

XXXVII.—STATISTICS OF THE SHAD-HATCHING OPERATIONS CONDUCTED BY THE UNITED STATES FISH COMMISSION IN 1882.

BY CHAS. W. SMILEY.

From the reports of the various persons in charge of shad-hatching stations during the spring of 1882, I have prepared a series of five tables to show the operations at each station, and the sixth for a summary exhibit. From these it will appear that 36,637,000 eggs were obtained and hatched with an average loss of 18 per cent. A comparison with the number of shad hatched in previous years is of interest. The decrease this year has been attributed to the cold season and small run of shad.

Number of shad hatched :

| | |
|------------|------------|
| 1879 | 16,842,000 |
| 1880 | 29,473,000 |
| 1881 | 70,035,000 |
| 1882 | 30,283,000 |

Of the fish hatched, a part were deposited in waters near the several hatching stations, as follows :

Deposited in local waters :

| | |
|------------|------------|
| 1879 | 5,587,000 |
| 1880 | 7,864,600 |
| 1881 | 46,518,500 |
| 1882 | 8,315,000 |

Of the fish hatched, the number designed for transportation to other waters was as follows :

Placed in transportation for other waters : *

| | |
|------------|-------------|
| 1879 | 10,002,500 |
| 1880 | 20,761,400 |
| 1881 | 23,516,500 |
| 1882 | †21,078,000 |

The number of shad actually deposited within the waters of the different States the present year was as follows :

| | |
|----------------------------|-----------|
| Alabama | 850,000 |
| Arkansas | 432,000 |
| Delaware | 891,000 |
| District of Columbia | 3,050,000 |
| Georgia | 2,831,000 |
| Illinois | 145,000 |

* From these figures there is a slight deduction each year for fish lost in transit.

† Of these 677,000 were lost while in transit.

| | |
|----------------------|-------------------|
| Indiana | 145,000 |
| Iowa | 958,000 |
| Kansas | 222,000 |
| Kentucky | 1,900,000 |
| Maine | 475,000 |
| Maryland | 7,769,000 |
| New York | 983,060 |
| Ohio | 1,595,000 |
| South Carolina | 497,000 |
| Tennessee | 400,000 |
| Texas | 1,518,000 |
| Virginia | 3,605,000 |
| West Virginia | 450,000 |
| Total | 28,716,000 |

Fuller particulars of these deposits, the time, streams, places, etc. will be found in the tables of distribution.

TABLE I.—Record of shad-hatching operations conducted by the United States steamer Fish Hawk, Lieut. Z. L. Tanner, U. S. N., commanding, at Quantico Creek, from April 17 to May 22, 1882.

| Date. | Ripe shad taken. | | Eggs obtained. | Eggs lost in hatching. | Fish released in local waters. | Fish transported to other places. |
|-------------------|------------------|-----------|------------------|------------------------|--------------------------------|-----------------------------------|
| | Males. | Females. | | | | |
| Apr. 17..... | 1 | 1 | 20,000 | | | |
| 18..... | 1 | 1 | 30,000 | | | *30,000 |
| 19..... | 1 | 1 | 30,000 | | | |
| 20..... | 1 | 1 | 20,000 | | | |
| 24..... | 4 | 1 | 15,000 | | | |
| 26..... | 1 | 1 | 25,000 | | 20,000 | |
| 28..... | 1 | 1 | 15,000 | | | |
| 29..... | 1 | 1 | 15,000 | | | |
| 29..... | 4 | 3 | 147,000 | | | |
| 30..... | 4 | 6 | 175,000 | 60,000 | | |
| 30..... | 11 | 8 | 280,000 | 25,000 | | |
| May 1..... | 5 | 3 | 50,000 | 5,000 | | |
| 1..... | 15 | 15 | 400,000 | 10,000 | | |
| 2..... | 5 | 5 | 150,000 | 25,000 | | |
| 2..... | 11 | 11 | 275,000 | | | |
| 3..... | 9 | 9 | 125,000 | | 30,000 | |
| 3..... | 6 | 6 | 130,000 | | | |
| 4..... | 2 | 2 | 50,000 | | 20,000 | |
| 4..... | 3 | 3 | 70,000 | | | |
| 5..... | 2 | 2 | 40,000 | | | |
| 5..... | 1 | 1 | 35,000 | | | |
| 6..... | 8 | 8 | 255,000 | 5,000 | | |
| 7..... | 1 | 1 | 15,000 | 2,000 | 15,000 | |
| 7..... | | | | | 25,000 | |
| 8..... | | | | | 15,000 | |
| 8..... | | | | | 15,000 | |
| 8..... | | | | | 147,000 | |
| 9..... | | | | | 115,000 | |
| 9..... | | | | | 255,000 | |
| 9..... | | | | | 45,000 | |
| 10..... | | | | | 125,000 | |
| 11..... | | | | | 300,000 | †600,000 |
| 11..... | | | | | 455,000 | |
| 12..... | | | | | 50,000 | †200,000 |
| 12..... | | | | | 13,000 | |
| 14..... | 3 | 3 | †40,000 | 20,000 | | |
| 22..... | | | | | 20,000 | |
| Total..... | 101 | 94 | 2,407,000 | 152,000 | 1,755,000 | 830,000 |

* Used for experiments.

† Transferred to central station and navy-yard, and included in the reports for those places.

‡ Eggs received from the Lookout.

