

Leech Lake Walleye Analysis

Test Data

SEINING
TRAWLING
ELECTRO FISHING
GILLNETTING

Sampling Stations

SEINING – 5

TRAWLING - 3

ELECTRO FISHING – 12

GILLNETTING - 36

Gillnet Data

YEAR	Age																					
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1983	7	26	21	42	23	3	9	24	11	0	3	1	0	0	0	0	0	0	0	0	0	0
1984	12	87	22	40	30	27	22	9	6	6	4	2	2	0	0	0	0	0	0	0	0	0
1985	1	26	68	33	30	44	31	10	7	6	2	2	0	0	0	0	0	0	0	0	0	0
1986	3	20	32	49	43	32	25	14	8	9	5	2	1	1	0	0	0	0	0	0	0	0
1987	4	86	14	12	24	31	20	6	6	2	5	0	5	2	0	0	0	0	0	0	0	0
1988	65	19	122	144	35	45	27	6	4	7	1	7	0	0	0	0	0	0	0	0	0	0
1989	2	161	28	66	71	43	26	11	7	1	0	2	0	2	1	1	0	0	0	0	0	0
1990	1	34	147	34	32	21	7	10	5	6	0	0	2	1	0	0	0	0	0	0	0	0
1991	17	53	37	113	25	37	16	9	5	1	1	1	1	1	0	0	0	0	0	0	0	0
1992	0	55	28	17	51	10	26	6	8	2	3	1	1	0	0	0	0	0	0	0	0	0
1993	0	8	49	25	6	42	5	21	1	0	6	0	3	0	0	0	0	0	0	0	0	0
1994	3	4	18	42	19	14	45	10	10	6	0	3	0	1	0	1	0	0	0	0	0	0
1995	18	101	4	5	36	19	10	45	7	13	6	3	2	2	0	0	0	0	0	0	0	0
1996	5	72	180	4	11	25	6	10	18	2	7	0	1	1	0	0	0	0	0	0	0	0
1997	10	23	53	72	6	4	12	5	0	9	1	1	1	1	0	0	0	0	0	1	0	0
1998	17	152	72	72	73	10	5	2	2	3	10	1	0	0	0	0	0	0	0	0	0	0
1999	20	39	103	48	41	53	3	1	4	3	2	4	0	0	0	0	0	0	0	0	0	0
2000	5	40	31	50	20	22	25	0	0	7	2	1	3	0	0	0	0	0	0	1	0	0
2001	23	35	58	34	40	23	10	26	0	1	1	0	0	0	0	0	0	0	0	0	0	0
2002	11	47	13	53	25	38	13	10	9	2	0	2	0	0	0	0	0	0	0	0	0	0
2003	3	39	36	11	36	10	25	4	12	9	1	0	0	0	0	0	0	0	0	0	0	0
2004	0	22	47	33	11	17	8	21	3	6	9	1	0	0	1	0	0	0	0	0	0	0
2005	1	16	15	34	41	8	20	5	21	2	4	5	0	0	1	0	0	1	1	0	0	1
2006	25	97	7	10	33	21	4	14	13	6	7	5	8	1	0	1	1	0	1	0	0	0
2007	53	168	121	24	9	18	21	4	16	4	18	5	6	3	0	0	1	0	0	1	0	0
2008	0	74	126	58	4	6	12	7	2	10	5	6	3	6	3	2	1	0	0	0	0	1
2009	1	26	89	106	42	3	1	10	10	0	9	2	2	3	1	1	0	0	2	0	2	0

