

**GREATER
TORONTO
RAPTOR WATCH
1998 REPORT**



7 BOWEN 96

Version 2

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Credits

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John Barker

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Chapter 1

Greater Toronto

Raptor Watch

Purpose,

Goals, and

Structure



Greater Toronto Raptor Watch

CLOSE TO LAKE ONTARIO, WE HAVE TWO WATCH STATIONS. THEY ARE HIGH PARK, TORONTO AND CRANBERRY MARSH, WHITBY. WE ALSO HAVE ONE WATCH STATION 10 KM NORTH OF OUR CRANBERRY MARSH STATION. IT IS CALLED IROQUOIS SHORELINE WHICH IS LOCATED IN THE NORTHEAST PART OF HEBER DOWN CONSERVATION AREA NEAR THE TOWN OF BROOKLIN DURHAM R.M.

OUR WATCH STATIONS ARE IN OPERATION FROM LATE AUGUST TO LATE NOVEMBER. THE GREATER TORONTO RAPTOR WATCH ARE INVOLVED IN THE FOLLOWING PROJECTS; 1) HAWKS, 2) BIRDS, 3) DRAGONFLIES, AND 4) BUTTERFLIES WE MONITOR THE MIGRATES THAT ARE LEAVING FOR AREAS TO THE SOUTH OF US.

GOALS OF THE GREATER TORONTO RAPTOR WATCH

- TO DOCUMENT THE FLUCTUATIONS IN NUMBERS AND SPECIES OF RAPTORS, BIRDS, DRAGONFLIES, AND BUTTERFLIES MIGRATING THROUGH THE GREATER TORONTO VIEWING AREA IN THE AUTUMN.
- TO PROMOTE THE AWARENESS OF MIGRATION MONITORING AND THE REASONS FOR ANALYZING THE ANNUAL DATA COLLECTED AT OUR STATIONS.
- TO PROMOTE AND FURTHER SCIENTIFIC ANALYSIS OF OUR PROJECTS THAT WE MONITOR.

BEST DAYS FOR VIEWING IS DAYS WITH NORTHWEST WINDS, MODERATE WINDSPEED, PARTLY CLOUDY SKY, AND RISING BAROMETRIC PRESSURE.

Greater Toronto Raptor Watch

Structure of the Greater Toronto Raptor Watch

Chairperson: John Barker

High Park Raptor Watch

Site Coordinator: Don Barnett

Publicity: Naish McHugh

Internet: Howard Shaprio

Cranberry Marsh Raptor Watch

Site Coordinator: Doug Lockrey

Publicity:

Internet: Doug Lockrey

Iroquois Shoreline Raptor Watch

Site Coordinator: Martin Bence

Publicity:

Internet: Doug Lockrey

TOC Raptor Committee

Chairperson:	John Barker
High Park:	Don Barnett
	Naish McHugh
	Howard Shaprio
Cranberry:	Rayfield Pye
	Tyler Hoar
Iroquois:	

GTRW Chair's statement to the TOC

The Greater Toronto Raptor Watch in 1998 had its best count ever at High Park and Cranberry Marsh stations. In 1998 we opened a new station 10-km north of Cranberry within the Heber Downs Conservation Area. We have named it Iroquois Shoreline Raptor Watch with the shortform of ISRW.

We have a Site coordinator at each station, they are Don Barnett, High Park, Doug Lockrey Cranberry Marsh, and Martin Bence, Iroquois. They report to the chair who Liaisons with each station.

Our stations are involved in monitoring migrating Raptors, Birds, Dragonflies, and Butterflies. A number of Nature related groups around North America request the use our data. In 1998 we also made weekly postings of our counts on the Internet.

I just want to point out that if the TOC needs specific information about our projects do not hesitate to ask. We have created a large resource of local bird data. As Chair I am spending a lot of my spare time in building a comprehensive database. As you are aware we will continue in our efforts in producing an accurate annual Hawk report.

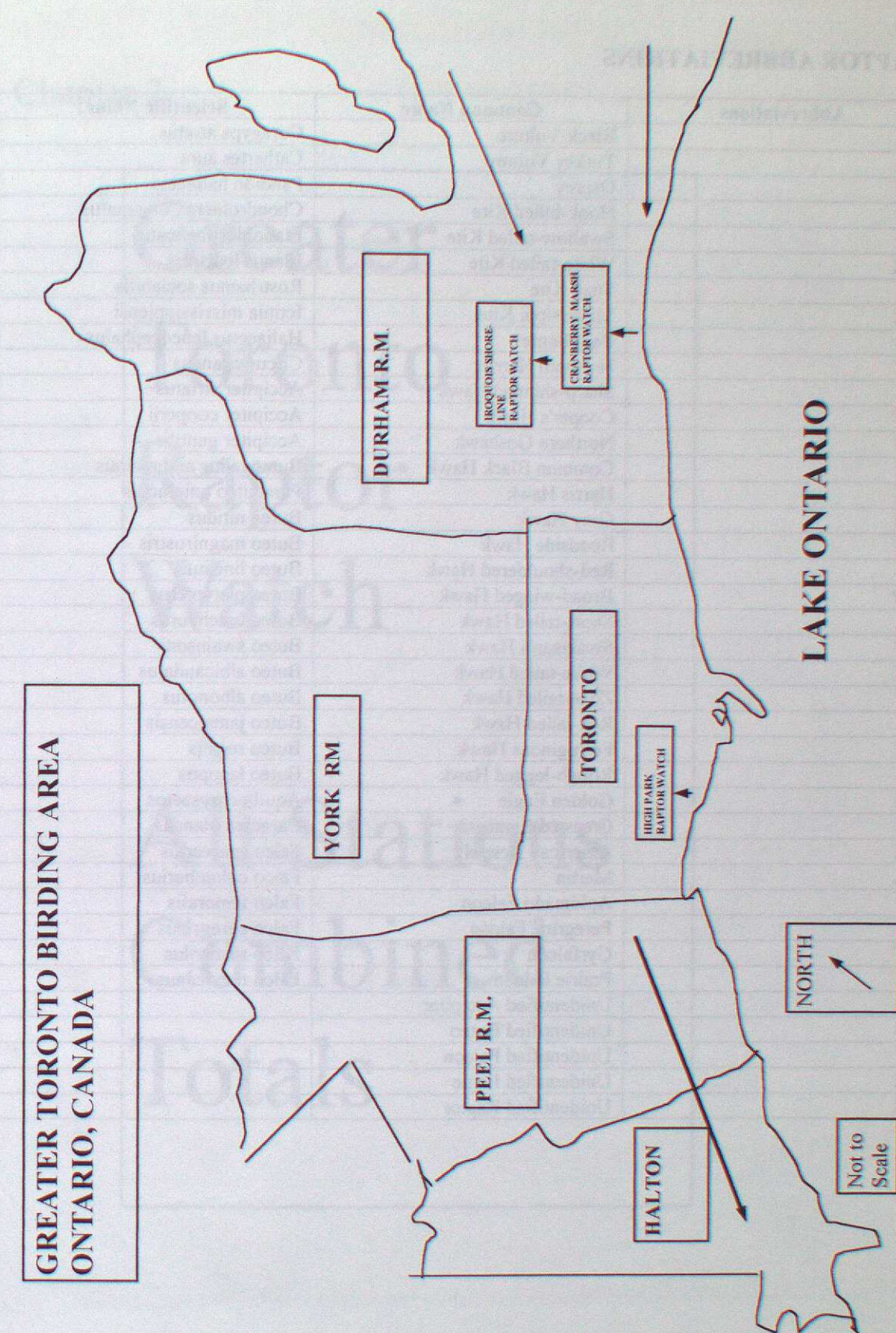
Don and Doug have held informal outdoor education sessions for all ages that express an interest in our projects. We have also submitted station descriptions for inclusion in the "World Atlas on Raptor Migration" that is being produced by The Hawk Mountain Foundation and Birdlife International. It is a mission of ours that if a newcomer comes to one of our stations we will try to inform and be as helpful as possible. Our group is going to provide Hawk Information Days at our High Park and Cranberry stations. High Park will have the first Sunday in October. Our Durham stations will also participate in events at Whitby and Oshawa. We will make an effort in more media coverage when times present themselves.

We are also directly involved in the current Lynde Shores Conservation Management Plan. We need to ensure that we remain as a key player in the future of Cranberry Marsh.

Our group thanks the TOC for allowing us to join as a sub-committee to the Records Committee. We hope that in 1999 we can work together in adding new and worthwhile data on the wildlife that pass through the Greater Toronto Birding Area.

I am grateful to the following members who helped with all aspects of our project. They are Don Barnett, Leon Schlichter, Alfred Adamo, Doug Lockrey, Mike Boudreau, Rayfield Pye, Tyler Hoar, Martin Bence, and Mike Williamson. The Field observers that helped us are second to none and none of what we accomplished could happen without their efforts. The counters are a key to operating a Hawkwatch. To you many thanks. We hope you will join us again in 1999.

Submitted by John Barker, GTRW Chair.



RAPTOR ABBREVIATIONS

Abbreviations	Common Name	Scientific Name
BV	Black Vulture	Coragyps atratus
TV	Turkey Vulture	Cathartes aura
OS	Osprey	Pandion haliaetus
HK	Hook-billed Kite	Chondrohierax uncinatus
ST	Swallow-tailed Kite	Elanoides forficatus
WK	White-tailed Kite	Elanus leucurus
SK	Snail Kite	Rostrhamus sociabilis
MK	Mississippi Kite	Ictinia mississippiensi
BE	Bald Eagle	Haliaeetus leucocephalus
NH	Northern Harrier	Circus cyaneus
SS	Sharp-shinned Hawk	Accipiter striatus
CH	Cooper's Hawk	Accipiter cooperii
NG	Northern Goshawk	Accipiter gentilis
BH	Common Black Hawk	Buteogallus anthracinus
HH	Harris Hawk	Parabuteo unicinctus
GH	Gray Hawk	Buteo nitidus
RH	Roadside Hawk	Buteo magnirostris
RS	Red-shouldered Hawk	Buteo lineatus
BW	Broad-winged Hawk	Buteo platypterus
SH	Short-tailed Hawk	Buteo brachyurus
SW	Swainson's Hawk	Buteo swainsoni
WT	White-tailed Hawk	Buteo albicaudatus
ZT	Zone-tailed Hawk	Buteo albonotus
RT	Red-tailed Hawk	Buteo jamaicensis
FH	Ferruginous Hawk	Buteo regalis
RL	Rough-legged Hawk	Buteo lagopus
GE	Golden Eagle	Aquila chrysaetos
CC	Creasted Caracara	Caracara plancus
AK	American Kestrel	Falco sparverius
ML	Merlin	Falco columbarius
AF	Aplomado Falcon	Falco femoralis
PG	Peregrine Falcon	Falco peregrinus
GY	Gyr Falcon	Falco rusticolus
PF	Prairie Falcon	Falco mexicanus
UA	Unidentified Accipiter	
UB	Unidentified Buteo	
UF	Unidentified Falcon	
UE	Unidentified Eagle	
UR	Unidentified Raptor	

