

**Kennebec River Shortnose Sturgeon Population Study
August – December 1999**

By

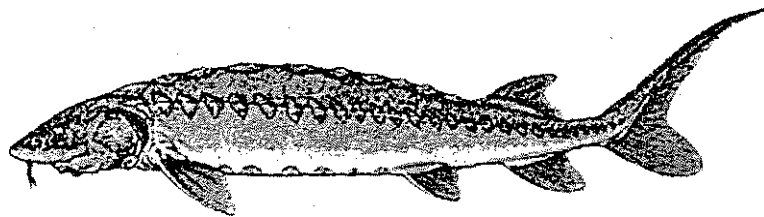
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***KENNEBEC RIVER
SHORTNOSE STURGEON POPULATION STUDY***

August , 1998 – December , 1999



- Graphics from NMFS, NE Fisheries Science Center

NMFS Contract 40EANF800053

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INTRODUCTION

Shortnose sturgeon occur in the estuarine complex of the Sheepscot, Kennebec, and Androscoggin Rivers. The Kennebec and Androscoggin Rivers flow into Merrymeeting Bay, a large tidal/freshwater bay that also receives inflow from several smaller drainages, i.e., the Eastern, Cathance, Abagadaset, and Muddy Rivers. The combined river systems exit Merrymeeting Bay through a narrow channel and flow approximately 20 miles to the Atlantic Ocean. The lower tidal segment is known as the "Kennebec River" and interconnects with the Sheepscot River by means of the tidal Sasanoa River and several bays. This entire estuarine complex will be referred to as the "Kennebec River" for the remainder of the report; it supports the largest population of shortnose sturgeon in the United States north of the Hudson River.

The Maine Department of Marine Resources (DMR) has conducted studies in the past to determine the distribution and abundance of shortnose sturgeon in the estuarine complex of the Kennebec, Androscoggin and Sheepscot Rivers (Squiers and Smith, 1979; Squiers et al, 1982). Additional studies were conducted to determine the timing of the spawning run and locations of spawning areas in the tidal section of the Androscoggin River (Squiers, 1982; Squiers, 1983; Squiers et al, 1993). The estimated size of the adult population (>50cm TL) based on a tagging and recapture study done from 1977 - 1981 was 7200, with a 95% C.I. of 5000 - 10,800 (Squiers et al, 1982). The average density of adult shortnose sturgeon/hectare of habitat in the estuarine complex of the Kennebec River was the second highest of any population studied through 1983 (Dadswell et al, 1984).

DMR tracked shortnose sturgeon that had been outfitted with sonic transmitters from the fall of 1996 through early 1998. Sonic transmitters were internally implanted in 15 shortnose in the fall of 1996 (and an additional five in 1997) to determine if adults overwintered in the Bath area where a new bridge is being built. In addition, DMR cooperated in an additional tracking study initiated in 1998 by Bath Iron Works (BIW) in the Bath region of the Kennebec River. The main objective of this latter study, which was conducted by Normandeau Associates for BIW, was to collect detailed information on the movements of both adult shortnose sturgeon and subadult Atlantic sturgeon in the vicinity of the BIW shipyard. Both studies provided valuable data about the feeding and overwintering areas for shortnose sturgeon. The tracking data and earlier gill net studies indicate that the majority of shortnose feed in the Bath region from mid-April through late November/early December, then migrate upriver to overwinter in Merrymeeting Bay.

The recently released *The Shortnose Sturgeon Recovery Plan* (NOAA, 1998) identified several priorities necessary to facilitate recovery of shortnose sturgeon in the Kennebec River, including recent population estimates, age structure, recruitment, growth rate, and reproductive success. The National Marine Fisheries Service (NMFS) has chosen to obtain updated population estimates and other population dynamics parameters for shortnose sturgeon in the Kennebec River to refine current management strategies to facilitate recovery or reclassify the population status, if warranted.

The primary objective of this study is to obtain revised population estimates for the federally listed endangered shortnose sturgeon populations in the Kennebec River. Secondary objectives include the collection and analysis of early life history data, including age/stage specific abundance and distribution; estimates of survival and annual variability and stock recruitment

relationships; seasonal habitat use; and collection of tissue samples for ongoing genetic analysis of shortnose sturgeon populations.

