He was succeeded by Hugh R. Jones, 1953 to April, 1955 followed by Eugene Bassett, present custodian.

Personnel of the Game Bird Survey (W-37-R) and the Game Management Division, have cooperated with the refuge custodians since the acquisition of the management area, helping conduct surveys, operating hunters' check stations, and making recommendations for management. Until 1952, Harry J. Figge, was leader of Project W-37-R, when succeeded by Wayne W. Sandfort. State Game Manager, Gilbert N. Hunter, and his regional game managers, Clois (Smokey) Till and Harold W. Swope, have always taken an active part in the management of the area. In 1955, when the regional coordinator system was adopted by the Game and Fish Department, immediate responsibility of the South Platte Management Area was placed under the coordinator for the Northeast District, Clois (Smokey) Till. Wildlife Conservation Officers in whose districts the management area lies are William B. Wells and Lloyd Triplet. Wildlife technicians who have worked on the check stations on the area have been R. G. Kinghorn, B. D. Baker, H.W. Swope, H. W. Boeker, I. R. Poley, W. Flinn, F. C. Kleinschnitz, R. Stewart, and R. A. Ryder. From 1947 until 1954, wildlife technicians of the game bird survey project were stationed in Sterling and were especially concerned with the management area. These technicians and their periods of assignment in Northeastern Colorado were R. G. Kinghorn (1947 until 1949), B. D. Baker, (1949 until 1950), and Harold D. Swope (1950 until 1954).

Personnel of the Habitat Improvement Project W-59-D under Project Leader, Glenn Kinghorn, have made various plantings on units of the management area.

History of the South Platte Management Area. --- Negotiations for the Tamarack Ranch portion of the management area were started in October, 1947. At the time of the purchase, appraisals made by the U. S. Fish and Wildlife Service and the Game and Fish Department indicated the purchase to be of the following types of land - (1) deeded land (8,195 acres) of which 700 acres were irrigated meadow (wild-hay), 70 acres sub-irrigated pasture, and 7,491 acres dry-land pasture; (2) leased state land (5,324 acres), all dry-land pasture.

In addition to the Tamarack purchase, use of additional land to the east was acquired by a land exchange agreement made with the Sprague Brothers, effective May 1, 1948. Under this exchange agreement the Game and Fish Department was to receive all wildlife management rights and privileges on all of the Sprague Brothers' lands (approximately 31,000 acres) located in Logan, Sedgwick, Weld and Phillips counties. The most important part of their lands, from a wildlife standpoint, was some three and one-half miles of river bottom joining the Tamarack on the east boundary. In return, the Sprague's were to receive one-half of the hay on the Tamarack Ranch for irrigation, cutting and bailing, and grazing rights to both deeded and leased land on a conservation basis as set up by the Soil Conservation Service and the State Game and Fish Department.

On March 17, <sup>1954</sup> a new exchange agreement was signed with the Sprague Brothers whereby the Department again received the wildlife rights to all the Sprague Brother's land and the right to make certain wildlife improvements. The Sprague Brothers in turn received all haying and grazing rights, the latter subject to good ranch management practices as designated by the Department and the Soil Conservation Service. This agreement became effective May 1, 1954, and extends for eight years.

The Condon purchase of 1,135.56 acres and the Stewart purchase of 596 acres were bought in 1949, adding approximately eight miles of river bottom from the Crook bridge to the old Proctor bridge, all west of the Tamarack Ranch.

The Tamarack Ranch segment was further consolidated in 1950 by the addition of 433.3 acres on the north side of the river known as the Rewerts purchase.

The Sedgwick Bar property of 240.0 acres was purchased in 1947 while the Sand Draw area of 210 acres was bought in 1948.

Use of the Tamarack Ranch and Sedgwick Bar properties as public shooting grounds was first permitted in 1948 primarily for waterfowl hunting, but also for pheasant, bob-white quail, and rabbits. Deer seasons were held on the management area in 1953 and 1954.

The Smith property of 640 acres, two miles northeast of Crook was purchased in 1954 bringing the total of state-owned land in the South Platte Management Area to 11,550 acres, with the department managing wildlife on 2,400 more acres of adjacent leased state school land and about 30,000 more acres of private land through exchange use agreement.

Table 1 summarizes the various land acquisitions comprising the South Platte Management Area.

Table 1.—South Platte Management Area, Colorado, Land Acquisitions

Land Acquisition	Year Purchased	Acreage <u>1/</u>
Sedgwick Bar	1947	240.00
Tamarack Ranch	1948	8,195.00
Sand Draw	1948	210.00
Stewart Property	1949	596.00
Condon Property	1949	1,135.56
Rewerts Property	1950	433.40
Smith Property	1954	640.00
<b>Totals</b>		<b>11,449.96</b>

1/ Acreage of deeded land. The management area also includes 2,400 acres of leased state school land and about 30,000 acres of private land on which the Game and Fish Department manages the wildlife under exchange use agreements.

Description. As mentioned before, the South Platte Management Area is composed of four separate units as follows: (1) Tamarack Ranch (including Condon, Stewart, Rewerts, and Sprague areas); (2) Sedgwick Bar; (3) Sand Draw; and (4) Smith Property. Each unit is described in some detail as follows:

Tamarack Ranch. From a wildlife standpoint, the most important part of the Tamarack Area consists of about eighteen miles of river bottom which averages approximately one-half mile in width. This bottomland is typical of cottonwood river bottom type found on the South Platte River in north-eastern Colorado consisting of an overstory of cottonwood (Populus occidentalis) with an understory of snowberry (Symphoricarpos spp), and various grasses and forbs. The river channel is much divided although not very meandering. Numerous backwater and slough areas exist with dense stands of cat-tail and phragmites. Many of these back channels are impounded by beaver dams. Gravel and sand bars in the river channel are often covered with tall growths of clover.

