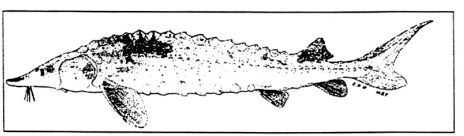
THE OHIO STATE UNIVERSITY

Genetic Studies of Lake Sturgeon (*Acipenser fulvescens*)

Report on the Population Acquisition and Disposition of Tissue Samples at The Ohio State University



The Ohio State University
Museum of Biological Diversity

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Introduction:

The lake sturgeon, *Acipenser fulvescens*, was once an important component of the great lakes ecosystem, inhabiting all of the Great Lakes and many waterways and smaller lakes draining into the system, as well as being found in the Mississippi, Missouri, and Ohio River systems. Unfortunately within the last 100 years, overfishing, water pollution, and the impoundment of breeding rivers have severely impacted the population size of the lake sturgeon over much of its range. Because of their late sexual maturity, often at 12 or more years, and reproduction by mature female only once every 3-4 years (Harkness, 1923; Probst and Cooper, 1954), lake sturgeon have limited ability to recover quickly from population bottlenecks. At present, the lake sturgeon is considered a rare fish species in the Great Lakes basin and appears to have been reduced to isolated remnant populations in Mississippi and Ohio river systems, and extirpated from the Missouri river system. It has been classified as endangered by several governmental bodies concerned with Great Lakes aquatic management.

Efforts have been initiated by natural resources agencies in the U.S. and Canada to maintain and restore the existing populations of lake sturgeon throughout the Great Lakes. The long-term success of attempts to increase the population size of the lake sturgeon might be influenced by genetic considerations which relate to management plans. In waters where sturgeon are believed to be extirpated, restoration initiatives have already been implemented through the stocking of hatchery reared sturgeon from source populations where they are abundant. Several states have drafted recovery plans that consider the potential for augmenting remnant natural populations with hatchery stocked fish. Studies on other species of fish suggest that the success of restocking and restoration efforts often depend on genetic factors such as local population adaptation and loss of genetic variability in hatchery stock (Utter, 1991; Ryman and Utter, 1987). When restocking extirpated waters, efforts should be made to introduce genetically diverse founders in order to increase heterozygosity and reduce problems associated with inbreeding depression. When augmenting a natural population through restocking, additional concern might be placed on identifying source populations that are genetically compatible with the remnant population.

Sturgeon Genetics at the Ohio State University:

The Sturgeon Genetics group at the Ohio State University has been conducting research on lake sturgeon genetics since 1993, when a stock population of several thousand hatchlings was obtained from gametes of a limited number of Wolf River (Wisconsin) spawning adults. The genetic variability of this stock was investigated to determine whether they should be used to augment the remnant sturgeon population in Lake Erie. Initial genetic surveys were performed on two natural populations (Lake Erie and Lake St. Claire) and the Wolf River stock using allozyme electrophoresis (Porter et al., 1994). Initial allozyme surveys required various tissues resulting in the sacrifice of several Lake Erie and Lake St. Claire individuals. Following genetic sampling, the bodies of these sturgeon were preserved in formalin, transferred to ethanol for storage, catalogued and deposited in the fish collections at the Ohio State University Museum of Biological Diversity. Less invasive allozyme sampling has been continued on additional natural populations using a four or eight millimeter muscle plug taken with a biopsy punch. The fish could then be released back to the wild relatively unharmed. The allozyme studies on muscle plug samples indicate that there is substantial genetic variation, both within and between natural population of lake sturgeon (Porter et al., 1995). Problems with allozyme interpretation stemming from the polyploid arrangement of the sturgeon genome and gene duplication events have led to the development of several additional genetic techniques and approaches. DNA fingerprinting (VNTRs) was used in conjunction with the allozyme data to defer the stocking of the 1993 Wolf River progeny into the remnant population of Lake Erie. The stock population

was found to have high genetic similarity, while the natural populations were genetically diverse and differentiated from the stock.

Ongoing work from our group consists of the development of randomly amplified polymorphic DNA (RAPD) and microsatellite markers. Recently, we have screened four populations (Lake Erie, Lake St. Claire, Wolf River, and Menominee River) with several RAPD and microsatellite markers, revealing genetic variation both within and between populations. Additional markers and fourteen additional populations are being investigated in order to answer the following **objectives:**

1) To measure genetic variability within local populations and compare the relative level of variability in populations sampled from throughout the species range, to ascertain if some local populations suffered a disproportionate loss of variability as a result of the historical decline of the lake sturgeon during the last century.
2) To examine the hierarchy of genetic variation within the lake sturgeon population to determine where significant genetic substructure exists. This analysis will include consideration of local differences (surveying genetic differences between breeding groups from successive years; genetic differences between breeding groups and non-breeding individuals collected in proximity to breeding areas, and genetic differences between sites within a single drainage), regional differences (genetic difference between samples from different drainages within single lake systems), and basin differences (genetic differences between populations of different lakes and/or between the Great Lakes basin and samples from the St. Lawrence, Mississippi, Ohio River systems, and Hudson Bay drainages); estimates of the historical relative migration rates between different sturgeon populations.
3) To use multi-locus genetic information to test hypotheses about population bottlenecks (in the northern range of the species as a result of post-glaciation expansion, or in local populations because of population size crashes and subsequent population isolation because of human alteration to the environment).
4) If technical methods permit, to directly compare contemporary and historic levels of genetic variation by using PCR to study preserved museum specimens of the lake sturgeon.

Details of genetic structure of the lake sturgeon can guide the choice of populations which can serve as source material for restocking, and of populations which are likely to productively accept migrants. Genetic differentiation between populations may also suggest if particular populations require extra preservation efforts. Success in restoration may be affected by the degree of genetic divergence which exists between localities. Given the long generation time of sturgeon, mistakes in such decisions can be especially unfortunate. This work will improve the likelihood of successful species conservation, and help guide decisions about habitat maintenance and/or altering acceptable harvest pressure.

Samples in the DNA Collection of the Fish Division, Museum of Biological Diversity:

We currently have genetic samples from eighteen lake sturgeon populations (see following tables). These population samples total 548 natural samples. In addition, we have samples for genetic study from 550 hatchery and laboratory raised individuals, derived from wild stock. In total we currently have 1098 samples for genetic study. The accompanying tables provide data on samples, localities, and collectors. We wish to thank all individuals who have expended their time, effort and resources to provide samples for our studies.

Current Tissue Sampling Protocol:

We are actively seeking lake sturgeon genetic samples from additional localities. We are also interested in obtaining annual samples from breeding aggregations at any location. Sample sizes of fifteen to thirty individuals will assure robust statistical evaluation.

Our current sampling protocol for DNA analysis is quite non invasive. Approximately 1 cm^2 of the posterior (trailing) edge of the pectoral or pelvic fins can be cut with sturdy scissors. This small fin clip should be transferred as soon a possible to a vial labelled with a unique number (the tag number or a sequential numbering system is fine) which contains at least 1ml of 95% ethanol. It is essential that the size of the fin clip be kept small, BIGGER IS NOT BETTER. In fact, a larger sample will dilute a small volume of ethanol and result in poor preservation. What seems to be a small sample from such a large fish is actually a lifetime's supply of DNA. It is best to change the ethanol after one half to one hour after initial preservation to assure adequate preservation. The ethanol preserved samples can be stored at room temperature indefinitely.

It is also essential to assure that the ethanol does not remove the writing on the label. A Sharpie Permanent Marker (Sanford) available in most stores is a convenient implement, but even it will dissolve away with the smallest drop of ethanol so please be certain that the lids do not leak. As an alternative, a piece of tape can be placed around each vial with the sample number written boldly in pencil. Our 1.5 ml screw top plastic vials have a small number embossed on the inside cover of the lid, but if you use this number, please be sure that each sample has a unique number.

The following information should be recorded on an accompanying sheet of paper:
Collection Locality: Including the water body, distance to the nearest landmark (road, store, town, or county line, etc.), Township, County, and State. If caught on a vessel as during a trawl, please note the latitude and longitude and depth whenever possible.
Collector: Please list yourself and crew as you would like to appear in our acknowledgements.
Collection Date: Please write out the date in longhand to avoid confusion. ex. 5 March, 1998.
Total Length: When possible please measure the length from the tip of the snout to the upper lobe of the tail in metric units.
Sex: If the sex can be determined by extruded gametes, please record. Empirically determined individuals will assist us in the development of a DNA-based sex marker.
Tag Number: If you are tagging the fish before you release it, please record the number (this can be used as the sample number if you wish). If the individual is a recapture, please report that number.
Weight: If possible, record the weight in grams or kilograms.
Sample Number: Corresponding to the number on the vial.