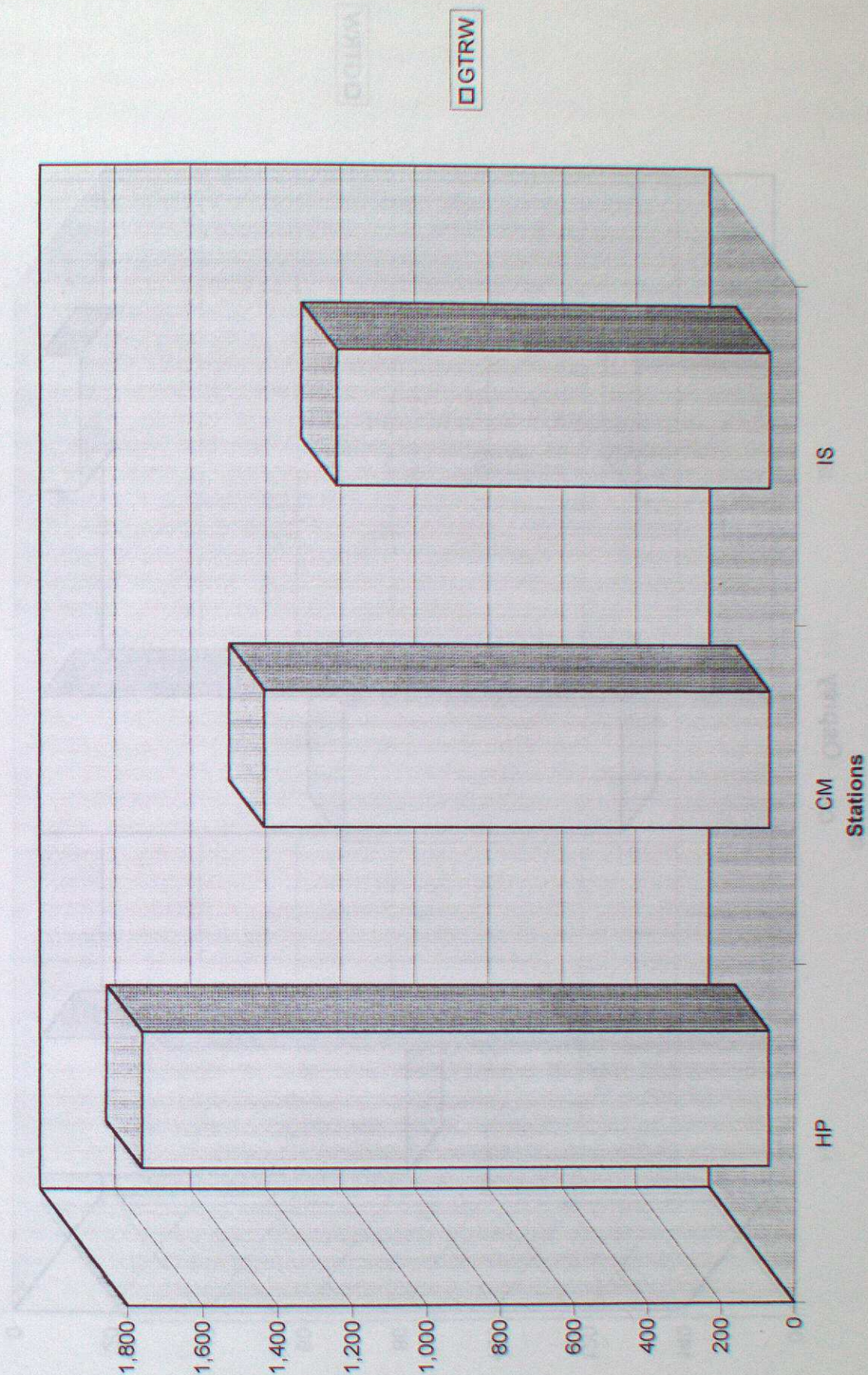
Chapter 2

Greater
Toronto
Raptor
Watch

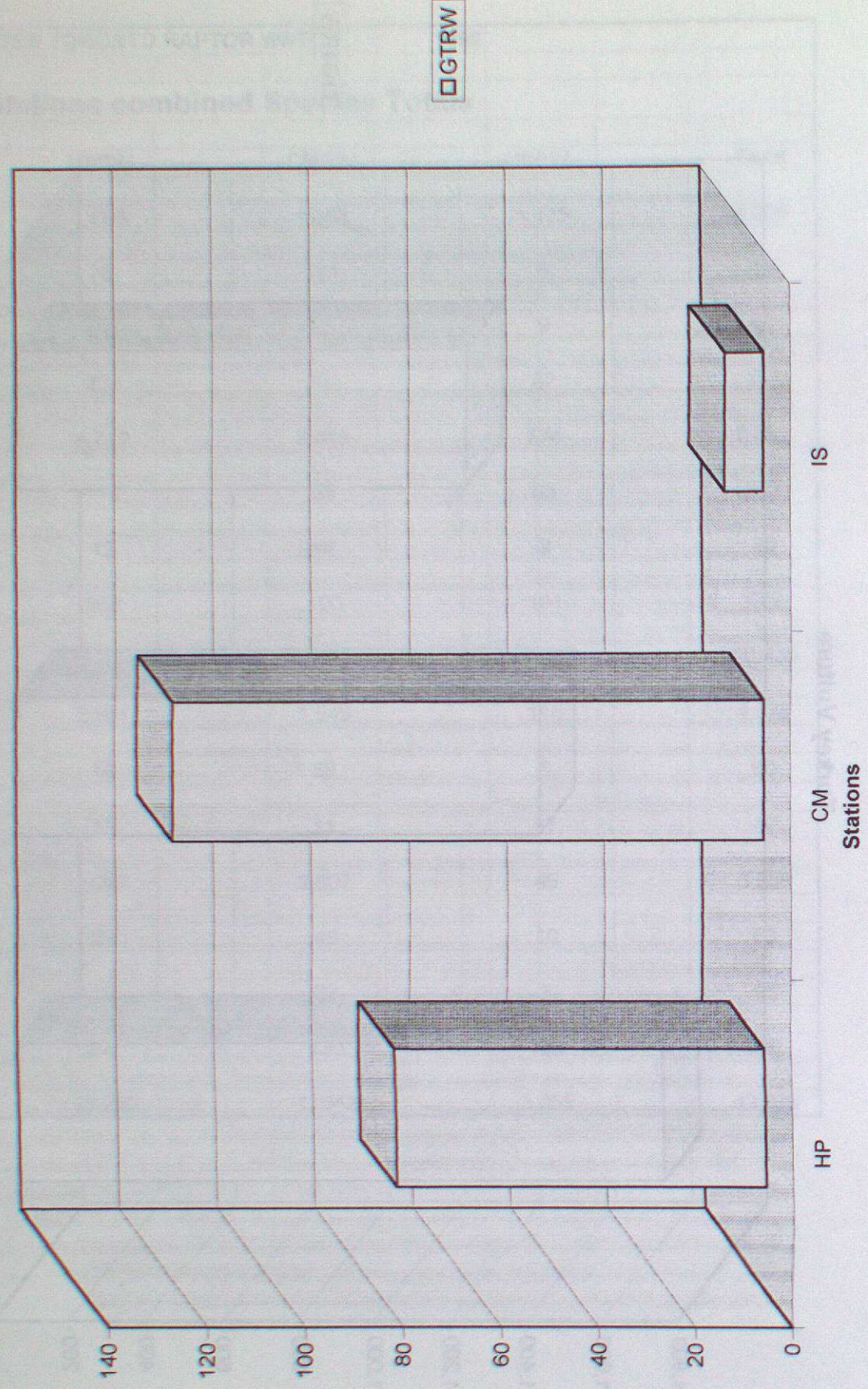
All Stations
Combined
Totals

GREATER TORONTO RAPTOR WATCH				1998		
All Stations combined Species Totals						
Species	HPRW	CMRW	ISRW	Total		
TV	1,693	1,368	1,175	4,236		
OS	76	121	8	205		
BE	42	29	9	80		
NH	359	330	82	771		
SS	4,749	3,419	774	8,942		
CH	114	93	65	272		
NG	12	14	2	28		
RS	368	120	191	679		
BW	11,361	7,821	448	19,630		
RT	2,861	1,949	116	4,926		
RL	16	58	6	80		
GE	19	11	17	47		
AK	1,287	2,007	45	3,339		
ML	24	49	10	83		
PG	19	23	1	43		
UR	232	130	106	468		
Total	23,232	17,542	3,055	43,829		

