

780 N. Commercial Street P.O. Box 330 Manchester, NH 03105—330

April 4, 2016

D33525

U.S. Environmental Protection Agency Region 1: New England Office of Ecosystem Protection Water Technical Unit (OES04 – SMR) 5 Post Office Square - Suite 100 Boston, MA 02109-3912

Dear Sir/Madam:

Merrimack Station NPDES Permit No. NH0001465 2015 Annual Fish Impingement Report

Public Service Company of New Hampshire d/b/a Eversource Energy ("PSNH") herein submits this Annual Fish Impingement Report for the year 2015 pursuant to Part I., Section A.10.b. of the Merrimack Station NPDES Permit, No. NH0001465. This permit condition requires PSNH to conduct impingement monitoring at Merrimack Station according to the provisions below.

- PSNH shall provide impingement monitoring at Merrimack Station when flows from Garvins Falls Hydroelectric Station are less than 900 cubic feet per second (cfs) during any period from July 1 through October 15.
- PSNH shall collect all fish from both MK-1 and MK-2 traveling screen washes during one continuous 48-hour period per week when the conditions outlined above are met.
- PSNH shall report in writing to the New Hampshire Fish & Game Department (NHFGD),
 United States Fish and Wildlife Service (USFWS), New Hampshire Department of
 Environmental Services (NHDES) and the United States Environmental Protection
 Agency (USEPA) any Extraordinary Impingement Event (EIE) at Merrimack Station. An
 EIE is defined as an event when 50 or more fish at any one time, of any size or species,
 are either distressed or killed as a result of impingement.

Based on river flows at Garvins Falls Hydro and unit operation, Merrimack Station was required to collect two weekly samples from the intake screens between July 1 and October 15 in 2015. A total of ten fish were collected over the entire sampling season. Impingement rates for the sampling periods were calculated by dividing the total number

of fish collected by the total volume of water passed through the units. The volume of water reported is based on circulating pump capacities and the number of pumps that were operating during each screen wash cycle. Each operating unit has two pumps; the pumps servicing Unit 1 are rated at 63 cfs each (126 cfs total), the pumps servicing Unit 2 are rated at 144.5 cfs each (289 cfs total).

Table 1 summarizes the total number of fish collected and the impingement rate for each sampling period. The average impingement rate for 2015 was 0.08 fish per million cubic feet of screened water. As demonstrated every year, the rate of fish impingement at Merrimack Station is extremely low by all industry standards even though the data is collected during worse case conditions, i.e., when river flows are less than 900 cfs. Table 2 identifies the ten impinged fish by common name as well as the respective total lengths. Table 3 provides corresponding scientific names of the fish species commonly found in this section of the Merrimack River. All of the weekly data sheets are attached to demonstrate river flows above 900 cfs and the operational status of the two units. There were no extraordinary impingement events in 2015.

If you have any questions regarding this report, please call Mr. Allan G. Palmer, NH Generation, at (603) 634-2439.

Very truly yours,

EVERSOURCE ENERGY

Elizabeth H. Tillotson

Manager - Regulatory and Environmental

NH Generation

Enclosures

CC:

Ms. Sharon M. DeMeo
US Environmental Protection Agency
Region 1: New England
Office of Ecosystem Protection
Mail Code: OEP
5 Post Office Square - Suite 100
Boston, MA 02109-3912

Mr. Eric Nelson
US Environmental Protection Agency
Region 1: New England
Office of Ecosystem Protection
Mail Code: OEP
5 Post Office Square - Suite 100
Boston, MA 02109-3912

NH Department of Environmental Services Water Division Wastewater Engineering Bureau Permits and Compliance Section 29 Hazen Drive, P.O. Box 95 Concord, NH 03302-0095

Mr. Joseph F. McKeon US Fish and Wildlife Service Central New England Fishery Resources Office 151 Broad Street Nashua, NH 03063

Mr. John Magee, Fish Habitat Biologist New Hampshire Fish and Game Department Inland Fisheries Division 11 Hazen Drive Concord, NH 03301

Ms. Carol Henderson, Environmental Review Coordinator New Hampshire Fish and Game Department 11 Hazen Drive Concord, NH 03301 Enclosure – April 4, 2016 Merrimack Station NPDES Permit No. NH0001465 2015 Annual Fish Impingement Report

TABLE 1

Merrimack Station

Fish Impingement Monitoring Program

2015 Schedule and Impingement Rates

48 Hour Sample Dates	Unit(s) Sampled	48 Hour Flow Through the Units	Impingement Rate	Fish Count
08/17 - 08/19	1	71,712,000 cu. ft.	0.06/million cu. ft.	4
09/08 - 09/10	1&2	46,742,400 cu. ft.	0.13/million cu. ft.	6

The average impingement rate for the two sampling periods was 0.08 fish per million cubic feet of screened water.

