

2016 Sturgeon Fishing Report Card: Preliminary Data Report

Jason DuBois and Andrew Danos

California Department of Fish and Wildlife
Bay Delta Region
2109 Arch-Airport Road, Suite 100
Stockton, CA 95206

22 Mar 2017

Summary

About 47,614 2016 Sturgeon Fishing Report Cards (Cards) were issued. This report was written 10-Mar-2017 using information from the 15,008 Cards that had been received from anglers (11,036 via the Internet and 3,972 via mail) by that date.

Most catch of sturgeon (both species) was in the Sacramento River from Rio Vista to Chipps Island and in Suisun Bay. Anglers reported the release of 220 Green Sturgeon, retention of 2,528 White Sturgeon, and release of 4,963 White Sturgeon. As has been the case since 2007, roughly 50% of the anglers who fished for sturgeon were not successful and successful anglers retained on average less than half the annual bag limit of three White Sturgeon.

Anglers reported fork length measurements for 102 Green Sturgeon (range 18-71 inches, averaged 33 inches). Of the White Sturgeon retained, anglers reported fork length measurements for 2,516 fish (range 40-60 inches, average 48 inches). Of the White Sturgeon released, anglers reported a length measurement for 2,375 fish (range 12-108 inches, averaged 44 inches).

Introduction

This report summarizes data from the 2016 California Sturgeon Fishing Report Card (Card). The Card is part of a suite of sport fishing regulations that are intended to protect California's year-round White Sturgeon fishery while increasing protections for the federally-threatened Green Sturgeon population and adding resiliency to the conservation-dependent White Sturgeon population.

The 2016 Card was distributed to any angler for a fee of \$8.13 exclusively through the Automated License Data System (ALDS) and was required of every angler — including minors, anglers fishing only from piers, and anglers fishing on 'free fishing' days — to fish for or retain a sturgeon in California.

Cards included fields for contact information, retained White Sturgeon, and released White Sturgeon (Appendix 1). To aid the Department's efforts to reduce illegal commercialization of sturgeon and to enforce the daily and annual bag limits on White Sturgeon, the Cards also included detachable single-use serially-numbered Card-specific tags to be placed on White Sturgeon retained by anglers.

Information on catch of sturgeon from 2016 Cards is complementary to on-going research and monitoring conducted by the Department (including application of disk-tags to wild fish) and others and will be used in planned articles and technical reports.

Card Distribution and Return

About 47,614 2016 Cards were issued to anglers. Anglers began returning Cards (on-line or via mail) almost immediately after distribution. Cards returned after preparation of this report began are not described here (cutoff date 10-Mar-2017, mid PM).

Fifteen thousand eight (15,008) Cards were returned. Of the Cards returned, 6,311 had no data (effort but no catch; 4,468 via the Internet and 1,843 via mail), 5,906 indicated no fishing effort (did not fish; 4,796 via the Internet and 1,110 via mail), and 2,791 (1,772 via the Internet and 1,019 via mail) had data on sturgeon catch.

Angler Data

The Card included fields for general, personal, and contact information (Appendix 1), but those data are not summarized here.

Catch Data

The Card contained three sections for reporting sturgeon catch: (1) Sturgeon Retained, (2) Sturgeon Released (no reward disk present), and (3) Sturgeon Released (reward disk present). See Appendix 1.

Recapture of disk-tagged fish — Seventeen (17) anglers each caught one disk-tagged White Sturgeon or disk-tagged unidentified sturgeon (Table 1). No disk-tagged Green Sturgeon were reported. Two anglers each reported catching and then releasing disk tag HH1001 (not shown in Table 1). Although this tag is a valid CDFW release from 2006, it also appears as the example on the report card. Anglers have previously recorded this tag, and to date the physical tag (HH1001) has not been returned to us.

Table 1. Angler-reported tag recaptures from 2016 Cards with corresponding CDFW tagging data; table sorted by date tagged (oldest to newest)

Angler-reported Tag Recaptures						CDFW Tagging Data			
Date (2016)	Location	Species	Fate	Fork Length (inches)	Tag Number	Date Tagged	Species	Fork Length (inches)	Days at large
5-Apr	Suisun Bay	White	kept	58 ^a	ST12288	26-Aug-09	White	65 ^a	2,414
28-Jan	Montezuma Slough	White	kept	57	HH1787	5-Oct-09	White	48	2,306
4-Feb	Sacramento River: Knights Landing to Rio Vista	White	kept	45	HH2045	1-Sep-11	White	36	1,617
3-Feb	San Joaquin River: Stockton to Sherman Lake	White	kept	52	HH2074	29-Sep-11	White	42	1,588
23-Oct	Sacramento River: Rio Vista to Chipps Island	White	kept	40	HH2275	15-Oct-14	White	34	739
12-Apr	Suisun Bay	Unk	released	NA	HF2134	17-Aug-15	White	39	239
20-Sep	San Joaquin River: Stockton to Sherman Lake	White	kept	57	FF2159	25-Aug-15	White	55	392
22-Mar	Suisun Bay	White	kept	58	HF2140	26-Aug-15	White	56	209
24-Sep	Suisun Bay	White	kept	44	HF2165	10-Sep-15	White	39	380
6-Feb	Grizzly Bay	Unk	released	46	FF2182	1-Oct-15	White	45	128
21-Jan	Grizzly Bay	Unk	released	56	HF2189	13-Oct-15	White	44	100
9-Nov	Sacramento River: Rio Vista to Chipps Island	Unk	released	36	FF2177	14-Oct-15	White	36	392
26-Dec	Suisun Bay	Unk	released	NA	FF2195	25-Oct-15	White	36	428
4-Dec	Suisun Bay	White	kept	52	HF2311	19-Oct-16	White	52	46
27-Nov	Grizzly Bay	Unk	released	54	HH2173	-	White	-	-
7-May	Suisun Bay	White	kept	46	FF2185	-	White	-	-
17-Apr	Montezuma Slough	White	kept	51	1881	-	-	-	-

