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MOSQUITO-CONTROL ACTIVITIES IN THE
PACIFIC NORTHWEST
UNDER THE CWA PROGRAM

BY

H.H.Stage.

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Mosquito-Control Activities in the
Pacific Northwest Under the CWA Program //

By

² ²⁰ H. H. Stage, Associate Entomologist
Division of Insects Affecting Man and Animals
U.S. Bureau of Entomology and Plant Quarantine, U.S.D.A.

Until 1930, aside from a few feeble local attempts, nothing had been done in Oregon and Washington to reduce the mosquito pest, which in some sections of the two States had become a severe handicap to various out-of-door enterprises. From 1930 until the fall of 1933 a definite, but inadequate, program of control was in force in Multnomah County, Oregon, and Skamania County, Washington. In 1931 a group of home owners on Bainbridge Island, in Puget Sound, began in a small way to oil and to drain, but their funds were inadequate for an effective program.

During the winter of 1933-34 mosquito control work in these States was greatly accelerated through an allotment of funds by the Civil Works Administration. Rather important work was accomplished in Multnomah, Columbia, and Tillamook Counties, Oregon, and in Kitsap, Skamania, and Clark Counties, Washington. This work, which began early in December 1933 and terminated as Federal projects on February 15, 1934, gave employment to 1,000 men in Oregon and 700 in Washington. Later the work was continued as State projects, but the number of men employed was rapidly reduced until on April 1 all work was discontinued.

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Three types of work were conducted, influencing three associations of mosquito species.

The first type was in the thickly matted jungles of willow brush along the Columbia and Willamette Rivers in Multnomah and Columbia Counties, Oregon, and in Skamania and Clark Counties, Washington. This brush was cleared up to reduce shelter and to discourage egg deposition by the flood-water mosquitoes Aedes vexans Meig. and A. aldrichi Dyar. These two species of mosquitoes occur in great hordes in early summer after thousands of acres of low ground along the rivers mentioned have been inundated by the annual freshets. They hatch from eggs deposited in the previous summer on damp cool ground protected from sun and wind by heavy growths of willow brush. While brush clearing is open to criticism as an efficient practice in mosquito-control activities, it has been found effective in reducing the mosquito pest in this section. We have several research studies under way in an effort to determine how the changed ecological conditions on the areas treated have affected the mosquito population there.

Most of the land on which the work was done is used as pasture, but the dense willow brush has prevented growth of grass and made the land largely useless. During the past summer it has been observed that where ground cleared of willow brush has been used for grazing purposes, the stock have kept the growth of willows well checked. In some other instances the owners of such property

have kept the land clear and have requested that additional areas be cleared.

In addition to the clearing of willow and other brush in the four counties mentioned, dyking against high water and ditching of poorly drained areas were practiced. Brush was cleared from 3,390 acres of land, 68,297 lineal feet of ditches were dug, and several hundred yards of fill were thrown up as dyking. A total of 333,798 man-hours, at a cost of \$175,254.44 for labor and supervision and \$7,249.85 for tools, transportation, and supplies, was used on this project, which, besides aiding in the control of flood-water mosquitoes, furnished suitable hand labor for relief purposes and made fertile pasture land available for grazing.

The second type of control work was practiced on a typical salt-water marsh in Tillamook County, Oregon. Here approximately 1,500 acres of desirable pasture land which is flooded regularly by the bimonthly high tides has been a particularly favorable breeding place for Aedes dorsalis Meig. Numerous potholes scattered over the marsh held water between high tides. From May until September the larvae of A. dorsalis were numerous in these holes, and the adults were a most annoying pest to dairy cattle pastured in the marsh. Under the CWA program the potholes were connected with the main channel by ditches or, if small, were filled with sods taken from newly con-

structed ditches. A total of 33,420 lineal feet of ditches was constructed, 3,000 lineal feet of stream banks was cleared, ²3,570 cubic yards of fill made, 200 acres of potholes drained, and potholes totaling 1.86 acres in area were filled. This furnished 11,105 man-hours of labor and supervision at a total cost of \$6,435.04 for wages and salaries. Tools, supplies, and transportation cost \$1,121.94.