TABLE II.—Record of shad-hatching operations conducted by the United States Fish Commission at Moxley's Point, and navy-yard, Washington, D. C., from April 19 to June 8, 1882, inclusive. Lieut. W. M. Wood in charge.

| Date. | Ripe shad taken. | | Eggs obtained. | Eggs lost in hatching. | Fish released in local waters. | Transported to other waters. | Messenger in charge of transfer. |
|----------------|------------------|----------|----------------|------------------------|--------------------------------|------------------------------|----------------------------------|
| | Males. | Females. | | | | | |
| 1882. | | | | | | | |
| Apr. 19 | | | 40,000 | | | | |
| 20 | | | 155,000 | | | | |
| 21 | | | 30,000 | | | | |
| 22 | | | 205,000 | | | | |
| 23 | | | | | | | |
| 24 | | | 500,000 | | | | |
| 25 | | | 300,000 | | | | |
| 26 | | | 500,000 | | | | |
| 27 | | | 1,500,000 | | | | |
| 28 | | | 800,000 | | | | |
| 29 | | | 300,000 | | | | |
| 30 | | | 120,000 | | | | |
| May 1 | | | 445,000 | | | | |
| 2 | | | 360,000 | | | | |
| 3 | | | 250,000 | | | 150,000 | J. F. Ellis. |
| 4 | | | 365,000 | | | 300,000 | N. Simmons. |
| 5 | | | 730,000 | | | 230,000 | Do. |
| 6 | 14 | 14 | 980,000 | | | | |
| 7 | 15 | 12 | 500,000 | | | 250,000 | G. G. Davenport. |
| 8 | 10 | 8 | 240,000 | | | 460,000 | J. Mace. |
| 9 | 5 | 4 | 110,000 | | | 300,000 | G. Schuermann. |
| 10 | 30 | 31 | 700,000 | | | 250,000 | C. J. Huske. |
| 11 | 2 | 1 | | | | 760,000 | J. F. Ellis. |
| 12 | 15 | 10 | 500,000 | | | 300,000 | H. E. Quinn. |
| 13 | 16 | 12 | 400,000 | | | 550,000 | G. G. Davenport. |
| 14 | | | | | | 250,000 | G. Schuermann. |
| 15 | 15 | 12 | 50,000 | | | 850,000 | H. E. Quinn. |
| 16 | 10 | 13 | 350,000 | | | 250,000 | C. J. Huske. |
| 17 | 13 | 10 | 280,000 | | | 1,400,000 | N. Simmons. |
| 18 | 30 | 30 | 450,000 | | | | |
| 19 | 3 | 3 | 400,000 | | | | |
| 20 | 1 | 1 | 400,000 | | | | |
| 21 | 2 | 2 | 40,000 | | | 1,000,000 | H. E. Quinn. |
| 22 | 5 | 4 | 100,000 | | | 1,005,000 | G. H. H. Moore. |
| 23 | 2 | 2 | 40,000 | | | | |
| 24 | 5 | 4 | 80,000 | | | 810,000 | N. Simmons. |
| 25 | 2 | 3 | 70,000 | | | | |
| 26 | 4 | 5 | 100,000 | | | 920,000 | F. L. Donnelly. |
| 27 | 6 | 6 | 200,000 | | | 250,000 | G. G. Davenport. |
| 28 | 4 | 5 | 150,000 | | | 920,000 | G. H. H. Moore. |
| 29 | 10 | 12 | 300,000 | | | 300,000 | J. Mace. |
| 30 | 3 | 4 | 80,000 | | | 460,000 | Do. |
| 31 | | | | | | 560,000 | J. F. Ellis. |
| June 1 | 6 | 5 | 80,000 | | | 300,000 | H. E. Quinn. |
| 3 | 5 | 5 | 30,000 | | | 910,000 | J. F. Ellis. |
| 5 | 7 | 8 | 200,000 | | | 180,000 | W. D. Wirt. |
| 6 | 4 | 3 | 80,000 | | | 180,000 | H. E. Quinn. |
| 7 | 5 | 6 | 140,000 | | | 340,000 | G. Schuermann. |
| 8 | 5 | 5 | 120,000 | | | | |
| April to June. | | | 7,040,000 | | | *441,000 | |
| Total. | | | 21,820,000 | 3,885,000 | 3,050,000 | 14,885,000 | |

* Sent directly to Little Falls of the Potomac River.

TABLE III.—Record of shad-hatching operations conducted by H. C. Chester, at Havre de Grace, Md., on the Susquehanna River, under the direction of the United States Fish Commission, from May 8 to June 23, inclusive, 1882.

| Date. | Ripe shad taken. | | Eggs obtained. | Eggs lost. | Fish released in local waters. | Fish transported to other waters. | Fish taken at seine hauls. | | | |
|--------|------------------|----------|----------------|------------|--------------------------------|-----------------------------------|----------------------------|----------|-------|---------|
| | Males. | Females. | | | | | Shad. | Herring. | Rock. | Others. |
| 1882. | | | | | | | | | | |
| May 8 | | | 18,000 | | | | | | | |
| 9 | | | 869,000 | | | | | | | |
| 10 | | | 473,000 | *473,000 | | | | | | |
| †18 | | | 156,000 | | | | | | | |
| 19 | | | 145,000 | | | | | | | |
| 20 | | | 135,000 | | | | 4 | 700 | | 500 |
| 21 | | | 60,000 | | | | | | | |
| 22 | | | 25,000 | | | | 70 | 800 | 1 | 1,500 |
| 23 | | | 477,000 | | | | 150 | 2,000 | 1 | 1,000 |
| 24 | | | 170,000 | | | | 100 | 1,000 | | |
| 25 | | | 239,000 | | 400,000 | | 48 | 600 | | |
| 26 | | | | | | | 100 | 500 | | |
| 27 | | | 215,000 | | | | | | | |
| 31 | | | | | 1,000,000 | | | | | |
| June 1 | | | | | 300,000 | | | | | |
| 2 | | | | | 150,000 | | | | | |
| 3 | | | | | | | 27 | 400 | | |
| 5 | | | | | 75,000 | 150,000 | 12 | 300 | | |
| 6 | | | ‡106,000 | | | | 10 | | | |
| 7 | | | ‡117,000 | | | | 47 | | | |
| 8 | ‡11 | ‡12 | ‡317,000 | | | | 29 | 800 | 4 | |
| 9 | ‡6 | ‡6 | ‡117,000 | | | | 47 | | 10 | |
| 10 | | | | | | | 28 | | 14 | |
| 12 | ‡2 | | ‡25,000 | | | | 6 | | 8 | |
| 13 | | | | | | | 6 | | 26 | |
| 14 | | | | | | | 6 | | 39 | |
| 15 | | | | | 75,000 | 30,000 | 6 | | 7 | |
| 10 | | | | | | 500,000 | 12 | | 14 | |
| 17 | | | | | | | 2 | | 5 | |
| 19 | | | | | | | 4 | | 4 | |
| 21 | | | | | | | 11 | | 12 | |
| 23 | | | | | | | 12 | | 2 | |
| Total | | | 3,153,000 | 548,000 | 1,955,000 | 650,000 | 758 | 6,600 | 183 | 3,000 |

* Loss of these eggs caused by a gale.