The following tasks were identified to meet the above objectives:

Primary Task:

1) Adult shortnose sturgeon will be captured and marked in the summer concentration areas utilizing anchored multifilament gill nets (30m X 2.4 m) with stretch mesh sizes of 15, 18, and 20cm. A minimum of two stations will be sampled weekly for adult shortnose sturgeon; all captured fish will be measured (mm) for fork (FL) and total (TL) lengths and weighed immediately upon retrieval. Passive integrated transponder (PIT) tags will be inserted in all shortnose sturgeon larger than 30cm (FL).

Secondary Tasks:

2) Juvenile shortnose sturgeon will be sampled using anchored gill nets (30m X 2.4m) with stretch mesh sizes of 5, 7.5, and 10cm; they will be set in the channel section of each station. A minimum of two stations will be sampled each week for juvenile shortnose sturgeon. All captured fish will be measured (mm) for fork (FL) and total (TL) lengths and weighed immediately upon retrieval. Passive integrated transponder (PIT) tags will be inserted in all shortnose sturgeon larger than 30cm (FL). Physical and chemical attributes will be collected at each station where juvenile shortnose are sampled and will include water depth, surface and bottom temperatures (C), salinity, and dissolved oxygen.

3) A triangular piece of tissue will be collected from the caudal fin of 50 sturgeon from the spawning run on the Androscoggin River, as well as 50 from the Kennebec spawning run.

PRELIMINARY FINDINGS

The NMFS contract for shortnose sturgeon population estimates in the Kennebec River was awarded to DMR on July 25, 1998 and received by DMR on July 28, 1998. The required nets, tags, and tagging equipment were ordered soon after the contract was received; although a new contract was not awarded for the recapture effort in 1999, there were sufficient funds left from the 1998 contract to carry out the 1999 recapture effort.

1998 Collection/Marking of Adult Shortnose Sturgeon

Sampling was initiated on August 1, 1998, utilizing anchored gill nets which DMR had in stock. One net was 30m X 2.4m, with a stretch mesh (thread size of #9) of 20.3cm; the second net was 60m X 2.4m, with two panels of stretch mesh (thread size #277), 17.8cm and 20.3cm. Nets were set for three to four hours from early August through early September to reduce the chance of mortality due to high water temperatures (>22°C). Most sampling after this time was accomplished with 90m X 2.4m nets, with three panels of stretch mesh (thread size #277), 15.2cm, 17.8cm, and 20.3cm. Some overnight sets were made once the water temperatures fell below 20°C.

The majority of sampling sites were located in the summer concentration area, which extended from Winnegance Cove to Chops Point, including the Pleasant Cove area of the Sasanoa River (Figure 1; Table 1). A total of 346 shortnose sturgeon were captured from August 1 through November 19, 1998 (Table 2), 308 of which were marked with PIT tags (Avid 14mm microchip) and an additional 28 with Carlin tags. All shortnose sturgeon captured were scanned with an

AVID Power Tracker II before and after tagging; the majority that were PIT tagged were dual tagged with Carlins. PIT tags were inserted in the fleshy base of the dorsal fin on the right side; Carlin tags were attached with a stainless steel wire bridle inserted through the base of the dorsal fin. Three shortnose were released without tags. Twenty-five of the 346 were recaptures, many of which had been Carlin-tagged in previous studies, but had lost the plastic pennant. Eight of these recaptured sturgeon with just wire bridles were retagged with both PIT and Carlin tags; one, retagged with a Carlin tag; and one, released without being tagged. Eleven sturgeon with just Carlin tags (including the pennant) were recaptured; 10 were dual tagged with PIT tags and the other was released without being PIT tagged (Table 3). Four of the recaptures had been dual tagged during the ongoing study. Carlin Tag #1315, which was recaptured near Trufant Ledge in Bath on 10/21/98, was originally tagged over 16 years ago (5/19/92), near head-of-tide on the Androscoggin River, during spawning season.

1999 Mark and Recapture Effort

A total of 403 adult shortnose sturgeon were captured from July 7 through September 29, 1999 (Table 4). A total of 57 sets were made with 90-meter nets consisting of #277 multifilament nylon mesh (three 30m panels of 15.2cm, 17.8cm, and 20.3cm stretch measure) and 2.4m deep. The nets had a 1.27cm diameter float line and a lead core lead line (29.5kg/180m) and were fished from one hour, 45 minutes to 18 hours, 58 minutes, generally under six hours when temperatures exceeded 20°C, resulting in a total of 51 recaptures (Table 4). There were 20 recaptures, which satisfied the condition of being tagged while in the feeding area after July 1, 1998, and being recaptured in the feeding area after July 1, 1999 (Table 5). An additional 355 sturgeon were marked with PIT tags during this time period (Table 4).

