



**Name' (Lake Sturgeon) Project
on the White River in Wisconsin
during 2001**

by

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EPA-CEM Grant #X975411-01 FY 2001**

Acknowledgments

We would like to thank the Environmental Protection Agency Coastal Environmental Management program, the members of the Aquatic Committee of the Lake Superior Binational Program, and the Lake Superior Technical Committee of the Great Lakes Fisheries Commission, for their support of this project.

We would like to thank two individuals and cooperators, Rick Huber with the Bad River Natural Resources Department and Henry Quinlan with the U.S. Fish and Wildlife Service. Also, we would like to thank the GLIFWC seasonal employees who worked on this project, Ben Basley, Abby LaBarre, and Brandie Cheatham. Finally, we would like to thank Mike Plucinski, Great Lakes Technician for his assistance in training the seasonal employees, and Dennis Pratt of the Wisconsin Department of Natural Resources for the historical reference on the White River falls location.

Abstract

This project addressed an issue identified as a high priority by both the Aquatic Community Committee of the Lake Superior Binational Program and the Lake Superior Technical Committee of the Great Lakes Fishery Commission; namely, to determine the current population status and abundance of lake sturgeon in Lake Superior tributaries where spawning occurred historically and to quantify sturgeon spawning habitat in those streams (LSTC 2001, LaMP 2000). This project found evidence of adult lake sturgeon successfully using the upper reaches of the White River, a tributary stream to the Bad River, by the capture of drifting larval lake sturgeon near State Highway 13. Habitat data for depth and substrate were collected in the areas where interviews with anglers indicated lake sturgeon were spawning.

Tables

- Table 1. Biological and tag data from USFWS for lake sturgeon captured at the confluence of the White and Bad Rivers in Wisconsin during May 2001.
- Table 2. Drift net capture data from the White River near Wisconsin State Highway 13 from May 30 to June 13, 2001.

Figures

- Figure 1. Study area on the White River, Ashland County, Wisconsin.
- Figure 2. Lifting large mesh gill net at the confluence of the White and Bad Rivers in Wisconsin.
- Figure 3. Scanning for PIT tag identification number after insertion into adult lake sturgeon ascending the White River during spawning 2001.
- Figure 4. Radio tag in adult lake sturgeon ascending the White River during spawning 2001.
- Figure 5. Area directly downstream from White River dam powerhouse where local anglers fished for and reported seeing lake sturgeon.
- Figure 6. Lifting larval drift net near State Highway 13 on the White River.
- Figure 7. Larval lake sturgeon captured in drift net in the White River near State Highway 13.
- Figure 8. Gathering physical habitat information on the White River, Wisconsin.
- Figure 9. SI values for substrate along transects taken within the White River.
- Figure 10. SI values for depth along transects taken within the White River.

Appendices

- Appendix A. Field work activity log on White River, Wisconsin, during 2001 CEM Lake Sturgeon study.
- Appendix B. Habitat data taken on the White River, Wisconsin, during 20001.

Introduction

This project addressed an issue identified as a high priority by both the Aquatic Community Committee of the Lake Superior Binational Program and the Lake Superior Technical Committee of the Great Lakes Fishery Commission; namely, to determine the current population status and abundance of lake sturgeon in Lake Superior tributaries where spawning occurred historically and to quantify sturgeon spawning habitat in those streams (LSTC 2001, LaMP 2000).

Lake sturgeon in the Great Lakes became scarce due to habitat destruction and over fishing during the early 1900s. Rehabilitation efforts are occurring but restoration will be slow, due in part to the reproductive characteristics of the species. Lake sturgeon do not spawn until they are around 4 feet in length and 12 to 20 years old. Previously, there were only two known spawning populations of lake sturgeon in the U.S. waters of Lake Superior - the Bad River in Wisconsin and the Sturgeon River in Michigan (LSTC 2001).

Lake sturgeon are classified as a "Species of Special Concern" by the U.S. Fish and Wildlife Service. They are also classified as "Threatened" by the State of Michigan. The Fond du Lac Band of Lake Superior Chippewa, Red Cliff Band of Lake Superior Chippewa, Bad River Band of Lake Superior Chippewa, Keweenaw Bay Indian Community, and Bay Mills Indian Community have identified lake sturgeon as a culturally sensitive species under the American Indian Natural Heritage Restoration Program. The harvest and sharing of *name* (lake sturgeon) is important to the culture of the Anishinaabe people. These fish continue to be harvested for ceremonial and subsistence purposes by tribal members.

Work on the White River, Wisconsin (Ashland County) was done during April to June 2001 to gather and compile biological and movement information on adult lake sturgeon ascending the river during the spring spawning run and on larval lake sturgeon drifting downstream in the river after spawning occurred (Figure 1). Also, physical habitat information (depth and substrate) was taken in the area where interviews with local anglers indicated that lake sturgeon were spawning.

It has long been suspected that lake sturgeon spawn in the White River, but evidence of spawning has never been documented (Schram, personal communication). The area below the White River dam was likely the upper limit for spawning by lake sturgeon in the river because according to an historical account in the June 3, 1882 edition of the Ashland Press, a falls of 16 feet existed on the river at the present dam location. However, changes in flow due to the operation of the hydroelectric facility may currently affect lake sturgeon spawning success (Auer, 1996).

Methods

At the beginning of the annual spawning run, lake sturgeon were captured in large mesh gill nets in the White River near the confluence with the Bad River as part of an ongoing project between the U.S. Fish and Wildlife Service (USFWS) and the Bad River Natural Resources Department (BRNRD) on the Bad River Indian Reservation (Figure 2). All lake sturgeon captured were checked for tags, sampled for biological information, tagged with a Passive Internal Transponder (PIT) tag and a radio tag and released (Figures 3 and 4). In an attempt to observe adult lake sturgeon during the spawning season GLIFWC crews walked sections of the river from three access points: the White River dam, off the south end of Beaser Avenue in Ashland, and the State Highway 13 bridge. Also, fishermen at the White River dam site were interviewed. To detect radio tagged fish using telemetry equipment the river between the White River dam and State Highway 13 was canoed periodically (Appendix A). At the conclusion of the spawning run, drift nets were set for larval lake sturgeon near State Highway 13 (Figure 1).

Physical habitat characteristics (depth and substrate) were recorded for areas reportedly used by spawning lake sturgeon. Depth was recorded using a standard habitat pole marked in 10 cm increments, while substrate was recorded following the modified Wentworth scale (Nielsen and Johnson 1983). Measurements were taken every meter along transects located every 20 meters throughout the study area where interviews with local anglers indicated that lake sturgeon were spawning (Figure 1).

Suitability index (SI) values for the components of substrate and depth were calculated using a model developed for lake sturgeon (Threader, et al. 1998), and an average suitability index (SI) was calculated for each transect. Three transects were given zero values because data for the transects were incomplete. Transects 1-17 were located in the by-pass channel between the White River dam and the powerhouse, while transects 18-41 were in an area below the powerhouse where anglers reported that lake sturgeon were caught.

Results

Twenty-one lake sturgeon were captured in large mesh gill nets in the White River near the confluence with the Bad River during May 4-18, 2001 (Quinlan, personal communication) (Table 1). During this sampling period two lake sturgeon were recaptured the day after they were originally tagged. From April 16 to May 18 attempts were made between State Highway 13 and the White River dam to recapture lake sturgeon at upstream locations by using large mesh gill nets, to locate them with radio telemetry equipment, and to visually observe them (Appendix A). No adult lake sturgeon were recaptured, located with telemetry equipment, or observed. However, interviews with local anglers indicated that adult lake sturgeon were spawning on a gravel bar directly downstream from the White River dam powerhouse (Figure 5).

Four larval lake sturgeon were captured in five nights of sampling during May 30 to June 13, 2001 with larval drift nets in the White River near the State Highway 13 crossing (Figures 1 and 6, Appendix A). Each lake sturgeon was sampled for length (Table 2) and all but one were released alive into the river near the point of capture (Figure 7). The capture of larval lake sturgeon near State Highway 13 indicated that lake sturgeon spawning occurred upstream of this area on the White River.

Physical habitat characteristics (depth and substrate) were recorded for areas reportedly used by spawning lake sturgeon (Figure 8, Appendix B). These areas appeared to have substrate and water depth suitable for lake sturgeon spawning. Based on the criteria developed for the substrate and depth components of spawning lake sturgeon habitat by Threader et al. (1998), the average suitability index (SI) values for each of the 41 transects ranged from 0.1 to 0.86 for substrate and from 0.23 to 1.0 for depth. A SI value of zero indicates poor suitability while 1.0 indicates excellent suitability for spawning lake sturgeon.

Transects 1-17, located in the by-pass channel (the original streambed) between the White River dam and the powerhouse, tended to have a lower SI values than those calculated for transects 18-41, an area below the powerhouse where anglers reported that lake sturgeon were caught (Appendix A). The lower SI's in the by-pass channel are likely due to two factors. First, the bypass channel is maintained at a minimum flow of about 16 cubic feet per second, with the remainder of the stream flow being diverted through the powerhouse of the hydroelectric facility. Due to this relatively low flow, the depth within the channel was shallow (average 23.8 cm) which resulted in low SI values for depth. Secondly, the channel consists largely of bedrock, which has a SI value of 0.3. Threader et al. (1998) noted their model was developed in streams where bedrock was uncommon, and that lake sturgeon populations from Wisconsin exhibit some preference for bedrock as spawning substrate. Thus, using this model for Wisconsin streams may be a model weakness underestimate substrate suitability.

Conclusion

Prior to this study only two spawning populations of lake sturgeon were confirmed in rivers along the south shore of Lake Superior, the Bad River in Wisconsin and the Sturgeon River in Michigan. The capture of larval lake sturgeon near State Highway 13 confirms that lake sturgeon spawn upstream of this area on the White River. In addition, physical habitat (substrate and depth) was suitable for lake sturgeon to spawn successfully during 2001 in the area of the White River from the dam to downstream of the powerhouse (Appendix B).

References

Auer, N.A. 1996. Response of spawning lake sturgeons to change in hydroelectric facility operation. *Transaction of the American Fisheries Society* 125:66-77.

Nielsen, L.A. and D.L. Johnson (ed.) 1983. *Fisheries Techniques*. Southern Printing Company, Inc., Blacksburg, Virginia.

Lake Superior Lakewide Management Plan (LaMP). 2000. Lake Superior Binational Program. April 2000.

Lake Superior Technical Committee (LSTC). 2001. A lake sturgeon rehabilitation plan for Lake Superior- July 2, 2001 Draft. Great Lakes Fisheries Commission, 2100 Commonwealth Blvd., Suite 209, Ann Arbor, Michigan.

Schram, Steve. Personal Communication. Wisconsin Department of Natural Resources, 141 S. 3rd Street, Bayfield, Wisconsin, 54814.

Threader R.W., R.J. Pope and P.R.H. Schaap. 1998. Development of a habitat suitability index model for lake sturgeon. Report No. H-07015.01-0012. Hydroelectric Ontario Canada. January 1998.

Quinlan, Henry. Personal Communication. U.S. Fish and Wildlife Service, 1400 E. Lake Shore Drive, Ashland, Wisconsin, 54806.

