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A Stock Status Assessment of Walleye (*Sander vitreus*) at Pigeon Lake, Alberta, 2003

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Conservation Report Series Types:
Data & Technical

ISBN printed: 0-7785-4115-0
ISBN online: 0-7785-4116-9
ISSN printed: 1712-2821
ISSN online: 1712-283X
Publication Number: T/090

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Suggested citation:
Patterson, B. and S. R. Grossman. 2005. A stock status assessment of walleye (*Sander vitreus*) at Pigeon Lake, Alberta, 2003. Data Report (D-2005-004), produced by Alberta Conservation Association, Edmonton, Alberta, Canada. 21 pp.

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EXECUTIVE SUMMARY

To aid in the management and recovery of Alberta's walleye stock at Pigeon Lake, the Alberta Conservation Association (ACA) conducted a Fall Walleye Index Netting (FWIN) survey on 21 September 2003. The purpose of this survey was to collect data for the ongoing assessment of the walleye fishery at this lake. Fall Walleye Index Netting provides an estimate of the both fish abundance and population structure and is used to assist Alberta Sustainable Resource Development (ASRD) in the sustainable management of the sport fishery.

Pigeon Lake was stocked with a total of 18.5 million walleye fingerlings and fry from 1979 to 1984 and from 1994 to 1999 that resulted in an abundance of 4 to 9 year old fish in 2003. The majority of older fish in Pigeon Lake were also likely derived from these stockings. Results from the 2003 survey show that fish aged between 4 and 9 years comprise up 95% of the fishery and represent a narrow age-class distribution. Several other younger year-classes are absent and recruitment can be expected to be extremely low in upcoming years based on weak or absent age-classes under age 4. Our analyses showed that the current walleye fishery is composed of fast growing fish that can reach 500 mm by six years of age. All males over the age of 7 were classified as mature, while females did not reach 100% maturity until age 9; however a majority of males between ages 4 and 7 and females between ages 7 and 9 were also mature. The estimated catch was very high, ranging from 37.7 - 48.8 walleye/100 m^2/24 h, with a maximum likelihood estimate of the mean at 43.2 (walleye/100 m^2/24 h; n = 197).

ACKNOWLEDGEMENTS

This work was funded by the Alberta Conservation Association (ACA) and was completed with in-kind support from Alberta Sustainable Resource Development (ASRD), in Red Deer and Edmonton.

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1.0 INTRODUCTION

1.1 General introduction

Efforts to quantify the abundance of sport fish represent a crucially important component of fisheries management. The Alberta Conservation Association (ACA) conducted a Fall Walleye Index Netting (FWIN) survey at Pigeon Lake, Alberta on 21 September 2003. The objective of this survey was to obtain information regarding the abundance and population structure of walleye (*Sander vitreus*) in this lake. The information collected from a FWIN provides a precise snapshot of the population structure by surveying only a narrow window of time (maximum of 3 days, water temperature ranging from 10 – 15 degrees Celsius), thereby minimizing the complication associated with growth and age of fish over the survey period.

FWIN catch data were recently validated as an appropriate index of walleye abundance using population density estimates and angler total catch rate data (Sullivan and Park 2004). The metric catch/net was highly correlated to catch/angling-hour ($r^2 = 0.90$, df = 6, $P = 0.001$) suggesting that it is a reasonable estimate of walleye abundance.

1.2 Study rationale

The purpose of this FWIN was to provide Alberta Sustainable Resource Development (ASRD) with current data describing the walleye fishery at Pigeon Lake, Alberta. The stocking of 18.5 million walleye fry and fingerlings from 1979 to 1984 and 1994 to 1999 appears to have re-established a fishery at Pigeon Lake. This fishery was assigned a collapsed status and in 1996 a sport fishery regulation of catch and release (0 daily bag limit) was implemented. With this restrictive angling regulation in place, the walleye fishery at Pigeon Lake should be in a "recovery" phase, showing population structure characteristics more typical of vulnerable or stable fisheries. This FWIN survey provides the data necessary to re-assess the status of walleye after a number of years of restricted angler harvest at Pigeon Lake, Alberta.

2.0 STUDY AREA

Pigeon Lake is located in the Battle River drainage and the main inlet is Tide Creek, located along the west shoreline. The lake is located about 60 kilometres southwest of Edmonton. The lake has a surface area of 9,748 hectares and a maximum depth of 9 metres (Figure 1; ASRD unpublished data). There is considerable anthropogenic development along the shoreline of the lake, with over 2,300 private cottages, 10 summer villages, 9 unincorporated subdivisions, 8 youth and church group camps, 3 Provincial Parks, 5 golf courses, and several private campgrounds, day-use areas and boat-launches.