- = Cannot determine with information supplied

^a verified angler's reporting of 58" fork length and CDFW recording of 65" FL (converted from TL cm and then to inches)

Catch — Anglers reported releasing 220 Green Sturgeon, releasing 4,963 White Sturgeon, and retaining 2,528 White Sturgeon (Table 2). Fifty (50) released sturgeon were not identified to species.

Table 2. White Sturgeon and Green Sturgeon catch reported on 2016 Cards

		White Sturgeon	Green Sturgeon	Unidentified Sturgeon	Overall Total
Retained	Measured	2,516	NA	0	2,516
	Not Measured	12	NA	0	12
	Total	2,528	NA	0	2,528
Released	Measured	2,375	102	8	2,485
	Not Measured	2,588	118	42	2,748
	Total	4,963	220	50	5,233
Overall Total		7,491	220	50	7,761

One thousand eight hundred fifty-nine (1,859) anglers reported retaining White Sturgeon (Table 3; average of 1.4 sturgeon). One hundred thirty-four (134) anglers retained the limit of three White Sturgeon.

One thousand six hundred thirty-two (1,632) anglers reported releasing White Sturgeon (Table 3). Of those anglers, 110 each released 10-30 fish and two each released > 30 fish.

One hundred seventy-five (175) anglers reported releasing Green Sturgeon (Table 3; average of 1.3 sturgeon). Of those anglers, 29 each released 2-5.

Table 3. Summary statistics for per-angler catch from 2016 Cards with catch data

	Number of Anglers	Number of Sturgeon	Maximum Number of Sturgeon per Angler	Average Number of Sturgeon per Angler
Retained White Sturgeon	1,859	2,528	3	1.4
Released White Sturgeon	1,632	4,963	39	3.0
Green Sturgeon	175	220	5	1.3
Unidentified Sturgeon	37	50	7	1.4

Far and away most of the successful White Sturgeon anglers caught 1-2 fish (Figure 1). Two hundred ninety-one (291¹) anglers retained and released White Sturgeon on the same day. The number of White Sturgeon voluntarily conserved could not be calculated, because the length of sturgeon released was not a required field on the Card.

¹ Of the 291 anglers, six retained and released White Sturgeon on three separate days, 37 retained and released White Sturgeon on two separate days, and 248 retained and released White Sturgeon on one day.

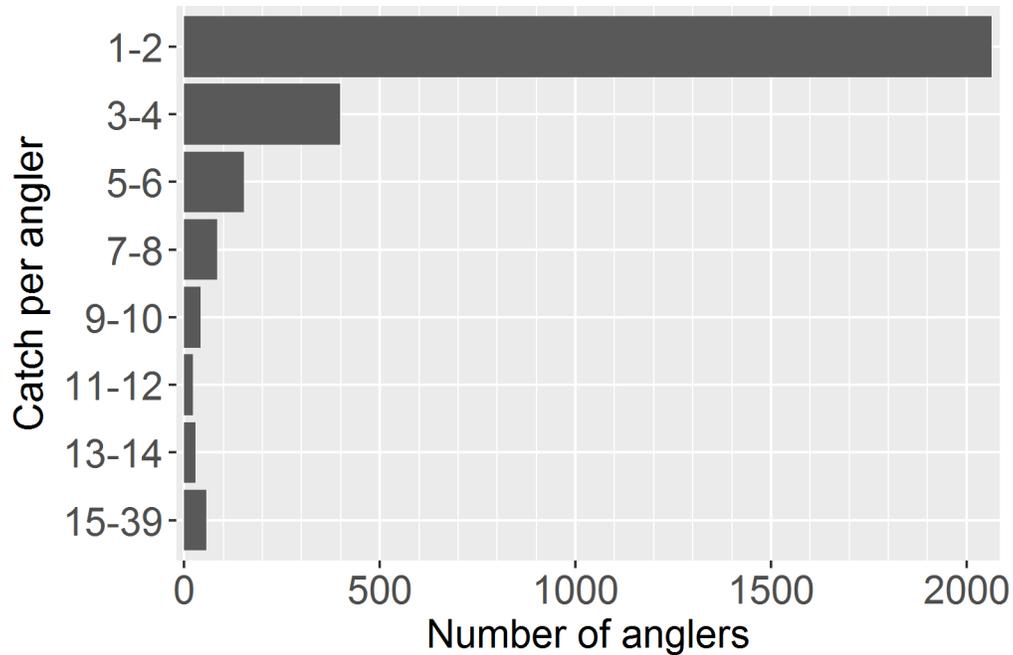


Figure 1. Frequency distribution of White Sturgeon catch per angler as reported on 2016 Cards

Lengths — Green Sturgeon length ranged 18-71 inches and averaged 33 inches (Figure 2). Retained White Sturgeon length ranged 40-60 inches² and averaged 48 inches (Figure 3). For the released White Sturgeon for which a length measurement was reported³ (Figure 4), length ranged 12-108 inches and averaged 44 inches, 544 were within the slot limit, 1,366 were below the slot limit, and 465 were above the slot limit.