Table 1. Biological and tag data from USFWS for 19 lake sturgeon captured at the confluence of the White and Bad Rivers in Wisconsin during May 2001. Note that fish were marked with 2-3 different types of tags and that fish with ID numbers 2663 and 2701 were captured twice during May 2001 and fish 2160 was a recapture of a sturgeon initially tagged by the Wisconsin DNR in Chequamegon Bay on June 4, 1991.

DAY	TOTAL		FORK		SEX	AGE	Tag 1			Tag 2			Tag 3			
	LENGTH (cm)	LENGTH (cm)	GIRTH (cm)	WEIGHT (lbs)			ID	AGENCY	COLOR	TYPE	ID	AGENCY	TYPE	ID	AGENCY	TYPE
4	1050	950	360	15	M		2728	USFWS	GREEN	Floy tag	42286D262C	USFWS	PIT	152.343	USFWS	Radio
4	1320	1210	500	36	F		2731	USFWS	GREEN	Floy tag	42254D3F12	USFWS	PIT	152.103	USFWS	Radio
5	1290	1170	470	28	M		2653	USFWS	GREEN	Floy tag	42256C5C7C	USFWS	PIT	152.163	USFWS	Radio
6	1210	1090	420	16	M		2656	USFWS	GREEN	Floy tag	422874586F	USFWS	PIT			
7	1070	980	410	15	U		2661	USFWS	GREEN	Floy tag	422566337D	USFWS	PIT	153.334	USFWS	Radio
8	1110	1010	350	16	M	19	2663	USFWS	GREEN	Floy tag	4229014B60	USFWS	PIT	153.303	USFWS	Radio
9	1450	1330	570	45	U		2668	USFWS	GREEN	Floy tag	42253C344D	USFWS	PIT	153.123	USFWS	Radio
9	1340	1230	470	30	M		2669	USFWS	GREEN	Floy tag	4228741264	USFWS	PIT	153.472	USFWS	Radio
9	1230	1120	420	19	M		2670	USFWS	GREEN	Floy tag	42260A4173	USFWS	PIT	153.790	USFWS	Radio
9	1250	1140	460	22	M		2671	USFWS	GREEN	Floy tag	4225637F10	USFWS	PIT	153.273	USFWS	Radio
9	1110	1010	350	16	M		2663	USFWS	GREEN	Floy tag	4229014B60	USFWS	PIT	153.303	USFWS	Radio
10	1040	930	370	11	U		2673	USFWS	GREEN	Floy tag	4229047F1F	USFWS	PIT			
10	1310	1210	290	29	M		2674	USFWS	GREEN	Floy tag	4225502127	USFWS	PIT	153.003	USFWS	Radio
11	1180	1060	400	15	M		2700	USFWS	GREEN	Floy tag	4226042B47	USFWS	PIT	152.374	USFWS	Radio
11	1130	1030	370	15	M		2701	USFWS	GREEN	Floy tag	4229080411	USFWS	PIT			
12	1470	1350	460	36	F		2705	USFWS	GREEN	Floy tag	422555201C	USFWS	PIT			
12	1010	920	330	12	M		2706	USFWS	GREEN	Floy tag	42256E495C	USFWS	PIT			
13	1130	1030	370	15	M		2701	USFWS	GREEN	Floy tag	4229080411	USFWS	PIT			
14	1230	1130	450	33	M		2708	USFWS	GREEN	Floy tag	42286C2222	USFWS	PIT			
15	1510	1370	470	35	F		2709	USFWS	GREEN	Floy tag	42254D7519	USFWS	PIT			
18	1150	1040	400	12	M		2160	USFWS	GREEN	Floy tag	421C40302D	USFWS	PIT	426	WIDNR	Monal

Table 2. Drift net capture data from the White River near Wisconsin State Highway 13 from May 30 to June 13, 2001.

Month	Day	Sample Time		Species*	Length	Number	Clarity	Water		Comments
		Start	Finish					Flow	Temp.	
5	30	9:11	9:27	UND LARVAL		1	TURBID	NORMAL	58	WATER LEVEL DROPPED AFTER SECOND TOW
5	30	9:31	10:01	LAS	19	1				
5	30			CMS		1				
5	30			UND LARVAL		16				
5	30	9:43	10:15	UND LARVAL		13				
5	30	10:13	10:49	UND LARVAL		9				
5	30	10:29	10:58	UND LARVAL		2				
5	30	10:59	11:30	UND LARVAL		10				
5	30	11:06	11:38	UND LARVAL		9				
6	5	8:54	9:15	UND LARVAL		4	CLOUDY	LOW	57	
6	5	8:55	9:23	NO FISH						
6	5	9:23	9:53	LAS	20	1				
6	5			UND LARVAL		8				
6	5	9:28	10:04	UND LARVAL		6				
6	5	10:04	10:35	UND LARVAL		9				
6	5	10:11	10:45	UND LARVAL		7				
6	5	10:44	11:19	UND LARVAL		7				
6	5	10:57	11:28	NO FISH						
6	5	11:27	11:58	LAS	21	1				
6	5			UND LARVAL		13				
6	5	11:36	12:11	NO FISH						
6	6	8:35	9:08	UND LARVAL		10	CLOUDY	NORMAL	57	
6	6	8:35	9:16	UND LARVAL		7				
6	6	9:15	9:46	UND LARVAL		23				
6	6	9:29	9:55	UND LARVAL		16				
6	6	9:54	10:27	TRP		1				

Table 2. Continued.

Month	Day	Sample Time		Species	Length	Number	Clarity	Water		Comments
		Start	Finish					Flow	Temp.	
6	6			UND LARVAL		44				
6	6	10:08	10:38	MMN		1				
6	6			UND LARVAL		44				
6	6	10:37	11:08	TRP		1				
6	6			UND LARVAL		42				
6	6	10:55	11:20	CMS		1				
6	6			UND LARVAL		41				
6	6	11:20	11:52	LAS	23	1				
6	6			UND LARVAL		104				
6	6	11:39	12:10	UND LARVAL		104				
6	13	8:50	9:20	UND LARVAL		227	CLOUDY	LOW	68	WATER LEVEL ROSE AT 12:30
6	13	8:50	9:34	UND LARVAL		376~				
6	13	9:38	9:54	UND LARVAL		350~				
6	13	10:08	10:23	UND LARVAL		370~				
6	13	10:15	10:35	UND LARVAL		220~				
6	13	10:34	10:51	UND LARVAL		200~				
6	13	10:49	11:03	UND LARVAL		100~				
6	13	11:01	11:35	UND LARVAL		170~				
6	13	11:11	11:44	CHUB		1				
6	13			UND LARVAL		270~				
6	13	11:51	12:38	UND LARVAL		850~				
6	13	12:46	1:15	UND LARVAL		1550~				

*Species key:

Lake sturgeon	LAS
Unidentified larval fish	UND LARVAL
Creek chub	CHUB
Common shiner	CMS
Trout perch	TRP
Mudminnow	MMN

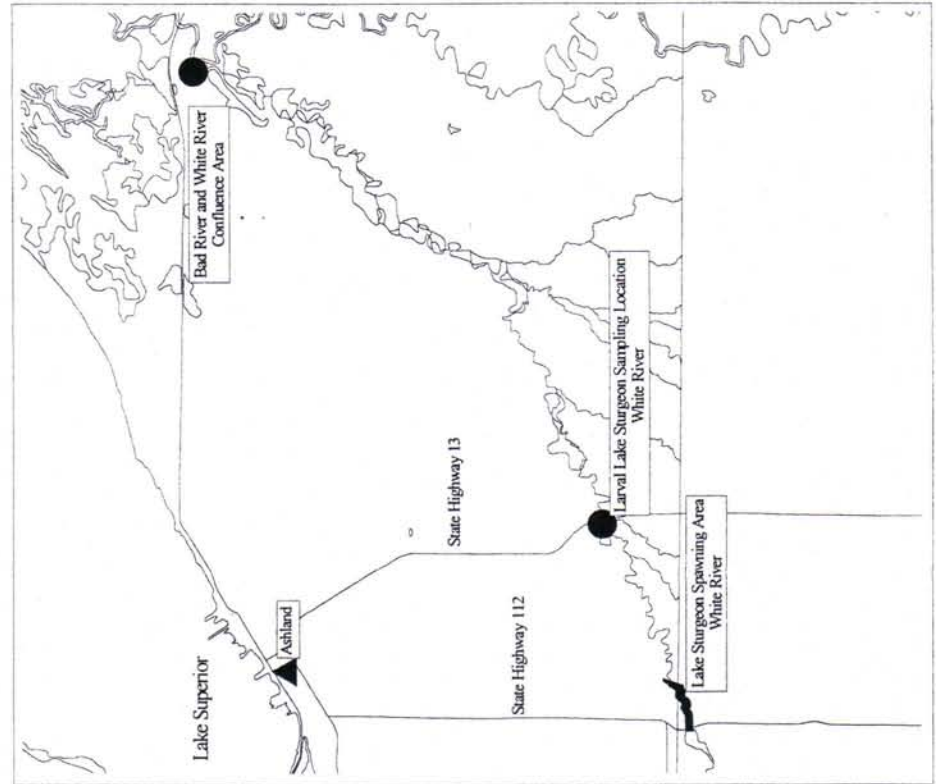
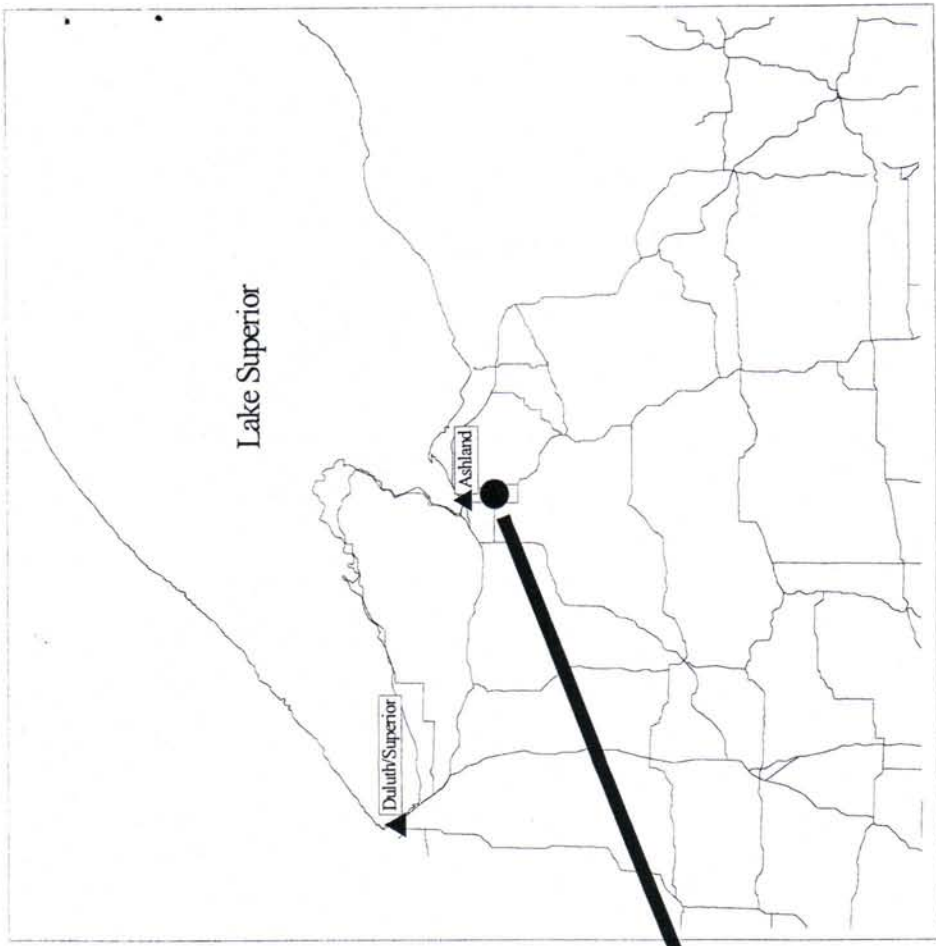


Figure 1. Study area on the White River, Ashland County, Wisconsin.