Please wrap the vials in absorbent paper and place them in a ziplock bag. Place the bag in a mailing box along with a copy of the reference sheet and mail to:

Marc Kibbey
Fish Division
Museum of Biological Diversity
1315 Kinnear Road.
Columbus, OH 43212

Phone: (614) 292-7873
e-mail: kibbey.3@osu.edu

If you would like to use our vials, we can send some to you. The samples and/or extracted DNA will remain at the Ohio State University and will become archived in the DNA collections in the Division of Fishes at the Museum of Biological Diversity.

Literature Cited:

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Future updates of this report:

Updates of this report will be available at the web page of the Sturgeon Genetics Project: www.biosci.ohio-state.edu/~pfuerst/sturgeon/

Sturgeon Population Sample
Table Key

Sample ID: Population identification used for designation in population genetic studies

LEx = Lake Erie sample # x (23 individuals total)
SCRx = Saint Clair River sample # x (16 individuals total)
LSCx = Lake Saint Clair sample # x (25 individuals total)
WRx = Wolf River sample # x (57 individuals, total)
SRx = Sturgeon River sample # x (45 individuals, total)
LWDx = Lake of the Woods sample # x (15 individuals, total)
SLRx = Saint Lawerence River sample # x (17 individuals, total)
GRx = Grasse River sample # x (7 individuals, total)
KRx = Kettle River sample # x (40 individuals, total)
NCx = North Channel of Lake Huron sample # x (15 individuals, total)
BRx = Bad River sample # x (62 individuals, total)
LWx = Lake Winnebago sample # x (110 individuals, total)
LSPx = Lake St. Pierre sample # x (15 individuals, total)
DRx = Detroit River sample # x (3 individuals, total)
BLx = Black Lake sample # x (30 individuals, total)
LHx = Southern Lake Huron sample # x (15 individuals, total)
MEx = Menominee River sample # x (55 individuals, total)
KHx = Kincaid Hatchery cross sample # x, 1993 (30 individuals, total)
1KHx = Kincaid cross 1, sample x, 1995 (80 individuals, total)
2KHx = Kincaid cross 2, sample x, 1995 (80 individuals, total)
3KHx = Kincaid cross 3, sample x, 1995 (80 individuals, total)

Accession Number:	OSU Museum of Biological Diversity Accession Number
Catalog Number:	Collecter assigned number or tag number (if applicable)
Collection Location:	Location of sampling of population (if available)
Date Collected:	Collection Date
Date Received:	Date samples received at OSU
Collector:	Individual who collected sample (if available)
Total Length:	Total length in centimeters (if available)
Weight:	Total weight in kilograms (if available)
Sex:	M = male, F = Female, U or ?= undetermined, Mr = ripe male
Tissues collected:	Tissues collected designated with an X
Contact:	Contact individual (if available)
Project Head:	Individual responsible for study (if applicable)

Lake St. Clair, MI Sturgeon Samples

Sample ID	ID#	Cat. #	Collection Location	Date Collected	Date Received	Collector	Total Length (cm)	Weight (kg)	Sex	Tissues Collected						Contact	Project Head
										Muscle	Liver	Fin Clip	Blood	Whole	Other		
SCR1	9903	7	Lake St. Clair from Mt.Clemens survey	5/29/96	6/1/96	Bab Haas	154.9	33.1		X		X					
SCR2	9908	1001	"	5/30/96	"	"	144.8	24.0		X		X					
SCR3	9908	1003	"	"	"	"	134.6	18.1				X					
SCR4	9910	1002	"	5/31/96	"	"	108.0	10.4		X		X					
SCR5	6101	1005	"	6/12/96	"	"	121.9	12.9		X		X					
SCR6	6101	1006	"	"	"	"	87.6	4.2		X		X					
SCR7	6103	1007	"	"	"	"	76.2	2.8		X		X					
SCR8	6103	1008	"	"	"	"	81.2	3.4		X		X					
SCR9	6104	1009	"	"	"	"	101.6	7.0		X		X					
SCR10	6104	1010	"	"	"	"	73.4	2.2		X		X					
SCR11	6105	1011	"	6/13/96	"	"	93.9	5.6		X		X					
SCR12	6109	1012	"	"	"	"	147.3	30.8		X		X					
SCR13	6111	1013	"	"	"	"	144.8	22.7		X		X					
SCR14	6112	1501	"	"	"	"	44.5	0.5				X					
SCR15	6108	1508	"	"	"	"	43.1	0.5		X		X					
SCR16			Lower St. Clair River, raised from fry in aquarium	10/17/97		Doug Sweet						X				Doug Sweet	

Sturgeon Samples

Lake St. Clair, MI Sturgeon Samples

Sample ID	Accession Number	Cat. #	Collection Location	Date Collected	Date Received	Collector	Total Length (cm)	Weight (kg)	Sex	Tissues Collected						Contact	Project Head
										Muscle	Liver	Fin Clip	Blood	Whole	Other		
LSC1		77121	Lake St. Clair trawl	8/4/93			81.9										
LSC2		77122	"	8/11/93			23.2										
LSC3		77122	"	"			42.0										
LSC4		77122	"	"			63.8										
LSC5		77241	"	9/8/93			40.5										
LSC42				7/6/94	?		44.6			X			X				
LSC43			Lake St. Clair	5/24/94	?	MDNR	116.2			X			X				
LSC44			"	7/13/94	?	MDNR	79.0			X			X				
LSC45			"	8/17/94	?	MDNR	127.5			X			X				
LSC46			Lake St. Clair	10/10/94	?		85.0			X			X				
LSC47			"	"	?		55.5	0.8		X			X				
LSC6		6	Lake St Clair, Ontario side. Fish caught	4/23/95	5/22/95	Don MacLennan	153.0	20.0	M	X							
LSC7		7	7 miles NW of the Thames River mouth	"	"	"	128.0	14.0	F	X							
LSC8		8	D13 approx lat./long. Of 42 23 00N/	"	"		139.0	25.0	F	X							
LSC9		9	82 31 00 W	"	"		163.0	34.0	F	X							
LSC10		10		4/26/95	"		147.0	25.0	F	X							
LSC11		11		"	"	Bob Haas	153.0	27.0	F	X							
LSC12		12		"	"	"	140.0	23.0	F	X							
LSC13		13		"	"	"	112.0	9.0	M	X							
LSC14		14		4/29/95	"	"	163.0	34.0	F	X							
LSC15		15		"	"	"	152.0	24.0	F	X							
LSC16		16		"	"	"	148.0	20.0	F	X							
LSC17		17		"	"	"	134.0	16.0	F	X							
LSC18		18		"	"	"	125.0	15.0	M	X							
LSC19		19		5/1/95	"	"	154.0	25.0	F	X							
LSC20		20		"	"	"	143.0	20.0	M	X							
LSC21		21		"	"	"	148.0	22.0	F	X							
LSC22		22		"	"	"	132.0	18.0	M	X							
LSC23		33		5/12/95	"	"	171.0	29.0	F	X							
LSC24		34		"	"	"	165.0	29.0	F	X							
LSC25		35		"	"	"	107.0	7.5	M	X							