Collection and Marking of Juvenile Shortnose Sturgeon

No sampling was done for juvenile shortnose sturgeon due to the brevity of the 1998 sampling season. All sampling efforts in 1999 were dedicated to capturing and tagging adult shortnose to assure a sufficient number were examined to get a valid population estimate.

Tissue Collection

DMR had collected tissue samples from shortnose and Atlantic sturgeon prior to this study. A small V-shaped wedge was taken from the caudal fin of shortnose sturgeon; 26 samples were taken in both 1996 and 1998 and are preserved in 95% reagent alcohol. These samples were collected in, and adjacent to, the summer feeding areas in the lower Kennebec River. In 1999, 50 tissue samples were collected from adult shortnose sturgeon on the spawning run in both the Androscoggin and Kennebec Rivers.

Very large catches of shortnose sturgeon were made on both rivers: two 90-meter experimental gill nets were set on 5/5/98 in the Androscoggin River, with the intent of a four to six hour set. Retrieval of the first net was made after approximately four hours of soak time, but the sampling crew was only able to remove sturgeon from half of the first net before darkness set in. Eighty-four were captured (Table 6), 83 of which were PIT tagged. An additional 108 sturgeon were captured and released from the remaining half net. The other one and a half nets were left to fish overnight. A total of 66 shortnose were captured in the second net, from which 50 fin clips were collected from Androscoggin River fish captured on 5/5/99. Twenty-four of these fin clips were sent to Dr. Isaac Wirgin at New York Medical Center.

A total of 135 adult shortnose sturgeon were captured in an overnight set on the Kennebec River at a site approximately six miles below head-of-tide (Table 6). Fifty-one were PIT tagged and 50 fin clips were collected, 24 of which were sent to Dr. Isaac Wirgin at New York Medical Center.

The Shortnose Sturgeon Recovery Plan (NOAA, 1998) defines the population(s) in the estuarial complex of the Kennebec River as one Distinct Population Segment (DPS). In a ***Status Review of Shortnose Sturgeon in the Androscoggin and Kennebec Rivers*** (NOAA, 1996), it was noted that shortnose sturgeon spawned in both the Kennebec and Androscoggin Rivers, but there was not sufficient information available to determine if these two spawning components represented separate DPS. A recent analysis of morphometric and meristic data collected from shortnose sturgeon captured in both Kennebec and Androscoggin suspected spawning areas found a significant difference in one morphometric measurement (interorbital width) and one meristic count (left lateral scutes) between sturgeon of these two rivers (Walch, Bain, and Squiers in review). These differences indicate that two distinct populations may exist within the same estuarial complex.

FIGURE 1.

