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115.—REPORT ON DISTRIBUTION OF FISH AND EGGS BY THE U. S. FISH COMMISSION FOR THE SEASON OF 1885-'86.

By **MARSHALL McDONALD.**

The distribution of young carp, whitefish, shad, and various species of *Salmonidæ* is made chiefly by car or detached messenger service, the organization of which the present year was the same as that of 1884. The distribution of eggs and of carp and trout to applicants not located sufficiently near to the centers of distribution is made by express.

During the season of 1885 the cars of the Commission were moved 74,805 miles, as follows:

Car No. 1, N. Simmons in charge.....	24,939
Car No. 2, Geo. H. H. Moore in charge.....	34,061
Car No. 3, J. F. Ellis in charge.....	15,805
Total.....	74,805

Of the above transportation, 26,212 miles were furnished by the railroads gratuitously, and 48,593 miles were paid for at the rate of 20 cents per mile. The Commission is indebted to the *personnel* and management of the railroads for much courtesy, consideration, and dispatch.

The following summaries of the number of fish and embryonized eggs distributed show (1) the distribution by species, (2) the station whence they were derived:

Fish and eggs furnished for distribution by the stations during the season of 1885-'86.

Station.	Species.	Eggs.	Fry.	Large fish.
Grand Lake Stream, Me.....	Landlocked salmon.....	222,000	.....	.....
Bucksport, Me.....	Atlantic salmon.....	1,251,500	.....	.....
Northville, Mich.....	Whitefish.....	42,800,000	52,000,000	.....
	Brook trout.....	145,000	25,000	550
	Lake trout.....	1,031,000	75,500	.....
	Rainbow trout.....	5,000	.....	3,364
	Landlocked salmon.....	.....	22,000	.....
Alpena, Mich.....	Whitefish.....	.....	40,000,000	.....
Baird, Cal.....	Rainbow trout.....	246,000	.....	.....
Wytheville, Va.....	do.....	30,000	250	1,300
	Lake trout.....	.....	.....	1,791
	Black bass.....	.....	500	.....
	Red-eye perch.....	.....	250	.....
Cold Spring Harbor, N. Y.....	Atlantic salmon.....	.....	419,550	.....
	Landlocked salmon.....	.....	19,500	.....
	Brown trout.....	.....	23,000	.....
Battery Station, Md.....	Shad.....	.....	10,725,000	.....
Steamer Fish Hawk (Delaware River).....	do.....	.....	8,063,000	.....
Steamer Lookout (Delaware and Susquehanna Rivers).....	do.....	.....	340,000	.....
Central Station.....	do.....	.....	.....	.....
Carp ponds, Washington, D. C.....	Carp for public waters.....	325,000	15,531,000	.....
	Carp for private ponds.....	.....	161,370	.....
	Goldfish.....	.....	187,414	.....
	.....	.....	4,344	.....
Total.....	.....	46,055,500	127,603,578	7,005

Summary of distribution for the season of 1885-'86.

Species.	Number of eggs.	Number of fish.	Total.
Whitefish (<i>Coregonus clupeiformis</i>)	42,800,000	92,000,000	134,800,000
Brook trout (<i>Salvelinus fontinalis</i>)	145,000	*25,550	170,550
Lake trout (<i>Salvelinus namaycush</i>)	1,031,000	177,291	1,108,291
Rainbow trout (<i>Salmo trideus</i>)	281,000	14,914	285,914
Atlantic salmon (<i>Salmo salar</i>)	1,251,500	419,550	1,671,050
Landlocked salmon (<i>Salmo salar</i> subsp. <i>sebago</i>)	222,000	41,500	263,500
Brown trout (<i>Salmo fario</i>)		28,000	28,000
Shad (<i>Clupea sapidissima</i>)	325,000	34,650,000	34,984,000
Carp (<i>Cyprinus carpio</i>)		\$348,784	348,784
Goldfish (<i>Carassius auratus</i>)		4,344	4,344
Black bass (<i>Micropterus dolomieu</i>)		500	500
Red-eye perch (<i>Ambloplites rupestris</i>)		250	250
Total	40,055,500	127,610,583	173,666,083

* Of this number, 550 were one or more years old.

† Of this number, 1,791 were one or more years old.

‡ Of this number, 4,664 were one or more years old.