3.0 MATERIALS AND METHODS

3.1 Survey method

The FWIN survey methods described by the Ontario Ministry of Natural Resources (Morgan 2000) were followed in this study. Table 1 summarizes the basic sampling methods employed at Pigeon Lake in 2003. We used a standard, 1.8 m deep by 61 m long, monofilament gill net, consisting of eight mesh sizes. The following meshes (stretched measurement) are sewn together in ascending order of size: 25 mm, 38 mm, 51 mm, 64 mm, 76 mm, 102 mm, 127 mm and 152 mm.

The surface area of the lake was divided into 0.25 square kilometre (km^2) quadrants using a Universal Transverse Mercator (UTM) grid. We sequentially numbered the quadrants and randomly selected them (without replacement) for sampling in order to minimize bias in locating sites. Net sets were placed in the centre of each quadrant if possible, or within 250 m of the centre where conditions were suitable.

Bathymetry data was used to calculate a ratio of surface area for the depth strata: i) 2 m - 5 m and ii) 5 m - 15 m (Morgan 2000). We stratified the number of nets set in each strata based on this ratio of shallow: deep quadrants throughout the lake. If the desired depth or suitable topography was not found within 250 m of the selected quadrant centre, we replaced that quadrant with the next randomly selected quadrant in the sequence (Morgan 2000; see Figure 1 for a map of the sampled quadrants).