During the last summer season several inspections were made of the marsh, and the method of control has been found to work perfectly. Long-time residents marvel at the freedom from mosquitoes and tell of "seeing only 3 mosquitoes this summer". An important dairy section of Tillamook County was entirely free during 1934. Dairymen reported that mosquito eradication was followed by a marked increase in milk production in that district.

The third type of control was conducted on the northern end of Bainbridge Island, in Puget Sound. Many fine summer homes are located there, since the island is within easy commuting distance of Seattle. The country is fairly rugged and in many places is so thickly overgrown with brush and large trees that it is nearly impenetrable. There were many springs and depressions where seepage and rainwater collected during early spring. Great numbers of Aedes aboriginis Dyar and A. fitchii Felt and Young emerged from these pools and remained nearby as a most annoying pest until midsummer. A few residents of the island organized 3 or 4 years ago as the Port Madison mosquito-control committee and attempted control by the

customary practice of oiling. Funds were inadequate, however, and it was difficult to treat all the pools because they were so hidden by briars and brush.

Under the CWA program the northern end of the island for a distance of 2 miles was completely surveyed, and all watercourses were ditched to the sound except one or two for which such treatment was impractical. In the latter instances the country was opened up by clearing so that the pools could be efficiently oiled. Ditches totaling 57,941 lineal feet were dug, 435 lineal feet of culverts was installed, and 30 acres was cleared of brush by 40,300 man hours of labor and supervision, at a total cost of \$24,665.00 for wages and salaries and \$4,461.24 for tools, supplies, and transportation.

Summary.

Under the CWA program during the winter of 1933-34, three types of work, influencing three associations of mosquito species, were conducted in the Pacific Northwest.

Flood-water mosquitoes, Aedes vexans and A. aldrichi, were reduced in numbers along the Columbia River near Portland, Oregon, by clearing their breeding grounds of heavy willow brush; a salt-water mosquito, Aedes dorsalis, was eliminated during 1934 from an isolated

1,500-acre salt marsh in Tillamook County, Oregon, by connecting potholes in which it bred with the main channel by ditches so as to allow the high tides to flush and drain out the breeding places; and temporary-pool mosquitoes, Aedes aboriginis and A. fitchii, were controlled on the northern end of Bainbridge Island, Washington, by eliminating pools of seepage and rainwater.

1,000-1,500 lbs. per acre, depending on the soil and the weather.

It is a very good crop for the soil and the weather.

It is a very good crop for the soil and the weather.

It is a very good crop for the soil and the weather.

It is a very good crop for the soil and the weather.

It is a very good crop for the soil and the weather.

TOP. Thick willow brush before clearing on ground subject to flood. Eggs of Aedes vexans and A. aldrichii are deposited in large numbers in such situations.

BOTTOM. The same ground after treatment. The deposition of eggs is now discouraged because of the lack of shelter.

TOP. A tidal salt marsh at Sand Lake, Oregon at high tide. Numerous potholes occur which hold the water between high tides. Aedes dorsalis breed abundantly in these accumulations of salt water.

BOTTOM. The same area at low tide. Ditches have been dug connecting the potholes with the main channel. Wrigglers hatching at high tide are carried out as the water returns to the sea.

TOP. A pool of rain and snow water in thick brush on Bainbridge Island, Wash. Aedes aboriginis & A. fitchii breed in temporary accumulations of water of this kind in early spring.

BOTTOM. Areas as shown above have been cleared and drained to prevent the development of these species of mosquitoes.

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE
WASHINGTON, D.C.

November 23, 1934.

MEMORANDUM FOR DR. F. C. BISHOPP.

Dear Doctor Bishopp:

In accordance with Memorandum 575 of the Secretary, Paragraph 604, I have approved for outside publication manuscript 2860, "Mosquito-Control Activities in the Pacific Northwest Under the CWA Program," by H. H. Stage.

The edited retyped copy of this manuscript is returned herewith. A carbon copy, as required, has been forwarded to the Office of Information for reference and filing.

It is requested that the Bureau librarian be notified of the publication in which this article appears and the date of issue.

Very truly yours,

Chief of Bureau.

It is suggested that in reading this paper at the meeting these figures (and similar figures on later pages) be rounded off to 3,400, 68,000, 334,000, 175,000 and 7,000. Person hearing the figures read can not carry them in mind as they can when seeing them printed. For publication, the complete sum is preferred. Always state, however, in reading, that the figures have been rounded off.