60 % Alignment +/- 20%

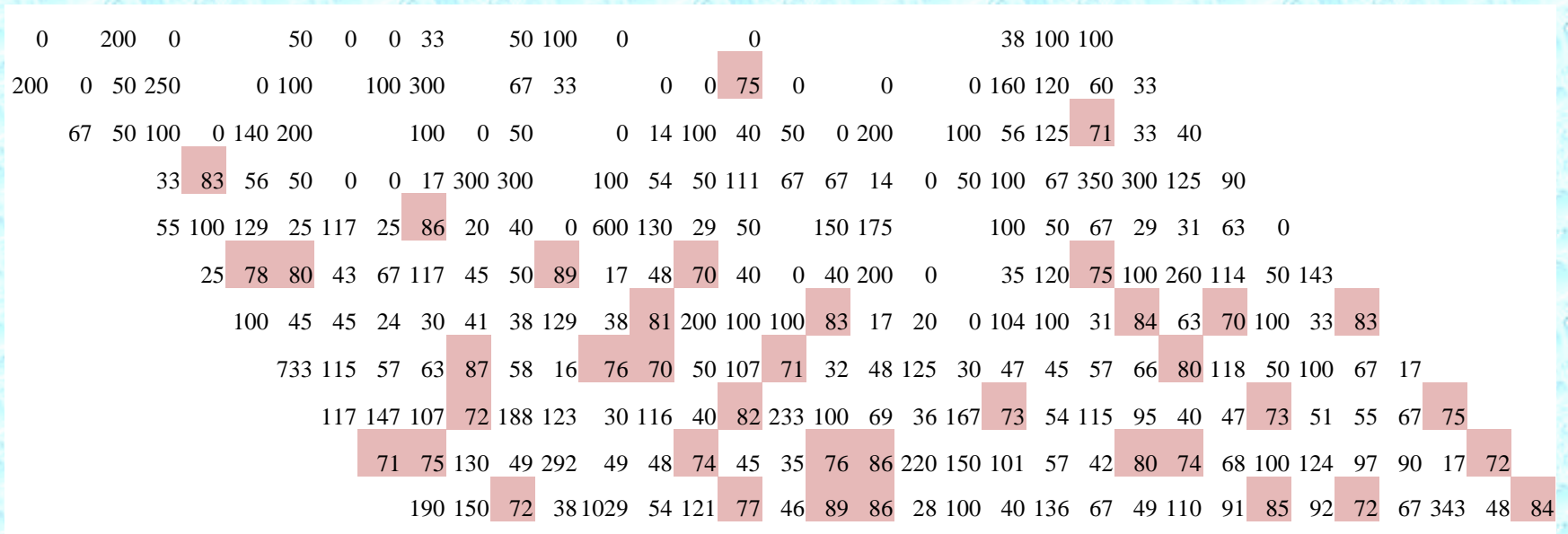
Age	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0
15	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	1
14	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	3	1
13	0	0	0	1	2	0	2	1	1	0	0	1	2	1	1	0	0	0	0	0	0	0	0	0	1	3	6	3
12	0	2	0	1	5	0	0	2	1	1	3	0	2	1	1	0	0	3	0	0	0	0	0	0	8	6	3	2
11	1	2	2	2	0	7	2	0	1	1	0	3	3	0	1	1	4	1	0	2	0	1	5	5	5	6	2	2
10	3	4	2	5	5	1	0	0	1	3	6	0	6	7	1	10	2	2	1	0	1	9	4	7	18	5	9	9
9	0	6	6	9	2	7	1	6	1	2	0	6	13	2	9	3	3	7	1	2	9	6	2	6	4	10	0	0
8	11	6	7	8	6	4	7	5	5	8	1	10	7	18	0	2	4	0	0	9	12	3	21	13	16	2	10	10
7	24	9	10	14	6	6	11	10	9	6	21	10	45	10	5	2	1	0	26	10	4	21	5	14	4	7	10	10
6	9	22	31	25	20	27	26	7	16	26	5	45	10	6	12	5	3	25	10	13	25	8	20	4	21	12	1	1
5	3	27	44	32	31	45	43	21	37	10	42	14	19	25	4	10	53	22	23	38	10	17	8	21	18	6	3	3
4	23	30	30	43	24	35	71	32	25	51	6	19	36	11	6	73	41	20	40	25	36	11	41	33	9	4	42	42
3	42	40	33	49	12	144	66	34	113	17	25	42	5	4	72	72	48	50	34	53	11	33	34	10	24	58	106	106
2	21	22	68	32	14	122	28	147	37	28	49	18	4	180	53	72	103	31	58	13	36	47	15	7	121	126	89	89
1	26	87	26	20	86	19	161	34	53	55	8	4	101	72	23	152	39	40	35	47	39	22	16	97	168	74	26	26
0	7	12	1	3	4	65	2	1	17	0	0	3	18	5	10	17	20	5	23	11	3	0	1	25	53	0	1	1

