Moapa dace numbers from 1994 to 2013

Moapa Dace Counts over Time

Method: One week in **February** all inhabited reaches are surveyed by snorkelers who work upstream, strive to remain in the water, and record all fish with focus on Moapa dace.

Reach	Reach Name	1994	1997	1999	2000	2001	2002	2003	2005	2007	2008	2009	2010	2011	2012	2013
1	Refuge Apcar	x	x	5	x	87	86	40	6	0	0	0	7	28	74	69
2	Top Apcar	x	x	x	x	x	x	x	87	42	50	29	13	20	78	139
3	Middle Apcar	x	x	x	x	x	x	x	52	14	0	2	3	1	10	127
4	Lower Apcar	x	x	x	x	x	x	x	18	0	0	0	7	2	0	62
2 ,3, 4	Subtotal for reaches 2-4	407	528	x	43	85	55	30	157	56	50	31	23	23	88	328
1,2,3,4	Subtotal for all of Apcar (1-4)	407	528	5	43	172	141	70	163	56	50	31	30	51	162	397
5	Pederson	x	x	185	163	184	172	204	174	395	50	80	82	99	66	128
5.5	lower Pederson channel	x	x	x	x	x	x	x	x	x	x	29	71	96	99	244
6	Little (Goodchild) Spring	x	x	x	x	x	x	x	80	128	56	9	8	22	10	36
6.5	Sheet flow from Pederson outflow	x	x	x	x	x	x	x	x	x	19	x	x	x	x	x
7	Plummer	0	20	113	x	59	53	60	177	170	148	187	166	188	109	113
8	WSR Concrete flume to Plummer/Pedersen	x	x	x	x	x	x	x	406	282	59	61	118	78	27	141
9	Refuge Arm Concrete flume to Apcar barrier	x	x	x	x	x	x	x	166	47	40	23	43	40	180	153
5.5, 6, 8, 9	Subtotal for reaches 6 (with 5.5), 8, & 9			566	643	416	599	507	652	457	322	122	240	236	316	574
5, 5.5, 6, 7, 8, 9	Subtotal for all of "Refuge Stream"	313	595	864	806	659	824	771	1003	1022	520	389	488	523	491	815
10	Gabion to Apcar Refuge Arm barrier	x	x	x	x	x	x	x	62	54	14	32	11	0	0	14
11	Muddy River mainstem from NV Power diversion to Apcar/Refuge/Muddy confluence	x	x	x	x	x	8	0	x	0	0	0	4	0	0	0
12	Muddy river mainstem from Apcar/Refuge/Muddy confluence gabion to ranch road crossing	x	x	x	x	x	x	x	4	0	0	0	0	0	0	0
13	Muddy River from ranch road crossing to North/South fork confluence	x	x	x	x	x	x	x	45	16	5	2	0	0	0	0
	Subtotal for total Mainstem	2088	260													
12,13	Subtotal for reaches 12 & 13	x	x	x	x	34	49	19	49	16	5	2				
14	Muddy Spring outflow	236	28	14	x	5	2	0	0	0	0	0	0	0	1	
15	North Fork	426	106	77	73	46	37	33	9	15	17	7	1	0	0	0
16	South Fork	355	28	13	9	18	24	14	10	9	1	1	0	0	0	0
Total		**3825**	**1565**	**973**	**931**	**934**	**1085**	**907**	**1296**	**1172**	**459**	**462**	**534**	**574**	**654**	**1226**