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438 U. S. Courthouse,
Portland, Oregon.
Sept. 20, 1934

Mr. C. H. Bergstrom,
County Agricultural Agent,
Tillamook, Oregon.

Dear Mr. Bergstrom:

The active mosquito season is now over and we wish to determine the results of the work done by the Federal CWA Pest Mosquito Control during the winter of 1933-1934. We would therefore, greatly appreciate communications from yourself and particularly farmers living near Sandlake, telling of their experiences with the mosquito pest this season, compared with the seasons of other years.

This information will be important and is desirable whether the reports are good or bad. In fact, any comments and criticisms of the work will be greatly appreciated.

Yours very truly,

H. H. Stage,
Associate Entomologist.

Mr. J. H. Thompson,
The Lincoln, Boston,
Mass., U.S.A.

Mr. C. O. Thompson,
Boston, U.S.A.

Dear Mr. Thompson:

The active season is now over
and we are to determine the results of the year
from the Federal and State records.
During the winter of 1914-15, we have been
greatly interested in the results of the
and particularly in the results of the
during the winter of 1914-15. The results of
the active season, compared with the results of
other years.

This information will be available
in the winter of 1915-16. The results of the
in fact, the results of the active season
will be greatly appreciated.

Very truly yours,

J. H. Thompson,
Associate Professor.

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COOPERATIVE EXTENSION WORK
IN
AGRICULTURE AND HOME ECONOMICS
STATE OF OREGON
TILLAMOOK

Nov. 15, 1934

Mr. H. H. Stage,
Associate Entomologist
U. S. Department of Agriculture
440 U.S. Court House,
Portland, Oregon.

Dear Mr. Stage:

I am enclosing herewith copies of letters written by some of the dairymen in the Sand Lake district regarding the mosquito control work carried on in that district last winter. You may use any or all of these if you think they will be of any benefit in promoting this program further.

I trust that these will arrive in time to do some good and if you prefer the originals, we have them and will be glad to mail them to you.

Very truly yours,

(Signed) C. M. Bergstrom
County Agent.

COMMERCIAL BANK

WASHINGTON, D. C.
JANUARY 10, 1900

Dear Sir:

Mr. J. A. Smith,
Associate Banker
U. S. Department of Agriculture,
Washington, D. C.

Dear Sir:

I am enclosing herewith a copy of the report of the
of the Commission in the Canal Zone, dated at Washington, D. C.
November 10, 1900, and a copy of the report of the
Commission, dated at Washington, D. C., November 10, 1900.
I have also enclosed a copy of the report of the
Commission, dated at Washington, D. C., November 10, 1900.

I trust that you will find the report of the
Commission of interest, and I have been very glad
to send them to you.

Very truly yours,

(Signature)
John A. Smith

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Sandlake, Ore.

Nov. 12, 1934

Mr. C. H. Bergstrom,
County Agent,
Tillamook, Ore.

Dear Mr. Bergstrom:

I am herewith giving you my observations as to
the result of the mosquito control work done last winter.

Here at my place there has been a most complete
eradication of the mosquito menace and from the statements
of others, it appears that the pesky mosquito has not been
in evidence about the lake as in former years.

I trust this control work will be continued until
the nuisance is entirely abated.

Yours truly,

(Signed) L. F. Brode

 

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Sandlake, Oregon

Mr. C. H. Bergstrom

The mosquito work done here last year has entirely
done away with the mosquitoes, did not have a one here this
year. There were millions of them before.

(Signed) Eugene Atkinson

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The amount of work done was not very large

and very little was done in the way of

work, but the amount of work done was

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Sandlake, Ore.
November 12, 1934

Mr. C. H. Bergstrom

Dear Sir:

In regard to the mosquito work it was pretty good but if we could get the work done in dyking this place instead of the ditching and fill up the holes instead of digging them out it would help a whole lot more and would not cost much more than they spent last year and would benefit more people so if we could get Government to help would be a lot more to till - a lot of our land that is worthless would be so we could use it. We have 15 to 20 acres that produce grass and hay and other things. So if you get a chance you can suggest about it besides we could move tract of the sand that is in the road on the dyke. Our road is a bother as the sand is moving in the road when it blows hard so it may be you can help us some way and oblige.

