

## Smith River Volunteer Adult Trout and Salmon Surveys Summer 2017

*Prepared on behalf of the Smith River Alliance by:*

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Adult Coastal Cutthroat Trout (*Oncorhynchus clarki clarki*) in the South Fork Smith River.

Photo: Darrell Warnock



Training volunteers to identify fish and survey safely.

Photo: Marisa Parish

## Introduction

The 725 square mile Smith River basin is designated as a salmon stronghold, a wild and scenic river, as well as a National Recreation Area. The river has exceptional water quality and clarity providing an ideal setting to learn to identify, observe and count adult salmonids. The Smith River Alliance conducts an annual volunteer fish census during the summer with the objective of consistently and accurately counting adult salmonids in the Smith River. These data contribute to a long-term data set dating back to 1988, providing annual population density trends and distribution of adult salmonids. Due to the strong assistance from citizen volunteers, these surveys also provide increased public awareness of the natural diversity and condition of the Smith River watershed. These surveys were first performed by California Department of Fish and Wildlife (CDFW) contractors in 1988. The U.S. Forest Service then intermittently conducted surveys from 1989 to 1999. Since 2000, the Smith River Alliance has led organization, training, and reporting for these surveys. Survey efforts are focused on the South Fork Smith River, which has the longest continuous data set. With sufficient volunteers, additional surveys are conducted on the Middle Fork and North Fork of the Smith River. This report highlights the results from surveys conducted on July 15, 2017 and how these counts compare to those from past years survey efforts.

## Survey Methods

During the summer when flows are low and water clarity is high groups of 3-5 individuals conduct a snorkel survey along a continuous river stretch (reach) ranging from 1 – 3.25 miles while floating downstream through all pool habitats. All adult salmonids including Coastal Cutthroat Trout (*Oncorhynchus clarki clarki*), summer Steelhead Trout (*Oncorhynchus mykiss*), Steelhead half-pounders, Spring Chinook Salmon (*Oncorhynchus tshawytscha*), and Rainbow Trout (*Oncorhynchus mykiss*), as well as Klamath Smallscale Suckers (*Catostomus rimiculus*) observed during the survey are counted.

All new participating volunteers attend a pre-survey training to practice proper survey methods, fish identification and measurement techniques with qualified trainers having previous direct experience. Training held on July 14<sup>th</sup>, 2017 taught volunteers to employ skills to reduce the probability of double counting fish as well as how to safely navigate hazards present in the river. Each survey crew was assigned a lead in charge of data recording and reporting and to ensure accurate and safe navigation of the assigned survey reach. Each group also included a surveyor comfortable with diving to ensure areas of cover such as boulders, logs, and ledges were thoroughly investigated for hiding fish. Surveying members are taught to watch for fleeing fish while another surveyor dives. Groups are taught to communicate by vocalizing and pointing to ensure fish are not doubled counted. All surveys are conducted between 9:30 and 5:00 pm during the optimal lighting conditions.

Only fish lacking juvenile parr marks are counted during a survey. Coastal Cutthroat Trout are counted by dividing them into two groups, small (< 12") and large (> 12") individuals. summer Steelhead Trout are divided into adults ( $\geq 16"$ ) and half-pounders (12" – 15"). Also counted are Spring Chinook Salmon > 16", Rainbow Trout > 10", and Klamath Smallscale Suckers > 6". Lastly, observations of amphibians and aquatic reptiles are also recorded.

## Results

With the help of 75 volunteers, 20 reaches were surveyed across 43.3 miles on July 15, 2017. The South Fork was surveyed from Buck Creek to the confluence with the Middle Fork covering 21.61 miles (Table 1). The Middle Fork was surveyed from the Middle Fork Falls to Mary Adam's Bridge covering 21.69 miles (Table 2). A total of 1271 Coastal Cutthroat Trout, 4 summer Steelhead Trout, 11 Steelhead half-pounders, 4 Spring Chinook Salmon, 62 Rainbow Trout, and 6 Klamath Smallscale Suckers were observed across all surveys (Table 2). The USGS gauge near Smith River (11532500) recorded a preliminary daily mean flow of 556 cubic feet per second (cfs); higher than the average daily flow of 358 cfs during past fish counts. The water temperature was recorded at 16.7°C at Rock Creek Ranch.

