R-2 Proposed
Utah

Dr. Gabrielson

file

June 4, 1938

Mr. Lee L. Laythe, Regional Director,
580 Custom House,
Denver, Colo.

Dear Mr. Laythe:

Dr. Gabrielson has always been very much interested in developing Fish Springs, Juab County, Utah, for migratory waterfowl and general wildlife purposes. Recently he requested me to ask you to look over the project from the standpoint of attempting to develop it by the easement method. Please investigate the possibility of this method of attack as soon as an opportunity presents itself.

We are enclosing herewith the following information from our files which may be helpful:

(Copy) Duck Food Report, dated September 27, 1936, made by Charles C. Sperry

(Copy) Letter of January 25, 1935 from George E. Mushbach enclosing his report on the Fish Springs Project.

Very truly yours,

J. Clark Salyer, II
In Charge
Division of Wildlife Refuges

Enc.

JCS:ipk

C O P Y

September 27, 1936

Duck Food Report on Fish Springs, Juab County, Utah. - Charles C. Sperry

The Fish Springs area as here considered covers the region from Big Spring on the north (also called North Spring) to the South Spring on the south and all marshes and flats adjacent thereto and in between. Distance between the two most widely separated springs is approximately 3½ miles but there is considerable alkali brush land involved and it is estimated that the marshes and adjacent meadows cover not much in excess of 2000 acres. However, since acreage involved as well as topography, water supply, property ownership, and present land uses have been covered in detail by Mushbach (January 1935) and the Land Acquisition Report (July 1936) the present account will deal chiefly with duck foods and waterfowl conditions in the area.

The Springs.

The spring water is fairly warm but cools quickly and is quite drinkable. Heavy salt deposits thruout the marsh and over all flooded grounds probably leech from the soil and are not so soluable in the water for salt crusts are not present around the springs. Moreover, the channel flow from South Spring, where it leaves the marsh to cross the road three-fourths of a mile from the spring, is cool and fresh.

Big Spring (North Spring). Big Spring begins as a deep, minature lake 120 yards long by 80 yards wide but the flow is not as great as either Middle Spring or South Spring. All the springs drain away from the west ... and Big Spring is mainly toward the east. The old spring creek channel, 20 to 40 feet wide at the start, gradually narrows until a quarter of a mile out it is 6 to 10 feet across and a half mile farther it still is a narrow, swift flowing creek. In some places this channel, altho three feet deep, is less than a foot wide

with surface walls of a firm sod. Again the flow is entirely under ground and the only signs of its presence are the bogs in low spots to the side or the stagnant pools in depressions farther out on the alkali bush flats.

In this soil a narrow creek channel produces very little marsh or open water considering the amount of water moving in the stream, Promoters, interested in developing a local muskrat industry, wished to conserve this apparent waste of water and spread it out so as to make more marsh. To this end Big Spring was dyked and the direction of drainage shunted from east to northeast. This venture was not a success for the new flow did not spread as anticipated but created a narrow channel and stuck to it resulting in a mile of marsh that was only a hundred yards wide. At the present time the flow is allowed to follow the old and lower channel altho the drainage to the northeast is still sufficient to keep up the long narrow marsh even tho it has no surface water.

There are no open water ponds in the Big Spring marsh.

Fish Spring (Thomas Spring). Fish Spring starts as a deep, 40 by 60 foot pool less than a quarter of a mile south and east of the old Thomas Ranch buildings --- now commonly referred to as Fish Springs altho, contrary to report, there is no post office, general store, or gasoline station there. This spring has not sufficient flow to make the usual wide spring channel but, augmented by smaller springs in the neighborhood, it spreads out almost at once into a wet marsh extending to the south, east, and north.

The Fish Spring marsh has no permanent open water lakes. There are in its interior many small pond basins, some dry and others with water 2 to 4 inches deep. These ponds are from 20 to 50 feet in diameter but are merely open depressions in the marsh for they have no definite banks or permanent aquatic plant or animal life.

Middle Spring. Middle Spring arises about three quarters of a mile south of Fish Spring and has a greater water flow than any of the springs in the valley. Here again the muskrat interests have attempted to control stream flow. As now seen the spring pool is of irregular outline (25 by 75 feet) and confined by 12 foot dykes with a gate for controlling the flow thru a 10 inch pipe. Dyke construction at these springs was quite simple because all ~~kkx~~ are alike in that they start from the bench land and have firm earthen banks on three sides.

The creek made by Middle Spring starts as a 40 foot channel and a half mile down stream is still a swift creek 20 to 40 feet wide. Side trickles from the main stream form little boggy sloughs with two inches of stagnant water. In places side channels have been cut and one such, about a half mile from the spring, is three feet wide and carrys a strong flow that is two feet deep into outlying marshes.

Thruout this most extensive marsh there are a number of small inland ponds where the water is 4 to 6 inches deep and the underlying muck twice as deep as the water. Aquatic plant growth in these ponds is stunted and of little value to hungry waterfowl --- in fact ducks do not seem to use such ponds at all. This non-use by the ducks might be due, in part at least, to the extreme abundance of crusted salts in these shoal waters.