Figure 2. Lifting large mesh gill net at the confluence of the White and Bad Rivers in Wisconsin (photo by Rick Huber).



Figure 3. Scanning for PIT tag identification number after insertion into adult lake sturgeon ascending the White River during spawning 2001 (photo by Rick Huber).

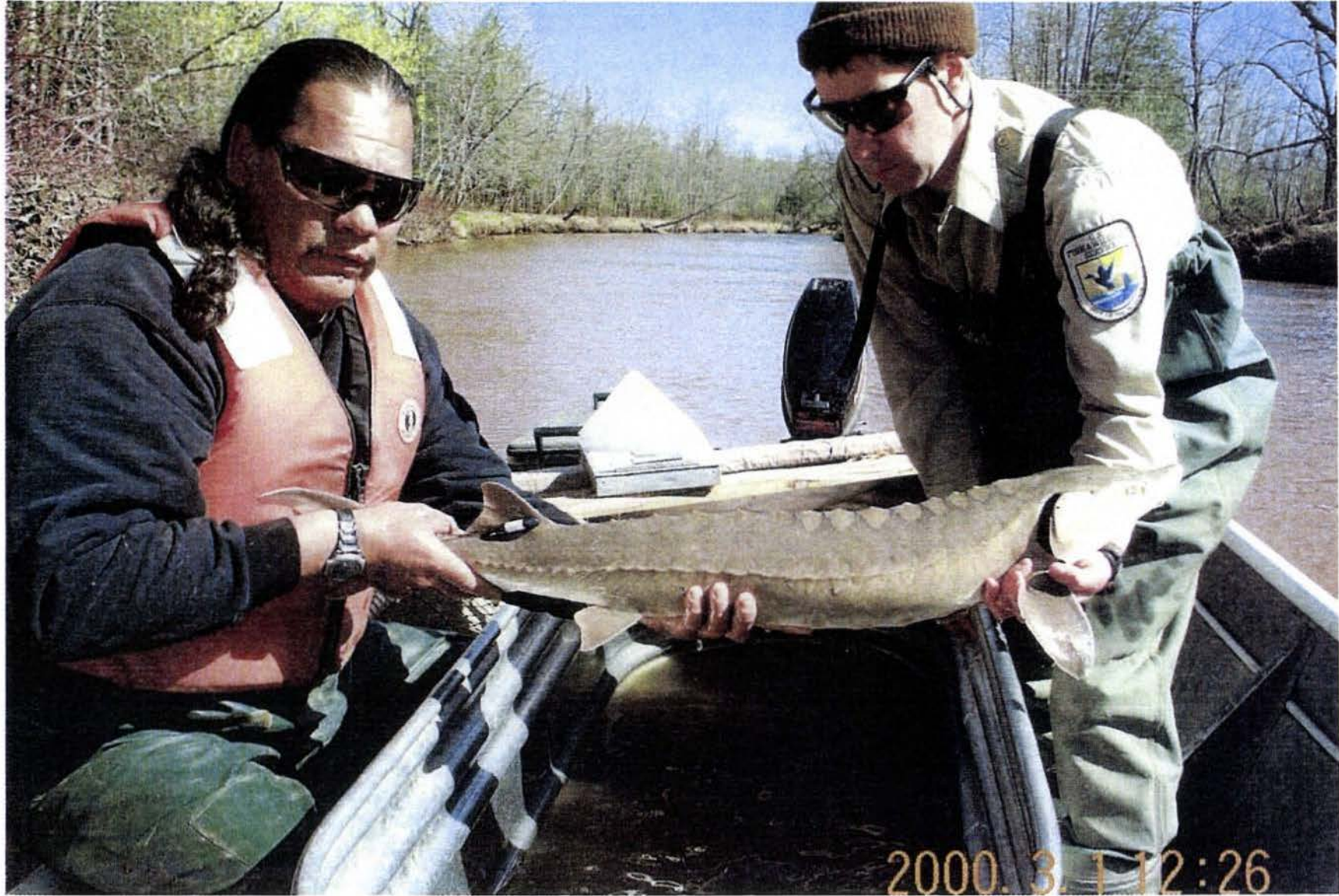


Figure 4. Radio tag in adult lake sturgeon ascending the White River during spawning 2001 (photo by Rick Huber).



Figure 5. Area directly downstream from White River dam powerhouse where local anglers fished for and reported seeing lake sturgeon.



Figure 6. Lifting larval drift net near State Highway 13 on the White River.



Figure 7. Larval lake sturgeon captured in drift net in the White River near State Highway 13.



Figure 8. Gathering physical habitat information on the White River, Wisconsin.

Substrate

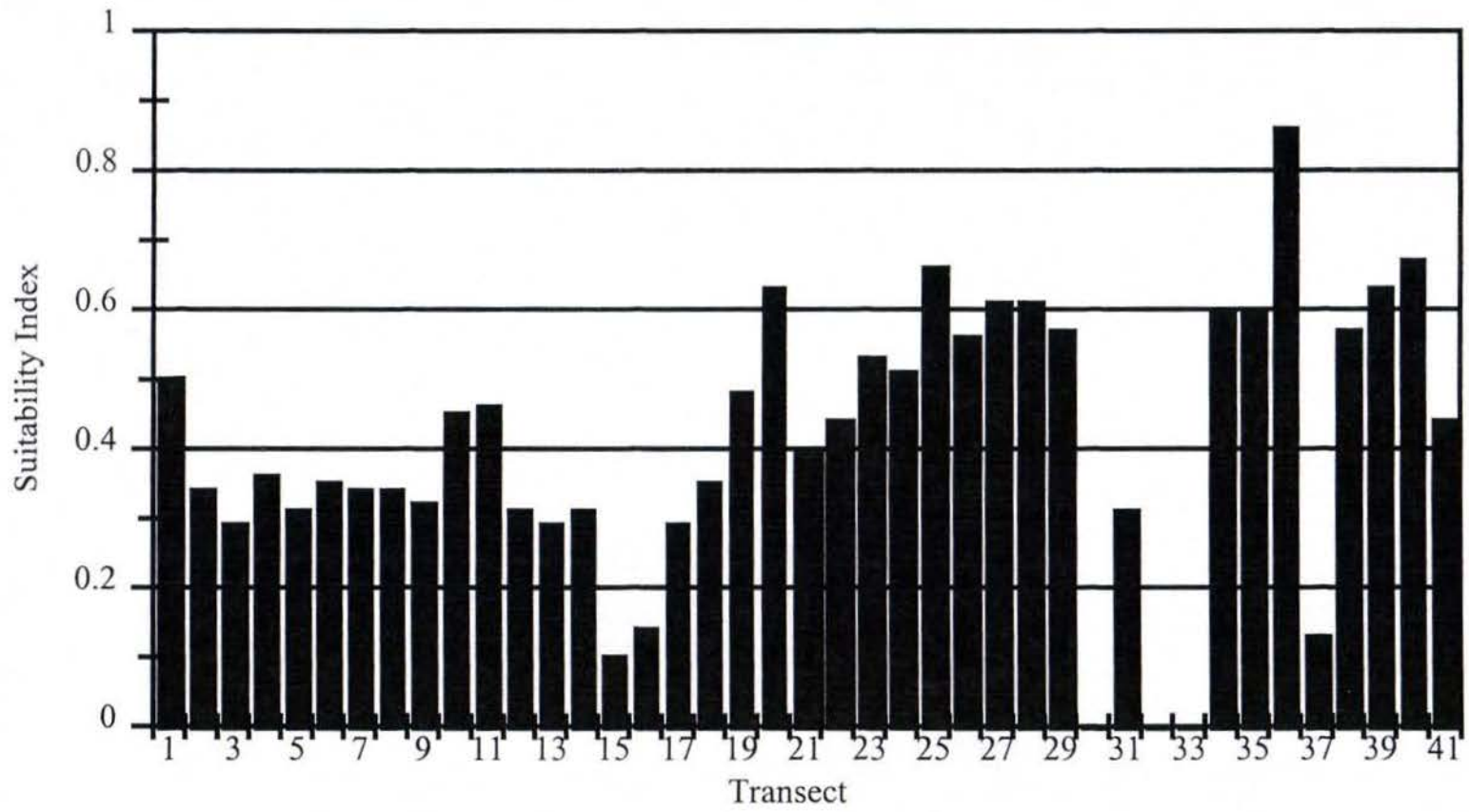


Figure 9. SI values for substrate along transects taken within the White River.