Lake Erie Sturgeon Samples

Sample ID	Accession Number	Cat. #	Collection Location	Date Collected	Date Received	Collector	Total length (cm	Weight (kg)	Sex	Tissues Collected						Contact	Project Head
										Muscle	Liver	Fin Clip	Blood	Whole	Other		
LE1		77117	Off Cedar Point, Trap Net	7/19/93		Dave Davies	86.0	-	U	X							
LE1A			Cedar Point, net trap	9/22/93	?	"	121.9					X	X				
LE2		77155	Off Cedar Point, Trap Net	10/28/93		"	56.8		U			X					
LE3			Off Cedar Point, Trap Net	9/22/93	11/2/93	"	121.9		U			X	X				
LE4			Catawba, Trap net	6/6/94		Paul Leidorf	67.1	1.8	U	X		X	X				
LE5			Off Cedar Point, Trap Net, Grid 1006B	8/1/94	8/2/94	Bill Fouke	59.1	0.9	U	X		X	X				
LE6			Off Cedar Point, Trap Net, Grid 1006B	8/1/94		Bill Fouke	32.1	0.1	U	X		X	X				
LE7	1994:VIII:25		Foghorn at Cedar Point Breakwall, Sport	8/23/94		Dave Davies	67.0	1.2	U	X	X		X	X	Heart(F)	Dave Davies	
LE8			3.25NM off Sturgeon Point, 55ft. depth, Trawl	10/6/94		"	83.9	3.2	U				X		"	"	
LE9			Off Cedar Point, Trap Net	4/6/95		Dean Koch	135.0	23.5	U	X		X	X		"	"	
LE10			Off Cedar Point, Trap Net	4/17/95		Dean Koch	145.0	17.2	U	X		X	X		"	"	
LE11			Off Cedar Point, Trap Net, 12ft. Depth	9/19/95	9/21/95	Dave Davies	40.6	0.3	U	X			X		"	"	
LE12			Off Cedar Point, Trap Net, 12ft. Depth	9/19/95	9/21/95	"	58.4	0.9	U	X			X		"	"	
LE13			E. of Kelley's Island, Erie Co., Trawl	10/9/95		"	37.2	0.2	U	X		X			"	"	
LE14			Off Cedar Point, Trap Net, Grid 1006	10/23/95		Dean Koch	74.7	2.8	U			X	X		"	"	
LE15	1995:XII:05A		Near Hen-Chicken island	Aug-95		G. Ives	27.6	0.1	U	X	X			X	"	"	
LE16	1995:XII:05A		41° 58' 67' 82" 58' 96"	10/11/95		G. Ives	78.2	2.7	U	X	X			X	"	"	
LE17	1995:XII:05A		41° 55' N / 82° 31' W	7/27/95		G. Ives			U	X	X			X	"	"	
LE18		P1	Middle Sister Island 41-59-68 x 82-48-09		6/17/96	Chris Lowis	43.2								"	"	
LE19		P2	"		"	"	37.5								"	"	
LE20		ELE001	surface waters, Dunkirk area NY		"	"	90.8								"	"	
LE21		ELE002	Snyder beach in Farmum, NY		"	"	165.1		F						"	"	
LE22		ELE003	"		"	"	198.1		M						"	"	
LE23			41o 40' 43"N X 81o 40' 58"	6/23/97		trawl	85.5	2.2				X			Dave Davies		
LE 24			41° 51' 81"N / 83° 02' 30" W	5/6/96		Jerry Penner	81.3					X					
LE25			41° 51' 99"N / 83° 01' 11"W to	6/3/96		"	38.4					X					
LE26			41o 51' 92"N / 83o 03' 39"W	"		"	37.5					X					
LE27			"	"		"	41.9					X					
LE28			"	"		"	55.6					X					
LE29			"	"		"	51.6					X					
LE30			"	"		"	60.6					X					
LE31			"	"		"	45.4					X					
LE32			"	"		"	34.0					X					
LE33			"	"		"	36.8					X					
LE34			41o 50' 41"N / 82o 59' 159"W to	6/4/96		"	34.9					X					
LE35			41o 50' 62"N / 82o 59' 41" W	"		"	55.4					X					
LE36			41o 50' 54"N / 82o 59' 87" W	6/6/96		"	36.8					X					
LE37			41o 52' 20"N / 82o 59' 16" W	6/8/96		"	39.4					X					
LE38			41o 51' 31"N / 82o 56' 88" W	6/5/96		"	37.1					X					
LE39			41o 52' 26"N / 83o 01' 27" W to	6/7/96		"	44.4					X					
LE40			41o 52' 64"N / 82o 59' 68" W	"		"	43.8					X					
LE41			"	"		"	46.4					X					
LE42			"	"		"	43.8					X					

Wolf River, WI Sturgeon Samples

Sample ID	Catalog Number	Tag #	Collection Location	Date Collected	Date Received	Collector	Total Length (cm)	Weight (kg)	Sex	Tissues Collected							Contact	Project Head
										Muscle	Liver	Fin Clip	Blood	Whole	Other			
WR1	M1	10000	Wolf River, near intersection of Rt. 54	4/25/95	4/25/95	Ron Bruch,	115.0		M	X		X						
WR2	F1	10001	and old Rt. 54, approx. 9 miles (Bamboo	"	"	B. Porter,	146.3		F	X		X						
WR3	M2	75-6854	Bend) east of New London, Outagamie Co	"	"	D. Sears,	133.8		M	X		X						
WR4	M3	10002	Wisconsin	"	"	&	137.5		M	X		X						
WR5	M4	10003	"	"	"	WDNR	117.5		M	X		X						
WR6	M5	10004	"	"	"	"	131.3		M	X		X						
WR7	M6	10005	"	"	"	"	147.5		M	X		X						
WR8	M7	10006	"	"	"	"	132.5		M	X		X						
WR9	M8	10007	"	"	"	"	130.0		M	X		X						
WR10	M9	10008	"	"	"	"	135.0		M	X		X						
WR11	M10	10009	"	"	"	"	135.0		M	X		X						
WR12	F2	10011	"	"	"	"	165.0		F	X		X						
WR13	M11	10012	"	4/26/95	4/26/95	"	132.5		M	X		X						
WR14	M12	10013	"	"	"	"	127.5		M	X		X						
WR15	M13	10014	"	"	"	"	117.5		M	X		X						
WR16	M14	10015	"	"	"	"	96.3		M	X		X						
WR17	M15	10016	"	"	"	"	112.5		M	X		X						
WR18	M16	10017	"	"	"	"	142.5		M			X						
WR19	M17	10018	"	"	"	"	105.0		M			X						
WR20	M18	55-4999	"	"	"	"	145.0		M			X						
WR21	M19	10019	"	"	"	"	142.5		M	X		X						
WR22	M20	75-6758	"	"	"	"	126.3		M			X						
WR23	M21	10020	"	"	"	"	110.0		M			X						
WR24	F3	6437	"	"	"	"	160.0		F	X		X						
WR25		12191	Shawano Dam, east side of dam	4/29/97	4/29/97	B. Porter,	131.8		F	X		X						R. Bruch
WR26		12195	"	"	"	J. Krieger,	133.8		M	X		X						"
WR27		12199	"	"	"	B. Mark, &	148.8		M	X		X						"
WR28		12200	"	"	"	G. Booton	151.3		F	X		X						"
WR29		12401	"	"	"	Ron Bruch,	118.8		M	X		X						"
WR30		12403	"	"	"	&	152.5		F	X		X						"
WR31		12404	"	"	"	WDNR	130.0		M	X		X						"
WR32		12405	"	"	"	"	162.5		F	X		X						"
WR33		12406	"	"	"	"	151.3		F	X		X						"
WR34		12407	"	"	"	"	125.0		M	X		X						"
WR35		12408	"	"	"	"	131.3		M	X		X						"
WR36		12410	"	"	"	"	141.3		M	X		X						"
WR37		12411	"	"	"	"	122.5		M	X		X						"
WR38		12413	"	"	"	"	133.8		M	X		X						"
WR39		12415	"	"	"	"	165.0		F	X		X						"
WR40		12416	"	"	"	"	146.3		F	X		X						"
WR41		12418	"	"	"	"	162.5		F	X		X						"
WR42		12419	"	"	"	"	147.5		F	X		X						"
WR43		12420	"	"	"	"	123.8		M	X		X						"
WR44		12421	"	"	"	"	170.0		F	X		X						"
WR45		757805	"	"	"	"	171.3		F	X		X						"
WR46		12422	"	"	"	"	148.8		M	X		X						"
WR47		12424	"	"	"	"	147.5		F	X		X						"
WR48		12428	"	"	"	"	112.5		M	X		X						"
WR49		12432	"	"	"	"	161.3		F	X		X						"

Sediment Samples

WR50		12440	"	"	"	"	167.5		F	X		X							"
WR51		12447	"	4/30/97	4/30/97	"	128.8			X		X							Ron Bruch
WR52		12448	"	"	"	"	131.2			X		X							"
WR53		12449	"	"	"	"	162.5			X		X							"
WR54		12450	"	"	"	"	131.3			X		X							"
WR55		12355	"	"	"	"	172.5			X		X							"
WR56		12356	"	"	"	"	157.5			X		X							"
WR57		12357	"	"	"	"	146.3			X		X							"