One juvenile Coho Salmon was observed during surveys in the South Fork near McClendon Ford by a biologist skilled at their identifying characteristics. Juvenile Coho Salmon have been recorded annually in the South Fork basin since 2011 using the CDFW spatial structure protocol (Walkley and Garwood 2017). For information on distribution of Coho Salmon refer to Walkley and Garwood 2017. CDFW will be conducting spatial structure surveys further upstream of our survey area in the South Fork basin in the summer of 2017.

In 2014 there were high numbers of dead Coastal Giant Salamanders (*Dicamptodon tenebrosus*) observed though fewer have been observed since and none were observed this year. Two Coastal Giant Salamanders were observed on the Middle Fork and none on the South Fork. Fourteen Aquatic Garter Snakes (*Thamnophis atratus*) were recorded on the Middle Fork and one on the South Fork. Both of these species are cryptic predators and are difficult to detect with our survey protocol. Foothill Yellow-legged Frogs (*Rana boylei*) were observed on both the South Fork and the Middle Fork. Finally, a single dead adult Pacific Lamprey (*Entosphenus tridentatus*) was observed on both the Middle Fork and the South Fork.

This year's total count of cutthroat per mile was higher on the South Fork than the Middle Fork as has been consistently observed throughout the 28 year dataset (Figure 1). The total density of cutthroat on the South Fork was 1.4 times of the average compared to past years data, ranking 23 out of 28 years (Figure 1). Contrastingly the total density of cutthroat on the Middle Fork was 0.7 times of the average compared to past years, ranking 4 out of 23 years (Figure 1). Total cutthroat counts on the South Fork ranked There was a higher density of small cutthroat per mile than large cutthroat per mile on both the South Fork and the Middle Fork

(Figure 2, Figure 3), again with densities of both size classes above average when compared to past years data. No Summer Steelhead Trout were found on the South Fork, which has not occurred since 1999. However, surveys were not conducted as far upstream as summer steelhead have been sighted in previous years. Additionally, spring flows have been higher than in recent year's further enabling fish to migrate above our surveyed section. The count of summer steelhead in the Middle Fork was slightly below the average when compared to past years densities (Figure 4).

## **Acknowledgements**

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Table 1. Complete counts of fish observed across the South Fork (SF) Smith River during the volunteer fish count on July 15, 2017.

Reach	Reach Top	Reach Bottom	Length (miles)	Cutthroat <12"	Cutthroat >12"	Spring Chinook	Summer Steelhead	Steelhead half-pounder	Rainbow Trout	Klamath Smallscale Sucker	Crew Lead	Crew #
SF 1	Craig's Beach	Middle Fork	1.88	18	4	0	0	1	0	0	T. Dettmar	3
SF 2	Secret Stairs	Craig's Beach	2.04	53	13	0	0	0	0	0	K. Gahan	3
SF 3	Little Jim Flat	Secret Stairs	2.79	89	62	0	0	3	0	0	W. Boucher	4
SF 4	Sand Camp	Little Jim Flat	1.62	25	37	1	0	1	4	1	A. Piscitelli	4
SF 5	Rock Creek Ranch	Sand Camp	1.08	40	18	0	0	0	0	1 (dead)	J. Rizza	4
SF 6	Gordon Creek	Rock Creek Ranch	1.78	61	52	0	0	0	0	0	C. Flannery	4
SF 7	Rattlesnake Creek	Gordon Creek	1.49	34	36	0	0	3	3	0	G. Kubacki	4
SF 8	Steven's Bridge	Rattlesnake Creek	1.12	23	24	0	0	0	2	0	S. Burstein	4
SF 9	Hurdygurdy Creek	Steven's Bridge	1.21	30	31	1	0	2	3	0	K. McNamee	4
SF 10	Indian Bar	Hurdygurdy Creek	2.16	71	44	0	0	0	6	0	J. Abrams	4
SF 11	McCleandon Ford	Indian Bar	3.25	52	39	0	0	0	9	0	J. Deibner-Hanson	3
SF 12	Buck Creek	McCleandon Ford	1.20	48	23	1 (jack)	0	0	0	0	S. Gwozdz	3
<b>South Fork Totals</b>			<b>21.61</b>	<b>544</b>	<b>383</b>	<b>3</b>	<b>0</b>	<b>10</b>	<b>27</b>	<b>1</b>		

Table 2. Complete counts of fish observed across the Middle Fork (MF) Smith River and combined total counts (South Fork and Middle Fork) during the volunteer fish count on July 15, 2017.