Data by Cohort

<u>YEAR</u>	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007					
<u>13</u>	0	0	0	1	2	0	2	1	1	0	0	1	2	1	1	0	0	0	0	0	0	0	0	0	0	0	1	3	6	3
<u>12</u>	0	2	0	1	5	0	0	2	1	1	3	0	2	1	1	0	0	3	0	0	0	0	0	0	0	0	8	6	3	2
<u>11</u>	1	2	2	2	0	7	2	0	1	1	0	3	3	0	1	1	4	1	0	2	0	1	5	5	5	6	2			
<u>10</u>	3	4	2	5	5	1	0	0	1	3	6	0	6	7	1	10	2	2	1	0	1	9	4	7	18	5	9			
<u>9</u>	0	6	6	9	2	7	1	6	1	2	0	6	13	2	9	3	3	7	1	2	9	6	2	6	4	10	0			
<u>8</u>	11	6	7	8	6	4	7	5	5	8	1	10	7	18	0	2	4	0	0	9	12	3	21	13	16	2	10			
<u>7</u>	24	9	10	14	6	6	11	10	9	6	21	10	45	10	5	2	1	0	26	10	4	21	5	14	4	7	10			
<u>6</u>	9	22	31	25	20	27	26	7	16	26	5	45	10	6	12	5	3	25	10	13	25	8	20	4	21	12	1			
<u>5</u>	3	27	44	32	31	45	43	21	37	10	42	14	19	25	4	10	53	22	23	38	10	17	8	21	18	6	3			
<u>4</u>	23	30	30	43	24	35	71	32	25	51	6	19	36	11	6	73	41	20	40	25	36	11	41	33	9	4	42			
<u>3</u>	42	40	33	49	12	144	66	34	113	17	25	42	5	4	72	72	48	50	34	53	11	33	34	10	24	58	106			
<u>2</u>	21	22	68	32	14	122	28	147	37	28	49	18	4	180	53	72	103	31	58	13	36	47	15	7	121	126	89			