Sturgeon River, MI Sturgeon Samples

Sample ID	Accession Number	Cat. #	Collection Location	Date Collected	Date Received	Collector	Total Length	Weight (kg)	Sex	Tissues Collected						Contact	Project Head
										Muscle	Liver	Fin Clip	Blood	Whole	Other		
SR1		709	Sturgeon River, MI	5/12/95	5/15/95	Nancy Auer	149.5	21.3	M?	X							
SR2		710	"	"	"	"	142.5	21.8	F?	X							
SR3		711	"	"	"	"	135	18.1	Mr	X							
SR4		713	"	"	"	"	131	14.1	Mr	X							
SR5		714	"	"	"	"	119.5	12.7	Mr	X							
SR6		715	"	"	"	"	126	14.1	Mr	X							
SR7		716	"	"	"	"	162	24.9	Mr	X							
SR8		712	"	"	"	"	146.5	19.5	Mr	X							
SR9		717	"	"	"	"	140	18.1	Mr	X							
SR10		718	"	"	"	"	136	15.9	Mr	X							
SR11		719	"	"	"	"	141	17.2	Mr	X							
SR12		720	"	"	"	"	148	24	Mr	X							
SR13		721	"	"	"	"	144	18.6	Mr	X							
SR14		722	"	"	"	"	140	20	Mr	X							
SR15		725	"	"	"	"	152	21.8	Mr	X							
SR16		724	"	"	"	"	140.5	17.2	Mr	X							
SR17		723	"	"	"	"	148	19	Mr	X							
SR18		726	"	"	"	"	126	14.1	Mr	X							
SR19		727	"	"	"	"	148.5	24	F?	X							
SR20		728	"	"	"	"	123.5	12.2	Mr	X							
SR21		729	"	"	"	"	167	35.8	F?	X							
SR22		730	"	"	"	"	128	16.3	Mr	X							
SR23		731	"	"	"	"	154	20	Mr	X							
SR24		732	"	"	"	"	143	17.7	Mr	X							
SR25		676	"	"	"	"	129	13.6	Mr	X							
SR26		733	"	"	"	"	143	17.7	Mr	X							
SR27		734	"	"	"	"	142	18.6	Mr	X							
SR28		735	"	"	"	"	123	12.7	Mr	X							
SR29		1	Sturgeon River, MI, 1996 collection	5/30/96	6/17/96	Nancy Auer				X							
SR30		2	"	"	"	"				X							
SR31		3	"	"	"	"				X							
SR32		4	"	"	"	"				X							
SR33		5	"	"	"	"				X							
SR34		6	"	"	"	"				X							
SR35		7	"	"	"	"				X							
SR36		8	"	"	"	"				X							
SR37		9	"	"	"	"				X							
SR38		10	"	"	"	"				X							
SR39		11	"	"	"	"				X							
SR40		12	"	"	"	"				X							
SR41		13	"	"	"	"				X							
SR42		14	"	"	"	"				X							
SR43		15	"	"	"	"				X							
SR44		16	"	"	"	"				X							
SR45		17	"	"	"	"				X							

Lake of the Woods, MN Sturgeon Samples

Sample ID	Accession Number	Cat. #	Collection Location	Date Collected	Date Received	Collector	Total Length (cm)	Weight (g)	Sex	Tissues Collected							Contact	Project Head
										Muscle	Liver	Fin Clip	Blood	Whole	Other			
LWD1		72185	From Fourmile Bay, Lake of the Woods, MN	5/9/95	?	Tom Heinrich	140.0			X								
LWD2		72136	near mouth of Rainy River	"	"	"	84.5			X								
LWD3		F32631	"	5/8/95	"	"	137.5			X								
LWD4		72190	"	5/9/95	"	"	86.0			X								
LWD5		F32796	"	5/8/95	"	"	112.0			X								
LWD6		F35158	"	"	"	"	100.0			X								
LWD7		F36668	"	"	"	"	102.5			X								
LWD8		F31341	"	"	"	"	100.8			X								
LWD9		72198	"	5/9/95	"	"	125.0			X								
LWD10		72183	"	"	"	"	115.0			X								
LWD11		F38874	"	"	"	"	128.0			X								
LWD12		72191	"	"	"	"	121.5			X								
LWD13		72197	"	"	"	"	139.0			X								
LWD14		72186	"	"	"	"	117.2			X								
LWD15		A	"	5/8/95	"	"	131.5			X								

Sturgeon Samples

St. Lawerence River, Sturgeon Samples

Sample ID	Accession Number	Cat. #	Collection Location	Date Collected	Date Received	Collector	Total length (cm	Weight (g)	Sex	Tissues Collected						Contact	Project Head
										Muscle	Liver	Fin Clip	Blood	Whole	Other		
SLR1		1	Robert Moses Power Dam #3	6/1/94	2/1/95	Steve LePan	119.5		M				X			Steve LePan	
SLR2		2		"	"	"	92.4		U				X			"	
SLR3		3		"	"	"	103.1		M				X			"	
SLR4		4		"	"	"	121.9		U				X			"	
SLR5		5		"	"	"	108.0		M				X			"	
SLR6		6		"	"	"	116.4		M				X			"	
SLR7		7		"	"	"	105.1		M				X			"	
SLR8		8		"	"	"	100.5		M				X			"	
SLR9		9		"	"	"	120.0		U				X			"	
SLR10		10		"	"	"	108.5		M				X			"	
SLR11		11		"	"	"	120.5		M				X			"	
SLR12		12		"	"	"	107.9		M				X			"	
SLR13		13		"	"	"	112.5		M				X			"	
SLR14		14		"	"	"	106.2		U				X			"	
SLR15		15		"	"	"	115.9		M				X			"	

Sturgeon Samples

Grasse River Sturgeon Samples

Sample ID	Accession Number	Cat. #	Collection Location	Date Collected	Date Received	Collector	Total Length (cm)	Weight (g)	Sex	Tissues Collected						Contact	Project Head
										Muscle	Liver	Fin Clip	Blood	Whole	Other		
GR1				9/17/92			137.0						X				
GR2				9/18/92			78.7						X				
GR3				6/11/93			132.0						X				
GR4		17	Grasse River at Messena Rod & Gun Club	6/16/94			91.4		U								
GR5		18	"	6/16/94			98.4		U								
GR6		19	"	6/11/93			130.0		U								
GR7		20	"	6/11/93			130.0		U								

Sturgeon Samples

Kettle River, MN Sturgeon Samples

Sample ID	Accession Number	Cat. #	Collection Location	Date Collected	Date Received	Collector	Total length (cm	Weight (kg)	Sex	Tissues Collected						Contact	Project Head
										Muscle	Liver	Fin Clip	Blood	Whole	Other		
KR1		1	collected by Minnesota DNR	4/27/95		Roger Hugill	78.0			X							
KR2		2	40 total samples	4/28/95		"	75.8			X							
KR3		3	"	4/19/97		"	73.8			X							
KR4		4	"	4/26/95		"	85.0			X							
KR5		5	"	4/29/95		"	82.3			X							
KR6		6	"	4/20/95		"	43.3			X							
KR7		7	"	4/21/95		"	80.0			X							
KR8		8	"	4/23/95		"	45.3			X							
KR9		9	"	4/21/95		"	85.8			X							
KR10		10	"	4/21/95		"	41.8			X							
KR11		11	"	4/19/95		"	96.5			X							
KR12		12	"	4/19/95		"	69.0			X							
KR13		13	"	4/19/95		"	86.5			X							
KR14		14	"	4/21/95		"	123.8			X							
KR15		15	"	Apr-95		"	46.5			X							
KR16		16	"	4/25/95		"	43.8			X							
KR17		17	"	4/17/95		"	88.0			X							
KR18		18	"	4/20/95		"	42.5			X							
KR19		19	"	4/27/95		"	87.5			X							
KR20		20	"	4/19/95		"	76.8			X							
KR21		21	"	4/27/95		"	90.0			X							
KR22		22	"	4/25/95		"	83.8			X							
KR23		23	"	4/27/95		"	85.0			X							
KR24		24	"	4/25/95		"	93.0			X							
KR25		25	"	4/28/95		"	75.5			X							
KR26		26	"	4/22/95		"	89.0			X							
KR27		27	"	4/29/95		"	85.8			X							
KR28		28	"	4/28/95		"	74.8			X							
KR29		29	"	4/28/95		"	98.0			X							
KR30		30	"	4/29/95		"	131.3			X							
KR31		31	"	4/29/95		"	100.0			X							
KR32		32	"	4/26/95		"	74.0			X							
KR33		33	"	4/29/95		"	84.3			X							
KR34		34	"	4/29/95		"	96.0			X							
KR35		35	"	4/28/95		"	80.0			X							
KR36		36	"	5/1/95		"	140.5			X							
KR37		37	"	5/1/95		"	77.3			X							
KR38		38	"	5/1/95		"	75.8			X							
KR39		39	"	5/1/95		"	136.8			X							
KR40		40	"	5/1/95		"	73.5			X							