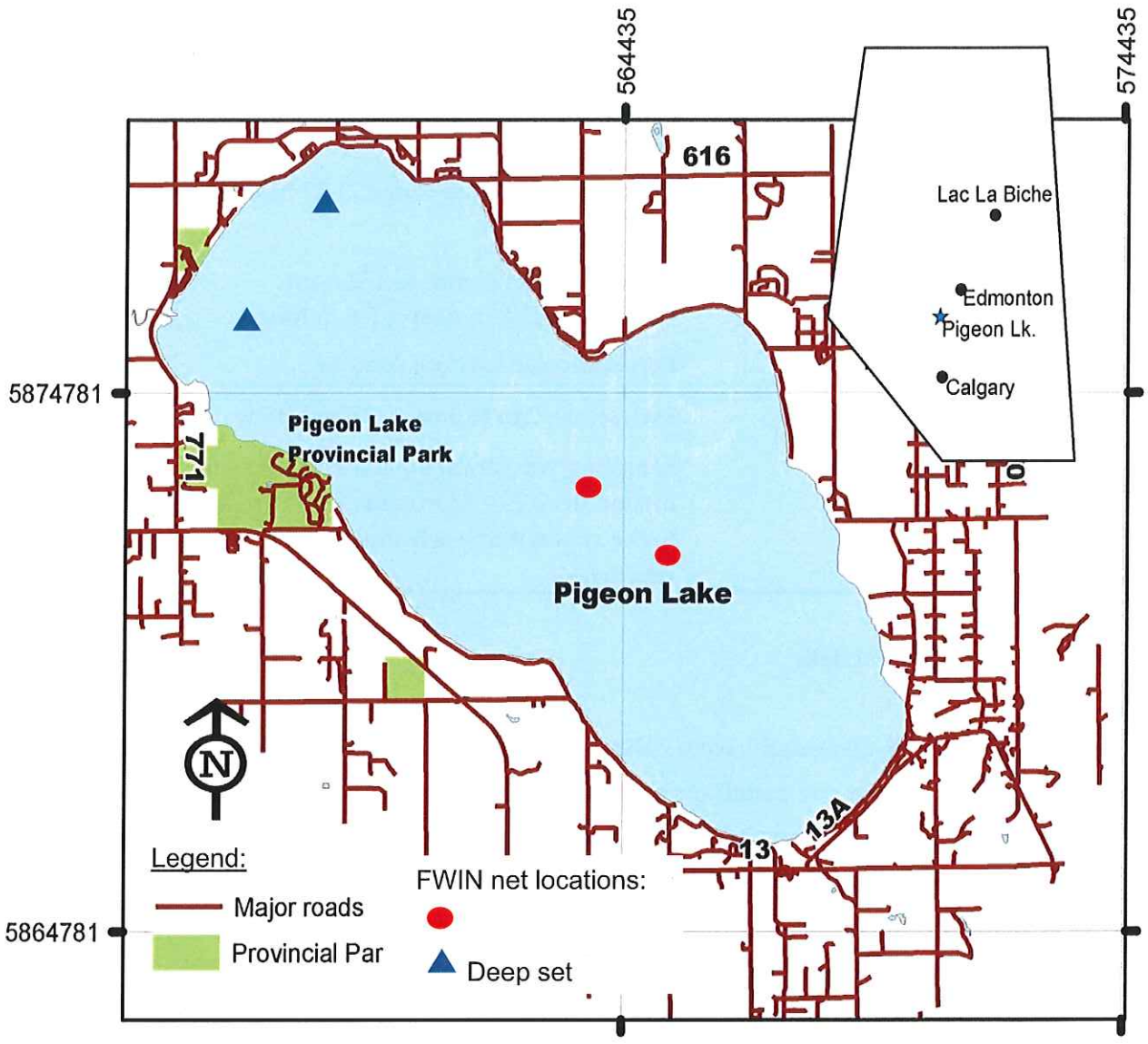

Figure 1. Location of Pigeon Lake, Alberta and the 2003 Fall Walleye Index Netting locations. Alberta map indicates location of Pigeon Lake. The red dots and blue triangles represent deep (5 - 15 m water depth) and shallow (2 - 5 m water depth) net locations, respectively.

Table 1. Summary of methods for 2003 Fall Walleye Index Netting survey at Pigeon Lake, Alberta. Modified from Morgan (2000).

Criteria	Target
Season	Fall; when surface temperature is between 15^0 C and 10^0 C
Set duration	24 hours (acceptable range 21-27 hrs)
Gear	Gillnet gang - 8 mesh sizes (25 mm to 152 mm) - Each mesh 1.8 m deep x 7.6 m long
Orientation	Perpendicular to shore contour
Depth	Two strata, 2 m to 5 m and 5 m to15 m
Stratification	Sampling was stratified across shallow (2 – 5 m) and deep (5 – 15 m) quadrants proportional to the area within each stratum across the whole lake.

3.2 Biological data

In the field, all fish caught were collected, bagged and recorded separately by species and mesh size (i.e., by panel) for each net. We collected data on fork length (± 1 mm), total weight (± 10 g), sex, and state of maturity as well as ageing structures from each fish. Fish were described as sexually mature if they appeared able to spawn during the next spawning season (Duffy et al. 2000). The left operculum and the first three rays of the left pelvic fin were collected to age walleye, the left cleithrum and the first three rays of the left pelvic fin for northern pike (*Esox lucius*), and scale samples for lake whitefish (*Coregonus clupeaformis*). Ages were determined according to Mackay et al. (1990).

3.3 Data analysis

We collected age, fork length frequency distributions and length-at-age from the biological data collected from net catches. Weight-length and length-age graphs were plotted to identify and verify any outliers. Outliers were omitted if a measurement or recording error was suspected.

We used a bootstrap technique to estimate catch per unit effort of walleye and 95% confidence intervals for this estimate. Sullivan (2004) summarized bootstrapping as a statistical procedure where an original sample of the population is subsequently re-sampled and a new mean calculated. Bootstrap samples are assumed to approximate the distribution of values that would have arisen from repeatedly sampling the original population (Haddon 2001). Re-sampling thousands of times provides a distribution of possible means describing the likelihood of the true (population) mean being within that distribution (Sullivan 2004). This group of means represents the distribution of possible means from data with the same scale of variation as observed in the original data set. Frequentist parameter estimates (e.g., means) are typically equal to maximum-likelihood estimates (MLE) for the parameters of the specified probability density function (Gotelli and Ellison 2004). Empirical confidence intervals (95% CI) were calculated following Haddon (2001). The final proportions (i.e., probability densities) were standardized to range between 0 and 1 (Paul et al. 2003). All data including the FWIN data were loaded into the Fisheries Management Information System (FMIS) of Alberta Sustainable Resource Development (ASRD).

4.0 RESULTS

4.1 Walleye abundance and population structure metrics

A total of 4 nets (2 shallow and 2 deep) were set in Pigeon Lake on 21 September 2003 (Appendix 6.1). The average soak time was 24.9 hours (range = 23.7- 26.3 hours). We caught and sampled a total of 197 walleye, 8 northern pike and 47 lake whitefish (Appendix 6.2).

The following subsections are listed according to biological characteristics used in the assessment of walleye management categories (i.e., stable, vulnerable, and collapsed) in Alberta. These categories are described in the Provincial Governments' Walleye Management and Recovery Plan (WMRP; Berry 1995).

4.2 Age-class distribution and stability

Walleye captured in gill nets (i.e., FWIN) displayed a narrow age-class distribution with age-classes 4 through 9, representing the walleye fry and fingerlings that were stocked into the lake between 1999 and 1994, made up 96% of the entire catch and the mean age was 5.6 years (Figure 2). All other age-classes are either weak (CUE $\leq$ 1 walleye/100m^2/24h)) or absent, and taken together strongly suggest continual year-class failures. Based on this FWIN catch, recruitment to the breeding population can be expected to be extremely low in upcoming years. According to the Walleye Management and Recovery Plan, this age-class distribution is indicative of an unstable, collapsed fishery.