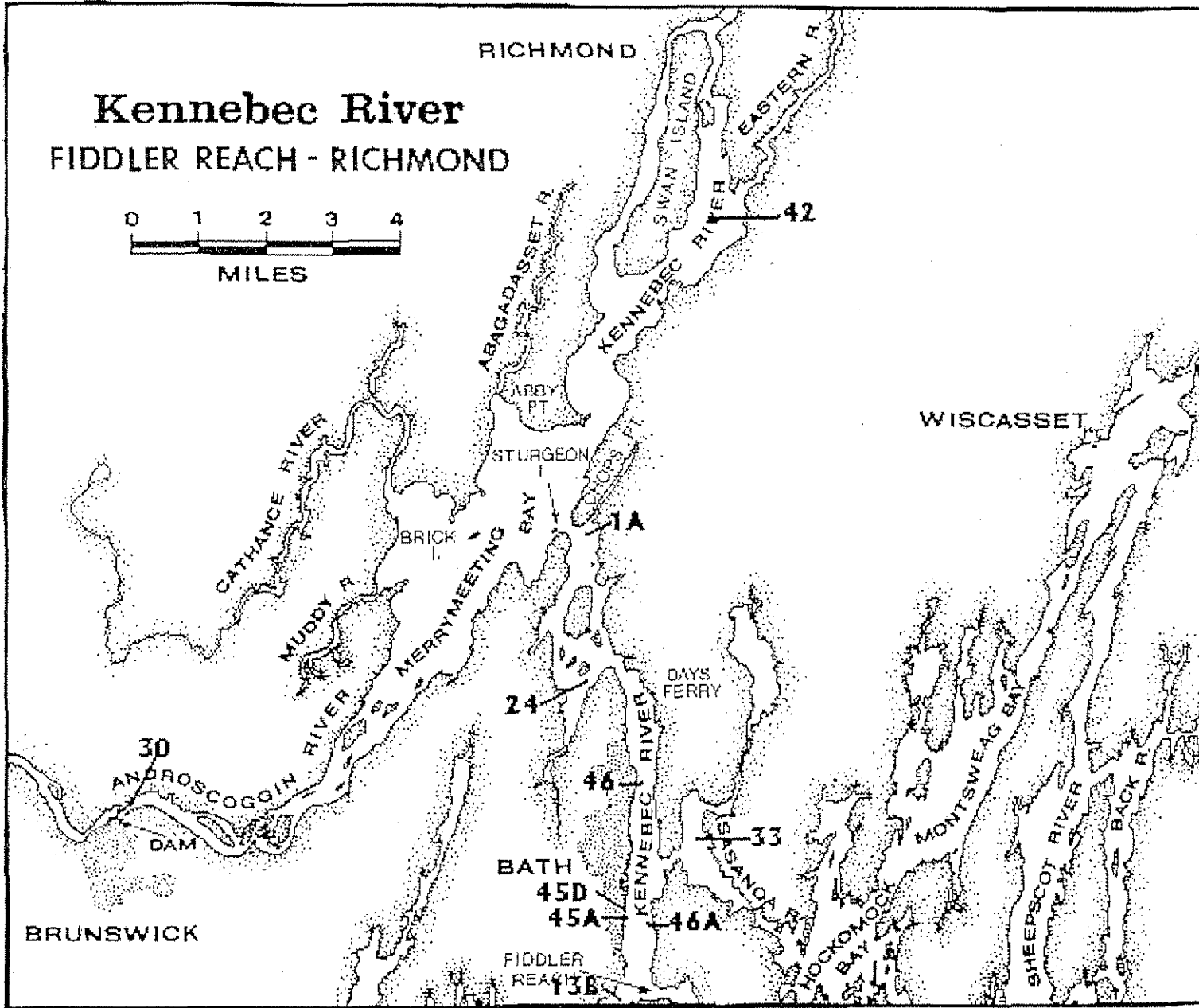


TABLE 1: Description of Sampling Sites for the 1998-99 Kennebec River Tagging/Recapture Study

<u>SITE</u>	<u>SITE NAME</u>	<u>RIVER SYSTEM</u>	<u>SITE DESCRIPTION</u>
1A	CHOPS CREEK	KENNEBEC RIVER	BELOW CHOPS PT. AT MOUTH OF CHOPS CREEK, LOWER KENNEBEC RIVER
13B	WINNEGANCE CREEK	KENNEBEC RIVER	ON FLATS BY MOUTH OF WINNEGANCE CREEK
15A	MONTSWEAG BAY	SHEEPSCOT RIVER	BETWEEN OAK ISLAND AND CHEWONKI POINT
15B	MONTSWEAG BAY	SHEEPSCOT RIVER	BAILEY POINT AT MAINE YANKEE
24	WOOD ISLAND	KENNEBEC RIVER	ACROSS FROM THORNE ISLAND, JUST BELOW MERRYMEETING BAY
30	ZEKE'S	ANDROSCOGGIN RIVER	BRUNSWICK SHORE BELOW RTE 201 BRIDGE, INSHORE FROM BIG ROCK
33	PLEASANT COVE	SASANOVA RIVER	PLEASANT COVE, SASANOVA RIVER
35C	FOGGY BOTTOM	KENNEBEC RIVER	JUST BELOW FOGGY BOTTOM MARINA, WEST SHORE-FARMINGDALE
42	RED SPAR	KENNEBEC RIVER	WEST SIDE OF SPAR AT LEDGES NEAR EASTERN RIVER
45A	BIW	KENNEBEC RIVER	JUST INSIDE LOWER PIER AT BIW, IN FRONT OF BLUE BLDG; 13 FT AT LOW WATER
45B	BIW, TRUFANT LEDGE	KENNEBEC RIVER	JUST DOWNSTREAM AND BETWEEN TRUFANT LEDGE AND TRUFANT MARSH; 7 TO 9 FT AT LOW WATER
45D	BIW, WHITE SHED	KENNEBEC RIVER	WHITE SHED JUST UPRIVER FROM SITE 45A
45E	ARROWSIC	KENNEBEC RIVER	EAST SHORE OPPOSITE LINCOLN LEDGE
45T6	BIW, HOSPITAL PT	KENNEBEC RIVER	TRAWL SITE; WEST SHORE DOWNRIVER OF BIW, JUST NORTH OF HOSPITAL PT.; NORMANDEAU'S T6
46	SARDINE CANNERY	KENNEBEC RIVER	JUST BELOW SARDINE CANNERY, WEST SHORE-BATH
46A	BIW, EAST SHORE	KENNEBEC RIVER	ACROSS FROM BIW, EAST SHORE