Enclosure – April 4, 2016 Merrimack Station NPDES Permit No. NH0001465 2015 Annual Fish Impingement Report

TABLE 2 Merrimack Station Fish Species Collected During Impingement Monitoring July 1, 2015 through October 15, 2015

Sampling Period	Fish Species Collected	Total Length (cm)
08/17 - 08/19	Alewife	7.0
	Alewife	6.0
	Alewife	7.0
	Alewife	6.5
09/08 - 09/10	Alewife	12.7
	Smallmouth Bass	7.6
	Smallmouth Bass	8.9
	Smallmouth Bass	15.2
	Smallmouth Bass	14.3
	Yellow Perch	13.9

Enclosure – April 4, 2016 Merrimack Station NPDES Permit No. NH0001465 2015 Annual Fish Impingement Report

TABLE 3

Merrimack Station Scientific Names of Species Common in the Merrimack River

Smallmouth Bass

Largemouth Bass

Bluegill Sunfish

Pumpkinseed Sunfish

Redbreast Sunfish

Brown Bullhead

White Sucker

Yellow Perch

Common Shiner

Spottail Shiner

Alewife

Chain Pickerel

Northern Pike

Creek Chub

Common Carp

American Eel

Micropterus dolomieui

Micropterus salmoides

Lepomis macrochirus

Lepomis gibbosus

Lepomis auritus

Ictalurus nebulosus

Catastamus commersoni

Perca flavescens

Notropis cornutus

Notropis hudsonius

Alosa pseudoharengus

Esox niger

Esox Lucius

Semotilus atromacultas

Cyprinus carpio

Anguilla rostrata



MERRIMACK STATION FISH IMPINGEMENT MONITORING REPORT

JULY 1 TO OCTOBER 15

2015

FISH IMPINGEMENT MONITORING **WEEKLY DATA SHEET**

MERRIMACK STATION

Week Ending

SAI	MPLING PERIOD
Begin	
End	

UNIT STATUS MK-1 OFF MK-2 OFF

CIRC PUMP STATUS MK-1 MK-2

Species		Total length (TL) of up to 20 fish per species measured to the nearest centimeter (cm) 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 2																		
	110	2	3	4	5	6	7	8	9	10	111	12	13	14	15	16	17	18	19	20
Alewife																	0	17		W.
American Shad						H												O. V		
Small mouth Bass																				
Largemouth Bass													1					19		
Bluegill Sunfish																A		J.C.	le le	
Pumpkinseed Sunfish																			erci,	
Redbrested Sunfish																	04	l K	The	
Brown Bullhead					TICK													1,00	i (UU)	
White Sucker						4												Fig. 1se		
Yellow Perch																				
Common Shiner																				
Spottail Shiner																I		de r		
American eel							Dien			da.	Hy	in a	1	120		Du -				
Unidentified Species		4910	OF THE REAL PROPERTY.	-30		4-000						HE		92	100					
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FISH IMPINGEMENT MONITORING WEEKLY DATA SHEET

MERRIMACK STATION

Week Ending 7 11 15

SA	MPLING PERIOD
Begin	
End	

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MK-1	OFF
MK-2	

CIRC PL	JMP STATUS
MK-1	
MK-2	

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Alewife						-														
American Shad			J.,																	
Small mouth Bass																	-			
Largemouth Bass																		1	177	
Bluegill Sunfish						1														
Pumpkinseed Sunfish																		THE		al.
Redbrested Sunfish			-	1																
Brown Bullhead																	Mrs.	1 bed		
White Sucker																				
Yellow Perch																				
Common Shiner																				
Spottail Shiner																			-	
American eel																1			1.16	
Unidentified Species					20	-0.20						1-1	8181	Maria.		LA AB		Marko d		
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Additional Fish													西班 奇特			Web I				