† From May 11 to 17 it was not possible to operate the fisheries on account of high winds.

‡ From fish in the pool.

TABLE IV.—Record of shad-hatching operations conducted by the United States steamer Fish Hawk, Lieut. Z. L. Tanner, U. S. N., commanding, near Battery Station, Susquehanna River, May 23 to June 13, 1882.

| Date. | Shad taken. | | Eggs obtained. | Eggs lost in hatching. | Fish released in local waters. | Fish transported to other waters. |
|--------------|-------------|----------|----------------|------------------------|--------------------------------|-----------------------------------|
| | Males. | Females. | | | | |
| May 23 | 11 | 11 | 336,000 | ..... | ..... | ..... |
| 23 | 7 | 8 | 170,000 | ..... | ..... | ..... |
| 24 | 6 | 7 | 147,000 | ..... | ..... | ..... |
| 24 | 6 | 5 | 154,000 | ..... | ..... | ..... |
| 24 | 6 | 7 | 185,000 | ..... | ..... | ..... |
| 25 | 10 | 7 | 215,000 | ..... | ..... | ..... |
| 26 | 3 | 2 | 77,000 | ..... | ..... | ..... |
| 27 | 1 | 1 | 35,000 | ..... | ..... | ..... |
| 27 | 2 | 8 | 60,000 | ..... | ..... | ..... |
| 27 | 2 | 1 | 40,000 | ..... | ..... | ..... |
| 29 | 15 | 13 | 364,000 | ..... | ..... | ..... |
| 30 | 10 | 8 | 220,000 | ..... | ..... | ..... |
| 30 | 3 | 5 | 112,000 | ..... | ..... | ..... |
| 30 | 2 | 2 | 84,000 | ..... | ..... | ..... |
| 30 | 6 | 5 | 112,000 | ..... | ..... | ..... |
| 31 ..... | ..... | ..... | ..... | ..... | 300,000 | ..... |
| June 1 ..... | ..... | ..... | ..... | ..... | 200,000 | ..... |
| 2 | 2 | 1 | 40,000 | ..... | 668,000 | ..... |
| 5 ..... | ..... | ..... | ..... | ..... | ..... | 150,000 |
| 6 | 1 | 1 | 10,000 | ..... | ..... | ..... |
| 6 | 1 | 1 | 25,000 | ..... | ..... | ..... |
| 6 | 1 | 2 | 40,000 | ..... | ..... | ..... |
| 8 | 2 | 8 | 100,000 | ..... | ..... | ..... |
| 9 ..... | ..... | ..... | ..... | ..... | 887,000 | ..... |
| 12 | 1 | 1 | *25,000 | ..... | ..... | ..... |
| 13 ..... | ..... | ..... | ..... | ..... | ..... | †60,000 |
| Total | 97 | 94 | 2,551,000 | 761,000 | 1,555,000 | 210,000 |

* Turned over to Battery Station to hatch.

† Final destination not reported.

TABLE V.—Record of shad-hatching operations conducted under the direction of M. McDonald at Central Station, Washington, D. C., from April 27 to June 19, 1882, inclusive.

| Date. | Eggs received. | Eggs lost in hatching. | Fish furnished for transportation to other waters. | Messenger in charge of transfer. |
|----------|----------------|------------------------|--|----------------------------------|
| April 27 | 1, 772, 000 | | | |
| 28 | 285, 000 | | | |
| 29 | 305, 000 | | | |
| 30 | 320, 000 | | | |
| May 1 | 125, 000 | | | |
| 2 | 160, 000 | 200, 000 | | |
| 3 | 55, 000 | 425, 000 | 325, 000 | J. F. Ellis. |
| 4 | 142, 000 | 35, 000 | 200, 000 | N. Simmons. |
| 5 | 214, 000 | 60, 000 | 200, 000 | Do. |
| 6 | 75, 000 | | 200, 000 | J. Mace. |
| 7 | 211, 000 | 79, 000 | 250, 000 | N. Simmons. |
| 8 | 205, 000 | 18, 000 | 300, 000 | J. Mace. |
| 9 | 362, 000 | | | |
| 10 | 142, 000 | | | |
| 11 | 225, 000 | *63, 000 | 250, 000 | J. F. Ellis. |
| 12 | 90, 000 | | 300, 000 | F. L. Donnelly. |
| 13 | 20, 000 | | 220, 000 | G. Schurmann. |
| 14 | 40, 900 | *70, 000 | | |
| 15 | 15, 000 | | 341, 000 | H. E. Quinn. |
| 16 | 104, 000 | 37, 000 | | |
| 17 | 20, 000 | 27, 000 | 200, 000 | N. Simmons. |
| 18 | 82, 000 | 37, 000 | 400, 000 | G. G. Davenport. |
| 19 | 145, 000 | | | |
| 20 | 105, 000 | 22, 000 | 24, 000 | B. & O. Express. |
| 21 | 158, 000 | 72, 000 | 400, 000 | J. Mace. |
| 22 | 15, 000 | 31, 000 | 140, 000 | G. H. H. Moore. |
| 23 | 230, 000 | | | |
| 24 | 235, 000 | | 83, 000 | N. Simmons. |
| 25 | 40, 000 | 22, 000 | | |
| 26 | 248, 000 | 8, 000 | 130, 000 | F. L. Donnelly. |
| 27 | 30, 000 | 6, 000 | | |
| 28 | 25, 000 | 32, 000 | 308, 000 | G. H. H. Moore. |
| 29 | | | 208, 000 | J. Mace. |
| 30 | 119, 000 | | 331, 000 | J. F. Ellis. |
| 31 | | 22, 000 | 225, 000 | G. G. Davenport. |
| June 1 | 25, 000 | 37, 000 | | |
| 2 | 10, 000 | 25, 000 | | |
| 3 | | | 48, 000 | J. F. Ellis. |
| 4 | | 70, 000 | | |
| 5 | 68, 000 | | 30, 000 | W. D. Wirt. |
| 6 | 105, 000 | 12, 000 | 70, 000 | H. E. Quinn. |
| 7 | 65, 000 | | | |
| 8 | 27, 000 | | | |
| 9 | | 2, 000 | 70, 000 | W. F. Page. |
| 10 | | 6, 000 | | |
| 12 | | | 140, 000 | G. H. H. Moore. |
| 13 | 70, 000 | 18, 000 | | |
| 14 | 10, 000 | *10, 000 | | |
| 15 | 10, 000 | | | |
| 18 | | 0, 000 | | |
| 19 | | 1, 000 | | |
| Total | 6, 706, 000 | 1, 313, 000 | 5, 393, 000 | |

* Loss offset by overcount of eggs received.