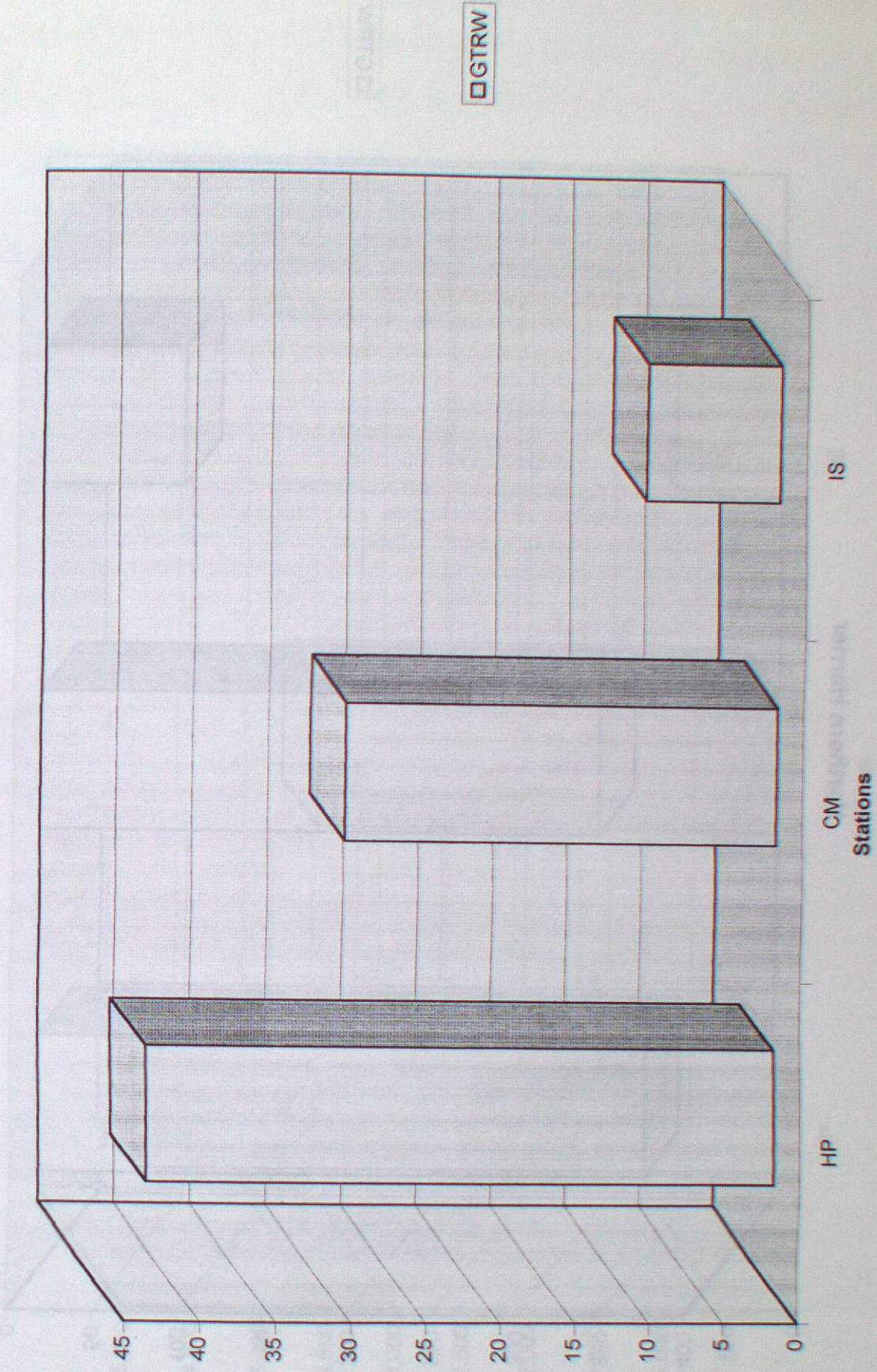
Turkey Vulture



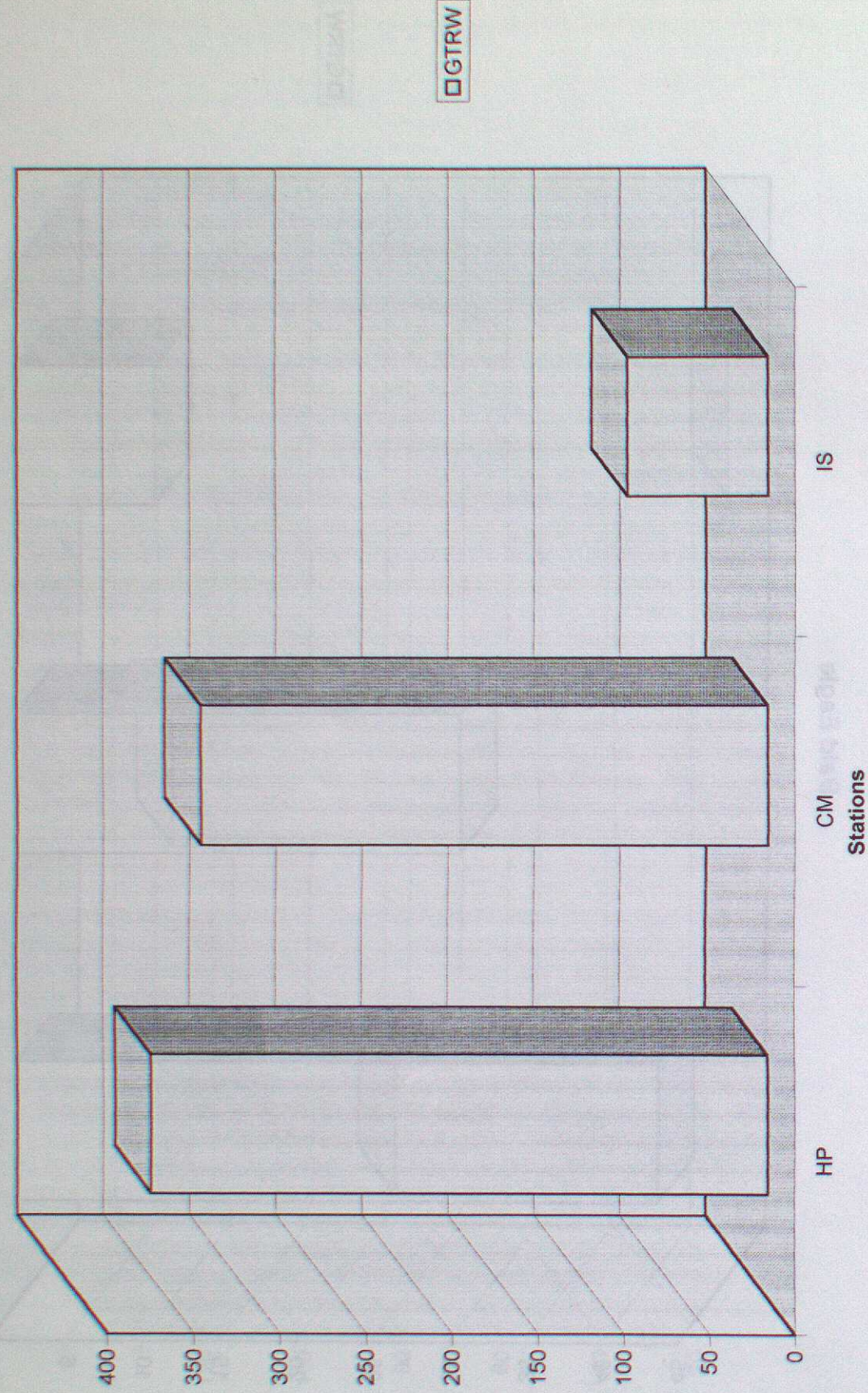
Osprey



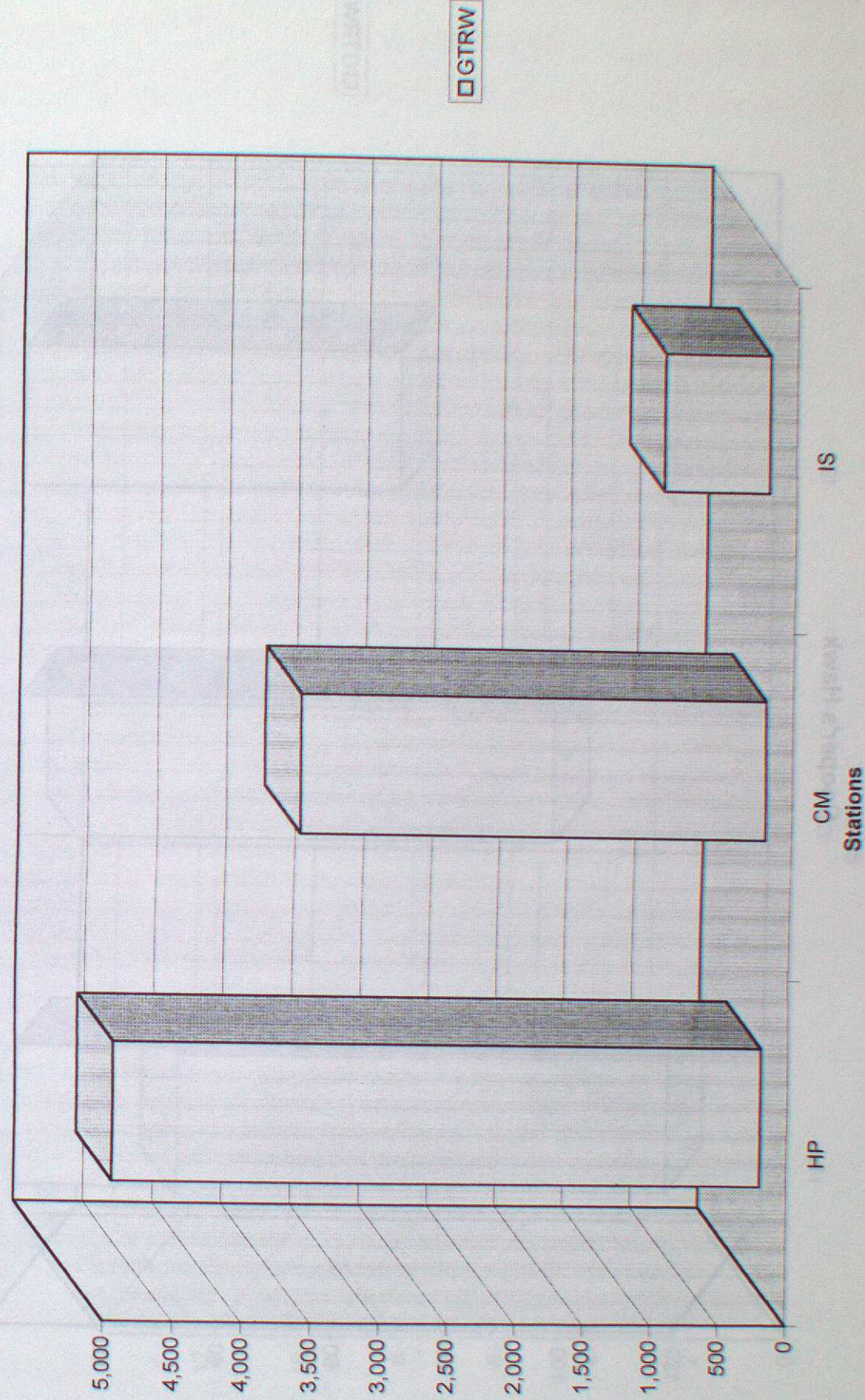
Bald Eagle



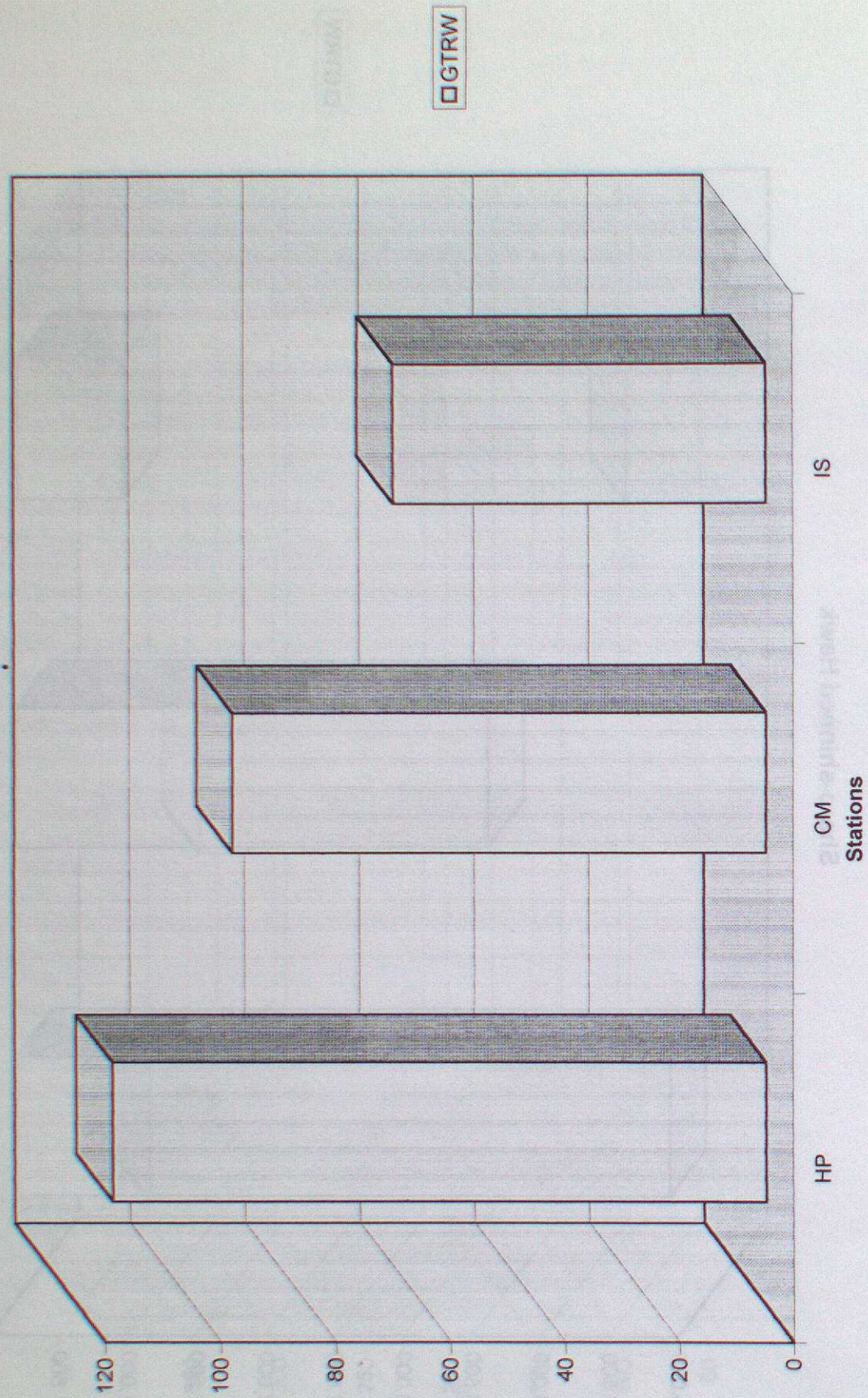
Northern Harrier



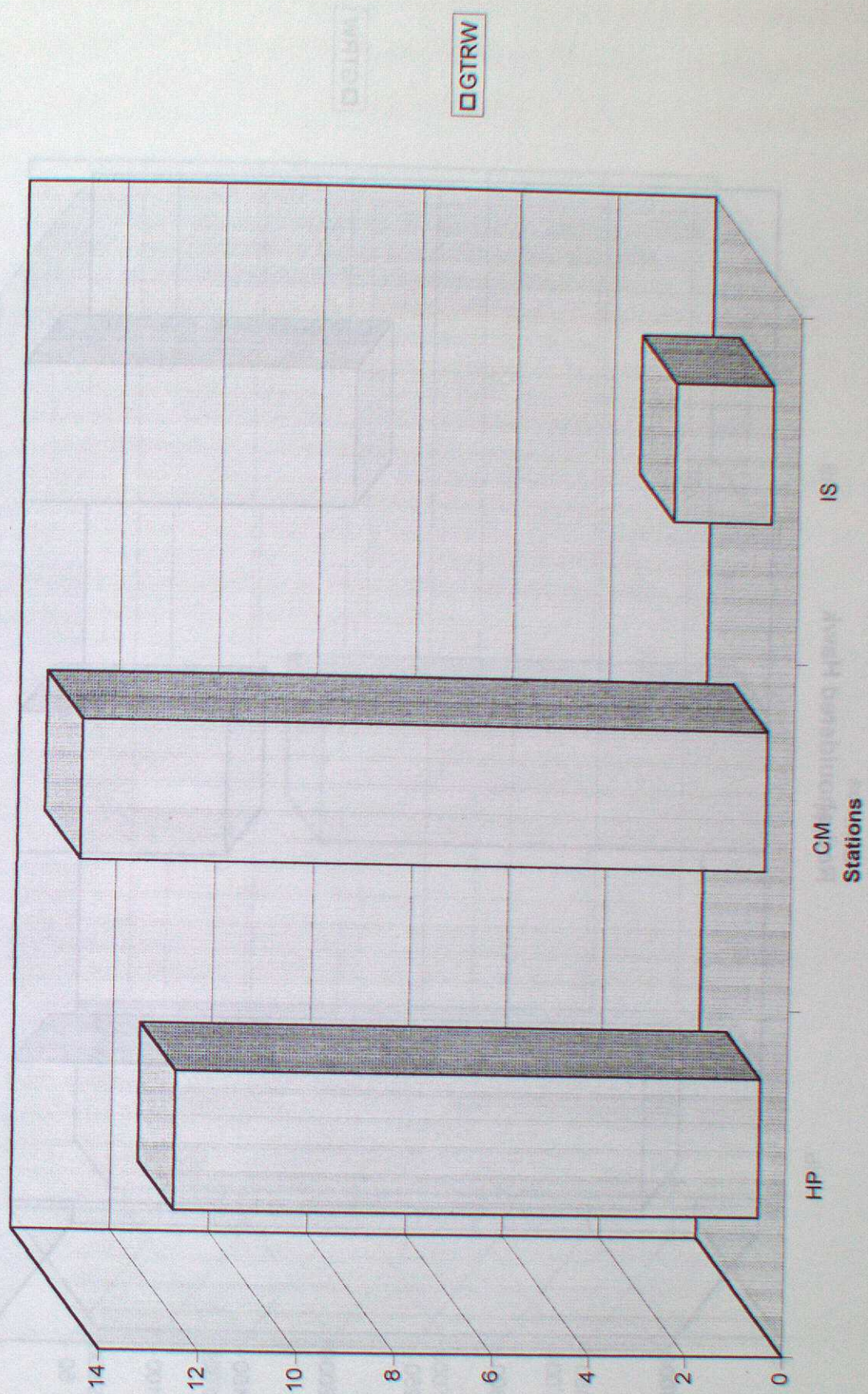
Sharp-shinned Hawk



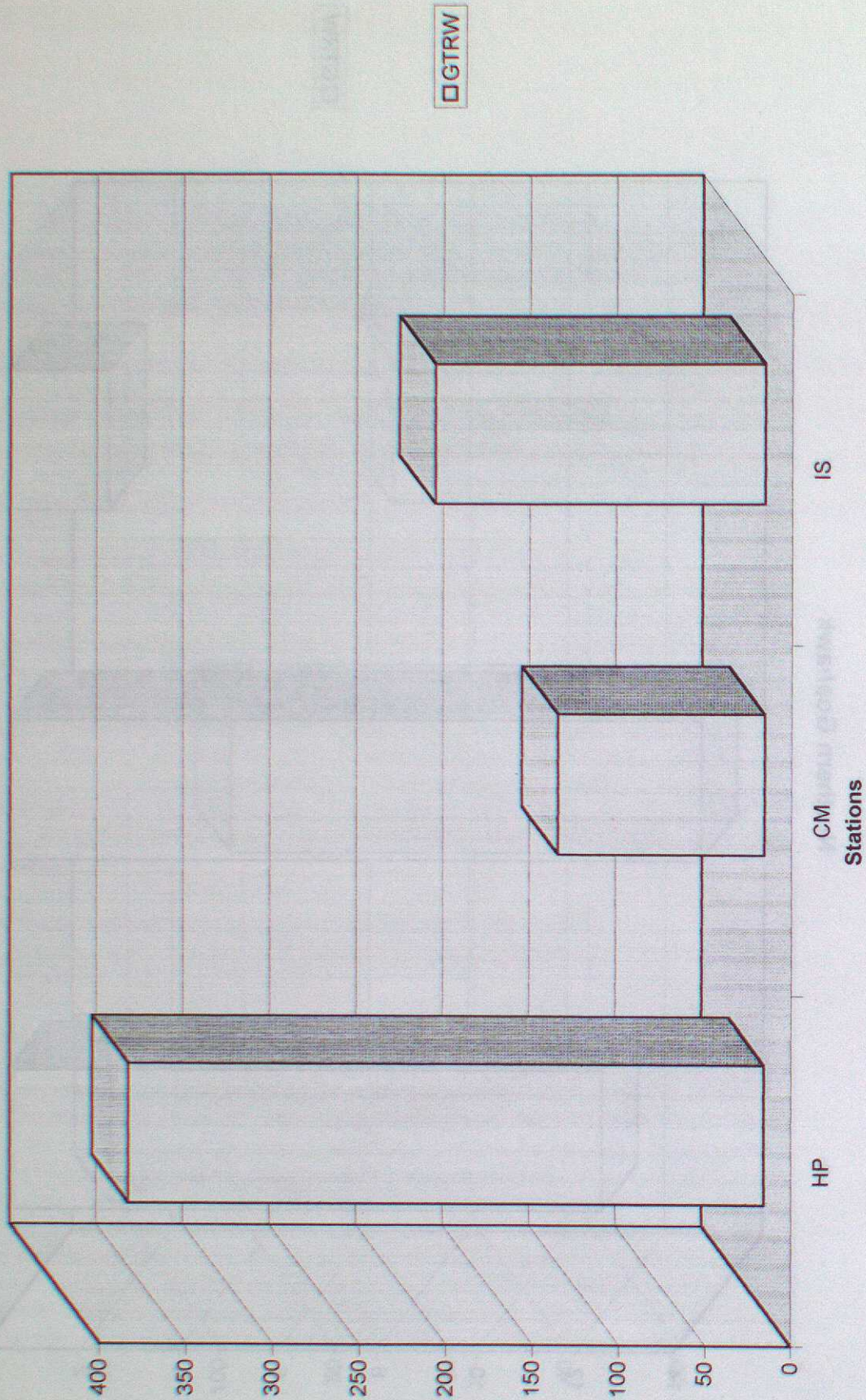
Cooper's Hawk



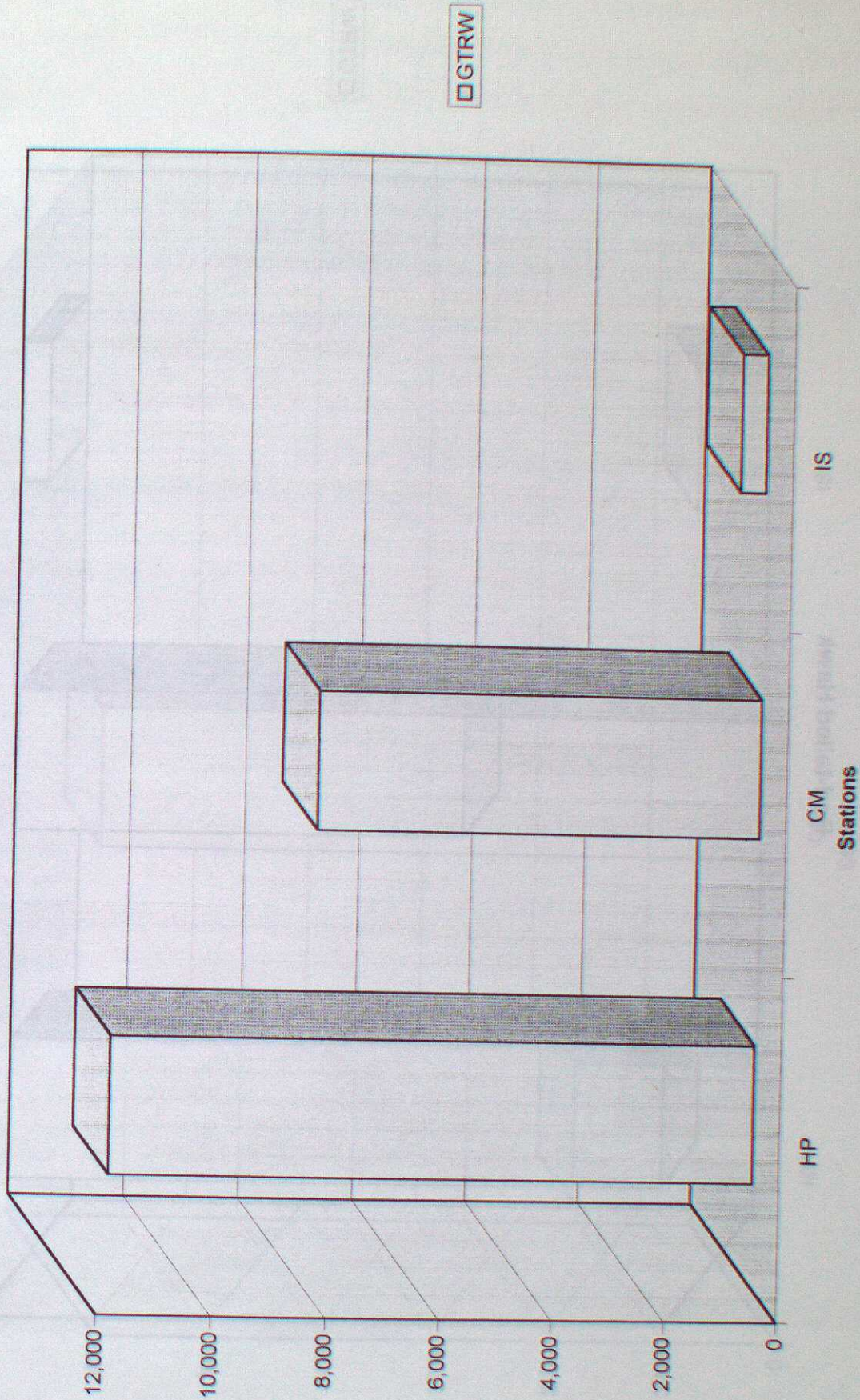
Northern Goshawk



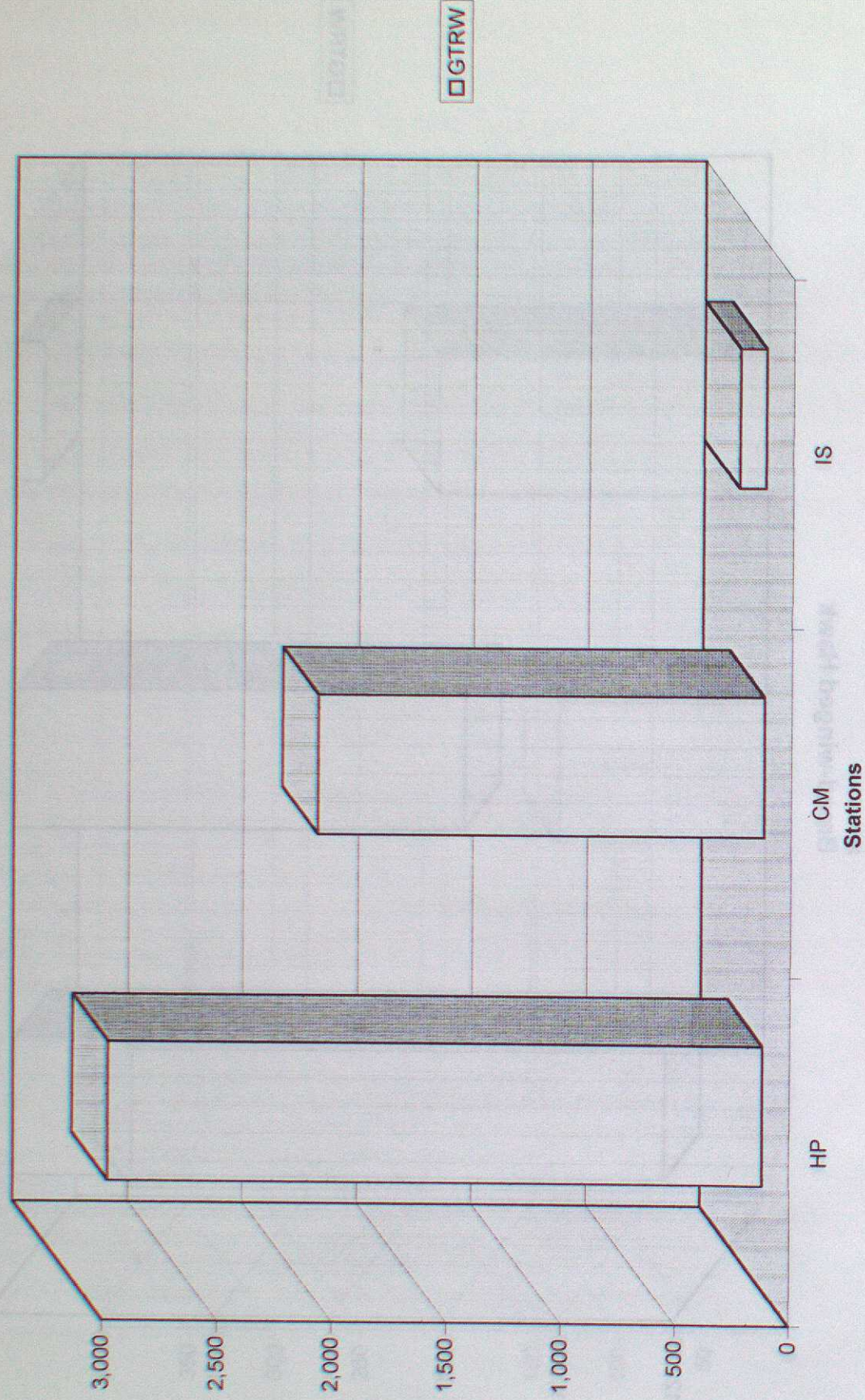
Red-shouldered Hawk



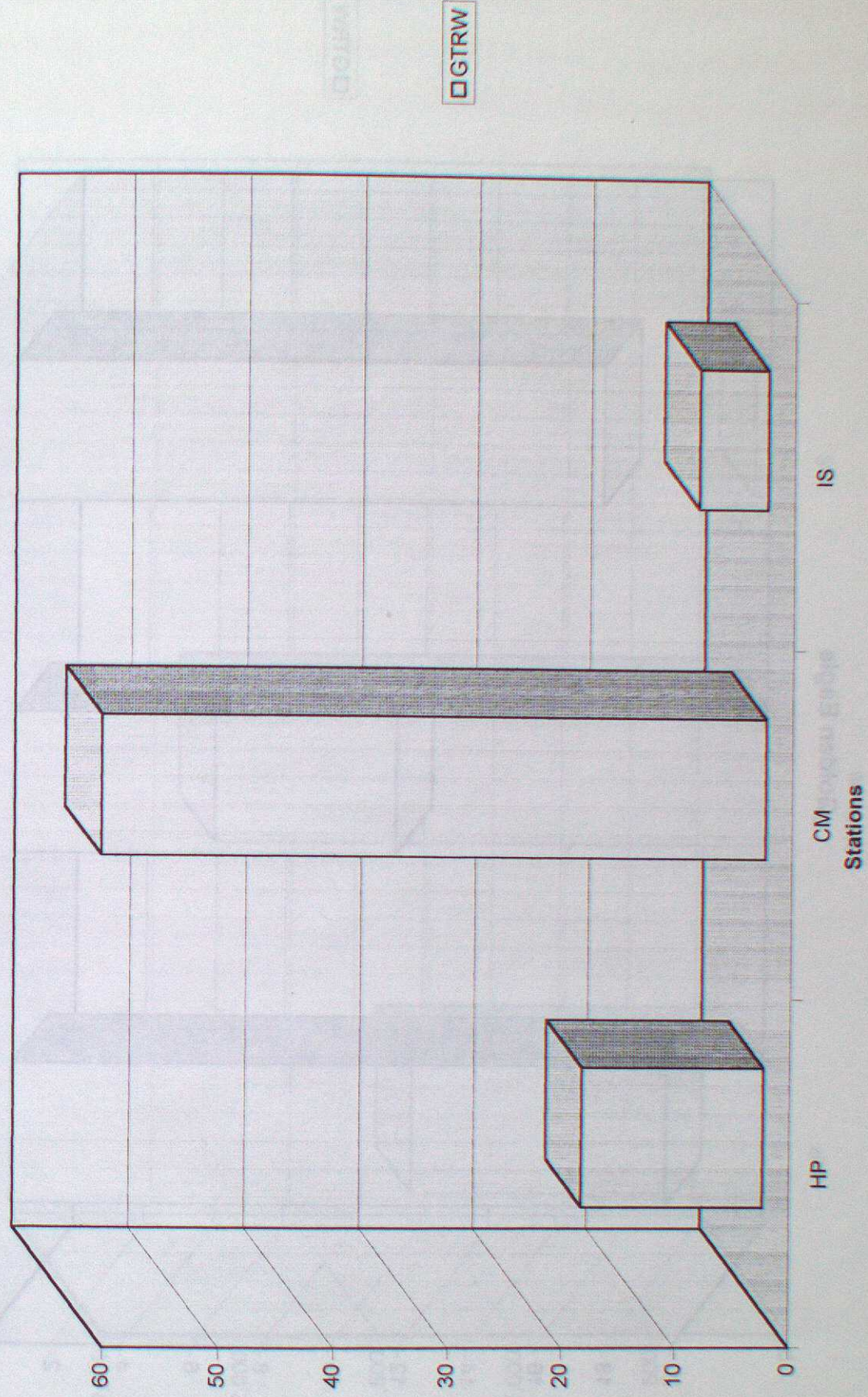
Broad-winged Hawk



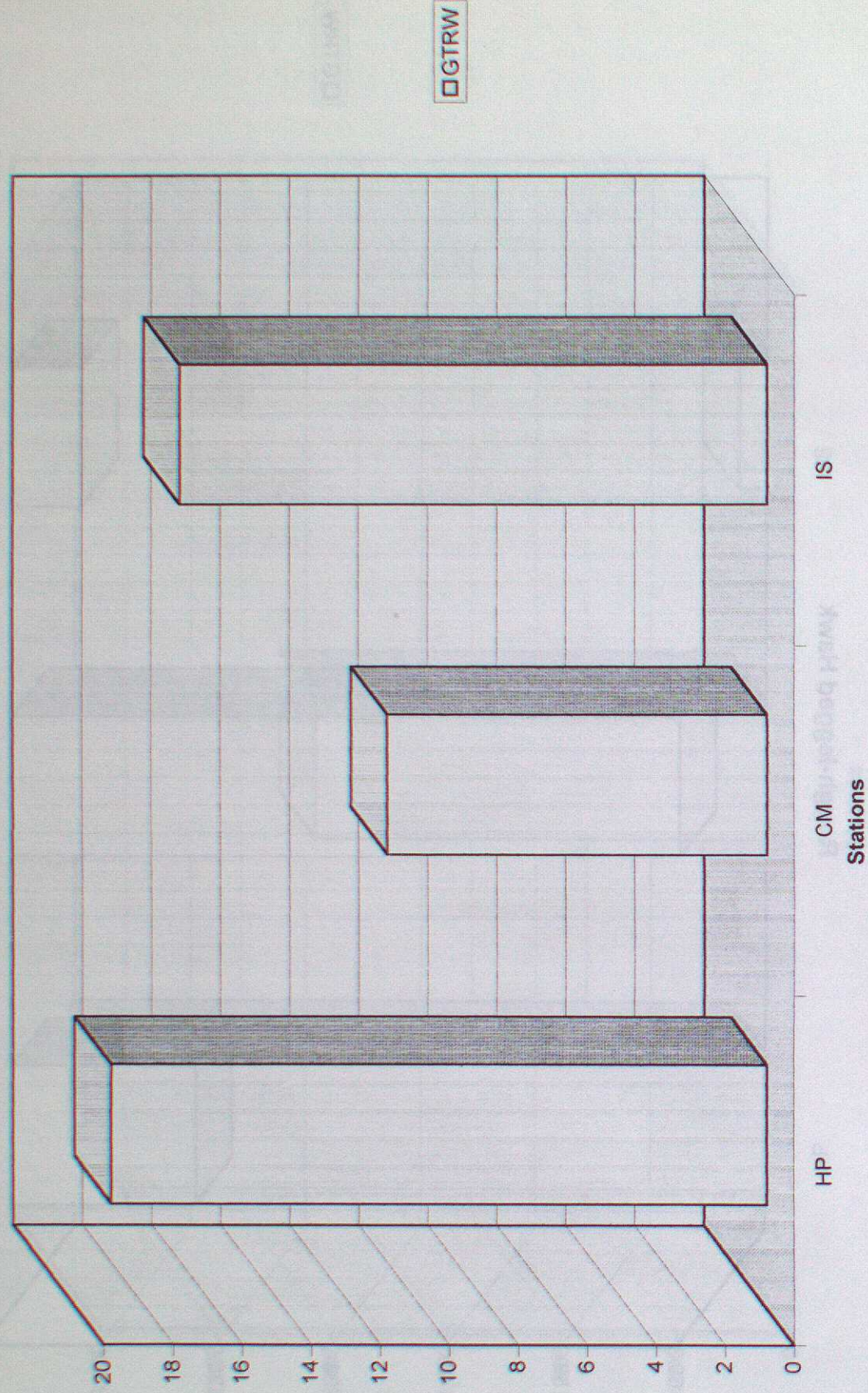
Red-tailed Hawk



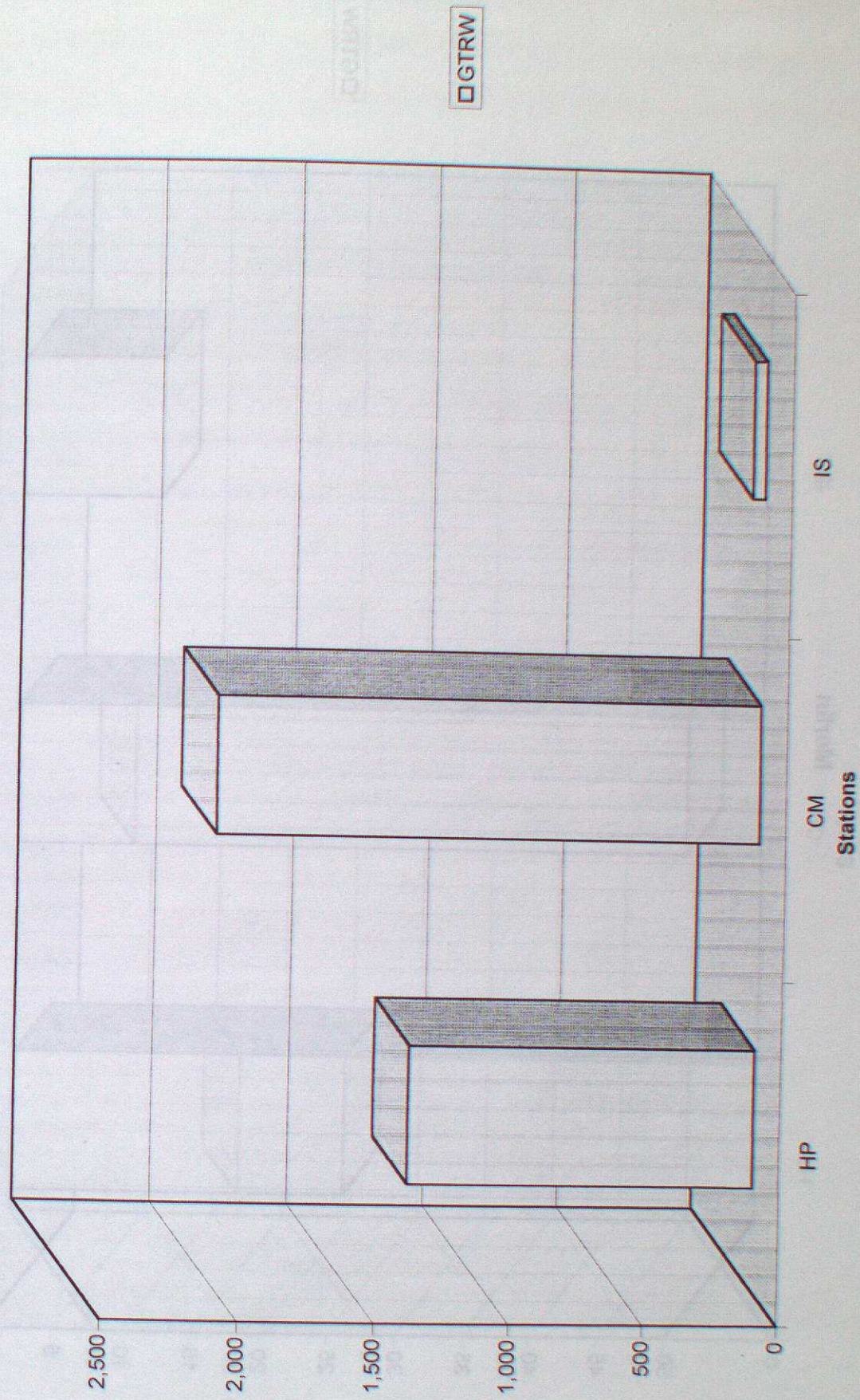
Rough-legged Hawk



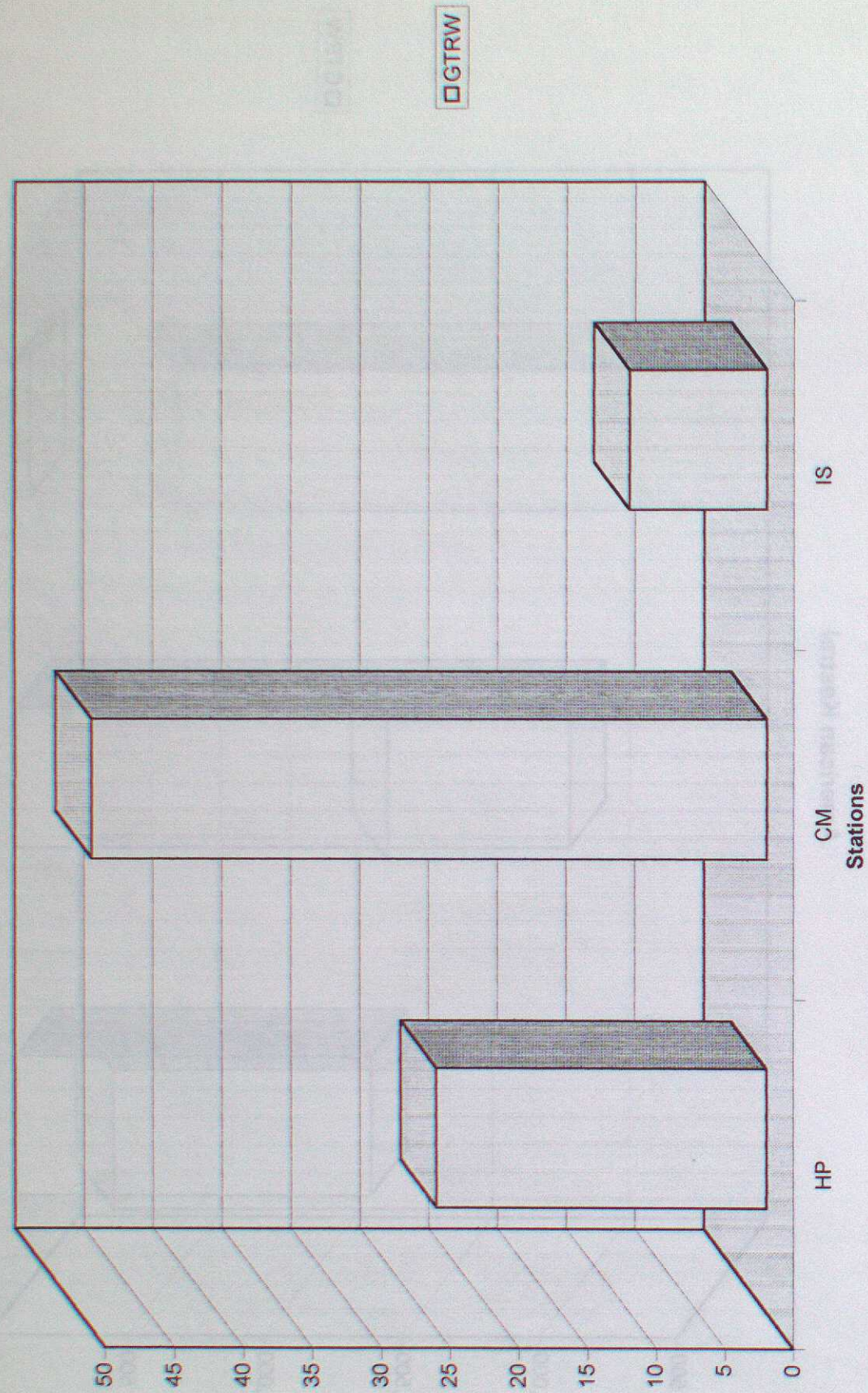
Golden Eagle



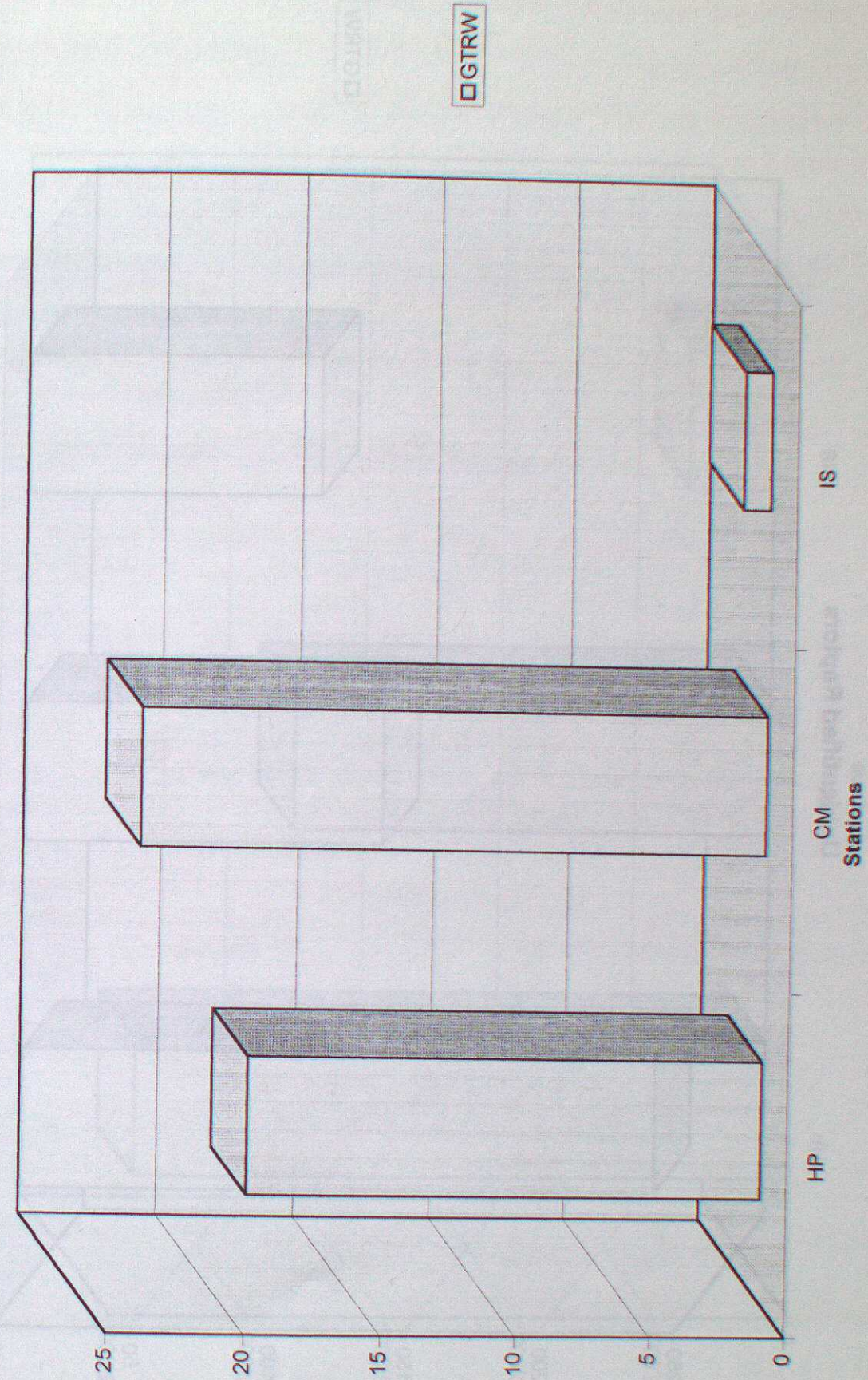
American Kestrel



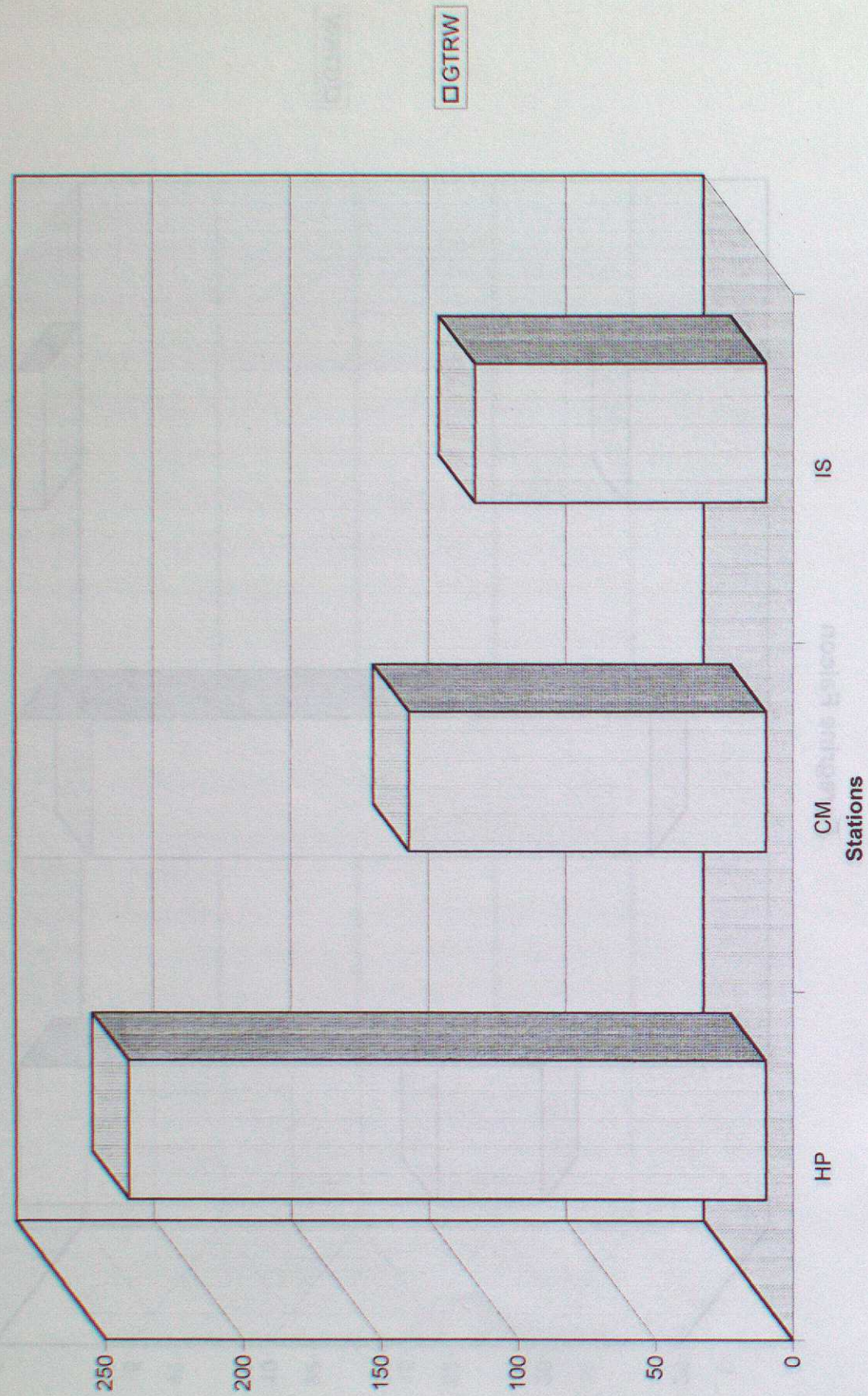
Merlin



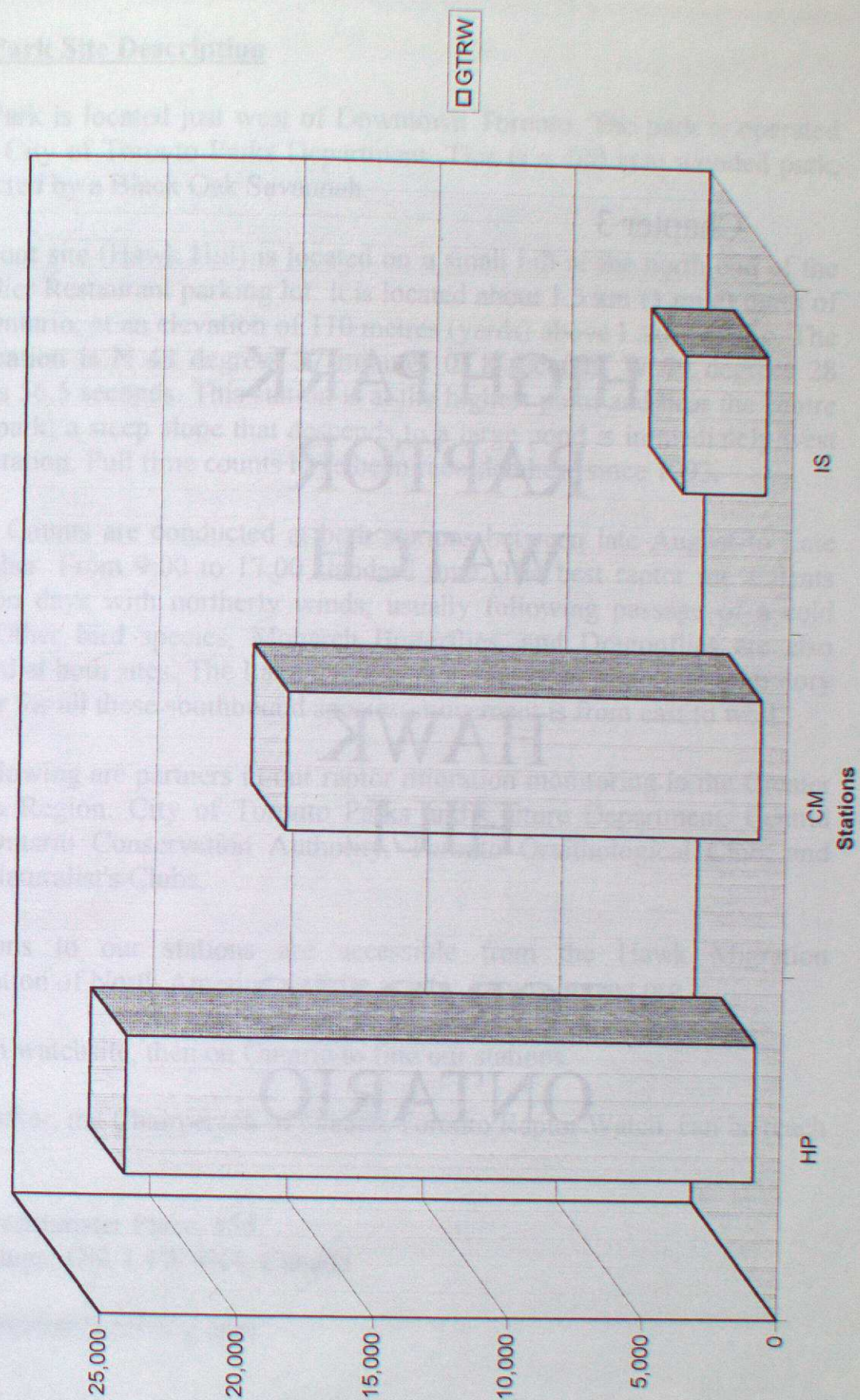
Peregrine Falcon



Unidentified Raptors



Season Totals



Chapter 3

HIGH PARK RAPTOR WATCH

HAWK HILL

TORONTO ONTARIO

High Park Site Description

High Park is located just west of Downtown Toronto. The park is operated by the City of Toronto Parks Department. This is a 400 acre wooded park, dominated by a Black Oak Savannah.