Because of the flow of the river and some warm-water seeps, there is considerable open water in the winter long after nearby reservoirs have frozen. Thus one finds thousands of ducks, mainly mallards, using the cottonwood bottoms as resting sites. Some food plants such as smartweeds (Polymomum spp.) are present in the bottomlands, but most of the ducks feed in dry-land corn fields some fifteen miles to the south in the Haxton-Fleming area where a definite crop depredations problem exists. Most of the mule deer on the Tamarack range in the cottonwood bottomland where they feed primarily on snowberry (Houston, 1953). Cottontail rabbits are usually

very abundant in the dense rose and snowberry thickets. Quail, and to a lesser extent, pheasants, also occupy this area especially the northern side of the river where they have closer access to field crops. Fur-bearers and predators such as coyotes, minks, raccoons, opossums, beavers, and muskrats also are found in the river bottoms as well as scattered colonies of fox squirrels.

Private cultivated lands and closely cropped pastures border the area on the north. South of the bottomland running practically the entire length of the area are irrigated native hay meadows occupying the river flood plain, varying in width up to one-half mile. West of the Crook bridge these hay meadows are all on private land while east of the bridge most are state-owned. South of the native hay meadows lie higher, rolling sand hills covered with sand sage (Artemisia filifolia) and mixed grasses.

Other than furnishing spring feeding and loafing grounds and possibly some resting grounds for waterfowl, the flooded hay meadows are not of great value to wildlife because of grazing and mowing. Some pheasants and whitetailed jackrabbits are found in and around the hay meadows.

A few isolated flocks of Greater Prairie Chickens are found in some of the sand-sage country usually in "pockets" where not overgrazed. Flocks of antelope, occasional deer, and even pheasants are also found in this vegetative type.

Sedgwick Bar. The Sedgwick Bar property near the town of Sedgwick has some one-half mile of river occupied by rather open cottonwood bottom type, but most of the 240 acres is in native grasslands, (mainly saltgrass, Distichlis stricta) which is either grazed or cut for hay on shares. Although limited in extent, Sedgwick Bar has much the same types of wildlife and seasons of use as found in the river bottoms of the Tamarack. A State-owned house on the area is utilized for housing of State personnel, usually one man and his family, and serves as a check station during the hunting season. Some nine acres have been planted to trees by the habitat improvement project W-59-D.

Sand Draw. The Sand Draw property is somewhat isolated from the other units of the South Platte Management Area lying some ten miles south of Julesburg. Approximately eighty acres are farmed on a percentage basis with the State's share (one quarter of the crop) left standing as winter feed. About 50 acres have been planted to trees and shrubs to provide winter and summer shelter in an area that is flat, open, and treeless (except for farmhouse trees) for many miles in all directions. An earthen dam has been built on the area which impounds water in a small reservoir. Some quail have been released in this unit and it is a proposed site for the release of Hungarian partridge. Occasional ducks utilize the reservoir mainly during migration. Public hunting is permitted on the area, but no check stations have been maintained such as on the Tamarack and Sedgwick Bar properties. This unit comprises one of the study areas utilized by project W-90-R, Habitat Evaluation.

Smith Property. The Smith Property of 640 acres near Crook is about two miles north of the Tamarack Ranch Unit and consists mainly of cultivated land but with considerable marshy salt grass meadowland and some cattail and willow thickets lying along the Harmony Irrigation Canal which crosses the area and eventually feeds into Jumbo Reservoir some six miles to the east. It is hoped this marshy area will provide nesting and resting areas for ducks. It is proposed to plant the cultivated area with corn, maize and other grains to provide food for waterfowl. In addition to waterfowl, pheasants, cottontail rabbits, and occasional flocks of prairie chickens now utilize the area. A house, barn, and other buildings are now present on the area, but may be sold and removed. The area is easily accessible, with county roads on two sides. Like Sand Draw, this area is also being used by Project W-90-R, Habitat Evaluation, as a study area.

Table 2 summarizes the land use on the four units of the South Platte Management Area and briefly lists the species of wildlife affected.

Table 2.—South Platte Management Area, Colorado - Land Use and Wildlife Values

Unit	Approximate Acreages of Cover Types	Wildlife Values
1. Tamarack Ranch (includes Condon, Rewerts, and Stewart purchases and Sprague exchange use lands)	River bottom- 5,000 acres Irrigated meadowland - 770 acres Dryland pasture- 22,348 acres Buildings and roads - 2 acres (Total - 10,360 acres state owned, 2,400 acres leased, 15,360 acres on exchange use)	Waterfowl resting sites; hunting; pheasant, quail, cottontail rabbit, mule deer, beaver, muskrat fox squirrels, 'coon and opossum.
2. Sedgwick Bar	River bottom - 20 acres Grazing of hayland - 210 acres Tree plantation - 9 acres Building and roads - 1 acre (Total - 240 acres)	Waterfowl resting sites; hunting, pheasant habitat.
3. Sand Draw	Croplands - 80 acres Grazing - 80 acres Tree Plantation and reservoir - 50 acres (Total - 210 acres)	Upland game cover and food; some waterfowl resting when reservoir filled.
4. Smith Property	Grazing or hayland - 320 acres Cropland - 319 acres Building and roads - 1 acre (Total - 640 acres)	Upland game food and cover. Possibly waterfowl nesting, resting, and feeding ground.



Method of Operation

Maintenance and Development. The upkeep and repair of improvements (other than for livestock) have been carried out under the supervision of the refuge custodian operating under project W-67-M. Maintenance work has included fence removal and building, repair of houses and other buildings on both the Tamarack and Sedgwick Bar, road repairs, sign posting, fire break construction, and patrol. Development work has been accomplished primarily under project W-56-D, but often in cooperation with W-59-D, the Habitat Improvement project. Development work on the area has included such things as construction of an earth dam at Sand Draw and tree planting at Sand Draw, and on the Tamarack Ranch.