Reach	Reach Top	Reach Bottom	Length (miles)	Cutthroat <12"	Cutthroat >12"	Spring Chinook	Summer Steelhead	Steelhead half-pounder	Rainbow Trout	Klamath Smallscale sucker	Crew Lead	Crew #
MF 2	North Fork	Mary Adam's Bridge	2.61	72	22	0	0	0	2	4	E. Sinkhorn	2
MF 3	Panther Flat	North Fork	2.47	17	8	0	0	0	1	0	T. Ward	2
MF 4	Grassy Flat	Panther Flat	2.85	6	10	0	3	1	5	1	W. Previte	3
MF 5	Patrick Creek	Grassy Flat	3.29	42	26	0	0	0	8	0	S. Bordon	3
MF 6	Siskiyou Fork	Patrick Creek	3.30	21	21	1	1	0	1	0	J. Crawford	3
MF 7	Idlewild Creek	Siskiyou Fork	2.97	37	12	0	0	0	11	0	C. Cosby	3
MF 8	Griffin Creek	Idlewild Creek	1.84	21	3	0	0	0	0	0	A. Broido	3
MF 9	MF Falls	Griffin Creek	2.34	14	12	0	0	0	7	0	R. McCain	3
<b>Middle Fork Totals</b>			<b>21.69</b>	<b>230</b>	<b>114</b>	<b>1</b>	<b>4</b>	<b>1</b>	<b>35</b>	<b>5</b>		
<b>Total Counts</b>			<b>43.30</b>	<b>774</b>	<b>497</b>	<b>4</b>	<b>4</b>	<b>11</b>	<b>62</b>	<b>6</b>		

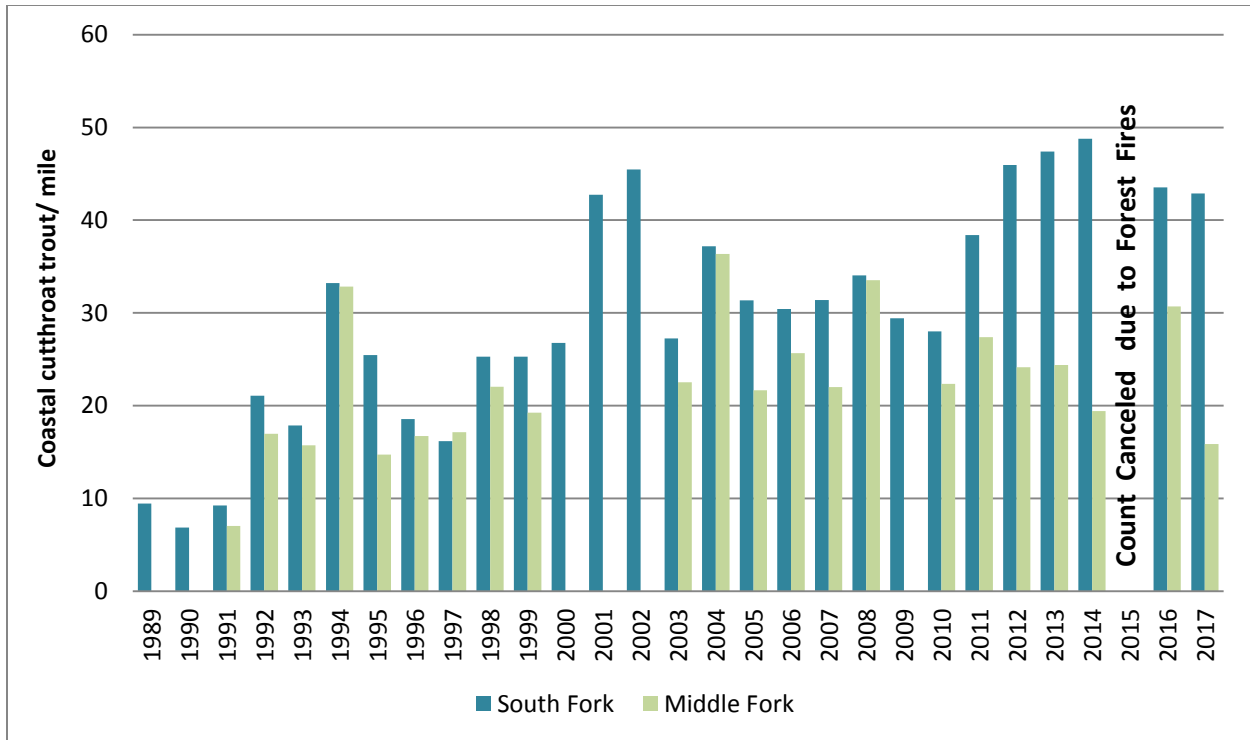


Figure 1. Density of total Coastal Cutthroat Trout counted per mile based on miles of river surveyed in the South Fork and Middle Fork Smith River from 1989 to 2017. No surveys were conducted on the Middle Fork in 1989, 1990, 2000 – 2002, or in 2009.