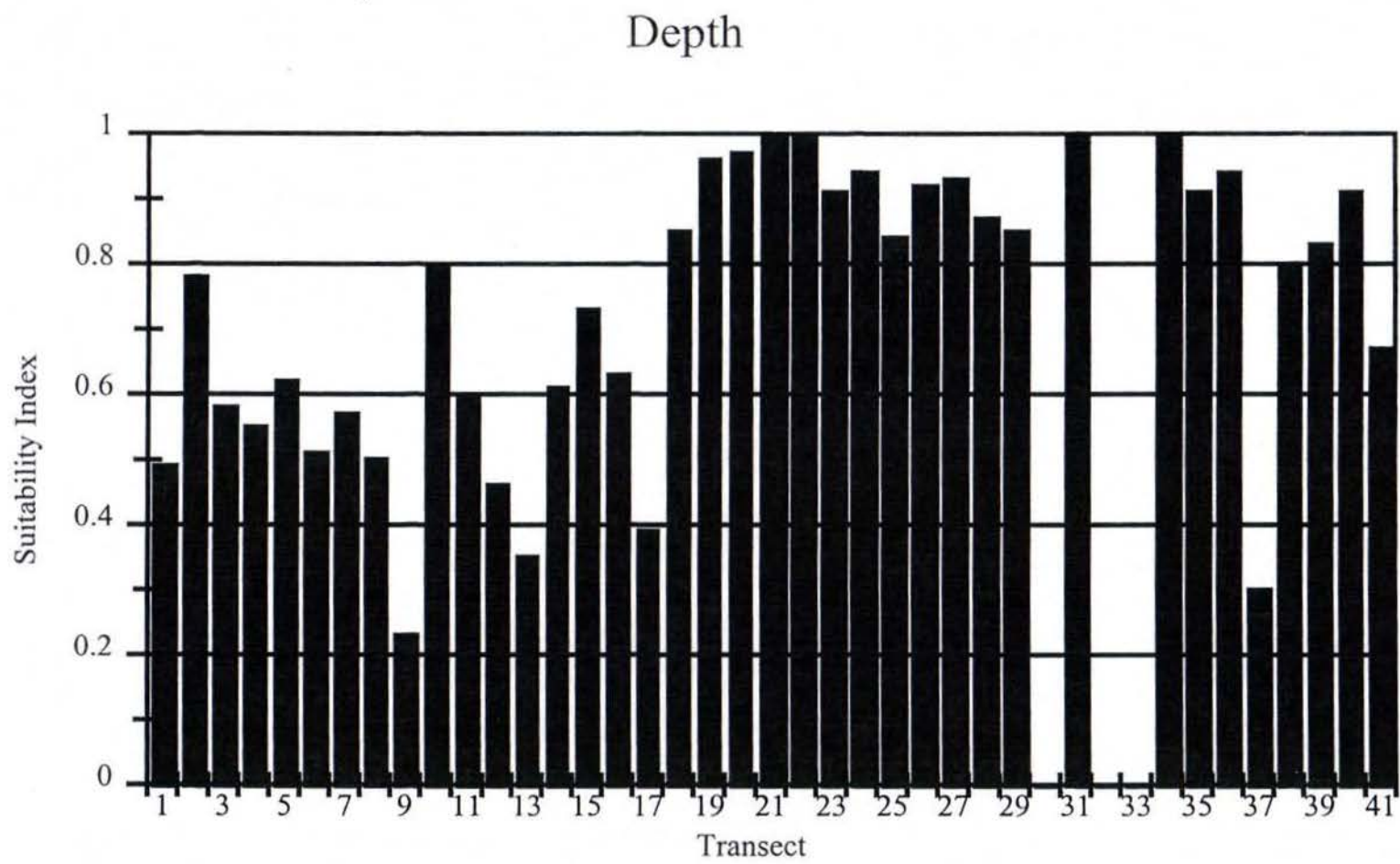


Figure 10. SI values for depth along transects taken within the White River.

Appendix A. Field work activity log on White River, Wisconsin, during 2001 CEM Lake Sturgeon study.

Month	Day	White River dam		Beaser access	Hwy 13 bridge	Bad/White confluence	Comments
		By-pass channel	Spawning area				
4	16	visual observation	visual observation				High Flows
4	17	visual observation	visual observation				High Flows
4	18	visual observation	visual observation				High Flows
4	19	visual observation	visual observation				High Flows
4	20	visual observation	visual observation				High Flows
4	21					Lifted nets	High Flows
4	22					Lifted nets	High Flows
4	23	visual observation	visual observation	visual observation	visual observation	Lifted nets	High Flows
4	24	visual observation	visual observation			Lifted nets	High Flows
4	25	visual observation	visual observation				High Flows
4	26	visual observation	visual observation	visual observation	visual observation	Lifted nets	High Flows
4	27	visual observation	visual observation			Lifted nets	High Flows
4	28					Lifted nets	
4	29					Lifted nets	
4	30	visual observation	visual observation			Lifted nets	High Flows
5	1	visual observation	visual observation			Lifted nets	Flows normal, crew sent to walk river sites
5	2	visual observation	visual observation			Lifted nets	At sites
5	3	visual observation	visual observation	visual observation		Lifted nets	
5	4	visual observation	visual observation	visual observation		Lifted nets	
5	5						
5	6						
5	7	visual observation	visual observation	visual observation			Interviewed anglers
5	8	visual observation	visual observation	visual observation			Interviewed anglers*
5	9	visual observation	visual observation	visual observation			Interviewed anglers**
5	10	visual observation	visual observation	visual observation			
5	11	visual observation	visual observation	visual observation			
5	12						
5	13						
5	14	visual observation	visual observation	visual observation			
5	15	visual/telemetry	visual/telemetry	visual/telemetry	visual/telemetry		Canoed from dam to hwy. 13
5	16	visual observation	visual observation	visual observation			
5	17	visual observation	visual observation	visual observation			
5	18	visual/telemetry	visual/telemetry	visual/telemetry	visual/telemetry		Canoed from dam to Hwy. 13
5	19						
5	20						
5	21				gill net		Set gill net at Hwy. 13

Appendix A. Continued.

Month	Day	By-pass channel	Spawning area	Beaser access	Hwy 13 bridge	Bad/White confluence	Comments
5	22	visual observation	visual observation	visual observation			
5	23	visual observation	visual observation	visual observation			
5	24						
5	25						
5	26				gill net		Set gill net at Hwy. 13
5	27						
5	28						
5	29						
5	30				larval drift net		Set larval drift net at Hwy. 13
5	31						
6	1						
6	2						
6	3						
6	4						
6	5				larval drift net		Set larval drift net at Hwy. 13
6	6				larval drift net		Set larval drift net at Hwy. 13
6	7	habitat					Collected physical habitat characteristics
6	8	habitat	habitat				Collected physical habitat characteristics
6	9						
6	10						
6	11		habitat				Collected physical habitat characteristics
6	12				habitat		Collected physical habitat characteristics
6	13				larval drift net		Set larval drift net at Hwy. 13

* Fisherman showed us a deep hole several bends past the island where a 55" sturgeon was snagged on Monday evening, 5-7-01.

Report of fisherman seeing a sturgeon snagged near the dam on Monday 5-7-01.

** Told by a fishermen that a 40" sturgeon had been snagged in front of the powerhouse on Tuesday, 5-8-01.

Appendix B. Habitat data taken on the White River, Wisconsin, during 20001.

MONTH	DAY	YEAR	TRANSECT	X	Y	LAT	LONG	WATER		VEGETATION	SILT COVERING		NOTES
								DEPTH	SUBSTRATE		SUBSTRATE		
6	7	2001	1	20	100	4629.864	9054.483	0	4				
6	7	2001	1	20	101			0	7	1			
6	7	2001	1	20	102			0	5	1			
6	7	2001	1	20	103			0	4				
6	7	2001	1	20	104			0	7				
6	7	2001	1	20	105			0	4	3,1			
6	7	2001	1	20	106			0	7				
6	7	2001	1	20	107			0	4				
6	7	2001	1	20	108			0		3,1			
6	7	2001	1	20	109			0	8				
6	7	2001	1	20	110			0	8				
6	7	2001	1	20	111			0	6				
6	7	2001	1	20	112			0	7				
6	7	2001	1	20	113			0	4				
6	7	2001	1	20	114			0	7				
6	7	2001	1	20	115			0	6				
6	7	2001	1	20	116			16	4				
6	7	2001	1	20	117			23	8	2	1		
6	7	2001	1	20	118			35	8		1		
6	7	2001	1	20	119			8	8	2	1		
6	7	2001	1	20	120			3	8	2	1		
6	7	2001	1	20	121			10	8		1		
6	7	2001	1	20	122			21	8				

Appendix B. Continued.

6	7	2001	1	20	123			0	8	1		
6	7	2001	1	20	124			12	8			1
6	7	2001	1	20	125			21	5			1
6	7	2001	1	20	126			20	8			1
6	7	2001	1	20	127			25	8			1
6	7	2001	1	20	128			0	8			
6	7	2001	1	20	129			0	8			
6	7	2001	2	40	100	4629.865	9054.467	0	3			
6	7	2001	2	40	101			18	8	2		1
6	7	2001	2	40	102			21	4	2		1
6	7	2001	2	40	103			31	6	2		1
6	7	2001	2	40	105			24	8	2		1
6	7	2001	2	40	106			26	8	2		1
6	7	2001	2	40	107			19	8	2		1
6	7	2001	2	40	108			50	8	2		1
6	7	2001	2	40	109			0	8			
6	7	2001	2	40	110			0	8			
6	7	2001	3	60	111	4629.867	9054.453	0	4	1		
6	7	2001	3	60	112			0	3	1		
6	7	2001	3	60	113			0	3	1		
6	7	2001	3	60	114			0	4			
6	7	2001	3	60	115			10				
6	7	2001	3	60	116			13	5	2		1
6	7	2001	3	60	117			1	8	2		1
6	7	2001	3	60	118			26	8	2		1
6	7	2001	3	60	119			9	8	2		1
6	7	2001	3	60	120			17	8	2		1

Appendix B. Continued.

6	7	2001	3	60	121			28	8	2	1
6	7	2001	3	60	122			26	8	2	1
6	7	2001	3	60	123			46	8	2	1
6	7	2001	3	60	124			32	8	2	1
6	7	2001	3	60	125			14	8	2	1
6	7	2001	3	60	126			0	8	1	
6	7	2001	3	60	127			0	8		
6	7	2001	4	80	128	4629.874	9054.443	0	4	3	
6	7	2001	4	80	129			0	3	1	
6	7	2001	4	80	100			0	8		1
6	7	2001	4	80	101			17	8	2	1
6	7	2001	4	80	102			38	6	2	1
6	7	2001	4	80	103			38	8		1
6	7	2001	4	80	104			49	6		1
6	7	2001	4	80	105			39	8	2	1
6	7	2001	4	80	106			16	8	2	1
6	7	2001	4	80	107			9	8	2	1
6	7	2001	4	80	108			4	8	2	1
6	7	2001	4	80	109			13	8	2	1
6	7	2001	4	80	110			2	8	2	1
6	7	2001	4	80	111			20	8		1
6	7	2001	4	80	112			7	8		1
6	7	2001	4	80	113			0	8		
6	7	2001	4	80	114			29	8	2	1
6	7	2001	4	80	115			12	8	2	1
6	7	2001	4	80	116			0	8		
6	7	2001	4	80	117			0	8	1	

Appendix B. Continued.

6	7	2001	4	80	118			0	8	1	
6	7	2001	5	100	119	4629.875	9054.426	0	8	1	
6	7	2001	5	100	120			0	8		
6	7	2001	5	100	121			0	8		
6	7	2001	5	100	122			0	8	1	
6	7	2001	5	100	123			0	8	1	
6	7	2001	5	100	124						
6	7	2001	5	100	125			25	6		1
6	7	2001	5	100	126			26	8	2	1
6	7	2001	5	100	127			36	8	2	1
6	7	2001	5	100	128			37	8	2	1
6	7	2001	5	100	129			65	8	2	1
6	7	2001	5	100	100			36	8	2	1
6	7	2001	5	100	101			2	8	2	1
6	7	2001	5	100	102			11	8	2	1
6	7	2001	5	100	103			12	8	2	1
6	7	2001	5	100	104			36	8	2	1
6	7	2001	5	100	105			10	8		1
6	7	2001	5	100	106			0	8	1	
6	7	2001	5	100	107			0	8		
6	7	2001	5	100	108			0	8		
6	7	2001	5	100	109			3	8		
6	7	2001	5	100	110			0	8	1	
6	7	2001	5	100	111			0	8		
6	7	2001	5	100	112			0	8	1	
6	7	2001	6	120	113	4629.876	9054.41	0	7	1	
6	7	2001	6	120	114			0	4		

Appendix B. Continued.

