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TO: Peter Stevens

FROM: Michael Seider

SUBJECT: 2010 Miscellaneous Assessments Report

CC: Bill Horns – FH/4 – Madison
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MISCELLANEOUS ASSESSMENTS, 2010

INTRODUCTION

The various fisheries of Chequamegon Bay are an important component of the sport fishery in Lake Superior. The “Bay” receives substantial fishing pressure during the open water and ice fishing seasons. Chequamegon Bay and other Lake Superior embayments contain unique assemblages of fish, which provide abundant fishing opportunities but also complicate management strategies. Monitoring these diverse fisheries must be accomplished through a variety of assessments. The objective of this report is to briefly present data from miscellaneous assessments that were conducted in 2010.

METHODS

1) From May 25th to May 27th, 400 ft and 800 ft graded mesh monofilament gill net gangs (100 ft or 200 ft panels of 8, 10, 12, and 14 in meshes) were set along the Ashland shoreline near the breakwall (Figure 1). Lake sturgeon were measured (total length), implanted with passive integrated transponder (PIT) tags, marked with external t-bar tags, and weighed when conditions permitted.

2) Smallmouth bass were sampled by hook-and-line during May and June, in the Kakagon and Sand Cut Sloughs (Figure 1). Wisconsin Department of Natural Resources (WDNR) personnel sampled areas with high concentrations of smallmouth bass preparing to spawn. Hook-and-line methods vary annually but generally include live bait (sucker minnows, leeches) and artificial baits (e.g. soft plastics). In 2008, only artificial baits were used due to legislative actions preventing use of live bait and barbed hooks. Smallmouth bass were measured (total length) and scales and dorsal spines were collected for age estimation. Smallmouth bass were marked with individually numbered t-bar tags.

RESULTS/DISCUSSION

1) In 2010, 65 lake sturgeon were captured, which averaged 42.7 in. (Table 1, Figure 2). Catch-per-unit-effort (CPUE) of lake sturgeon generally increased from 1988 to 2010 (Figure 3). The CPUE values may have dipped in 2010 because so little effort was expended compared to previous years (Table 1). Eleven lake sturgeon captured in 2010 had been previously tagged. Eight of those fish had been previously tagged in the Bad and White Rivers during the spawning season. Lake sturgeon do not spawn in the Chequamegon Bay, but they do inhabit the shallow embayment between spawning events. One recaptured sturgeon was originally tagged in Keweenaw Bay, at least 150 miles from Chequamegon Bay.

2) During spring sampling, 220 smallmouth bass were captured in the Sand Cut and Kakagon sloughs. Mean length of smallmouth bass captured was 17.0 in. (SD = 2.4) (Figure 4). Mean length of smallmouth bass increased steadily from 1991 to 2002 but has leveled off more recently (Figure 5). The age distribution of the fishery has shifted from one dominated by only a few year classes to a fishery with many different age

classes represented (Table 2). More consistent year class production may be due to higher abundance (due to 22 inch minimum length limit) and/or more suitable environmental conditions which favor smallmouth bass recruitment. Mean length of age 7 smallmouth bass was estimated to examine potential trends in growth. Age 7 was chosen because that age class was most consistently represented during spring sampling. Although sporadic year class strength and small age samples caused high variance in some years, mean length of age 7 fish generally increased until the mid-2000s (Figure 6). A potential slowing of growth in recent years may imply the smallmouth bass population is reaching carrying capacity. Clearly the 22 in. minimum length limit has been successful in not only protecting smallmouth bass from over harvest but also dramatically increasing the number of large fish.