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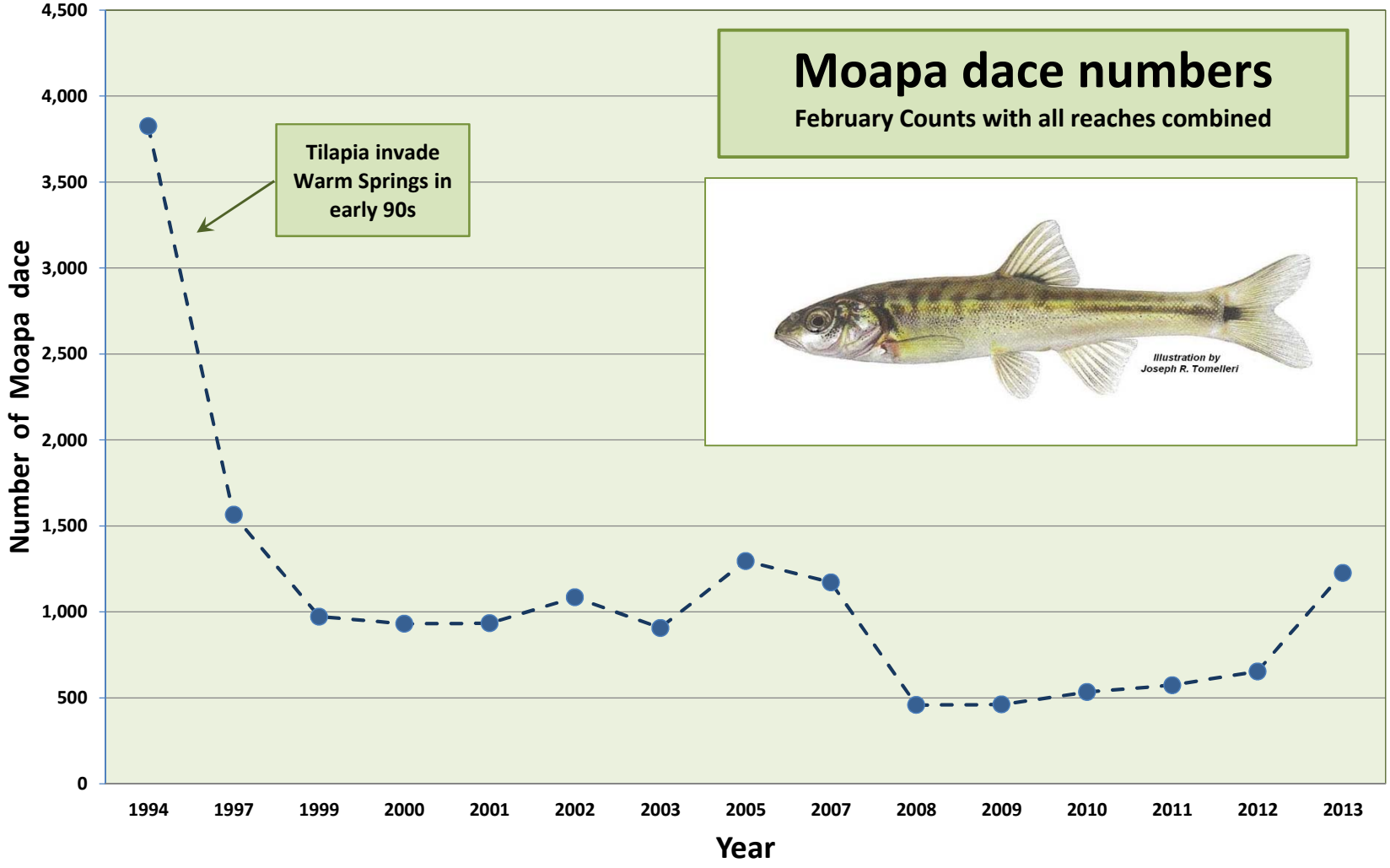

Muddy River Biological Advisory Committee

Moapa dace counts – February 2013

(data and map on flip side)

1. The winter 2013 Moapa dace survey was conducted on 5th and 6th February and recorded 1,226 Moapa dace, representing an increase of about 88% over the last year (+572 fish). Winter counts have occurred since the mid-1990s.
2. The Moapa dace count increased about 4% over the last 6 months (+45 fish). The dace population normally declines from August to February.
3. The surveys consist of 17 non-overlapping reaches. Compared to a year ago:
   a. 10 reaches had more Moapa dace.
   b. 2 reaches had fewer Moapa dace.
   c. 5 reaches had no change in Moapa dace (dace were absent from these areas).
4. Six reaches supported no Moapa dace in February 2013. All of these reaches are in the area where tilapia existed and chemical eradication has occurred in recent years.
5. All reaches that have been free of tilapia for many years supported dace in February 2013.
6. Two reaches that have undergone recent restoration showed large increases in Moapa dace numbers over the past 6 and 12 months (reaches 2 and 3).
7. Two reaches near other reaches that have undergone recent restoration show increases in Moapa dace numbers over the past 6 and/or 12 months (reaches 4 & 10; reach 10 had no dace a year ago, 17 dace 6 months ago, and 14 dace in February 2013).
8. Moapa Valley National Wildlife Refuge (MVNWR) supported 25% of the Moapa dace seen in February 2013. This percentage has decline from a high of 72% in August 2010, which was one month after wildfire burned the Warm Springs Natural Area. The shift in relative distribution of Moapa dace is most likely due to improved habitat conditions on the Warm Springs Natural Area (WSNA).
9. Reach 5.5 is a new spring channel created in late 2008. The reach has supported generally increasing numbers of Moapa dace since its creation and the largest number of dace of any reach in August 2012 and February 2013. This increase is likely due to both the reach's maturation as an ecosystem and the reach's proximity to other recently restored habitats nearby (reaches 2 & 3).
10. Recent declines in number of Moapa dace in reach 5 (Pedersen spring complex; MVNWR) reversed in the February 2013 survey, with increases of 36% (+34 fish) over the past 6 months and 94% (+62 fish) over the past year. These changes probably do not reflect restoration in other reaches, since an upstream fish barrier essentially isolates reach 5.
11. The area chemically treated for tilapia infestation (reaches 11-16) supported a single Moapa dace in late 2011 and early 2012. This dace was observed in the same area in both surveys (Muddy Creek; reach 14), and has not been observed subsequently. Fish in reaches 11-16 consist primarily of shortfin mollies, mosquitofish, and White River springfish. Over the past 18 months, a remnant infestation of tilapia and several large tilapia were detected and eliminated in reach 16. No evidence of reproduction by tilapia has been detected in the Warm Springs area, other than the remnant infestation, which was eradicated. Tilapia have been either completely or very nearly eradicated from the Warm Springs area, although monitoring will continue in the near future.

