

TAMARAC

NARRATIVE REPORTS

JANUARY-DECEMBER 1961

Narrative Report Routing Slip

Mr. Salyer _____

Mr. Ackerknecht Da _____

Mr. Crawford [Signature] _____

Administrative Services

Miss Baum MB _____

Operations

Mr. Fernandez _____

Mr. Regan _____

Public Use

Mr. Dumont PD _____

Mr. Kubichek _____

Mr. Stollberg BOS _____

Resource Management

Dr. Marley LAM _____

Mr. Hickok [Signature] _____

Wildlife Management

Mr. Banko _____

Mr. Stiles [Signature] _____

Mr. Goldman _____

Refuge TAMARAC _____

Period September - December 1961

TAMARAC NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

SEPTEMBER, OCTOBER, NOVEMBER, DECEMBER

1961

U.S. DEPARTMENT OF THE INTERIOR

BUREAU OF SPORT FISHERIES AND WILDLIFE

ROCHERT, MINNESOTA

REFUGE PERSONNEL

Robley W. Hunt Refuge Manager
James L. Stillings Wildlife Aid
Wayne D. Schmidt Refuge Clerk

TEMPORARY EMPLOYEES

Ned L. Larson Tractor Operator
Tom Jones Laborer
Charles Stone Laborer
Clifford C. Boswell Laborer
David A. Annette Foreman II Laborer

C O N T E N T S

	<u>Page</u>
I. General	
A. Weather Conditions	1
B. Habitat Conditions	1
1. Water	1
2. Food and Cover	2
II. Wildlife	
A. Migratory Birds	2
B. Upland Game Birds	4
C. Big Game Animals	4
D. Fur Animals, Predators, Rodents, and Other Mammals	4
E. Hawks, Eagles, Owls, Crows, Ravens, and Magpies	5
F. Other Birds	6
G. Fish	6
H. Reptiles	7
I. Disease	7
III. Refuge Development and Maintenance	
A. Physical Development	7
B. Plantings	8
C. Collections and Receipts	9
D. Control of Vegetation	9
E. Planned Burning	9
F. Fires	9
IV. Resource Management	
A. Grazing	9
B. Haying	9
C. Fur Harvest	10
D. Timber Removal	10
E. Commercial Fishing	12
F. Other Uses	12
V. Field Investigation or Applied Research	
A. Progress Reports	13
B.	
C.	
D.	
E.	
VI. Public Relations	
A. Recreational Uses	14
B. Refuge Visitors	15
C. Refuge Participation	16
D. Hunting	16
E. Violations	17
VII. Other Items	
A. Items of Interest	18
B. Photographs	
C. Signature	20

TAMARAC NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

SEPTEMBER, OCTOBER, NOVEMBER, DECEMBER

1961

I. GENERAL

A. Weather Conditions.

	<u>Snowfall</u>	<u>Precipitation</u>		<u>Max. Temp.</u>	<u>Min. Temp.</u>
		<u>This Month</u>	<u>Normal</u>		
September		3.50	1.96	84	19
October	trace	.52	1.37	81	18
November	.5" snow	.03	3.00	60	4
December	11.05" snow	.61	.75	39	-24
Total	11.55"	4.66	7.08	Extremes 84	-24
Annual Total		13.78	21.19		

September, October, and November again were characterized by lack of precipitation.

Snowfall in December was more than in the past two years, but still not excessive. Temperatures throughout the period were about normal.

B. HABITAT CONDITIONS

1. Water

Water levels in lakes, large marshes, and streams held up well through the period (for waterfowl) although levels did drop somewhat below former late summer levels. A number of the smaller potholes likewise dried up, but there was more than sufficient water for waterfowl in the large potholes, and other lakes and streams.

2. Food and Cover

As usual, aquatic foods were abundant. Submerged types thrived in lakes on which transects were completed. Wild rice grew on greater acreage than anytime previous in recent years - except in Tamarac Lake, where it has not yet recovered (the area it dominated in the early 30's). Geese and ducks made heavy use of the corn, rye, millet, and buckwheat fields on the south shore of Flat Lake; geese made some flights to a summer fallow field just south of the refuge entrance gate (feeding on quack sprouts); ducks, mourning doves and deer fed heavily on buckwheat, barley, and wheat fields east of the refuge pens. All wild rice beds received heavy use by ducks and coot throughout the migration period.

II. WILDLIFE

A. MIGRATORY BIRDS

The refuge received record utilization by ducks and geese. Checking back through fall migration records through 1953, total days use for both ducks and geese exceeded highest preceding years by almost doubling.

Total day's use for 1961 on geese (mainly Canada) was 22,484, compared to 13,076 for 1958, and 6,104 for 1960.

Total duck use for 1961 was 3,184,811, compared to 1,724,170 for 1959, and 1,595,210 for 1960.

Coot utilization was substantial at 1,478,050, but was still exceeded by 1948-49-50 utilization.

The large increase in total duck use is attributed to the drought conditions existing throughout the summer and fall in the prairie migration route to our immediate west, along with a substantial increase in our wild rice acreage, and additional grain fields in the newly developed Headquarters fields.

The large increase in the Canada goose utilization is attributed to the slowly increasing resident flock which is "decoying" more migrants, to our newly developed grain fields in the headquarters area, and to a noticeably increased number of migrant geese passing through the refuge and over adjacent farmlands to our west and east.

Mallards built up to spectacular flocks in the rice beds of Big Flat Lake, Little Flat, and Chippewa. The blue-wing teal also utilized these lakes heavily.

Large flocks of ring-necks fed daily in the bumper rice beds of the Flat Lakes, and later in the bushy pondweed beds of Upper Egg Lake. Upper Egg was also utilized by many baldpate - again feeding along with the Coot, and robbing them of much of their diving efforts on the submerged pondweeds.

Baldpate use was less than in 1960, as was pintail, shoveler, golden-eye, and redhead.

Largest gains over 1960 and many previous years were in mallard - 673,200 in 1960 as compared to 1,085,000 in 1961; blue-winged teal about doubled at 181,734 in 1961; utilization by ring-necks almost doubled over 1960, and scaup jumped from 44,315 in 1960 to 375,410 in 1961.

The unusually large total of use-days indicated as unknown were made up of mixtures of large numbers of birds feeding in heavy rice beds - flushing at long distances, and alighting back in the beds before flock composition could be determined. We do know that the birds were made up mostly of mallards, ring-necks, and scaup with smaller numbers of gadwall, baldpate - perhaps a very few pintail.

Booth Lake again was a good concentration area for mallards in the early part of the season; later large numbers of ring-necks gathered there, and fed daily in the rice beds.

Wood duck reached a new high this year - both for production and for buildup prior to moving out in the fall migration. Chippewa Lake was especially attractive for the wood duck. The flooded timber (now growing a solid stand of rice, which the Indians cannot harvest) on the north side of the road into the Melander fields was often good for 25-50 wood ducks during the early fall.

Throughout much of October the grain and rye fields at Headquarters, and south shore of Flat Lake, attracted 300-500 Canada geese, and 5,000-6,000 mallards daily.

The Canada geese started building up in September, starting from the first early observations of 50-100 geese (which we believe were the year's estimated production of about 50-60 young, along with parent birds, and unmated releases of late 1960, and spring 1961.