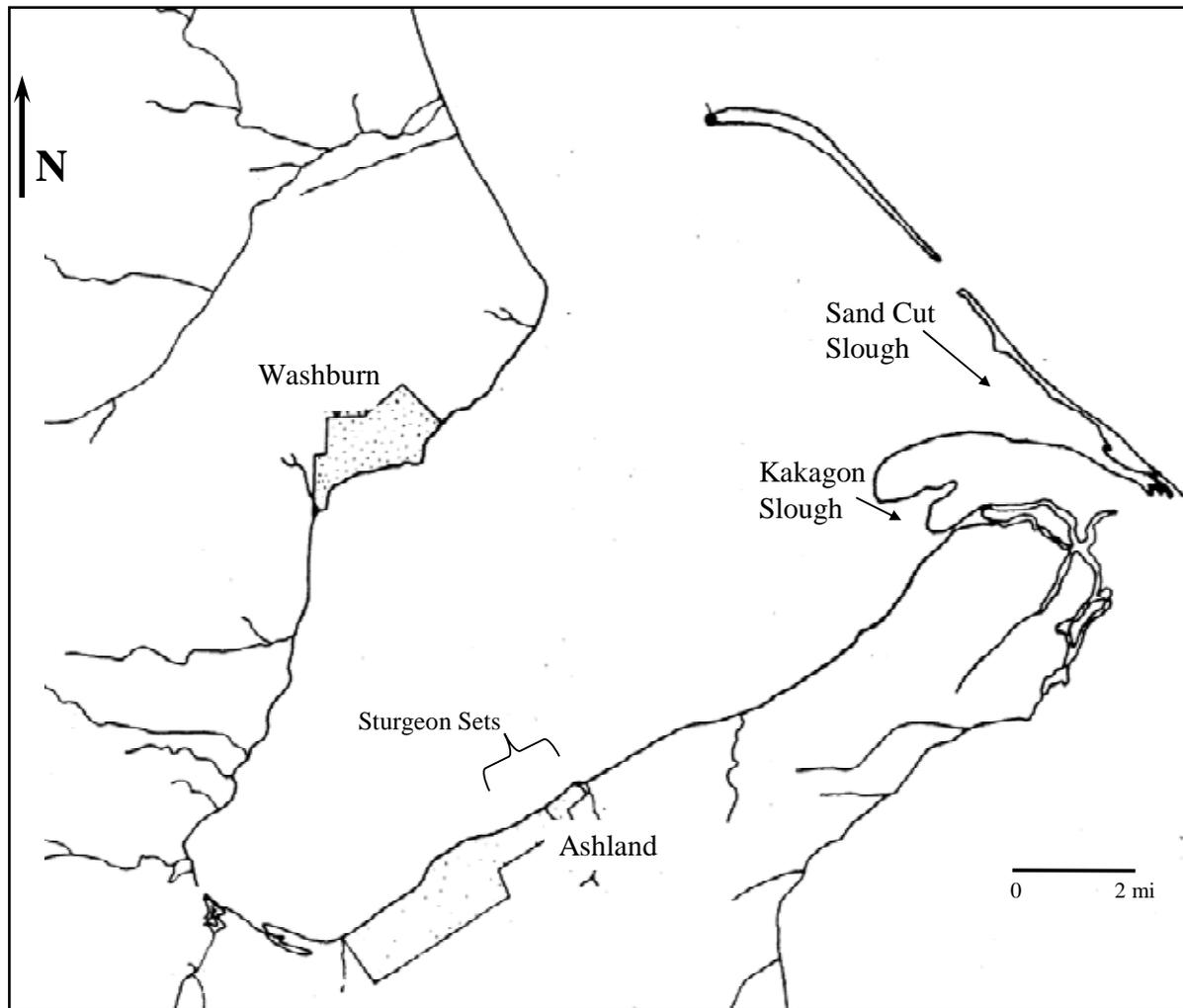


Figure 1. Map of Chequamegon Bay, Lake Superior.