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FISH IMPINGEMENT MONITORING WEEKLY DATA SHEET

MERRIMACK STATION

Week Ending 7 18 15

SAMPLING PERIOD	UNIT STATUS	CIRC PUMP STATU
Begin	MK-1 OFF	MK-1
End	MK-2 OFF	MK-2
End	MK-2 OFF	MK-2

Species			開節	消息			Tota	leng	th (TL	of up	to 20	fish p	er spe	cies						
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Alewife																				
American Shad		1-1																		
Small mouth Bass						1 150											Cath			
Largemouth Bass																				
Bluegill Sunfish																1,6				
Pumpkinseed Sunfish																				
Redbrested Sunfish						40										Y.				
Brown Bullhead																			(m	7
White Sucker										3										
Yellow Perch																			100	
Common Shiner				1		1														
Spottail Shiner																				
American eel	3-13			Flan I	S No.	15	July 1	San T	dia.	1300	(S. E	ulist	411	BUILT .	dy	200	S. b.t	1200	120	1
Unidentified Species									TO ST											
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FISH IMPINGEMENT MONITORING **WEEKLY DATA SHEET**

MERRIMACK STATION

Week Ending 1

SAME	LING PERIOD
Begin	
End	

UNIT STATUS MK-1 ON MK-2 ON

CIRC PUMP STATUS A+B MK-1 A+B MK-2

Species	Total length (TL) of up to 20 fish per species measured to the nearest centimeter (cm)																			
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Alewife																				
American Shad								111												11
Small mouth Bass																	-	Out II		
Largemouth Bass																		195.80		
Bluegill Sunfish							III		I								10.000	TELE		
Pumpkinseed Sunfish																J.	- 1			
Redbrested Sunfish																14		900	11/10	
Brown Bullhead						II.													TI I	
White Sucker																				
Yellow Perch			A STATE OF THE PARTY OF THE PAR															T F		
Common Shiner										I									1101	
Spottail Shiner																		moin		
American eel																				
Unidentified Species													Moi	i de la						la v
				1																
Additional Fish																				

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FISH IMPINGEMENT MONITORING WEEKLY DATA SHEET MERRIMACK STATION

Week Ending 8 1 15

SAM	PLING PERIOD
Begin	
End	

UNIT STATUS MK-1 ON MK-2 OFF

CIRC PUMP STATUS MK-1 A+B MK-2

* River flows above anofe

Species	Total length (TL) of up to 20 fish per species measured to the nearest centimeter (cm)																			
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Alewife			1													IT				
American Shad								E CONTRACTOR							1. 1	1.5				
Small mouth Bass																	And I			
Largemouth Bass																			1	1
Bluegill Sunfish						-												and the same		
Pumpkinseed Sunfish								Saw.iii.	7.14.2 mal 8.1											
Redbrested Sunfish													1				1.80			1
Brown Bullhead																				
White Sucker						1												***		
Yellow Perch																			7	
Common Shiner													7	-						
Spottail Shiner																				
American eel		200	170	Tobal		1405	bus.		100	P# 102	1		- 11	- Free	19.3					
Unidentified Species		Med	1 19			Paris				2019					7					
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FISH IMPINGEMENT MONITORING WEEKLY DATA SHEET

MERRIMACK STATION

Week Ending 8815

SA	AMPLING PERIOD	
Begin		
End		

UNIT	STATUS
MK-1	OFF
MK-2	OFF

CIRC	PUMP STATUS
MK-1	
MK-2	

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FISH IMPINGEMENT MONITORING WEEKLY DATA SHEET MERRIMACK STATION

Week Ending 8 15 15

SAMI	PLING PERIOD
Begin	
End	

UNIT	STATUS
MK-1	OFF
MK-2	OFF

CIRC	PUMP STATUS
MK-1	
MK-2	

Species	Total length (TL) of up to 20 fish per species measured to the nearest centimeter (cm)																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Alewife																	11,11	7.0		
American Shad																			lippak (
Small mouth Bass																	-1	-		
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Brown Bullhead																				
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Common Shiner																		Inves	lid .	
Spottail Shiner																		ul rik		
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FISH IMPINGEMENT MONITORING WEEKLY DATA SHEET