Canada geese built up to a peak of 500, and during the same period of October 1 - 21, we observed the first recorded field use of White-Fronted geese - along with 200 snow and blue geese. All of this use was handily observed from the tower at Headquarters, and it proved to be quite an attraction for interested people residing in the area. The addition of up to 30 deer feeding in with the ducks and geese further added to the novelty.

Early feeding of harvested grains played an important part in attracting and holding our refuge-reared geese at the Headquarters site until long after the local duck hunters had given up for the season. We had our refuge-reared fliers utilizing the grain fields, rye fields, and captive goose pens until December 12th; a mild fall and early winter also helped hold the birds, as there was open water in Flat Lake, Chippewa Lake, and others - Many Point Lake was nearly all open during the deer season and for some time after.

B. UPLAND GAME BIRDS

Ruffed grouse populations have held up well. Public hunting in the south end of the refuge did very little damage, although some birds were taken close to several of the public use patrol trails. Considerable checking through various timber types (in process of operating the forestry project) have revealed an excellent early winter population. Predation has been present in the form of Great Horned owls mainly, although we continue to have raccoon, fox, and others which may have some effect. Certainly predation has not been serious - we have too high a residual population for that.

C. BIG GAME ANIMALS

White-tail deer continue in good number. More observations and sign on adults and fawn this year than in the past four. This would be expected because of the fourth consecutive winter in which there was a lack of deep snow, along with mild or normal temperatures. There have been some opinions expressed by local hunters that deer seem to be larger now than when the season was first opened.

At any rate, deer numbers have been reduced from the highs of the late 40's and early 50's, and this should have resulted in greater herd productivity, and healthier specimens.

Further details are reported in the NR forms, and in the hunting write-up.

D. FUR ANIMALS, PREDATORS, RODENTS, AND OTHER MAMMALS

Beaver continue to maintain high enough populations to cause continual trouble by damming controls, plugging culverts, etc. Beaver have been trapped in spring and fall for several years, but they still seem prolific, and the same old sites seem to be occupied annually. Pelt prices remain moderately low.

Muskrat never build up to high numbers here, but seem to favor Dry Lake, upper Chippewa, and then a sprinkling of houses in other marshes where there is wild rice for house materials. It is our belief that the average shallow depths of Tamarac marshes is not conducive to high rat populations - that there is considerable winter loss. Mink populations are not high enough to be a limiting factor in holding down muskrat populations.

Mink seem to maintain rather stable moderate to low populations. Pelt prices remain high, and trapping pressure is heavy throughout the County. We know we have some poaching on mink in some of our more inaccessible northern lakes.

Fox and Coyote remain in representative numbers. Neither have had high populations for some years. We have continued to recommend that trappers remove both, but only token numbers have been taken. At any rate there is no cause for concern as far as abnormal

predation is concerned. The main objective should be to remove surplus numbers wherever there might be opportunity for complaint from neighboring farmers.

Raccoon continue in excessive numbers, and most control efforts have been directed toward reduction of this animal in the vicinity of the several captive goose pens. It is hoped that we can embark on a limited egg poisoning project in the near future.

Skunk continue low in number, but we should continue to dispose of them as opportunity permits.

Snowshoe rabbits seem to have dropped somewhat, although there is considerable variation in numbers from one site to another. We have continued to remove several hundred a year in the immediate vicinity of the winter cutting areas.

In the past these rodents have caused considerable damage to pine reproduction, and an intensive effort on removal in pine areas is justified.

Porcupine have also been a destructive animal over the years. Many fine specimens of white, red, and jack pine, along with some fine tamarack trees have been girdled, badly damaged, or killed outright by porcupine. Here again, we continue to dispose of them whenever possible. Our Indian crew workers report them in the cutting areas; they are then shot by the foreman or refuge personnel - the Indians burn off the quills, take them home, and then stew or roast them for eating.

E. HAWKS, EAGLES, OWLS, CROWS, RAVENS, AND MAGPIES

The usual fall flight of Rough-legged, Marsh, Red-tailed, Pigeon, and Sparrow Hawks passed through in September and October. Smaller numbers of Cooper and Sharp-shinned hawks were also observed.

There were no observations on predation by any of the above species.

Bald eagles in our opinion increased in numbers-both the fall migrants and the resident summer population. It was difficult to determine how many of the eagles observed were produced on the refuge, and how many were actually migrants.

Up until 1961 it was estimated that Tamarac usually supported two nests per year on the average. In 1961 we observed the Flat Lake family, an observation or two on the Carmine Lake nest, an occupied nest on the west side of Egg Lake, and a probable nest near the Ogemamash Crossing.

During the October waterfowl inventories, Bald eagles were observed on numerous lakes. It was difficult to be certain that there was not some duplication at times, but in our opinion there was a definite increase in numbers observed over the previous four years.

Golden Eagles were also observed during fall migration, but in about normal numbers as far as could be determined.

Crows were present in their usual large numbers. Large flocks built up in the vicinity of the grain fields. We had no time to spend on control. It is hoped that we can obtain use of an electronic call, and do some control work during the 1963 spring migration and nesting season.

Ravens have not as yet shown up in numbers, although we have observed a few in the heavier timbered areas.

Magpies are present in greater numbers than observed in the past several years. We observed a number of these predators early in the fall, and have noticed them pretty well spread throughout the area as of December 31.

F. OTHER BIRDS

Great Blue Herons continue to occupy the rookeries in Little Rice Lake and we suspect an additional small colony or two - near the south end of Booth Lake and the other possibly along the Egg River.

Turkey Vultures always appear in the summer months, but as yet we have no evidence of them nesting in the refuge or immediate area.

Shore birds have been observed more frequently the past summer and early fall. We attribute this to the exposed bottoms of the potholes and smaller marsh areas, and also the receded lake levels which exposed more lake bottom along the shorelines - and created much favorable feeding area for the sandpipers and yellowlegs.

Sora Rails continue to be one of the most abundant marsh occupants during the summer months. The potholes (some of less than .5 acre in size) have been utilized by these timid birds on a number of different locations; the larger marshes and rice beds have proven attractive to Soras throughout the refuge.

G. FISH

The Chippewa Lakes continue to produce good fishing of northern pike. Large catches of bullheads are also made at the County bridge. Yellow perch are likewise abundant, and now a few walleye pike are being taken at the bridge fishing site.

Tamarac Lake provided some northern pike fishing again this past fall, and 8 - 10 darkhouses were in use at the end of the period. More darkhouses might have been set up, but thin ice prevailed into late December.

Wauboose and Lost Lakes were closed to public fishing at the start of the rice harvest in late August. Lost Lake provided some fair to good fishing of northern pike but the winter kill in Wauboose in 1959 has caused a very noticeable drop in fishing success in that lake.

H. REPTILES

We have noticed no significant change in reptile populations, with the exception that the snapping turtle population may have been reduced in the Chippewa Lakes area - by permit trapping in the spring months.

In spite of the dry summer months it is believed that observations of the Spotted Salamanders were more frequent than in past years.

I. DISEASE

No evidence or indication of disease, or other abnormal losses.