Table 2: History for Shortnose Sturgeon Captured from August - November 1998, in the Kennebec River, Maine

DATE	SITE #	SITE NAME	NET TYPE	LENGTH OF SET	WATER TEMP (C)	NUMBER CAPTURED	NUMBER RECAPTURES	NUMBER MORTALITIES	NUMBER RELEASED UNTAGGED	NUMBER TAGGED
08/01/98	13B	WINNEGANACE CREEK	I	4	22	8	1	0	0	8
08/03/98	33	PLEASANT COVE, SASANOA RIVER	S	3.5	23	8	0	0	0	8
08/03/98	33	PLEASANT COVE, SASANOA RIVER	T	3.5	23.5	0	0	0	0	0
08/07/98	13B	WINNEGANACE CREEK	T	4	22.5	3	0	0	0	3
08/07/98	33	PLEASANT COVE, SASANOA RIVER	I	3.5	24	0	0	0	0	0
08/13/98	13B	WINNEGANACE CREEK	I	4	23	0	0	0	0	0
08/13/98	13B	WINNEGANACE CREEK	T	3	23	11	1	0	0	10
08/20/98	13B	WINNEGANACE CREEK	I	2	22.5	0	0	0	0	0
08/20/98	13B	WINNEGANACE CREEK	T	3	22.5	4	1	0	0	3
08/26/98	13B	WINNEGANACE CREEK	T	4.5		4	0	0	0	4
09/02/98	1A	CHOPS CREEK, WOOLWICH	S	4	23	1	0	0	0	1
09/02/98	24	WOOD ISLAND, NORTH BATH	T	3.5	23	0	0	0	0	0
09/03/98	45D	BIW, OFF WHITE SHED	I	4	22	3	2	0	0	3
09/11/98	33	PLEASANT COVE, SASANOA RIVER	S	4	19	1	0	0	0	1
09/15/98	13B	WINNEGANACE CREEK	S	4	18.9	7	1	0	0	6
09/15/98	13B	WINNEGANACE CREEK	S	4	18.9	9	0	0	0	9
09/16/98	13B	WINNEGANACE CREEK	S	19	18.9	25	5	0	3	20
09/24/98	33	PLEASANT COVE, SASANOA RIVER	S	23		19	3	0	0	19
09/30/98	45A	BIW	S	4	16	6	0	0	0	6
10/06/98	42	RED SPAR, EAST CHANNEL, SWAN ISLAND	S		14	1	0	0	0	1
10/13/98	13B	WINNEGANACE CREEK	S	4	13	15	2	0	0	14
10/14/98	46	SARDINE CANNERY, BATH	S	19	13	15	2	0	0	15
10/19/98	13B	WINNEGANACE CREEK	S	4.5	12.5	6	0	0	0	6
10/20/98	13B	WINNEGANACE CREEK	S	20.5	13.5	6	1	0	0	5
10/20/98	33	PLEASANT COVE, SASANOA RIVER	S	4	12.5	23	1	0	0	23
10/21/98	46	SARDINE CANNERY, BATH	S	19	13.5	148	6	0	0	148
10/22/98	46A	BIW, EAST SHORE	S	43.5	13.5	21	0	0	0	21
10/26/98	42	RED SPAR, EAST CHANNEL, SWAN ISLAND	S	3.5	11	0	0	0	0	0
11/19/98	42	RED SPAR, EAST CHANNEL, SWAN ISLAND	S	15	5.5	2	0	0	0	2
TOTALS:						346	26	0	3	336