² For 12 retained White Sturgeon, length was not recorded, illegible, or reported above or below the legal limit (40-60 inches FL).

³ Length of released fish is not a required field, but many anglers volunteered the information.

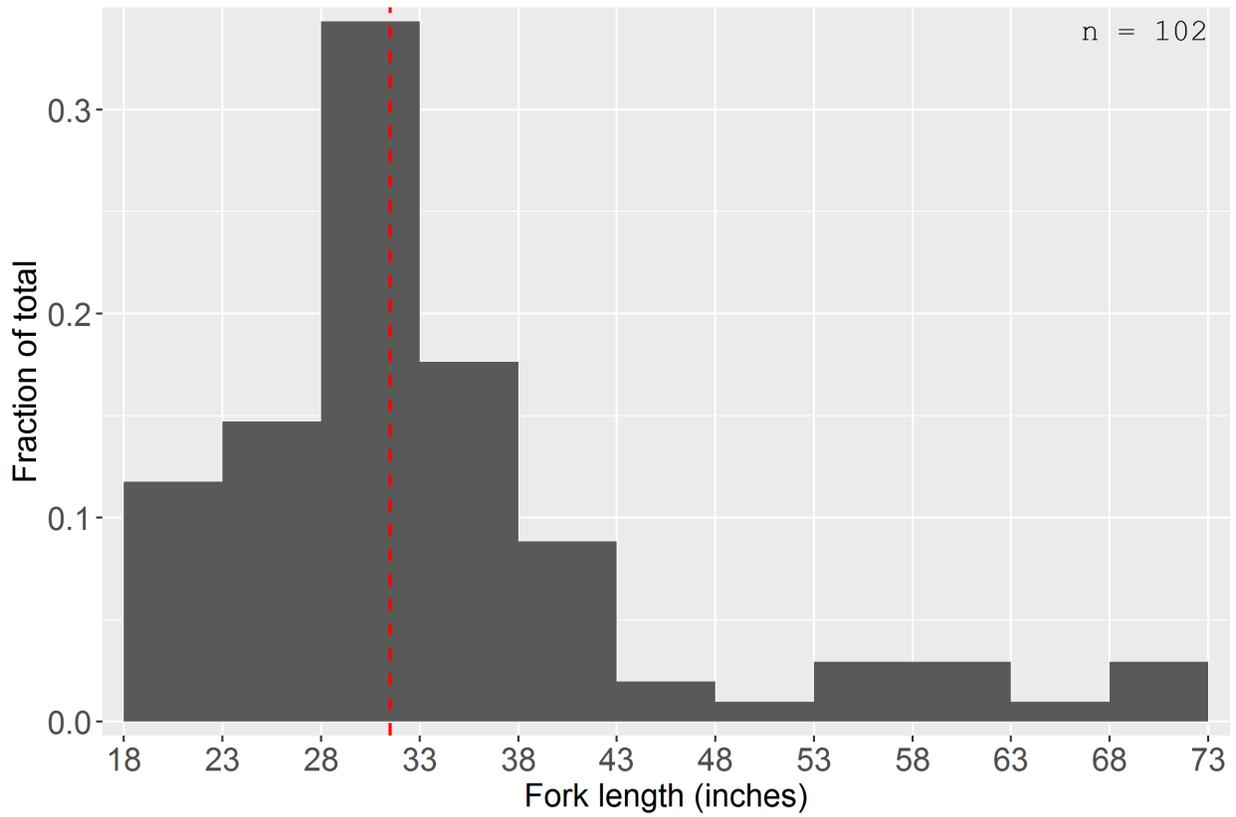


Figure 2. Length frequency distribution of Green Sturgeon released as reported on 2016 Cards; number measured included upper-right; dashed red line indicates median; bins by 5 inches