% Alignment by Cohort

80 ± 10% of previous year



80%± 10% of previous year - using raw #s

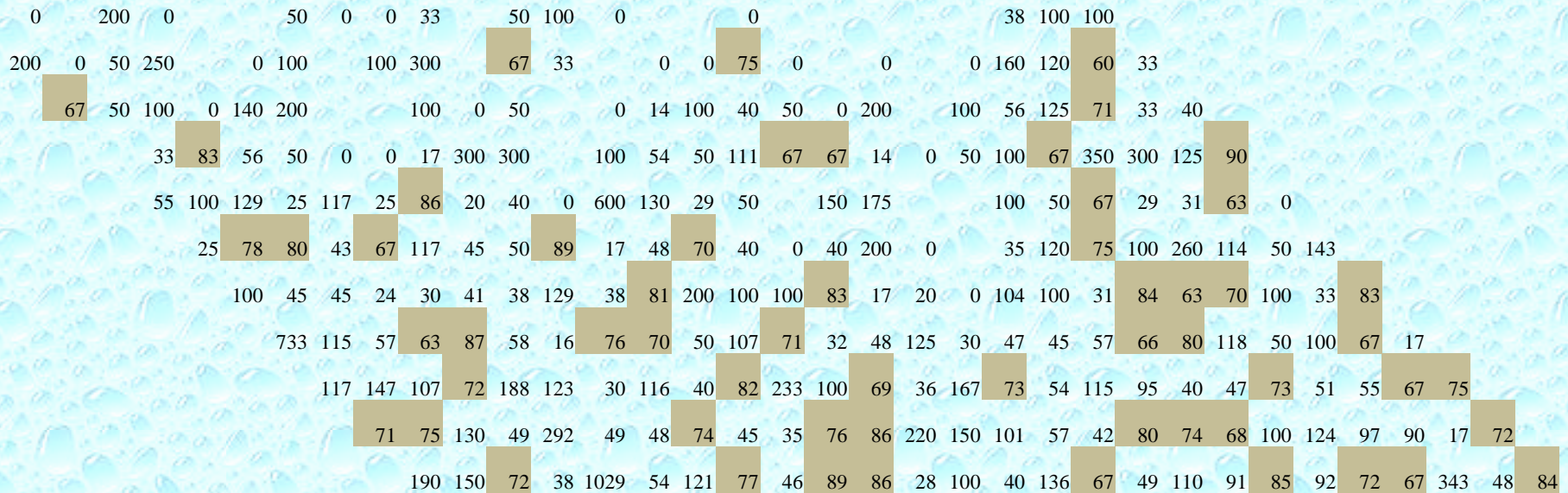
% Alignment

39 of 286

13.6%

% Alignment by Cohort

75 ± 15% of previous year



75%± 15% of previous year - using raw #s

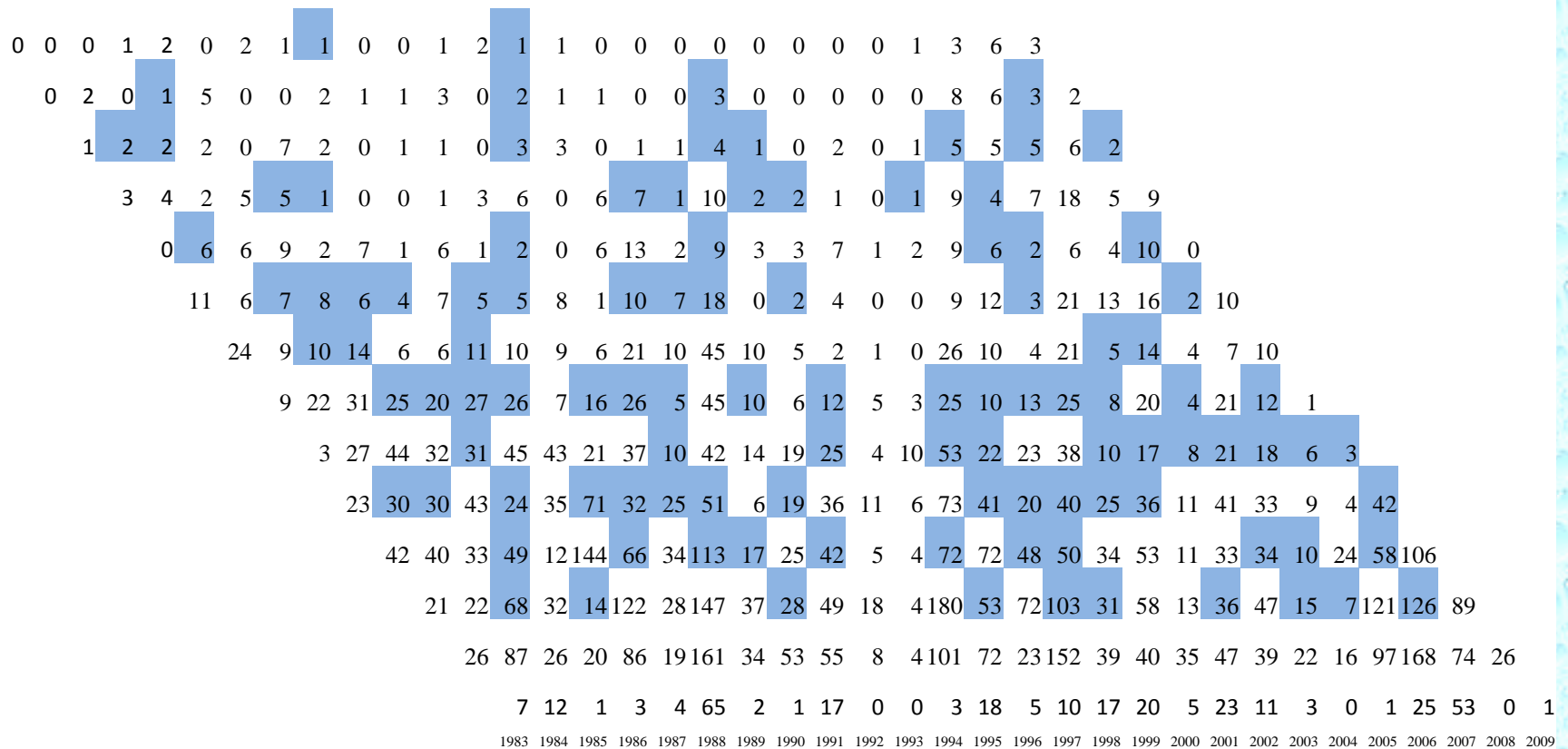
% Alignment

58 of 286

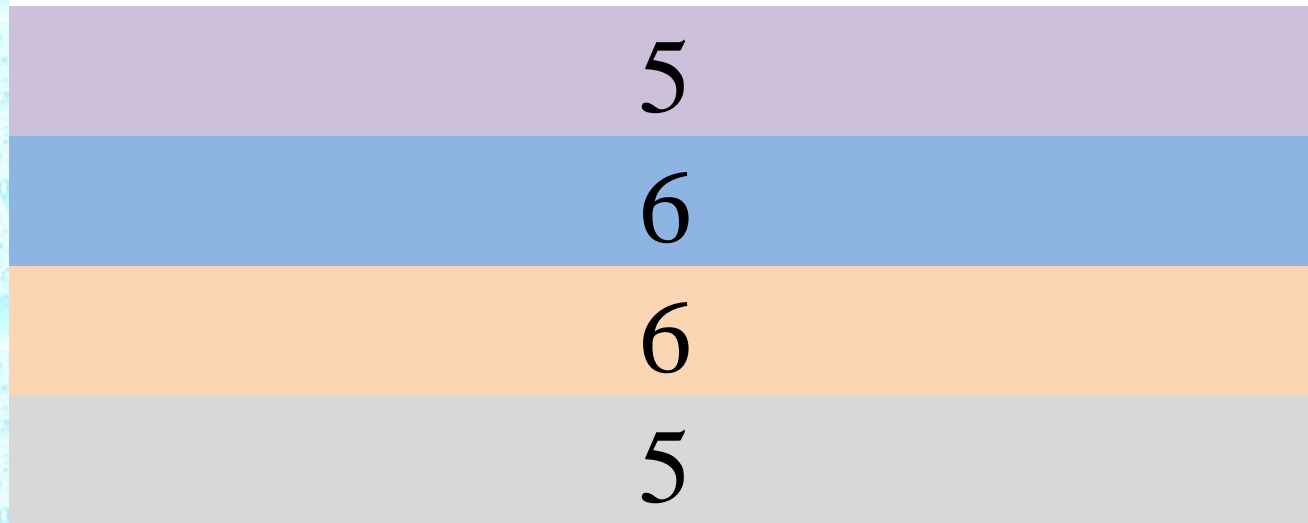
20.3%

% Alignment by Cohort

60 ± 20% of previous year



Quartile Rank - Raw #s



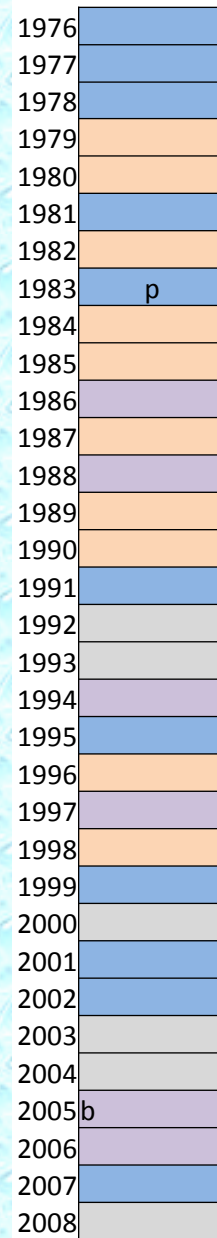
22 years prior to slot

Representation in Quartile by Age

Age	60% survivability	424	223	138	43
16	0.00047				
15	0.000784				
14	0.001306				
13	0.002177				
12	0.003628	1.0	0.5	0.3	0.1
11	0.006047	1.7	0.9	0.6	0.2
10	0.010078	2.9	1.5	0.9	0.3
9	0.016796	4.8	2.5	1.6	0.5
8	0.027994	7.9	4.2	2.6	0.8
7	0.046656	13.2	7.0	4.3	1.3