NET TYPES:

- I 30m x 2.4m (20.5cm stretch mesh, #9 twine)
- T 60m x 2.4m (17.8cm, 20.3cm stretch mesh, #277 twine)
- S 90m x 2.4m (15.2cm, 17.8cm, 20.3cm stretch mesh, #277 twine)

RECAPTURES:

The recaptures consisted of 10 sturgeon with Carlin tags, which were also tagged with PIT tags; 8 with wire bridles and no pennants, which were tagged with Carlin and PIT tags; 1 with a wire bridle, retagged with a Carlin; 1 with a wire bridle and not retagged; 2 with Carlins, which were not PIT tagged; and 4 double tagged with Carlin and PIT tags.

Table 3 : Data for Shortnose Sturgeon Recaptured from August 1, 1998 - November 1998 in the Kennebec River

Date	Carlin Tag #	PIT Tag #	Sonic T #	Site #	Site Name	River System	Total Length(cm)	Fork Length (cm)	Weight (kg)
10/14/98	1201	030 368 539		46	SARDINE CANNERY	KENNEBEC RIVER	92.4	84.1	4.5
05/14/98	1201		V16	45A	BIW	KENNEBEC RIVER	96	85.5	
08/13/98	1257			13B	WINNEGANCE CREEK	KENNEBEC RIVER	87.2	78.5	3.5
08/07/98	1257			13B	WINNEGANCE CREEK	KENNEBEC RIVER	87.2	78.5	3.5
09/16/98	1264	029 808 084		13B	WINNEGANCE CREEK	KENNEBEC RIVER	87.3	79	3.5
05/21/98	1264			45AT	BIW	KENNEBEC RIVER	85	76.5	3
10/21/98	1270	030 349 628		46	SARDINE CANNERY	KENNEBEC RIVER	92	82	5.5
06/24/98	1270		V22	45A	BIW	KENNEBEC RIVER	92	81.5	6
09/03/98	1294	029 829 802		45A	BIW	KENNEBEC RIVER	105.5	96.2	
07/14/97	1294		S2336	45B	BIW, TRUFANT LEDGE	KENNEBEC RIVER	106	93	
10/21/98	1315	030 304 814		46	SARDINE CANNERY	KENNEBEC RIVER	94.7	84.5	5.5
05/19/82	1315			30	ZEKE'S	ANDROSCOGGIN RIVER	79.3	69.2	4.75
10/21/98	1553	030 264 001		46	SARDINE CANNERY	KENNEBEC RIVER	84.9	80	4.5
08/01/98	1553			13B	WINNEGANCE CREEK	KENNEBEC RIVER	84	77.5	3.75
10/21/98	1554	030 290 635		46	SARDINE CANNERY	KENNEBEC RIVER	86.3	80.4	5
08/01/98	1554			13B	WINNEGANCE CREEK	KENNEBEC RIVER	82	78.5	4
10/13/98	1560	030 111 542		13B	WINNEGANCE CREEK	KENNEBEC RIVER	88.5	78.3	4
08/13/98	1560			13B	WINNEGANCE CREEK	KENNEBEC RIVER	88.9	77.1	4
09/03/98	1569	029 803 045		45A	BIW	KENNEBEC RIVER	105.4	96	6.25
08/26/98	1569			13B	WINNEGANCE CREEK	KENNEBEC RIVER	106.7	97	6.25
09/16/98	1583	029 621 315		13B	WINNEGANCE CREEK	KENNEBEC RIVER			
09/15/98	1583	029 621 315		13B	WINNEGANCE CREEK	KENNEBEC RIVER	85.6	77.2	3.25
10/13/98	1593	029 801 779		13B	WINNEGANCE CREEK	KENNEBEC RIVER			
09/15/98	1593	029 801 779		13B	WINNEGANCE CREEK	KENNEBEC RIVER	92.2	86.5	5
09/16/98	1597	029 559 786		13B	WINNEGANCE CREEK	KENNEBEC RIVER			
09/15/98	1597	029 559 786		13B	WINNEGANCE CREEK	KENNEBEC RIVER	98.4	78.2	5.25
09/16/98	1639	029 807 785		13B	WINNEGANCE CREEK	KENNEBEC RIVER	94.2	84.4	5.5
05/13/93	1639			30	ZEKE'S	ANDROSCOGGIN RIVER	91.3	79.7	6
10/20/98	1801	030 576 073		13B	WINNEGANCE CREEK	KENNEBEC RIVER			
10/13/98	1801	030 576 073		13B	WINNEGANCE CREEK	KENNEBEC RIVER	91.5	87.1	5