Sturgeon Samples

Northern Lake Huron Sturgeon Samples

Sample ID	Accession Number	Cat. #	Collection Location	Date Collected	Date Received	Collector	Total Length (cm)	Weight (kg)	Sex	Tissues Collected							Contact	Project Head
										Muscle	Liver	Fin Clip	Blood	Whole	Other			
NC01			North channel of Lake Huron, just north	4/26/95	?	Lloyd Mohr	133.0		unk	X			X					
NC02			of Manitoulin Island	"	"	"	138.0		M	X			X					
NC03			Caught near the mouth of the Missisagi	"	"	"	126.0		F	X			X					
NC04			River on the north shore of Lake Huron,	"	"	"	160.0		F	X			X					
NC05			by a commercial fisherman.	"	"	"	84.0		unk	X			X					
NC06			"	"	"	"	112.0		M	X			X					
NC07			"	"	"	"	120.0		M	X			X					
NC08			"	"	"	"	145.0		F	X			X					
NC09			"	"	"	"	122.0		M	X			X					
NC10			"	5/3/95	"	"	131.0		M	X			X					
NC11			"	"	"	"	114.0		M	X			X					
NC12			"	"	"	"	145.0		unk	X			X					
NC13			"	"	"	"	110.0		unk	X			X					
NC14			"	"	"	"	100.0		unk	X			X					
NC15			"	"	"	"	107.0		unk	X			X					

Bad River, WI Sturgeon Samples

Sample ID	Accession Number	Cat #	Collection Location	Date Collected	Date Received	Collector	Total Length (cm)	Weight (g)	Sex	Tissues Collected							Contact	Project Head
										Muscle	Liver	Fin Clip	Blood	Whole	Other			
BR1		404	Bad River, Wisconsin	4/26/95	5/19/95	Jeff Slade	122.5		M			X						
BR2		405		4/30/95	"	"	150.0		F			X						
BR3		406		"	"	"	126.5		F			X						
BR4		408		5/2/95	"	"	134.0		F			X						
BR5		409		"	"	"	126.4		M			X						
BR6		411		"	"	"	102.5		M			X						
BR7		412		5/3/95	"	"	106.0		M			X						
BR8		414		5/5/95	"	"	118.5		M			X						
BR9		417		"	"	"	103.4		M			X						
BR9		418		5/7/95	"	"	122.5		F			X						
BR10		420		"	"	"	104.9		M			X						
BR11		421		"	"	"	128.0		F			X						
BR12		422		"	"	"	113.0		M			X						
BR13		423		"	"	"	145.4		F			X						
BR14		424		"	"	"	109.2		M			X						
BR15		425		"	"	"	144.0		F			X						
BR16		426		5/8/95	"	"	132.9		F			X						
BR17		427		"	"	"	129.5		M			X						
BR18		428		"	"	"	125.8		M			X						
BR19		429		"	"	"	129.5		F			X						
BR20		430		"	"	"	145.6		F			X						
BR21		431		"	"	"	145.4		F			X						
BR22		432		"	"	"	127.2		F			X						
BR23		433		5/9/95	"	"	143.8		F			X						
BR24		434		"	"	"	147.0		F			X						
BR25		435		"	"	"	117.8		M			X						
BR26		436		"	"	"	125.4		M			X						
BR27		437		"	"	"	119.0		M			X						
BR28		438		"	"	"	122.0		M			X						
BR29		439		"	"	"	124.0		M			X						
BR30		440		"	"	"	116.5		M			X						
BR31		441	"	"	"	"	127.7		M			X						
BR32		203	Bad River, Wisconsin	4/29/97	5/15/97	USF&W	141.6	20.9	F	X								
BR33		202	"	"	"	"	135.5	14.9	M	X								
BR34		204	"	5/2/97	"	"	116.5	9	M	X								
BR35		206	"	5/4/97	"	"	130.9	16.3	F	X								
BR36		208	"	"	"	"	114.6	11.3	M	X								
BR37		210	"	"	"	"	150.0	27.7	F	X								
BR38		211	"	"	"	"	138.6	16.3	M	X								
BR39		213	"	"	"	"	127.8	18.6	M	X								
BR40		214	"	5/5/97	"	"	118.3	12.2	M	X								
BR41		215	"	"	"	"	143.5	20.4	F	X								
BR42		216	"	"	"	"	115.3	10.9	U	X								
BR43		218	"	"	"	"	126.8	18.6	F	X								
BR44		222	"	"	"	"	131.1	15.9	M	X								
BR45		224	"	5/6/97	"	"	88.2	4.9	U	X								
BR46		225	"	"	"	"	163.5	28.1	F	X								
BR47		227	"	"	"	"	126.0	15.9	M	X								

BR48		228	"	"	"	"	149.7	16.8	M	X								
BR49		230	"	5/7/97	"	"	115.7	10.9	M	X								
BR50		231	"	"	"	"	123.6	14	F	X								
BR51		233	"	5/8/97	"	"	106.2	7.7	M	X								
BR52		234	"	"	"	"	127.2	14.9	M	X								
BR53		236	"	"	"	"	88.1	4.1	U	X								
BR54		237	"	"	"	"	125.9	11.8	M	X								
BR55		239	"	"	"	"	151.9	15.8	F	X								
BR56		240	"	"	"	"	140.0	14.1	F	X								
BR57		244	"	"	"	"	155.2	20.4	F	X								
BR58		246	"	"	"	"	141.0	23.6	F	X								
BR59		248	"	5/9/97	"	"	128.3	12.7	M	X								
BR60		301	"	5/10/97	"	"	134.9	15.4	M	X								
BR61		302	"	5/12/97	"	"	120.7	10.9	M	X								
BR62		303	"	5/12/97	"	"	107.5	8.6	M	X								

Lake Winnebago, WI Sturgeon Samples

Sample ID	Accession Number	Cat. #	Collection Location	Date Collected	Date Received	Collector	Total Length	Weight (g)	Sex	Tissues Collected						Contact	Project Head
										Muscle	Liver	Fin Clip	Blood	Whole	Other		
LW1		1	Lake Winnebago spearfishing check-in	2/11/95	2/11/95	Condit and	asst.										
LW2		2	statioon samples collected by John	"	"	Nickell	Total										
LW3		3	Condit and Tom Nickell	"	"	"	Length										
LW4		4	110 total samples	"	"	"											
LW5		5	"	"	"	"											
LW6		6	"	"	"	"											
LW7		7	"	"	"	"											
LW8		8	"	"	"	"											
LW9		9	"	"	"	"											
LW10		10	"	"	"	"											
LW11		11	"	"	"	"											
LW12		12	"	"	"	"											
LW13		13	"	"	"	"											
LW14		14	"	"	"	"											
LW15		15	"	"	"	"											
LW16		16	"	"	"	"											
LW17		17	"	"	"	"											
LW18		18	"	"	"	"											
LW19		19	"	"	"	"											
LW20		20	"	"	"	"											
LW21		21	"	"	"	"											
LW22		22	"	"	"	"											
LW23		23	"	"	"	"											
LW24		24	"	"	"	"											
LW25		25	"	"	"	"											
LW26		26	"	"	"	"											
LW27		27	"	"	"	"											
LW28		28	"	"	"	"											
LW29		29	"	"	"	"											
LW30		30	"	"	"	"											
LW31		31	"	"	"	"											
LW32		32	"	"	"	"											
LW33		33	"	"	"	"											
LW34		34	"	"	"	"											
LW35		35	"	"	"	"											
LW36		36	"	"	"	"											
LW37		37	"	"	"	"											
LW38		38	"	"	"	"											
LW39		39	"	"	"	"											
LW40		40	"	"	"	"											
LW41		41	"	"	"	"											
LW42		42	"	"	"	"											
LW43		43	"	"	"	"											
LW44		44	"	"	"	"											
LW45		45	"	"	"	"											
LW46		46	"	"	"	"											
LW47		47	"	"	"	"											
LW48		48	"	"	"	"											
LW49		49	"	"	"	"											
LW50		50	"	"	"	"											