6	7	2001	6	120	115			0	7		
6	7	2001	6	120	116			0			
6	7	2001	6	120	117			19	8	2	1
6	7	2001	6	120	118			33	8	2	1
6	7	2001	6	120	119			19	8	2	1
6	7	2001	6	120	120			10	8	2	1
6	7	2001	6	120	121			4	8	2	1
6	7	2001	6	120	122			18	8	2	1
6	7	2001	6	120	123			9	8	2	1
6	7	2001	6	120	124			13	8	2	1
6	7	2001	6	120	125			19	8	2	1
6	7	2001	6	120	126			20	8	2	1
6	7	2001	6	120	127			18	8	2	1
6	7	2001	6	120	128			20	8	2	1
6	7	2001	6	120	129			18	8	2	1
6	7	2001	6	120	100			22	8	2	1
6	7	2001	6	120	101			10	8	2	1
6	7	2001	6	120	102			14	8	2	1
6	7	2001	6	120	103			0	8	1	
6	7	2001	6	120	104			0	8		
6	7	2001	7	140	105	4629.876	9054.395	0	4	1	
6	7	2001	7	140	106			0	4	1	
6	7	2001	7	140	107			0	3		
6	7	2001	7	140	108			24	4	2	1
6	7	2001	7	140	109			35	8	2	1
6	7	2001	7	140	110			51	8	2	1
6	7	2001	7	140	111			37	8	2	1

Appendix B. Continued.

6	7	2001	7	140	112			51	8	2	1
6	7	2001	7	140	113			37	8	2	1
6	7	2001	7	140	114			29	8	2	1
6	7	2001	7	140	115			5	8	2	1
6	7	2001	7	140	116			2	8	2	1
6	7	2001	7	140	117			21	8	2	1
6	7	2001	7	140	118			26	8	2	1
6	7	2001	7	140	119			27	8	2	1
6	7	2001	7	140	120			50	8	2	1
6	7	2001	7	140	121			27	8	2	1
6	7	2001	7	140	122			26	8	2	1
6	7	2001	7	140	123			8	8	2	1
6	7	2001	7	140	124			3	8	2	1
6	7	2001	7	140	125			0		3	
6	7	2001	7	140	126			11	8		
6	7	2001	7	140	127			0	4		
6	7	2001	7	140	128			0	6	1	
6	7	2001	8	160	129	4629.879	9054.383	0	1	1	
6	7	2001	8	160	100			0	4	1	
6	7	2001	8	160	101			0	7	2	
6	7	2001	8	160	102			8	4	2	1
6	7	2001	8	160	103			11	4	2	1
6	7	2001	8	160	104			10	6	2	1
6	7	2001	8	160	105			10	8	2	1
6	7	2001	8	160	106			7	8	2	1
6	7	2001	8	160	107			1	8	2	1
6	7	2001	8	160	108			11	8	2	1

Appendix B. Continued.

6	7	2001	8	160	109			28	8	2	1
6	7	2001	8	160	110			54	8	2	1
6	7	2001	8	160	111			40	8	2	1
6	7	2001	8	160	112			48	8	2	1
6	7	2001	8	160	113			41	8	2	1
6	7	2001	8	160	114			45	8	2	1
6	7	2001	8	160	115			48	8	2	1
6	7	2001	8	160	116			55	8	2	1
6	7	2001	8	160	117			33	8	2	1
6	7	2001	8	160	118			32	8	2	1
6	7	2001	8	160	119			0		3	
6	7	2001	8	160	120			0	8		
6	7	2001	8	160	121			1	8	2	1
6	7	2001	8	160	122			3	8	2	1
6	7	2001	8	160	123			0	8		
6	7	2001	8	160	124			0			
6	7	2001	9	180	125	4629.873	9054.366	0	1	1	
6	7	2001	9	180	126			0	1	1	
6	7	2001	9	180	127			0	3		
6	7	2001	9	180	128			23	6		1
6	7	2001	9	180	129			18	7		1
6	7	2001	9	180	100			20	6		1
6	7	2001	9	180	101			0	8		
6	7	2001	9	180	102			0	8		
6	7	2001	9	180	103			0	8		
6	7	2001	9	180	104			0	8		
6	7	2001	9	180	105			0		2	1

Appendix B. Continued.

6	7	2001	9	180	106			12	8		
6	7	2001	9	180	107			28	8	2	1
6	7	2001	9	180	108			55	8	2	1
6	7	2001	9	180	109			38	8	2	1
6	7	2001	9	180	110			8	8	2	1
6	7	2001	9	180	111			4	8	2	1
6	7	2001	9	180	112			3	8	2	1
6	7	2001	9	180	113			7	8	2	1
6	7	2001	9	180	114			0		3	
6	7	2001	9	180	115			0	8		
6	7	2001	9	180	116			0	8		
6	7	2001	9	180	117			0	8		
6	7	2001	9	180	118			0	8		
6	7	2001	9	180	119			0	8		
6	7	2001	9	180	120			0		3	
6	7	2001	9	180	121			0	8	3	
6	7	2001	9	180	122			0	8		
6	7	2001	9	180	123			0	8		
6	7	2001	10	200	124	4629.873	9054.343	0	4	1	
6	7	2001	10	200	125			0	7	1	
6	7	2001	10	200	126			0	8		
6	7	2001	10	200	127			0	5		
6	7	2001	10	200	128			0	7		
6	7	2001	10	200	129			0	8		
6	7	2001	10	200	100			0	5	1	
6	7	2001	10	200	101			0	7		
6	7	2001	10	200	102			0	4		

Appendix B. Continued.

6	7	2001	10	200	103			0	6			
6	7	2001	10	200	104			0	7			
6	7	2001	10	200	105			0				1
6	7	2001	10	200	106			15	8			
6	7	2001	10	200	107			26	8	2		1
6	7	2001	10	200	108			25	8	2		1
6	7	2001	10	200	109			27	8	2		1
6	7	2001	10	200	110			46	8	2		1
6	7	2001	10	200	111			89	8	2		1
6	7	2001	10	200	112			42	8	2		1
6	7	2001	10	200	113			44	8	2		1
6	7	2001	10	200	114			45	8	2		1
6	7	2001	10	200	115			25	8	2		1
6	7	2001	10	200	116			25	8	2		1
6	7	2001	10	200	117			25	8	2		1
6	7	2001	10	200	118			4	8	2		1
6	7	2001	10	200	119			0	8			
6	7	2001	11	220	120	4629.871	9054.329	0	6	1		
6	7	2001	11	220	121			0	7			
6	7	2001	11	220	122			0	6			
6	7	2001	11	220	123			10	6	2		1
6	7	2001	11	220	124			12	8	2		1
6	7	2001	11	220	125			21	7	2		1
6	7	2001	11	220	126			21	8	2		1
6	7	2001	11	220	127			27	8	2		1
6	7	2001	11	220	128			14	8	2		1
6	7	2001	11	220	129			13	8	2		1

Appendix B. Continued.

6	7	2001	11	220	100			38	8	2	1
6	7	2001	11	220	101			40	8	2	1
6	7	2001	11	220	102			30	8	2	1
6	7	2001	11	220	103			24	8	2	1
6	7	2001	11	220	104			0	8		
6	7	2001	11	220	105			0	8		
6	7	2001	11	220	106			9	8	2	1
6	7	2001	11	220	107			17	8	2	1
6	7	2001	11	220	108			36	8	2	1
6	7	2001	11	220	109			0	8		
6	7	2001	11	220	110			0	8		
6	7	2001	12	240	111	4629.867	9054.317	0	1	1	
6	7	2001	12	240	112			0	1	1	
6	7	2001	12	240	113			0	4		
6	7	2001	12	240	114			21	6		1
6	7	2001	12	240	115			49	5	2	1
6	7	2001	12	240	116			71	8	2	1
6	7	2001	12	240	117			25	8	2	1
6	7	2001	12	240	118			10	8	2	1
6	7	2001	12	240	119			6	8	2	1
6	7	2001	12	240	120			0	8		
6	7	2001	12	240	121			0			
6	7	2001	12	240	122			7	8	2	1
6	7	2001	12	240	123			28	8	2	1
6	7	2001	12	240	124			5	8		
6	7	2001	12	240	125			1	8		1
6	7	2001	12	240	126			0	8		

Appendix B. Continued.

6	7	2001	12	240	127			0	8			
6	7	2001	12	240	128			0	8			
6	7	2001	12	240	129			0	8			
6	7	2001	12	240	100			0	8			
6	7	2001	12	240	101			0	8			
6	7	2001	12	240	102			26	8	2		1
6	7	2001	12	240	103			32	8	2		1
6	7	2001	12	240	104			5	8	2		1
6	7	2001	12	240	105			13	8	2		1
6	7	2001	12	240	106			26	8	2		1
6	7	2001	12	240	107			0	8			
6	7	2001	12	240	108			0	4			
6	7	2001	12	240	109			0	8			
6	7	2001	12	240	110			0	1	1		
6	7	2001	13	260	111	4629.877	9054.304	0	1	1		
6	7	2001	13	260	112			0	3	1		
6	7	2001	13	260	113			0	8			
6	7	2001	13	260	114			0	8			
6	7	2001	13	260	115			0	4			
6	7	2001	13	260	116			0	5			
6	7	2001	13	260	117			0	8			
6	7	2001	13	260	118			0	8			
6	7	2001	13	260	119			0				
6	7	2001	13	260	120			5	8	2		1
6	7	2001	13	260	121			0	8			
6	7	2001	13	260	122			0	8			
6	7	2001	13	260	123			0	8			

Appendix B. Continued.

6	7	2001	13	260	124			0				
6	7	2001	13	260	125			3	8	2		1
6	7	2001	13	260	126			5	8	2		1
6	7	2001	13	260	127			18	8	2		1
6	7	2001	13	260	128			18	8	2		1
6	7	2001	13	260	129			29	8	2		1
6	7	2001	13	260	100			9	8	2		1
6	7	2001	13	260	101			17	8	2		1
6	7	2001	13	260	102			18	8	2		1
6	7	2001	13	260	103			10	8	2		1
6	7	2001	13	260	104			14	8	2		1
6	7	2001	13	260	105			15	8	2		1
6	7	2001	13	260	106			38	8	2		1
6	7	2001	13	260	107			17	8	2		1
6	7	2001	13	260	108			12	8	2		1
6	7	2001	13	260	109			8	8	2		1
6	7	2001	13	260	110			0	3	1		
6	7	2001	13	260	111			0	1	1		
6	7	2001	13	260	112			0	8	1		
6	7	2001	13	260	113			0	7	1		
6	7	2001	13	260	114			0	5	1		
6	7	2001	14	280	115	4629.873	9054.296	0	4	3		
6	7	2001	14	280	116			0	4	1		
6	7	2001	14	280	117			0	6			
6	7	2001	14	280	118			0	5	2		1
6	7	2001	14	280	119			13	8	2		1
6	7	2001	14	280	120			19	8	2		1

Appendix B. Continued.

6	7	2001	14	280	121			10	8	2	1
6	7	2001	14	280	122			17	8	2	1
6	7	2001	14	280	123			0	8		
6	7	2001	14	280	124			0	8		
6	7	2001	14	280	125			0			
6	7	2001	14	280	126			32	8	2	1
6	7	2001	14	280	127			68	8	2	1
6	7	2001	14	280	128			27	8	2	1
6	7	2001	14	280	129			11	8	2	1
6	7	2001	14	280	100			3	8	2	1
6	7	2001	14	280	101			17	8	1	
6	7	2001	14	280	102			28	8	1	
6	7	2001	14	280	103			31	8	2	1
6	7	2001	14	280	104			34	8	2	1
6	7	2001	14	280	105			34	8	2	1
6	7	2001	14	280	106			34	8	2	1
6	7	2001	14	280	107			22	8	2	1
6	7	2001	14	280	108			21	8	2	1
6	7	2001	14	280	109			34	8	2	1
6	7	2001	14	280	110			0	8		
6	7	2001	14	280	111			0	8		
6	7	2001	15	300	112	4629.875	9054.273	0	5	1	
6	7	2001	15	300	113			0		1,3	
6	7	2001	15	300	114			0	4		
6	7	2001	15	300	115			0	-		
6	7	2001	15	300	116			5	8	2	1
6	7	2001	15	300	117			26	8	2	1

Appendix B. Continued.