III. REFUGE MAINTENANCE AND DEVELOPMENT

A. PHYSICAL DEVELOPMENT

Physical Development and accomplishments during this period are listed as follows:

1. Dozed 16 potholes, 65 nesting mounds, 815 feet of channel in September-October. The nesting mounds are peat averaging 6 - 10' tops, surrounded by channels varying from 8' to 50' wide. The dragline constructed 580' of channel around 9 nesting islands in the goose pen - and also dug one waterhole 15' x 50'.
2. Trip to Mud Lake to get information on goose pen construction and operation.
3. Constructed new goose pen, and added new gates, etc. to old ones; added new buffer fencing to prevent predator entry to goose pens; erected pole traps, etc.
4. Purchased, hauled, and installed 5' culvert at new crossing to Chippewa fields.
5. Moved 2-stall garage from Moser tract to sub-headquarters site, levelled ground and set up on concrete blocks - this for equipment storage.
6. Constructed new addition on Manager's residence - painted entire house (exterior).
7. Bladed Bruce Boulevard road four times.
8. 2 trips to Grand Forks for surplus property.
9. Trip to Sand Lake Refuge to transfer property.
10. Dozed loafing bars on Flat Lake shoreline.
11. Dozed approaches and installed new pole gates at seven locations (former farm sites that were being entered at night by deer poachers).
12. Trip to Union Slough Refuge via Minneapolis - delivered diorama and picked up grain.
13. Constructed two new loading docks - at old Nygard and Hanson farm sites.
14. Filled old basement and well at Hopstad tract.
15. Moved old brooder house from Chase tract to Little Flat Lake for rice check station.

16. Dozed access road into Round Lake picnic site - cleaned up old debris.

B. PLANTINGS

1. Aquatic and Marsh Plants

A Total of 2,038 pounds of wild rice was planted during this period.

Previous plantings in Evans Lake have caught well in the north and west ends. 150 pounds were planted along the southwest, south and east shores. Some of the seeding in Stillings Pond had caught, and 143 pounds were planted along the east and northeast shores.

150 pounds were planted in Landrum Lake (the small pond about 2/3 mile north of the Ponsford Road on the east side of the Tea Cracker Trail).

1,595 pounds were seeded in barren areas of Flat Lake - seeding strips commenced at the end of the newly constructed loafing bars and extended toward the old Melander clearing.

In view of the excellent increase in acreage of wild rice on Flat Lake during the past two years of drawdown, and the success of previous rice plantings in this lake - and, the vast expanse of lake that looks like good rice water, it was believed wise to seed as much as possible in this lake.

2. Trees and Shrubs

Nothing planted this period.

3. Upland Herbaceous Plants

Nothing this period.

4. Cultivated Crops

Corn planted on the Flat Lake fields produced just fair - due mainly to lack of rain at the proper time. Spring wheat seedings on south Flat Lake never did develop, so were disced down, and the fields re-planted to fall rye.

Buckwheat and millet plantings on south Flat Lake fields did fairly well, but suffered somewhat from late planting, and lack of rainfall. Early planted buckwheat on new fields east of the headquarters pens did well, and produced a heavy crop. Spring wheat and barley in these same field locations produced a medium crop.

Volunteer millet and buckwheat fields in the Chippewa-Squaw Lake area did fairly well considering the lack of moisture during the critical period of early growth and filling out.

Fall rye plantings caught well in all sites. Detailed crop reports are included in NR forms.

C. COLLECTIONS AND RECEIPTS

1. Seed and Other Propagules

A total of 2,698 pounds of wild rice were collected through the 7 percent refuge share of the Chippewa permittee rice harvest operations on the refuge.

Of this amount 1,595 pounds were planted back into Tamarac waters, and 630 pounds were sold to a local bidder. It deemed best to sell the very first seed taken as it ordinarily contains a higher percentage of immature grains, and is therefore not the best for planting purposes.

We also obtained delivery of a quantity of winter wheat seed from the Union Slough Refuge during this period.

2. Specimens

None collected.

D. CONTROL OF VEGETATION

None by chemicals. We did accomplish some quack control through use of a field cultivator.

E. PLANNED BURNING

None accomplished.

F. FIRES

None during this period. We did have a short period of rather high fire hazard, and were on fire watch during this time.

IV. RESOURCE MANAGEMENT

A. GRAZING

None on the refuge.

B. HAYING

Due to the continued dry spell in this general area there was a brisk demand for hay, and we could have disposed of more than we had. Yield, as would be expected, was down somewhat over the previous year's averages - acre wise.

It is hoped that we may undertake some field studies on how our haying operations may be related to nesting success. It is possible that we may have to alter our haying program somewhat, although we suspect that nesting losses are not too severe.

C. FUR HARVEST

After several years of very poor success with Chippewa Tribal permittee trappers, we have issued permits to two local resident "white" trappers. While we do not have heavy populations of mink, we believe that the Chippewa trappers have not shared 50-50 in some instances. At the same time our Chippewa trappers do not extend effort on removal of raccoon (here again the season commences November 1st, and very often sub-freezing weather has caused the coon to commence winter hibernation). The beaver trapping has had somewhat better success - here, the trapper takes all which is good as the prices on beaver pelts have gone down considerably compared to what they were a few years back.

Details on NR forms.

D. TIMBER REMOVAL

The forestry project has gone well this past year.

The working agreement with the Becker County Welfare Board is still in effect and it has accomplished worthwhile objectives:

1. The refuge has completed timber stand improvement over a large acreage - by thinning extended areas of dense jack pine; there has been much "release" of the more valuable red and white pines; considerable acreages of dense pole-size tamarack have been thinned; fair acreages of balsam pole-size stands have been thinned; much overmature and mature aspen have been harvested and in many cases this has been in stands where the aspen have been suppressing more valuable spruce and balsam, and/or pines of various species; jack pine of sawlog size are being harvested, and in these stands other selective cuttings are being made for removal of pole and post sizes - so that remaining timber of all sizes will benefit by faster growth; mature basswood are being harvested - which in most cases benefits remaining sprout growths; tamarack, Balsam Gilead, spruce, and balsam sawlogs are being harvested, and dense growing pole and post size spruce and balsam are also removed for pulp materials - thus again benefitting the remaining trees by permitting faster growth, clear-cutting aspen (usually for pulp) is an approved method of removing the saleable materials as this usually results in excellent sprouting and the stand is regenerated in the same year as harvested.
2. Rodent control of porcupine and snowshoe rabbit is also accomplished while the crews are cutting in the winter work areas. Crew members snare rabbits, and refuge personnel shoot porcupine damaging the coniferous stands - many hundred pounds of meat are thus obtained by the Chippewa Tribal members.
3. Opening of the stands benefits shrub growths and regeneration of the valuable tree species - thus benefitting grouse and deer from the food and cover standpoint.

4. Bulldozing equipment used for opening haul and skid roads, and for clearing rollways for operation of the portable mills, is also used in the cutting vicinities for clearing off top debris in the numerous potholes; debris is dozed into piles for nesting, or spread along shorelines. We have had mated pairs make immediate use of these dozed areas upon open water appearing in the spring.

5. The bulldozer and one section of a Rome disc are used for winter discing of heavy brush and sod areas - this for exposing mineral soil for encouraging natural re-seeding of valuable tree species. Many areas could not be reached in the seasons when frost is out of the ground. Frozen ground discs quite well.

