Is the Soil Conservation Service destroying

waterfowl habitat faster than Ducks Unlimited

and Fish and Wildlife Service can restore it?

Conditions on one of our most important nesting

grounds indicate need for closer cooperation

VISITING sportsmen, tramping the terminal moraine of Day County in northeastern South Dakota, have always been impressed by the profusion of potholes. There are, by conservative estimate, 20,000 potholes in Day County—an average of 20 to the square mile. They range in size from one-sixteenth of an acre to 100 acres. Together with surrounding sloughs, lakes and uplands they constitute one of the prime waterfowl breeding areas on the continent.

Last fall, however, visiting sportsmen were impressed by something besides Day County's potholes. They were impressed—and disturbed—by the sight of hundreds of ditches which have already drained 1,400 of those potholes and by talk about more and bigger drainage to come. They saw this drainage as representing a threat to the Mississippi Valley duck population. And they were even more chagrined when they were told that the drainage projects were not due merely to the chance initiative of individual farmers, but also to calculated financial and technical aid from three Federal agricultural agencies.

What is happening in Day County is only a portion of what is going on in the 3,000 square miles of prime duck pothole country in eastern North and South Dakota. But because Day County is a typical situation, and because of an on-the-ground study by Field & Stream reporters, let's use Day County as a case history.

In a year of normal precipitation, more than one-eighth of the county is water—principally small lakes and upland kettle-holes, Blue-winged teal, gadwalls, mallards, and pintails nest near these water areas in great numbers. But however attractive they may be to breeding water-
fowl, the pot-holes are called nuisances by farmers, for they are frequently in the middle of cultivated fields.

Fortunately for the ducks, many of these Day County pot-holes cannot be drained. But many others can be and are being drained, usually by means of large, open-type ditches. Reclaimed land is usually sown to wheat, oats, barley or flax.

This Day County pot-hole drainage is under the aegis of the Soil Conservation Service, the Production and Marketing Administration (formerly the Agricultural Adjustment Agency) and the Agricultural Extension Service, operating through the Day County Soil Conservation District.

The official Soil Conservation District work plan recommends such accepted practices as crop rotation, strip cropping, contour plowing, etc. Further, it emphasizes the apparent need for pot-hole drainage in these words:

"In this district there are depressional areas where continuous cultivation has not been practiced because of periodic harmful accumulations of water. By reducing the amount of water run-off into these depressions ... and by the construction of drainage ditches leading to lower-level sloughs or intermittent stream channels, the percentage of years when these areas can be successfully cultivated will be increased."

Most SCS district work plans usually pay at least some lip service to the conservation of wildlife, but the term "waterfowl" occurs nowhere in the Day County plan, despite the fact that the county is a famous duck factory.

Under this charter, pot-hole drainage is developing in Day County. The farmers are all for it. With wheat at $3 and more a bushel, they can't seem to afford not to drain every possible strip of countryside. The SCS men are all for it. Their offer of free drainage-engineering advice helps them tremendously in bringing more and more farms into the SCS network. Local contractors are all for it. They have developed a tidy earth-moving business. Only Mr. Mallard objects. And he can't talk.

To date, the SCS in Day County has drained pot-hole areas totaling 5,816 acres. These have ranged in size from one-eighth of an acre to 60 acres, with the average at 5 acres. Some 240 farmers have participated. And more drainage is apparently on the way because three-fourths of the farms in the county have yet to come into the SCS program.

Another powerful stimulant to drainage in Day County is the fact that the AAA lists drainage ditches among its "approved conservation practices." A farmer can collect 8 cents a cubic yard for ditching, and another 75 cents a thousand square feet for grading the waterway. Last year the AAA paid the farmers of Day County $15,285 for digging 43 miles of ditches.

The third Federal agency in the picture, the Agricultural Extension Service, sends out bulletins from the State College at Brookings extolling the merits of pot-hole drainage. The Day County agricultural extension agent is the secretary of the Soil Conservation District.

It would be foolish, of course, to say that these three Federal organizations are solely responsible for pot-hole drainage in Day County. They are merely doing their assigned jobs of stimulating farm productivity. The real "culprits" if you want to call them that, are high farm prices and the farmer reluctance to look beyond today in terms of soil and water exhaustion. But it would also be foolish to claim that widespread drainage would proceed in Day County in the absence of Federal checks, bulletins and know-how.

Now just how good is this duck factory which is being tapped with 17 and around Day County?

Ira N. Gabrielson, President of the Wildlife Management Institute, has called the area "one of our best units according to production per acre."

W. A. Eikins of the Fish and Wildlife Service has labeled the region "one of the most important duck nesting grounds in the United States."