Hunting. All of the units of the South Platte Management Area have been opened either all or in part for public hunting during regulation seasons, but by far the most important has been the Tamarack Unit.

The Sedgwick Bar area has three duck blinds and since 1949 has been operated on a first-come, first-served basis during the waterfowl season. Hunters register in and out, and record the time they hunted and birds bagged under the supervision of a department employee usually the resident of the State-owned house. No regular check stations have been maintained at Sand Draw nor the Smith Property. The latter was only recently acquired and both are primarily important for pheasants as regards to hunting.

Most of the hunting of the Tamarack Unit is quite closely supervised with hunters checking in and out and being assigned specific hunting areas. During the waterfowl season all hunters must check in and out at one check station located at the entrance to the roads which the hunters use to get to the hunting areas. Areas are assigned on a first-come, first served basis, with no fees being charged. It has been a practice to open the station at 4:00 A. M. and remain open until the last hunter checks out after closing hours in the evening. No camping is permitted in the check station area, although hunters have been permitted to arrive early (often the night before) and sleep in line in their cars. The river bottom areas have been divided into approximately forty hunting stations. These stations are at least one-third of a mile apart and are plainly designated by signs along the roads on the south side of the river. The northern boundaries of the management area are also clearly marked. Each hunting party, usually the hunters in one car, are assigned to a hunting station and given a written permit to hunt on this station during the current day only. If a party consists of more than five hunters, an additional station may be assigned. The management area regulations and an outline map of the area are incorporated with the permit.

After receiving their permit, the hunters drive to their hunting stations, park their cars at the signs and walk the shorest route to the river bottom. From this point they are free to move about one hundred yards in either direction. If this general rule is adhered to, there is little encroachment upon the adjoining hunting stations. Numerous warm water sloughs and the river channels provide diversified hunting conditions. The

dense vegetation, typical of the river bottom affords ample cover as natural blinds. No blinds are constructed by the State. When their "shoot" is over, hunters report back through the check station to facilitate the collection of kill data. Other hunters may then be sent into the vacated areas.

During pheasant and quail hunting hours of limited seasons, hunters have been permitted to roam the entire area at will providing they check through the check station coming and going. It has been a practice to permit no rabbit or squirrel hunting during the waterfowl season except during pheasant hunting hours, in order to protect the duck hunting. These measures prevent hunters from roaming over all areas and possibly frightening ducks out of other areas by shooting at rabbits.

During the deer season, hunters check in and out similarly as during pheasant seasons, and are permitted to cover the entire area rather than remain in one hunting station.

Game and Fish Department personnel are on continuous duty throughout the waterfowl, deer, and upland game bird seasons, issuing permits, assigning areas, obtaining kill and other data, and enforcing regulations.

Only on rare days (holidays, opening day of pheasant season, etc.) are all stations occupied and other hunters asked to wait until a spot is vacated before they are allowed on the area. This is done for the sake of safety and to insure each hunter sufficient room to enjoy his hunting.

#### DATA OBTAINED

Waterfowl. Both the Tamarack and Sedgwick Bar units usually enjoy high waterfowl populations during the hunting seasons. The areas are logical resting places for flights from Julesburg (Jumbo) reservoir to the cornfields near Haxtun where the birds feed. Aerial counts on Jumbo before, during, and after the seasons give some indication of waterfowl abundance in the area. In some years, peak abundance of up to 100,000 ducks mainly mallards, is not uncommon. In some years, duck depredations in the Haxtun areas have reached such proportions and complaints have been so numerous as to force the U. S. Fish and Wildlife Service to rally ducks off of Jumbo Reservoir using airplanes, boats, and pyrotechnics. During the mid-1940's, when waterfowl damage in northeast Colorado was most serious, as many as 200,000 ducks were estimated to have been using Jumbo Reservoir.

Table 3. Mid-monthly Aerial Duck Counts, Julesburg (Jumbo) Reservoir, Colorado.

Year	October	November	December	January
1947-48	7,000	1,000	42,000	9,500
48-49	6,400	86,000	80,200	--- 1/
49-50	3,500	16,600	---	---
50-51	3,600	7,100	---	27,300
51-52	3,775	16,100	---	32,000
52-53	---	18,300	30,000	---
53-54	---	35,700	47,500	400
54-55	---	45,000	55,000	4,700

1/ Blanks represent no flights made or no ducks found as reservoir was frozen and ducks were on the river.

Table 4. --Kill Records and Success Data, Tamarack Check Station, 1948-1954  
Migratory Waterfowl Seasons

Comparisons	Year						
	1948	1949	1950	1951	1952	1953	1954
Total hunters	1,016	773	1,370	1,674	1,986	1,931	1,933
Total hours hunted	2,759.5	2,330	4,066	4,463.5	4,787	5,599	5,911
Total birds killed	641	679	1,458	2,795	1,859	1,675	1,274
Birds/hour hunted	.232	.291	.358	.626	.388	.299	.216
Hours hunted/bird	4.305	3.431	2.788	1.597	2.575	3.343	4.640
Birds/hunter attempt	.631	.878	1.064	1.667	.936	.867	.659
Type of season	one	one	2 splits	2 splits	one	one	one
Number of days	34½	44½	35	38	59½	59½	59½
Season dates	11/12-12/16	10/14-11/27	10/6-10/23 12/19-1/5	10/19-11/7 12/14-1/2	10/20-12/8	10/20-12/8	11/1-12/30
Duck hunting weather	poor	poor	fair	good	fair	poor	poor
Peak numbers on Jumbo	86,000	16,600	27,300	32,000	30,000	47,500	55,000

Hunting pressure on the Tamarack Ranch has increased more or less steadily since 1948, the first year it was operated as a public shooting area, until in 1954, close to 2,000 duck hunters were using the area. Table 4 presents a summary of the hunting pressure and season bags based on check station records at the Tamarack. The quality of hunting as reflected by the birds per hunter attempt has been dependent more upon the weather and time of the hunting season than upon the number of ducks in the area. Thus, in 1951, the best season in the history of the management area, the kill was 1.667 per hunter attempt with a peak of only 32,000 ducks on Jumbo, whereas in 1948, the poorest season, the kill was .631 per hunter attempt, but the peak on Jumbo was 86,000, the highest aerial count on record during any of the duck seasons during which the check station was operated.