(Signed) George Galloway

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Sandlake, Oregon
November 11, 1974

Mr. C. H. Bergstrom
County Agent
Tillamook, Oregon.

Dear Sir:

In answer to your letter in regard to Mosquito Control Work, will say that it was very satisfactory in this section.

Very few mosquitoes appeared this last summer and fall, the stock could feed unmolested and one did not need a net to make hay on the tideland.

I would like to see the work continued.

Yours truly,

(signed) Roy Robertson

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Sand Lake, Ore.
Nov. 10, 1934

Dear Mr. Bergstrom:

The mosquito control project is apparently a success. Although this farm contains no tideland and therefore does not breed many mosquitoes, I should like to see the work continued for the benefit of the community at large.

Very sincerely,

(signed) Mrs. Eva Webb

By: C.M.W.

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THE
FEDERAL
GOVERNMENT

DEPARTMENT OF
THE ARMY
WASHINGTON, D. C.

The following report was received from the
Director of the Bureau of Military Affairs
on the 1st day of May, 1918, and is
being forwarded to you for your information.
It contains a list of the names of the
officers who have been promoted to the rank of
Colonel since the 1st day of January, 1918.

Very respectfully,
Your obedient servant,
John D. Smith,
Colonel, U. S. Army.

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Sand Lake, Oregon.
November 10, 1934.

Mr. C. H. Bergstrom,

Dear Sir:-

Due to the work last winter of the "Mosquito Control", we had very few mosquitoes here this summer.

In former years it was a very disagreeable task to make hay in the tidelands, or gather berries in the woods or on the sand hills, but due to the scarcity of the mosquitoes this year these tasks were a pleasure.

I would like very much to see the control work continued.

Very truly,

(Signed) N. J. Myers

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CITY OF PORTLAND, OREGON
OFFICE OF THE CITY CLERK

Sandlake, Oregon,
November 12, 1934.

Mr. C. H. Bergstrom,
County Agent,
Tillamook, Oregon.

Sandlake, Oregon.

November 12, 1934.

Dear Mr. Bergstrom:

I have your letter regarding mosquito control work in
Sand Lake.

Portland, Oregon.

I am very much pleased with the result of last winter's work
here. On my end of the lake the work was practically completed
with the result that the mosquitoes were almost entirely
eradicated. My milk production for May and June this year
was almost 20% more than May and June last year. On account
of it being such a poor grass year the production for July and
August this year was about the same as last. I am convinced
that with grass condition normal, my production will run 20%
more throughout the season than it did before the mosquito
control work was done. As my production is this year

With the work completed, I'm convinced that Sandlake would be
completely free from mosquitoes and it is only fair to assume that
production would increase clear around the lake in about the
same proportion that mine did.

Since more than one half the milk produced in Sandlake is from
tideland pastures, the benefit of the control work is a good
big item from that standpoint alone. Needless to say the absence
of mosquitoes adds very materially to the comfort of man and
beast alike.

(Signed)

Mayor

I hope the work here may be completed.

Sincerely yours,

(Signed) E. E. Allen, Jr.

CITY OF ST. HELENS

C O P Y

St. Helens, Oregon

September, 24, 1934.

Mr. H. H. Stage,

Portland, Oregon.

Dear Sir;

In answer to your letter of the 30 inst. will say that I think the work done by the Federal C.W.A. Pest Mosquito Control forces last winter did some good.

We did not seem to have as many mosquitoes this year as some years before, therefore, I feel if this work could be continued it would be a great help to the surrounding community.

Yours very truly,

E. I. Ballagh, (signed)
Mayor.

St. Helens, Oregon

September, 1901.

Mr. H. H. Steeg,

Portland, Oregon.

Dear Sir:

In answer to your letter of the 30 inst. will say that I think the work done by the Federal C. W. A. Post Mosquito Control forces last winter did some good.

We did not seem to have as many mosquitoes this year as some years before, therefore, I feel if this work could be continued it would be a great help to the surrounding community.

Yours very truly,

H. I. Wallace, (signed)
Mayor.

C O P Y

Skamania County

Board of County Commissioners

September 26, 1934.

Mr. H. H. Stage,
Associate Entomologist,
U. S. Court House,
Portland, Oregon.

