



Mora National Fish Hatchery

April 2016

Photo Credit: Angela James USFWS

2016 Year Class

Mora National Fish Hatchery wrapped up a successful spawning season by the first week of April, and all viable crosses had completed hatching by the end of the month. A new spawning protocol was put in place this year where broodstock of differing year classes were spawned together to ensure the genetic flow between the year classes occurs. Fertilization and hatch rates improved in Main and South Diamond lineages, while Whiskey and Spruce Creek lineages struggled again this year. Detailed information for each lineage is found below.

Main Diamond

One hundred and thirty six genetically appropriate crosses in six egg takes were completed to fully capture the genetic variability of this lineage and resulted in 77,481 green eggs. Cross success rate in 2016 was 89%, well above average. After eye-up, 114 crosses suitable for broodstock development were identified, and 50 randomly selected individuals were placed in the new Z-habitat aquariums and 30 gallon circulars. Final enumeration of sac fry resulted in 43,792 individuals, or green to hatch rate of 56.5%. Fecundity of each female averaged 570 eggs, slightly below the long term hatchery average.

South Diamond

One hundred and thirteen genetically appropriate crosses in five egg takes were completed to fully capture the genetic variability of this lineage and resulted in 74,091 green eggs. Fifty-four crosses, or 48% of all crosses contained at least one wild parent. Cross success rate in 2016 was 79%, and this rate is normal for the lineage. After eye-up, 86 crosses suitable for broodstock development were identified, and 50 randomly selected individuals were placed in the new Z-habitats and 30 gallon circulars. Final enumeration of sac fry resulted in 39,840 individuals, or green to hatch rate of 53.8%. Fecundity of each female averaged 656 eggs, near the long term hatchery average.

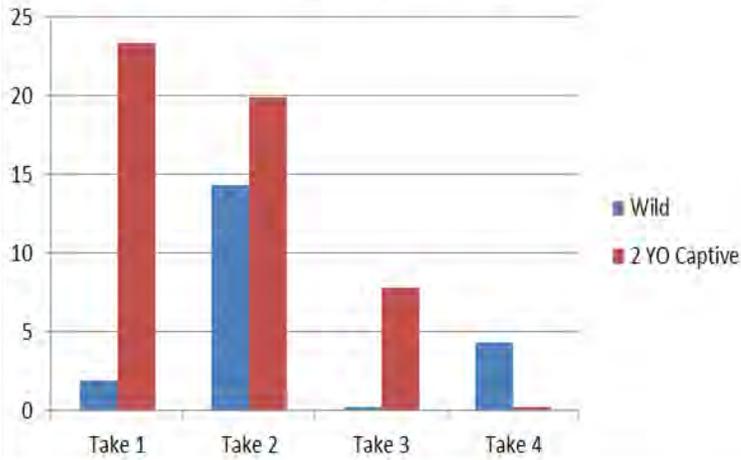
Whiskey Creek

Sixty-one genetically appropriate crosses in five egg takes were completed to fully capture the genetic variability of this lineage and resulted in 28,698 green eggs. Forty-one crosses, or 67% of all crosses contained at least one wild parent. Cross failure rate in 2016 was 54%, and this rate is well above the hatchery average. After eye-up, 27 crosses suitable for broodstock development were identified, and 50 randomly selected individuals were placed in the 10 gallon aquariums. Final enumeration of sac fry resulted in 4,021 individuals, or green to hatch rate of 14%. Fecundity of each female averaged 470 eggs, which is well below the long term hatchery average.

Spruce Creek

Four genetically appropriate crosses in three egg takes were completed to fully capture all available mature females. Nine hundred and seventy seven eggs were collected, resulting in 47 fry from one cross. Hatch rate was 4.7%, with each female having 244 eggs, well below the hatchery average.

Whiskey Creek Hatch Rate



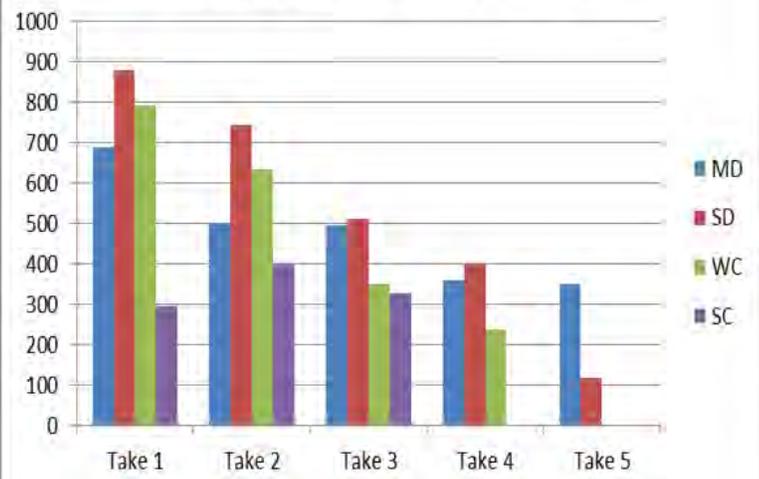
Whiskey Creek Spawning

Due to the limited availability of new wild source Whiskey Creek lineage fish, staff at Mora spawned 2 year old captive broodstock and captive 5+ year old wild source fish that had been spawned in 2014 and 2015. As noted by Bill Wayman during cryo-preservation, milt motility in the older fish was greatly reduced from previous years, and a significant portion of the two year old fish were immature. These developments led to low hatch rates in the Whiskey Creek lineage in 2016.