Hunting pressure (as indicated by hunter attempts) on the Sedgwick Bar Property has run from almost one-third down to one fifth of that on the Tamarack Ranch which is surprisingly high considering that there are only three hunting stations at Sedgwick Bar compared to approximately 40 on the Tamarack. Hunting success (based on either birds/hour or birds/hunter attempt) has run consistently higher on the Sedgwick Bar Shooting Area. However, one cannot logically compare the success on the two areas. The Sedgwick Bar is a small tract that possesses the characteristics of a privately leased area. Many of the same experienced hunters return day after day to permanently established blinds and decoy spreads. On the Tamarack the majority of the hunters are inexperienced and unfamiliar with the area to which they are assigned. Very few of these hunters use decoys or attempt to construct blinds.

Table 5.—Kill Records and Success Data, Sedgwick Bar Check Station, 1949-1954 Migratory Waterfowl Seasons

Comparisons	Waterfowl Season					
	1949	1950	1951	1952	1953	1954
Total Hunters	226	228	280	352	489	521
Total Hours						
Hunted	682	301	765	312	1,105	972
Total Birds						
Killed	205	402	563	374	579	402
Birds/Hour						
Hunted	.301	1.336	.736	1.199	.524	.414
Hours hunted/ Bird	3.327	.749	1.359	.834	1.908	2.418
Birds/hunter attempt	.907	1.763	2.011	1.063	1.184	.772

In general, late seasons with good duck hunting weather i.e., stormy winds, snow cover, and a fairly low temperature, result in better bags on the management area. Grieb and Boeker (1954) have shown that a late season results in not only a bigger kill but a higher percentage of mallards in the bag.

In the seven years the Tamarack Check Station has been operated, some seventeen species of ducks in addition to a few Canada geese and coots have been taken during the migratory waterfowl seasons. The mallard generally makes up over 90 percent of the bag with the green-winged teal being second in importance. Generally, the green-winged teal make up less than 6 percent of the bag, although in 1949, they made up over one-fourth of the bag. The remaining 4 percent or less of the bag is usually fairly well distributed among a variety of species. With the exception of golden eyes and American mergansers, most of the minor species are dabbling ducks, but this is understandable as not much diving duck habitat is found in the management area. This high percentage of mallards in the bag reflects not only the high percentage of mallards in the waterfowl population, but also a preference on the part of hunters to shoot mallards. The percentage of mallards is much higher in the Tamarack bags (91%) than in bags in either the Fort Collins area (84.1%) or the Mile-High Duck Club, Brighton, (28.2%). The comparative scarcity of pintails and baldpates in the Tamarack bag is also quite a contrast compared to bags in the Fort Collins and Brighton areas (Grieb and Boeker, 1954).

Table 6.—Average Species Composition of Kill, Before and After November 15  
Tamarack Ranch Check Station, 1949-1952 <sup>1/</sup>  
(after Grieb and Boeker, 1954)

Species	Kill					
	Before November 15		After November 15		Total	
	No.	Percent Total	No.	Percent Total	No.	Percent Total
Mallard	1,970	82.2	4,389	95.2	6,359	91.0
Green-winged Teal	313	13.1	129	2.8	442	6.0
Early and mid- season migrants						
<sup>2/</sup>	100	4.2	26	0.6	126	2.0
Late migrants <sup>3/</sup>	12	0.5	66	1.4	78	1.0
Totals	2,395	100.0	4,610	100.0	7,005	100.0

<sup>1/</sup> Data consolidated from Colorado Quarterly Reports, January, 1950; January, 1951; April, 1952; April, 1953.

<sup>2/</sup> Includes mainly gadwalls, redheads, lesser scaups, shovellers and blue-winged teal.

<sup>3/</sup> Includes American merganser and American goldeneyes.

The species composition of the bags checked at Sedgwick Bar is similar to those checked at the Tamarack, in that mallards dominate, followed by green-winged teal. However, the first two years of operation, mallards only made up 77.56 percent and 85.32 percent of the Sedgwick bags respectively with green-winged teal making up 15.11 percent and 9.95 percent for those two years (1949 and 1950). The last four years, mallards have made up 95 to 99 percent of the Sedgwick Bar bag and green-winged teal 2 percent or less. The 1949 waterfowl season was the earliest (starting October 14), of the seven so far experienced, on the South Platte Management area. The effect of an early season can be readily seen when one notes that in 1949 only 68.05 percent and 77.56 percent of the bags at the Tamarack and Sedgwick Bar check stations were mallards, when other years the percentages usually exceed 95 percent, (See Table 8).

The mallard sex ratio (males:100 females) of the bags varied from 138 to 238 on the Tamarack and from 206 to an amazingly high 352 on the Sedgwick Bar. The predominance of drakes in the bag reflects not only the distorted sex ratio commonly noted in mallard populations, but also is probably exaggerated by the preference of hunters to shoot drakes rather than hens. This preference probably accounts for the higher proportion of males in the Sedgwick Bar bags as compared to the Tamarack bags. As mentioned earlier, the hunters using the Sedgwick Bar shooting stations are, in general, more experienced than those hunting on the Tamarack Ranch, and thus more able to "pick" drakes rather than hens.