6	7	2001	15	300	118			36	8	2	1
6	7	2001	15	300	119			40	8	2	1
6	7	2001	15	300	120			47	8	2	1
6	7	2001	15	300	121			36	8	2	1
6	7	2001	15	300	122			41	8	2	1
6	7	2001	15	300	123			1	8		1
6	7	2001	15	300	124			0	8		
6	7	2001	15	300	125			0	8	1	
6	7	2001	15	300	126			0	8	1	
6	7	2001	15	300	127			0	8		
6	7	2001	15	300	128			0	8		
6	7	2001	15	300	129			0			
6	7	2001	15	300	100			17	8	2	1
6	7	2001	15	300	101			0	8	1	
6	7	2001	15	300	102			0	8		
6	7	2001	15	300	103			0	8		
6	7	2001	15	300	104			0	8	3	
6	7	2001	15	300	105			0	8	1	
6	7	2001	15	300	106			0	8	1	
6	7	2001	15	300	107			0	8		
6	7	2001	15	300	108			0	8		
6	7	2001	15	300	109			0	8		
6	7	2001	16	320	110	4629.883	9054.248	0	4	1	1
6	7	2001	16	320	111			0		3	
6	7	2001	16	320	112			0	5		
6	7	2001	16	320	113			0	6		
6	7	2001	16	320	114			0	5		1

Appendix B. Continued.

6	7	2001	16	320	115			24	5	2	1
6	7	2001	16	320	116			42	8		1
6	7	2001	16	320	117			44	8	2	1
6	7	2001	16	320	118			46	8	2	1
6	7	2001	16	320	119			54	8	2	1
6	7	2001	16	320	120			34	8	2	1
6	7	2001	16	320	121			0	8	2	1
6	7	2001	16	320	122			0	8		
6	7	2001	16	320	123			0	8	1	
6	7	2001	16	320	124			0	8		1
6	7	2001	16	320	125			13	8	2	1
6	7	2001	16	320	126			31	8	2	1
6	7	2001	16	320	127			26	8	2	1
6	7	2001	16	320	128			17	8	2	1
6	7	2001	16	320	129			48	8	2	1
6	7	2001	16	320	100			0	8	1	
6	7	2001	16	320	101			0	8	1	
6	7	2001	16	320	102			0	8		
6	7	2001	16	320	103			3	8		1
6	7	2001	16	320	104			0	8	2	1
6	7	2001	16	320	105			0	8	1	
6	7	2001	16	320	106			0	8		
6	7	2001	17	340	107	4629.885	9054.246	0	6	1	
6	7	2001	17	340	108			0	5		
6	7	2001	17	340	109			0			
6	7	2001	17	340	110			16	7	2	1
6	7	2001	17	340	111			39	6	2	1

Appendix B. Continued.

6	7	2001	17	340	112			30	4			1
6	7	2001	17	340	113			13	6			1
6	7	2001	17	340	114			30	5			1
6	7	2001	17	340	115			41	6			1
6	7	2001	17	340	116			29	7			1
6	7	2001	17	340	117			70	5			1
6	7	2001	17	340	118			61	8			1
6	7	2001	17	340	119			29	8	2		1
6	7	2001	17	340	120			7	8			1
6	7	2001	17	340	121			0	1,3	1		
6	7	2001	17	340	122			0	3,8	1		
6	7	2001	17	340	123			0	1	1		
6	7	2001	17	340	124			0	8			1
6	7	2001	17	340	125			26	8	2		1
6	7	2001	17	340	126			53	8	2		1
6	7	2001	17	340	127			43	8	2		1
6	7	2001	17	340	128			0	1	1		
6	7	2001	17	340	129			0	8	1		
6	7	2001	17	340	100			0	8	1		
6	7	2001	17	340	101			0	8			1
6	7	2001	17	340	102			4	8	2		1
6	7	2001	17	340	103			11	8	2		1
6	7	2001	17	340	104			15	8	2		1
6	7	2001	17	340	105			0	8			
6	7	2001	17	340	106			0	8			
6	7	2001	18	360	107	4629.897	9054.238	4	1	1		
6	7	2001	18	360	108			20	4			1

Appendix B. Continued.

6	7	2001	18	360	109			22	4		1
6	7	2001	18	360	110			21	5		1
6	7	2001	18	360	111			17	5		1
6	7	2001	18	360	112			20	6		1
6	7	2001	18	360	113			24	4		1
6	7	2001	18	360	114			30	5		1
6	7	2001	18	360	115			51	5		1
6	7	2001	18	360	116			69	8		1
6	7	2001	18	360	117			77	5		1
6	7	2001	18	360	118			75	8		1
6	7	2001	18	360	119			75	8		1
6	7	2001	18	360	120			83	8		1
6	7	2001	18	360	121			65	8		
6	7	2001	18	360	122			67	8		
6	7	2001	18	360	123			62	8		
6	7	2001	18	360	124			46	8		
6	7	2001	18	360	125			47	8		
6	7	2001	18	360	126			48	8		
6	7	2001	18	360	127			82	8		
6	7	2001	18	360	128			0	8	1	
6	7	2001	18	360	129			0	8		
6	7	2001	18	360	100			0	8		
6	8	2001	19	380	101	4629.899	9054.227	259.08	0		Too deep to sample
6	8	2001	19	380	102			259.08	0		
6	8	2001	19	380	103			35	8	2	
6	8	2001	19	380	104			37	8	2	
6	8	2001	19	380	105			44	6	2	

Appendix B. Continued.

6	8	2001	19	380	106			34	6		
6	8	2001	19	380	107			25	4		
6	8	2001	19	380	108			20	5		
6	8	2001	19	380	109			23	4		
6	8	2001	19	380	110			29	4		
6	8	2001	19	380	111			52	7		
6	8	2001	19	380	112			66	4		
6	8	2001	19	380	113			68	4		
6	8	2001	19	380	114			59	4		
6	8	2001	19	380	115			66	7		
6	8	2001	19	380	116			69	5		
6	8	2001	19	380	117			65	7		
6	8	2001	19	380	118			65	8		
6	8	2001	19	380	119			51	7		
6	8	2001	19	380	120			50	8		
6	8	2001	19	380	121			42	8		2
6	8	2001	19	380	122			27	8		2
6	8	2001	19	380	123			35	8		2
6	8	2001	19	380	124			37	8		2
6	8	2001	19	380	125			0	8		
6	8	2001	19	380	126			0	8		
6	8	2001	20	400	102	4629.906	9054.211	0	8		1
6	8	2001	20	400	103			0	1		1
6	8	2001	20	400	104			0	1		1
6	8	2001	20	400	105			0	1		1
6	8	2001	20	400	106			0	1		1
6	8	2001	20	400	107			0	1		1

Appendix B. Continued.

6	8	2001	20	400	108			40	4	2	
6	8	2001	20	400	109			42	8	2	
6	8	2001	20	400	110			50	5	2	
6	8	2001	20	400	111			45	6	2	
6	8	2001	20	400	112			27	7	2	
6	8	2001	20	400	113			37	7	2	
6	8	2001	20	400	114			41	6	2	
6	8	2001	20	400	115			49	4	2	
6	8	2001	20	400	116			54	6	2	
6	8	2001	20	400	117			47	4	2	
6	8	2001	20	400	118			36	7	2	
6	8	2001	20	400	119			19	7	2	
6	8	2001	20	400	120			40	5	2	
6	8	2001	20	400	121			40	5	2	
6	8	2001	20	400	122			56	4	2	
6	8	2001	20	400	123			71	8	2	
6	8	2001	20	400	124			73	8	2	
6	8	2001	20	400	125			84	6	2	
6	8	2001	20	400	126			98	8	2	
6	8	2001	20	400	127			133	8		
6	8	2001	20	400	128			100	8	2	Too deep to sample
6	8	2001	21	420	129	4629.906	9054.196	0	0	1	
6	8	2001	21	420	100			0	0	1	
6	8	2001	21	420	101			0	0	1	
6	8	2001	21	420	102			0	0	1	
6	8	2001	21	420	103			0	0	1	
6	8	2001	21	420	104			0	0		

Appendix B. Continued.

6	8	2001	21	420	105			52	6	
6	8	2001	21	420	106			63	4	
6	8	2001	21	420	107			47	7	2
6	8	2001	21	420	108			70	8	2
6	8	2001	21	420	109			75	7	2
6	8	2001	21	420	110			69	6	2
6	8	2001	21	420	111			53	8	2
6	8	2001	21	420	112			60	4	2
6	8	2001	21	420	113			73	4	2
6	8	2001	21	420	114			118	8	2
6	8	2001	22	440	115	4629.92	9054.183	0	0	1
6	8	2001	22	440	116			0	0	1
6	8	2001	22	440	117			0	0	1
6	8	2001	22	440	118			0	0	1
6	8	2001	22	440	119			0	1	
6	8	2001	22	440	120			34	3	
6	8	2001	22	440	121			31	4	
6	8	2001	22	440	122			37	6	2
6	8	2001	22	440	123			43	3	2
6	8	2001	22	440	124			46	3	2
6	8	2001	22	440	125			45	6	
6	8	2001	22	440	126			57	4	2
6	8	2001	22	440	127			58	8	2
6	8	2001	22	440	128			49	8	2
6	8	2001	22	440	129			45	8	2
6	8	2001	22	440	100			49	8	2
6	8	2001	22	440	101			68	6	

Too deep to sample

Appendix B. Continued.

6	8	2001	22	440	102			65	7	
6	8	2001	22	440	103			65	6	
6	8	2001	22	440	104			66	7	
6	8	2001	22	440	105			69	6	
6	8	2001	22	440	106			35	8	2
6	8	2001	22	440	107			43	8	2
6	8	2001	22	440	108			62	6	
6	8	2001	22	440	109			62	5	
6	8	2001	22	440	110			63	5	
6	8	2001	22	440	111			33	8	2
6	8	2001	22	440	112			41	8	2
6	8	2001	22	440	113			32	8	2
6	8	2001	22	440	114			43	7	2
6	8	2001	22	440	115			65	4	
6	8	2001	22	440	116			55	5	
6	8	2001	22	440	117			31	4	
6	8	2001	22	440	118			0	0	1
6	8	2001	22	440	119			0	0	1
6	12	2001	23	460	120	4629.924	9054.166	0	0	1
6	12	2001	23	460	121			0		3,1
6	12	2001	23	460	122			0	0	1
6	12	2001	23	460	123			11	0	
6	12	2001	23	460	124			15		3
6	12	2001	23	460	125			29	4	1
6	12	2001	23	460	126			28	4	3
6	12	2001	23	460	127			23	6	
6	12	2001	23	460	128			34	7	2

Appendix B. Continued.

