

## SECTION G, CONSERVATION

### Waterfowl Inventory on Small Flood Prevention Reservoirs in Western Oklahoma

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Since the first Watershed Protection and Flood Prevention project was completed in Oklahoma in 1953, several hundred small lakes have been built as part of this program. Administered by the Soil Conservation Service, USDA, the primary purpose of the program is flood prevention by retarding run-off rainfall on watersheds while conserving and better utilizing soil and water resources.

Tens of thousands of ducks migrate through western Oklahoma each fall and spring, yet few linger during hunting season or spend the winter. In fact, in previous mid-winter waterfowl inventories, Ellis and Roger Mills counties have been omitted from the state-wide master plan because so few ducks and geese were known to be there. The master plan for estimating total waterfowl populations in Oklahoma was based upon information from sample areas in several ecological units of the state (Files, Oklahoma Wildlife Conservation Department).

In order to ascertain waterfowl utilization of small flood-detention reservoirs, five aerial surveys were made in November and December 1960 and January and March 1961. Concurrently, waterfowl on larger reservoirs in western Oklahoma were inventoried also.

Geese were rare but ducks were common to abundant on small lakes. Two out of three times there were more ducks on small flood-detention lakes than on all large reservoirs in western Oklahoma combined, except Great Salt Plains where a National Waterfowl Refuge has been developed.

#### METHODS

Five waterfowl inventories were made from a Cessna 170 airplane with pilot<sup>2</sup> and observer. Daily flights were made between 10:00 a.m. and 3:00 p.m. Surveys of small lakes and large reservoirs were made the same day or on successive days.

The upper portion of the Washita River watershed, from a point 10 miles north of Mountain View, Oklahoma to the Texas border, was selected for this survey. According to a map prepared by the Soil Conservation Service (Anon., 1960), 221 structures were completed or contracted in the survey region on June 30, 1960. This included structures on 16 small watersheds in Roger Mills, Beckham, Dewey, Custer and Washita counties.

After a reconnaissance flight from Clinton to Cheyenne, 28 November 1960, to see if waterfowl were using detention lakes, about 20 percent of the lakes in the survey region were selected for repeated inventories. All three impoundments on Beaver Dam Creek watershed, all six on Panther Creek, all 12 on Turkey Creek plus Clinton Lake, 15 of 22 on Sandstone Creek and six of 64 on Barnitz Creek were surveyed. Two flights were

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<sup>2</sup>I wish to express gratitude to Pilot E. D. Gray, who trained me to estimate waterfowl numbers from an airplane, and for his enthusiastic participation in all our waterfowl surveys.

made in December 1960 and one in January and March 1961.

Of the 43 lakes surveyed 23 were turbid, 19 were clear, and one was dry. In clear lakes aquatic plants were obvious from the air, whereas in turbid ones they were not.

Most small flood-detention lakes in Oklahoma are larger than farm and ranch "stock" ponds. Among the lakes actually surveyed, the permanent pool ranged from eight to 115 acres, and averaged 29 acres. The median size was 19.5 acres. Clinton lake had 335 surface acres.

Large reservoirs in western Oklahoma were Lugert (Altus) (6600 acres), Ft. Cobb (4100), Canton (7700) and Ft. Supply (1800) in addition to Great Salt Plains Lake with the National Waterfowl Refuge. Foss reservoir had not been impounded.

### RESULTS

Ducks were common to abundant on small flood-detention lakes each time they were surveyed (Table I). From 30 to 68 percent of the lakes were occupied by ducks during the various surveys. The average number of ducks per occupied lake ranged from 54 to 88 on the five flights.

On individual lakes there were as many as 600 ducks and as few as one. One lake had 600 ducks and 600 coot at one time. For all flights, on occupied lakes only, the median number of ducks was 35, the average 73.1. One lake, not included in the aerial survey, had about one thousand ducks in November 1960.

On two out of three concurrent surveys more ducks were estimated to be present on the upper portion of the Washita River watershed, on small flood-detention lakes, than on Ft. Supply, Canton, Ft. Cobb, and Lugert lakes combined (Table II).

Ducks utilized clear lakes more extensively than turbid ones. Among the lakes used 89.5 percent of the clear ones and 52 percent of the turbid ones were occupied one or more times.

Larger lakes attracted more ducks than small ones. Groups of 100 or more ducks were observed only on lakes with 26 or more surface acres.

Small ponds were numerous in the region, but ducks were rarely seen on them during this survey. However, the following year ducks were

TABLE I. Duck inventory on the upper portion of the Washita River watershed in western Oklahoma, November 1960 to March 1961.