LW51		51	"	"	"	"												
LW52		52	"	"	"	"												
LW53		53	"	"	"	"												
LW54		54	"	"	"	"												
LW55		55	"	"	"	"												
LW56		56	"	"	"	"												
LW57		57	"	"	"	"												
LW58		58	"	"	"	"												
LW59		59	"	"	"	"												
LW60		60	"	"	"	"												
LW61		61	"	"	"	"												
LW62		62	"	"	"	"												
LW63		63	"	"	"	"												
LW64		64	"	"	"	"												
LW65		65	"	"	"	"												
LW66		66	"	"	"	"												
LW67		67	"	"	"	"												
LW68		68	"	"	"	"												
LW69		69	"	"	"	"												
LW70		70	"	"	"	"												
LW71		71	"	"	"	"												
LW72		72	"	"	"	"												
LW73		73	"	"	"	"												
LW74		74	"	"	"	"												
LW75		75	"	"	"	"												
LW76		76	"	"	"	"												
LW77		77	"	"	"	"												
LW78		78	"	"	"	"												
LW79		79	"	"	"	"												
LW80		80	"	"	"	"												
LW81		81	"	"	"	"												
LW82		82	"	"	"	"												
LW83		83	"	"	"	"												
LW84		84	"	"	"	"												
LW85		85	"	"	"	"												
LW86		86	"	"	"	"												
LW87		87	"	"	"	"												
LW88		88	"	"	"	"												
LW89		89	"	"	"	"												
LW90		90	"	"	"	"												
LW91		91	"	"	"	"												
LW92		92	"	"	"	"												
LW93		93	"	"	"	"												
LW94		94	"	"	"	"												
LW95		95	"	"	"	"												
LW96		96	"	"	"	"												
LW97		97	"	"	"	"												
LW98		98	"	"	"	"												
LW99		99	"	"	"	"												
LW100		100	"	"	"	"												
LW101		101	"	"	"	"												
LW102		102	"	"	"	"												
LW103		103	"	"	"	"												
LW104		104	"	"	"	"												

LW105		105	"	"	"	"											
LW106		106	"	"	"	"											
LW107		107	"	"	"	"											
LW108		108	"	"	"	"											
LW109		109	"	"	"	"											
LW110		110	"	"	"	"											

Lake St. Pierre Sturgeon Samples

Sample ID	Accession Number	Cat. #	Collection Location	Date Collected	Date Received	Collector	Total Length (cm)	Weight (kg)	Sex	Tissues Collected						Contact	Project Head
										Muscle	Liver	Fin Clip	Blood	Whole	Other		
LSP1		1	Lake St. Pierre archipelago of the St.	10/17/94	10/20/94	Yves Mailhot	110.5	7.7	M	X			X				
LSP2		2	Lawrence River	"	"	"	86.5	3.4	M	X			X				
LSP3		3	"	"	"	"	86.2	3.2	M	X			X				
LSP4		4	"	"	"	"	86.0	2.7	F	X			X				
LSP5		5	"	"	"	"	74.0	1.8	M	X			X				
LSP6		6	"	"	"	"	130.2	8.4	F	X			X				
LSP7		7	"	"	"	"	104.0	7.3	M	X			X				
LSP8		8	"	"	"	"	114.0	7.5	F	X			X				
LSP9		9	"	"	"	"	99.8	5.2	F	X			X				
LSP10		10	"	"	"	"	102.7	6.4	M	X			X				
LSP11		11	"	"	"	"	?	?	?	X			X				
LSP12		12	"	"	"	"	110.2	6.1	M	X			X				
LSP13		13	"	"	"	"	101.4	5.0	F	X			X				
LSP14		14	"	"	"	"	99.2	5.0	F	X			X				
LSP15		15	"	"	"	"	102.0	5.7	F	X			X				

Detroit River, MI Sturgeon Samples

Sample ID	Accession Number	Cat. #	Collection Location	Date Collected	Date Received	Collector	Total ength (cm	Weight (g)	Sex	Tissues Collected						Contact	Project Head
										Muscle	Liver	Fin Clip	Blood	Whole	Other		
DR1		1	Fish were recovered following poaching,		Sep-96	Doug Sweet	130.0					X					
DR2		2	from Detroit River in May 1995		"	"	117.5			X							
DR3		3	found in downtown Detroit, at Renaisance		"	"	136.3			X							
			Center, died of over chlorination at														
			Belle Isle Aquarium, 3 samples total														

Black Lake, MI Sturgeon Samples

Sample ID	Accession Number	Cat. #	Collection Location	Date Collected	Date Received	Collector	Total length (cm	Weight (g)	Sex	Tissues Collected							Contact	Project Head
										Muscle	Liver	Fin Clip	Blood	Whole	Other			
BL1		1	Black Lake, MI, 30 samples, fin clips	7/18/97		D. Borgeson	165.0					X						
BL2		2	in vials	"			150.0					X						
BL3		3	"	"			137.5					X						
BL4		4	"	"			125.0					X						
BL5		5	"	7/15/97			142.5					X						
BL6		6	"	"			127.5					X						
BL7		7	"	6/19/97			145.0					X						
BL8		8	"	"			137.5					X						
BL9		9	"	"			162.5					X						
BL10		10	"	6/18/97			132.5					X						
BL11		11	"	6/17/97			142.5					X						
BL12		12	"	"			175.0					X						
BL13		13	"	6/16/97			152.5					X						
BL14		14	"	"			140.0					X						
BL15		15	"	"			132.5					X						
BL16		16	"	"			142.5					X						
BL17		17	"	7/23/97			147.5					X						
BL18		18	"	7/21/97			155.0					X						
BL19		19	"	"			172.5					X						
BL20		20	"	7/23/97			165.0					X						
BL21		21	"	7/14/97			155.0					X						
BL22		22	"	"			165.0					X						
BL23		23	"	"			165.0					X						
BL24		24	"	"			160.0					X						
BL25		25	"	7/21/97			167.5					X						
BL26		26	"	7/23/97			162.5					X						
BL27		27	"	"			145.0					X						
BL28		28	"	"			175.0					X						
BL29		29	"	"			160.0					X						
BL30		30	"	7/14/97			160.0					X						

Sturgeon Samples

Southern Lake Huron Sturgeon Samples

Sample ID	Accession Number	Cat. #	Collection Location	Date Collected	Date Received	Collector	Total Length (cm)	Weight (kg)	Sex	Tissues Collected						Contact	Project Head
										Muscle	Liver	Fin Clip	Blood	Whole	Other		
LH01			From south end of Lake Huron, near Blue	7/5/95	"	Lloyd Mohr	121.0	7	M	X			X				
LH02			Point. Caught in trap nets, small ones	"	"	"	120.0	13	M	X			X				
LH03			tagged and released	"	"	"	83.0	T & R	unk.	X			X				
LH04			"	"	"	"	92.0	T & R	unk.	X			X				
LH05			"	"	"	"	74.0	T & R	unk.	X			X				
LH06			"	"	"	"	40.0	T & R	unk.	X			X				
LH07			"	"	"	"	85.0	T & R	unk.	X			X				
LH08			"	"	"	"	102.0	T & R	unk.	X			X				
LH09			"	"	"	"	105.0	T & R	unk.	X			X				
LH10			"	"	"	"	124.0	9	M	X			X				
LH11			"	"	"	"	125.0	13	M	X			X				
LH12			"	"	"	"	133.0	13	M	X			X				
LH13			"	"	"	"	137.0	17	M	X			X				
LH14			"	"	"	"	174.0	39	F	X			X				
LH15			"	"	"	"	136.0	14	M	X			X				

Menominee River, MI Sturgeon Samples

Sample ID	Accession Number	Cat. #	Collection Location	Date Collected	Date Received	Collector	Total length (cm	Weight (kg)	Sex	Tissues Collected						Contact	Project Head
										Muscle	Liver	Fin Clip	Blood	Whole	Other		
MR1		1	1 mile of river immediately below the	7/12/94	7/12/94	Gary Schnicke	114.0										
MR2		2	Grand Rapids Hydro Dam				117.0										
MR3		3	T34N, R27W, Secs. 9 & 16,				120.0										
MR4		4	Menominee Co				99.0										
MR5		5	"				65.0										
MR6		6	"				60.0										
MR7		7	"				145.0										
MR8		8	"				75.0			X			X				
MR9		9	"				60.0			X			X				
MR10		10	"				57.0			X			X				
MR11		11	"				60.0			X			X				
MR12		12	"				57.0			X			X				
MR13		13	"				54.0			X			X				
MR14		14	"				85.0			X			X				
MR15		15	"				66.0			X			X				
MR16		16	"				122.0			X			X				
MR17		17	"				62.0			X			X				
MR18		18	"				64.0			X			X				
MR19		19	"				69.0			X			X				
MR20		20	"				58.0			X			X				
MR21		21	"				68.0			X			X				
MR22		22	"				54.0			X			X				
MR23		23	"				61.0			X			X				
MR24		24	"				125.0			X			X				
MR25		25	"				100.0			X			X				
MR26		4151	From Menominee River, Spring 1996	6/3/96	6/4/96	Ed Baker	82.0	3.2	?			X					
MR27		4152	"	"	"	"	102.0	5.0	?			X					
MR28		4153	"	"	"	"	132.0	14.1	M			X					
MR29		4154	"	"	"	"	126.0	15.4	M?			X					
MR30		4155	"	"	"	"	131.0	15.0	?			X					
MR31		4156	"	"	"	"	140.5	19.0	?			X					
MR32		4157	"	"	"	"	108.0	10.9	?			X					
MR33		4158	"	"	"	"	96.0	5.9	?			X					
MR34		4159	"	"	"	"	101.0	7.3	M			X					
MR35		4160	"	"	"	"	124.0	20.0	F?			X					
MR36		4161	"	"	"	"	100.0	7.7	M			X					
MR37		4162	"	"	"	"	116.5	10.0	M			X					
MR38		4163	"	"	"	"	108.0	11.3	M			X					
MR39		4164	"	"	"	"	126.0	18.6	F?			X					
MR40		4165	"	"	"	"	101.5	6.8	M			X					
MR41		4166	"	"	"	"	92.7	4.5	M			X					
MR42		4167	"	"	"	"	108.0	8.2	M			X					
MR43		4168	"	"	"	"	113.5	15.0	F?			X					
MR44		4169	"	"	"	"	96.5	5.4	M			X					
MR45		4170	"	"	"	"	97.0	5.9	M			X					
MR46		4292	From Menominee River, Summer 1996				158.0	23.5				X					
MR47		4293	"				81.0	1.4				X					
MR48		4294	"				119.0	13.2				X					
MR49		4295	"				119.0	11.8				X					
MR50		4296	"				115.0	10.4				X					