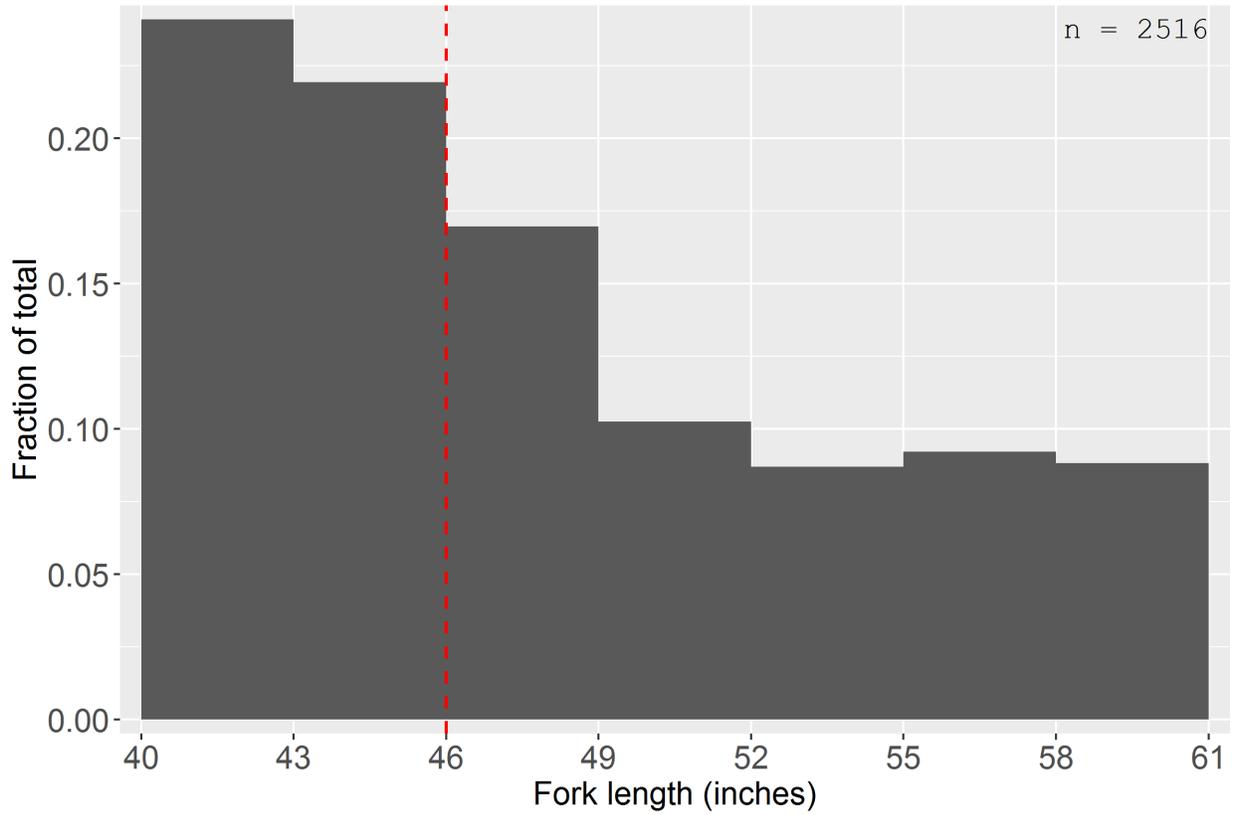


Figure 3. Length frequency distribution of White Sturgeon retained as reported on 2016 Cards; number measured included upper-right; dashed red line indicates median; bins by 3 inches