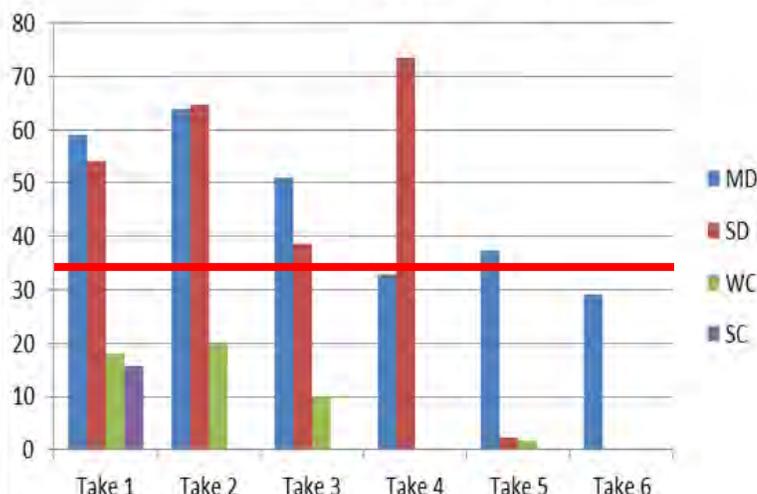
Fecundity

The long term fecundity data at the Mora National Fish Hatchery is approximately 650 eggs per female. This year, several egg takes in the captive lineage greatly exceeded this average. Staff feel that the higher quality broodstock diet from Bio-Oregon has led to these change.

Eggs per female by Take



Hatch Rate by Spawn Date



Hatch Rate

The long term average hatch rate at Mora National Fish Hatchery is 34%. Many of the egg takes in 2016 improved upon this average, with some almost doubling the average. Staff feels that the new incubation system and improved brood diets has led to this impressive improvement.

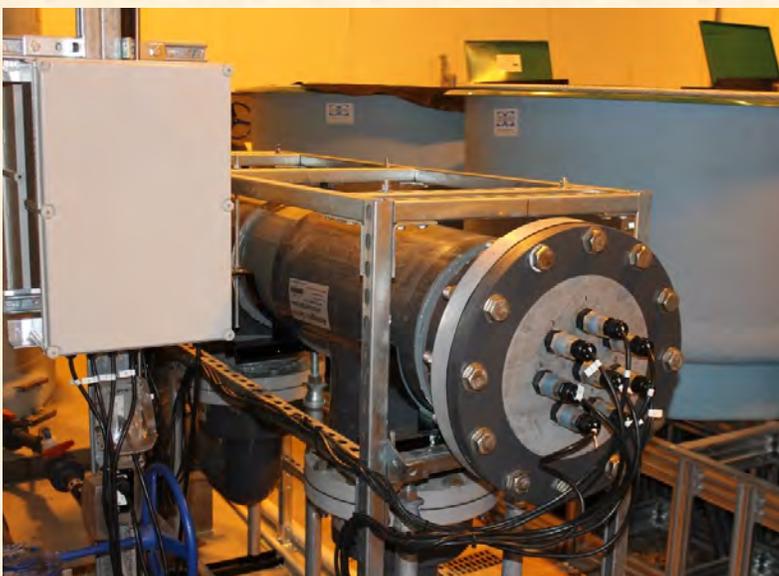


System 1 Bio-filter Repaired

The System 1 Bio-filter failed in April due to an internal break in the effluent manifold. This repair is becoming commonplace in the systems due to the age and flexing of the manifold. Hatchery staff are developing a longer term repair to address the main cause of the failure (flexing) by using some type of hold-down on the manifold end. Hatchery staff had the bio-filter back online within two days.

Native Trout Workshop

Project Leader Nate Wiese presented at the 7th Annual Native and Wild Trout Workshop held in Phoenix, AZ on April 21. The presentation centered around Mora National Fish Hatchery's efforts at recovering the Gila trout, including genetics work, rearing strategies, and hatchery optimization. The talk was very well received with a lot of interest generated for the program.



System 3 UV Serviced

The System 3 UV unit was a prototype design, and as such, several issues were identified during its operation. The manufacturer addressed these issues and provided replacement parts to correct these deficiencies so that that the unit was 100% operational. The updates were installed, and the unit was running prior to fry hatching.



Outdoor Classroom

Hatchery staff provided archery instruction and the living stream display to the annual Outdoor Classroom in Mora, NM. The Outdoor Classroom exposes 4th and 7th graders to the natural environment, and activities in it. A casting demonstration and contest was held in addition to the living stream display with the winner of each group receiving a prize. Intern Jamie Conway assisted with the casting contest and her help was greatly appreciated.