The count site (Hawk Hill) is located on a small hill at the north end of the Grenadier Restaurant parking lot. It is located about 1.5 km (1 mile) north of Lake Ontario, at an elevation of 110 metres (yards) above Lake Ontario. The site location is N 43 degrees 37 minutes 03.8 seconds, W 79 degrees 28 minutes 56.5 seconds. This station is at the highest point and near the centre of the park; a steep slope that descends to a large pond is immediately west of the station. Full time counts have been recorded here since 1993.

Raptor Counts are conducted at both stations between late August to Late November. From 9:00 to 17:00 standard time. The best raptor movements occur on days with northerly winds, usually following passage of a cold front. Other bird species, Monarch Butterflies, and Dragonflies are also recorded at both sites. The Lake Ontario shoreline is an important migratory corridor for all these southbound species; movement is from east to west.

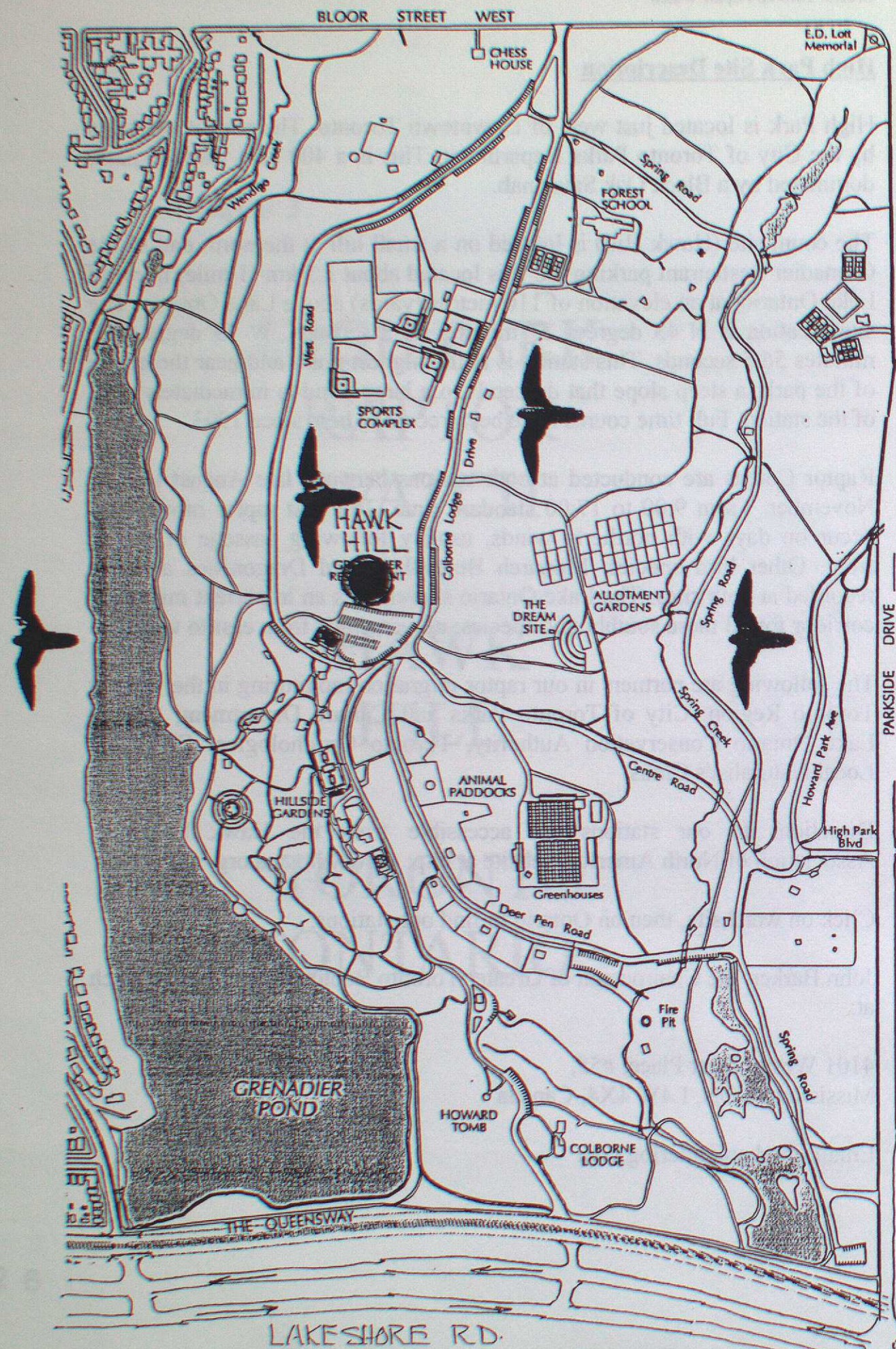
The following are partners in our raptor migration monitoring in the Greater Toronto Region: City of Toronto Parks and Culture Department, Central Lake Ontario Conservation Authority, Toronto Ornithological Club, and Local Naturalist's Clubs.