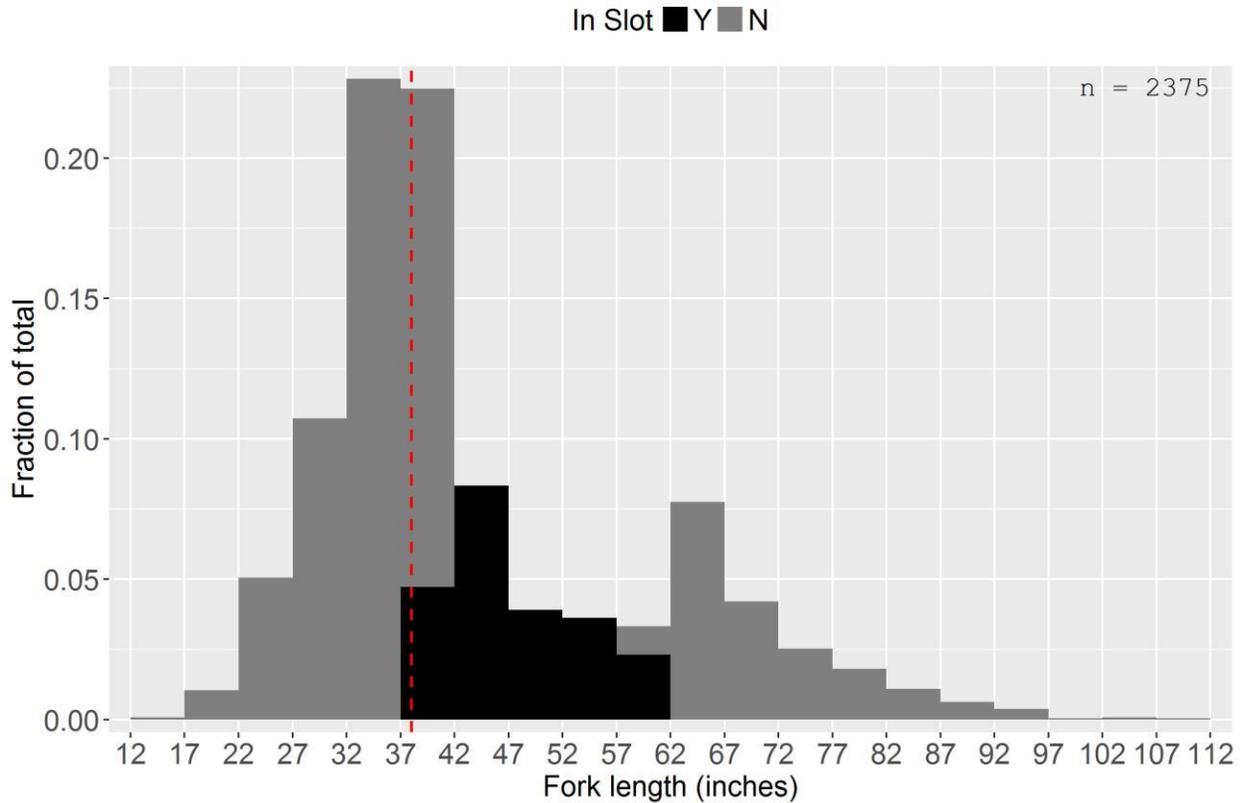


Figure 4. Length frequency distribution of White Sturgeon released as reported on 2016 Cards (dark bars denote slot limit of 40–60 inches FL); number measured included upper-right; dashed red line indicates median; bins by 5 inches. Because these data are not collected randomly or systematically (e.g., many slot-sized fish are not released) and it is illegal to remove certain oversized White Sturgeon from the water (e.g., for measurement), this is not the population’s actual distribution and is likely biased towards relatively small fish.

Seasonality — Catch per month ranged from approximately 1-18%, with the smallest proportions during summer months and early fall (Table 4).

Table 4. White Sturgeon and Green Sturgeon catch per month for 2016

Month	White Sturgeon	Green Sturgeon	Unknown Sturgeon	Catch Total	Percent of Total
<i>Not given</i>	8	0	0	8	0.10
Jan	947	19	6	972	12.52
Feb	1,372	32	5	1,409	18.15
Mar	930	12	5	947	12.20
Apr	763	16	4	783	10.09
May	263	5	4	272	3.50
Jun	102	3	0	105	1.35
Jul	71	3	0	74	0.95
Aug	63	3	0	66	0.85
Sep	236	4	5	245	3.16
Oct	626	32	7	665	8.57
Nov	1,202	46	8	1,256	16.18
Dec	908	45	6	959	12.36
Totals	7,491	220	50	7,761	

Locations — Sturgeon were reported caught in 25 of the 28 locations listed on the Card (Figure 5). For the present purposes, locations where 1-50 sturgeon were collected were grouped as 'All Other Locations' (AOL, N = 13). Location were either not specified or were illegible (grouped as 'Unknown') for 34 retained White Sturgeon, 23 released White Sturgeon, one Green Sturgeon, and four unidentified sturgeon.