6	12	2001	23	460	129	38	7	
6	12	2001	23	460	100	38	5	
6	12	2001	23	460	101	39	5	
6	12	2001	23	460	102	42	6	2
6	12	2001	23	460	103	42	6	2
6	12	2001	23	460	104	45	6	2
6	12	2001	23	460	105	32	7	2
6	12	2001	23	460	106	32	5	
6	12	2001	23	460	107	29	7	2
6	12	2001	23	460	108	36	6	
6	12	2001	23	460	109	39	7	
6	12	2001	23	460	110	28	8	
6	12	2001	23	460	111	27	8	2
6	12	2001	23	460	112	58	8	
6	12	2001	23	460	113	19	8	2
6	12	2001	23	460	114	55	8	
6	12	2001	23	460	115	45	6	
6	12	2001	23	460	116	40	8	2
6	12	2001	23	460	117	41	8	
6	12	2001	23	460	118	41	5	
6	12	2001	23	460	119	47	6	
6	12	2001	23	460	120	44	8	2
6	12	2001	23	460	121	52	6	
6	12	2001	23	460	122	40	6	
6	12	2001	23	460	123	41	5	2
6	12	2001	23	460	124	35	3	
6	12	2001	23	460	125	14	4	

Appendix B. Continued.

6	12	2001	23	460	126			0	0	1
6	12	2001	23	460	127			0	0	1
6	12	2001	24	480	128	4629.928	9054.15	0	8	1
6	12	2001	24	480	129			0	0	1
6	12	2001	24	480	100			0	8	1
6	12	2001	24	480	101			26	3	
6	12	2001	24	480	102			29	4	2
6	12	2001	24	480	103			35	4	2
6	12	2001	24	480	104			34	5	
6	12	2001	24	480	105			42	7	
6	12	2001	24	480	106			31	8	2
6	12	2001	24	480	107			50	8	2
6	12	2001	24	480	108			53	8	2
6	12	2001	24	480	109			29	8	2
6	12	2001	24	480	110			45	7	
6	12	2001	24	480	111			27	8	
6	12	2001	24	480	112			29	8	2
6	12	2001	24	480	113			43	5	2
6	12	2001	24	480	114			47	5	2
6	12	2001	24	480	115			39	5	2
6	12	2001	24	480	116			24	8	2
6	12	2001	24	480	117			49	8	
6	12	2001	24	480	118			58	6	
6	12	2001	24	480	119			52	6	2
6	12	2001	24	480	120			38	6	
6	12	2001	24	480	121			31	6	
6	12	2001	24	480	122			31	6	2

Appendix B. Continued.

6	12	2001	24	480	123			27	4	2
6	12	2001	24	480	124			18	7	2
6	12	2001	24	480	125			29	6	
6	12	2001	24	480	126			30	4	
6	12	2001	24	480	127			37	4	
6	12	2001	24	480	128			28	4	
6	12	2001	24	480	129			0	4	1
6	12	2001	24	480	100			0	0	1
6	12	2001	25	500	101	4629.922	9054.142	0	0	1
6	12	2001	25	500	102			0	0	1
6	12	2001	25	500	103			0	5	3
6	12	2001	25	500	104			27	4	
6	12	2001	25	500	105			23	6	2
6	12	2001	25	500	106			23	6	2
6	12	2001	25	500	107			15	6	2
6	12	2001	25	500	108			44	8	2
6	12	2001	25	500	109			43	7	
6	12	2001	25	500	110			60	6	
6	12	2001	25	500	111			63	6	
6	12	2001	25	500	112			57	6	
6	12	2001	25	500	113			57	6	
6	12	2001	25	500	114			39	8	2
6	12	2001	25	500	115			49	8	2
6	12	2001	25	500	116			52	7	
6	12	2001	25	500	117			47	5	
6	12	2001	25	500	118			47	6	2
6	12	2001	25	500	119			41	4	2

Appendix B. Continued.

6	12	2001	25	500	120			27	6	2
6	12	2001	25	500	121			22	6	2
6	12	2001	25	500	122			14	6	2
6	12	2001	25	500	123			20	6	2
6	12	2001	25	500	124			24	8	2
6	12	2001	25	500	125			32	6	2
6	12	2001	25	500	126			40	4	
6	12	2001	25	500	127			25	6	
6	12	2001	25	500	128			24	4	
6	12	2001	25	500	129			7	6	
6	12	2001	25	500	100			0	0	1
6	12	2001	25	500	101			0	7	1
6	12	2001	26	520	102	4629.916	9054.126	0	0	1
6	12	2001	26	520	103			0	0	1
6	12	2001	26	520	104			0	4	1
6	12	2001	26	520	105			0		
6	12	2001	26	520	106			23	6	
6	12	2001	26	520	107			34	6	1
6	12	2001	26	520	108			38	5	
6	12	2001	26	520	109			51	4	
6	12	2001	26	520	110			68	6	
6	12	2001	26	520	111			60	6	
6	12	2001	26	520	112			59	5	2
6	12	2001	26	520	113			57	4	2
6	12	2001	26	520	114			49	7	
6	12	2001	26	520	115			45	8	2
6	12	2001	26	520	116			48	6	2

Appendix B. Continued.

6	12	2001	26	520	117			41	5	2
6	12	2001	26	520	118			48	8	2
6	12	2001	26	520	119			43	6	2
6	12	2001	26	520	120			43	6	2
6	12	2001	26	520	121			44	6	2
6	12	2001	26	520	122			42	4	2
6	12	2001	26	520	123			35	6	2
6	12	2001	26	520	124			33	4	2
6	12	2001	26	520	125			30	6	2
6	12	2001	26	520	126			32	4	2
6	12	2001	26	520	127			37	3	2
6	12	2001	26	520	128			37	4	
6	12	2001	26	520	129			25	5	
6	12	2001	26	520	100			13	4	
6	12	2001	26	520	101			4	4	
6	12	2001	26	520	102			0	5	
6	12	2001	26	520	103			0	0	1
6	12	2001	27	540	104	4629.923	9054.102	0	0	1
6	12	2001	27	540	105			0		3
6	12	2001	27	540	106			0		
6	12	2001	27	540	107			16	3	
6	12	2001	27	540	108			21	3	
6	12	2001	27	540	109			29	4	
6	12	2001	27	540	110			47	6	2
6	12	2001	27	540	111			68	6	2
6	12	2001	27	540	112			54	8	2
6	12	2001	27	540	113			81	8	2

Appendix B. Continued.

6	12	2001	27	540	114			69	6	
6	12	2001	27	540	115			53	7	2
6	12	2001	27	540	116			52	5	2
6	12	2001	27	540	117			45	4	2
6	12	2001	27	540	118			39	6	2
6	12	2001	27	540	119			47	4	2
6	12	2001	27	540	120			48	6	2
6	12	2001	27	540	121			60	5	2
6	12	2001	27	540	122			60	6	2
6	12	2001	27	540	123			56	6	2
6	12	2001	27	540	124			57	7	2
6	12	2001	27	540	125			59	7	2
6	12	2001	27	540	126			50	6	2
6	12	2001	27	540	127			50	4	2
6	12	2001	27	540	128			52	5	2
6	12	2001	27	540	129			38	6	
6	12	2001	27	540	100			27	4	
6	12	2001	27	540	101			12	4	
6	12	2001	27	540	102			0	4	1
6	12	2001	27	540	103			0	0	1
6	12	2001	28	560	104	4629.924	9054.084	0	3	1
6	12	2001	28	560	105			0	7	
6	12	2001	28	560	106			9	6	2
6	12	2001	28	560	107			17	3	
6	12	2001	28	560	108			25	4	2
6	12	2001	28	560	109			35	6	
6	12	2001	28	560	110			38	4	2

Appendix B. Continued.

6	12	2001	28	560	111	37	6	2
6	12	2001	28	560	112	48	6	2
6	12	2001	28	560	113	51	6	2
6	12	2001	28	560	114	48	5	2
6	12	2001	28	560	115	53	6	2
6	12	2001	28	560	116	38	6	2
6	12	2001	28	560	117	30	8	2
6	12	2001	28	560	118	32	8	2
6	12	2001	28	560	119	42	8	2
6	12	2001	28	560	120	47	5	2
6	12	2001	28	560	121	51	6	2
6	12	2001	28	560	122	48	6	2
6	12	2001	28	560	123	49	7	
6	12	2001	28	560	124	45	6	2
6	12	2001	28	560	125	43	5	2
6	12	2001	28	560	126	43	6	2
6	12	2001	28	560	127	30	7	2
6	12	2001	28	560	128	32	6	2
6	12	2001	28	560	129	26	6	2
6	12	2001	28	560	100	20	6	2
6	12	2001	28	560	101	26	5	
6	12	2001	28	560	102	20	5	
6	12	2001	28	560	103	18	6	
6	12	2001	28	560	104	10	1	2
6	12	2001	28	560	105	0	0	1
6	12	2001	28	560	106	0		3
6	12	2001	28	560	107	0	0	1

Appendix B. Continued.

6	12	2001	28	560	108			0	0	1
6	12	2001	29	580	109	4629.928	9054.068	0	3	1
6	12	2001	29	580	110			0	5	1
6	12	2001	29	580	111			0	0	1
6	12	2001	29	580	112			45	7	2
6	12	2001	29	580	113			38	7	2
6	12	2001	29	580	114			23	7	2
6	12	2001	29	580	115			58	5	2
6	12	2001	29	580	116			40	8	2
6	12	2001	29	580	117			43	6	2
6	12	2001	29	580	118			45	5	
6	12	2001	29	580	119			42	6	2
6	12	2001	29	580	120			43	7	2
6	12	2001	29	580	121			16	7	2
6	12	2001	29	580	122			45	8	2
6	12	2001	29	580	123			47	8	2
6	12	2001	29	580	124			44	8	2
6	12	2001	29	580	125			17	7	2
6	12	2001	29	580	126			26	5	2
6	12	2001	29	580	127			40	6	2
6	12	2001	29	580	128			48	6	2
6	12	2001	29	580	129			35	5	2
6	12	2001	29	580	100			33	5	2
6	12	2001	29	580	101			30	5	2
6	12	2001	29	580	102			25	5	2
6	12	2001	29	580	103			25	5	2
6	12	2001	29	580	104			24	5	2

Appendix B. Continued.

6	12	2001	29	580	105			22	7	2	
6	12	2001	29	580	106			20	6	2	
6	12	2001	29	580	107			18	6	2	
6	12	2001	29	580	108			28	5		
6	12	2001	29	580	109			19	5	2	
6	12	2001	29	580	110			21	4		
6	12	2001	29	580	111			26	3		
6	12	2001	29	580	112			36	4		
6	12	2001	29	580	113			32	5		
6	12	2001	29	580	114			17	3		
6	12	2001	29	580	115			0	0		
6	*	12	2001	30	600	116	4629.916	9054.067			Too deep to sample
6	'	12	2001	31	620	117	4629.924	9054.042	0	0	1
6		12	2001	31	620	118			0	0	1
6		12	2001	31	620	119			30	6	2
6		12	2001	31	620	120			50	4	2
6		12	2001	31	620	121			75	8	2
6		12	2001	31	620	122			40	8	2
6		12	2001	31	620	123			55	8	2
6		12	2001	31	620	124			50	8	2
6		12	2001	31	620	125			82	8	2
6		12	2001	31	620	126			58	8	2
6		12	2001	31	620	127			76	8	2
6		12	2001	31	620	128			56	8	2
6		12	2001	31	620	129			55	8	2
6		12	2001	31	620	100			45	8	2
6		12	2001	31	620	101			35	8	2

Appendix B. Continued.