6. Bulldozers open up and clear old logging trails - which are then available for use in control of fires during the fire season.

7. The County benefits by not having to give direct relief to 25 relief clients during the period of December-June each year - a saving of at least \$2,000.00 per month. Instead, the Welfare office simply advises the claimant that there is work available on the refuge.

8. Most workers can make more than the approximate \$6.00 per day relief order usually granted.

9. Sons of the relief clients often help their fathers in the woods work - we believe this is beneficial in that these newer generations are getting first hand experience in "working" for a living rather than living on a dole and the whims and variations of County relief policies.

10. Stumpage revenue, and revenue derived from processed post sales has increased refuge income. Much of the income is plowed back into the expense of sales operation, but the refuge timber stand has been vastly improved for future harvesting - along with covering current operation costs, and yet showing a "profit" over operating expenses.

11. Operations can be continued indefinitely. We are cutting less than the annual allowable cut for both post and pole cordwood scale, and for sawlog materials.

As of the fourth year of operations we have not yet commenced cutting in the jack pine pole stands north of the Indian Service Road. We estimate three winters operations available in jack pine stands north of the Service Road.

By the time these stands have been thinned (and nearby sawlog stands cut) it will be time to commence another cut in jack pine pole stands first thinned in 1959.

12. Besides providing work for the relief clients, the timber operation provides winter work for 1 - 2 portable sawmills, 2 - 3 local skidders (small tractor operators), 2 - 3 local truckers,

several local pulp, post, and sawlog buyers.

Total season income to local residents has exceeded \$68,000.00.

E. COMMERCIAL FISHING

None on this area.

F. OTHER USES

The wild rice harvest has continued to be a major operation on Tamarac. The fall of 1961 produced the largest rice acreage to-date. Harvest, however, fell below the previous harvests because low water levels in most lakes prevented the rice harvesters from working their rice boats into much of the heaviest yielding beds.

Waterfowl, however, responded and we experienced the heaviest utilization of refuge waters in recent years.

The following information was recorded for the 1961 harvest:

Total number of permits issued - 54

Total number of pickers - 108

Total quantity of rice harvested - 40,585 lbs.

Total share to government - *2,841 lbs.

Total of government share sold
and price received -*630 lbs. for \$220.50

Total quantity rice planted -*1,595 lbs.

*difference is expected loss of water between original weighing and planting or sale

Total quantities harvested by lakes:

		Man-days
Little Flat	11,800 lbs.	72
Upper Chippewa	3,637 lbs.	58
Lower Chippewa	4,301 lbs.	60
Booth	1,758 lbs.	11
Two Island	2,313 lbs.	17
Big Flat	11,303 lbs.	154
Lost	90 lbs.	2
Carminie	3,267 lbs.	16
Squaw	726 lbs.	12
Egg	1,173 lbs.	18
Tea Cracker	217 lbs.	6
Totals	40,585 lbs.	426

V. FIELD INVESTIGATION OR APPLIED RESEARCH

A. PROGRESS REPORTS

1. Waterfowl Utilization of Wooded Potholes

This study was a two-year field study initiated in 1959 by former Student Assistant Roger K. Burnard. Mr. Burnard completed the required field work on the study in 1960, but we have not been advised that he has completed his write-up and thesis as yet.

In any event, continuing field inventories of the same groups of wooded potholes along with observations on numerous other wooded potholes continue to reveal the excellent productivity of these potholes, and their valuable contribution toward refuge waterfowl welfare.

2. Herbicide trials for Wildlife Cover Manipulation

Herbicide trials for wildlife cover manipulation and tree regeneration were completed in the summer of 1960 and a re-check completed in the summer of 1961. The re-check revealed that the applications of the two different chemicals resulted in a partial kill of overstory, understory, and ground cover. As yet it is not possible to determine the longevity effects, and whether or not the vegetative response will be favorable for wildlife or the more desired tree regeneration.

3. Deer Pellet Count Survey

The deer pellet count survey was given a trial application within the previously established aerial spray plots by Wildlife Research Biologist Krefting. His analysis has not been made available to this office as yet.

4. Aerial Spray Plots

The aerial spray plot study was given a further re-check by Mr. Krefting and results of this re-check were presented in a paper at a Society of American Foresters meeting. Mr. Krefting's paper reported that aerial spray of certain timber types on Tamarac caused an increase of more desirable winter deer foods, and a "kill-back" of the undesirable hazel brush.

5. Discing for Pine Regeneration

Two areas that have been disced have now been staked and a check is being made on the amount of natural regeneration obtained by the discing operation. To-date we have observed jack and white pines appearing in the disced areas - as compared to little or no such response in un-disced areas.

We are experimenting with winter discing again, after having some little success in 1961.

6. We are experimenting with removal of peat from dozed potholes - to determine costs, and possibilities of utilizing the peat on our nearby croplands - or possibilities of marketing through the Becker County Welfare Board - and use of relief labor.

7. A number of summer dozed peat nesting mounds (surrounded by channels) and a number of winter dozed mounds of marsh top debris have been constructed adjacent to our captive goose holding pens. We are planning to release some of the 1961 flock in this area - hoping to obtain some good nesting success.

VI. PUBLIC RELATIONS

A. RECREATIONAL USES

It is estimated that use of the picnic areas has been about equal to that of 1960. Group use may have been more than in the previous year, as we know of several large clubs and churches that held organized picnics. The permit issued to the Red River Valley Council BSA resulted in a weekend camporee of over 120 Scouts during this period. A permit was issued for overnight Campfire Girls camping (Detroit Lakes) but the permit was not used.

It is planned to issue a Special Use Permit to the Campfire Girls for continued use of one of the purchased hunting lodges - details on this will not be worked out until next year, at which time more of the lodges will be available.

<u>Date</u>	<u>Name</u>	<u>Organization</u>	<u>Purpose</u>
9/2/61	Paul Nyberg	SCS Detroit Lakes, Minn.	Soil survey
9/5/61	Chippewa Rice Comm.	Ponsford, Minn.	Rice harvest
9/6/61	Howard Huenecke	RO, Mpls., Minn.	Master plan
9/6/61	Art Brazda	"	"
9/7/61	Chippewa Rice Comm.	Ponsford, Minn.	Rice harvest
9/12-15/61	Ben Schaffer	RO, Mpls., Minn.	Land acquisition
9/12-15/61	Ben Turner	"	"
Frequent	Morris Paterson	Hubbel Pond Refuge	Refuge problems
9/19/61	Mr. Dittman	FWS, Washington, D.C.	Master plan
9/19/61	John Umberger	RO, Mpls., Minn.	"
9/21/61	W.J. Ellerbrock	FWS, St. Paul, Minn.	Law enforcement
9/21/61	Mr. Pinkham	"	"
9/26/61	L.W. Krefting	FWS, St. Paul, Minn.	Deer tour
9/26/61	Dr. Hanson	Univ. of Minn.	"
9/27/61	C. Alexander	Rice Lake Refuge	Deliver grain
9/28/61	30 deer mgt. officials	Minn., Wis., Mich., Can.	Deer tour
9/29/61	120 Boy Scouts	Red River Valley Council	camporee
10/5/61	Dave Fisher	GMA, Fergus Falls, Minn.	Law enforcement
10/5/61	Willard Robbins	Editor, Becker Co. Record	Newspaper article
Frequent	Ernest Dow	Hubbel Pond Refuge	Deer patrol & refuge problems
10/10/61	5 State wardens	surrounding counties	Deer patrol
10/12/61	Carl Strutz	Game farm - Jamestown, ND	See refuge
10/28/61	DeWitt Ankenny	Rice Lake Gun Club	Sell club
11/1-12/31/61	Kermit Wilhelm &	RO, Mpls., Minn.	Master plan
11/3/61	Phil Mueller		
11/3/61	Jerry Sevada	State fisheries, Detroit Lakes, Minn.	Co-operation
11/3/61	Paul Nyberg	SCS, Detroit Lakes, Minn.	Soil survey
11/8/61	J. Clawson	Necedah Refuge	Possible transfer
11/8/61	H. VanDyke	RO, Mpls., Minn.	Master plan
12/14/61	DeWitt Clason	Becker Co. Land Comm.	Refuge problems
12/14/61	J.M. Baldwin	Pulp buyer	Timber project
12/18/61	Paul Beckler	State milk insp. Wadena	Refuge problems
Frequent	Ted Abrahamson	State Warden Detroit Lakes	Enforcement