Dear Sir:

Your letter of September 20th
addressed to the County Commissioners
of this county was brought up at
their meeting last Saturday.

The members of the Board greatly
appreciate the work that was done
for the elimination of the mosquito
pest and only trust that further work
by your division can be carried on
again. It might be stated that this
work not only carried on the good of
ridding the county of mosquitoes but
helped in the way of giving work to
those unemployed.

We appreciate greatly the work that
has been done and hope that the Washington
D. C. office will realize the benefits
derived and authorize further expenditures.

Trusting we can be of further
assistance to you, we are

Board of County Commissioners

By Mahel J. Fasse (signed)
Clerk of said Board.

Skamania County

Board of County Commissioners

September 25, 1934.

Mr. H. H. Stage,
Associate Entomologist,
U. S. Court House,
Portland, Oregon.

Dear Sir:

Your letter of September 20th addressed to the County Commissioners of this county was brought up at their meeting last Saturday.

The members of the Board greatly appreciate the work that was done for the elimination of the mosquito pest and only trust that further work by your division can be carried on again. It might be stated that this work not only carried on the road of ridding the county of mosquitoes but helped in the way of giving work to those unemployed.

We appreciate greatly the work that has been done and hope that the Washington D. C. office will realize the benefits derived and authorize further expenditures.

Trusting we can be of further assistance to you, we are

Board of County Commissioners

By Mahel J. Passa (signed)
Clerk of said Board.

Robert L. Rockwell

C O P Y

October 10, 1934

Mr. H. H. Stage
Associate Entomologist
438 U. S. Court House
Portland, Oregon

Dear Mr. Stage:

The writer has again been appointed chairman of the Port Madison Mosquito Control Committee by Mr. J. Speed Smith, the new president of our community organization, the Port Madison Water Company.

The committee is agreed that our first and most pleasant duty is to again express our gratitude for your always courteous, prompt and efficient cooperation with us in our efforts during the past four years.

We are sure that your endorsement of the control methods originally instituted by the Committee encouraged the community to subscribe to the mosquito control fund, so our local control could be continued from year to year.

As the result of our joint activities it was soon quite evident that, while we were able to secure a sizeable measure of local relief from the pest mosquitoes by means of the clearing and oiling operations conducted by the committee, the discovery of large areas of proven breeding places within easy flight distance of our control district was convincing evidence of our financial inability to properly extend our control to the point where it would really eliminate the pests.

Your Bureau's generous allocation of funds for the C.W.A. mosquito control work on Bainbridge Island, so completely changed the picture, and this summer there were practically no mosquitoes to torment the residents of Port Madison.

About three quarters of a mile up the bay where the work was not completed, however, the mosquitoes again were so bad this summer that workmen dreaded to work there, and the residents were glad to take refuge within their screened porches.

October 10, 1934

Mr. H. H. R. State
Associate Antismuggling
438 U. S. Court House
Portland, Oregon

Dear Mr. State:

The writer has again been appointed Chairman of the Port Madison Economic Control Committee by the Board of Directors of the Port Madison Paper Company. I am, the new President of our community organization, the

The committee is agreed that our first and most pleasant duty is to begin efforts in giving the community a prompt and efficient organization within the last four years.

We are sure that our endorsement of the control methods originally instituted by the Committee and the community to cooperate to the maximum control of our local control could be continued from year to year.

As the result of our joint activities in the past year, quite evident that, while we were able to secure a measure of local relief from the pest problem, the clearing and culling operations conducted by the committee, the discovery of large areas of forest, places within easy flight distance of our control district was convincing evidence of our financial inability to properly extend our control to the point where it would really eliminate the pests.

Your Bureau's long and allocation of funds for the C.W.A. mosquito control work on Bainbridge Island, and completely changed the picture, and this summer there was practically no mosquitoes to torment the residents of Port Madison.

About three quarters of a mile up the bay where the work was not completed, however, the mosquitoes were so bad this summer that women dressed to work there, and the residents were glad to take refuge within their screened porches.

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This great contrast has positively proven the effectiveness of the control methods employed, and we trust you will use your influence with the powers that be to secure a continuation of the program in case C.W.A. funds are made available for relief employment this winter.