§ Of this number, 187,414 were for private ponds and 161,370 for public waters.

The details of distribution summarized above are as follows:

(a) WHITEFISH (*Coregonus clupeiformis*).

Of this species 42,800,000 eggs were distributed from Michigan stations the present season and were allotted as follows:

To the State commissioners, to be hatched and planted in public waters .	34,800,000
To foreign countries (international exchange).....	6,000,000
To other U. S. Fish Commission stations	2,000,000
Total	42,800,000

The eggs which were retained and hatched at the stations yielded 92,000,000 fry, which were distributed as follows:

To Lake Michigan	29,000,000
To Lake Superior	6,000,000
To Lake Huron	30,000,000
To Lake Erie	15,000,000
To Lake Ontario.....	12,000,000
Total	92,000,000

The distribution was made by two cars instead of one, as heretofore, with the result of securing greater dispatch in the work and distribution of fry under better conditions.

(b) MORANKE (*Coregonus albula*).

We are indebted to the courtesy of the Deutsche Fischerei-Verein for two consignments of eggs of this small species of whitefish. The total number received aggregated 150,000, which were allotted as follows:

To C. G. Atkins, Bucksport, Me., for hatching and planting in Maine waters.	100,000
To F. N. Clark, Northville, Mich., for stocking lakes in Northwestern States.	50,000

(c) BROOK TROUT (*Salvelinus fontinalis*).

Eggs of this species are collected at the Northville Station from fish reared in ponds. The number furnished for distribution during the winter of 1885-'86 was 145,000, which were assigned as follows:

To State commissioners and individuals	50,000
To Wytheville Station, United States Commission, for hatching and rearing.....	50,000
To foreign countries (international exchange)	45,000
Total	145,000

The eggs retained at the station to be hatched yielded 25,000 fry. Of these 4,000 were distributed to applicants in Michigan and Indiana, and the balance retained at the station for rearing.

(d) LAKE TROUT (*Salvelinus namaycush*).

The eggs of this species distributed by the U. S. Fish Commission are all collected at the Northville Station. The total assignments of eggs the present season aggregated 1,031,000; these were distributed as follows:

To State commissioners and individual applicants	406,000
To other United States stations, to be hatched and reared	450,000
To foreign countries (international exchange).....	175,000
Total	1,031,000

The eggs retained at the station yielded 115,500 fry, which were disposed of as follows:

To applicants in Ohio, Indiana, and Michigan.....	75,500
Retained at the station, to hatch and rear.....	40,000

(e) RAINBOW TROUT (*Salmo irideus*).

Eggs of this species are collected for propagation and distribution at Baird Station, California; Northville Station, Michigan; and Wytheville Station, Virginia. At Baird Station the eggs are obtained from wild native fish. At Northville and Wytheville Stations the breeders have been reared from eggs artificially impregnated at Baird Station and hatched and reared at the stations.

The total production available for distribution was as follows:

From Baird Station, California:	
Hatched and planted in McCloud River.....	28,700
Hatched for ponds at station	11,300
Forwarded to applicants and Eastern United States stations.....	246,000
From Northville Station, Michigan:	
Forwarded to applicants	5,000
Hatched for rearing at station	30,000
From Wytheville Station, Virginia:	
Forwarded to applicants	30,000
Retained at the station to be hatched and reared.....	166,000
Total	517,000

Our experience, extending over a number of years, has clearly shown that the results from planting the fry of any of the species of *Salmonidæ*

are disappointing and wholly incommensurate to the expenditure incurred.

Instances are rare in which substantial or even appreciable results have been obtained by planting young fish just before, or at the time, the absorption of the sac is complete. This is to be attributed to the fact that usually the streams stocked abound in cottoids, darters, and other species of predaceous fish of small size, which pursue and prey upon the helpless young fish so assiduously that few if any escape capture.

It has been determined, therefore, to retain the young fish at the stations and rear them till they have attained a length of from 4 to 6 inches, and are, consequently, of such size and vigor as to dominate the waters in which they are placed. The percentage of loss in rearing is, it is true, very considerable, but probably not greater than would occur in open waters not infested by predaceous fish; and, since fish of this size are comparatively exempt from natural casualty, it is probable that one pair of yearling trout will contribute as much towards the stocking of the waters as would a plant of several thousand fry.