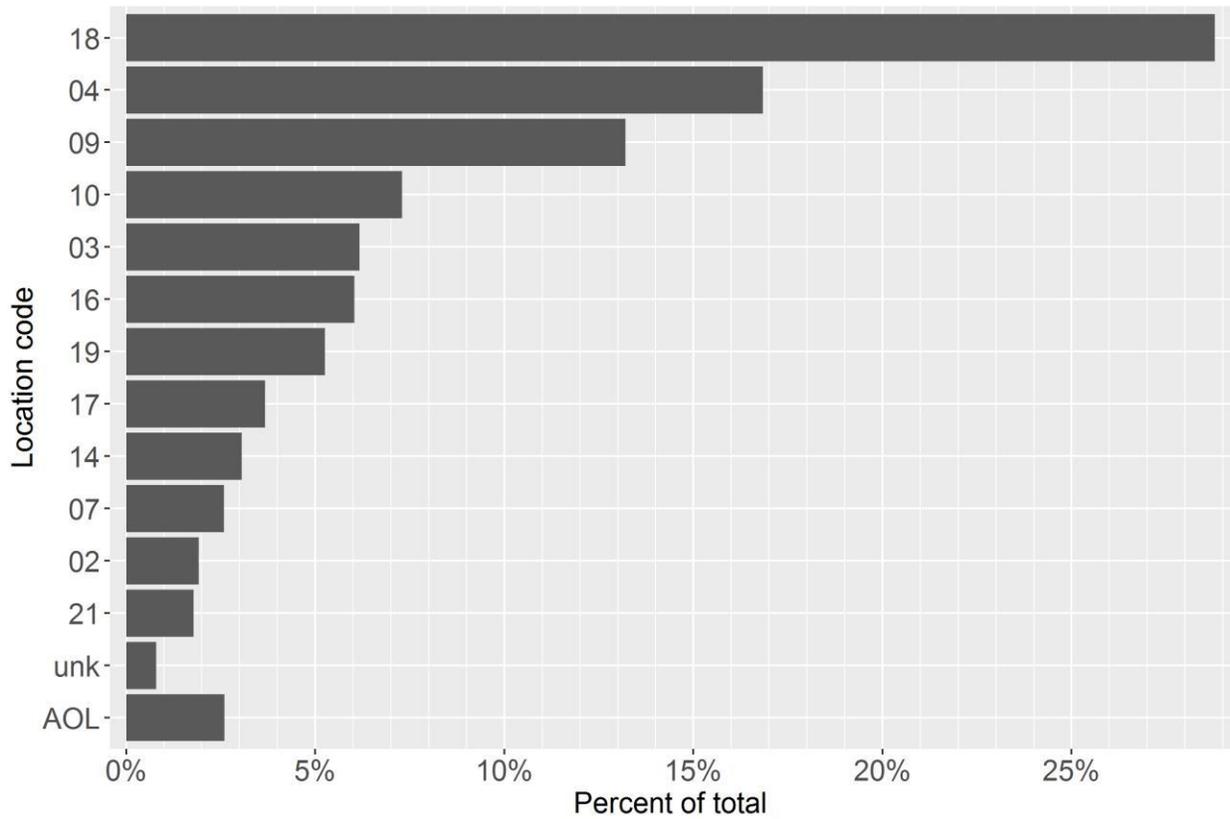


Figure 5. Percent of total catch of all sturgeon by location as reported on 2016 Cards; to conserve space location codes — rather than names — are given, see any of tables 5-7 for location names

Catch of Green Sturgeon was greatest in the Sacramento River from Rio Vista to Chipps Island and in Suisun Bay (Table 5). Catch of White Sturgeon was greatest in Suisun Bay, Montezuma Slough, and in the Sacramento River from Rio Vista to Chipps Island (Tables 6 and 7).

Table 5. Green Sturgeon catch and length statistics by location and season as provided on 2016 Cards. The five locations where total catch was highest were ranked. Seasons were defined as follows: Winter=December-February, Spring=March-May, Summer=June-August, Fall=September-November.

Location Code	Location Name	Rank of Catch	Number of Anglers	No Month of Capture	Winter Catch	Spring Catch	Summer Catch	Fall Catch	Total Catch	Number Measured	Minimum Length (inches)	Maximum Length (inches)	Average Length (inches)	
01A	Sacramento River: Upstream of Red Bluff		-	-	-	-	-	-	-	-	-	-	-	
01B	Sacramento River: Red Bluff to Hwy 32 bridge		2	-	-	-	1	1	2	1	32	32	32.0	
01C	Sacramento River: Hwy 32 bridge to Colusa		2	-	1	3	-	-	4	1	62	62	62.0	
2	Sacramento River: Colusa to Knights Landing		3	-	-	2	-	1	3	1	32	32	32.0	
3	Sacramento River: Knights Landing to Rio Vista		8	-	3	2	-	3	8	3	25	59	46.0	
4	Sacramento River: Rio Vista to Chipps Island	1	53	-	27	3	1	37	68	34	18	71	29.9	
5	Feather River		2	-	1	-	-	1	2	-	-	-	-	
6	American River		-	-	-	-	-	-	-	-	-	-	-	
7	Sacramento Deepwater Ship Channel		9	-	3	1	-	5	9	3	18	37	26.3	
8	Yolo Bypass		-	-	-	-	-	-	-	-	-	-	-	
9	Montezuma Slough	3	17	-	8	6	2	3	19	12	24	66	34.2	
10	Napa River		7	-	6	3	-	-	9	6	21	55	36.7	
11	Petaluma River		2	-	3	-	-	-	3	2	18	39	28.5	
12	San Joaquin River: Upstream of HWY 140 bridge		1	-	-	-	-	1	1	-	-	-	-	
13	San Joaquin River:HWY 140 bridge to Stockton		-	-	-	-	-	-	-	-	-	-	-	
14	San Joaquin River: Stockton to Sherman Lake	4	13	-	6	3	-	8	17	10	27	68	35.0	
15	Old River		-	-	-	-	-	-	-	-	-	-	-	
16	San Pablo Bay	5	12	-	9	2	-	1	12	5	19	32	26.0	
17	Carquinez Strait		7	-	3	3	1	-	7	3	32	57	42.0	
18	Suisun Bay	2	33	-	19	4	2	17	42	17	20	68	34.3	
19	Grizzly Bay		4	-	6	-	-	3	9	1	45	45	45.0	
20	San Francisco Bay: North of HWY 80		-	-	-	-	-	-	-	-	-	-	-	
21	San Francisco Bay: South of HWY 80		3	-	1	-	1	1	3	2	38	39	38.5	
22	Pacific Ocean: North of Golden Gate Bridge		1	-	-	-	1	-	1	-	-	-	-	
23	Pacific Ocean: Golden Gate Bridge to Point Sur		-	-	-	-	-	-	-	-	-	-	-	
24	Pacific Ocean: Point Sur to San Diego		-	-	-	-	-	-	-	-	-	-	-	
25	Any reservoir or lake		-	-	-	-	-	-	-	-	-	-	-	
26	Klamath River		-	-	-	-	-	-	-	-	-	-	-	
unk			1	-	-	1	-	-	1	1	35	35	35.0	
			Totals	180	-	96	33	9	82	220	102			

- = no reported angler catch

Notes: (1) some anglers fished more than one location; (2) any lengths reported as single-digits not included in descriptive stats (n, min, max, avg)

Table 6. Retained White Sturgeon catch and length statistics by location and season as provided on 2016 Cards. The five locations where total catch was highest were ranked. Seasons were defined as follows: Winter=December-February, Spring=March-May, Summer=June-August, Fall=September-November.