Jerome Stoudt, diurnal biologist for the F & WS, has census data to show that in the spring of 1948 the area had a puddle-duck population of 377 pairs per square mile and that 8% per cent of all water area under observation were occupied by breeding waterfowl. Stoudt's detailed census data is of real interest to all duck hunters. One typical Day County transect of 15 square miles, for instance, contained 76 pot-holes totaling 727 acres of water—an average of 9.9 acres to the pot-hole and 48 acres of water to the square mile. Some 87 per cent of the pot-holes were occupied.
by ducks. There were 176 bluejays, 82 gadwalls, 59 mallards, 10 pintails, 4 ruddles, 3 redheads, 7 shovelers, 5 canvasbacks, 3 baldpates and 5 scaups — a total of 170 and a breeding-pairs-per-square-mile ratio of 33.2. These are June, 1958, figures.

As far as Dakota farmers go, they believe that pot-hole drainage is of at least immediate, if not long-range, value to intensive agriculture. By and large the reclaimed pot-hole soil is good. Art Lundeen, a farmer northeast of Bristel, drained a pot-hole at a cost of about $80 an acre and raised a 50-bushel-to-the-acre crop of oats on the same ground the first year.

From a short-time point of view, the farmer can't lose. The PMA (AAA) benefits pay for 60 per cent of the cost of drainage, and the $1.00-a-bushel floor under wheat means that he can recoup the rest of his investment in two years or at the most in two. If he thinks about them at all, he may feel sorry for the drained-out ducks, but the utility of a breed of bluejays on the farm forty is slight, indeed compared to the cars and tractors which added profits will buy.

True, the enthusiasm of the average Day County farmer for drainage is tempered somewhat by a premonition of droughts to come. He knows just what effect pot-hole drainage will have on the general water-table. He has read a Soil Conservation Service warning from Washington that "destructive droughts and dust storms will return sooner or later ... [because] many farmers are plowing up sod to grow wheat at present-day advantageous prices." And he remembers that not too long ago Federal money was being spent in Day County on artificial lakes and reservoirs. But in the face of high prices today, the average Day County farmer is taking little thought of the morrow. He is cultivating to the hilt, and the devil take the hindmost duck.

As one Waukau farmer put it last month: "I guess you'd call me a soil robber. And you'd do it, too, if ten years ago your children were wearing paper shoes. I'm taking mine while the taking's good."

In the second place, the PMA (AAA) in Day County is proud of the role it is playing in helping farmers reclaim their wetlands.

"We're the bread-and-butter agency in this county," says Director E. E. Gehaus at Webster. "You can't eat a field terrace, but you can buy groceries with our benefit payments. A good deal of PMA drainage in this county doesn't show up on the SCS records at all. Commercial contractors are responsible for encouraging a lot of it, too." He doesn't see pot-hole drainage as hurting the ducks, and feels that the real enemies of breeding waterfowl in the area are predators and hay mowers.

In the third place, the SCS men in Day County are reasonably confident that their participation in pot-hole drainage is sound. They feel, at the outset, that the project is in keeping with high SCS policy. It is quite true that National SCS Director Hugh Bennett defines soil conservation simply as "a matter of using land efficiently under a farming system that safeguards it from erosion," and goes on to list "draining unproductive land" as one of eleven approved techniques. But Mr. Bennett is careful to couple drainage with "a shift to safer, less intensive uses on near-by, highly erodible or otherwise unfavorable land, as by substituting rich drained bottomland for poor, highly erodible hillsides."

This exchange is not taking place in Day County to any appreciable extent. Pot-holes are being drained, but the pressure is not being relieved on worn-out uplands. Out of the 150,000 acres in the county under SCS supervision, only 16,000 are cultivated on the contour, less than 1,500 are strip-cropped, and a scant 1,060 are seeded to permanent hay. The 38 miles of ditches dug by the SCS in 1957 exceeded the 28.1 miles of conservation terraces built the same year.

On paper, the 477 Day County Farms participating in the SCS program are models of well-balanced soil conservation. Each has a comprehensive farm plan. But on the ground, on farm after farm, the only approved practice in field use is a drainage ditch. Beside many drainage ditches are plowed fields where the subsoil is showing through the desiccated topsoil. The SCS has been willing to sign up farmers for immediate drainage-engineering service on the promise that "sometime" they will begin to retire their eroded uplands.

There are exceptions, of course. The
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GOOD-BY, POT-HOLES

(Continued from page 37)

and Joe Kamps farms near Webster offer some examples of how drainage coupled with careful management of soil sides. But these prize-winning farms are few and far between.

