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Beaver in Iowa

W. W. Aitken
Iowa State Conservation Commission

BEAVER IN IOWA

W. W. AITKEN

Beaver are generally assumed to have become extinct in Iowa, therefore the average Iowa citizen is startled when newspapers announce in headline type beaver activity in some apparently remote district of the state. These largest of all American rodents are not at all uncommon today in parts of the state. In fact, the increase of beaver population the past four years has now reached a point where their management presents a definite conservation problem.

A survey of beaver distribution has been made and notes recorded concerning several phases of their habits in relation to soil erosion, reforestation, drainage, agricultural practices, and fish management.

Beaver are native to Iowa. The writer has collected beaver teeth from Broken Kettle Mound in Plymouth County,[1] which is substantial evidence that beaver lived in the Big Sioux River area, many years ago just as they do today. No doubt beaver meat ranked high on the Iowa aborigine's diet, as it did with the Indians in later times.

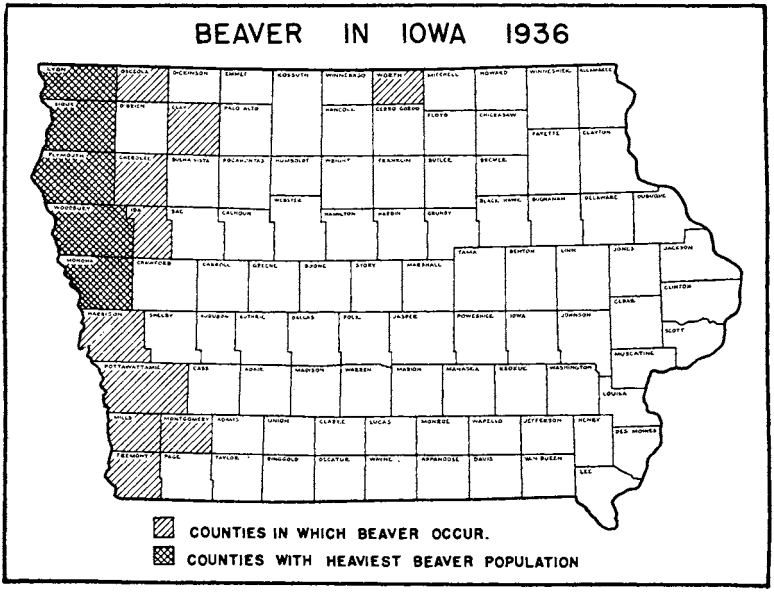
The credit for the distribution records included here is given to the Conservation Officers of Iowa. A questionnaire was prepared and mailed to each officer who was able to give accurate information on number, date of occurrence, and activity of beaver in his respective territory. In a survey of the fisheries of Iowa, the writer has made observations on many of these beaver sites and here records these data so that future investigators may have a definite base map on the occurrence in Iowa of *Castor canadensis*.

Pratt [2] is authority for seven sub-species of *Castor canadensis*. Seton [3] lists 13 races of *C. canadensis*. Because these separations are based largely on range, size, and coloration of the animal, we may say that the Iowa rodent is *C. c. Missouriensis*, even though W. W. Trusell of Sioux City trapped a beaver in 1936, weighing 71 pounds. This animal ranked in size much above the average for the Michigan species.

Excellent accounts have been published concerning the life his-

1 The Broken Kettle Mound is a large refuse dump of early American Indians. It is located on Broken Kettle Creek about one mile from the Big Sioux River.
2 Manual of Vertebrates, 1935.
3 Lives of Game Animals. Vol. IV, Part II, 1929.

tory of beaver. To date beaver in Iowa have exhibited known tendencies in life habits and our purpose here is to point out the effect that such activities have on the present day conditions of an agricultural state.



The accompanying map shows the 1936 distribution. With only one exception (the colony in Worth County) all Iowa beavers inhabit the Missouri River drainage basin. One reason for this is immediately obvious. On the "Big Muddy" and her "Little Muddy" tributaries, grow in adventious abundance, cottonwood (*Populus deltoides*) and willow (several species of Salix) and very sparingly, the beavers' favorite food in northern and northwestern regions, the quaking aspen (*Populus tremuloides*).

The definite increase of beaver colonies in Iowa may be caused by the sustained drought periods that have affected the region northwest of Iowa; the attendant lower water levels forcing the beaver farther down the Missouri River. It follows, however, that where the natural habitat of these animals is left undisturbed and rigid protection is exercised the beaver abounds. Both of these factors have existed for the past few years in western Iowa and may explain the presence of an increasing beaver population.