Directions to our stations are accessible from the Hawk Migration Association of North America website at <http://www.hmana.org>

Click on watchsite, then on Ontario to find our stations.

John Barker, the Chairperson of Greater Toronto Raptor Watch, can be reach at:

HIGH PARK - TORONTO
HAWK HILL



Title Page 3a

HIGH PARK
HAWK HILL
RAPTORS

GREATER TORONTO RAPTOR WATCH							
Station : High Park							
1993 to 1998 Season Totals							
			Italics denotes Station Record				
Species/ Year	1993	1994	1995	1996	1997	1998	Total
Turkey Vulture	291	1,711	290	2,029	1,803	1,693	7817
Osprey	5	39	28	76	67	76	291
Bald Eagle	0	19	10	24	20	42	115
Northern Harrier	19	277	88	47	173	359	963
Sharp-shinned Hawk	751	1,742	2,064	3,403	4,415	4,749	17124
Cooper's Hawk	32	50	83	155	131	114	565
Northern Goshawk	10	11	22	15	18	12	88
Red-shouldered Hawk	85	161	301	303	84	368	1302
Broad-winged Hawk	261	9,408	3,751	5,439	5,051	11,361	35271
Swainson's Hawk	0	0	1	0	0	0	1
Red-tail Hawk	781	2,650	2,902	2,165	1,550	2,861	12909
Rough-legged Hawk	6	10	22	21	21	16	96
Golden Eagle	4	15	22	13	12	19	85