The unemployment situation on Bainbridge Island was acute last winter. Many self respecting families were all but destitute, and were unable to seek employment effectively because of the high cost of transportation to and from the Island, which has very few industries within its own boundaries.

It seems to us that the earnestness and willingness of the men employed on the C.W.A. mosquito control project are better expressions of their appreciation of this employment at a time when it was so sorely needed, than anything we can write.

The situation has been relieved in this respect somewhat, but with the fishing, berry picking and canning seasons ended, want again will be confronting many of our Island residents this winter.

Another phase of the mosquito control program that has not been emphasized, is the fact that the clearing and draining operations open up rich bottom land for cultivation. An offer was made for the 20-acre parcel owned by the Port Madison Water Company, where the committee's clearing work was done year before last, but had to be refused because this land is held to protect one of our springs that constitute our source of water supply.

Again thanking you for your splendid cooperation, and assuring you of our desire and willingness to be of assistance in furthering an all-island mosquito control district, and with kind personal regards to yourself and staff, we remain,

Very sincerely yours,

Port Madison Mosquito Control Committee

RLR:S

By Robert Rockwell (signed)
Chairman

This great contrast has been very clearly shown in the effectiveness of the control method employed, and as you will see your influence with the people that we are securing a continuation of the program in case it is made available for relief, especially this winter.

The unemployment situation on the island was acute last winter. Many self-respecting families were all but destitute, and were unable to see to the necessities of the high cost of transportation to and from the island, which has very few industries within its boundaries.

It seems to us that the earnestness and willingness of the men employed on the C. A. Mosquito Control project are better expressions of their appreciation of this employment at a time when it was so sorely needed, than anything we can write.

The situation has been relieved in this respect somewhat, but with the planting, berry picking and canning seasons ended, want again will be confronting many of the island residents this winter.

Another phase of the mosquito control program that has not been emphasized, is the fact that the clearing and draining operations open up rich bottom land for cultivation. An offer was made for the 20-acre parcel owned by the Port Madison Water Company, where the committee's clearing work was done years before last, but had to be refused because this land is held to protect one of our springs that contribute our source of water supply.

Again thanking you for your splendid cooperation, and assuring you of our desire and willingness to be of assistance in furthering an all-island mosquito control district, and with kind personal regards to yourself and staff, we remain,

Very sincerely yours,

Port Madison Mosquito Control Committee

By Robert Rockwell (signed)
Chairman

RLR:2

JOHN GRAHAM, A.I.A.

C O P Y

October 3, 1934.

Mr. H. H. Stage,
Associate Entomologist,
U. S. Bureau of Entomology,
438 U. S. Court House,
Portland, Oregon.

Dear Mr. Stage:-

I have recently returned from the Orient and from my family and friends, who spent the summer at Port Madison, have glowing accounts of the success of the mosquito control work done last winter. As far as I can gather, the results have been perfect.

I am not sure whether you are familiar with the beginnings of that undertaking. Some years ago, when I was President of the Port Madison Community Club, I suggested we take steps to get the mosquito pest under control, and while many were sceptical as to our ability to accomplish results, I asked Mr. Rockwell to take charge of the matter. He went into the work very enthusiastically and got in touch with you and other scientific technical experts and so the work was started.

We were soon able to see, however, that the job was much too large for a small community like ours to cope with. Then the C.W.A. program was inaugurated last year. This work under your direction gave, not only needed employment, but has proved a tremendous benefit to the community.

There is still some work to be done in the neighborhood of Port Madison and Agate Point and it should ultimately be extended to cover the whole island. Of all the C. W. A. work that I saw done in various places last year, the most valuable has been this mosquito control work and I certainly hope you will be able to find relief employment for a number of men next winter in continuing the good work.

Yours very truly,

JG-AB

(signed)

John Graham

JOHN GRAHAM, M.I.A.

C O E Y

Mr. H. H. Stages,
Associate Entomologist,
U. S. Bureau of Entomology,
438 U. S. Court House,
Portland, Oregon.

Dear Mr. Stages:

I have recently returned from the Grant and Tracy family and friends, who spent the summer at Fort Madison, have glowing accounts of the success of the mosquito control work done last winter. As far as I can gather, the results have been perfect.