Pot-hole drainage to the local SCS, in other words, is a natural, because it is the practice under which they are sold. Drainage is not something that is done spontaneously or by chance.

Nor do the Day County SCS men see anything contradictory between what they are doing and Chapter 10 in the federal code, which states that "land that is definitely suitable to wildlife should not be drained." As a matter of fact, most of them sincerely believe that pot-hole drainage in Day County is actually improving the waterfowl situation. Before we can evaluate that claim, we've got to define our term "pot-hole" a little finer.

There are four types of Dakota pot-holes. Class A pot-holes are comparatively permanent. Class B pot-holes are areas which will not be drained before May 15 and July 15 in an average season. Class C pot-holes are shallow, overflow areas which ordinarily dry up early in the spring, but which are never plowed. Class D pot-holes are placed in the fall, in expectation of their being dried up before the next spring.

Now, the SCS feeling is that by draining, say, four transient pot-holes on a farm into a fifth pot-hole it is thereby exceeding the "cuckoo" areas. This is a permanent wildlife haven—roosting both the ducks and the farmer.

In certain cases there is some merit to this argument. The drainage of Class B pot-holes has no appreciable effect on wildlife. The drainage of Class A pot-holes does not affect leaving breeding grounds. This is the considered opinion of a non-partisan orist, Joseph H. Hickey of the University of Wisconsin.
Class A pot-holes are without question the good duck habitat.

How many Day County pot-holes fall into each of these categories in a given year nobody knows. Ground observation would indicate, however, that of the pot-holes drained to date, 60 per cent at the very least were in Classes A and B.

Even granted that the SCS was successful in creating a series of relatively permanent pot-holes by eliminating others, this technique would fare far worse from the breeding standpoint, because the critical factor in duck production is not the amount of permanent water but the amount of short-line during the nesting season. A" amount of water scattered in the breeding and early summer which in five small pots will, other things being equal, produce more ducks than the same amount of water in a smooth permanent kettle, because the total available nesting-season shore-line is greater.

This important shore-line factor is all worked up in what 'duckologists' call territorial behavior, under which breeding ducks demand a specialized terrain that includes water, a feeding spot, nesting cover and food. As H. Albert Hochbeam of the Delta (Manitoba) Duck Station writes: 'There is a close relationship between the number of territorial pairs and the length of shore-line.'

The main objection in the eyes of biologists, then, to the drainage of these small, Day County pot-holes is the loss of valuable shore-line, because any reduction in shore-line will directly affect the duck-breeding potential of an area.

Here's the way Gerald B. Spawm, associate professor in charge of wildlife techniques at South Dakota State College, summarizes the Day County habitat:

'My opinion is that under normal rainfall conditions most of the pot-holes [in Day County] will produce ducks or at least give them the start in an area which is not too hazardous even if the smaller pot-holes dry up... I would probably rate the pot-holes as the water in a smooth as they are then drained into one central water area... The more the pot-holes can be scattered but the potential breeding range will be used... A drainage program should be conducted with care.'

Looking at Day County as a whole, you remember that 0.235 acres of pot-holes have been drained, the average area being about 4 acres. If 60 per cent of that acreage were Classes A and B, it would total 0.374 acres. This type of breeding range commonly has a population of 1.2 pairs per acre, according to Dakota survey data. A duck-breeding potential of about 0.25 may be expected from the Delta's experience. That would mean 0.25 pairs per acre. That is why the Delta estimates that 250 ducks could be expected from that drainage in 1947.

These calculations are only estimates and need to be elaborated by further research. But they do have just as much, if not more, validity as any flat statement that pot-hole drainage in Day County is not harming the ducks one bit.

Paul Underwood, SCS man at Webster, confidently expects that, come the next drought, he will be in the position of recommending that Day County farmers dam up their drainage ditches to conserve moisture, and that consequently some of the drained pot-holes will be put back into duck production. But he is, however, that once a plug has destroyed an entire plug, the community which it has taken nature hundreds of years to develop, that habitat cannot be recaptured quickly, if at all.

W. S. McMurtry, SCS regional biologist.
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State Biologist Benner has publicly criticized the absence of wildlife conservation in the SCS picture. "Farmers have trained themselves to think in terms of raising grain and livestock, and the SCS has trained themselves to think in terms of helping the farmers to raise grain and livestock." He points out that the mink has not disappeared, that the mink program has been successful in learning to think of wildlife as a supplement to the farm economy. Even one SCS field man admitted recently that "we've got to get wildlife conservation into our thinking." But the mink program has been successful in learning to think of wildlife as a supplement to the farm economy.