6	0.07776	22.1	11.6	7.2	2.2
5	0.1296	36.8	19.3	12.0	3.7
4	0.216	61.3	32.2	19.9	6.2
3	0.36	102.1	53.7	33.2	10.4
2	0.6	170.2	89.5	55.4	17.3
	1.494558	283.7	149.2	92.3	28.8
	0.35767				

Under 15"	Age 2-12
424	223
138	43

Back Testing



1990 Data		
73% Alignment		
3 better		
Age	Quart Rnk	Actl Catch
12	1	2
11	1	0
10	1	0
9	3	6
8	3	5
7	7	10
6	7	7
5	12	21
4	61	32
3	33	34
2	170	147
Total	299	264

6/11	55%
7/11	64%
8/11	73%
9/11	82%
10/11	91%

1990 – 1999 Data Alignment

1990 Data		
73% Alignment		
3 better		
Age	Quart Rnk	Actl Catch
12	1	2
11	1	0
10	1	0
9	3	6
8	3	5
7	7	10
6	7	7
5	12	21
4	61	32
3	33	34
2	170	147
Total	299	264

1991 Data		
82 % Alignment		
2 better		
Age	Quart Rnk	Actl Catch
12	0	1
11	1	1
10	2	1
9	2	1
8	4	5
7	4	9
6	7	16
5	37	37
4	20	25
3	102	113
2	55	37
Total	234	246

1992 Data		
82 % Alignment		