Location Code	Location Name	Rank of Catch	Number of Anglers	No Month of Capture	Winter Catch	Spring Catch	Summer Catch	Fall Catch	Total Catch	Number Measured	Minimum Length (inches)	Maximum Length (inches)	Average Length (inches)
01A	Sacramento River: Upstream of Red Bluff		4	-	2	1	-	1	4	4	40	56	47.8
01B	Sacramento River: Red Bluff to Hwy 32 bridge		-	-	-	-	-	-	-	-	-	-	-
01C	Sacramento River: Hwy 32 bridge to Colusa		28	-	16	16	-	1	33	33	42	59	54.4
2	Sacramento River: Colusa to Knights Landing		56	-	40	25	1	1	67	67	40	60	53.2
3	Sacramento River: Knights Landing to Rio Vista	4	179	-	111	54	-	48	213	210	40	60	49.8
4	Sacramento River: Rio Vista to Chipps Island	2	384	1	194	68	9	228	500	499	40	60	46.3
5	Feather River		6	-	-	8	-	-	8	8	43	59	53.0
6	American River		1	-	-	-	-	1	1	1	45	45	45.0
7	Sacramento Deepwater Ship Channel		63	-	37	9	-	30	76	76	40	60	46.5
8	Yolo Bypass		2	-	2	1	-	-	3	3	43	44	43.7
9	Montezuma Slough	3	185	-	69	91	4	65	229	227	40	60	48.3
10	Napa River	5	134	1	80	69	7	13	170	169	40	60	47.1
11	Petaluma River		12	-	8	3	-	1	12	12	40	58	48.6
12	San Joaquin River: Upstream of HWY 140 bridge		14	-	5	6	-	7	18	18	41	52	46.7
13	San Joaquin River:HWY 140 bridge to Stockton		7	-	2	-	-	6	8	8	41	48	44.9
14	San Joaquin River: Stockton to Sherman Lake		73	-	33	16	-	40	89	89	41	60	47.5
15	Old River		3	-	-	-	-	3	3	3	43	47	45.0
16	San Pablo Bay		116	-	88	34	-	10	132	132	40	59	49.2
17	Carquinez Strait		70	-	37	19	13	14	83	82	40	60	47.8
18	Suisun Bay	1	516	-	260	153	21	236	670	670	40	60	46.5
19	Grizzly Bay		93	-	53	16	2	39	110	110	40	59	47.7
20	San Francisco Bay: North of HWY 80		3	-	3	1	-	-	4	4	45	52	48.5
21	San Francisco Bay: South of HWY 80		51	-	43	9	-	8	60	60	41	60	50.5
22	Pacific Ocean: North of Golden Gate Bridge		-	-	-	-	-	-	-	-	-	-	-
23	Pacific Ocean: Golden Gate Bridge to Point Sur		-	-	-	-	-	-	-	-	-	-	-
24	Pacific Ocean: Point Sur to San Diego		-	-	-	-	-	-	-	-	-	-	-
25	Any reservoir or lake		1	-	1	-	-	-	1	1	40	40	40.0
26	Klamath River		-	-	-	-	-	-	-	-	-	-	-
unk			28	1	7	3	3	20	34	30	40	58	46.3
Totals			2,029	3	1,091	602	60	772	2,528	2,516			

- = no reported angler catch

Notes: (1) some anglers fished more than one location; (2) any lengths reported as single-digits not included in descriptive stats (n, min, max, avg)

Table 7. Released White Sturgeon catch and length statistics by location and season as provided on 2016 Cards. The five locations where total catch was highest were ranked. Seasons were defined as follows: Winter=December-February, Spring=March-May, Summer=June-August, Fall=September-November