Note: Transmitter code numbers are listed under Sonic T #. Twenty shortnose sturgeon were implanted with pulse code transmitters from Sonotronics in 1996/1997 and 17 were implanted with digital code tags from Vemco in 1998.

TABLE 4: Sampling History of Shortnose Sturgeon in the Kennebec River July 1 - Sept 30, 1999

DATE	SITE #	LENGTH OF SET	WATER TEMP C	NUMBER CAPTURED	NUMBER RECAPTURES	NUMBER MORTALITIES	NUMBER RELEASED UNTAGGED	NUMBER TAGGED
7/7/99	13B	6:50	24	7	2	0	0	7
7/7/99	33	5:05	23	7	1	0	0	6
7/7/99	13B	5:30	24	23	1	0	0	22
7/8/99	46	4:25	21	3	0	0	0	3
7/8/99	4	4:00	24	0	0	0	0	0
7/9/99	46A	1:45	22	28	1	0	0	27
7/9/99	45B	3:40	22	2	0	0	0	2
7/27/99	13B	3:00	24	11	2	0	0	9
7/27/99	33	3:00	24	1	0	0	0	1
7/28/99	13B	3:10	24	0	0	0	0	0
7/29/99	13B	2:25	25	10	1	0	0	9
7/29/99	45B	1:50	25	6	1	0	0	5
7/29/99	46A	3:10	24	1	0	0	0	1
8/9/99	24	2:00	22.5	0	0	0	0	0
8/9/99	33	2:00	20.5	6	0	0	0	6
8/10/99	15A	2:00	20.5	3	0	0	0	3
8/10/99	15B	2:00	17	1	0	0	0	1
8/11/99	8	2:00	21.5	0	0	0	0	0
8/11/99	14	3:30	21.5	0	0	0	0	0
8/12/99	46	3:00	21	0	0	0	0	0
8/12/99	46A	3:00	21	2	0	0	0	2
8/17/99	42	2:00	22	0	0	0	0	0
8/24/99	46A	3:00	19.5	0	0	0	0	0
8/24/99	13B	3:15	19.5	13	0	0	0	13
8/25/99	13B	3:45	21.5	6	1	0	0	5
8/25/99	33	2:25	22.5	2	0	0	0	2
8/27/99	13B	2:55	21.5	4	0	0	0	4
8/27/99	45E	2:00	22	0	0	0	0	0
9/7/99	33	2:45	22.7	1	0	0	0	1
9/7/99	13B	3:12	20	8	1	0	0	7
9/8/99	13B	3:05	21.2	1	0	0	0	1
9/8/99	13B	3:05	21.2	1	0	0	0	1
9/9/99	46A	2:00	22.5	1	0	0	0	1
9/9/99	13B	2:00	22.5	4	0	0	0	4
9/20/99	13B	15:30	15.7	26	6	0	0	20
9/20/99	13B	4:35	15.7	10	0	0	0	10
9/20/99	33	4:37	17.9	5	0	0	0	5
9/21/99	33	3:00	0	3	0	0	0	3
9/21/99	13B	3:00	16	6	1	0	0	5
9/22/99	33	17:00	0	29	3	1	0	25
9/22/99	45B	15:30	17	19	0	0	0	19
9/23/99	13B	18:58	17	33	4	1	0	28
9/23/99	45T6	16:40	0	8	0	0	0	8
9/23/99	45T6	4:09	17	4	0	0	0	4
9/23/99	13B	4:00	17	5	1	0	0	4
9/24/99	13B	2:00	17	4	2	0	0	2
9/27/99	45B	5:24	17	8	1	0	0	7
9/27/99	45B	16:00	17	4	1	0	0	3
9/27/99	33	16:33	17.6	18	4	0	0	14
9/27/99	33	3:57	16.7	7	1	0	0	6
9/28/99	33	17:00	16.8	11	1	0	0	10
9/28/99	45B	4:00	16.9	1	0	0	0	1
9/28/99	33	5:43	15.7	5	2	0	0	3
9/28/99	13B	16:00	17.5	25	4	0	0	21
9/28/99	13B	17:00	0	17	6	0	0	11
9/29/99	45B	2:54	0	3	0	0	0	3
9/29/99	33	5:28	16.8	0	0	0	0	0
				403	48	2	0	355