4.3 Length-at-age

The majority of walleye first reached a size of 500 mm (fork length) at 5 to 7 years of age (Figure 3). This index-of-growth indicates a vulnerable walleye fishery, according to the WMRP.

4.4 Catch rate

The FWIN catch rate at Pigeon Lake in 2003 ranged from 37.7 - 48.8 walleye/100 m^2/24 h (95% CI; n = 197; Figure 4). The MLE was 43.2 walleye/100 m^2/24 h. This catch rate is indicative of a high density of walleye according to Provincial government criteria (Watters 2005).

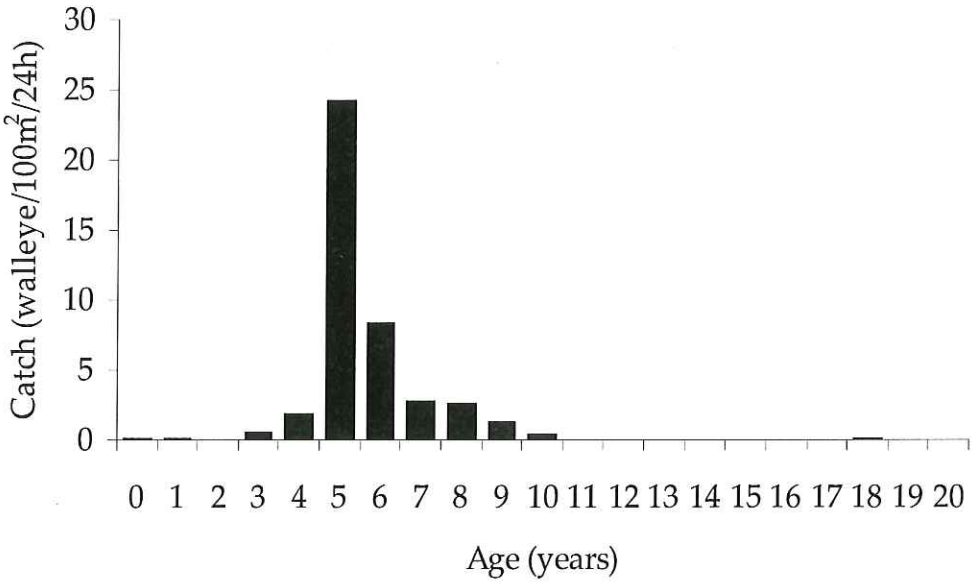

Figure 2. Age-class distribution of walleye sampled from Pigeon Lake, 2003. The mean age was 6.4, n= 195 fish.

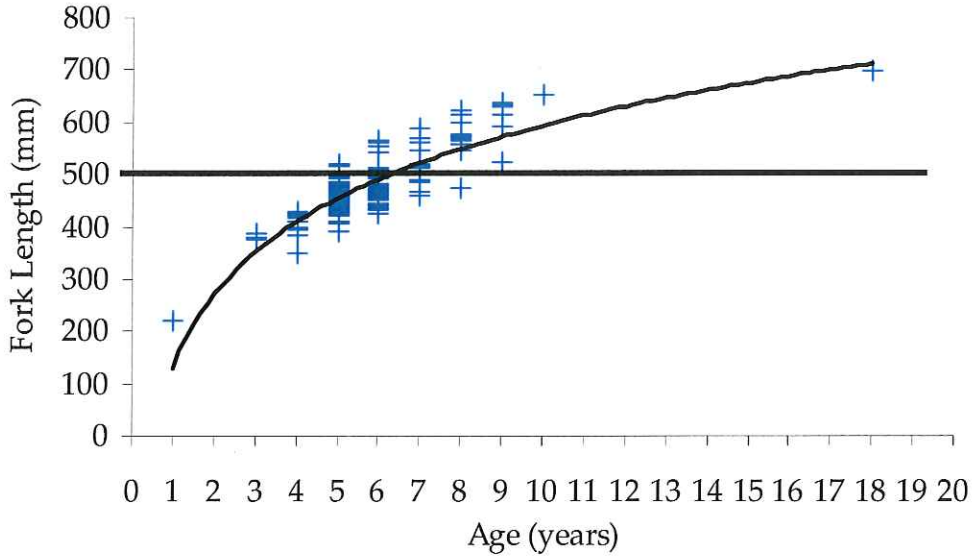

Figure 3. Length-at-age of walleye sampled in 2003 from Pigeon Lake, Alberta. The black line represents the logarithmic line-of-best fit (r^2= 0.71, n= 195) and the blue crosses represent actual data.