South Spring. South Spring, a half mile south and east of Middle Spring, starts as a round pool 100 feet wide with a 30 foot neck as the beginning of the creek flow to the southeast. Here the water is not so deep as in the other large springs (most of it less than 6 feet) and the flow is gentle so there is more variety in the aquatic vegetation.

The creek channel is not so swift either and consequently the submerged vegetation is more profuse than in other main spring creeks. Several side spring

channels connect boggy springs to the main creek. Here the water is quiet and three feet deep over a soft mud bottom. In the interior of the marsh are the usual shoal water or dry pond basins.

At the south end of the main marsh, a mile southeast of South Spring, the marsh basin is abruptly terminated by a high, rolling, brush covered alkali ridge. Here it is that we find the only permanent ponds or lakes in the entire Fish Springs area. This pond section does not cover over 50 acres (with marshy islands and peninsulas taking up half of that) but it is a favorite feeding ground for most of the local waterfowl population. The pond water is 16 to 24 inches deep with 6 inches of soft mud over a firm mud bottom and aquatic duck food, while not varied, is plentiful.

Vegetation.

AQUATIC.

Algae. A Spirogyra type of alga was common to abundant wherever water, either standing or flowing, was found.

Chara. Next to algae muskgrass is the most widespread aquatic plant in the Fish Springs unit. If the shoal water ponds in the interior of the marsh supported any vegetation at all it was sure to be made up of algae and Chara. Muskgrass does not grow in the deep springs but is abundant in the feathery overflow that extends into the narrow marshy borders and it fills the seepy marsh of spring bogs. It soon makes its appearance in the spring channels and farther down these runs the abundant Chara often is the only submerged plant. Its best growth is seen in the ponds at the south end of the marshes for there it covers practically the entire pond floor with an eight inch growth.

Naias marina. The course prickly form of bushy pondweed is the dominant plant in most of the big springs and in all the main creek channels. It seems to require an abundance of running water, however, for it was not found in the smaller springs or in the main South Spring ponds altho it was dominant in the

creek channel out of South Spring. This plant had few seeds and those were quite immature.

Ruppia maritima. Widgeon grass was dominant in Fish Spring and common in South Spring and Big Spring. It was not seen in Middle Spring altho common in the creek channel a half mile below. In fact Ruppia showed up in all the spring creeks as soon as the flow cut down sufficient to allow it anchorage. In such an environment, however, it was never plentiful because restricted to the small spots of quiet water in the creek bends. It was sparingly represented in some of the inland ponds and was common near shore in the main south ponds altho unable to successfully compete with the musk grass in the deeper water there. This seasons seed crop of Ruppia is good.

Ceratophyllum demersum. Coontail was dominant in South Spring where it formed a heavy surface blanket extending 10 to 20 feet out from the banks. This growth was so thick that there were no leaves on the Ceratophyllum stems except on the terminal 4 to 6 inches exposed to the light and these "tails" covered the water sufface except where they in turn were blotted out by the algal mat. Coontail was not found anywhere else in the Fish Springs unit.

Utricularia. Bladderwort was common in South Spring and in the lower creek of Middle Spring. A few plants also were seen in an inland pond of the Middle Spring marsh.

Radicula. Water cress was found in a small spring in the ranch yard at Fish Springs and in another small spring midway between Fish Spring and Big Spring. In both cases it had spread from the spring along the seepage and into the marsh for a few yards. I was told that this water cress was brought into the region at the same time the southern bullfrogs were imported.

Wolffiella ? . A floating strap-plant, unfamiliar to me, was abundant in a small marshy spot near the corrals at the Fish Springs ranch but was not found elsewhere.

MARSH

Scirpus Olneyi. The marshes of the Fish Springs area are made by Scirpus Olneyi. Every spring, channel, pond, seep, or bog is bordered or covered with this form of the three square. Around the springs, along the channels, and in the more wet marsh its growth is rank, much of it over 6 feet tall, and dense enuf to excluse all other vegetation. As usual, however, its seed crop is meagre. Farther back from the stream courses and in the dryer marsh Scirpus Olneyi completes with other plants, does not grow so rank, and produces a little fruit tho not much. This plant forms the peninsulas and islands in the south marsh ponds and is responsible for the shaking islets in the creek channels.

Distichlis spicata. Salt grass makes the meadows just as Scirpus Olneyi dies the wet marsh. On the lower flats this grass grows a foot high and so thick that few competing plants survive. Even on the higher ground it holds its own well back to the dry brush lands.

Juncus balticus. This tall, coarse bog rush is found in patches or thinly scattered thru the salt grass all over the flats. Sometimes a clump of it has made a successful stand even in the wet marsh but its real home is at the outer and dryer edge of the marsh where it may cover a broad expanse. Most of it grows tall ($1\frac{1}{2}$ - $2\frac{1}{2}$ feet) and makes a dense and tough cover.