A beginning in this new direction was made the present season. Rainbow trout, from 4 to 7 inches in length, to the number of 4,664, have been distributed from the Northville and Wytheville Stations. The distribution from Northville was made to lakes and other protected waters in Indiana, Ohio, and Michigan; that from Wytheville to the headwaters of the Shenandoah, in Augusta County, Virginia, to the tributaries of the Potomac River in Washington County, Maryland, and to a number of spring-fed cold-water ponds in Maryland, Southwest Virginia, and Tennessee.

(f) ATLANTIC SALMON (*Salmo salar*).

The eggs of this species distributed by the Commission are all furnished by the collecting station at Bucksport, Me. The production for the year aggregated 1,251,500, which were distributed as follows:

To the commissioners of Maine, New Hampshire, and Vermont.....	751,500
To Cold Spring Harbor, for Delaware and Hudson Rivers.....	500,000
Total	1,251,500

(g) SCHOODIC OR LANDLOCKED SALMON.

The station at Grand Lake Stream, Maine, reported 222,000 eggs of this species as available for assignment. These were distributed as follows:

To the State commissioners.....	130,000
To foreign countries (in exchange).....	40,000
Transferred to other United States stations	52,000
Total	222,000

(h) BROWN TROUT (*Salmo fario*).

Three consignments of eggs of the brown trout (*Salmo fario*) were received from Germany.

The first consignment of 64,000 eggs from the Deutsche Fischerei-Verein arrived in very bad order and proved a total loss. The second lot of 40,000 eggs from the Deutsche Fischerei-Verein reached New York in good condition. A third lot of 50,000 eggs of this species from Max von dem Borne arrived in excellent condition. The entire number, aggregating 90,000 good eggs, were allotted as follows:

To Wytheville Station, Virginia.....	3,000
To Northville Station, Michigan.....	23,000
To Cold Spring Harbor, Long Island, New York.....	63,000
To James Nevin, superintendent, Madison, Wis.....	1,000

The subsequent disposition of these eggs and details of waters stocked will be found in the reports of stations.

(i) SHAD (*Clupea sapidissima*).

Shad for distribution were contributed as follows:

Battery Station, Susquehanna River.....	10,725,000
Fish Hawk Station, Delaware River.....	8,063,000
Central Station, Potomac River.....	15,531,000
Steamer Lookout.....	340,000
Total.....	34,659,000

In this distribution liberal plants of shad fry have been made in the Potomac, the Susquehanna, the Delaware, and the minor tributaries of Chesapeake and Delaware Bays.

A summary of the distribution by river basins is as follows:

Rivers and minor tributaries of Chesapeake Basin.....	14,137,000
The Delaware and tributaries.....	8,403,000
Hudson River.....	1,250,000
Tributaries of Narragansett Bay.....	850,000
Tributaries of the Albemarle.....	1,500,000
Streams draining into the South Atlantic.....	2,050,000
The Mississippi and minor tributaries of the Gulf of Mexico.....	4,561,000
Colorado River of the West.....	998,000
Snake River, Washington Territory.....	10,000
Willamette River, Oregon.....	900,000
Total*.....	34,659,000

* Of this number of fish which started from the stations, there perished before reaching destination, 1,861,000, as follows:

On trip to Willamette River, Oreg.....	850,000
On trips to Congaree and Green Rivers, S. C.....	575,000
On trip to Colorado River, Ariz.....	150,000
On trips to Fox and Illinois Rivers, Ill.....	96,000
On trips to Ocklockonnee and other Georgia Rivers.....	75,000
On trips to Blue, Smoky, and Republican Rivers, Kans.....	65,000
On trips to Appomattox and other Virginia Rivers.....	25,000
On trip to Narragansett Bay.....	25,000
Total.....	1,861,000

The attempt to acclimate the shad in the Colorado River of the West, which was begun in 1884, has been continued the present season, during which 848,000 fry were sent out by car No. 2, in charge of George H. H. Moore, and planted in good condition. Should the experiment prove successful, we may expect to see the plant of 1884 reappearing as full-grown, mature fish in the spring of 1887 or 1888.