Table 5: Data for Shortnose Sturgeon Tagged in 1998 and Recaptured after July 1, 1999

Date Recaptured	Site Recaptured	Pit Tag #	Carlin Tag #	Date Recaptured	Site Tagged	Total Length (cm)	Fork Length (cm)	Weight (kg)	NOTES
9/21/99	13B	035862019	1279	5/14/98	45A	94.3	81.1	10.6	
7/7/99	13B	021058874	1547	8/1/98	13B	86.1	77.8	4.75	
9/27/99	33	029802594	1578	8/3/98	33	102.4	90.7	15.5	
9/27/99	33	029830356	1575	8/3/98	33	89.3	78.1	10.5	
9/28/99	33	029807322	1576	8/3/98	33	93.4	87.8	11.5	
7/27/99	13B	011855860	1559	8/13/98	13B	100	91	7	
9/23/99	13B	030111542	1560	8/13/98	13B	90.4	77.8	10.25	
9/27/99	45B	036293342	1563	8/20/98	13B	94.9	88.8	12	
7/7/99	33	028853845	1568	8/26/98	13B	91.2	80	4	
7/7/99	13B	029625018	1594	9/15/98	13B	75.5	67.2	3	
7/27/99	13B	029802046	1589	9/15/98	13B	92.5	82.5	6	
7/29/99	13B	029581580	1586	9/15/98	13B	87.5	76	5.5	
9/20/99	33	029807785		9/16/98	13B	93.2	84.3	12.75	When tagged in 1998, it had Carlin #1639 (Site 30 on 5/13/93)
9/21/99	13B	036301053	1842	9/24/98	33	74.1	66.4	8.5	Previously tagged with PIT #030371841
9/21/99	33	021786895		9/24/98	33	94	85.3	11.75	Was also tagged with Carlin #1854 on this date
9/21/99	33	030263329	1845	9/24/98	33	86.1	76.6	9.25	
9/27/99	33	030116124		9/24/98	33	95	83.9	11.5	Also tagged with Carlin #1874 on this date; had wire from previous tagging.
9/23/99	13B	030335096		10/13/98	13B	86	77.5	11.75	Also tagged with Carlin #1888. Recap at Site 30 with #1888 on 5/6/99; recap 9/23/99 at 13B; recap 9/28/99 at Site 1
9/28/99	13B	030335096		10/13/98	13B	84.7	74.8	11.25	Also tagged with Carlin #1888. Recap at Site 30 with #1888 on 5/6/99; recap 9/23/99 at 13B; recap 9/28/99 at Site 1
9/28/99	13B	030293569		10/13/98	13B	90.4	83.5	11.25	
9/21/99	33	030361520	1694	10/20/98	33	89.1	81.9	12	

All data associated with the date recaptured.

The study called for sturgeon to be tagged after 7/1/98 and recapped after 7/1/99; 20 recaptures met this condition.

TABLE 6: Sampling History of Shortnose Sturgeon Captured in the Androscoggin Kennebec Rivers, May 1999

<u>Date</u>	<u>Site</u>	<u>Length set</u>	<u>Water temp</u>	<u>Number SN Tagged</u>	<u>Number SN Recaptured</u>	<u>Number SN Released Untagged</u>	<u>Number SN Morts</u>
5/5/99	30	8:00	13	83	0	1	0
5/6/99	30	23:00	13.9	0	1	107	0
5/6/99	30	23:59	13.9	0	5	61	0
5/11/99	35C	22:50	14	51	1	83	0

Gillnets = 90-meter multifilament sinking, 2.4m deep, with 3 panels of 15.2cm, 17.8cm, 20.3cm stretch mesh, thread size #277

Two nets were set at Site 30 on 5/5/99. Only 1/2 of the first net was retrieved on 5/5/99 because of time limitation.

The remaining 1 and 1/2 nets were pulled on 5/6/99.