

USE OF MINNESOTA PONDS AND PITS BY WATERFOWL

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IN recent years there has been a significant increase in the construction of ponds and pits for livestock water in Minnesota. This increase was brought about by a need for water to better effect distribution of grazing, by the availability of funds for cost-sharing through the Agricultural Conservation Program, and by the availability of technical assistance through the Soil Conservation Service.

In Minnesota, stock-water pits (dugouts) are less than one-fourth acre in area and about 10 feet deep, but otherwise are similar to those described by Shearer (1960) for South Dakota. Farm ponds in Minnesota average one acre in area and are 12 feet or more deep. They are found in more rolling land where a fill can be constructed that will back up water to flood a draw, gully, or ravine.

In Minnesota, both ponds and pits may be fenced and the area seeded to grass and legumes. In some instances the protected area is partially planted to shrubs and trees. In the case of farm ponds the fence is a minimum of 40 feet from the edge of the water, but on the majority of pits the fence is only 12 feet out, although in some cases the fence may be as far away as 25 to 40 feet.

Minnesota farmers and ranchers constructed 1,902 ponds and pits during the 1962 fiscal year. These brought the total built with technical assistance from the Soil Conservation Service to 6,785. It is significant that many of these water areas were built in parts of the state low in permanent open water important to waterfowl (Mann, 1957).

Some reports received in 1956 showed that ponds and pits were being used heavily by ducks during the spring migration. Other reports from southwestern Minnesota indicated that farmers were able to hunt ducks on their own land for the first time due to the ponds and pits that had been built for livestock water. Because of these reports it was decided that observations should be undertaken to determine wildlife benefits derived by the application of these water conservation measures.

OBSERVATIONS

1957.—Three counts were made of 17 ponds and 7 pits in Lincoln and Pipestone counties in southwestern Minnesota. On 26 April and 16 and 29 May, when the observations were made, 13 (76%) of the 17 ponds and 3 (43%) of the 7 pits were utilized by ducks on at least one of the three visits.

1958.—Three observations were made during the spring migration period on 21 ponds and 36 pits in Lincoln, Pipestone, and Rock counties. The observations were taken on 23–25 April, and 5–6 and 22–23 May. During the three observations, 204 ducks were seen, 160 on the ponds and 44 on the pits, for an average of 7.6 ducks per pond and 1.2

per pit. Eighty per cent of the ponds and 28 per cent of the pits were utilized on at least one of the three visits.

While en route to these ponds and pits, observations were made of ducks on 343 natural wetland areas. Eighty-eight of these were one or more acres in size and ducks were seen on 78 per cent of them. There were 145 wetlands of less than one acre and ducks were observed on 31 per cent of them. In addition there were 110 areas that had gone dry. On 24 April, 25 per cent of the pits were being used by ducks, but only 18 per cent of the small wetland areas were being used. Seventy-eight per cent of the ponds were being used while 61 per cent of the wetland areas over one acre in size were in use. It was concluded, therefore, that ponds and pits compared favorably with the natural wetland areas during the spring migration period.

Blue-winged Teal (*Anas discors*) composed 43 per cent of the waterfowl observed using the ponds and pits. Lesser Scaup (*Aythya affinis*) made up 39 per cent. Other species were Pintail (*Anas acuta*), Mallard (*A. platyrhynchos*), Shoveler (*Spatula clypeata*), Ruddy Duck (*Oxyura jamaicensis*), and American Coot (*Fulica americana*).

Observation in August revealed four broods (three Blue-winged Teal, one Mallard) on four ponds and two broods (teal and Mallard) on two pits. The low utilization by broods is not surprising since all three counties are in an area of low value (Mann, 1955). The observations indicate that the utilization of these water areas by ducks is primarily confined to migrating birds, but that they are of some benefit to birds during the courting and breeding period.

1959 and 1960.—On 6 and 22 May, and 18 June 1959, observations were made of waterfowl use of 14 pits in Mahnom County. This county is in an area of high waterfowl value in northwestern Minnesota. Nineteen waterfowl were observed on seven of the 14 pits.

On 26 May 1960, in a single check of 39 pits built in the fall of 1959 in Mahnom County, 39 waterfowl were observed on 15 pits. Occupied pits averaged 2.6 ducks per pit. Blue-winged Teal and Mallards were the principal species.

FACTORS AFFECTING UTILIZATION

During the 1958 observations, data were recorded on age of the ponds and pits, their water levels, adjacent vegetation, and fencing (Table 1).

Age.—Ninety-four ducks were observed on the nine ponds that were over two years old for an average of 10.4 ducks per pond. Eleven newer ponds had 55 birds for an average of 5.0 ducks per pond. On nine ponds where waterfowl were observed on two out of three spring observations in 1958, only two ponds were less than two years old. The average was 4.2 years. On the 11 ponds where waterfowl were observed once or not at all, 10 ponds were less than two years old. The average was 2.6 years. These data would indicate that the utilization of ponds by ducks increases as the ponds become older. The age of one pond was not known.

Water levels.—Ponds in which the water level did not fall more than 3 feet below the full mark by 22 May 1958 had an average of 9.7 ducks during the observations. Ponds that dropped more than 3 feet from full averaged only 4.2 ducks.