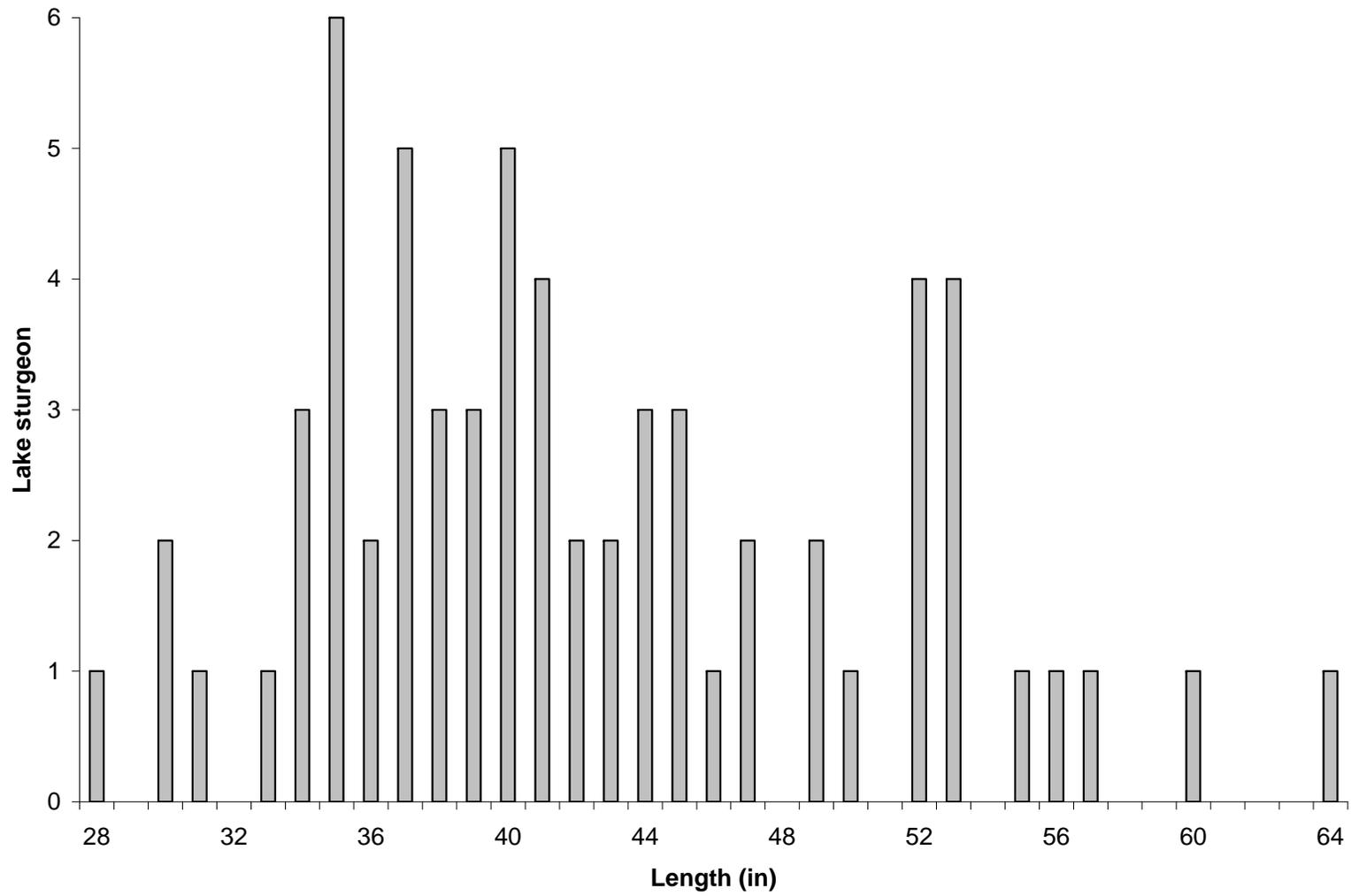


Figure 2. Length distribution of lake sturgeon captured in Chequamegon Bay, 2010.