TABLE VI.—Summary of work at shad-hatching stations operated by the United States Fish Commission during the spring of 1882.

| Dates. | | Location of stations. | | Persons in charge of station. | Eggs obtained. | Eggs lost. | Fish hatched. | Fish released in local waters. | Fish transported to other waters. |
|---------------|---------------|-----------------------|-----------------------|-------------------------------|----------------|------------|---------------|--------------------------------|-----------------------------------|
| Season began. | Season ended. | Water. | Place. | | | | | | |
| April 17 | May 22 | Quantico Creek | Quantico, Va. | Z. L. Tanner | 2,407,000 | 152,000 | 2,585,000 | 1,755,000 | *830,000 |
| April 19 | June 8 | Moxley's Point | Navy-yard, Washington | W. M. Wood | 21,820,000 | 3,845,000 | 17,035,000 | 3,050,000 | 14,685,000 |
| May 8 | June 23 | Battery Island | Havre de Grace, Md | H. C. Chester | 3,153,000 | 848,000 | 2,665,000 | 1,455,000 | 650,000 |
| May 23 | June 13 | Susquehanna River | Havre de Grace, Md | Z. L. Tanner | 2,531,000 | 761,000 | 1,765,000 | 1,355,000 | 720,000 |
| April 27 | June 19 | Central Station | Washington, D. C. | M. McDonald | 6,706,000 | 1,313,000 | 5,393,000 | 5,393,000 | 5,393,000 |
| | | Total | | | 36,637,000 | 6,649,000 | 30,288,000 | 8,315,000 | 21,968,000 |

* Of this number 30,000 were used for experiments; 600,000 were delivered to Central Station and 200,000 to navy-yard, and included in the reports for those stations.

† Of this number 64,000 were reported as a shipment, but no further record appears.

‡ Of this amount 20,000 were used for experiment, and 800,000 are duplicated in the reports of Central Station and navy-yard. The disposition of the remainder, with the exception of the 60,000 referred to in the preceding foot-note, appears from Tables VII and VIII.

TABLE VII.—Chronological record of distribution of young shad made under the direction of the United States Commissioner of Fish and Fisheries, from April 26 to June 17, 1882.