C. REFUGE PARTICIPATION

Participation by refuge personnel as follows:

9/5/61 Hunt attended meeting of Izaak Walton chapter - 15 in attendance.

9/6/61 Hunt met with Detroit Lakes Quarterback Club as one of directors.

9/14/61 Hunt attended meeting of Becker County Sportsmen Club gave talk on predator problems - got OK for limited poisoning project - 50 in attendance.

9/20/61 Hunt attended KMG field day at Cloquet - good information on forestry operations

9/29/61 Hunt gave talk to 120 Boy Scouts and leaders at Pine Lake camporee.

9/30/61 Schmidt showed FWS Diorama at Ducks Unlimited showat Fergus Falls.

10/9/61 Hunt attended Izaak Walton meeting.

10/12/61 Hunt attended Becker County Sportsmen Club meeting - gave short talk and introduced Carl Strutz who showed film on geese.

11/7/61 Stillings showed Tamarac movie to Izaak Walton meeting

11/30/61 Schmidt and Hunt showed Tamarac movie to 40 Detroit Lakes Rotarians.

Schmidt is leader of Holmesville 4-H and has regular monthly meetings, fair exhibit, etc.

Schmidt is completing third year as treasurer of Egelund Lutheran Church.

Stillings showed Tamarac movie to Zion Lutheran Church Brotherhood group.

D. HUNTING

Following is a listing of information obtained by operation of the deer checking station:

<u>Date</u>	<u>Buck</u>	<u>Doe</u>	<u>Fawn Buck</u>	<u>Fawn Doe</u>	<u>Total</u>
11/11/61	12	15	6	4	37
11/12/61	7	8	5	4	24
11/13/61	3	2	4	1	10
11/14/61	1	2	5	1	9
11/15/61	5	2	2	3	12
Total	28	29	22	13	92

Adult Bucks 28
 Adult Does 29 57 61.9% adults

92

Male Fawns 22 35 38.1% fawns
 Female Fawns 13

Ratio of Fawn/Doe - 120:100

Ratio of Buck/Doe - 96:100

1,365 hunter days were expended removing a total estimated 166 deer.
 This compares to 2,132 hunter days removing 150 deer in 1960.

E. VIOLATIONS

<u>Name of Violator</u>	<u>Violation</u>	<u>Disposition</u>	<u>Warden</u>
Dave Roy-White Earth, Minn.	Rice w/over width canoe	\$10.00/4.00	Blixt, Peabody Jovonovich
Clifford Warren White Earth, Minn.	Rice w/over width boat	\$25.00/4.00	Blixt, Peabody
Louis M. Terway Mahnomen, Minn.	Ricing w/o proper license	\$10.00/4.00	Blixt, Peabody Jovonovich
Melvin Little Wolf Naytahwash, Minn.	"	"	"
Ben Skippinthe day Ponsford, Minn.	"	"	"
Joe Sullivan White Earth, Minn.	"	"	"
Ray Jackson White Earth, Minn.	"	"	"
Clarence Thompson Bagley, Minn.	"	"	"
Michael Phelps Osage, Minn.	"	\$4.50	"
Mrs. William Keezer Mahnomen, Minn.	"	Committed 10 days	"
Herbert W. Herbinson Fargo, N.Dak.	Taking trees	\$75.00-5.00	Ellerbrock-Fisher

<u>Name of Violator</u>	<u>Violation</u>	<u>Disposition</u>	<u>Warden</u>
Thomas Fitzgerald Detroit Lakes, Minn.	Uncased firearm in closed area	\$10.00/4.50 (suspended)	Hunt
Richard Halsne Marshall, Minn.	Transport uncased firearm in car	\$10.00/4.00	Schmidt
Barbara Nelson Detroit Lakes, Minn.	Taking deer from public road	\$35.00/4.50 (15.00 suspended)	Hunt
Milton H. Butenhoff Barnesville, Minn.	Transport loaded rifle in car	\$25.00/4.00	Hunt
Erling Jeral Dilworth, Minn.	Transport loaded rifle in car	\$25.00/4.50 (10.00 suspended)	Hunt
Melvin Chapman Pelican Rapids, Minn.	Transport uncased firearm	\$10.00/4.00 (suspended)	Stillings
Vernon Heinen Detroit Lakes, Minn.	Transport uncased rifle	\$10.00/4.00	Schmidt
Roland Pihlaja Osage, Minn.	Trapping w/permit in refuge	\$20.00/4.50	Hunt

F. SAFETY

Safety measures taken during this period consisted of the following:

1. Holders for warning flags constructed on all road vehicles.
2. 4 additional fire extinguishers previously obtained assigned to residences.
3. Chimneys and furnaces cleaned in early fall.
4. New electric outlets installed by licensed electricians.
5. Top of chimney at Peabody residence re-built.
6. 5 additional fire extinguishers at Upper Souris awaiting pickup when combined with other trip.
7. 2 new safety cans obtained from GSA for transporting gasoline in field.
8. Fire brick replaced in furnace at Quarters 11.
9. 4 life vests at Upper Souris awaiting pickup when combined with other trip.

VII. OTHER ITEMS

A. ITEMS OF INTEREST

Land acquisition has caused a new outbreak of refuge criticism by some of those who must sell out to the refuge. We anticipate more of this as the final purchase negotiations are made toward finishing off the remaining private lands still within refuge boundaries.

Verbal assent to selling their lands by the Rice Lake Gun Club (the largest remaining land owner within refuge boundaries) is a hopeful indication that the biggest hurdle in completing land acquisition has been overcome. It is believed by many that when this Gun Club sells out the rest will give in, as the Rice Lake Gun Club has without doubt been most influential in staving off completion of land buying on Tamarac.

In this same connection we are most fortunate in having had the vigorous support of both the Becker County Sportsmen Club and the local chapter of the Izaak Walton League. These two clubs have given strong support when we have needed it most.

B. PHOTOGRAPHS

None.