Table 7.--Species Composition of the Waterfowl Kill, Tamarack Check Station 1948-1954.

Species	Waterfowl Season													
	1948		1949		1950		1951		1952		1953		1954	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Canada Goose	-	-	-	-	-	-	-	-	-	-	4	0.24	-	-
Mallard	597	93.14	462	68.05	1323	90.74	2576	92.16	1781	95.80	1583	94.51	1173	92.07
Gadwall	-	-	8	1.17	-	-	11	0.39	7	0.37	11	0.65	6	0.47
Baldpate	-	-	9	1.33	1	0.07	7	0.25	10	0.54	5	0.30	6	0.47
Pintail	3	0.47	5	0.74	13	0.89	12	0.43	5	0.27	19	1.13	5	0.39
Green-w. teal	39	6.08	184	27.09	78	5.35	147	5.26	33	1.78	27	1.61	54	4.24
Blue-w. teal	-	-	-	-	5	0.34	2	0.07	-	-	7	0.42	1	0.08
Shoveller	-	-	4	0.59	1	0.07	7	0.25	-	-	1	0.06	-	-
Wood Duck	-	-	-	-	1	0.07	-	-	-	-	2	0.12	-	-
Redhead	-	-	-	-	-	-	1	0.04	1	0.05	2	0.12	4	0.31
Canvasback	-	-	-	-	-	-	-	-	-	-	-	-	1	0.08
Ring-necked Duck	-	-	-	-	-	-	-	-	-	-	-	-	1	0.08
Lesser Scaup	-	-	1	0.16	4	0.27	8	0.29	1	0.05	2	0.12	-	-
Am. Goldeneye	-	-	2	0.29	13	0.89	19	0.68	1	0.05	4	0.24	5	0.39
Bufflehead	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hooded Merganser- Am.	-	-	2	0.29	-	-	-	-	-	-	-	-	-	-
Merganser	-	-	2	0.29	17	1.17	4	0.14	20	1.08	7	0.42	16	1.26
Ruddy Duck	-	-	-	-	-	-	1	0.04	-	-	1	0.06	-	-
Coot	-	-	-	-	2	0.14	-	-	-	-	-	-	-	-
Other Species	2	0.31	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Kill</b>	<b>641</b>	<b>-</b>	<b>679</b>	<b>-</b>	<b>1458</b>	<b>-</b>	<b>2795</b>	<b>-</b>	<b>1859</b>	<b>-</b>	<b>1675</b>	<b>-</b>	<b>1274</b>	<b>-</b>

Table 8.--Species Composition of the Waterfowl Kill, Sedgwick Bar Check Station, 1949-1954

Species	Waterfowl Season											
	1949		1950		1951		1952		1953		1954	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Mallard	159	77.56	343	85.32	536	95.20	357	95.45	567	97.93	398	99.01
Green-w teal	31	15.11	40	9.95	13	2.31	4	1.07	10	1.73	4	.99
Blue-w. teal	2	0.98	9	2.24	-	-	-	-	-	-	-	-
Gadwall	1	0.49	-	-	1	0.18	1	0.27	2	0.34	-	-
Baldpate	-	-	-	-	3	0.53	-	-	-	-	-	-
Pintail	3	1.46	3	0.75	2	0.35	4	1.07	-	-	-	-
Shoveller	1	0.49	1	0.25	5	0.89	5	1.34	-	-	-	-
Redhead	2	0.98	-	-	-	-	-	-	-	-	-	-
Ring- necked Duck-	-	-	-	-	1	0.18	-	-	-	-	-	-
Lesser Scaup	-	-	-	-	2	0.36	1	0.27	-	-	-	-
Am. Golden- eye	3	1.46	-	-	-	-	-	-	-	-	-	-
Bufflehead	1	0.49	-	-	-	-	-	-	-	-	-	-
Am. Merganser	2	0.98	6	1.49	-	-	2	0.53	-	-	-	-
<b>Total</b>	<b>205</b>	<b>100.0</b>	<b>402</b>	<b>100.0</b>	<b>563</b>	<b>100.0</b>	<b>374</b>	<b>100.0</b>	<b>579</b>	<b>100.0</b>	<b>402</b>	<b>100.0</b>

Table 9.--Mallard and Green-Winged Teal Sex Ratios, Hunters Bags, Tamarack and Sedgwick Bar Check Stations

Year	Mallard		Green-winged Teal	
	No. Checked	M:100F	No. Checked	M:100F
<b>Tamarack</b>				
1948	597	156	39	179
1949	462	138	184	122
1950	1,323	215	78	130
1951	2,576	238	147	167
1952	1,781	205	33	267
1953	1,583	234	27	170
1954	1,173	185	54	68
<b>Sedgwick Bar</b>				
1948	No records kept in 1948			
1949	159	238	31	55
1950	343	206	40	2.6
1951	536	249	13	63
1952	357	352	4	?
1953	567	234	10	43
1954	398	252	4	100



It is not known why the sex ratio of the green-winged teal bag usually runs high to drakes on the Tamarack and high to females on the Sedgwick Bar, unless it is because the sample taken on the Sedgwick Bar is usually too small to be significant.

The degree and success of utilization of the Tamarack public shooting ground by hunters from several geographic regions of Colorado and surrounding states is given in Table 10. Local hunters (mainly those from Sedgwick, Phillips, Logan, Yuma, and Washington Counties) not only are in a majority, usually, but generally account for over half of the ducks bagged. Contrary to the complaints of many local hunters, hunters from Denver and its suburbs do not monopolize the area, and especially not the bag because they are, generally speaking, less successful. This lack of as high a success ratio on the part of metropolitan Denver hunters should not be interpreted to mean they are necessarily poorer hunters than locals, although this often is the case. Local hunters are usually able to come to the shooting area on stormy, hence good duck hunting days, and during the middle of the week when there is less hunting pressure. Hunters from the Denver area usually are able to hunt only on the weekends. The relatively small percentage of the hunters who come from out of state are usually quite successful in their hunting. Most are from nearby Nebraska, but many are servicemen stationed in Colorado.