American Kestrel	75	409	304	367	627	1,287	3069
Merlin	0	15	30	36	26	24	131
Peregrine Falcon	0	2	5	5	15	19	46
Unidentified Raptor	18	226	170	10	89	232	745
Season Total	2,338	16,745	10,087	14,220	14,242	23,232	80,864
Hours Observed	48	100	239	479	479	519	1864
Days	6	36	39	65	79	86	311
Year Total minus BW	2,077	7,337	6,336	8,781	9,191	11,871	45,593

Greater Toronto Raptor Watch

Station: High Park

Year: 1998

One Day Peaks For Migrating Raptors

SPECIES	Au.	SEPTEMBER E M L	OCTOBER E M L	NOVEMBER E M L	1998 Peak	Peak Date	Range 1993 - 97
TV			//////		379	Oc.10	54-930
OS		//////			13	Se.4	06 - 15
BE		//////			9 * !	Se.8	03 - 08
NH		//////			52	Se.8	08 - 87
SS		//////	//////		744 * !	Se.8	313 - 701
CH		//////			15	Oc.8	11 - 19
NG			//////		3	Oc.21	02 - 05
RS			//////		180 *	Oc.22	41- 68
BW		//////			4477 *	Se.8	3056 - 3741
RT			//////		574	Oc.29	371 - 1,268
RL			//////		4	Oc.22	02 - 05
GE			//////		3	Oc.21	03- 10
AK		//////			372 *	Se.7	70 - 178
ML		//////			5	Se.7	04 - 07
PG		//////			6 *	Oc.8	01 - 03

Range of Migration, // 1998 Peak Period, 1997 Peak Period, = 93 - 97 Peak P.
E = Early, M = Middle, L = Late, * = New Record > Station, ! = N.R. > Region