| Date. | Where fish were hatched. | Number of fish— | | State. | Town or place. | Introduction of fish. | | | Tributary of— | Transfer in charge of— | |
|-------------|---------------------------|-----------------|-------------------|-------------------|---|--------------------------|--------------------------|--------------------------|--------------------------|------------------------|--|
| | | Started with. | Actually planted. | | | Stream. | Stream. | Stream. | | | |
| 1882. | | | | | | | | | | | |
| April 26 | Steamer Fish Hawk..... | 20,000 | 20,000 | Virginia | Quantico | Quantico Creek..... | Quantico Creek..... | Quantico Creek..... | Potomac River..... | Z. L. Tanner. | |
| April & May | Navy-yard..... | 3,050,000 | 3,050,000 | Dist. of Columbia | Washington..... | Eastern Branch..... | Eastern Branch..... | Eastern Branch..... | Potomac River..... | W. M. Wood. | |
| May 3 | Steamer Fish Hawk..... | 30,000 | 30,000 | Virginia | Quantico | Quantico Creek..... | Quantico Creek..... | Quantico Creek..... | Potomac River..... | Z. L. Tanner. | |
| 4 | Navy-yard and armory..... | 475,000 | 450,000 | Ohio | Tiffin..... | Santucky River..... | Santucky River..... | Santucky River..... | Ohio River..... | J. F. Ellis. | |
| 5 | Steamer Fish Hawk..... | 20,000 | 20,000 | Virginia | Quantico | Quantico Creek..... | Quantico Creek..... | Quantico Creek..... | Potomac River..... | Z. L. Tanner. | |
| 6 | Navy-yard and armory..... | 500,000 | 500,000 | Maryland | Little Falls..... | Potomac River..... | Potomac River..... | Potomac River..... | Chesapeake Bay..... | N. Simmons. | |
| 7 | Armory..... | 200,000 | 430,000 | Maryland | Little Falls..... | Potomac River..... | Potomac River..... | Potomac River..... | Chesapeake Bay..... | N. Simmons. | |
| 8 | Armory..... | 250,000 | 200,000 | West Virginia | Wheeling..... | Potomac River..... | Potomac River..... | Potomac River..... | Chesapeake Bay..... | Joseph Mace. | |
| 9 | Steamer Fish Hawk..... | 40,000 | 240,000 | Virginia | Quantico | Quantico Creek..... | Quantico Creek..... | Quantico Creek..... | Mississippi River..... | N. Simmons. | |
| 10 | Navy-yard..... | 177,000 | 177,000 | Virginia | Quantico | Quantico Creek..... | Quantico Creek..... | Quantico Creek..... | Potomac River..... | Z. L. Tanner. | |
| 11 | Steamer Fish Hawk..... | 250,000 | 231,000 | Georgia | Newman..... | Chattahoochee River..... | Chattahoochee River..... | Chattahoochee River..... | Potomac River..... | Z. L. Tanner. | |
| 12 | Navy-yard..... | 750,000 | 750,000 | Maryland | Little Falls..... | Potomac River..... | Potomac River..... | Potomac River..... | Appalachicola River..... | G. G. Davenport. | |
| 13 | Navy-yard..... | 300,000 | 300,000 | Virginia | Va. Midland R. R. Crossing..... | Rappahannock River..... | Rappahannock River..... | Rappahannock River..... | Chesapeake Bay..... | Joseph Mace. | |
| 14 | Steamer Fish Hawk..... | 415,000 | 415,000 | Virginia | Quantico | Quantico Creek..... | Quantico Creek..... | Quantico Creek..... | Potomac River..... | Z. L. Tanner. | |
| 15 | Steamer Fish Hawk..... | 125,000 | 125,000 | Virginia | Quantico | Quantico Creek..... | Quantico Creek..... | Quantico Creek..... | Potomac River..... | Z. L. Tanner. | |
| 16 | Navy-yard and armory..... | 845,000 | 870,000 | Texas | Austin..... | Colorado River..... | Colorado River..... | Colorado River..... | Gulf of Mexico..... | J. F. Ellis. | |
| 17 | Steamer Fish Hawk..... | 65,000 | 63,000 | Virginia | Quantico | Quantico Creek..... | Quantico Creek..... | Quantico Creek..... | Potomac River..... | Z. L. Tanner. | |
| 18 | Armory..... | 300,000 | 300,000 | Virginia | Farmville..... | Appomattox River..... | Appomattox River..... | Appomattox River..... | James River..... | Z. L. Tanner. | |
| 19 | Navy-yard..... | 250,000 | 248,000 | South Carolina | C. and A. L. Crossing..... | Broad River..... | Broad River..... | Broad River..... | Santee River..... | C. J. Donnelly. | |
| 20 | Navy-yard and armory..... | 470,000 | 470,000 | Virginia | Fredericksburg..... | Rappahannock River..... | Rappahannock River..... | Rappahannock River..... | Chesapeake Bay..... | G. C. Schuermann. | |
| 21 | Navy-yard..... | 300,000 | 300,000 | Virginia | Strasburg..... | Shenandoah River..... | Shenandoah River..... | Shenandoah River..... | Potomac River..... | H. E. Quinn. | |
| 22 | Navy-yard..... | 550,000 | 550,000 | Maryland | Little Falls..... | Potomac River..... | Potomac River..... | Potomac River..... | Chesapeake Bay..... | G. G. Davenport. | |
| 23 | Navy-yard and armory..... | 600,000 | 600,000 | Georgia | Conyers..... | Oconee River..... | Oconee River..... | Oconee River..... | Altamaha River..... | H. E. Quinn. | |
| 24 | Navy-yard and armory..... | 600,000 | 450,000 | Georgia | Corvinton..... | Yellow River..... | Yellow River..... | Yellow River..... | Ocmulgee River..... | H. E. Quinn. | |
| 25 | Navy-yard..... | 250,000 | 249,000 | South Carolina | C. and A. L. Crossing..... | Broad River..... | Broad River..... | Broad River..... | Santee River..... | C. J. Huske. | |
| 26 | Navy-yard..... | 800,000 | 800,000 | Kentucky | Towers..... | Kentucky River..... | Kentucky River..... | Kentucky River..... | Ohio River..... | N. Simmons. | |
| 27 | Navy-yard and armory..... | 800,000 | 800,000 | Kentucky | Point Burnside..... | Cumberland River..... | Cumberland River..... | Cumberland River..... | Ohio River..... | N. Simmons. | |
| 28 | Armory..... | 400,000 | 400,000 | Tennessee | Chatanooga..... | Tennessee River..... | Tennessee River..... | Tennessee River..... | Ohio River..... | G. G. Davenport. | |
| 29 | Armory..... | 24,000 | 20,000 | New York | New York..... | East River..... | East River..... | East River..... | Atlantic Ocean..... | B. and O. Express. | |
| 30 | Armory..... | 400,000 | 400,000 | Maryland | Little Falls..... | Potomac River..... | Potomac River..... | Potomac River..... | Chesapeake Bay..... | Joseph Mace. | |
| 31 | Navy-yard..... | 325,000 | 325,000 | Georgia | Junction of Etowah and Oostaula Rivers..... | Coosa River..... | Coosa River..... | Coosa River..... | Mobile River..... | H. E. Quinn. | |