In 1952, more detailed records were kept than in other years regarding the age and sex composition of the hunting population and the degree of success for the east and west portions of the ranch (Boeker, 1952). These records indicate that most hunters that year were men (94.6%) with a few juveniles (3.9%) and women (1.5%) hunting.

Table 10. Source of Hunting Pressure and Comparative Success, Tamarack Check Station, South Platte Management Area, 1950-54 Migratory Waterfowl Seasons.

Year	Source of Hunting Pressure							
	Local		Denver		Denver Suburbs		Out of State	
	No. of Hunters	% of Hunters	No. of Hunters	% of Hunters	No. of Hunters	% of Hunters	No. of Hunters	% of Hunters
1950	746	55	470	34	154	11	—	—
1951	1,009	60	492	29	96	6	77	5
1952	1,162	59	512	26	223	11	89	4
1953	947	49	585	30	224	12	175	9
1954	926	48	520	27	307	16	180	9
	No. of Ducks	% of Ducks	No. of Ducks	% of Duck	No. of Ducks	% of Ducks	No. of Ducks	% of Ducks
1950	773	53	574	39	111	8	—	—
1951	1,706	61	783	28	159	6	147	5
1952	1,109	60	476	26	187	10	87	4
1953	832	50	471	28	213	13	159	9
1954	668	53	210	16	202	16	194	15

Table 11.--Analysis of Hunters and Site of Hunting Pressure, South Platte Management Area - 1952.

Comparison	Number	Percent Total
Hunters	1,986	---
Men	1,879	94.6
Women	30	1.5
Juvenile	77	3.9
Hunting Parties	813	2.44 (per party)
East 1/	533	68.6
West 2/	244	31.4
Ducks Killed	1,859	---
East	1,257	69.2
West	559	30.8
Ducks Crippled	244	11.6
East	177	75.6
West	57	24.4
Hours Hunted	4,787	2.4 (hrs. per hunter attempt)

- 1/ East denotes that portion of the South Platte Management Area lying east of the check station.  
 2/ West denotes that area of the South Platte Management Area lying west of the check station.

In 1952, approximately two-thirds of the hunters killed 69.2 percent of the ducks on the area east of the check station. During the season 244 ducks were reported to have been crippled and lost by hunters, making up 11.6 percent of the total duck kill.

Winchesters were by far the most common shotguns used by hunters on the South Platte Management area in 1952. The next popular brand was Remington, the two making up 52 percent of the total guns checked. The remaining 48 percent of the shotguns used were of various brands including common models, custom made jobs, and foreign imports.

Table 12. Shotguns used by Duck Hunters on the South Platte Management Area - 1952.

Brand	Number	Brand	Number
Winchester	269	Harrington & Richards	7
Remington	186	Fox	6
Stevens	70	Kessler	6
Western Field	65	Parker	5
Browning	61	Springfield	5
Ithica	57	Marlin	4
J. C. Higgins	29	Other Brands	42
Savage	20		
Mossberg	19		
L. C. Smith	18		
Lefever	8		

Table 13.--Shotgun Actions Preferred by Duck Hunters on the South Platte Management Area - 1952

Type Action	Number
Pump	464
Automatic	162
Double Barrel	120
Bolt Action	67
Single Barrel	62
Over-under	6
Lever Action	3

Table 14.--Gauge of Shotguns Preferred by Duck Hunters on the South Platte Management Area - 1952

Gauge of Gun	Number
10	4
12	661
16	110
20	80
410	17

A breakdown of the types of shotgun actions revealed that the pump repeater, making up 53 percent of the total, was the most common type used by duck hunters. Other actions in order of popularity were automatic, double barrel, single barrel, over-under and lever action. Several unique foreign imports were recorded, including several double barrels superimposed over rifle barrels. The majority of the guns were field grade models.

The common 12 guage guns are very popular with duck hunters. Of the total number checked on the area, 661 (76 percent) were of this gauge. A considerable number of 16 and 20 gauge guns were also used. The heavy 10 gauge and the tiny 410 were represented in very small numbers.

Many field-grade guns are issued from the factories equipped with full choke barrels. Most ducks hunters prefer this hard hitting bore, as revealed by the figures compiled in this study. Of the guns used, 86 percent had full choke construction. Other chokes varied from open cylinder to modified. A total of 46 guns were equipped with variable choke tubes, which allowed for a selection by the hunter.

The most common size of shot pellets used were the 6 chilled, followed closely by 4's and 5's. In addition, several hunters used 2's, 7½ and BB's. A total of 7,704 shots were fired in 1952, averaging 3.9 shots per hunter attempt.

Table 15. --Size of Shot Preferred by Duck Hunters on the South Platte Management Area - 1952

Size of Shot	Number
B.B.	1
2	15
4	201
5	171
6	231
7 $\frac{1}{2}$	11

Table 16. --Type of Choke Preferred by Duck Hunters on the South Platte Management Area - 1952

Choke	Number
Full	609
Modified	110
Mod. and Full	51
Variable	46
Full and Full	6
Cylinder	2
Imp. and Mod.	1
Mod. and Mod.	1
Mod. and Cyl.	1

Table 17. --Species of Dogs used by Duck Hunters on the South Platte Management Area - 1952

Species	Number
Black Labrador	19
Golden Labrador	7
Weimaraner	5
Cocker	5
Chesapeake	4
German Short Hair	2
Golden Retriever	2
Springer Spaniel	2
Fox Terrier	1
Mutt	2

The use of decoys and duck calls is gaining in popularity by duck hunters in Colorado. Figures show that 16 percent of the hunters checked used duck calls with varying degrees of success. Decoys were used by 26 percent of the hunters, with an average number of 12 per set.