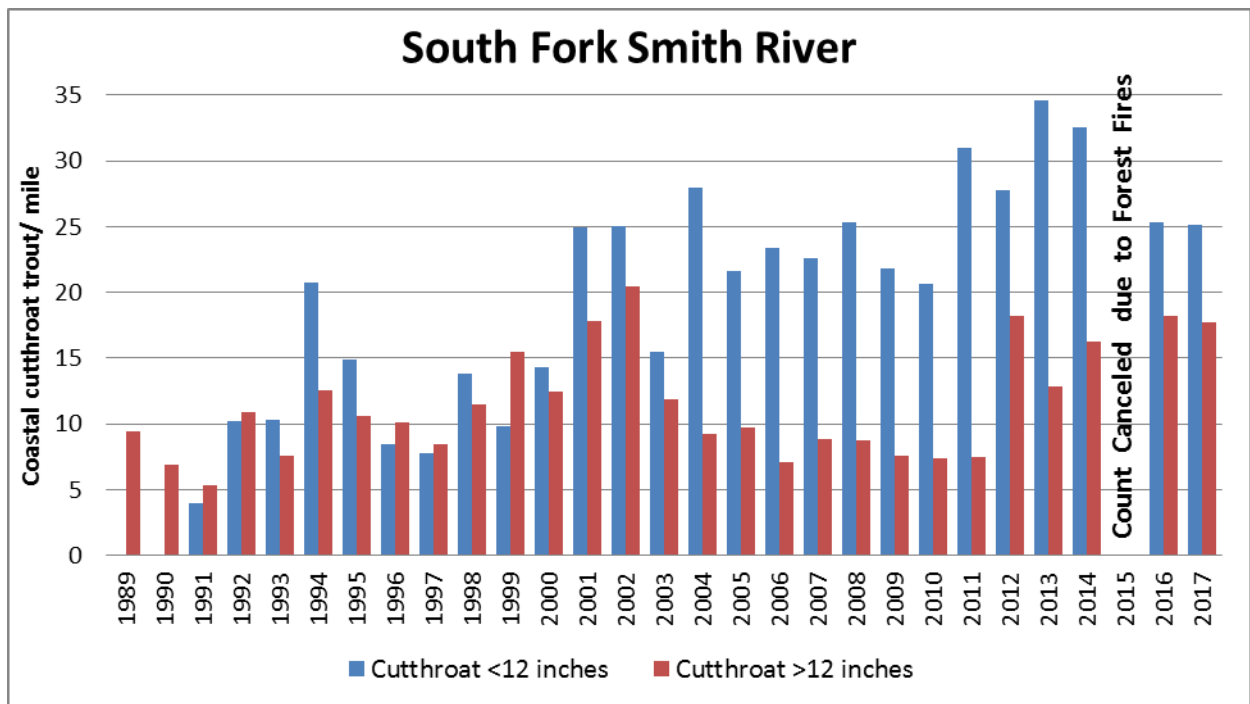


Figure 2. Density of small (<12") and large (>12") Coastal Cutthroat Trout based on counts per mile of river surveyed on the South Fork Smith River from 1989 to 2017.