Location Code	Location Name	Rank of Catch	Number of Anglers	No Month of Capture	Winter Catch	Spring Catch	Summer Catch	Fall Catch	Total Catch	Number Measured	Minimum Length (inches)	Maximum Length (inches)	Average Length (inches)
01A	Sacramento River: Upstream of Red Bluff		-	-	-	-	-	-	-	-	-	-	-
01B	Sacramento River: Red Bluff to Hwy 32 bridge		1	-	1	-	-	-	1	-	-	-	-
01C	Sacramento River: Hwy 32 bridge to Colusa		7	-	3	8	-	-	11	3	66	74	70.7
2	Sacramento River: Colusa to Knights Landing		39	-	30	35	3	11	79	23	30	88	58.0
3	Sacramento River: Knights Landing to Rio Vista		146	-	104	72	3	76	255	110	20	93	50.6
4	Sacramento River: Rio Vista to Chipps Island	3	295	1	270	121	29	311	732	334	18	92	40.2
5	Feather River		6	-	-	16	-	-	16	2	50	70	60.0
6	American River		1	-	1	-	-	-	1	1	25	25	25.0
7	Sacramento Deepwater Ship Channel		57	-	44	22	2	44	112	38	24	75	40.2
8	Yolo Bypass		6	-	1	6	-	6	13	8	36	58	44.6
9	Montezuma Slough	2	286	-	261	351	21	136	769	427	20	100	47.7
10	Napa River	4	160	1	190	138	18	38	385	151	22	102	48.2
11	Petaluma River		20	-	12	6	4	1	23	13	12	75	33.6
12	San Joaquin River: Upstream of HWY 140 bridge		11	-	4	6	1	3	14	3	32	39	36.0
13	San Joaquin River:HWY 140 bridge to Stockton		2	-	-	1	-	1	2	1	36	36	36.0
14	San Joaquin River: Stockton to Sherman Lake		66	-	50	40	10	30	130	71	22	84	41.5
15	Old River		2	-	-	-	2	3	5	2	33	39	36.0
16	San Pablo Bay	5	142	-	230	69	3	21	323	166	17	80	41.4
17	Carquinez Strait		90	-	95	31	17	51	194	103	18	90	40.8
18	Suisun Bay	1	488	1	622	367	50	470	1,510	748	13	108	41.5
19	Grizzly Bay		115	-	150	47	10	77	284	135	22	104	44.3
20	San Francisco Bay: North of HWY 80		4	-	2	1	-	1	4	2	36	39	37.5
21	San Francisco Bay: South of HWY 80		46	-	57	12	1	5	75	28	36	87	59.8
22	Pacific Ocean: North of Golden Gate Bridge		1	-	-	-	1	-	1	-	-	-	-
23	Pacific Ocean: Golden Gate Bridge to Point Sur		-	-	-	-	-	-	-	-	-	-	-
24	Pacific Ocean: Point Sur to San Diego		-	-	-	-	-	-	-	-	-	-	-
25	Any reservoir or lake		1	-	1	-	-	-	1	-	-	-	-
26	Klamath River		-	-	-	-	-	-	-	-	-	-	-
unk			15	2	8	5	1	7	23	6	30	65	46.8
Totals			2,007	5	2,136	1,354	176	1,292	4,963	2,375			

- = no reported angler catch

Notes: (1) some anglers fished more than one location; (2) any lengths reported as single-digits not included in descriptive stats (n, min, max, avg)

Discussion

Information from and about 2016 Cards includes the following highlights:

- (1) Approximately 32% of sturgeon anglers submitted their Cards or data, which is slightly greater than for 2015 Cards, moderately greater than 2013-2014, but substantially greater than for 2007-2012 Cards.
- (2) Almost 75% of reported Cards were done so via the Internet and about 64% of Cards with catch were reported on-line. Both are marked increases when compared to past years and suggests that anglers are becoming more familiar (or comfortable) with on-line reporting.
- (3) Some anglers (n = 14) reported single-digit sturgeon lengths and some anglers (n = 4) reported harvesting White Sturgeon in a closed reach of the Sacramento River (Location 01A). For those data submitted to us by way of mail, we verified that we entered the data accurately. We may attempt to clarify these reports by contacting the anglers.
- (4) As has been the case since 2007, roughly 50% of the anglers who fished for sturgeon were not successful and successful anglers retained on average less than half the annual bag limit of three White Sturgeon.
- (5) Information on the reported capture of 16 disk-tagged White Sturgeon will augment the Department's sturgeon population study, and thus is important for the precision and/or accuracy of estimated abundance, harvest rate, and survival rate.
- (6) The mode in Green Sturgeon lengths is likely a sign that the 2011 brood year was exceptionally good, which — though we have essentially no data on the relationship between Green Sturgeon brood year strength and Sacramento River outflow — is what we expect from the strong relationship between White Sturgeon brood year strength and Sacramento River outflow.

Literature Cited and Relevant References

DFW-Region 3-Sport Fish Unit. 2017. Table: Sturgeon Fishing Report Card Summary Statistics, California Department of Fish and Wildlife
<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentId=94336>

DFW-Region 3-Sport Fish Unit. 2016. Figure: Length Frequencies of White Sturgeon From Card Data, California Department of Fish and Wildlife
<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentId=84549>

DFW-Region 3-Sport Fish Unit. 2016. Figure: Annual Abundance of San Francisco Estuary White Sturgeon by Size Category (sublegal, legal, oversized), California Department of Fish and Wildlife
<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentId=84812>

Gingras, M. and J. DuBois. 2015. Estimating Annual Abundance of White Sturgeon 85-116 and >= 169 Centimeters Total Length, IEP Newsletter Volume 28, Number 2. Interagency Ecological Program for the San Francisco Estuary
<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentId=114809>

Harris, M. D. 2016. Memorandum: Results of Nov 19–Dec 21 (2015) Pilot Sturgeon Angler Phone Survey. California Department of Fish and Wildlife.
<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentId=115526>

Harris, M. D. 2016. Memorandum: Results of Jun 21-Aug 5 (2016) Pilot Sturgeon Angler Phone Survey, California Department of Fish and Wildlife
<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentId=129286>

Harris, M.D. and J. DuBois. 2017. Memorandum: Results of 21-Dec-2016 to 30-Jan-2017 Pilot Sturgeon Angler Phone Survey, California Department of Fish and Wildlife
<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentId=138277>

For more, click on [additional bibliography](#).

Acknowledgements

Special thanks to Ken Flowers, Spencer Lewis, Michael Grady, Kevin Banks, and Michael D. Harris (retired), for sorting returned Cards and/or for entering data. Very special thanks to all anglers who returned Cards and provided valuable information on Card format/function.