Thanks Jamie!

Stocking

Grant Langmaid and volunteer Sandy Kalb released 1,253 holdover South Diamond fish into the Forks Area on April 7. The fish were approximately 6.58 inches and weighed 0.11 pounds each. Former USFWS employee Dustin Myers, and his son Dayton assisted with the release.



Career Day

Lori Casados and Debbie Pike from the Northern New Mexico Wildlife Refuge Complex represented the US Fish and Wildlife Service at the annual career fair at New Mexico Highlands University in Las Vegas, NM. Lori indicated that the display was very well received, with several potential future volunteers interested in the Hatchery's recovery program.



Stock on Hand

Production Lineage	Brood Year	Purpose	Location	Number	Mortality	Sample (fpp)	Length (in)	Biomass (lbs)
Main Diamond	2013	Brood	Raceway 5T	274	37	0.45	17.3	608
	2014	Brood	Raceway 6	886	44	0.8	14.3	1108
	2014	Wild	VC East 2	65	0	6.1	7.4	11
	2015	Brood	R1T	863	2	4.0	8.4	216
	2016	Brood	ZHAB, 30	5,823	550	2000	1.1	3
	2016	Recovery	SR:1,7 250's, 30	22,082	1,362	2000	1.1	11
	2016	4D	SR, 380, 250	32,052	2,546	2000	1.1	16
	Total				62,045	4,541	31.6	4.3
South Diamond	2012	Wild	VC West 1,2,3	70	0	0.7	15.7	100
	2013	Brood	Raceway 5B	296	19	0.4	18.1	740
	2014	Brood	Raceway 7	554	21	0.8	14.3	693
	2015	Brood	R2T	811	8	5.5	7.6	146
	2016	Brood	ZHAB, 30	3,917	691	2000	1.1	2
	2016	Recovery	SR, 250	18,439	1,031	2000	1.1	9
	2016	4D	SR, 30	21,371	2,862	2000	1.1	11
	Total				45,458	4,632	26.7	4.5
Whiskey Creek	2011	Wild	Whiskey Creek	57	2	0.3	20.3	190
	2014	Brood	Raceway 8	480	68	1.0	13.5	480
	2015	Brood	R3T	614	1	4.7	7.9	129
	2015	Recovery	R3B	2,091	2	4.6	8.0	454
	2016	Brood	AQ	996	194	2000	1.1	0.5
	2016	Recovery	250, 30	2,320	511	2000	1.1	1.2
	Total				6,558	778	5.2	7.8
Spruce Creek	2010/2013	Wild	Spruce Creek 1	27	0	1.1	13.3	25
	2014	Brood	RW Circular	35	0	0.7	15.3	50
	2014	Wild	Spruce Creek 2	10	0	2.6	9.9	4
	2016	Brood	C8	47	0	2500	1.1	0
	Total				119	0	1.5	11.9
Iron Creek	2011	Wild	Spruce Creek 3,4	32	0	0.7	15.3	46
	2013	Wild	VC East 3,4	92	0	9.4	6.4	10
	Total				124	0	2.2	10.5
Total All Lineages				114,304	9,951	22.6	4.8	5,064

BonyTail	2011	Wild	Shady Acres	1,262	0	4.1	9.6	308
	Total			1,262	0	4.1	9.6	308



Hatchery Visit

Project Leader Nate Wiese visited the Alchesay-Williams Creek National Fish Hatchery Complex on April 20. Nate met with staff from both facilities to discuss fish rearing challenges at Mora NFH and the Complex.

Upcoming Events

- Project Leader Nate Wiese on detail as acting Columbia Gorge Complex Manager from May 5 to July 1, 2016.
- Newly selected Biological Science Technician Dustin Wagner to start on May 2nd.
- Glenn Snapp, engineer from Wastewater Management Technologies to perform a site visit on May 3rd.
- Oklahoma State University to visit on May 16th.
- Mora Schools Field Day on May 24th.

In Brief

Grant Langmaid attended the annual Broodstock Meeting in Charleston, SC on April 18-21.

Interns Jeremiah Olivas and Jamie Conway finished their terms. The hatchery staff wishes them success in their future endeavors.

Jeff Conway and Nate Wiese updated the Wild Fish Standard Operating Procedures with help from Martha Keller, Southwestern Fish Health Unit.

Richie Garcia worked on several well repairs in April, including a diverter valve malfunction on Well 2. Richie also met with well vendors to discuss upcoming deferred maintenance projects to make well operation more efficient and reliable.

Hatchery Staff

Nate Wiese, Project Leader
Lori Casados, Admin. Assistant
Jeff Conway, Fish Biologist
Grant Langmaid, Fish Biologist
Richie Garcia, Maintenance Worker
Vacant, Biological Technician
Daniel Gallegos, Intern
Sandy Kalb, Volunteer
Jeremiah Olivas, Volunteer
Jamie Conway, Intern

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