The conditions that have determined the selection of the Colorado River of the West for this important experiment in acclimatization and afford reasonable expectation of successful results, are as follows:

The waters of the Colorado are exceptionally free from alkaline salts. The spring and summer temperature of the waters and other favorable characteristics make it probable that the young shad will find in them a congenial habitat during their sojourn in fresh waters. Great profusion of minute forms of animal life abounds in the waters. Every condition would therefore seem to be favorable to the early stages of life of the shad. If, after migrating to salt water, they do not become *wanderers*, as the shad planted in the Sacramento River have done, there is every probability that the experiment will be successful.

Since the Colorado River empties into the head of the Gulf of California, which stretches south for 700 miles towards the equator before joining the ocean, it is probable that the high temperature of the waters of its more southern portions will serve as a bar, or temperature wall, to prevent the shad from passing southward into the open ocean.

Should this anticipation be realized, the shad, when mature, must necessarily find their way back to spawning ground in the Colorado and Gila Rivers.

An unsuccessful attempt was also made the present season to stock with shad the streams of the Seattle region of Washington Territory; 900,000 vigorous fry were selected and sent out by car No. 2, in charge of Mr. Moore, one of the most experienced and careful messengers of the Commission.

The experiment was hazardous, because the number of days required for uninterrupted transit from Washington to Seattle marks the limit of time within which transportation can be safely effected. A detention of three days *en route*, caused by the washing away of bridges, resulted in almost total loss of shipment. Only 50,000 were alive on arrival at Portland, Oreg. These were deposited in the Willamette River, near that city.

A table of distribution of young shad, showing 18,871,000 planted during the season of 1885, will be found on pages 384 and 385 of the Fish Commission Bulletin for 1885. That table should be amended as follows:

Number of shad planted as given in the table	18,871,000
Planted in Delaware River by steamer Fish Hawk	8,063,000
Planted in Susquehanna River from Battery Station.....	5,524,000
Planted in Delaware River by steamer Lookout.....	340,000
Total	32,798,000

(j) CARP (*Cyprinus carpio*).

The total distribution for the season aggregated 348,784, as follows:

Table of German-carp planted in public waters during the season of 1885-'86.