SIGNATURE PAGE

Submitted by:

R. W. Hunt
(Signature)

Robley W. Hunt
Refuge Manager
Title

Date: January 18, 1962

Approved, Regional Office:

Date: 2-6-62

James D. Carpenter
(Signature)

Regional Refuge Supervisor

WATERFOWL

REFUGE Tamarac National Wildlife Refuge

MONTHS OF September 1 TO December 31, 1961

(1) Species	(2) Weeks of reporting period									
	8/27-9/2 1	9/3-9/9 2	9/10-9/16 3	9/17-9/23 4	9/24-9/30 5	10/1-10/7 6	10/8-10/14 7	10/15-21 8	10/22-28 9	10/29-11/4 10
Swans:										
Whistling Trumpeter										
Geese:										
Canada	100	100	100	100	200	250	500	350	400	200
Cackling Brant							20	12		
White-fronted Snow					150	150	100		10	flights of
Blue Other					50	50	100		10	300-500
Ducks:										
Mallard	5500	8000	12000	15000	30000	30000	30000	12000	8000	3000
Black	10	20	20	100	200	200	200		100	10
Gadwall				100	100	100	100			
Baldpate	60	150	400	300		1300	1200		150	
Pintail				400	100	100	300		10	10
Green-winged teal	60	80	100	100	250	800	300	200		
Blue-winged teal	4262	6000	7000	7000	1500	100	100			
Cinnamon teal						100				
Shoveler						100				
Wood	4100	4000	4500	500	1000	500	200			
Redhead						100	200	100	50	200
Ring-necked	1131	3000	7000	10000	15000	25000	25000	18000	35000	4000
Canvasback							200			
Scaup	50	50	50	50	30	200	200	18000	20000	10000
Goldeneye	50	80	100				50			50
Bufflehead	5		5				50	200		20
Ruddy		10	10							
*Other (Unidentified)		400	930	3400	10000	14000	14000	5000	2500	1000
Coot:	5000	10000	18000	40000	40000	50000	35000	10000	3000	150

3 -1750a
 Cont. NR-1
 (Rev. March 1953)

WATERFOWL
 (Continuation Sheet)

REFUGE Tamarac National Wildlife Refuge

MONTHS OF September 1 TO December 31, 1961

(1) Species	(2) Weeks of reporting period								(3) Estimated	(4) Production	
	11/5-11/11	11/12-18	11/19-24	11/25-12/1	12/2-8	12/9-15	12/16-22	12/23-30	waterfowl	Broods:	Estimated
	11	12	13	14	15	16	17	18	days use	seen	total
<u>Swans:</u>											
Whistling Trumpeter											
<u>Geese:</u>											
Canada	200	60		<u>No Waterfowl Present</u>					17,920		
Cackling											
Brant											
White-fronted										224	
Snow										2,870	
Blue										1,470	
Other											
<u>Ducks:</u>											
Mallard	1500									1,085,000	
Black										6,020	
Gadwall										2,800	
Baldpate										24,920	
Pintail										6,440	
Green-winged teal										13,230	
Blue-winged teal										181,734	
Cinnamon teal											
Shoveler										700	
Wood										103,600	
Redhead										4,550	
Ring-necked	2000	10								1,015,987	
Canvasback										1,400	
Scaup	5000									375,410	
Goldeneye										2,310	
Bufflehead										1,960	
Ruddy										140	
Other (Unidentified)*										358,610	
<u>Coot:</u>										1,478,050	

(over)

	(5)	(6)	(7)
	<u>Total Days Use</u>	<u>Peak Number</u>	<u>Total Production</u>
Swans	0	0	----
Geese	22,484	720	----
Ducks	3,184,811	72,500	----
Coots	1,478,050	50,000	----

SUMMARY

Principal feeding areas Rice beds in Flat Lake, Little Flat, Flat, Chippewa, Egg Lakes, Booth, Headquarters grain fields.

Principal nesting areas

Reported by Robley W. Hunt, Refuge Manager

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) **Species:** In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) **Weeks of Reporting Period:** Estimated average refuge populations.
- (3) **Estimated Waterfowl Days Use:** Average weekly populations x number of days present for each species.
- (4) **Production:** Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) **Total Days Use:** A summary of data recorded under (3).
- (6) **Peak Number:** Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) **Total Production:** A summary of data recorded under (4).

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u>					
Mourning dove	Present	400	No Data		500
White-winged dove					
IV. <u>Predaceous Birds:</u>					
Golden eagle	Present				15
Duck hawk	"				2
Horned owl	"				50
Magpie	2 10/15-20				50
Raven	No data				50
Crow	"				1000
Bald Eagle	"				10-15
Red-tailed Hawk	"				40
Marsh Hawk	"				50
Cooper's Hawk	"				20
Sharp-shinned Hawk	"				30
Turkey Vulture	"				10
Sparrow Hawk	"				10
			Reported by	Robley W. Hunt	

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

Refuge Tamarac National Wildlife Refuge

Year 1961

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
<p>Insufficient data for completing these forms for 1961. Based on data collected and what hunter contacts were made, it is estimated that there was an increase in hunting pressure and that success was very close to 1960. May have been more coots taken this year, mallard and ringneck continued to make up 80% of bag with blue-wing teal a poor third.</p>								

(over)

INSTRUCTIONS

- (1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.
- (2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.
- (3) Record the total number of hours the hunters spent hunting on the refuge.
- (4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).
- (5) Record total numbers of waterfowl bagged.
- (6) Record total numbers of waterfowl reported knocked down but not recovered.
- (7) Total of Columns 5 and 6.
- (8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).
- (9) Kill sample projected to 100 percent. $\text{Column 9} = \frac{\text{Column 8}}{\text{Column 2}} \times \text{Column 7}$.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Tamarac

Months of September to December, 19 61

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
						Hunting	For Re- stocking	For Research		
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage				Estimated number using Refuge	Pertinent information not specificoally requested. List introductions here.
Ruffed Grouse	23,000					150			4000	Population is good - birds are flushed throughout refuge wooded areas
Ring-necked Pheasant	1,000					10			100	Pheasants have increased near headquarters grain fields in the past year
Wild Turkey	5,000 est.					--			5 - 10	Several reports from farm neighbors - they are about gone

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1753
Form NR-3
(June 1945)

BIG GAME

Refuge Tamarac

Calendar Year 1961

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
			Hunting	For Re- stocking	Sold	For Research	Predation	Disease-Accidents	Winter Losses	Poaching	Number	Source	At period of Greatest use	
White-tail Deer	27,600	300	166				20	10	20			1100	930	Buck-Doe 96:100
Black Bear	"		4									15	10	--
Moose	"											2 - 3	--	--

Remarks:

Reported by Robley W. Hunt

INSTRUCTIONS

Form NR-3 - BIG GAME

- (1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.
- (2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge: once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated total number of young produced on refuge.
- (4) REMOVALS: Indicate total number in each category removed during the year.
- (5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.
- (6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.
- (7) TOTAL REFUGE POPULATION: Give the estimated population of each species on the refuge at period of its greatest abundance and also as of Dec. 31.
- (8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

DISEASE

Refuge Tamarac National Wildlife Refuge Year 1961

Botulism None

Lead Poisoning or other Disease None

Period of outbreak _____

Kind of disease _____

Period of heaviest losses _____

Species affected _____

Losses:

Number Affected

	Actual Count	Estimated
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Species	Actual Count	Estimated
_____	_____	_____
_____	_____	_____
_____	_____	_____

Number Hospitalized No. Recovered % Recovered

Number Recovered _____

(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Number lost _____

Source of infection _____

Areas affected (location and approximate acreage) _____

Water conditions _____

No evidence of algae poisoning -or other di seases

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.