Investigation of many of the cuttings shows that beaver seem to have a preference for cottonwood over willow. However, on the Big Sioux River, willow cuttings make up a large portion of this

work, while on the Missouri River, as illustrated by Figure 1, large cottonwoods are often chosen where willow is abundant.

Two types of cuttings are observed. In one type, stumps three and one-half to five inches in diameter are severed as by a single

Fig. 1. Cottonwood grove on bank of Missouri River. The tops were removed and stored.

axe stroke, while in other cuttings of the same size and species of trees, the circumferential type of gnawing is made. The single cottonwood in Figure 2 measured 42 inches in circumference. The apex of the gnawed stump is 18 inches from the ground. The chips from the cottonwood average two and one-half inches long for the larger trees. Chips from aspen cuttings average almost twice longer than cottonwood. It is possible aspen cuts easier than cottonwood. In nearly all cuttings the majority of the stumps, regardless of species, average between 14 and 18 inches in height, although some stumps range to 27 inches high. This demonstrates that beaver of large size did the work.

When a tree is felled on a high bank the smaller branches are cut into lengths that average three to five feet long and range from one and one-half inches to three inches in diameter. These pieces are skidded into the water near the den, and one end of each stick pushed into the mud in such manner that the entire piece is securely anchored and submerged. This system of storing the cuttings provides fresh bark at all times for the hungry beaver. When the sticks have been stripped clean of all bark they are released to float away.

Fig. 2. Demonstrates circumferential cutting.

Figure 3 shows a "slide" where cuttings have been dragged into the river; note also, the ventilating hole of the den, the entrance to which is below the water level.

The tree cutting has been described in detail to show how easily beaver work may accelerate bank erosion or even cause erosion

Fig. 3. Slide used by beaver to get timber into water.

that would otherwise not occur. This erosional danger is looked upon with alarm, and rightfully so, by the farmer affected. In cases where beaver activity presents possible harm to farm land the Superintendent of Game for Iowa, Mr. Taylor W. Huston, has formulated plans for living-trapping such animals and removing them to a State owned area.

Conservation Officer, W. W. Trusell of Sioux City, in 1936 devised a method for treating trees subject to beaver depredation which would not injure the trees nor harm the beaver. Figure 4

Fig. 4. Treated tree showing beaver teeth marks. This tree is on the bank, but flood waters have temporarily inundated the base.

shows a treated tree and evidences of beaver teeth marks made after the solution of lime and creosote had been applied. Figure 5 shows cottonwood and willow stand treated after beavers started cutting. Not a single tree has been cut after a lapse of six months. The beavers transferred their activity to a willow thicket 100 yards upstream.

Because beaver will take either willow or cottonwood, by using Trusell's method of treating trees along a stream, the beaver cutting may be directed to undesirable thickets, and in this manner

Fig. 5. Cottonwood trees treated to prevent beaver damage.

the animals will find plenty to eat, yet cause no harm to the adjoining land owner. Tree cutting is not the only menace beavers present to the farmer.

In the drainage ditch leading into the north reaches of Trumbull Lake, a colony of beaver built a dam. Figure 6 illustrates the construction of this engineering phenomenon. The barrier is three and one-half feet high and shows the typical curve upstream. The material used is small willow twigs interlaced and plastered with mud and other debris. Enough leakage is maintained to hold water level slightly below dam crest. The impounded water extends several hundred yards back-stream filling the network of drainage tile of

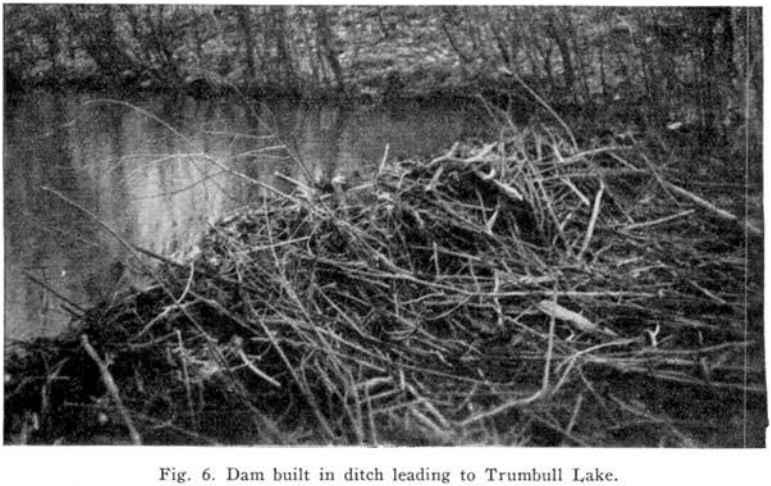


Fig. 6. Dam built in ditch leading to Trumbull Lake.

adjacent farms. Here again is definite beaver damage presenting a trapping problem for the Iowa State Game Department.