2 better		
Age	Quart Rnk	Actl Catch
12	0	1
11	1	1
10	1	3
9	3	2
8	3	8
7	4	6
6	22	26
5	12	10
4	61	51
3	33	17
2	55	28
Total	195	153

1993 Data		
55 % Alignment		
2 better, 3 worse		
Age	Quart Rnk	Actl Catch
12	1	3
11	1	0
10	2	6
9	2	0
8	3	1
7	13	21
6	7	5
5	37	42
4	20	6
3	33	25
2	90	49
Total	209	158

1994 Data		
64 % Alignment		
3 better, 1 worse		
Age	Quart Rnk	Actl Catch
12	0	0
11	1	3
10	1	0
9	2	6
8	8	10
7	4	10
6	22	45
5	12	14
4	20	19
3	54	42
2	17	18
Total	141	167

In alignment +/- 1 fish

1995 Data		
73 % Alignment		
3 better		
Age	Quart Rnk	Actl Catch
12	1	2
11	1	3
10	2	6
9	5	13
8	3	7
7	13	45
6	7	10
5	12	19
4	32	36
3	10	5
2	17	4
Total	103	150

1996 Data		
91 % Alignment		
1 better		
Age	Quart Rnk	Actl Catch
12	0	1
11	1	0
10	3	7
9	2	2
8	8	18
7	4	10
6	7	6
5	19	25
4	6	11
3	10	4
2	170	180
Total	230	264