Eleocharis(acuminata ?). A coarse, creeping spikerush that produces little fruit and spreads by means of long, flattened, overarched culms that take root where they touch the ground is locally common to abundant in open areas of the wet marsh. It is this plant that borders the semi-dry ponds in the interior of the marshes but soon gives way to the dense growth of Scirpus Olneyi, Distichlia, and Juncus. Very few of the spikes produced fruiting heads and those heads that were formed held a minimum of seed.

Phragmites communis. This giant reed grass borders Middle Spring and is locally abundant along the runs at Big Spring. One good bed was seen at the

south end of the marshes but in general it was scarce altho its plumed heads insured that it all be seen.

Agrostis. A fine sprayed red-top grass was seen here and there in the dryer marsh and was quite abundant in the Big Spring district. The thin plume tops of this grass made a billowy bed in the marsh and ones allusion of a pure and heavy stand was shattered only when closer examination revealed that the less showy salt grass really made up the bulk of the ground cover.

Salicornia and other "pickle weeds". Samphire was but locally common in the Fish Springs area altho various forms of bush pickle weeds were abundant. From the edge of the greasewood and rabbit brush, across the salt grass and bog rush flats, and into the center of the dryer marsh extended these pickle weeds. Usually scattered, never dominant, but often prominent, they held their own with the wide-spreading Distichlis and Juncus.

Asclepias. Milkweed was common as a back border plant along the stream courses. Not as a big patch but prominent in a thin well-marked line it seemed to divide the rank growing Scirpus Olneyi from the lower vegetation on the dryer flats. It was in fruit and the feathery plumed seeds floated everywhere.

Scirpus paludosus. Bayonet grass is rare in the Fish Springs district. A few plants were seen bordering a spring creek side slough off the Middle Spring channel and it fringes the road for a few yards at the south end of the south spring marsh. It does not grow in the interior of the marsh.

Scirpus occidentalis. A thin patch of big bulrush was found in the spring run of South Spring where it crosses the road at the south end of the marshes. It does not occur in the interior of the marshes nor could I find it along any of the other spring creek channels.

Scirpus sp. A few plants of a small round-stemmed bulrush were found on the dry slope above Middle Spring.

Echinochloa crus-galli. Duck millet was not present in the main marshes

nor around the big springs but was locally abundant in the garden plot of the Fish Springs ranch.

Spartina. Cord grass was rare --- only a few plants seen and those in the dry marsh of Big Spring.

Atriplex, Chenopodium, Erigeron, and Helianthus were nowhere abundant but sparingly scattered thruout the dryer marshes.

Birds.

About 300 ducks including mallard, pintail, widgeon, and blue-winged teal were using the ponds at the south end of the marshes as were also 50 coots. In addition 5 blue-winged teal, 2 mallard, and 9 coot were flushed from the South Spring creek.

On Middle Spring there were 6 coot, 2 blue-winged teal, and a small grebe whild down the creek there were 12 more coot, 75 more teal, and a few widgeon.

Other birds seen included a little blue heron (white phase) and several great blue herons, night herons, and American bitterns.

Other Wildlife.

Aquatic insects, snails, crustaceans, bull frogs, and fish are plentiful in all the permanent water and muskrats are quite abundant if their numbers be judged by the distribution and abundance of their bank tunnels. Not many muskrat houses were seen in the marsh. The area is trapped for rats and is posted against trespassing, hunting, or trapping. Old timers report there was noduck hunting in the district even before it was posted.

Summary.

The Fish Springs marsh covers about 3000 acres of Scirpus Olneyi, Distichlis spicata, and Juncus balticus. Other marsh plants are not plentiful enuf to be important. The main water comes from 4 large springs but most of it seeps away and there are few permanent ponds in the area. It might be added that unusual

rains (reported the heaviest in 54 years) in August and early September of this year repeatedly flooded these marshes. Extensive beds of marsh growth were flattened and killed by those high waters but there were no extra ponds or lakes in the region and the water level was back to normal when our survey was made in late September. Attempts to control the water have been unsuccessful because it quickly escapes thru the 3 foot muck under the sod.

Except for Chara aquatic duck food plants are restricted to springs and their attendant creeks because there is no other habitat for their distribution.

Brush and grass covered knolls furnish amople nesting sites for ducks and the dense, rank marsh growth is ideal cover.

A variety of shoal water ducks as well as coots and herons frequented the area when surveyed in September and it is reported that a number of ducks nest in the region.

The district is systematically trapped for muskrats and is posted against hunting. Reports are that hunting of ducks in the area never was important --- and such reports may well be true for the region is thinly populated and not readily accessible to outside sportsmen.

Conclusions.

The Fish Springs area has plenty of cover for nesting ducks. The marsh produces little duck food so there is no inducement for large numbers of migrant ducks to visit the place - especially since there is no open water worth mentioning. Furthermore the area is practically uninhabited and so inaccessible that hunting, even tho permitted, would be of no consequence.

Recommendation.

Fish Springs, Juab County, Utah is <u>not</u> recommended as a waterfowl refuge.

Charles G. Sperry
Surveyed - September 24-25, 1936.