Date.	Waters stocked.	Place of deposit.	Number of fish.
Dec. 4, 1885	Acquia Creek	Bridge on Baltimore and Potomac Railroad, Virginia.	6,250
Dec. 20, 1885	Arkansas River	Granada, Colo.	5,000
Dec. 23, 1885	Banister River	Railroad crossing near Lynchburg, Va.	3,000
Dec. 7, 1885	Bayou La Fourche	La Fourche, La.	1,000
Jan. 5, 1886	Bayou Macon	Between Delta and Shreveport, La.	1,000
Dec. 30, 1885	Big Muddy River	Wood Lawn, Ill.	400
Dec. 10, 1885	Brandywine Creek	Wilmington, Del.	500
Oct. 27, 1885	Bungay River	Attleborough, Mass.	200
Dec. 10, 1885	Christiana Creek	Wilmington, Del.	500
Jan. 5, 1886	Boeuf River	Between Delta and Shreveport, La.	1,000
Dec. 31, 1885	Clear Lake	Riverton, Ill.	1,000
Dec. 23, 1885	Dan River	Danville, Va.	6,000
Dec. 10, 1885	Delaware River	Wilmington, Del.	500
Jan. 2, 1886	Des Plaines River	Near Naperville, Ill.	200
Nov. 28, 1885	Tributary of Forked Deer River	Near Dyersburgh, Tenn.	1,000
Nov. 30, 1885	Tributary of Forked Deer River	Near Fowlkes, Tenn.	1,000
Jan. 2, 1886	Fox River	Near Aurora, Ill.	1,000
Jan. 5, 1886	Grassy Lake, Richland County	Between Delta and Shreveport, La.	1,000
Dec. 21, 1885	Great Peedee River	Near Society Hill, S. C.	600
Jan. 1, 1886	Illinois River	La Salle, Ill.	3,000
Nov. 24, 1885	Ivy Creek	Near Charlottesville, Va.	400
Jan. 2, 1886	Kankakee River	Kankakee, Ill.	1,000
Dec. 5, 1885	Lakes near Jacksonville	Near Jacksonville, Fla.	600
Jan. 2, 1886	Lakes in South Park	Chicago, Ill.	1,050
Jan. 2, 1886	Lakes in Lincoln Park	Chicago, Ill.	1,600
Dec. 8, 1885	Lake in Alabama	On Atlanta and West Point Railroad	500
Nov. 4, 1885	Lake Beauty, Murray County	Near Slayton, Minn.	500
Dec. 30, 1885	Lake Cooper	Pekin, Ill.	100
Jan. 5, 1886	Lake Ono	Between Delta and Shreveport, La.	1,000
Dec. 30, 1885	Lanesville Lake	Lanesville, Ill.	800
Nov. 28, 1885	Little River	Intersection of Richmond, Fredericksburg and Potomac Railroad, Virginia.	5,000
Jan. 1, 1886	Little Vermilion River	Mendota, Ill.	1,000
Dec. 30, 1885	Little Wabash River	Louisville, Ill.	200
Dec. 30, 1885	Little Wabash River	Mill Shoals, Ill.	400
Dec. 8, 1885	Mahoning River	Near Youngstown, Ohio	3,000
Nov. 27, 1885	Mattaponi River	Milford, Va.	8,000
Mar. 20, 1886	Muskingum River	Zanesville, Ohio	3,750
Nov. 28, 1885	Muskanna River	Intersection of Richmond, Fredericksburg and Potomac Railroad, Virginia.	7,000
Dec. 30, 1885	Kaskaskia River	Vandalia, Ill.	1,000
Dec. 30, 1885	Kaskaskia River	Carlyle, Ill.	400
Dec. 4, 1885	Occoquan River	Wood Bridge, Va.	7,000
Dec. 23, 1885	Otter River	Railroad crossing near Lynchburg, Va.	5,000
Jan. 5, 1886	Washita River	Between Delta and Shreveport, La.	2,000
Jan. 5, 1886	Pearl River	Jackson, Miss.	5,000
Jan. 10, 1886	Ponds of railroad	Along line of Vandalia Railroad	2,520
Dec. 4, 1885	Potomac River	On line of Baltimore and Potomac Railroad, Virginia.	5,500
Dec. 4, 1885	Quantico Creek	Bridge on Baltimore and Potomac Railroad, Virginia.	6,250
Dec. 10, 1885	Red River	Shreveport, La.	2,500
Dec. 29, 1885	Red River	Fulton, Ark.	3,200
Dec. 21, 1885	Rio Grande River	Albuquerque, N. Mex.	6,000
Nov. 24, 1885	Rivanna River	Near Charlottesville, Va.	1,600
Nov. 15, 1885	Rockfish Creek	Rockfish Depot, Va.	200
Jan. 1, 1886	Rock River	Dixon, Ill.	1,000
Dec. 30, 1885	Saline River	Equality, Ill.	400
Dec. 30, 1885	Sangamon River	Riverton, Ill.	1,000
Dec. 12, 1885	Sau Marcos River	San Marcos, Tex.	5,050
Dec. 11, 1885	Satilla River	Near Way Cross, Ga.	2,400
Dec. 10, 1885	Shellpot Creek	Wilmington, Del.	500
Nov. 28, 1885	South Anna River	Intersection of Richmond, Fredericksburg and Potomac Railroad, Virginia.	5,000
Dec. 23, 1885	Staunton River	Near Lynchburg, Va.	6,000
Nov. 17, 1885	Susquehanna River	Battery Station, Md.	20,000
Jan. 5, 1886	Tensas River	Between Delta and Shreveport, La.	1,000
1885	Tewksbury Reservoir	Winchester, Mass.	600
Dec. 30, 1885	Railroad water-tank	Clinton, Ill.	200
Total			161,370

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Summary of carp distributed to private applicants from October 6, 1885, to March 20, 1886.