1997 Data		
82 % Alignment		
2 worse		
Age	Quart Rnk	Actl Catch
12	0	1
11	2	1
10	1	1
9	5	9
8	3	0
7	4	5
6	12	12
5	4	4
4	6	6
3	102	72
2	90	53
Total	229	164

1998 Data		
91 % Alignment		
1 worse		
Age	Quart Rnk	Actl Catch
12	1	0
11	1	1
10	3	10
9	2	3
8	3	2
7	7	2
6	2	5
5	4	10
4	61	73
3	54	72
2	55	72
Total	193	250

1999 Data		
100 % Alignment		
Age	Quart Rnk	Actl Catch
12	0	0
11	2	4
10	1	2
9	2	3
8	4	4
7	1	1
6	2	3
5	37	53
4	32	41
3	33	48
2	170	103
Total	284	262

2000 – 2009 Data Alignment

2000 Data		
82 % Alignment		
1 better, 1 worse		
Age	Quart Rnk	Actl Catch
12	1	3
11	1	1
10	2	2
9	3	7
8	1	0
7	1	0
6	22	25
5	19	22
4	20	20
3	102	50
2	55	31
Total	227	161

2001 Data		
91 % Alignment		
1 better		
Age	Quart Rnk	Actl Catch
12	0	0
11	1	0
10	2	1
9	1	1
8	1	0
7	13	26
6	12	10
5	12	23
4	61	40
3	33	34
2	90	58
Total	226	193

2002 Data		
100 % Alignment		
Age	Quart Rnk	Actl Catch
12	0	0
11	1	2
10	0	0
9	1	2
8	8	9
7	7	10
6	7	13
5	37	38
4	20	25
3	54	53
2	17	13
Total	152	165

2003 Data		
82 % Alignment		
1 better, 1 worse		
Age	Quart Rnk	Actl Catch
12	1	0
11	0	0
10	1	1
9	5	9
8	4	12
7	4	4
6	22	25
5	12	10
4	32	36
3	10	11
2	90	36
Total	181	144.0

2004 Data		
82 % Alignment		
2 worse		
Age	Quart Rnk	Actl Catch
12	0	0
11	0	1
10	3	9
9	3	6
8	3	3
7	13	21
6	7	8
5	19	8
4	6	11
3	53	33
2	90	47
Total	197	147

In alignment +/- 1 fish

2005 Data		
91 % Alignment		
1 better		
Age	Quart Rnk	Actl Catch
12	0	0
11	2	5
10	2	4
9	2	2
8	8	21
7	4	5
6	12	20
5	4	8
4	32	41
3	54	34
2	17	15
Total	137	155