I am not sure whether you are familiar with the beginnings of that undertaking. Some years ago, when I was President of the Fort Madison Community Club, I suggested we take steps to get the mosquito pest under control, and while many were sceptical as to our ability to accomplish results, I asked Mr. Rockwell to take charge of the matter. He went into the work very enthusiastically and got in touch with you and other scientific technical experts and so the work was started.

We were soon able to see, however, that the job was much too large for a small community like ours to cope with. Then the C.W.A. program was inaugurated last year. This work under your direction gave, not only needed employment, but has proved a tremendous benefit to the community.

There is still some work to be done in the neighborhood of Fort Madison and Agate Point and it should ultimately be extended to cover the whole island. Of all the C. W. A. work that I saw done in various places last year, the most valuable has been this mosquito control work and I certainly hope you will be able to find relief employment for a number of men next winter in continuing the good work.

Yours very truly,

John Graham

(signed)

10-AB

Bainbridge Island

C O P Y

September 27 1934.

Dear Mr. Stage:

In reply to your enquiry of whether or not your mosquito control work on Bainbridge had been successful, I wish to state that by universal consent your work has been an entire success.

I might add that from my own observation, I have it far more successful than I ever deemed possible. On my own place, in former years it was almost impossible to sit on my porch or wander in the garden towards sunset. During the day-time, it was not specially pleasant to walk along the shady road north of place, so numerous, often were the mosquitoes. This year I have not been bitten by a single mosquito near my place. The people around Madison report about the same favorable conditions.

I wish, therefore, here to congratulate you for the excellent work of your Department. I only hope that it will be possible to continue your work this Fall on the south of the Island.

Yours sincerely :

Committeeman of the Bainbridgs Island
Community Club.
Formerly associate Geologist U.S.Engineers.

M T Hopkins (signed)

1912

September 10, 1912

Dear Mr. Stages:

In reply to your inquiry of whether or not your mosquito work

on Belmont's Island had been successful, I wish to state that

university consent your work has been an entire success.

I might add that from my own observation, I have in the

successful than I ever deemed possible. On my own island, in 1911

years it was almost impossible to sit on my porch or wander in the

garden towards sunset. During the day-time, it was not possible

pleasant to walk along the sandy road north of house, so numerous

often were the mosquitoes. This year I have not been bitten by a

single mosquito near my place. The people around Madison report about

the same favorable conditions.

I wish, therefore, here to congratulate you for the excellent

work of your Department. I only hope that it will be possible to

continue your work this Fall on the south of the island.

Yours sincerely :

Commissioner of the Belmont's Island
Community Club.
Formerly associate Geologist U.S. Engineers.

W. T. Hopkins (signed)

P.S. At next month's meeting
I will see to it that
the Community Club sends you
a vote of thanks.

Rolling Bay

Bainbridges Island Wash.

Sept. 27 1934

Dear Mr. Stage:

On my return from a somewhat extended fishing treip East of the Mountains, I found your letter.

Yes, your mosquito work on the island has been an entire success. Everyone to whom I have spoken on the subject is entirely convinced of this. On a separate sheet I am writing you a testimonial of the fact. Yates some time ago suggested that I write a letter of commendation of your work to Washington. At the time I was about to sail for Alaska on a fishing and touring trip and failed to write this letter, I will do so now for I think that your Department deserves it. (I will obtain the endorsement of the Community Club on this)

If you come over here let me know some time in advance and I will organise a fishing trip for you and your friends on the Trilobite. Yates who is on a temporary job with the U.S. Highways may be back by then and we will take him along.

I heard today that a considerable fund was to be allotted to relief work on the Island this Fall. If these funds become available we shall try to have it put in mosquito work to terminate your whole Island project. If anything developes about these funds I shall take the matter up with the relief administration and try to have most of them in favor of pest eradication work. Work on the roads is almost useless. We have too many roads as it is, which require more upkeep than we can afford.

My best regards to your assistants, the Gjulins.
Cordially yours: M T Hopkins (signed)

At next month's meeting
I will see to it that
the Community Club sends you
a vote of thanks.

Very truly,
M. T. Hopkins

Washington, D.C.

April 27, 1934

Dear Mr. Stages:

On my return from a somewhat extended fishing trip last of

the mountains, I found your letter.

Yes, your mosquito work on the island has been an entire success.