A well trained dog is an asset to a duck hunter, especially if the hunting is done in river bottom habitat, with a deep, swift current, "bottomless" sloughs, and dense surrounding cover. Dogs were used by 48 hunting parties in 1952. Table 17 shows the number of dogs of the various species represented.

A total of 197 mallard gizzards were collected during the 1952 season, for the purpose of determining food preference and availability. The various types of food eaten and the percent of each type is revealed in Table 18. A weekly breakdown of the sample does not indicate a food preference trend, however, the total figures reveal the upland food species (grain crops and weed seeds) and aquatic vegetation were taken in nearly equal portions during the 1952 season.

Table 18.--Food Habits of Mallards Taken at South Platte Management Area-1952.

Period	Number of Gizzards	Percent Field Grains	Percent Aquatic Vegetation	Percent Weed Seeds	Total
Oct. 20-25	18	55.28	44.72	---	100
Oct 26-Nov. 1	18	17.78	78.33	3.89	100
Nov. 2-8	21	45.00	38.33	16.67	100
Nov. 9-15	14	51.79	42.50	5.71	100
16-22	49	57.96	36.65	9.39	100
23-29	38	10.53	86.05	3.42	100
Nov. 30-Dec. 6	12	44.17	53.33	2.50	100
Dec. 7-13	17	55.88	35.29	8.83	100
14-18	10	45.00	55.00	---	100
<b>Totals</b>	<b>197</b>	<b>42.60</b>	<b>51.80</b>	<b>5.60</b>	<b>100</b>

Several hundred ducks were weighed during the 1954 migratory waterfowl season at the Tamarack check station. A summary of the weights collected appears in Table 19. Mallard weights collected averaged somewhat higher than post-season weights taken in the Fort Collins area in 1949-51 (Ryder and Grieb, 1950; Ryder, 1951) but were very similar to weights collected during the hunting seasons in other Central Flyway states. Too few weights for species other than mallard were collected to draw any conclusions from them.

Table 19.--Waterfowl Weights Collected at the Tamarack Check Station, 1954 Season

Species	Sex	Age	Number Weighed	Range (pounds and ounces)	Average Weight
Mallard	M	A	346	2 - 2 to 3 -12	2-14.4
	M	I	50	2 - 0 to 3 -5	2-10.4
	F	A	177	1 -12 to 3 -7	2-8.6
	F	I	19	1- 11 to 2 -13	2-3.8
Green-winged Teal	M	A	4	10 to 15 oz.	12.7
	M	I	5	10 to 1 -0.0	13.2
	F	A	3	12 to 15	13.3
Am. Merganser	M	A	5	2-11 to 3 -12	3-5.6
	M	I	2	2-12 to 3 -3	2-15.5
	F	A	3	2-4 to 3- 6	2-12.0
Am. Golden-eye	M	A	1	---	2-2.0
	F	A	1	---	1-9.0
	F	I	1	---	1-14.0
Baldpate	M	I	1	---	2-0.0
	F	I	1	---	1-9.0
Gadwall	M	I	1	---	1-6.0
Pintail	F	A	1	---	1-8.0
Redhead	F	I	1	---	1-12.0

Game Species Other than Waterfowl. Deer hunting was permitted in 1953 and 1954 on the Tamarack Unit. In 1953, the three day, either sex season covered a Saturday, Sunday, and Monday, October 24 - 26. All shotguns (slugs only), rifles and bow and arrows that met the requirements were legal. There was no restriction placed on the number of hunters allowed into the area at one time. The deer seasons in 1953 ran concurrently with the migratory waterfowl season. The duck and deer hunters were permitted to hunt the same areas. In 1954 the area was open for bucks only. Rifles and shotguns were permitted on three days, October 20-22 and bow and arrows were also permitted October 1 through 19. In 1954, the deer season was over before the duck season opened.

In 1953, 93 deer hunters made 108 hunting attempts on the area during the three day season. The first day 42 hunters took 36 deer for an 86 percent success ratio. Fifty percent of the 36 hunters hunting the second day were successful. The last day, 37 percent of 30 hunters hunting bagged their deer. In all, 65 deer were known to have been legally killed on the area in 1953 in addition to which there were four reliable reports of deer taken off the area without coming through the check station. A crippled doe was killed and given to the local school hot lunch program. Three dead deer (beyond salvage) were also reported by hunters. This placed the known deer kill in 1953 at 73.

Table 20.—Hunting Pressure and Deer Kill, Tamarack Public Shooting Grounds, 1953

Date	Hunters	Deer Taken	Success Percent	Bucks		Does		Fawns	
				No.	%	No.	%	No.	%
Oct. 24	42	36	86	19	53	9	25	8	22
Oct. 25	36	18	50	4	22	7	39	7	39
Oct. 26	30	11	37	1	8	5	46	5	46
Totals	108	65	70 1/2	24	37	21	32	20	31

1/ Success is based on the 93 licensed hunters, not on the 108 hunting attempts made by them.

It is interesting to note the distorted sex ratio of the fawn kill. Fifteen of the twenty fawns taken were males. There was little difference between the weights of male and female fawns.

On the basis of beam diameters, number of points, weights, and dentition, the animals checked in 1953 were grouped in three age categories (2 1/3 years and older, 1 1/3 to 2 1/3 years, and fawns).