Date.	State.	Point of distribution.	Number of counties.	Number of applicants.	Number of fish.
1885.					
Dec. 1	Alabama	Montgomery, Ala.	42	164	4,475
Dec. 21	Arizona	Albuquerque, N. Mex.	6	8	695
Dec. 17	Arkansas	Saint Louis, Mo.	32	88	2,200
Nov. 16	Colorado	Denver, Colo.	15	25	550
Oct. 27	Connecticut	Boston, Mass.	7	18	400
Nov. 6	Dakota	Bismarek, Dak.	18	26	822
Nov. 2	Delaware	Wilmington, Del.	3	31	2,124
(*)	District of Columbia	Washington, D. C.	1	14	301
Dec. 5	Florida	Jacksonville, Fla.	13	38	1,475
Nov. 28	Georgia	Atlanta, Ga.	89	460	12,605
Nov. 11	Idaho	Ogden, Utah	10	31	686
Nov. 15	Illinois	Quincy, Ill.	84	384	15,699
Nov. 14	Indiana	Indianapolis, Ind.	70	240	8,417
Dec. 16	Indian Territory	Dallas, Tex.	2	2	50
Nov. 2	Iowa	Cedar Rapids, Iowa.	79	323	11,221
Oct. 27	Kansas	Kansas City, Mo.	76	290	6,015
Nov. 28	Kentucky	Lexington, Ky.	35	108	3,630
Dec. 7	Louisiana	New Orleans, La.	19	31	820
Oct. 27	Maine	Boston, Mass.	6	7	145
(*)	Maryland	Washington, D. C.	12	42	2,075
Oct. 27	Massachusetts	Boston, Mass.	13	49	1,690
Nov. 16	Michigan	Northville, Mich.	51	177	3,801
Nov. 4	Minnesota	Saint Paul, Minn.	8	11	1,425
Dec. 3	Mississippi	Jackson, Miss.	33	117	3,080
Dec. 19	Missouri	Saint Louis, Mo.	19	37	885
Nov. 8	Montana	Helena, Mont.	8	19	520
Nov. 3	Nebraska	Omaha, Nebr.	21	30	860
Nov. 10	Nevada	Ogden, Utah	10	15	329
Oct. 27	New Hampshire	Boston, Mass.	3	3	75
Oct. 30	New Jersey	Jersey City, N. J.	21	78	3,947
Dec. 21	New Mexico	Albuquerque, N. Mex.	12	44	1,245
Oct. 30	New York	Jersey City, N. J.	47	208	9,011
Dec. 7	North Carolina	Raleigh, N. C.	54	341	8,825
Nov. 13	Ohio	Columbus, Ohio.	73	276	6,482
Nov. 12	Oregon	Portland, Oreg.	19	185	3,921
(*)	Pennsylvania	Washington, D. C.	61	609	20,345
Oct. 27	Rhode Island	Boston, Mass.	2	2	280
Nov. 24	South Carolina	Columbia, S. C.	30	249	6,024
Dec. 1	Tennessee	Memphis, Tenn.	51	306	8,005
Dec. 16	Texas	Dallas, Tex.	42	86	2,682
Nov. 11	Utah	Ogden, Utah	19	283	5,855
Oct. 27	Vermont	Boston, Mass.	8	10	5,380
(*)	Virginia	Washington, D. C.	60	351	7,756
Nov. 10	Washington	Walla Walla, Wash.	20	157	3,498
(*)	West Virginia	Washington, D. C.	19	54	1,600
Nov. 4	Wisconsin	Saint Paul, Minn.	10	23	495
Nov. 5	Wyoming	Laramie City, Wyo.	3	3	3,060
Dec. 23	Mexico	El Paso, Tex.		1	800
	Total		1,348	6,273	187,414

* October 6, 1885, to March 20, 1886.

To individual applicants for pond culture	187,414
To public waters	161,370
The number of individual applicants supplied was	6,273

The distribution was general, including 309 Congressional districts and 1,348 counties. The distributions to public waters embrace the principal river basins of the Middle and South Atlantic and Gulf slopes.

(k) COMMON AND JAPANESE GOLDFISH (*Carassius auratus*).

The number of this fish produced at the U. S. Fish Commission ponds in Washington each season is entirely insufficient to meet the eager demand for fish for aquaria, fountains, and ornamental lakes. The fish being purely an ornamental species, of no value for food, no special ef-

fort has been made to increase the supply. The number distributed in 1885 was 4,344 to 572 applicants.

Summary of goldfish distributed in the season of 1885-'86.