Everyone to whom I have spoken on the subject is entirely convinced

of this. On a separate sheet I am writing you a testimonial

of the fact. Yates some time ago suggested that I write a letter of

commendation of your work to Washington. At the time I was about to

will for Alaska on a fishing and hunting trip and failed to write

this letter. I will do so now for I think that your Department deserves

it. (I will obtain the endorsement of the Community Club on this)

If you come over here let me know some time in advance and

I will organize a fishing trip for you and your friends on the Tinian.

Yates who is on a temporary job with the U.S. Fish and Game Service

then and we will take him along.

I heard today that a considerable fund was to be allotted to re-

lieve work on the island this fall. If these funds become available we

shall try to have it put in mosquito work to terminate your whole

island project. If anything develops about these funds I shall take

the matter up with the relief administration and try to have most of them

in favor of pest eradication work. Work on the roads is almost useless.

We have too many roads as it is, which require more upkeep than we can

afford.

My best regards to your associates, the Tinians.
Cordially yours: M. T. Hopkins (signed)

C O P Y

J. Speed Smith,
Attorney at Law,
Dexter-Horton Building
Seattle

October 10, 1934

Mr. H. H. Stage
Associate Antomologist
438 U. S. Court House,
Portland, Oregon.

Dear Sir:

The people of the north end of Bainbridge Island owe to your department a debt of gratitude that can never be paid for two reasons: first, the splendid work which was done by the government in mosquito control has made the north end of the island a place in which people can live with some degree of comfort, since we at Port Madison had no mosquitoes last year. Secondly, by doing this work the government employed a great number of people upon the island who were destitute.

It seems a pity that the work that you began could not be finished by reason of lack of funds. It seems to me that any funds available for the employment of idle men should be allotted for the completion of your work. It would be a calamity for your task to be only half completed.

With kindest personal regards, I am

Yours very truly

JSS:B

(signed) J. Speed Smith
President, Port Madison Water Co.

J. Speed Smith,
Attorney at Law,
Dexter-Horton Building
Seattle

October 30, 1935

Mr. H. W. Stage
Associate Anatomologist
438 U. S. Court House,
Portland, Oregon.

Dear Sir:

The people of the north end of Bainbridge Island are so much
depressed a debt of gratitude that can never be paid for the
first, the splendid work which was done by the government in
control has made the north end of the island a place in which people
can live with some degree of comfort, since as at Fort Madison and
Ponchartraine last year. Secondly, by doing this work the government
employed a great number of people upon the island who were destitute.

It seems a pity that the work that you began could not be
finished by reason of lack of funds. It seems to me that any funds avail-
able for the employment of idle men should be allotted for the completion
of your work. It would be a calamity for your task to be only half com-
pleted.

With kindest personal regards, I am

Yours very truly

122:B

(signed) J. Speed Smith
President, Fort Madison Water Co.

C O P Y

October 9th 1934.

Mr. H. H. Stage,
Associate Entomologist,
U. S. Bureau of Entomology,
No. 438 U. S. Court House,
Portland, Oregon.

My dear Mr. Stage:

As a resident for many years of Port Madison on Bainbridge Island, I wish to express my appreciation of the work done by yourself and Associates in practically eliminating mosquitoes in the North end of our Island.

For the past two years I have been President of our Water Company (which is really an Improvement Club). I followed this work very closely and personally know of the wonderful results you have accomplished.

I sincerely hope this work is going to be continued as I feel sure that a little more clearing and drainage would make this Island a perfect summer resort.

Again thanking you, I am

Yours very truly

(signed) E. Cunningham

October 21st 1904.

Mr. H. H. Stage,
Associate Entomologist,
U. S. Bureau of Entomology,
No. 438 U. S. Court House,
Portland, Oregon.

My dear Mr. Stage:

As a resident for many years of Fort
Madison on Bainbridge Island, I wish to express
my appreciation of the work done by yourself and
Associates in practically eliminating mosquitoes
in the North end of our Island.

For the past two years I have been In-
sident of our Water Company (which is really an
Improvement Club). I followed this work very
closely and personally know of the wonderful results
you have accomplished.

I sincerely hope this work is going to be
continued as I feel sure that a little more drain-
ing and drainage would make this Island a perfect
summer resort.

Again thanking you, I am

Yours very truly

(signed) E. Cunningham