| | | | | | | | |
|------|----------------------|------------|---------------|-------------------|----------------------|---------------------|------------------|
| 21 | Navy-yard | 350,000 | Georgia | 2 miles from Rome | Etowah River | Coosa River | H. E. Quinn. |
| 21 | Navy-yard | 325,000 | Georgia | 3 miles from Rome | Oostenaula River | Coosa River | H. E. Quinn. |
| 22 | Steamer Fish Hawk | 20,000 | Virginia | Quantico | Quantico Creek | Potomac River | Z. L. Tanner. |
| 22 | Navy-yard and armory | 300,000 | Ohio | Zanesville | Muskingum River | Ohio River | G. H. H. Moore. |
| 22 | Navy-yard and armory | 545,000 | Ohio | Columbus | Scioto River | Ohio River | G. H. H. Moore. |
| 22 | Navy-yard and armory | 300,000 | Ohio | Atlanta | Hockoning River | Ohio River | G. H. H. Moore. |
| 24 | Navy-yard and armory | 893,000 | New York | Albany | Hudson River | Atlantic Ocean | N. Simmons. |
| 25 | Navy-yard and armory | 400,000 | Maryland | Battery Island | Susquehanna River | Chesapeake Bay | H. C. Chester. |
| 27 | Navy-yard | 250,000 | Alabama | Selma | Susquehanna River | Mobile River | F. C. Davenport. |
| 27 | Navy-yard | 300,000 | Alabama | Troy | Coonch River | Escambia River | F. L. Donnelly. |
| 27 | Navy-yard | 300,000 | Alabama | Whiting | Escambia Creek | Gulf of Mexico | F. L. Donnelly. |
| 27 | Navy-yard | 200,000 | Georgia | Atlanta | Chattahoochee River | Appalachicola River | F. L. Donnelly. |
| 27 | Navy-yard | 250,000 | Georgia | West Point | Chattahoochee River | Appalachicola River | F. L. Donnelly. |
| 28 | Navy-yard | 300,000 | Arkansas | Little Falls | Potomac River | Chesapeake Bay | Joseph Mace. |
| 28 | Navy-yard | 240,000 | Arkansas | Poplar Bluffs | Black River | White River | G. H. H. Moore. |
| 28 | Navy-yard | 216,000 | Arkansas | Arkadelphia | Washita River | Red River | G. H. H. Moore. |
| 28 | Navy-yard | 248,000 | Arkansas | Jefferson | Big Cypress Creek | Caddo Lake | G. H. H. Moore. |
| 28 | Navy-yard | 370,000 | Texas | Fort Worth | Trinity River | Trinity Bay | G. H. H. Moore. |
| 28 | Navy-yard and armory | 370,000 | Texas | Little Falls | Potomac River | Chesapeake Bay | Joseph Mace. |
| 28 | Navy-yard and armory | 688,000 | Maryland | Shepherdville | Salt River | Chesapeake Bay | H. E. Quinn. |
| 30 | Navy-yard and armory | 100,000 | Kentucky | Manfortville | Green River | Ohio River | H. E. Quinn. |
| 31 | Navy-yard | 100,000 | Kentucky | Bowling Green | Barron River | Green River | H. E. Quinn. |
| 31 | Navy-yard | 100,000 | Kentucky | Battery Island | Susquehanna River | Chesapeake Bay | H. C. Chester. |
| 31 | Navy-yard | 100,000 | Kentucky | Harro de Grace | North East River | Susquehanna River | Z. L. Tanner. |
| 31 | Navy-yard | 100,000 | Kentucky | Little Falls | Potomac River | Chesapeake Bay | Z. L. Tanner. |
| 31 | Navy-yard | 100,000 | Kentucky | Harro de Grace | North East River | Susquehanna River | Joseph Mace (f). |
| 31 | Steamer Fish Hawk | 300,000 | Maryland | Battery Island | Susquehanna River | Susquehanna River | Z. L. Tanner. |
| 31 | Steamer Fish Hawk | 441,000 | Maryland | Battery Island | Susquehanna River | Susquehanna River | Z. L. Tanner. |
| 1-31 | Steamer Fish Hawk | 200,000 | Maryland | Battery Island | Potomac River | Chesapeake Bay | Z. L. Tanner. |
| 1 | Navy-yard and armory | 300,000 | Maryland | Battery Island | Susquehanna River | Chesapeake Bay | H. C. Chester. |
| 1 | Navy-yard and armory | 150,000 | Maryland | Battery Island | Susquehanna River | Chesapeake Bay | H. C. Chester. |
| 1 | Navy-yard and armory | 891,000 | Delaware | Seaford | Nanticoke River | Chesapeake Bay | J. F. Ellis. |
| 2 | Armory | 668,000 | Maryland | Harro de Grace | North East River | Susquehanna River | Z. L. Tanner. |
| 2 | Armory | 75,500 | Kansas | Ellsworth | Smoky Hill River | Kansas River | G. G. Davenport. |
| 2 | Armory | 37,500 | Kansas | New Cambria | Sabino River | Smoky Hill River | D. B. Long. |
| 2 | Armory | 37,500 | Kansas | Solomon River | Solomon River | Kansas River | D. B. Long. |
| 2 | Armory | 37,500 | Kansas | Fort Riley | Republican River | Kansas River | D. B. Long. |
| 2 | Armory | 37,500 | Kansas | Manhattan | Big Bluo River | Kansas River | D. B. Long. |
| 2 | Armory | 37,500 | Kansas | Dubuque | Mississippi River | Gulf of Mexico | J. F. Ellis. |
| 3 | Navy-yard and armory | 958,000 | Iowa | Covington | Wabash River | Ohio River | F. L. Donnelly. |
| 3 | Fish Hawk | 150,000 | Indiana | Darville | Big Vermillion River | Mississippi River | F. L. Donnelly. |
| 3 | Battery Island | 150,000 | Illinois | Battery Island | Susquehanna River | Chesapeake Bay | F. L. Donnelly. |
| 5 | Harro de Grace | 75,000 | Maryland | Piedmont | Potomac River | Chesapeake Bay | H. C. Chester. |
| 5 | Navy-yard and armory | 210,000 | West Virginia | Quintman | Potomac River | Chesapeake Bay | W. D. Vritt. |
| 6 | Navy-yard and armory | 125,000 | Georgia | Lainbridge | Withacochee River | Savanne River | H. E. Quinn. |
| 6 | Navy-yard and armory | 125,000 | Georgia | Charlottesville | Roanoke River | James River | H. E. Quinn. |
| 7 | Navy-yard | 340,000 | Maryland | Harro de Grace | North East River | Atlantic Ocean | G. C. Schermann. |
| 9 | Steamer Fish Hawk | 387,000 | Maryland | Albany | Hudson River | Susquehanna River | W. F. Page. |
| 10 | Armory | 70,000 | New York | Fredericksburg | Rappahannock River | Atlantic Ocean | W. F. Page. |
| 13 | Harro de Grace | 140,000 | Virginia | Battery Island | Rappahannock River | Atlantic Ocean | W. F. Page. |
| 15 | Navy-yard and armory | 300,000 | Maryland | Battery Island | Susquehanna River | Chesapeake Bay | G. H. H. Moore. |
| 17 | Battery Island | 250,000 | Maine | Waterville | Sebasticook River | Chesapeake Bay | H. C. Chester. |
| 17 | Battery Island | 250,000 | Maine | Waterville | Sebasticook River | Chesapeake Bay | G. H. H. Moore. |
| | | 23,363,000 | | | Mattawamkeag | Penobscot River | G. H. H. Moore. |
| | | 23,715,000 | | | | | |

TABLE VIII.—Geographical record of distribution of young shad made under the direction of the United States Commissioner of Fish and Fisheries from April 26 to June 17, 1882.