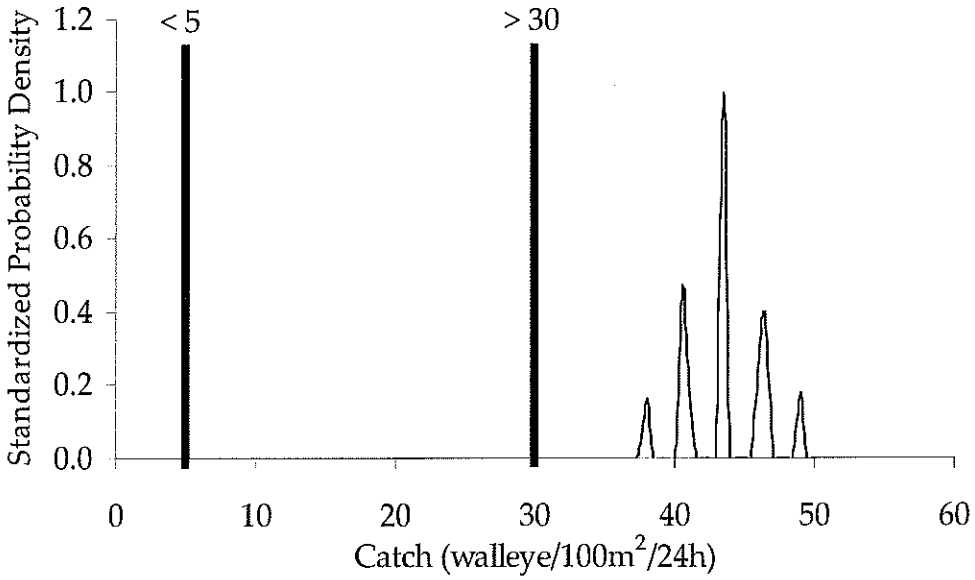

Figure 4. Standardized probability density function of walleye catch rate in 2003 from Pigeon Lake, Alberta (MLE = 20.8 walleye/100 m²/24 h; 95% CI = 16.8 - 25.0 walleye/100 m²/24 h; n = 197). The catch rate set points (i.e., < 5, 5 – 30 and > 30 walleye/100 m²/24 h), indicated by the vertical bars, specify management categories; Collapsed = <5, vulnerable = ≥ 5 and ≤30, stable 30.

4.5 Age-at maturity

In 2003, 98% of the male walleye caught during the FWIN were mature and all male walleye age seven and older were mature (Figure 5). Only two male walleye, which ages were estimated at 5 and 6 years were classified as immature. Seventy-one percent of the female walleye caught were mature and all female walleye age 9 and older were mature (Figure 6). Both male and female walleye in Pigeon Lake appeared to have accelerated maturation schedules indicative of a vulnerable fishery.

Figure 5. Age-at-maturity of male walleye in 2003 from Pigeon Lake, Alberta.

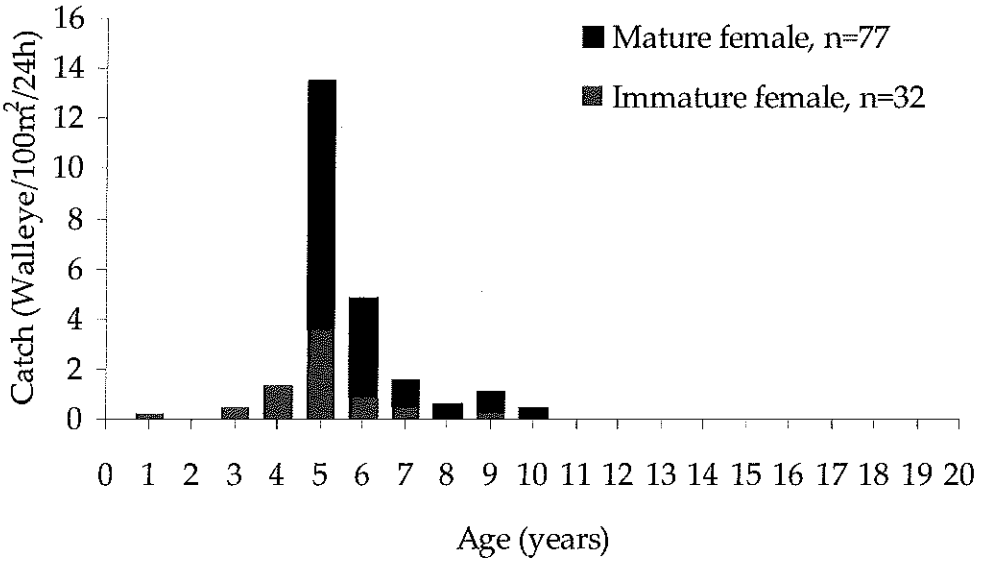

Figure 6. Age-at-maturity of female walleye from Pigeon Lake, Alberta in 2003.