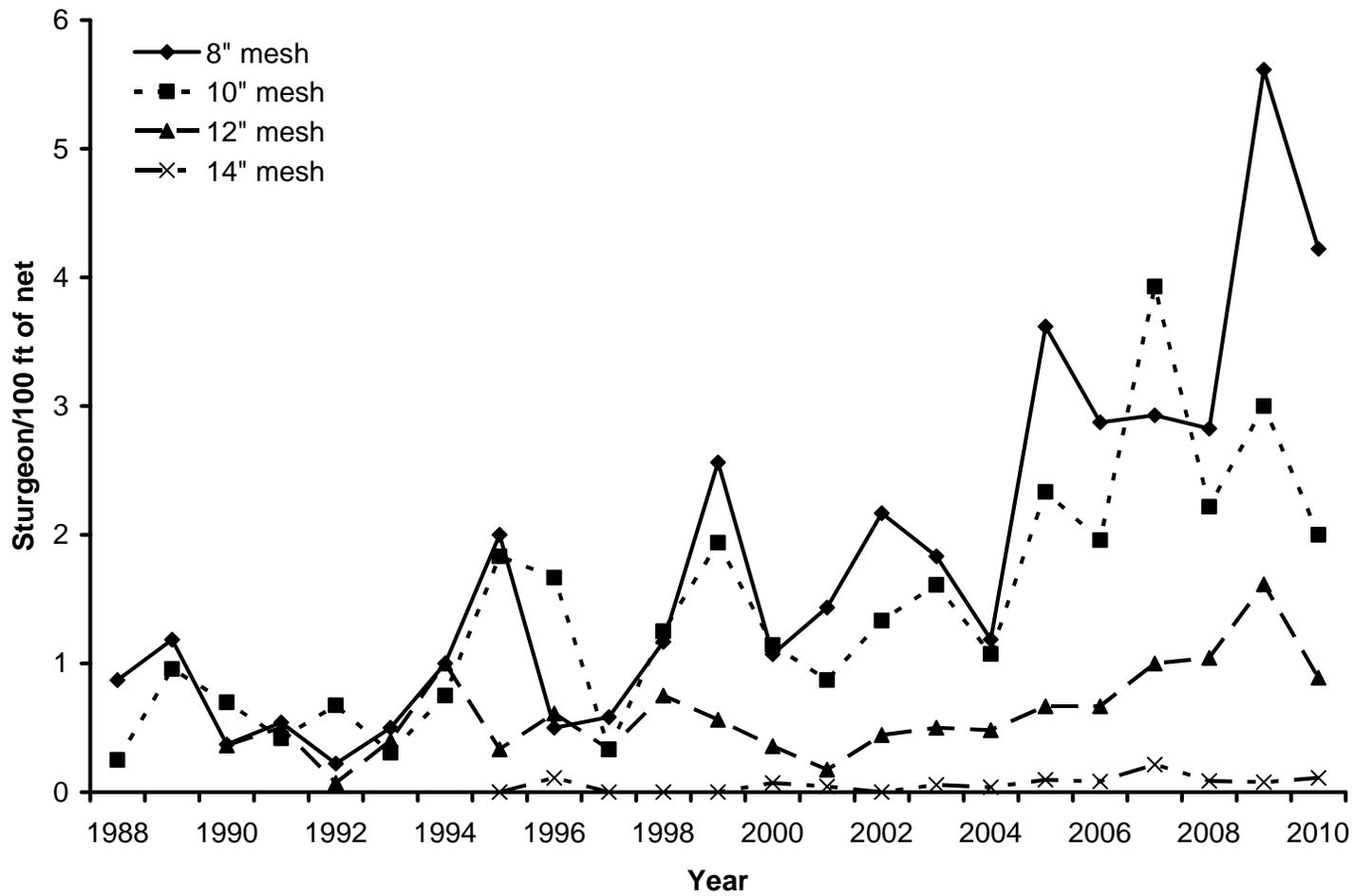


Figure 3. Catch-per-unit-effort of lake sturgeon from spring Chequamegon Bay assessment, 1988-2010. Twelve inch mesh was added to the assessment in 1990 and 14 inch mesh was added in 1995.