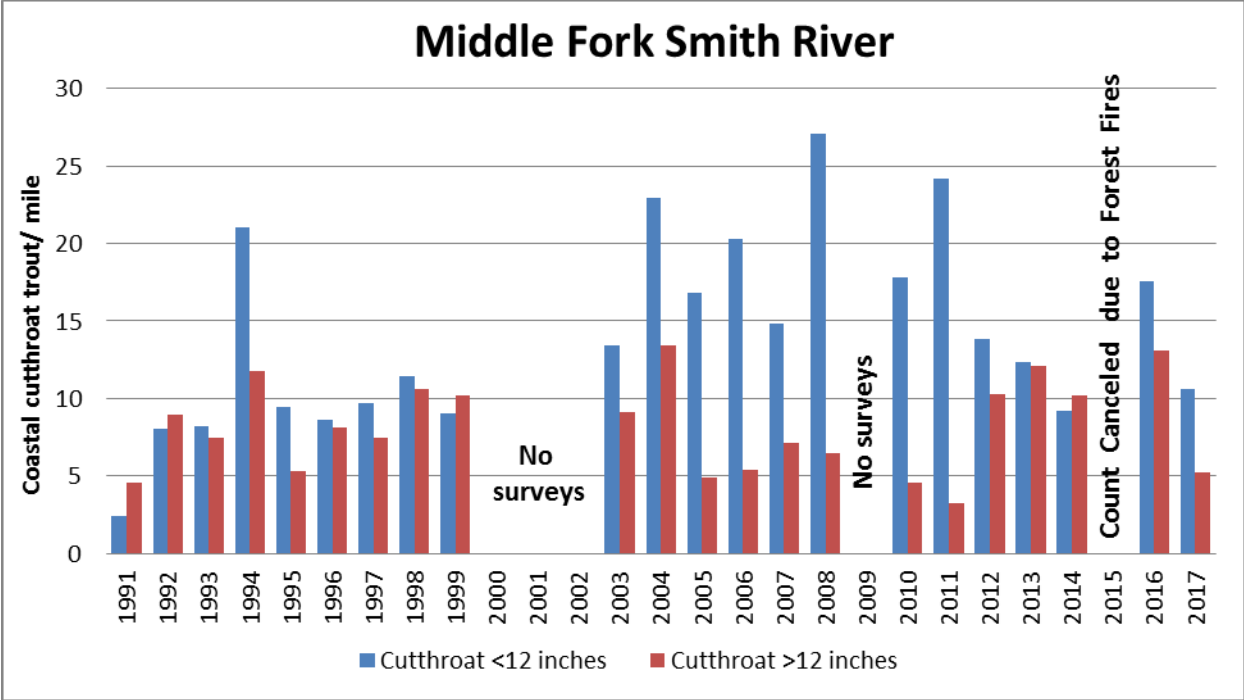


Figure 3. Density of small (<12”) and large (>12”) Coastal Cutthroat Trout based on counts per mile of river surveyed on the Middle Fork Smith River from 1991 to 2017.