6	12	2001	31	620	102			90	8	2	
6	12	2001	31	620	103			85	8	2	
6	12	2001	31	620	104			58	8	2	
6	12	2001	31	620	105			0	8		
6	12	2001	32	640	106	4629.923	9054.025				Too deep to sample
6	12	2001	33	660	107	4629.926	9054.018				Too deep to sample
6	12	2001	34	680	108	4629.941	9053.997	0	0	1	
6	12	2001	34	680	109			0	0	1	
6	12	2001	34	680	110			47	5		
6	12	2001	34	680	111			55	4		
6	12	2001	34	680	112			67	5		
6	12	2001	34	680	113			68	7		
6	12	2001	34	680	114			85	4		
6	12	2001	34	680	115			68	6		
6	12	2001	34	680	116			89	6		
6	12	2001	34	680	117			79	7		Too deep to sample
6	12	2001	35	700	118	4629.939	9053.993	0		3,1	
6	12	2001	35	700	119			0			
6	12	2001	35	700	120			4	0	2	
6	12	2001	35	700	121			25	4	2	
6	12	2001	35	700	122			29	4	2	
6	12	2001	35	700	123			29	6	2	
6	12	2001	35	700	124			35	4	2	
6	12	2001	35	700	125			35	6	2	
6	12	2001	35	700	126			50	6	2	
6	12	2001	35	700	127			49	6	2	
6	12	2001	35	700	128			70	6	2	

Appendix B. Continued.

6	12	2001	35	700	129			75	6	2
6	12	2001	35	700	100			90	5	2
6	12	2001	35	700	101			80	6	2
6	12	2001	35	700	102			65	7	2
6	12	2001	35	700	103			70	5	2
6	12	2001	35	700	104			45	7	2
6	12	2001	35	700	105			75	6	2
6	12	2001	35	700	106			80	5	2
6	12	2001	35	700	107			70	7	2
6	12	2001	35	700	108			70	5	2
6	12	2001	35	700	109			60	4	2
6	12	2001	35	700	110			65	4	
6	12	2001	35	700	111			62	4	
6	12	2001	35	700	112			63	4	
6	12	2001	35	700	113			66	5	
6	12	2001	35	700	114			63	5	
6	12	2001	35	700	115			0	0	1
6	12	2001	36	720	116	4629.951	9053.991	0	3	1
6	12	2001	36	720	117			0	0	1
6	12	2001	36	720	118			9	6	2
6	12	2001	36	720	119			24	4	
6	12	2001	36	720	120			20	6	2
6	12	2001	36	720	121			34	4	2
6	12	2001	36	720	122			26	6	
6	12	2001	36	720	123			30	5	2
6	12	2001	36	720	124			35	5	2
6	12	2001	36	720	125			35	6	2

Appendix B. Continued.

6	12	2001	36	720	126			45	3	2
6	12	2001	36	720	127			46	5	2
6	12	2001	36	720	128			49	7	
6	12	2001	36	720	129			56	7	
6	12	2001	36	720	100			68	5	
6	12	2001	36	720	101			60	5	
6	12	2001	36	720	102			65	6	
6	12	2001	36	720	103			68	4	
6	12	2001	36	720	104			73	5	2
6	12	2001	36	720	105			85	4	
6	12	2001	36	720	106			90	6	
6	12	2001	36	720	107			80	7	
6	12	2001	36	720	108			76	4	
6	12	2001	36	720	109			77	5	
6	12	2001	36	720	110			75	6	
6	12	2001	36	720	111			68	6	
6	12	2001	36	720	112			52	6	
6	12	2001	36	720	113			0		3
6	12	2001	37	740	114	4629.976	9053.992	0	0	1
6	12	2001	37	740	115			0	0	1
6	12	2001	37	740	116			0	0	1
6	12	2001	37	740	117			19	4	
6	12	2001	37	740	118			16	4	
6	12	2001	37	740	119			17	4	
6	12	2001	37	740	120			10	4	2
6	12	2001	37	740	121			0	4	1
6	12	2001	37	740	122			0		

Appendix B. Continued.

6	12	2001	37	740	123	1	4	2
6	12	2001	37	740	124	13	4	
6	12	2001	37	740	125	0	5	1
6	12	2001	37	740	126	0	5	1
6	12	2001	37	740	127	0	4	
6	12	2001	37	740	128	0	3	2
6	12	2001	37	740	129	2		
6	12	2001	37	740	100	13	6	
6	12	2001	37	740	101	26	4	2
6	12	2001	37	740	102	10	6	2
6	12	2001	37	740	103	22	5	
6	12	2001	37	740	104	34	4	2
6	12	2001	37	740	105	40	4	2
6	12	2001	37	740	106	40	5	2
6	12	2001	37	740	107	48	4	2
6	12	2001	37	740	108	50	6	2
6	12	2001	37	740	109	56	4	2
6	12	2001	37	740	110	58	7	
6	12	2001	37	740	111	60	6	2
6	12	2001	37	740	112	67	4	2
6	12	2001	37	740	113	83	6	2
6	12	2001	37	740	114	65	7	
6	12	2001	37	740	115	78	6	
6	12	2001	37	740	116	77	5	
6	12	2001	37	740	117	80	5	
6	12	2001	37	740	118	59	6	
6	12	2001	37	740	119	56	4	

Appendix B. Continued.

6	12	2001	37	740	120			54	5	
6	12	2001	37	740	121			26	1	2
6	12	2001	37	740	122			0	0	1
6	12	2001	38	760	123	4629.988	9053.983	0	1	1
6	12	2001	38	760	124			0	0	2
6	12	2001	38	760	125			3		
6	12	2001	38	760	126			16	5	2
6	12	2001	38	760	127			20	5	2
6	12	2001	38	760	128			20	5	2
6	12	2001	38	760	129			19	4	2
6	12	2001	38	760	100			19	5	2
6	12	2001	38	760	101			15	6	2
6	12	2001	38	760	102			15	5	2
6	12	2001	38	760	103			16	5	2
6	12	2001	38	760	104			25	5	2
6	12	2001	38	760	105			29	5	2
6	12	2001	38	760	106			28	6	2
6	12	2001	38	760	107			34	5	2
6	12	2001	38	760	108			41	4	2
6	12	2001	38	760	109			55	4	2
6	12	2001	38	760	110			52	4	2
6	12	2001	38	760	111			54	6	2
6	12	2001	38	760	112			56	6	2
6	12	2001	38	760	113			58	6	2
6	12	2001	38	760	114			67	5	2
6	12	2001	38	760	115			71	6	2
6	12	2001	38	760	116			64	6	2

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Appendix B. Continued.

6	12	2001	38	760	117			62	5	2
6	12	2001	38	760	118			60	4	2
6	12	2001	38	760	119			49	5	2
6	12	2001	38	760	120			28	4	2
6	12	2001	38	760	121			0	0	1
6	12	2001	39	780	122	4629.992	9053.972	0	0	1
6	12	2001	39	780	123			0		
6	12	2001	39	780	124			41	4	2
6	12	2001	39	780	125			25	7	
6	12	2001	39	780	126			25	5	
6	12	2001	39	780	127			14	6	2
6	12	2001	39	780	128			15	5	2
6	12	2001	39	780	129			13	7	
6	12	2001	39	780	100			16	6	2
6	12	2001	39	780	101			25	5	2
6	12	2001	39	780	102			31	5	2
6	12	2001	39	780	103			35	5	2
6	12	2001	39	780	104			47	6	2
6	12	2001	39	780	105			65	6	2
6	12	2001	39	780	106			69	5	
6	12	2001	39	780	107			60	5	
6	12	2001	39	780	108			65	6	
6	12	2001	39	780	109			58	6	
6	12	2001	39	780	110			50	6	
6	12	2001	39	780	111			53	4	
6	12	2001	39	780	112			19	5	
6	12	2001	39	780	113			0	0	1

Appendix B. Continued.

6	12	2001	40	800	114	0	0	
6	12	2001	40	800	115	0	0	
6	12	2001	40	800	116	0	0	
6	12	2001	40	800	117	27	5	
6	12	2001	40	800	118	28	4	
6	12	2001	40	800	119	19	3	
6	12	2001	40	800	120	26	4	
6	12	2001	40	800	121	26	5	
6	12	2001	40	800	122	23	6	2
6	12	2001	40	800	123	29	6	2
6	12	2001	40	800	124	30	6	2
6	12	2001	40	800	125	27	6	2
6	12	2001	40	800	126	39	6	2
6	12	2001	40	800	127	36	7	2
6	12	2001	40	800	128	30	6	2
6	12	2001	40	800	129	40	6	2
6	12	2001	40	800	100	40	5	2
6	12	2001	40	800	101	35	7	
6	12	2001	40	800	102	34	7	2
6	12	2001	40	800	103	40	7	2
6	12	2001	40	800	104	37	6	2
6	12	2001	40	800	105	30	7	2
6	12	2001	40	800	106	35	7	2
6	12	2001	40	800	107	37	7	2
6	12	2001	40	800	108	24	5	2
6	12	2001	40	800	109	0	6	
6	12	2001	40	800	110	0	0	1

Appendix B. Continued.

6	12	2001	41	820	111	0	0	1
6	12	2001	41	820	112	0	4	
6	12	2001	41	820	113	0	4	
6	12	2001	41	820	114	20	1	
6	12	2001	41	820	115	13	2	
6	12	2001	41	820	116	2	2	
6	12	2001	41	820	117	9	4	
6	12	2001	41	820	118	9	4	
6	12	2001	41	820	119	15	4	
6	12	2001	41	820	120	20	4	
6	12	2001	41	820	121	22	6	
6	12	2001	41	820	122	28	5	
6	12	2001	41	820	123	30	4	
6	12	2001	41	820	124	25	4	2
6	12	2001	41	820	125	19	5	
6	12	2001	41	820	126	18	5	
6	12	2001	41	820	127	13	5	2
6	12	2001	41	820	128	25	4	
6	12	2001	41	820	129	25	4	
6	12	2001	41	820	130	17	5	2
6	12	2001	41	820	131	18	5	
6	12	2001	41	820	132	15	4	
6	12	2001	41	820	133	23	5	
6	12	2001	41	820	134	30	4	
6	12	2001	41	820	135	38	4	
6	12	2001	41	820	136	25	5	
6	12	2001	41	820	137	35	4	

Appendix B. Continued.

6	12	2001	41	820	138	30	4	
6	12	2001	41	820	139	300	5	
6	12	2001	41	820	140	28	7	
6	12	2001	41	820	141	35	4	
6	12	2001	41	820	142	30	6	
6	12	2001	41	820	143	25	4	2
6	12	2001	41	820	144	30	3	2
6	12	2001	41	820	145	25	5	
6	12	2001	41	820	146	25	6	
6	12	2001	41	820	147	17	5	
6	12	2001	41	820	148	5	4	
6	12	2001	41	820	149	4	4	
6	12	2001	41	820	150	0	4	
6	12	2001	41	820	151	0	4	