State.	Number of applicants.	Number of fish.	State.	Number of applicants.	Number of fish.
Alabama	11	170	Minnesota	5	138
Arizona	4	24	Missouri	1	6
Arkansas	1	4	Mississippi	2	14
Colorado	2	12	Nebraska	4	20
Dakota	2	12	New Jersey	7	42
Delaware	4	84	New York	6	48
District of Columbia	338	1,890	North Carolina	3	14
Florida	7	41	Ohio	11	98
Georgia	10	119	Pennsylvania	18	374
Illinois	8	154	South Carolina	3	58
Indiana	6	50	Tennessee	10	60
Iowa	8	199	Texas	10	83
Kansas	1	10	Utah	8	44
Kentucky	2	18	Virginia	49	251
Louisiana	4	21	West Virginia	1	7
Maryland	4	84	Wyoming	1	4
Massachusetts	7	92			
Michigan	14	90	Total	572	4,344

(l) LITTLE ROUND CLAM (*Tapes staminea*).

A successful effort was made to transfer several hundreds of this valuable west-coast mollusk from Puget Sound, Washington Territory, to the waters of Vineyard Sound, off the coast of Massachusetts. The conduct of the experiment was intrusted to Mr. George H. H. Moore, in charge of car No. 2. As the necessary conditions for success in transportation had not been ascertained, the entire arrangement was left to his discretion. The methods employed, the difficulties encountered, and the final success attained are detailed in his report, dated Washington, June 30, 1885, the important items of which are as follows:

“*Sunday, June 14.*—After much trouble and the promise of \$2 per sack (the usual price being about \$1.50 per sack), I engaged 20 sacks of clams, to be delivered at car by Wednesday noon. I also engaged enough rock weed to pack over the clams.

“*Tuesday, June 16.*—Finished getting sand in tanks this p. m. One of the clam gatherers, from whom I engaged 10 sacks of clams, returned with 1 sack. Had them tied up and put overboard, so as to keep in good condition.

“*Wednesday, June 17.*—The other 10 sacks of clams arrived this a. m. After consultation with those that make a business of gathering clams, I concluded it would be best to pack them in sand, with mouth up, then cover with about 2 inches of sand, and put the rock weed on top of this, then, by means of a sprinkling-can, keep them moistened with the salt water. After selecting the smallest of the clams, had them packed as above described. Took on 30 cans of salt water. Estimated the number of clams in tanks at 6,000.

"*Thursday, June 18.*—Left Tacoma at 5.25 a. m. Put one-half ton of ice in tanks.

"*Sunday, June 21.*—Had clams in tanks taken out. Find they are not looking well. Concluded to have them taken out of sand and placed on top of sand, with mouths up, then covered with the rock weed.

"*Monday, June 22.*—Had the other side unpacked and looked over. They seem to be doing tolerably well. In repacking I find the estimate as to the number in tanks was too high; from 4,000 to 4,500 is nearer the number.

"*Tuesday, June 23.*—Clams packed in rock weed are in very bad condition; those packed in sand also are in poor condition. Concluded to put them all in cans and cover with salt water.

"*Wednesday, June 24.*—In changing water on clams to-day I find that they are in bad condition, and the prospect not encouraging. Had them looked over every few hours to prevent the dead ones from contaminating the water.

"*Thursday, June 25.*—Clams are looking better this evening. Arrived Boston 9.45 p. m. Had car transferred to depot Old Colony Railroad; sent car to dock; got some fresh water for the clams and had it put on them.

"*Friday, June 26.*—Had clams put in baggage car; looking very well. Arrived at Wood's Holl 11.40 a. m.; had clams transferred to station U. S. Fish Commission. These were put out in sand on the beach and counted, and 768 looked as if they were alive and in good condition, a good many of them being lively enough to cover themselves before I left, at 4.10 p. m."

NEW STATION NEEDED.

The attention of the Commissioner has been drawn to the increasing demand for trout for stocking streams in the Trans-Mississippi and Rocky Mountain region. It is impracticable to provide satisfactorily for these requests to such extent as the importance of the work demands by sending the fish from existing Eastern stations.

The necessity for the establishment of a breeding and rearing station for the *Salmonidæ* at some central point in the Rocky Mountain region grows each year more apparent. At such station we could provide for the hatching, rearing, and distribution of desirable species of the *Salmonidæ*, at a reasonable cost, and at the same time arrange for the collection of the eggs of the native Rocky Mountain trout (*Salmo purpuratus*) for the stocking of Eastern waters. This species, though similar to the rainbow trout in many respects, has a much wider geographical and climatic range, and would therefore seem better adapted for general distribution.

WASHINGTON, D. C., *December 30, 1886.*