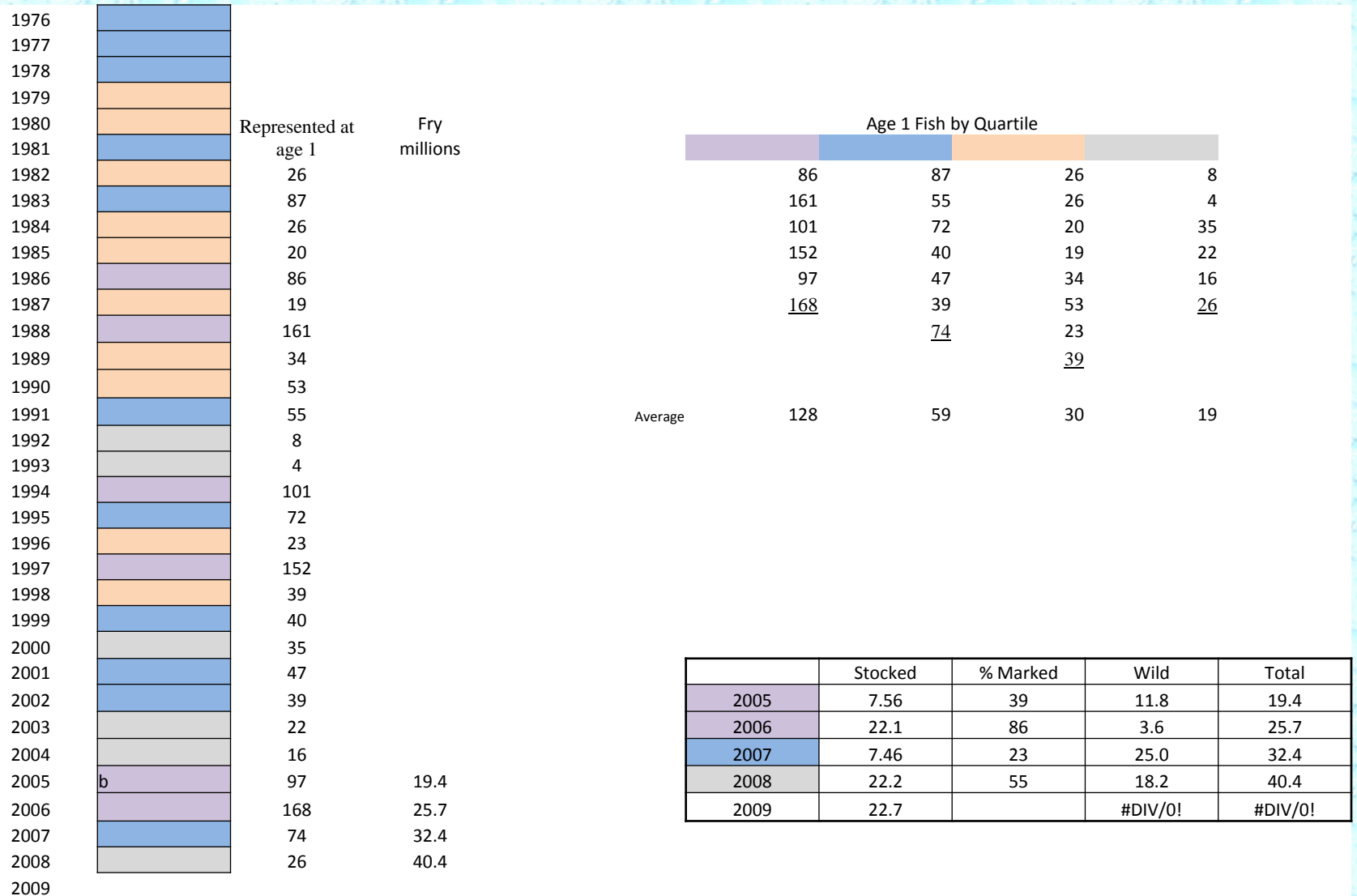
2006 Data		
64 % Alignment		
4 better		
Age	Quart Rnk	Actl Catch
12	1	8
11	1	5
10	1	7
9	5	6
8	3	13
7	7	14
6	2	4
5	19	21
4	32	33
3	10	10
2	17	7
Total	98	128

2007 Data		
64 % Alignment		
4 better		
Age	Quart Rnk	Actl Catch
12	1	6
11	1	5
10	3	18
9	2	4
8	4	16
7	1	4
6	12	21
5	19	18
4	6	9
3	10	24
2	170	121
Total	229	246

2008 Data		
73 % Alignment		
3 better		
Age	Quart Rnk	Actl Catch
12	0	3
11	2	6
10	1	5
9	3	10
8	1	2
7	7	7
6	12	12
5	4	6
4	6	4
3	102	58
2	170	126
Total	308	239

2009 Data		
82 % Alignment		
2 better		
Age	Quart Rnk	Actl Catch
12	1	2
11	1	2
10	2	9
9	1	0
8	4	10
7	7	10
6	2	1
5	4	3
4	61	42
3	102	106
2	90	89
Total	275	274

Recognition



Create Weather Index - Sunshine, lake temp., other factors that affect zooplankton production - These factors are out of our control but will help us understand survivability of fry.

Percent of Walleyes under 15" in Gillnet is a meaningless Goal & Trend. There is a poor correlation between YOY walleyes caught in gillnets and Year Class Strength.

Perch Count