MR51		4297	"				108.0	5.9				X						
MR52		4298	"				114.0	8.2				X						
MR53		4299	"				156.0	30.0				X						
MR54		4226	"				120.0	10.4				X						
MR55		4227	"				127.0	13.8				X						

Kincaid Hatchery, OH Sturgeon Samples

Sample ID	Accession Number	Cat. #	Collection Location	Date Collected	Date Received	Collector	Total Length	Weight (g)	Sex	Tissues Collected						Contact	Project Head
										Muscle	Liver	Fin Clip	Blood	Whole	Other		
KH1		77149	Kincaid Fish Hatchery	9/1/93	9/1/93	B. Porter				X	X	X	X	X			
KH2		"	derived from Wisconsin stock	"	"	"				X	X	X	X	X			
KH3		"	Total length varies in these samples	"	"	"				X	X	X	X	X			
KH4		"	from 124-168mm	"	"	"				X	X	X	X	X			
KH5		"	"	"	"	"				X	X	X	X	X			
KH6		"	"	"	"	"				X	X	X	X	X			
KH7		"	"	"	"	"				X	X	X	X	X			
KH8		"	"	"	"	"				X	X	X	X	X			
KH9		"	"	"	"	"				X	X	X	X	X			
KH10		"	"	"	"	"				X	X	X	X	X			
KH11		"	"	"	"	"				X	X	X	X	X			
KH12		"	"	"	"	"				X	X	X	X	X			
KH13		"	"	"	"	"				X	X	X	X	X			
KH14		"	"	"	"	"				X	X	X	X	X			
KH15		"	"	"	"	"				X	X	X	X	X			
KH16		"	"	"	"	"				X	X	X	X	X			
KH17		"	"	"	"	"				X	X	X	X	X			
KH18		"	"	"	"	"				X	X	X	X	X			T. Cavender
KH19		"	"	"	"	"				X	X	X	X	X			&
KH20		"	"	"	"	"				X	X	X	X	X			B. Porter
KH21		"	"	"	"	"				X	X	X	X	X			
KH22		"	"	"	"	"				X	X	X	X	X			
KH23		"	"	"	"	"				X	X	X	X	X			
KH24		"	"	"	"	"				X	X	X	X	X			
KH25		"	"	"	"	"				X	X	X	X	X			
KH26		"	"	"	"	"				X	X	X	X	X			
KH27		"	"	"	"	"				X	X	X	X	X			
KH28		"	"	"	"	"				X	X	X	X	X			
KH29		"	"	"	"	"				X	X	X	X	X			
KH30		"	"	"	"	"				X	X	X	X	X			
1KH1		CROSS 1	Raised from Wolf River Wisconsin Stock	9/26/95	9/29/95	B. Porter				X	X	X	X	X			
THROUGH		M1xF1 or	100 individuals from each of 3 crosses	"	"	"				X	X	X	X	X			
1KH80		WR1xWR2	were brought back to museum, 20 of each	"	"	"				X	X	X	X	X			
2KH1		CROSS 2	group preserved in formalin,	"	"	"				X	X	X	X	X			
THROUGH		M4xF3 or	total of 240 individuals available for DNA	"	"	"				X	X	X	X	X			
2KH80		WR5xWR24	studies	"	"	"				X	X	X	X	X			
3KH1		CROSS 3	Fish were sacrificed whole, and samples	"	"	"				X	X	X	X	X			
THROUGH		M19xF3	of all tissue types taken and preserved	"	"	"				X	X	X	X	X			
3KH80		WR21xWR24		"	"	"											

OSU Lab Cross Sturgeon Samples

Cross	Accession Number	Individual Number	Parental Cross	Date Collected	Date Received	Collector	Total Length	Weight (kg)	Sex	Muscle	Liver	Tissues Collected: Fin Clip	Blood	Whole	Other	Contact	Project Head
AF1		1.00	12191F X 12195M	35550.00	35562.00	B. Porter								X		B. Porter	B. Porter
"		2.00	"	"	"	"								X			
"		3.00	"	"	"	"								X			
"		4.00	"	"	"	"								X			
"		5.00	"	"	"	"								X			
"		6.00	"	"	"	"								X			
"		7.00	"	"	"	"								X			
"		8.00	"	"	"	"								X			
"		9.00	"	"	"	"								X			
"		10.00	"	"	"	"								X			
"		11.00	"	"	"	"								X			
"		12.00	"	"	"	"								X			
"		13.00	"	"	"	"								X			
"		14.00	"	"	"	"								X			
"		15.00	"	"	"	"								X			
"		16.00	"	"	"	"								X			
"		17.00	"	"	"	"								X			
"		18.00	"	"	"	"								X			
"		19.00	"	"	"	"								X			
"		20.00	"	"	"	"								X			
"		21.00	"	"	"	"								X			
"		22.00	"	"	"	"								X			
"		23.00	"	"	"	"								X			
"		24.00	"	"	"	"								X			
AF2		1.00	12191F X 12199M	"	"	"								X			
"		2.00	"	"	"	"								X			
"		3.00	"	"	"	"								X			
"		4.00	"	"	"	"								X			
"		5.00	"	"	"	"								X			
"		6.00	"	"	"	"								X			
"		7.00	"	"	"	"								X			
"		8.00	"	"	"	"								X			
"		9.00	"	"	"	"								X			
"		10.00	"	"	"	"								X			
"		11.00	"	"	"	"								X			
"		12.00	"	"	"	"								X			
"		13.00	"	"	"	"								X			
"		14.00	"	"	"	"								X			
"		15.00	"	"	"	"								X			
"		16.00	"	"	"	"								X			
"		17.00	"	"	"	"								X			
"		18.00	"	"	"	"								X			
"		19.00	"	"	"	"								X			
"		20.00	"	"	"	"								X			
"		21.00	"	"	"	"								X			
"		22.00	"	"	"	"								X			
AF3		1.00	12432F X 12401M	"	"	"								X			
"		2.00	"	"	"	"								X			
"		3.00	"	"	"	"								X			
"		4.00	"	"	"	"								X			

"		5.00	"	"	"	"							X			
"		6.00	"	"	"	"							X			
"		7.00	"	"	"	"							X			
"		8.00	"	"	"	"							X			
"		9.00	"	"	"	"							X			
"		10.00	"	"	"	"							X			
"		11.00	"	"	"	"							X			
"		12.00	"	"	"	"							X			
"		13.00	"	"	"	"							X			
"		14.00	"	"	"	"							X			
"		15.00	"	"	"	"							X			
"		16.00	"	"	"	"							X			
"		17.00	"	"	"	"							X			
"		18.00	"	"	"	"							X			
"		19.00	"	"	"	"							X			
"		20.00	"	"	"	"							X			
"		21.00	"	"	"	"							X			
"		22.00	"	"	"	"							X			
"		23.00	"	"	"	"							X			
"		24.00	"	"	"	"							X			
"		25.00	"	"	"	"							X			
AF4		1.00	12432F X 12413M	"	"	"							X			
"		2.00	"	"	"	"							X			
"		3.00	"	"	"	"							X			
"		4.00	"	"	"	"							X			
"		5.00	"	"	"	"							X			
"		6.00	"	"	"	"							X			
"		7.00	"	"	"	"							X			
"		8.00	"	"	"	"							X			
"		9.00	"	"	"	"							X			
"		10.00	"	"	"	"							X			
"		11.00	"	"	"	"							X			
AF5		1.00	12432F X 12407M	"	"	"							X			
"		2.00	"	"	"	"							X			
"		3.00	"	"	"	"							X			
"		4.00	"	"	"	"							X			
"		5.00	"	"	"	"							X			
"		6.00	"	"	"	"							X			
"		7.00	"	"	"	"							X			
"		8.00	"	"	"	"							X			
AF6		1.00	12440F X 12411M	"	"	"							X			
"		2.00	"	"	"	"							X			
"		3.00	"	"	"	"							X			
"		4.00	"	"	"	"							X			
"		5.00	"	"	"	"							X			
"		6.00	"	"	"	"							X			
"		7.00	"	"	"	"							X			
"		8.00	"	"	"	"							X			
"		9.00	"	"	"	"							X			
"		10.00	"	"	"	"							X			
"		11.00	"	"	"	"							X			
"		12.00	"	"	"	"							X			
"		13.00	"	"	"	"							X			
"		14.00	"	"	"	"							X			