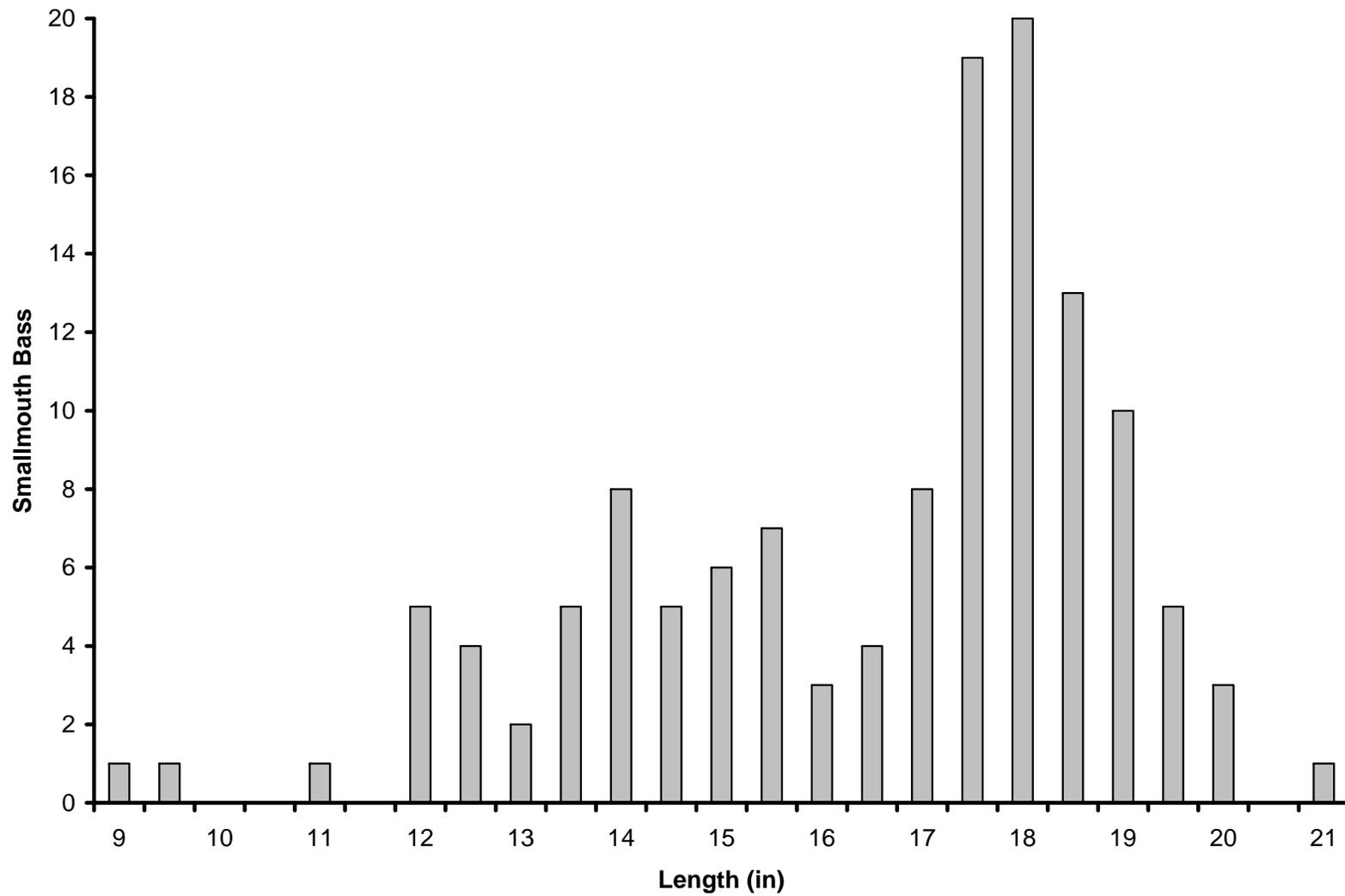


Figure 4. Length distribution of smallmouth bass captured during spring assessment in Chequamegon Bay, 2010.