| Date. | Where fish were hatched. | Number of fish— | | State. | Town or place. | Introduction of fish. | | Tributary of— | Transfer in charge of— |
|-------------|--------------------------|-----------------|-------------------|-------------------|--|-----------------------|----------------------|--------------------|------------------------|
| | | Started with. | Actually planted. | | | Stream. | Stream. | | |
| 1882. | | | | | | | | | |
| May 27 | Navy-yard | 250,000 | 250,000 | Alabama | Selma | Alabama River | Alabama River | Mobile River | G. G. Davenport. |
| May 27 | Navy-yard | 300,000 | 300,000 | Alabama | Troy | Coosa River | Coosa River | Escanaba River | F. L. Donnelly. |
| May 27 | Navy-yard | 300,000 | 300,000 | Alabama | Whiting | Escanaba Creek | Escanaba River | Gulf of Mexico | F. L. Donnelly. |
| May 28 | Navy-yard | 240,000 | 216,000 | Arkansas | Poplar Bluff | Black River | Black River | White River | G. H. H. Moore. |
| May 28 | Navy-yard | 248,000 | 216,000 | Arkansas | Arkadelphia | Washington River | Washington River | Red River | G. H. H. Moore. |
| June 1 | Navy-yard and armory | 891,000 | 891,000 | Delaware | Seaford | Nanticoke River | Nanticoke River | Chesapeake Bay | J. F. Ellis. |
| April & May | | 3,050,000 | 3,050,000 | Dist. of Columbia | Washington | Eastern Branch | Eastern Branch | Potomac River | W. M. Wood. |
| May 8 | Navy-yard | 250,000 | 231,000 | Georgia | Nownan | Chattoahoochie River | Chattoahoochie River | Apalachicola River | G. G. Davenport. |
| May 15 | Navy-yard and armory | 600,000 | 600,000 | Georgia | Covena | Oconee River | Oconee River | Altamaha River | H. E. Quinn. |
| May 15 | Navy-yard and armory | 600,000 | 450,000 | Georgia | Covington | Yellow River | Yellow River | Ocmulgee River | H. E. Quinn. |
| May 21 | Navy-yard | 325,000 | 325,000 | Georgia | Junction of Etowah and Oostee-bath Rivers. | Coosa River | Coosa River | Mobile River | H. E. Quinn. |
| June 21 | Navy-yard | 350,000 | 350,000 | Georgia | 2 miles from Rome | Etowah River | Etowah River | Coosa River | H. E. Quinn. |
| June 21 | Navy-yard | 325,000 | 325,000 | Georgia | 3 miles from Rome | Oosteenathla River | Oosteenathla River | Coosa River | H. E. Quinn. |
| June 27 | Navy-yard | 200,000 | 200,000 | Georgia | Atlanta | Chattahoochee River | Chattahoochee River | Apalachicola River | F. L. Donnelly. |
| June 27 | Navy-yard and armory | 250,000 | 250,000 | Georgia | West Point | Chattahoochee River | Chattahoochee River | Apalachicola River | F. L. Donnelly. |
| June 6 | Navy-yard and armory | 125,000 | 125,000 | Georgia | Quitman | Withlacoochee River | Withlacoochee River | Savannah River | H. E. Quinn. |
| June 6 | Navy-yard and armory | 125,000 | 125,000 | Georgia | Bainbridge | Flint River | Flint River | Savannah River | H. E. Quinn. |
| June 3 | Battery Island | 150,000 | 145,000 | Illinois | Danville | Big Vermillion River | Big Vermillion River | Apalachicola River | F. L. Donnelly. |
| June 3 | Steamer Fish Hawk | 150,000 | 145,000 | Indiana | Covington | Wabash River | Wabash River | Mississippi River | F. L. Donnelly. |
| June 3 | Navy-yard and armory | 958,000 | 958,000 | Iowa | Dubuque | Mississippi River | Mississippi River | Ohio River | J. F. Ellis. |
| June 2 | Armory | 75,000 | 74,000 | Kansas | Ellsworth | Smoky Hill River | Smoky Hill River | Gulf of Mexico | G. G. Davenport. |
| June 2 | Armory | 37,500 | 37,000 | Kansas | Now Cambria | Solomon River | Solomon River | Smoky Hill River | D. B. Long. |
| June 2 | Armory | 37,500 | 37,000 | Kansas | Solomon City | Republic River | Republic River | Kansas River | D. B. Long. |
| June 2 | Armory | 37,500 | 37,000 | Kansas | Fort Riley | Big Blue River | Big Blue River | Kansas River | D. B. Long. |
| June 2 | Armory | 37,500 | 37,000 | Kansas | Manhattan | Kentucky River | Kentucky River | Ohio River | N. Simmons. |
| June 18 | Navy-yard | 800,000 | 800,000 | Kentucky | Towers | Cumberland River | Cumberland River | Ohio River | N. Simmons. |
| June 18 | Navy-yard and armory | 800,000 | 800,000 | Kentucky | Point Burnside | Salt River | Salt River | Ohio River | N. Simmons. |
| June 31 | Navy-yard | 100,000 | 100,000 | Kentucky | Shepherdsville | Green River | Green River | Ohio River | H. E. Quinn. |
| June 31 | Navy-yard | 100,000 | 100,000 | Kentucky | Manfordville | Barren River | Barren River | Green River | H. E. Quinn. |
| June 31 | Navy-yard | 100,000 | 100,000 | Kentucky | Bowling Green | Sabatscock River | Sabatscock River | Kennelbec River | H. E. Quinn. |
| June 17 | Battery Island | 235,000 | 237,500 | Maine | Watterville | Mattawamkeag River | Mattawamkeag River | Pennelcock River | G. H. H. Moore. |
| June 17 | Battery Island | 250,000 | 237,500 | Maine | Little Falls | Potomac River | Potomac River | Chesapeake Bay | G. H. H. Moore. |
| June 17 | Navy-yard | 500,000 | 500,000 | Maryland | Little Falls | Potomac River | Potomac River | Chesapeake Bay | N. Simmons. |
| May 4 | Navy-yard and armory | 430,000 | 430,000 | Maryland | Little Falls | Potomac River | Potomac River | Chesapeake Bay | N. Simmons. |
| May 5 | Navy-yard and armory | 200,000 | 200,000 | Maryland | Little Falls | Potomac River | Potomac River | Chesapeake Bay | N. Simmons. |
| May 6 | Armory | 750,000 | 750,000 | Maryland | Little Falls | Potomac River | Potomac River | Chesapeake Bay | Joseph Mace. |
| May 8 | Navy-yard and armory | 750,000 | 750,000 | Maryland | Little Falls | Potomac River | Potomac River | Chesapeake Bay | Joseph Mace. |