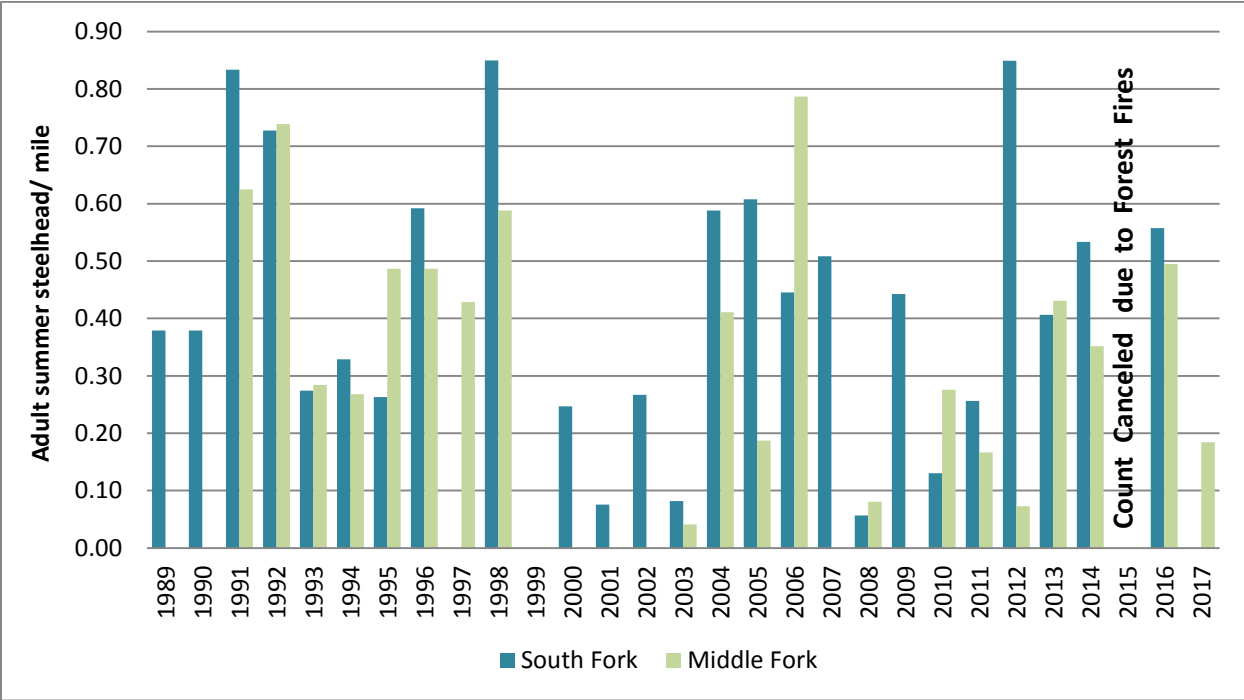


Figure 4. Density of adult Summer Steelhead Trout (>16”) based on total counts per mile surveyed along the South Fork and Middle Forks of the Smith River during surveys conducted from 1989 to 2017. No surveys were conducted on the Middle Fork in 1989, 1990, 2000 – 2002, or in 2009.



## Appendix

Appendix A. Summary of counts from all summer adult fish surveys in the South Fork Smith River. When a particular species was not identified and recorded during a survey year no data (ND) is available for that year.

Year	Miles	Cutthroat <12"	Cutthroat >12"	Spring Chinook Salmon	Summer Steelhead Trout	Steelhead half- pounder	Rainbow Trout	Klamath Smallscale Sucker
1982	25.0	ND	91	11	5	ND	ND	ND
1989	13.2	ND	125	2	5	ND	ND	ND
1990	13.2	ND	91	11	5	ND	ND	ND
1991	9.6	38	51	1	8	0	ND	ND
1992	11.0	112	120	1	8	3	ND	ND
1993	14.6	150	111	17	4	6	13	ND
1994	15.2	315	190	8	5	11	32	ND
1995	15.2	226	161	21	4	4	19	5
1996	15.2	128	154	38	9	ND	ND	0
1997	8.9	69	75	1	0	0	17	ND
1998	15.3	212	175	3	13	5	3	ND
1999	13.6	133	211	0	0	1	3	ND
2000	8.1	116	101	1	2	2	2	1
2001	13.2	329	235	2	1	1	6	5
2002	15.0	375	307	14	4	2	19	8
2003	24.5	378	290	14	2	12	29	6
2004	13.6	380	126	12	8	0	39	21
2005	24.7	535	240	2	15	20	61	4
2006	24.7	578	174	11	11	10	43	7
2007	17.7	400	156	3	9	0	17	2
2008	17.7	448	155	2	1	0	9	11
2009	22.6	494	171	5	10	0	58	6
2010	23.0	474	170	0	3	ND	34	2
2011	19.5	604	145	5	5	ND	64	23
2012	21.2	589	385	2	18	5	142	present
2013	12.3	425	158	0	5	3	15	6
2014	13.1	427	213	2	7	2	5	3
2016	19.7	500	359	2	11	4	45	24
2017	21.6	544	383	2	0	10	27	1

Appendix B. Summary of counts from all summer adult fish surveys in the Middle Fork Smith River. If a particular species was not identified and recorded during a survey year no data (ND) is available for that year.

Year	Miles	Cutthroat <12"	Cutthroat >12"	Spring Chinook Salmon	Summer Steelhead Trout	Steelhead half- pounder	Rainbow Trout	Klamath Smallscale Sucker
1991	17.6	43	81	7	11	0	ND	ND
1992	17.6	142	157	1	13	21	ND	ND
1993	17.6	145	132	6	5	2	15	ND
1994	11.2	236	132	2	3	7	134	ND
1995	22.6	213	120	3	11	7	81	9
1996	22.6	195	183	14	11	9	0	8
1997	14.0	136	104	1	6	8	27	16
1998	10.2	117	108	2	6	9	56	0
1999	13.6	123	139	2	0	5	16	0
2003	24.5	329	223	17	1	4	97	82
2004	14.6	335	196	2	6	ND	86	68
2005	10.7	180	52	3	2	7	26	2
2006	17.8	361	96	0	14	7	45	23
2007	6.0	89	43	0	0	0	5	80
2008	12.4	336	80	0	1	0	24	47
2010	14.5	258	66	0	4	ND	79	2
2011	18.0	435	58	0	3	1	50	7
2012	13.7	190	141	0	1	0	11	ND
2013	11.6	143	140	2	5	0	70	1
2014	11.4	105	116	1	4	2	5	0
2016	8.1	142	106	1	4	15	20	15
2017	21.7	230	114	1	4	1	35	5

#### Literature Cited

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