Date	Lakes Surveyed				
	Number Surveyed	Percent Occupied By Ducks	Number Ducks Observed	Average Number Ducks*	Estimated Number Ducks in Region**
Nov. 28, 1960	28	68	1,304	69	10,267
Dec. 15, 1960	43	44	1,676	88	8,595
Dec. 28, 1960	37	30	613	56	3,649
Jan. 4, 1961	43	49	1,127	54	5,779
Mar. 22, 1961	22	50	695	63	6,962

\* On occupied lakes only.

\*\* There were 221 lakes in the survey region.

TABLE II. Comparison of duck populations on upper Washita River watershed and four large lakes in western Oklahoma, fall and winter 1960-1961.

Date	Ducks on Upper Washita River Watershed	Ducks on Large Lakes in Western Oklahoma*				Total
		Ft. Supply	Canton	Lugert	Ft. Cobb	
Nov. 28, 1960	10,287	2,000	1,550	1,821	3,760	9,131
Dec. 15, 1960	8,595	4,600	5,400	3,519	2,490	16,009
Jan. 4, 1961	5,779	1,500	1,587	887	1,150	5,124

\* Great Salt Plains Lake with waterfowl refuge not included.

common to abundant on farm ponds in some regions of the state.

Two Canada geese were seen on small watersheds: one at Clinton Lake and one on a Beaver Dam Creek impoundment.

Most ducks identified on small detention lakes were mallards, about 74 percent. Other species present were mergansers (12 percent), gadwall (10), canvasback (2) and teal (2).

#### DISCUSSION AND CONCLUSIONS

Small flood-detention lakes were heavily utilized by a moderate number of ducks. The number of ducks on a pond or lake was roughly proportional to its surface acreage. Among farm ponds and small lakes, those up to 115 surface acres in size, ducks were most abundant on large, clear ones.

The increase in number and size of small lakes in Oklahoma should increase hunting opportunity, since ducks will be more evenly distributed over the state. Hunter access may be limited, however, since most flood-detention lakes are on private land.

Roger Mills county should no longer be considered virtually devoid of ducks during fall and winter. The first two inventories were made during duck season, between October 20 and December 18, 1960. Sixty of the 221 detention lakes in the survey region were in Roger Mills county. Some of the best duck lakes, those on Beaver Dam and Sandstone Creek watersheds, were in this county.

#### MANAGEMENT SUGGESTIONS

Ducks now are common on watershed detention lakes in western Oklahoma. The three basic elements essential to attracting migrating ducks are: clear water, food and protection from hunting or very little shooting pressure. Potentially, there is increased hunting opportunity. However, history of duck hunting on farm ponds in Oklahoma has shown that as shooting pressure increases, the ducks migrate (Dodson, 1953).

In order that hunters may be able to hunt without driving off the resource, the following types of management should be considered.

*On lakes already constructed.* (1) Below some detention lakes grain sorghum could be produced on flat or gently sloping land, dyked at very little expense, and flooded in fall with water from the reservoir. (2) After ducks consume aquatic plants in the lake, within 15 inches of the surface, lower the water level two or three feet in fall (Barstow, 1957; Copelin, 1962). (3) On lakes with shallow water, draw the water level

down three feet in June or July, sow smartweed (*Polygonum* spp.) or Japanese millet (*Echinochloa crusgalli* var. *frumentacea*) on mud flats, then refill the lake in fall, flooding crops (Davison and Neely, 1959; Anon. nd.). This practice is recommended for eastern Oklahoma only, where run-off in fall is more likely to be ample to refill the lake within a short period of time. (4) For cover or concealment of ducks or hunters, roundstem bulrush (*Scirpus* spp.) is recommended. It is preferred to cattail, since bulrush produces seeds ducks frequently consume, whereas cattail does not (Martin and Uhler, 1951). (5) Hunt only in the morning; prohibit human activities around the lake after noon. (6) In south-central and eastern Oklahoma leave trees standing in and near the permanent pool for wood ducks.

*On new lakes.* (1) Before construction, plan for an automatic water level control structure. The simple slot with stop logs is acceptable (Davison and Neely, 1959; Anon.). (2) After the dam is constructed, while grass cover is being established on the dam but water is not being impounded, plant sorghum or Japanese millet in the lake bottom. After crops mature leave them standing, and begin impounding water in fall. (3) As water is being impounded plant with sago pondweed (*Potamogeton pectinatus*) and broadleaf pondweed (*P. nodosus*). These plants do best when planted in April and May (Martin and Uhler, 1951).

One watershed lake, not a part of the aerial survey, held about one thousand ducks during open season. With management, duck usage should be multiplied several times. Perhaps these small detention lakes would serve as good focal points for development of small duck refuges. In contrast to large refuges they would distribute ducks well for hunters, minimize chances of spreading diseases among ducks, and lessen possibilities of crop depredations associated with vast numbers of birds.

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