4.6 Stock assessment summary

According to the Provincial Government Walleye Management and Recovery Plan classification (Berry 1995), data collected at Pigeon Lake in 2003 suggests that, while some population metrics show improvement in the quality of the fishery, a number of population metrics remain indicative of a collapsed walleye fishery. In general, Pigeon Lake had a narrow age-class distribution with 10 year-classes being represented. The vast majority of the fish sampled (> 96%) most likely originated from intensive, multi-year stockings between 1994 and 1999. Several other year-classes are absent or weak, and recruitment can be expected to be extremely low in upcoming years given the low density of fish 4 years and younger. The walleye fishery was composed of fast growing fish with a moderate maturation schedule, relative to other Alberta lakes (Sullivan 1994). The estimated catch rate of walleye was very high for Alberta lakes and ranged from 37.7- 48.8 walleye/100 m^2/24 h, with a MLE of 43.2 walleye/100 m^2/24 h (n = 197;).

This high-density walleye fishery displays characteristics of a population far below its carrying capacity (i.e., fast growth and early maturation; Post et al. 1999). These compensatory responses are generally more typical of low-density walleye populations, and may be a result of high density, stocked age-classes with very low recruitment.

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6.0 APPENDICES

6.1 Appendix 1. Catch of walleye from the Fall Walleye Index Netting survey at Pigeon Lake, 2003.

Set number	Depth strata	Walleye catch	Northern pike catch	Lake whitefish catch	Net set date	Net pull date	Net soak (hours)
96 C	Deep	57	2	17	21-Sept	22-Sept	25.5
31 B	Shallow	45	3	8	21-Sept	22-Sept	26.3
75 D	Deep	53	0	4	21-Sept	22-Sept	23.8
5 D	Shallow	42	3	18	21-Sept	22-Sept	24.3

6.2 Appendix 2. Biological data collected from the FWIN activity at Pigeon Lake, 2003.

Species code: WALL = walleye, NRPK = northern pike, LKWH = lake whitefish; Sex code: M = male, F = female.

Sample number	Species	Fork length (mm)	Weight (g)	Sex	Maturity	Age (yrs)
1	LKWH	358	595			
1	WALL	428	905	M	Mature	6
1	NRPK	647	1935	M	Mature	
1	WHSC					
1	WHSC	482				
2	WALL	140	15	U	Immature	
2	LKWH	355				
2	NRPK	655	1945	F	Mature	
2	WHSC	479				
3	WALL	485	1520	M	Mature	6
3	LKWH	392				
3	NRPK	865	5900	F	Mature	
4	WALL	507	1490	F	Immature	6
4	LKWH	421				
4	NRPK	869	5800	F	Mature	
5	WALL	484	1220	F	Immature	6
5	LKWH	322				
5	NRPK	817	4655	F	Mature	
6	WALL	419	870	F	Immature	6
6	LKWH	365				
6	NRPK	732	3110	F	Mature	
7	WALL	421	910	M	Mature	6
7	LKWH	355				
7	NRPK	765	3530	F	Mature	
8	WALL	474	1240	M	Mature	5
8	LKWH	365				
8	NRPK	762	4000	F	Mature	
9	WALL	614	2620	F	Mature	10
9	LKWH	408				
10	WALL	467	1260	M	Mature	7
10	LKWH	355	605			

6.2 Appendix 2. Continued.

Sample number	Species	Fork length (mm)	Weight (g)	Sex	Maturity	Age (yrs)
11	WALL	454	1120	F	Mature	5
11	LKWH	354	560			
12	WALL	487	1200	F	Immature	6
12	LKWH	365	670			
13	WALL	479	1180	M	Mature	7
13	LKWH	376				
14	WALL	545	1920	F	Mature	8
14	LKWH	434				
15	WALL	481	1170	F	Mature	7
15	LKWH	380	735			
16	WALL	410	840	M	Mature	5
16	LKWH	382	685			
17	WALL	424	940	F	Mature	6
17	LKWH	374	650			
18	WALL	448	1050	F	Immature	6
18	LKWH	349	580			
19	WALL	568	2040	M	Mature	9
19	LKWH	280	320			
20	WALL	385	600	F	Immature	4
20	LKWH	320	450			
21	WALL	450	1080	F	Mature	6
21	LKWH	315	415			
22	WALL	456	1450	F	Immature	6
22	LKWH	314	400			
23	WALL	470	1240	F	Mature	6
23	LKWH	315	470			
24	WALL	472	1105	F	Immature	6
24	LKWH	395	880			
25	WALL	465	1175	M	Mature	6
25	LKWH	457	1320			
26	WALL	491	1480	M	Mature	7
26	LKWH	371				