| | | | | | | | |
|------|----------------------|------------|----------------|-------------------------------|--------------------|-------------------|-----------------------|
| 13 | Navy-yard | 550,000 | Maryland | Little Falls | Potomac River | Chesapeake Bay | G. G. Davenport. |
| 21 | Armory | 400,000 | Maryland | Little Falls | Potomac River | Chesapeake Bay | Joseph Mace. |
| 25 | Havre de Grace | 400,000 | Maryland | Batter Island | Susquehanna River | Chesapeake Bay | H. C. Chester. |
| 26 | Navy-yard | 300,000 | Maryland | Little Falls | Potomac River | Chesapeake Bay | Joseph Mace. |
| 30 | Navy-yard and armory | 688,000 | Maryland | Batter Island | Potomac River | Chesapeake Bay | Joseph Mace. |
| 31 | Havre de Grace | 1,000,000 | Maryland | Little Falls | Susquehanna River | Susquehanna River | H. C. Chester. |
| 1-31 | Steamer Fish Hawk | 300,000 | Maryland | Batter Island | North East River | Susquehanna River | Z. L. Tanner. |
| 1 | Steamer Fish Hawk | 441,000 | Maryland | Havre de Grace | Potomac River | Chesapeake Bay | Joseph Mace. (f) |
| 1 | Havre de Grace | 200,000 | Maryland | Little Falls | North East River | Susquehanna River | Z. L. Tanner. |
| 2 | Havre de Grace | 300,000 | Maryland | Batter Island | Susquehanna River | Chesapeake Bay | H. C. Chester. |
| 2 | Steamer Fish Hawk | 150,000 | Maryland | Batter Island | Susquehanna River | Chesapeake Bay | H. C. Chester. |
| 5 | Havre de Grace | 668,000 | Maryland | Havre de Grace | North East River | Susquehanna River | Z. L. Tanner. |
| 5 | Steamer Fish Hawk | 75,000 | Maryland | Batter Island | North East River | Susquehanna River | Z. L. Tanner. |
| 9 | Steamer Fish Hawk | 387,000 | Maryland | Havre de Grace | North East River | Susquehanna River | H. C. Chester. |
| 15 | Havre de Grace | 30,000 | Maryland | Batter Island | North East River | Susquehanna River | Z. L. Tanner. |
| 20 | Armory | 24,000 | Maryland | Batter Island | Susquehanna River | Chesapeake Bay | Z. L. Tanner. |
| 24 | Navy-yard and armory | 893,000 | New York | New York | East River | Atlantic Ocean | H. C. Chester. |
| 10 | Armory | 70,000 | New York | Albany | Hudson River | Atlantic Ocean | Balt. & Ohio Express. |
| 3 | Navy-yard and armory | 475,000 | New York | Tidun | Hudson River | Atlantic Ocean | N. Simmons. |
| 22 | Navy-yard and armory | 300,000 | Ohio | Zanesville | Sandusky River | Ohio River | W. F. Page. |
| 22 | Navy-yard and armory | 545,000 | Ohio | Columbus | Muskingum River | Ohio River | J. F. Ellis. |
| 22 | Navy-yard and armory | 300,000 | Ohio | Athens | Scioto River | Ohio River | G. H. H. Moore. |
| 12 | Navy-yard | 250,000 | South Carolina | C. & A. A. L. Cross ing. | Hockhocking River | Ohio River | G. H. H. Moore. |
| 17 | Navy-yard | 250,000 | South Carolina | C. & A. A. L. Cross ing. | Broad River | Santee River | C. J. Huske. |
| 19 | Armory | 400,000 | Tennessee | Chattanooga | Broad River | Santee River | C. J. Huske. |
| 11 | Navy-yard and armory | 1,000,000 | Tennessee | Austin | Tennessee River | Ohio River | G. G. Davenport. |
| 28 | Navy-yard | 370,000 | Texas | Jefferson | Colorado River | Gulf of Mexico | J. F. Ellis. |
| 28 | Navy-yard | 370,000 | Texas | Fort Worth | Big Cypress Creek | Ceddo Lake | C. H. H. Moore. |
| 26 | Steamer Fish Hawk | 20,000 | Texas | Quantico | Trinity River | Trinity Bay | C. H. H. Moore. |
| 3 | Steamer Fish Hawk | 30,000 | Virginia | Quantico | Quantico Creek | Potomac River | Z. L. Tanner. |
| 4 | Steamer Fish Hawk | 30,000 | Virginia | Quantico | Quantico Creek | Potomac River | Z. L. Tanner. |
| 7 | Steamer Fish Hawk | 40,000 | Virginia | Quantico | Quantico Creek | Potomac River | Z. L. Tanner. |
| 8 | Steamer Fish Hawk | 177,000 | Virginia | Quantico | Quantico Creek | Potomac River | Z. L. Tanner. |
| 9 | Steamer Fish Hawk | 300,000 | Virginia | V. A. Midland R. R. Crossing. | Rappahannock River | Chesapeake Bay | G. C. Schuermann. |
| 9 | Steamer Fish Hawk | 415,000 | Virginia | Quantico | Quantico Creek | Potomac River | Z. L. Tanner. |
| 10 | Steamer Fish Hawk | 125,000 | Virginia | Quantico | Quantico Creek | Potomac River | Z. L. Tanner. |
| 11 | Steamer Fish Hawk | 845,000 | Virginia | Quantico | Quantico Creek | Potomac River | Z. L. Tanner. |
| 12 | Steamer Fish Hawk | 63,000 | Virginia | Quantico | Quantico Creek | Potomac River | Z. L. Tanner. |
| 12 | Armory | 300,000 | Virginia | Farmville | Rappahannock River | James River | F. L. Donnelly. |
| 13 | Navy-yard and armory | 470,000 | Virginia | Fredericksburg | Rappahannock River | Chesapeake Bay | G. C. Schuermann. |
| 13 | Steamer Fish Hawk | 300,000 | Virginia | Staunton | Shenandoah River | Potomac River | H. E. Quinn. |
| 22 | Steamer Fish Hawk | 20,000 | Virginia | Quantico | Quantico Creek | Potomac River | Z. L. Tanner. |
| 7 | Navy-yard | 340,000 | Virginia | Charlottesville | Quantico River | James River | Z. L. Tanner. |
| 13 | Armory and Fish Hawk | 140,000 | Virginia | Fredericksburg | Rappahannock River | Chesapeake Bay | G. C. Schuermann. |
| 7 | Armory | 250,000 | West Virginia | Wheeling | Ohio River | Mississippi River | N. H. H. Moore. |
| 5 | Navy-yard and armory | 210,000 | West Virginia | Piedmont | Potomac River | Chesapeake Bay | N. Simmons. |
| | | 29,393,000 | | | | | W. D. Wirt. |
| | | 28,716,000 | | | | | |