Fishing Report and Farmer, says that "pot-hole drainage is one of the finest things that has happened to Day County agriculture in years."

It's a great idea, he says, to call it water management instead of habitat drainage, nobody would complain, he says.

The local bird-watcher, Dr. Webster, is inclined to be philosophical about it all. "If these drainage ditches didn't clear the fields before the next drought would," he feels, "wonder what the ducks would do."

It's well and good to talk about a future preserving the intact natural habitat of his land, but right now there's little to report. Fishing runs out of South Dakota farmer like water from a drained-out pot-hole. He has seen nature itself raise more hell with the integrity of the South Dakota landscape in recent years than man has ever done. It will take a lot of work to bring back the species that have left, and it will be years before they return.

Ducks Unlimited has spent $10,000 in the last ten years on restoring some two hundred Canadian loons, sumps and pot-holes to duck production, according to Director Arthur Bartley. Yet, if the census figures of wildlife in South Dakota are reliable, all the DU projects in the state did not produce as many ducklings in 1947 as the drained-out pot-holes in Day County would have. For instance, Dick Grissom, leg of the South Dakota Legislature, who is interested in this project, says that that year, it is likely that only 7% of the state's drained pot-holes typically produced that many more ducks.

This becomes a fair question: Are we going to fix the destruction of B-grade Canadian duck habitat, or are we going to fix A-grade habitat in the U.S. slip through the cracks?

Maybe Day County is symptomatic of the fact that we've all got to accept intensive, mechanized, industrialized agriculture as being unimitable, then stop shooting ducks to solely. As one Greenville farmer pointed out, "Let's worry about conserving the water, because if we don't, then we'll just shoot fewer ducks, everybody's going to say..."

A R SqlDataReader looks at the situation this way: "Look, we've got to choose between civilization and old-time duck hunting. We can't have both. But if it's a question of choosing between clearing a pot-hole to grow soybeans and the mallards, why, the pot-hole and the duck hunting are both better off if we do it."
provide farmers with dynamite for blow- ing sawdust clouds, but other districts have gone so far as to purchase heavy ditch digging equipment often from Government agencies which is in turn rented out to farmers at going rates. The profits are used, among other things, to print seed catalogues, seed storage and bringing in more drainage. It's a vicious circle, with Pete Pintail strictly on the out-side looking in.

As if pot-hole drainage in South Dakota weren't enough, the water-level in Rush Lake, Day County, is at the mercy of a state highway project, and Putney Slough in Brown County, famous for its fine blue and snow geese, is threatened by a flood-control plan.

In surrounding states the pattern is being repeated. Minnesota has a big drainage program under way. UW Professor Hickey declares that" in some parts of Wisconsin since the war, soil conservation has come to mean one thing—drainage— and the Soil Conservation Service has come to stand for the Soil Exploration Service."

Hickey's predecessor, the late Aldo Leopold, wrote this about the Middle West picture just before his death last summer: "The farmers have selected, out those plants which would grow anywhere, and ignored those which were profitable to the community, but not clearly profitable to the farmer individually. All the farmers are building a soil structure and a soil conservation machinery to the farmers' true magnitude of his obligations. Obligations have no meaning without conscience, and the problem we face is the extension of the social conscience from people to land."

THE SUNKEN FLY

(Continued from page 30)

over the widely scattered places that could hold trout, I was bound to score a good average. The fly that caught the better part of a day, the water was certain to give satisfaction. This is in effect the whole story of wet-fly fishing—know the stream bottom, and design a method to exploit it.

So now we find that we cannot say downstream or upstream above, for there are better methods within the method and these are what pay off. The only thing that is necessary is to reach the BEARER of the Baetis through. It is not yet too late for downstream fishing by all means, the following spring on opening day I went to another Cattkill stream and picked up where I had left off.

Fishing downstream was the easiest way to start out that morning. The Cattkill was flowing clear and bank-full, and because of the steep gradient of the hill the drift was less frequent. I tied on a pair of wet flies, a Mallard Quill and a Leaping Coachman for the downstream, and started combing the pocket water. Here too there I would step into a pocket hole and get pulled along with the current but the stream was interesting and full of promise.

I caught five or six small rainbows in the backwaters, but nothing came to my flies from the main channel, or even from the deep pockets behind boards. After an hour or so on the Cattkill the Bauer, still held promise but no fulfillment. Upon reaching the iron bridge I got out of the stream and crossed to the other side. The bank I had been wading would be for a holder going upstream, and obviously I needed every advantage I could muster.

Packing the current was hard work at first, but I found by wading in the back...