Food conditions _____

Many small potholes dried up. All lakes had lower water levels than have occurred in recent years. In spite of this, no evidence of Botulism.

Condition of vegetation and invertebrate life _____

Remarks _____

Remarks _____

3-1756
 Form NR-6
 (April 1946)

FISH

Refuge Tamarac National Wildlife Refuge Year 1961

Species	Relative Abundance	Sport Fishing		Commercial Fishing		Restocking		Number removed for Restocking
		Man days Fishing	Number Taken	No. of Permits	Pounds Taken	Number Stocked	Area Stocked	
Northern Pike	Abundant	No dates (Chippewa, Tamarac, Lost)	700					None
Walleye Pike	Common in Tamarac		150			100,000 300,000	Wauboose Lake Tamarac Lake	
Bullhead	Abundant		1000					
Suckers	Abundant		400					

REMARKS:

PUBLIC USE

Refuge Tamarac National Wildlife Refuge

Calendar Year 1961

Total Use	Hunting	Fishing	Miscellaneous
Visitor-Days 19,951	Use 2,465	Use 1,000	Use 16,486

Where practical, by means of occasional spot checks, or other methods, show by percent and visitor-days the breakdown of the above figures and other related information:

Hunting (on refuge lands):	Percent	Visitor-Days	Acres	Miscellaneous	Percent	Visitor-Days
Waterfowl	_____	<u>900</u>	<u>3200</u>	Recreation*	_____	<u>13,000</u>
Upland Game	_____	<u>200</u>	<u>8000</u>	Official	_____	<u>300</u>
Big Game	_____	<u>1365</u>	<u>29000</u>	Economic Use	_____	<u>2986*</u>
Supervised by Refuge	--	By State	--	No. of Blinds	--	Other
						<u>200</u>

Hunting (off
refuge Lands: Estimated man-days of hunting on lands

Adjacent to the refuge 1,500 (These figures
(down on deer - up on waterfowl)
should not be included in hunting-use totals above).

Comments: *Economic Use Breakdown

Timber Operations	-	2160
Rice Harvest	-	426
Farming Operations	-	360
Fur Harvest		40

Fishing:

Acres of ponds or lakes 3,150 and miles of streams

 open to fishing.

* including picnicking, swimming, boating, camping,
viewing wildlife, and photographing.

PLANTINGS
(Marsh - Aquatic - Upland)

Refuge Tamarac National Wildlife Refuge Year 1961

Species	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount & Nature of Propagules	Date of Planting	Survival	Cause of Loss	Remarks
Wild Rice	Evans Lake	30# acre	5 acres	150 lbs.	8/31/61			
" "	Flat Lake	"	15 acres	450 lbs.	8/31/61			
" "	" "	"	18 acres	535 lbs.	9/2/61			
" "	" "	"	10 acres	295 lbs.	9/6/61			
" "	" "	"	11 acres	315 lbs.	9/7/61			
" "	SW $\frac{1}{4}$ Sec 36 T14OR39	"	5 acres	150 lbs.	9/8/61			Landrum lake n. of Ponsford road in Tea Cracker
" "	" "	"	5 acres	143 lbs.	9/12/61			marsh north of Stillings site

TOTAL ACREAGE PLANTED:

Marsh and aquatic.....69 acres....
Hedgerows, cover patches.....none.....
Food strips, food patches.....none.....
Forest plantings.....none.....

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

PERMITTEE CULTIVATED CROPS - HAYING - GRAZING

Refuge Tamarac National Wildlife Refuge County Becker State Minnesota

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water-fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
Oats	136.85	1905 bu.	45.65	635 bu.			182.5		
Oats (baled)*	18	18 bales	6	6 bales			24.0		
Barley	34.9	315 bu.	11.6	65 bu.			46.5		
Corn**	40.0 (31.25)	60 tons	-- (8.75)	350 bales hay			40.0		
*permittee tried to cut and bale crop which was not harvestable for grain but had to give it up as there was nothing to cut due to extreme drought.									
**corn did not mature to produce ears due to extreme drought conditions. In accordance with para. 5 of co-operative agreement substitutions made as above - permittee harvested crop for silage and refuge received equal value of hay from permittee's farm.								Fallow Ag. Land	43

No. of Permittees: Agricultural Operations 7 Haying Operations 15 Grazing Operations 0

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
Alfalfa, Clover, Brome, Timothy	261.9	380	\$523.80	1. Cattle				
Marsh Hay	12.9	12	6.45	2. Other				
1. Total Refuge Acreage Under Cultivation (Permittee)								336
Hay - Wild	102.7	140	\$154.05	2. Acreage Cultivated as Service Operation				

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

REFUGEE PERSONNEL CULTIVATED CROPS - HAYING - GRAZING

Refuge Tamarac National Wildlife Refuge County Becker State Minnesota

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water-fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested		Unharvested				
			Acres	Bu./Tons	Acres	Bu./Tons			
Fortune Millet			3	15 bu.			3		
Buckwheat			3	20 bu.	6*	60 bu.	9		
Barley					23	345 bu.	23		
Spring Wheat					25	250 bu.	25		
Corn**					10	80 bu.	10		
Fall Rye								Fall Rye	15
Soybeans								Soybeans	3
Volunteer millet					12	120 bu.			
Volunteer buckwheat					6	50 bu.			
Alfalfa								Alfalfa	3
								Fallow Ag. Land	8
*Good yield on buckwheat		**Part of corn failed completely.							

No. of Permittees: Agricultural Operations _____ Haying Operations _____ Grazing Operations _____

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle				
				2. Other				
				1. Total Refuge Acreage Under Cultivation				
Hay - Wild				2. Acreage Cultivated as Service Operation				117

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

REFUGE GRAIN REPORT

Refuge Tamarac National Wildlife Refuge

Months of September through December, 1951

(1) VARIETY*	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED OR SUITABLE USE*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Oats	939		939	16		461	477	462		x	
Barley	139		139			139	139	0			
Spring Wheat	59	100	159			87	87	72	x	x	
Winter Wheat	0	32	32					32	x		
Corn (ear)	125		125			95	95	30		x	
Corn (shelled)	0	100	100			70	70	30		x	
Buckwheat	36		36	11			11	25	x	x	
Millet	10	15	25			18	18	7	x	x	
Rye	152		152					152	x		

(8) Indicate shipping or collection points Detroit Lakes, Minnesota

(9) Grain is stored at Headquarters and Moser granaries

(10) Remarks _____

*See instructions on back.