GREATER TORONTO RAPTOR WATCH						
Station: High Park						
Comparison of 1998 Season Totals and Birds Per Hour to the 1994-97 Average						
Species	Totals			Birds Per Hour		
	Average			Average		
	1994-97	1998	% Change	1994-97	1998	% Change
Turkey Vulture	1458	1693	16.12	4.542	3.262	-28.18
Osprey	53	76	43.40	0.165	0.146	-11.52
Bald Eagle	19	42	121.05	0.059	0.081	37.29
Northern Harrier	141	359	154.61	0.439	0.692	57.63
Sharp-shinned Hawk	2899	4749	63.81	9.031	9.150	1.32
Cooper's Hawk	105	114	8.57	0.327	0.220	-32.72
Northern Goshawk	17	12	-29.41	0.053	0.023	-56.60
Total Accipiters	3021	4875	61.38	9.411	9.393	-0.01
Red-shouldered Hawk	212	368	73.59	0.660	0.709	7.42
Broad-winged Hawk	5916	11361	92.04	18.430	21.890	18.77
Red-tailed Hawk	2317	2861	23.48	7.218	5.513	-23.62
Rough-legged Hawk	19	16	-15.79	0.059	0.031	-47.46
Total Buteos	8464	14606	72.57	26.368	28.143	6.73
Golden Eagle	16	19	18.75	0.050	0.037	-26.00
American Kestrel	426	1287	202.11	1.327	2.480	86.89
Merlin	27	24	-11.11	0.084	0.046	-45.24
Peregrine Falcon	7	19	171.43	0.022	0.037	68.18
Total Falcons	460	1330	189.130	1.433	2.563	78.86
Unidentified Raptors	199	232	16.58	0.620	0.447	-38.70
Total Raptors	13836	23232	67.91	43.103	44.76	3.85
Observer Hours	321	519	61.68	321	NA	NA

GREATER TORONTO RAPTOR WATCH						
Station : High Park						
Comparison of 1997-1998 Season Totals and Birds Per Hour						
Species	TOTALS			BIRDS PER HOUR		
	1997	1998	% Change	1997	1998	% Change
Turkey Vulture	1803	1693	-6.10	3.764	3.262	-13.34
Osprey	67	76	13.43	0.140	0.146	4.29
Bald Eagle	20	42	110	0.042	0.081	92.86
Northern Harrier	173	359	107.51	0.361	0.692	91.69
Sharp-shinned Hawk	4415	4749	7.57	9.217	9.150	-0.73
Cooper's Hawk	131	114	-12.98	0.334	0.220	-34.13
Northern Goshawk	18	12	-33.33	0.038	0.023	-39.47
Total Accipiters	4564	4875	6.81	9.528	9.393	-1.42
Red-shouldered Hawk	84	368	338.10	0.175	0.709	305.14
Broad-winged Hawk	5051	11361	124.93	10.545	21.890	107.58
Red-tailed Hawk	1550	2861	84.58	3.236	5.513	70.37
Rough-legged Hawk	21	16	-23.81	0.044	0.031	-29.55
Total Buteos	6706	14606	117.81	14	28.143	101.02
Golden Eagle	12	19	58.33	0.025	0.037	48
American Kestrel	627	1287	105.26	1.309	2.480	89.46
Merlin	26	24	-7.69	0.054	0.046	-14.82
Peregrine Falcon	15	19	26.67	0.031	0.037	19.36
Total Falcon	668	1330	99.1	1.395	2.563	83.73
Unidentified Raptors	229	232	1.31	0.478	0.447	-6.49
Total Raptors	14242	23232	63.12	29.733	44.76	50.56
Observer Hours	479	519	8.35	NA	NA	NA

GREATER TORONTO RAPTOR WATCH																					
Station: HPRW																					
Location: Hawk Hill, High Park, Toronto, Ontario																					
Viewing Period: Aug.19 to Nov.28, 1998																					
Date	TV	OS	BE	NH	SS	CH	NG	RS	BW	RT	RL	GE	AK	ML	PG	UR	TOTALS	WIND	SPEED	HRS	OBS
19-Aug										3			3					6 SW	Light	3	1
21-Aug		1			1					1						1		4 W	Light	5	2
22-Aug					1													1 W	Light	1	2
26-Aug	1	2			7					4			5	1				20 SW	Light	5	2
27-Aug		2			10	1												13 SW	Light	6	2
28-Aug			1		4					1								6 SE	Light	5	2
29-Aug		3			16				1	4				1				25 VAR	Light	6	2
30-Aug	1				14								2					17 VAR	VAR	6	4
31-Aug		3	1	2	47				5				68			6		132 NW	VAR	7	5
Total	2	11	2	2	100	1	0	0	6	13	0	0	78	2	0	7	224			46	

3 3

3 4

GREATER TORONTO RAPTOR WATCH																					
Station: HPRW																					
Location: Hawk Hill, High Park, Toronto, Ontario																					
Viewing Period: Aug. 19 to Nov. 28, 1998																					
Date	TV	OS	BE	NH	SS	CH	NG	RS	BW	RT	RL	GE	AK	ML	PG	UR	TOTALS	WIND	SPEED	HRS	OBS
1-Sep					7								4			1		12 Var	Var	4	3
2-Sep					26	3			1	2			5					37 WNW	M	7	4
3-Sep					31								2					33 Var	Light	5	2
4-Sep	1	13	1	3	338				20	11			358			15		760 NW	M	8	8
5-Sep					9								3			1		13 SW	Var	6	5
6-Sep	4	4		1	28					1			2					40 SW	Light	7	5
7-Sep	1	8	1	24	408				170	9			372	5	1	14		1013 Var	M	10	5
8-Sep	1	5	9	52	744	1			4427	24			201	2		8		5524 NW	M	9	8
9-Sep	1	4	5	48	409	2			3524	11			19			5		4028 NNW	Strong	9	13
10-Sep	1	5	2	27	383	2			3008	3			10	1		15		3457 NNW	M	7	9
11-Sep					53				3				2			1		59 Var	M	6	6
12-Sep		8	2	21	132	3			92	4			14			5		281 W	M	7	12
13-Sep				1	30								6					37 Var	Calm	6	7
14-Sep				1	22				2	2			2	1				30 SE	Light	6	3
15-Sep																		0 SE	Light	2	2
16-Sep	3			1	9								2			3		18 Var	Var	7	9
17-Sep		5	2	29	98	6				2			10	1		22		164 SW	Light	8	7
18-Sep		2		5	34	3							5			1		50 SE	Light	6	6
19-Sep					13											1		13 Var	Light	7	6
20-Sep																		0 SE	Light	4	2
21-Sep	4	2		5	75				9	14			5			1		114 W	Light	7	6
22-Sep	2		2	13	122	2			18	3			39	1		6		208 N	M	7	6
23-Sep	11	2	4	8	81				6	18			21		4	7		162 Var	Light	7	15
24-Sep	2	1			1								2					6 Var	Light	6	8
25-Sep										2								2 Var	Light	5	4
27-Sep					18					1			3	1				23 SW	M	9	8
28-Sep	131	1	1	16	364	8			10	31			50	2		2		616 NW	M	8	11
29-Sep		1			7													8 Var	Light	5	6
30-Sep	19	3		4	88	2	1		4	3			2		2	2		130 Var	M	6	10
Total	181	64	29	259	3530	32	0	1	11344	141	0	0	1139	14	7	97	16838			188	

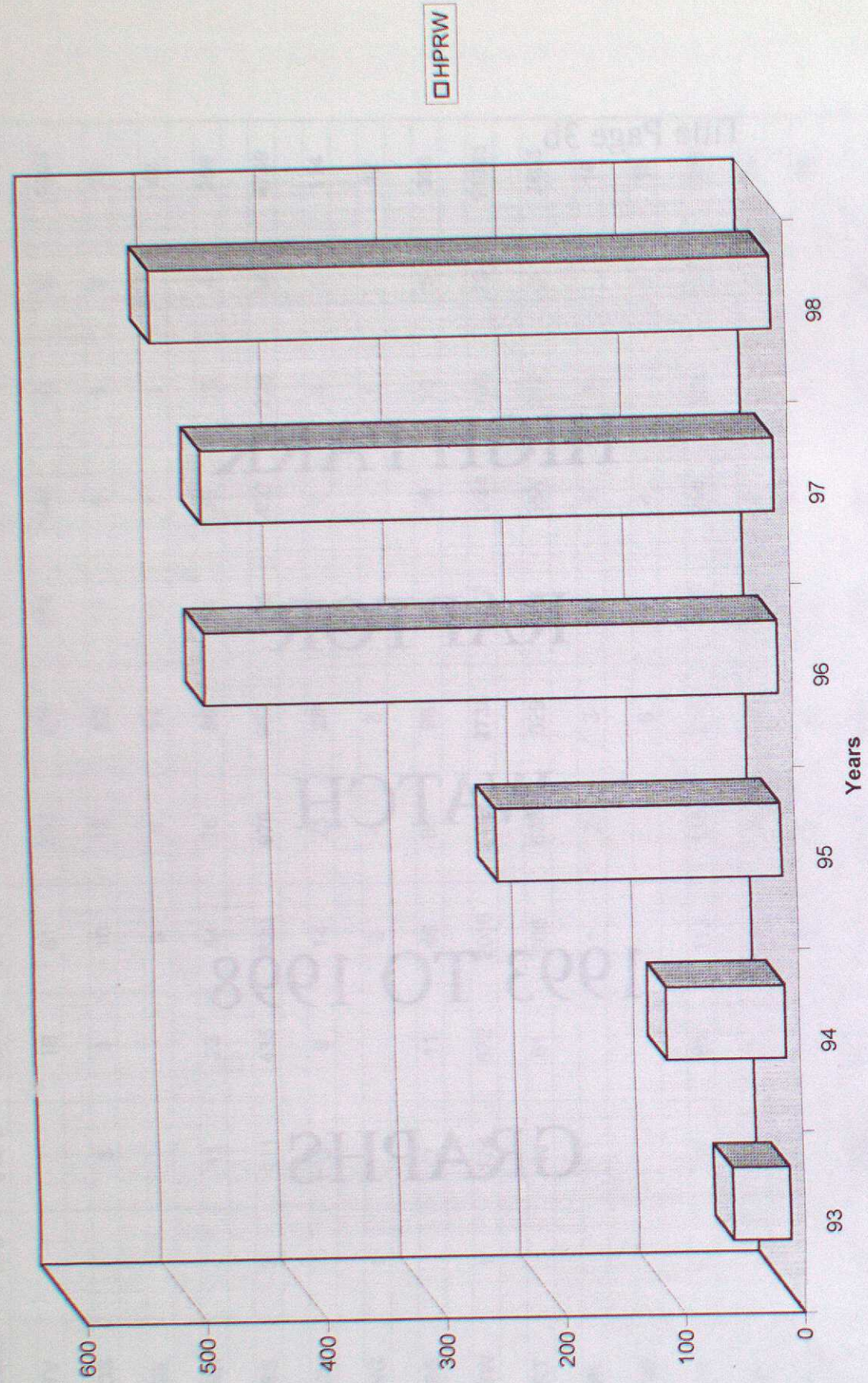
GREATER TORONTO RAPTOR WATCH																					
Station: HPRW																					
Location: Hawk Hill, High Park, Toronto, Ontario																					
Viewing Period: Aug.19 to Nov.28, 1998																					
Date	TV	OS	BE	NH	SS	CH	NG	RS	BW	RT	RL	GE	AK	ML	PG	UR	TOTALS	WIND	SPEED	HRS	OBS
1-Oct	115	1	1	9	162	5		1	7	9			36			1	347	NW	Strong	10	18
2-Oct	6			11	85	2		2	2	5		1	10			5	129	Var	Strong	8	20
3-Oct				1	7												8	NE	Light	6	4
4-Oct	5				1			2					1	1	1	1	11	ENE	M	8	16
5-Oct					28	2				10			1				41	NE	M	6	8
6-Oct					2								1				3	E	Strong	5	3
8-Oct	30		2	4	90	15				28			1		6		176	NNW	M	7	13
9-Oct	349	0	4	2	68	13				19	1		6	3		7	472	Var	Light	7	10
10-Oct	379		2	7	43	4		4	1	33		1	2	1	1	4	482	NW	Light	9	11
11-Oct	65				39					11						1	116	NNW	Var	8	12
12-Oct										3							3	SE	Light	6	6
13-Oct																	0	S	Light	5	4
14-Oct				1	8	2		2		3	1						15	WNW	M	5	12
15-Oct	157			12	29	2		2		16						1	219	Var	Var	7.5	14
16-Oct	1			1	2			1		1							6	SE	Light	6	5
17-Oct																	0	SE	Light	1	1
18-Oct																	0	SW	Strong	4	4
19-Oct	8			2	26			3		2		1	5		2		49	NW	Var	7	8
20-Oct	9			1	26			2		11			1				50	W	Extreme	7	6
21-Oct	40		1	19	260	2	3	44		125	2	3	3			15	517	NW	Strong	8	15
22-Oct	281		1	8	190	11	2	180		409	4	2				25	1113	NW	M	9	11
23-Oct					5					1							6	SW	Var	5	6
25-Oct	2				3			1		1						1	8	Var	Light	7	6
26-Oct					1			2		10			1	1	1		16	East	M	8	3
27-Oct					1			1		3							5	Var	Light	7	3
28-Oct	9			1	2	3		16		87	1	2		1		3	125	Var	Strong	6.5	9
29-Oct	24			4	4	2		28		574	3	1		1		24	665	NNW	Var	9	17
30-Oct	18			4	1		1	27		268		3				7	329	North	M	6	9
31-Oct	1				3	4	1	20	1	268						3	301	NW	M	7.5	8
Total	1499	1	11	87	1086	70	7	338	11	1897	12	14	68	7	11	98	5215			195.5	