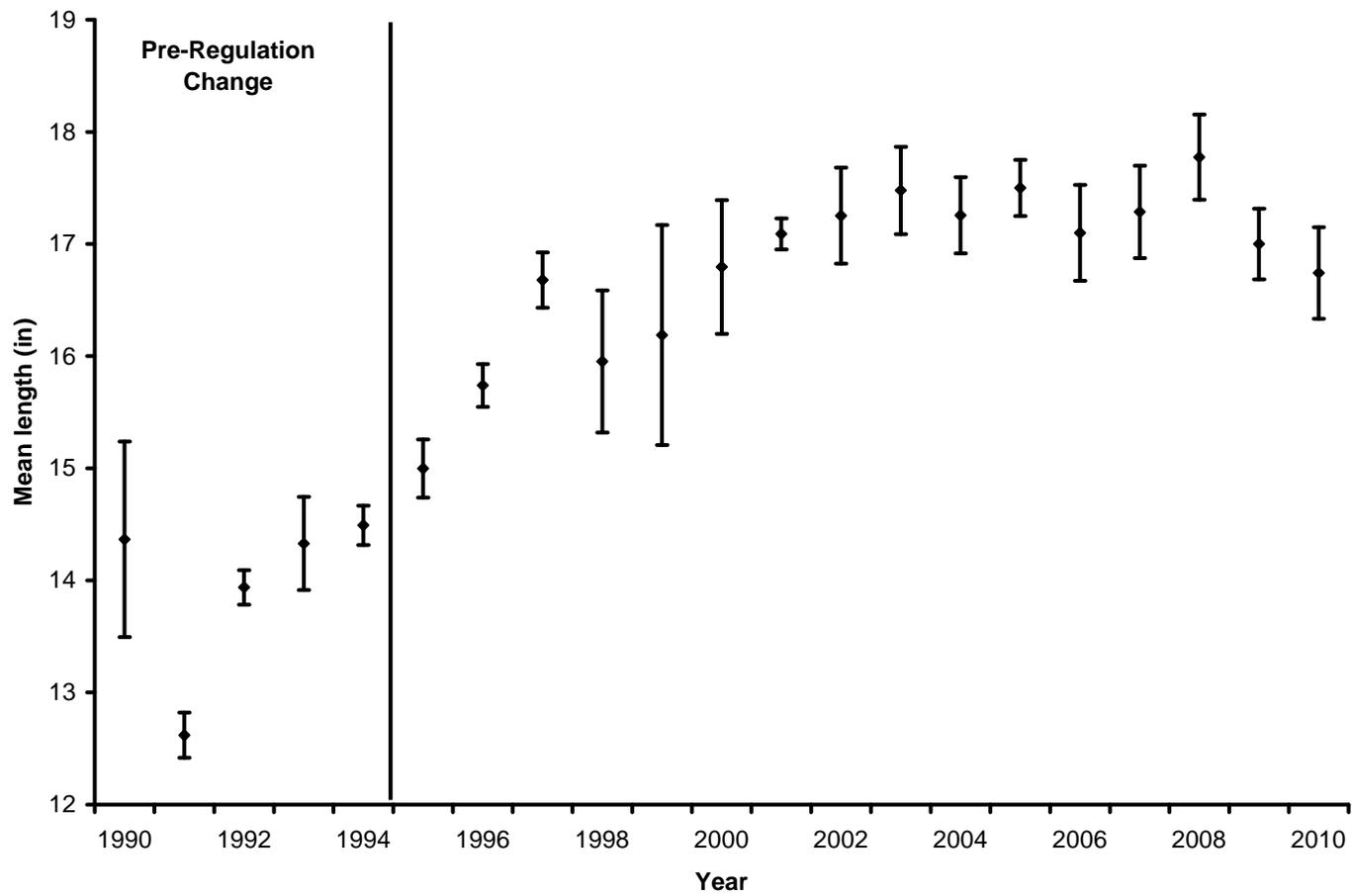


Figure 5. Mean length (in) of smallmouth bass from spring assessment in Chequamegon Bay, 1990-2010.