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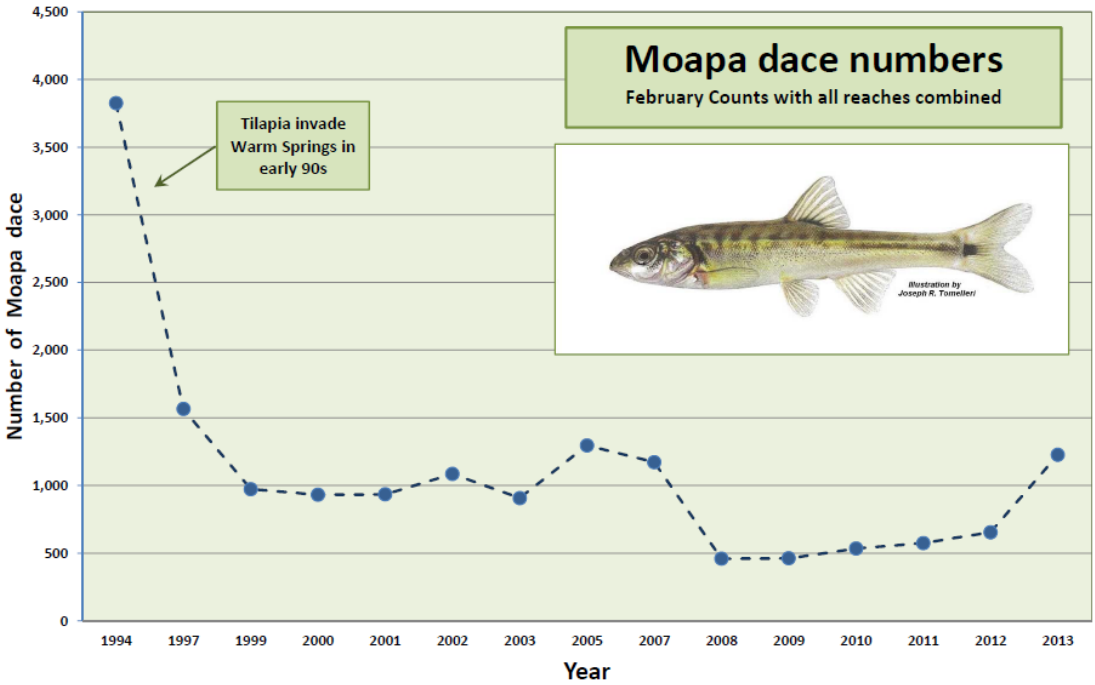
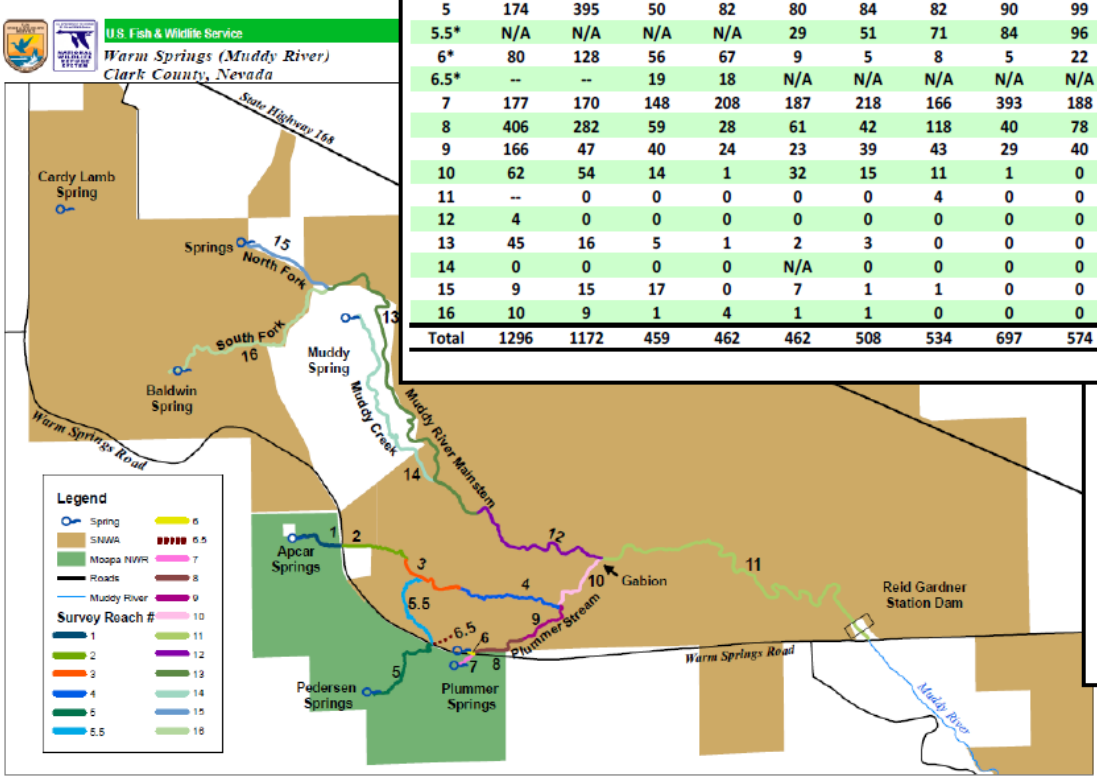