Subsurface Samples

"		15.00	"	"	"	"								X				
"		16.00	"	"	"	"								X				
"		17.00	"	"	"	"								X				
"		18.00	"	"	"	"								X				
"		19.00	"	"	"	"								X				
"		20.00	"	"	"	"								X				
"		21.00	"	"	"	"								X				
"		22.00	"	"	"	"								X				
"		23.00	"	"	"	"								X				
"		24.00	"	"	"	"								X				
"		25.00	"	"	"	"								X				
"		26.00	"	"	"	"								X				
"		27.00	"	"	"	"								X				
"		28.00	"	"	"	"								X				
"		29.00	"	"	"	"								X				
"		30.00	"	"	"	"								X				
"		31.00	"	"	"	"								X				
"		32.00	"	"	"	"								X				
"		33.00	"	"	"	"								X				
"		34.00	"	"	"	"								X				
"		35.00	"	"	"	"								X				
AF7		1.00	12440F X 12410M	"	"	"								X				
"		2.00	"	"	"	"								X				
"		3.00	"	"	"	"								X				
"		4.00	"	"	"	"								X				
"		5.00	"	"	"	"								X				
"		6.00	"	"	"	"								X				
"		7.00	"	"	"	"								X				
"		8.00	"	"	"	"								X				
"		9.00	"	"	"	"								X				
"		10.00	"	"	"	"								X				
"		11.00	"	"	"	"								X				
"		12.00	"	"	"	"								X				
"		13.00	"	"	"	"								X				
"		14.00	"	"	"	"								X				
"		15.00	"	"	"	"								X				
"		16.00	"	"	"	"								X				
"		17.00	"	"	"	"								X				
"		18.00	"	"	"	"								X				
"		19.00	"	"	"	"								X				
"		20.00	"	"	"	"								X				
"		21.00	"	"	"	"								X				
"		22.00	"	"	"	"								X				
"		23.00	"	"	"	"								X				
"		24.00	"	"	"	"								X				
"		25.00	"	"	"	"								X				
"		26.00	"	"	"	"								X				
"		27.00	"	"	"	"								X				
AF8		1.00	12440F X 12404M	"	"	"								X				
"		2.00	"	"	"	"								X				
"		3.00	"	"	"	"								X				
"		4.00	"	"	"	"								X				
"		5.00	"	"	"	"								X				
"		6.00	"	"	"	"								X				

"		7.00	"	"	"	"								X				
"		8.00	"	"	"	"								X				
"		9.00	"	"	"	"								X				
"		10.00	"	"	"	"								X				
"		11.00	"	"	"	"								X				
"		12.00	"	"	"	"								X				
"		13.00	"	"	"	"								X				
"		14.00	"	"	"	"								X				
"		15.00	"	"	"	"								X				
"		16.00	"	"	"	"								X				
"		17.00	"	"	"	"								X				
"		18.00	"	"	"	"								X				
"		19.00	"	"	"	"								X				
"		20.00	"	"	"	"								X				
AF9		1.00	12449F X 12447M	"	"	"								X				
"		2.00	"	"	"	"								X				
"		3.00	"	"	"	"								X				
"		4.00	"	"	"	"								X				
"		5.00	"	"	"	"								X				
"		6.00	"	"	"	"								X				
"		7.00	"	"	"	"								X				
"		8.00	"	"	"	"								X				
"		9.00	"	"	"	"								X				
"		10.00	"	"	"	"								X				
"		11.00	"	"	"	"								X				
"		12.00	"	"	"	"								X				
"		13.00	"	"	"	"								X				
AF10		1.00	12449F X 12448M	"	"	"								X				
"		2.00	"	"	"	"								X				
"		3.00	"	"	"	"								X				
"		4.00	"	"	"	"								X				
"		5.00	"	"	"	"								X				
"		6.00	"	"	"	"								X				
"		7.00	"	"	"	"								X				
"		8.00	"	"	"	"								X				
"		9.00	"	"	"	"								X				
AF11		1.00	12449F X 12450M	"	"	"								X				
"		2.00	"	"	"	"								X				
"		3.00	"	"	"	"								X				
"		4.00	"	"	"	"								X				
"		5.00	"	"	"	"								X				
"		6.00	"	"	"	"								X				
"		7.00	"	"	"	"								X				
"		8.00	"	"	"	"								X				
"		9.00	"	"	"	"								X				
"		10.00	"	"	"	"								X				
"		11.00	"	"	"	"								X				
"		12.00	"	"	"	"								X				
"		13.00	"	"	"	"								X				
"		14.00	"	"	"	"								X				
"		15.00	"	"	"	"								X				
"		16.00	"	"	"	"								X				
"		17.00	"	"	"	"								X				
"		18.00	"	"	"	"								X				

Sturgeon Samples

"		19.00	"	"	"	"								X				
"		20.00	"	"	"	"								X				
"		21.00	"	"	"	"								X				
"		22.00	"	"	"	"								X				
AF12		1.00	12356F X 12408M	"	"	"								X				
"		2.00	"	"	"	"								X				
"		3.00	"	"	"	"								X				
"		4.00	"	"	"	"								X				
"		5.00	"	"	"	"								X				
"		6.00	"	"	"	"								X				
"		7.00	"	"	"	"								X				
"		8.00	"	"	"	"								X				
"		9.00	"	"	"	"								X				
"		10.00	"	"	"	"								X				
"		11.00	"	"	"	"								X				
"		12.00	"	"	"	"								X				
"		13.00	"	"	"	"								X				
"		14.00	"	"	"	"								X				
"		15.00	"	"	"	"								X				
"		16.00	"	"	"	"								X				
"		17.00	"	"	"	"								X				
"		18.00	"	"	"	"								X				
"		19.00	"	"	"	"								X				
"		20.00	"	"	"	"								X				
"		21.00	"	"	"	"								X				
"		22.00	"	"	"	"								X				
"		23.00	"	"	"	"								X				
"		24.00	"	"	"	"								X				
"		25.00	"	"	"	"								X				
"		26.00	"	"	"	"								X				
"		27.00	"	"	"	"								X				
"		28.00	"	"	"	"								X				
"		29.00	"	"	"	"								X				
"		30.00	"	"	"	"								X				
"		31.00	"	"	"	"								X				
"		32.00	"	"	"	"								X				
AF13		1.00	12356F X 12357M	"	"	"								X				
"		2.00	"	"	"	"								X				
"		3.00	"	"	"	"								X				
"		4.00	"	"	"	"								X				
"		5.00	"	"	"	"								X				
"		6.00	"	"	"	"								X				
"		7.00	"	"	"	"								X				
AF14		1.00	12356F X 12428M	"	"	"								X				
"		2.00	"	"	"	"								X				
"		3.00	"	"	"	"								X				
"		4.00	"	"	"	"								X				
"		5.00	"	"	"	"								X				
"		6.00	"	"	"	"								X				
"		7.00	"	"	"	"								X				
"		8.00	"	"	"	"								X				
"		9.00	"	"	"	"								X				
"		10.00	"	"	"	"								X				
"		11.00	"	"	"	"								X				

"		12.00	"	"	"	"							X				
"		13.00	"	"	"	"							X				
"		14.00	"	"	"	"							X				
"		15.00	"	"	"	"							X				
"		16.00	"	"	"	"							X				
"		17.00	"	"	"	"							X				
"		18.00	"	"	"	"							X				
"		19.00	"	"	"	"							X				
"		20.00	"	"	"	"							X				
"		21.00	"	"	"	"							X				
"		22.00	"	"	"	"							X				
"		23.00	"	"	"	"							X				
"		24.00	"	"	"	"							X				
"		25.00	"	"	"	"							X				