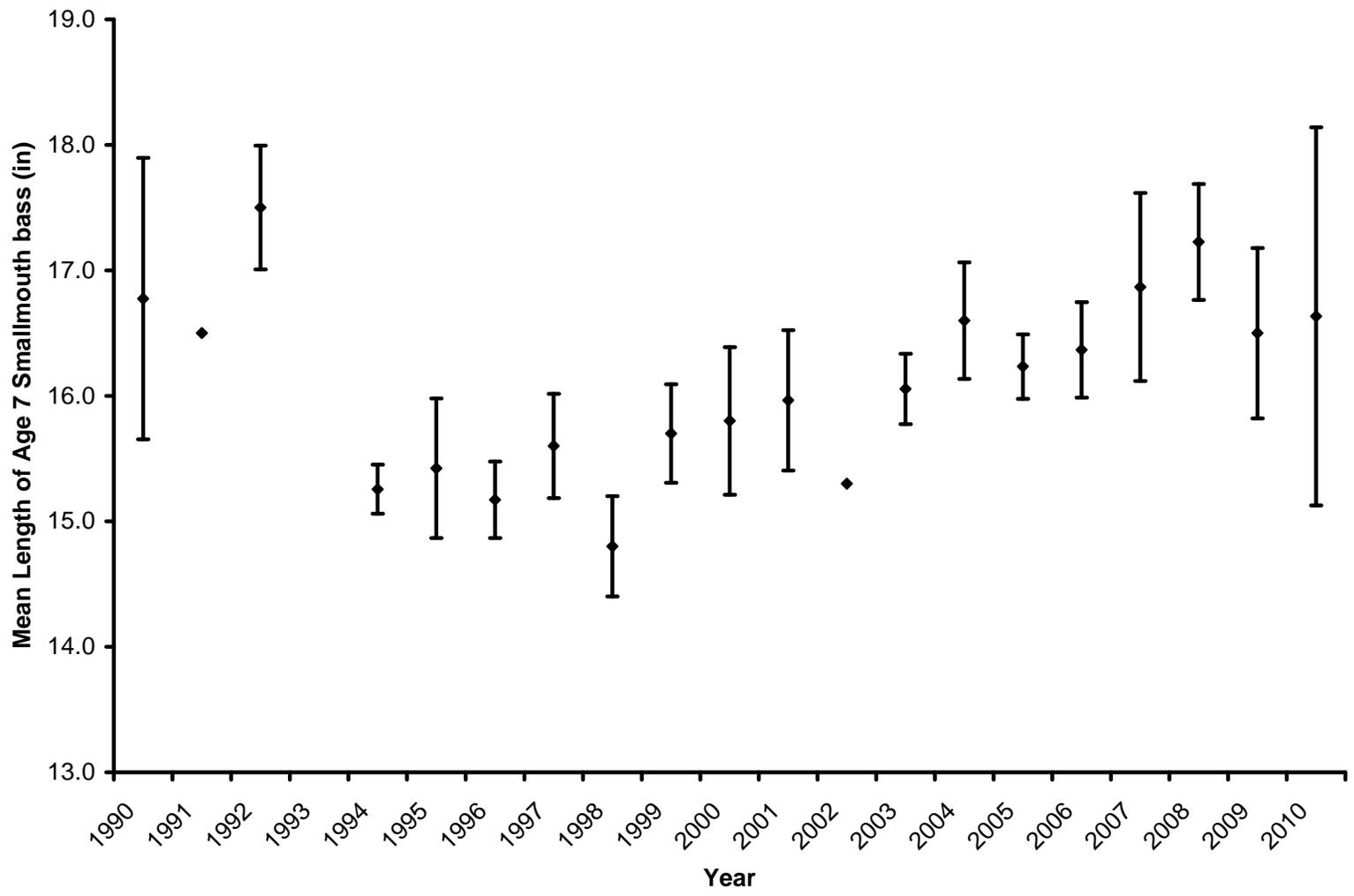


Figure 6. Mean length (in) of age 7 smallmouth bass from spring assessment in Chequamegon Bay, 1990-2010.

Table 1. Lake sturgeon catch and effort data from Chequamegon Bay assessment, 1988-2010.

Year	Effort (ft)	Lifts	Number of Sturgeon					Length (in)			Weight (lbs)		
			8"	10"	12"	14"	Total	Min.	Max.	Ave.	Min.	Max.	Ave.
1988	5,900	6	27	7	na	na	34	34.9	55.9	43.1	na	na	na
1989	4,750	3	29	22	na	na	51	27.5	59.0	42.4	6.0	51.0	20.0
1990	14,200	10	20	46	8	na	74	25.2	65.5	48.0	5.5	100+	27.6
1991	5,200	4	13	10	4	na	27	26.2	65.7	43.7	4.5	62.0	23.4
1992	9,000	7	8	27	1	na	36	28.0	60.0	45.0	6.0	57.0	23.0
1993	9,200	6	18	11	8	na	37	26.7	65.9	47.2	8.0	80.0	29.3
1994	2,400	4	8	6	8	na	22	33.2	65.3	48.2	8.5	62.0	31.2
1995	2,400	3	12	11	2	0	25	28.8	64.0	41.6	4.5	55.0	18.9
1996	7,200	7	9	30	11	2	52	32.2	60.0	47.7	8.0	61.0	27.4
1997	4,800	5	7	4	4	0	15	24.8	59.2	47.3	5.0	56.0	27.1
1998	4,800	7	14	15	9	0	38	31.5	57.9	45.0	14.0	52.0	26.9
1999	6,400	8	41	31	9	0	81	24.0	62.4	42.5	3.0	70.0	20.7
2000	5,600	5	15	16	5	1	37	24.0	64.6	45.3	3.5	58.0	23.9
2001	9,200	9	33	20	4	1	58	31.0	60.0	45.5	7.0	53.0	25.2
2002	7,200	6	39	24	8	0	71	23.6	67.0	43.2	3.0	100+	22.5
2003	7,200	6	33	29	9	1	72	26.2	67.1	43.7	4.5	71.0	22.9
2004	10,800	9	32	29	13	1	75	23.6	68.8	43.9	2	52	22.4
2005	8,400	7	76	49	14	2	141	18.6	67.2	44.2	1	82	23.5
2006	9,600	8	70	47	16	2	135	27.9	64.5	45.6	4	55	24.7
2007	5,600	5	41	55	14	3	113	27.0	68.5	44.2	4.5	85	23.5
2008	9,200	8	65	51	24	2	142	26.3	65.2	44.2	3.9	87.9	24.8
2009	5,200	5	73	39	21	1	134	30.2	63.7	44.3	7	79	24.6
2010	3,600	3	38	18	8	1	65	28.4	64.6	42.7	5	65	21.1