MOAPA DACE NUMBERS BASED ON SNORKEL SURVEYS

Reach	Feb. 2005	Feb. 2007	Feb. 2008	Aug. 2008	Feb. 2009	Aug. 2009	Feb. 2010	Aug. 2010	Feb. 2011	Aug. 2011	Feb. 2012	Aug. 2012	Feb. 2013
1	6	0	0	N/A	N/A	1	7	20	28	67	74	84	69
2	87	42	50	22	29	34	13	35	20	54	78	79	139
3	52	14	0	4	2	4	3	0	1	8	10	31	127
4	18	0	0	3	0	10	7	0	2	1	0	13	62
5	174	395	50	82	80	84	82	90	99	108	66	94	128
5.5*	N/A	N/A	N/A	N/A	29	51	71	84	96	88	99	376	244
6*	80	128	56	67	9	5	8	5	22	27	10	59	36
6.5*	--	--	19	18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7	177	170	148	208	187	218	166	393	188	206	109	159	113
8	406	282	59	28	61	42	118	40	78	55	107	112	141
9	166	47	40	24	23	39	43	29	40	85	100	157	153
10	62	54	14	1	32	15	11	1	0	13	0	17	14
11	--	0	0	0	0	0	4	0	0	0	0	0	0
12	4	0	0	0	0	0	0	0	0	0	0	0	0
13	45	16	5	1	2	3	0	0	0	0	0	0	0
14	0	0	0	0	N/A	0	0	0	0	1	1	0	0
15	9	15	17	0	7	1	1	0	0	0	0	0	0
16	10	9	1	4	1	1	0	0	0	0	0	0	0
Total	1296	1172	459	462	462	508	534	697	574	713	654	1181	1226



*Notes:

- Reach 5.5 is the lower Pedersen outflow created in fall 2008.
- Reach 6.0 is the former lower Pedersen outflow dewatered in fall 2008. Little Spring remains here, flowing into the top of reach #8
- Reach 6.5 was created by leakage from Reach 6 that dried in fall 2008 when Pedersen flow was redirected to create Reach 5.5.
- Data in red box (Feb. 2012) were comingled and separated later with potential error