6.2 Appendix 2. Continued.

Sample number	Species	Fork length (mm)	Weight (g)	Sex	Maturity	Age (yrs)
27	WALL	698	3700	M	Mature	17
27	LKWH	357				
28	WALL	542	1680	M	Mature	7
28	LKWH	380				
29	WALL	434	1080	M	Mature	6
29	LKWH	402				
30	WALL	442	1030	M	Mature	6
30	LKWH	427				
31	WALL	461	1110	F	Immature	6
31	LKWH	374				
32	WALL	446	1110	F	Mature	6
32	LKWH	358				
33	WALL	495	1270	M	Mature	7
33	LKWH	392				
34	WALL	485	1420	F	Immature	6
34	LKWH	427				
35	WALL	515	1280	M	Mature	6
35	LKWH	372				
36	WALL	471	1040	M	Immature	6
36	LKWH	394				
37	WALL	441	1040	M	Mature	6
37	LKWH	381				
38	WALL	566	2180	F	Mature	7
38	LKWH	369				
39	WALL	613	2890	F	Mature	9
39	LKWH	391				
40	WALL	562	1970	F	Immature	7
40	LKWH	370				
41	WALL	475	1230	M	Mature	6
41	LKWH	285				
42	WALL	444	1025	F	Immature	6
42	LKWH	280				
43	WALL	514	1480	M	Mature	7

6.2 Appendix 2. Continued.

Sample number	Species	Fork length (mm)	Weight (g)	Sex	Maturity	Age (yrs)
43	LKWH	367				
44	WALL	545	1915	F	Mature	8
44	LKWH	468				
45	WALL	497	1545	F	Immature	6
45	LKWH	362				
46	WALL	629	2495	F	Immature	8
46	LKWH	366				
47	WALL	557	1920	M	Mature	9
47	LKWH	384				
48	WALL	570	1920	M	Mature	8
49	WALL	586	2155	F	Immature	7
50	WALL	500	1680	M	Mature	6
51	WALL	560	2005	F	Mature	7
52	WALL	494	1655	F	Mature	6
53	WALL	481	1295	F	Mature	6
54	WALL	600	2550	M	Mature	9
55	WALL	634	3370	F	Mature	9
56	WALL	637	3510	F	Mature	10
57	WALL	621	2800	F	Mature	9
58	WALL	473	1210	F	Mature	7
59	WALL	429	955	M	Mature	5
60	WALL	483	1240	F	Immature	6
61	WALL	651	3915	F	Mature	11
62	WALL	423	860	M	Mature	5
63	WALL	453	1005	F	Mature	6
64	WALL	457	1020	F	Mature	6
65	WALL	460	1150	F	Mature	6
66	WALL	446	970	F	Mature	6
67	WALL	482	1220	F	Immature	7
68	WALL	457	1040	F	Mature	6
69	WALL	424	865	M	Mature	6
70	WALL	393	615	F	Immature	4
71	WALL	406	690	M	Mature	6
72	WALL	350	490	M	Mature	4

6.2 Appendix 2. Continued.

Sample number	Species	Fork length (mm)	Weight (g)	Sex	Maturity	Age (yrs)
73	WALL	444	990	F	Mature	6
74	WALL	432	810	M	Mature	6
75	WALL	429	945	M	Mature	6
76	WALL	464	1155	F	Mature	6
77	WALL	453	1020	F	Mature	5
78	WALL	462	1115	F	Mature	6
79	WALL	429	1010	M	Mature	6
80	WALL	476	1265	F	Immature	6
81	WALL	430	760	F	Immature	5
82	WALL	509	1430	F	Mature	7
83	WALL	423	900	M	Mature	5
84	WALL	380	610	M	Mature	4
85	WALL	475	1055	F	Immature	6
86	WALL	465	1230	F	Mature	6
87	WALL	471	1175	F	Mature	6
88	WALL	443	935	F	Mature	6
89	WALL	471	1305	F	Mature	7
90	WALL	449	1055	F	Mature	6
91	WALL	461	1110	M	Mature	6
92	WALL	489	1340	F	Mature	7
93	WALL	410	825	M	Mature	6
94	WALL	469	1130	F	Mature	6
95	WALL	428	965	M	Mature	6
96	WALL	420	960	M	Mature	5
97	WALL	455	1160	F	Mature	6
98	WALL	456	1200	F	Mature	6
99	WALL	479	1320	F	Mature	6
100	WALL	440	1055	M	Mature	6
101	WALL	546	1615	M	Mature	8
102	WALL	652	3515	F	Mature	9
103	WALL	486	1390	M	Mature	7
104	WALL	421	830	M	Mature	5
105	WALL	450	1020	M	Mature	6
106	WALL	452	1010	M	Mature	6