MERRIMACK STATION

Week Ending 8 22 15

SAMPLING PERIOD
Begin \$\\17\15
End \$\\19\15

MK-1 ON MK-2 OFF MK-1 A+B

Species	Total length (TL) of up to 20 fish per species measured to the nearest centimeter (cm)												- A							
	1	2	3	14	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Alewife	7	6	7	6.5																
American Shad																				
Small mouth Bass											T						1234			
Largemouth Bass																	Hell			
Bluegill Sunfish																				
Pumpkinseed Sunfish																	14			
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Brown Bullhead											1								1	
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Yellow Perch																				
Common Shiner																				
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American eel																		tivil.		
Unidentified Species																				
	31																1 2			
Additional Fish																				
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FISH IMPINGEMENT MONITORING WEEKLY DATA SHEET MERRIMACK STATION

Week Ending 8 29 5

SAMPLING PERIOD	UNIT STATUS	CIRC PUMP STATUS
Begin	MK-1 OFF	MK-1
End	MK-2 OFF	MK-2

Species							Tota	il leng easure	ed to the	he nea	rest c	entim	eter (c	m)						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Alewife													1							
American Shad													1				mms.	MAIN	100111	
Small mouth Bass				17													and i	die	li o i	
Largemouth Bass										7				3			7	in the	1000	
Bluegill Sunfish																Total State of the				
Pumpkinseed Sunfish					I									1						
Redbrested Sunfish									1											
Brown Bullhead																		Jane	and a	
White Sucker	1																			
Yellow Perch																				
Common Shiner					II.								T							
Spottail Shiner					T															1
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Unidentified Species							No.			No.										
Additional Fish																62/11		OF THE REAL PROPERTY.	(E)	
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FISH IMPINGEMENT MONITORING WEEKLY DATA SHEET

MERRIMACK STATION

Week Ending 9 5 15

SAM	PLING PERIOD	
Begin		
End		

UNIT	STATUS
MK-1	OFF
MK-2	OFF

CIRC	PUMP STATUS
MK-1	
MK-2	

Species							Tota	al leng easure	th (TL	of up	to 20	fish p	er spe	ecies	VE DE				MANUTA S	
A 10 - William Control	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Alewife																				
American Shad								1								1			7	
Small mouth Bass			1												T	T		00 1		
Largemouth Bass				11	L	1			110		1							Tho	(lad	
Bluegill Sunfish																		125.00		
Pumpkinseed Sunfish	do.																de		Dogs	
Redbrested Sunfish																Tite	in a			
Brown Bullhead					I													Del.		
White Sucker																			no.	
Yellow Perch																		100		
Common Shiner		9																	Vol	
Spottail Shiner																	100			
American eel	II_																			
Unidentified Species		WINST			W-1			Links,				1888	Mist a			S Page	Final	Hey/h-d	ne j	
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Additional Fish							S TO THE						(BENCH					(me300)	E C	
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FISH IMPINGEMENT MONITORING WEEKLY DATA SHEET MERRIMACK STATION

Week Ending 9 12 15

SAMPLING PERIOD
Begin 9/8/15
End 9/10/15

MK-1 ON MK-2 ON

MK-1 A+B

Species		'n					Tota	l leng	th (TL	ne nea	to 20 rest c	entim	eter (c	em)						
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Alewife	12.7																			
American Shad																	anas'	EX cody	1	
Small mouth Bass	7.6	8.9	15,2	14.3				1									Land			
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Bluegill Sunfish																1				
Pumpkinseed Sunfish							1									1				
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Brown Bullhead																				
White Sucker																				
Yellow Perch	13.9																			
Common Shiner																				
Spottail Shiner																				
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FISH IMPINGEMENT MONITORING WEEKLY DATA SHEET

MERRIMACK STATION

Week Ending 9/19/15

SAM	PLING PERIOD
Begin	
End	

UNIT	STATUS
MK-1	OFF
MK-2	OFF

CIRC	PUMP STATUS
MK-1	
MK-2	

Species							Tota	l leng	th (TL	of up	to 20	fish p	er spe	ecies	50.					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Alewife							1													
American Shad	Le la la							1				h	L		113				18-	
Small mouth Bass																				
Largemouth Bass									الساء			IL	His	LE		JI.	1000	(Da		
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Pumpkinseed Sunfish																		-	Ug ns	
Redbrested Sunfish		L							I.								(Ind)			
Brown Bullhead			1	1								La					ching			1
White Sucker	10																	100		
Yellow Perch																				
Common Shiner															112					
Spottail Shiner																	100			
American eel															1				11/2	
Unidentified Species							Sei id		Most			Diale.					N. C.			RF.
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Additional Fish			15.07	TATE OF THE PARTY			Name of Street	NAME OF TAXABLE PARTY.	STATE						B10-0		19 (53)			TEN S
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FISH IMPINGEMENT MONITORING WEEKLY DATA SHEET MERRIMACK STATION