If this dam is left in the drainage ditch many acres of private farm land will be rendered useless for cultivation. However, increased water levels in Iowa ditches and streams are naturally beneficial for fish life. For this reason beaver work can be managed so that fish environment will be created. A classical example is here shown.

Two colonies of beaver took up residence on Deer Creek, in Worth County, where aspen appears in scattered clumps on the high grassy banks of the stream. This creek is a tributary of the Cedar River. The largest dam is built across the stream at a 30-degree angle. The material used in construction are pieces of branches picked up at random and supplemented with some willow and aspen cuttings.

Nearly all cuttings are made in a quaking aspen thicket 150 feet from the dam. The dam is so well constructed that the 1937 spring floods carrying heavy blocks of ice failed to harm the dam. A spillway at each end of the structure keeps the water level of the stream stabilized. The solid condition of the dam after flood waters subsided attest the efficient construction of a beaver dam.

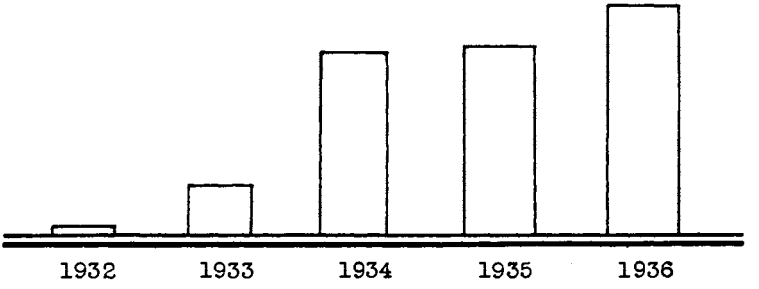
The impounded water of Deer Creek is of sufficient depth to sustain fish life in considerable abundance where previously fish were scarcely larger than "minnow" size. Other such streams in the state, flowing through wooded sections can be made attractive to beaver. Thus new fishing areas will be automatically created. If beaver migrate to these areas it is possible to trap and place them in such streams of low water level provided the natural food of the beaver is present. Here they will instinctively build dams, creating areas suitable for fish life. Higher water levels will also be beneficial for domestic purposes. It is seen, therefore, that beaver are not detrimental to Iowa if they are properly managed.

BEAVER DISTRIBUTION AT PRESENT DATE

County	*Location*
Clay	Inlet to Trumbull Lake.
Cherokee	Little Sioux River.
Fremont	Missouri River.
Harrison	Mouth of Little Sioux River in Gumbo ditch.
	Rufcorn timber, south of mouth of Little Sioux on Missouri River.
Ida	Odebolt Creek, tributary of Maple River.
Lyon	Tom Creek, four miles northeast of Rock Rapids.

	Rock River, four miles north of Rock Rapids.
	Rock River, five miles south of Rock Rapids.
	Rock River, seven miles south of Rock Rapids.
Mills	Missouri River.
Monona	Many along Missouri River and Soldier River, Maple River, and Little Sioux River.
Montgomery	Nodaway River, one mile north of Grant.
Osceola	Otter Creek, five miles north of Sheldon.
Plymouth	Along the Big Sioux River.
Pottawattamie	North edge of Council Bluffs, city limits.
	Mouth of Pidgeon Creek.
Sioux	Otter Creek, three miles north of Matlock.
	Sioux River, one mile north of Hudson.
	Sioux River, one-half mile north of Highway No. 18.
	All along the Rock River.
Woodbury	Numerous colonies on the Little Sioux River and along the Missouri River south of Sioux City.
Worth	Deer Creek, west of Carpenter.

A total of 67 colonies have been counted.



Graph showing increase since 1932.

STATE BIOLOGIST,
IOWA STATE CONSERVATION COMMISSION.