6.2 Appendix 2. Continued.

Sample number	Species	Fork length (mm)	Weight (g)	Sex	Maturity	Age (yrs)
107	WALL	487	1300	M	Mature	6
108	WALL	382	670	F	Immature	4
109	WALL	480	1370	F	Mature	7
110	WALL	221	110	F	Immature	2
111	WALL	478	1180	F	Mature	6
112	WALL	451	1080	F	Mature	7
113	WALL	565	2160	M	Mature	7
114	WALL	431	1010	M	Mature	6
115	WALL	429	880	M	Mature	6
116	WALL	440	980	M	Mature	6
117	WALL	458	1090	M	Mature	7
118	WALL	453	1120	F	Mature	6
119	WALL	465	1110	F	Mature	6
120	WALL	451	1090	M	Mature	7
121	WALL	492	1280	F	Immature	6
122	WALL	465	1200	F	Immature	6
123	WALL	501	1700	F	Mature	6
124	WALL	445	1100	F	Mature	6
125	WALL	456	1000	M	Mature	7
126	WALL	465	1180	F	Mature	6
127	WALL	440	1000	M	Mature	6
128	WALL	451	1060	M	Mature	6
129	WALL	521	1840	M	Mature	8
130	WALL	459	1150	M	Mature	6
131	WALL	417	890	F	Immature	4
132	WALL	429	1020	M	Mature	6
133	WALL	432	950	M	Immature	5
134	WALL	475	1140	F	Immature	6
135	WALL	520	1770	F	Immature	6
136	WALL	443	1040	M	Mature	6
137	WALL	552	1550	F	Mature	7
138	WALL	434	980	M	Mature	6
139	WALL	513	1510	F	Mature	7
140	WALL	531	1650	F	Mature	

6.2 Appendix 2. Continued.

Sample number	Species	Fork length (mm)	Weight (g)	Sex	Maturity	Age (yrs)
141	WALL	441	1100	F	Mature	6
142	WALL	475	1280	F	Mature	7
143	WALL	492	1160	M	Mature	7
144	WALL	420	950	M	Mature	6
145	WALL	476	1440	M	Mature	7
146	WALL	452	1120	M	Mature	6
147	WALL	477	1090	M	Mature	6
148	WALL	575	2320	M	Mature	9
149	WALL	470	1170	M	Mature	6
150	WALL	565	1940	M	Mature	9
151	WALL	481	1620	F	Mature	6
152	WALL	496	1780	M	Mature	6
153	WALL	574	2570	M	Mature	8
154	WALL	523	1630	M	Mature	9
155	WALL	473	1250	F	Mature	6
156	WALL	470	1160	F	Mature	6
157	WALL	428	820	M	Mature	6
158	WALL	481	1290	F	Mature	6
159	WALL	435	980	M	Mature	6
160	WALL	448	1040	F	Mature	6
161	WALL	377	640	F	Immature	4
162	WALL	435	1100	M	Mature	6
163	WALL	400	830	M	Mature	5
164	WALL	440	1020	F	Mature	6
165	WALL	425	880	M	Mature	6
166	WALL	434	920	F	Mature	6
167	WALL	592	2310	F	Mature	9
168	WALL	409	760	F	Immature	4
169	WALL	553	2010	F	Mature	7
170	WALL	423	870	F	Immature	5
171	WALL	492	1360	F	Mature	7
172	WALL	430	1000	M	Mature	6
173	WALL	452	1080	F	Immature	6

6.2 Appendix 2. Continued.

Sample number	Species	Fork length (mm)	Weight (g)	Sex	Maturity	Age (yrs)
174	WALL	440	980	F	Mature	6
175	WALL	454	1070	F	Mature	6
176	WALL	422	900	M	Mature	6
177	WALL	476	1320	F	Mature	7
178	WALL	445	1130	F	Mature	6
179	WALL	392	740	M	Mature	4
180	WALL	450	1110	F	Mature	6
181	WALL	454	1090	F	Mature	6
182	WALL	568	1940	M	Mature	8
183	WALL	447	1100	F	Mature	6
184	WALL	464	1390	M	Mature	7
185	WALL	455	1100	F	Mature	6
186	WALL	467	1130	F	Mature	7
187	WALL	456	1110	F	Mature	6
188	WALL	436	940	M	Mature	6
189	WALL	460	1160	F	Mature	6
190	WALL	445	1100	F	Mature	6
191	WALL	434	940	M	Mature	6
192	WALL	440	980	M	Mature	6
193	WALL	467	1170	F	Mature	6
194	WALL	450	1160	M	Mature	6
195	WALL	451	1070	F	Mature	6
196	WALL	458	1180	M	Mature	7
197	WALL	510	1510	F	Mature	7

The Alberta Conservation Association acknowledges the following partner for their generous support of this project

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