Week Ending 9 26 15

S	AMPLING PERIOD
Begin	
End	

UNIT	STATUS
MK-1	OFF
MK-2	OFF

CIRC	PUMP STATUS
MK-1	
MK-2	

Species	Total length (TL) of up to 20 fish per species measured to the nearest centimeter (cm)																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Alewife																				
American Shad																				
Small mouth Bass						13														
Largemouth Bass						-							1							Y.
Bluegill Sunfish													7							
Pumpkinseed Sunfish																			1	
Redbrested Sunfish																				
Brown Bullhead																				
White Sucker																				
Yellow Perch									10											
Common Shiner																				
Spottail Shiner																				
American eel			6.50	E UTV	200	A-33	4 1	1.2	23.0	Colle			100	310. 1		aye of	1 10		52.0	9.7
Unidentified Species		712																		
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FISH IMPINGEMENT MONITORING WEEKLY DATA SHEET

MERRIMACK STATION

Week Ending 10 3 15

SAM	PLING PERIOD
Begin	
End	

UNIT STATUS MK-1 OFF MK-2 OFF MK-1 MK-2

Species	Total length (TL) of up to 20 fish per species measured to the nearest centimeter (cm) 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Alewife																				
American Shad																			1.00	
Small mouth Bass																		15-11		
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Bluegill Sunfish																		H		
oumpkinseed Sunfish		<u></u>															171			
Redbrested Sunfish																	15/8/3		1	
Brown Bullhead																	7766		X	
White Sucker																		III E	10	
/ellow Perch		1																1190		
Common Shiner								Ĭ										47		
Spottail Shiner																				
American eel								FT.										71.11	100	
Unidentified Species													N Jin			F-3/3	122		N F 1	
Additional Fish																				

Attachment 4

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FISH IMPINGEMENT MONITORING WEEKLY DATA SHEET MERRIMACK STATION

Week Ending 10 10 15

SAMI	PLING PERIOD
Begin	
End	

UNIT STATUS
MK-1 OFF
MK-2 OFF

MK-1 MK-2

Species	Total length (TL) of up to 20 fish per species measured to the nearest centimeter (cm)																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Alewife													1				1			
American Shad														V		TA.				
Small mouth Bass						1			7										2000	
Largemouth Bass							U.T.					100								
Bluegill Sunfish							1													
Pumpkinseed Sunfish					Ŷ.			3												
Redbrested Sunfish																				
Brown Bullhead																				
White Sucker																				
Yellow Perch														1						
Common Shiner																				
Spottail Shiner																				
American eel				Čau)													11111			
Unidentified Species			N-199						機能	10.29										
Additional Fish	DE R				THEN		N. Komisi	Kriyirai												
																				F
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A Market - Market Andrews						To all													-	-

FISH IMPINGEMENT MONITORING WEEKLY DATA SHEET

MERRIMACK STATION

Week Ending 10/17/15

SAMPLING PERIOD	UNIT STATUS	CIRC PUMP STATU
Begin	MK-1 ON	MK-1 A4B
End	MK-2 OFF	MK-2 —

Species	Total length (TL) of up to 20 fish per species measured to the nearest centimeter (cm)																			
Opedies	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Alewife																				
American Shad										2			1/4							
Small mouth Bass									di Vacanta										1	
Largemouth Bass			إسليل					2011-21												
Bluegill Sunfish																			1994	
Pumpkinseed Sunfish								1										Cuis		
Redbrested Sunfish																				
Brown Bullhead																				
White Sucker																	hill			
Yellow Perch																				
Common Shiner																				
Spottail Shiner								111										16 1	189	
American eel																				
Unidentified Species										Marin .										
Additional Fish					to the							MEANING THE								