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.
- (4) A total of columns 2 and 3.
- (6) Column 4 less column 5.
- (7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters granary," etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

COLLECTIONS AND RECEIPTS OF PLANTING STOCK
(Seeds, rootstocks, trees, shrubs,Refuge Tamarac National Wildlife Refuge Year 1961

Species	Collections				Receipts		Total Amounts on Hand	Amount Surplus
	Amount	Date or Period or Collection	Method	Unit Cost	Amount	Source		
Wild Rice	2,698	8/28-9/11/61	harvested by Indians	-	-	-	*	-
* 2,038 lbs. seeded and 660 lbs. sold								

TIMBER REMOVAL

Refuge Tamarac National Wildlife Refuge Year 195⁶¹

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut				
Becker County Welfare Board	Co-operative Agreement	19,24,29,30,31	135	235.68 cords	1.50	\$353.52	Selective 82" posts	Jack Pine				
				170.5 cords	.50	85.25	" 82" cull	"				
				88.94 cords	3.00	266.82	" poles	"				
				41.0 cords	.50	20.50	Dead & down	Firewood				
				4.78 M.B.F.	10.00	47.80	Selective Sawlogs	Jack Pine				
Hank Smith	33072	9,16,28	20	11.75 cords	4.00	47.00	Bolts 8" min. dia.	Jack Pine				
				19.202 M.B.F.	10.00	192.02	Selective Sawlogs	Spruce				
				9.545 M.B.F.	8.00	76.36	" "	Balsam				
				15.26 M.B.F.	8.00	122.08	" "	Tamarack				
				16.34 M.B.F.	4.00	65.36	" "	Aspen				
				1.3 M.B.F.	10.00	13.00	" "	Jack Pine				
				13.30 cords	4.00	53.20	Pulp 12" min. dia.	Balsam				
				59.91 cords	3.00	179.73	" "	"				
				.94 M.B.F.	2.00	1.98	Selective Sawlogs	Balm Gilead				
				53.8 cords	.75	40.35	Pulp 8" min. dia.	Aspen				
				20.65 cords	4.00	82.60	Pulp 14" min. dia.	Spruce				
				E.J. Larson	33079 (scattered sawlogs in thinning area)	19,24,30,31	5	1.13 M.B.F.	10.00	11.30	Selective Sawlogs	Jack Pine
								3.5 cords	4.00	14.00	Bolts 8" min. dia.	Jack Pine
61.8 cords	.75	46.35	Pulp 8" min. dia.					Aspen				
Albert Basswood	34801	18,19,39	8	8.1 cords	3.00	24.30	Selective Poles	Jack Pine				
				11.5 M.B.F.	10.00	115.00	Selective Sawlogs	"				
				4.2 cords	2.00	8.40	Selective Poles	Tamarack				

Total acreage cut over..... Total income.....

No. of units removed B. F. Method of slash disposal.....

Cords.....

Ties.....

TIMBER REMOVAL

Refuge Tamarac National Wildlife Refuge Year 1961

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut
George Stone	34807	20	3	10.28 M.B.F. .5 M.B.F.	10.00 4.00	102.80 2.00	Selective Sawlogs " "	Jack Pine Aspen
Clifford Boswell	33078	29	$\frac{1}{4}$	2.0 cords	3.00	6.00	Selective Poles	Jack Pine
William Norcross	33069	30,31,37	10	53.54 M.B.F. 3.32 M.B.F.	10.00 4.00	535.40 13.28	Selective Sawlogs " "	Jack Pine Aspen
Lincoln Graham	34802	40	12	132.94 cords	3.00	396.72	Pulp 12" min. dia.	Balsam
Wilbur Wilkins	34805	23,30	3	10.96 M.B.F.	10.00	109.60	Selective Sawlogs	Jack Pine
Bernard J. Rock Sr.	33074	30,31	5	19.86 M.B.F.	10.00	198.60	" "	"
Becker Co. Sportsmen	33075	20	1	5.0 cords	4.00	20.00	Pulp 12" min. dia.	Balsam
George Martin	34809	19	3	13.33 M.B.F. 5.92 M.B.F.	10.00 4.00	133.30 23.68	Selective Sawlogs " "	Jack Pine Aspen
Maynard Swan	34806	20,19	4	10.87 M.B.F.	10.00	108.70	" "	Jack Pine
John Bellanger	34808	19	4	10.51 M.B.F. 4.4 M.B.F. .11 M.B.F.	10.00 4.00 8.00	105.10 17.60 .88	" " " " " "	" Aspen Balsam

Total acreage cut over..... Total income.....

No. of units removed B. F. Method of slash disposal.....

Cords.....

Ties.....

TIMBER REMOVAL

Refuge.....Tamarac National Wildlife Refuge..... Year 195⁶¹

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut
Gerald Aken	34803	10	4	11.77 M.B.F.	10.00	117.70	Selective Sawlogs	Jack Pine
Carl Jenson	33073		15	22.2 cords	2.00	44.40	Selective Poles	Tamarack
				.18 M.B.F.	10.00	1.80	Selective Sawlogs	Spruce
				3.77 M.B.F.	8.00	30.16	" "	Tamarack
				.84 M.B.F.	2.00	1.68	" "	Balm Gilead
				3.2 cords	1.00	3.20	Bolts 8" min. dia.	Aspen
				1.64 M.B.F.	8.00	13.12	Selective Sawlogs	Balsam
				8.53 M.B.F.	4.00	34.12	" "	Aspen
David Annette	35702	17,28,38	25	7.55 cords	4.00	30.20	Bolts 8" min. dia.	Jack Pine
				19.1 cords	3.00	57.30	Pulp 8" min. dia.	"
				143.9 cords	.75	107.93	Pulp 8" min. dia.	Aspen
				15.0 cords	1.00	15.00	Bolts 8" min. dia.	"
David Annette	35715	33,34	50	101.75 cords	5.00	508.75	Bolts 8" min. dia.	Basswood
Tom Jones	33080	30	15	19.52 M.B.F.	10.00	195.20	Selective Sawlogs	Jack Pine
Victor Norcross	34804	23,30	20	17.69 M.B.F.	10.00	176.90	" "	"
				5.24 M.B.F.	4.00	20.68	" "	Aspen
Raymond Janson	34811 (removed scattered sawlog spruce)	12,13	50	4.25 M.B.F.	10.00	42.50	" "	Spruce
				.21 M.B.F.	8.00	1.68	" "	Balsam
				.63 M.B.F.	4.00	2.52	" "	Aspen
				7.75 cords	4.00	31.00	Pulp 14" min. dia.	Spruce

Total acreage cut over..... Total income.....

No. of units removed B. F. Method of slash disposal.....
 Cords.....
 Ties.....

TIMBER REMOVAL

Refuge.....Tamarac National Wildlife Refuge..... Year 195⁶¹.....

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut
Richard Linden	33061	2,22	20	5.04 M.B.F.	10.00	50.40	Selective Sawlogs	Spruce
				5.66 M.B.F.	4.00	22.64	" "	Aspen
				5.44 M.B.F.	8.00	43.52	" "	Tamarack
				2.55 M.B.F.	2.00	5.10	" "	Balm Gilead
				3.44 M.B.F.	8.00	27.52	" "	Balsam
Elder Rishof	35709	43	5	1.44 M.B.F.	4.00	5.76	" "	Aspen
				2.22 M.B.F.	12.00	26.64	" "	Basswood

Total acreage cut over 417.25

Total income \$5,258.00

No. of units removed B. F. 323.647 MBF
Cords 1,233.52
Ties.....

Method of slash disposal lopped and scattered