Table 21.—Weights and Estimated Ages of Deer Checked, Tamarack Public Shooting Ground, 1953

Weights	Bucks		Does		Fawns		Number of Females
	Number of Animals	Weights	Number of Animals	Weights	Number of Males	Weights	
260	1	130	1	80	3		
255	1	125	3	75	1		1
230	2	120	2	70	5		
225	1	115	3	65	2		3
220	1	110	3	60	2		
200	5	105	3	45	1		
190	1	100	2				
185	1	95	3				
175	2	85	1				
170	1						
160	1						
140	1						
135	1						
130	2						
Totals 1/	21		21		14		4

1/ No weights obtained for six deer.

Number of bucks 1 1/3 to 2 1/3 years - 4  
 Number of bucks 2 1/3 years and older - 17  
 Number of does 1 1/3 to 2 1/3 years - 12  
 Number of does 2 1/3 years and older - 9  
 Bucks, average weight - 191 pounds  
 Does, average weight - 110 pounds  
 Male fawns, average weight - 68.5 pounds  
 Female fawn, average weight - 67.5 pounds  
 All fawns, average weight - 68 pounds

Hunting pressure on the area in 1953 was almost entirely local. Four hunters came further than 30 miles away to hunt deer on the Tamarack and they were invited by friends residing locally.

In 1953 no shotgun hunters used the area. Two men hunted with bows and arrows, but neither was successful.

In 1954, 107 big game hunters checked in and out of the area during the three day season and bagged 15 buck mule deer which averaged 166.67 pounds (maximum 230 pounds) hog-dressed. One mule deer fawn was allegedly bagged during the 1954 archery season.

In general, upland game hunting has been permitted on all units of the South Platte Management Area with regulations conforming with those for private land nearby. Usually, however, it has been customary to prohibit cottontail rabbit hunting on the Tamarack and Sedgwick Bar Units during the duck season except during those hours when pheasants and quail may legally be hunted. Table 22, presents what data is available regarding pheasant, bobwhite quail, and cottontail rabbit bags on the Tamarack Unit. Data is not available for other units.

Table 22.--Upland game hunters and Their Bags, Tamarack Check Station, 1952-54.

	1952	1953	1954
Upland Game Hunters	<u>1</u> /	400	935
Pheasant Kill	83	65	61
Quail Kill	40	98	54
Cottontail Kill	308	552	240

1/ Upland Game hunters not kept separate from duck hunters' totals in 1952.

A field trial was held on the Tamarack September 26 and 27, 1953, by the Colorado Field Dog Association. For the occasion, some 200 or more bobwhite were released, many of which were accounted for in the increased quail bag during the hunting season a few weeks after the field trial.

Fox squirrels and raccoon are hunted somewhat on the Tamarack and occasionally opossum are taken. State trappers have removed considerable numbers of beavers from the area while State fur technicians have conducted muskrat trapping studies on the Tamarack, Efforts have been made to introduce bullfrogs and certain warm-water fish in sloughs on the Tamarack, but as yet with little success. Occasionally Wilson's snipe are taken by duck hunters.

Game drives were conducted in 1953, 1954, and 1955 primarily to count deer but during which time records were kept of pheasants, quail, cottontail rabbits and other game. About twenty men participated in each of these drives.



Stationed approximately 30 yards apart, they walked from the Proctor bridge east in the river bottom to the Haxtun Gun Club, only counting those deer that pass through the line. Results of these drives are presented in Table 23.

Table 23.--Game Drives and Aerial Counts, Tamarack Ranch, 1953-1955.

Year	Deer		Pheasant	Quail	Cottontail
	Ground	Aerial			
1953	94	No count	234	91	438
1954	76	46	149	133	262
1955	70	27	289 <u>1/</u>	517 <u>1/</u>	244 <u>1/</u>

1/ Pheasant, quail and cottontail rabbit counts for 1955 recorded in different manner than those in 1953 and 1954 so not comparable with those years.

#### Recommendations for Future Management

1. More development work should be undertaken on all units of the South Platte Management Area. Experimental food plantings and water improvements, such as small dikes and ponds construction, should be tried on the Tamarack Ranch. The major obstacle to be overcome in connection with these developments is a shortage of water. Irrigation water might be pumped from relatively shallow wells for food plantings. Ponds might be filled during the high water period in the spring but there is serious danger of rapid loss of stored water through the previous sandy soil. Investigations are needed to determine the economic feasibility of overcoming these problems.

2. Efforts should be made to purchase or acquire lands on an exchange-use basis to eliminate complications arising from private lands within the management area and irregular boundaries difficult to patrol and post. If possible, out-right purchase should be favored over exchange-use agreements to permit better control and management of the areas.

3. Experiments should be conducted to determine the best means of managing hunting on the units to insure the greatest permissible kill (within limits of good game management practices) to the greatest numbers of hunters and, if possible, help alleviate the duck depredation problems in the area. Construction of blinds, better roads, and car ports; use of food patches and rest areas interspersed with hunting areas; and possibly rallying of ducks off nearby reservoirs are a few techniques that might be employed. It may be necessary to charge hunting fees to finance these improvements and distribute the cost among those who directly benefit.

4. Information on the effects of various management practices on hunting on the South Platte Management Area should continue to be gathered.

5. Closer control of grazing by domestic livestock should be maintained on all units especially those of cottonwood bottomland type.

6. Game species new to the area might be introduced to more fully utilize the various vegetative types present but with caution not to compete with species already present. Hungarian partridge might be introduced on some of the drier farmlands, Eastern wild turkey in the bottomlands and some of the Tamarack Ranch might be used to keep a semi-captive flock of Canada geese to provide goslings for the Canada goose restoration program.

7. Some control of predators (skunks, raccoons, horned owls and possibly crows and magpies) might be valuable to increase the nesting and brood success of game birds breeding on the management area. Placing of the raccoon on the game list (rather than on the furbearers list) might encourage hunting with dogs and bring about the necessary control of this predator at no expense to the Department.

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