Pits showed similar characteristics. In 21 pits in which the water level did

TABLE I
FACTORS AFFECTING USE BY WATERFOWL OF PONDS AND PITS IN SOUTHWESTERN
MINNESOTA*

	Ponds			Pits		
	No. of ponds	Ducks per pond	Utilization (%)	No. of pits	Ducks per pit	Utilization (%)
Utilization	21	7.6	81	36	1.2	28
Age + 2 years	9	10.4	100	8	1.0	37
- 2 years	11	5.0	64	28	1.3	25
Adjacent cover						
Well-grassed	15	7.2	87	12	2.2	50
Mud or mud-grass	5	0.6	33	24	0.7	17
Water levels						
Stable						
Less than 3' below full	13	9.7	80	21	1.8	33
More than 3' below full	8	4.2	73	15	0.4	20
Fencing						
Adequate	11	7.6	73	23	1.8	39
Inadequate or none	10	7.6	80	13	0.2	8

* April-May 1958. Three observations.

not fall more than 3 feet from full, an average of 1.8 ducks per pit was observed. One-third of the pits observed were being utilized. Of 15 pits in which the water level dropped to a greater extent, only three were used by ducks and these at the rate of only 0.8 birds per pit. Similar findings were reported by Shearer (1960). It was also observed in Mahnomon County in 1960 that pits located on the edge of a marsh and fed by seepage rather than by run-off water were used to a greater degree than pits supplied solely by surface run-off water. The combination of desirable adjacent cover (cattails, bulrush, etc.) and a dependable water level were probably the influencing factors.

Adjacent cover.—Six of the 21 ponds had mud or mud with very sparse grass cover within 40 feet of the water's edge. Thirty-six ducks were observed during the three observations. However, 33 of these ducks were on one eight-year-old pond.

Twenty-four of the pits had mud or mud with very sparse grass cover within the fenced area. Twenty-three ducks used four (17 per cent) of these pits for an average of nearly 0.7 duck per pit during the observations. Six (50 per cent) of the twelve well-grassed pits were utilized by 27 ducks for an average of 2.2 ducks during the observations. Good shore-line vegetation appears to be an important factor determining the use of an area by ducks.

Fencing.—Eleven ponds had stock-proof fences and averaged 7.6 ducks for the period of observation. Ten were not fenced or were poorly fenced, did not

TABLE 2
WILDLIFE USE OF PONDS AND PITS IN MINNESOTA*

	Number	Per cent
Utilized by		
Ducks	311	90
Pheasants	257	82**
Deer	167	48
Geese	60	17
Mink	41	12
Muskrats	17	5
Others***	83	23
Non-utilized pits	5	1

* Landowner report.

** 82% of the ponds and pits were in pheasant range.

*** Raccoons, fox, rabbits, Mourning Doves, Gray Partridge, songbirds.

exclude livestock, and averaged 7.6 ducks for the period. It appears, therefore, that fencing around ponds is not necessary to maintain the quality or density of cover preferred by ducks. Bue, et al. (1952) reported that grazing within the carrying capacity was not detrimental to utilization by breeding birds.

Thirteen pits were not fenced or were grazed inside the fence. Only one was utilized for an average of 0.2 duck during the observations. Twenty-three pits were adequately fenced. Nine (39 per cent) were utilized by 42 ducks for an average of 1.8 ducks during the three observations. It appears that fencing is of value to waterfowl around pits if not around ponds. Logic indicates that pits being much smaller than ponds, grazing within the fenced area is much more apt to be above carrying capacity, thereby destroying the preferred cover.

Loafing sites as a means of increasing waterfowl use of pits.—Fourteen stock-water pits in Wright County, Minnesota, were observed for waterfowl utilization from 18 April through 17 July 1961. Loafing sites were placed on seven pits. The loafing sites consisted of rafts anchored in the middle of the pit and constructed of any material available on the farm. The minimum size of the rafts was 4 × 4 feet. Ten observations of these pits and seven pits without loafing sites were made by personnel of the Soil Conservation District. A total of 109 waterfowl was seen using the pits with loafing sites as compared to 26 on the pits without loafing sites. This amounted to 1.7 waterfowl per observation per pit with loafing site compared to 0.4 waterfowl per observation per pit without loafing site.

Waterfowl observed consisted of 88 Blue-winged Teal, 32 Mallards, 11 Wood Ducks, and 4 American Coot. Only teal were observed on the pits

without loafing sites. One brood of eight teal was on a pit with a loafing site. Only three pits were not used; all three were without loafing sites.

These observations indicate that loafing sites in stock-water pits are attractive to waterfowl and should be highly recommended as an improvement measure. To prove fully the attractiveness of these sites, the plan for 1962 is to remove the existing loafing sites and to place them on the pits that did not have them in 1961. Observations in 1962 would eliminate the influence of the pit location.

REPORTED UTILIZATION OF PONDS AND PITS

During the summer of 1960, 666 postcard inquiries were mailed to owners of ponds and pits in 10 Soil Conservation Districts. A total of 347 (52 per cent) was returned. Twenty species of wildlife were reported by the landowners as using these areas. These ranged from Prairie Chickens to moose, but the more abundant were ducks, geese, deer, mink, and muskrat. Only five farmers reported non-utilization. Extent of use by the major species is given in Table 2. Farmers in Swift County reported 25 broods of ducks in 16 of the 31 ponds and pits.

These observations by the farmers show the value of ponds and pits to wildlife to be greater than determined by my observations.

SUMMARY

Many species of wildlife make use of ponds and pits. Ducks in particular utilize them during the migration period, and to some extent for courting, breeding, and brood rearing.

Apparently good grass shore-line vegetation has the most influence on degree of utilization of ponds and pits by ducks. Stable water levels and age of the area appear to be important secondary influences.

Ducks use ponds more frequently than pits, apparently due to the larger size and the irregular and shallow shore lines of the ponds. Trials indicate that waterfowl utilization of pits may be substantially improved by installing loafing sites.

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