GREATER TORONTO RAPTOR WATCH																					
Station: HPRW																					
Location: Hawk Hill, High Park, Toronto, Ontario																					
Viewing Period: Aug. 19 to Nov. 28, 1998																					
Date	TV	OS	BE	NH	SS	CH	NG	RS	BW	RT	RL	GE	AK	ML	PG	UR	TOTALS	WIND	SPEED	HRS	OBS
1-Nov	1			1	8	1		16		231			1		1	18	278	NNW	Var	7	31
2-Nov	10				1			4		52		2				3	72	NW	Strong	8	5
3-Nov						1	2	4		100	1	1		1		5	115	NW	M	8	8
4-Nov						3	1	3		68	1	1				1	78	WNW	Var	7	10
5-Nov				2						22	1						25	NNW	M	5	9
6-Nov					4			1		28						1	34	NW	Light	4	4
8-Nov					1											1	2	WSW	Light	5	6
13-Nov					1	1				14						1	16	West	M	3	4
15-Nov				1		1	1			1						1	5	NW	Extreme	4	4
17-Nov				6	4	4				85	1						101	NW	Light	7	4
18-Nov						1											1	SW	Light	1	2
19-Nov										1							1	SW	Light	1	1
20-Nov																	1	SW	Light	3	1
21-Nov					2	1				105						1	109	NW	M	6.5	6
22-Nov										1							1	SW	Strong	2	1
23-Nov					1					1							2	SW	Strong	4	1
24-Nov				1	4			1		39							45	NW	Strong	6	4
27-Nov					5	2	1			61							69	NW	M	5	6
28-Nov					1												1	SW	Light	3	3
Total	11	0	0	11	33	14	5	29	0	810	4	5	2	1	1	29	956			89.5	

HIGH PARK
RAPTOR
WATCH
1993 TO 1998
GRAPHS

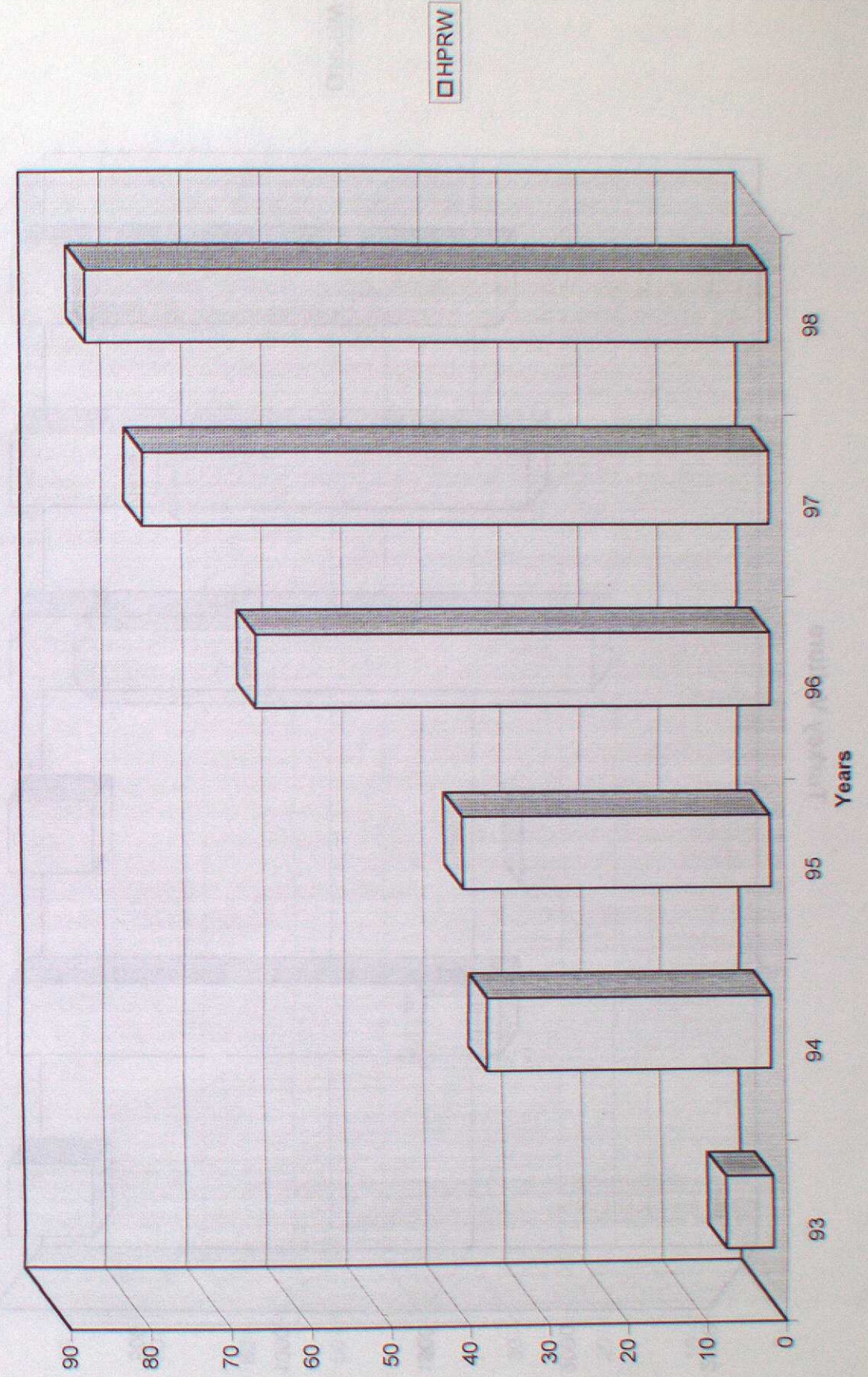
GREATER TORONTO RAPTOR WATCH													
Station: High Park			Time of Day Distribution - Raptor Observations										
September 1 to November 30, 1998			All Times are in Eastern Standard										
Species	7 to 8	8 to 9	9 to 10	10 to 11	11 to 12	12 to 13	13 to 14	14 to 15	15 to 16	16 to 17	Total		
TV			18	61	233	278	514	448	99	42	1693		
OS	1	3	3	10	13	22	11	5	5	3	76		
BE				3	8	11	10	7	3		42		
NH		11	23	54	76	86	54	38	13	4	359		
SS	3	111	435	820	976	967	695	450	228	64	4749		
CH		3	9	14	25	28	24	7	3	1	114		
NG	1			2	4	3	1		1		12		
RS		2	11	46	85	96	75	38	10	5	368		
BW	1	174	672	2016	2442	2738	2072	1034	193	19	11361		
RT		11	61	208	638	629	683	383	217	3	2833		
RL				1	2	3	6	1	3		16		
GE						6	8	4		1	19		
AK	10	36	81	113	115	210	160	214	231	117	1287		
ML		3	1	4	2	4	6	2		2	24		
PG			2	5	3	2	6		1		19		
Total	16	354	1316	3357	4622	5083	4325	2631	1007	261			

Hours



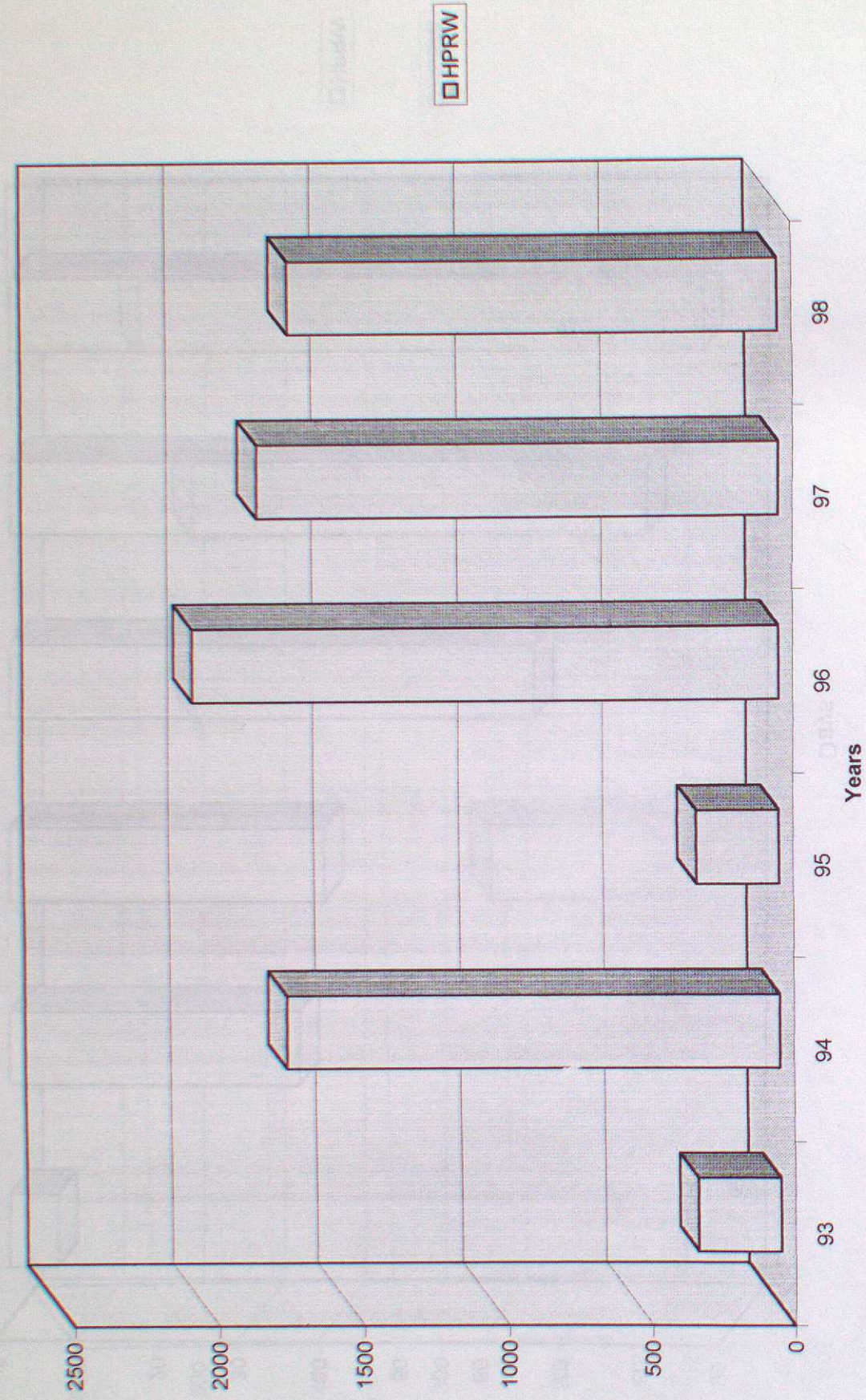
39

Days

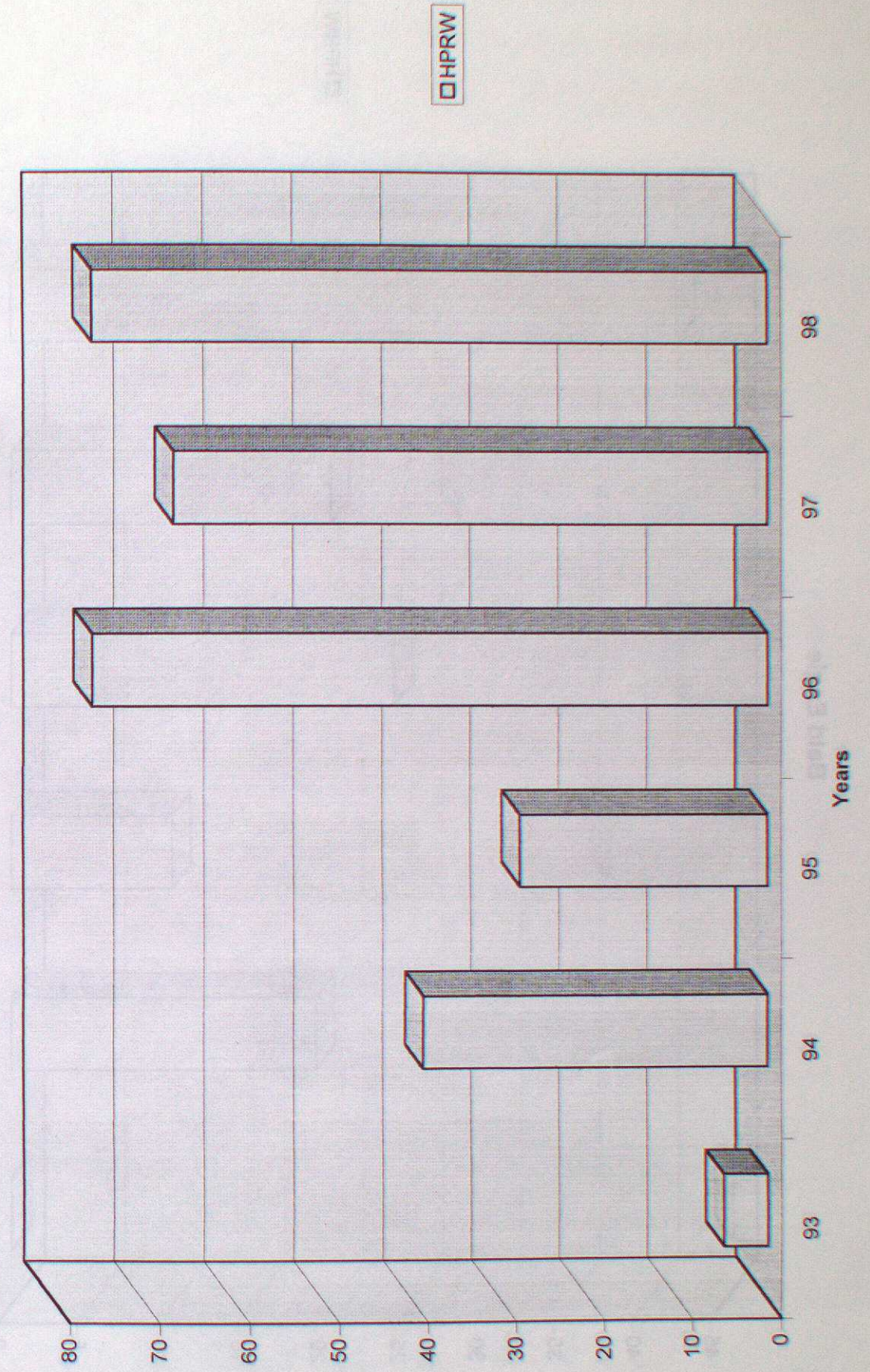


40

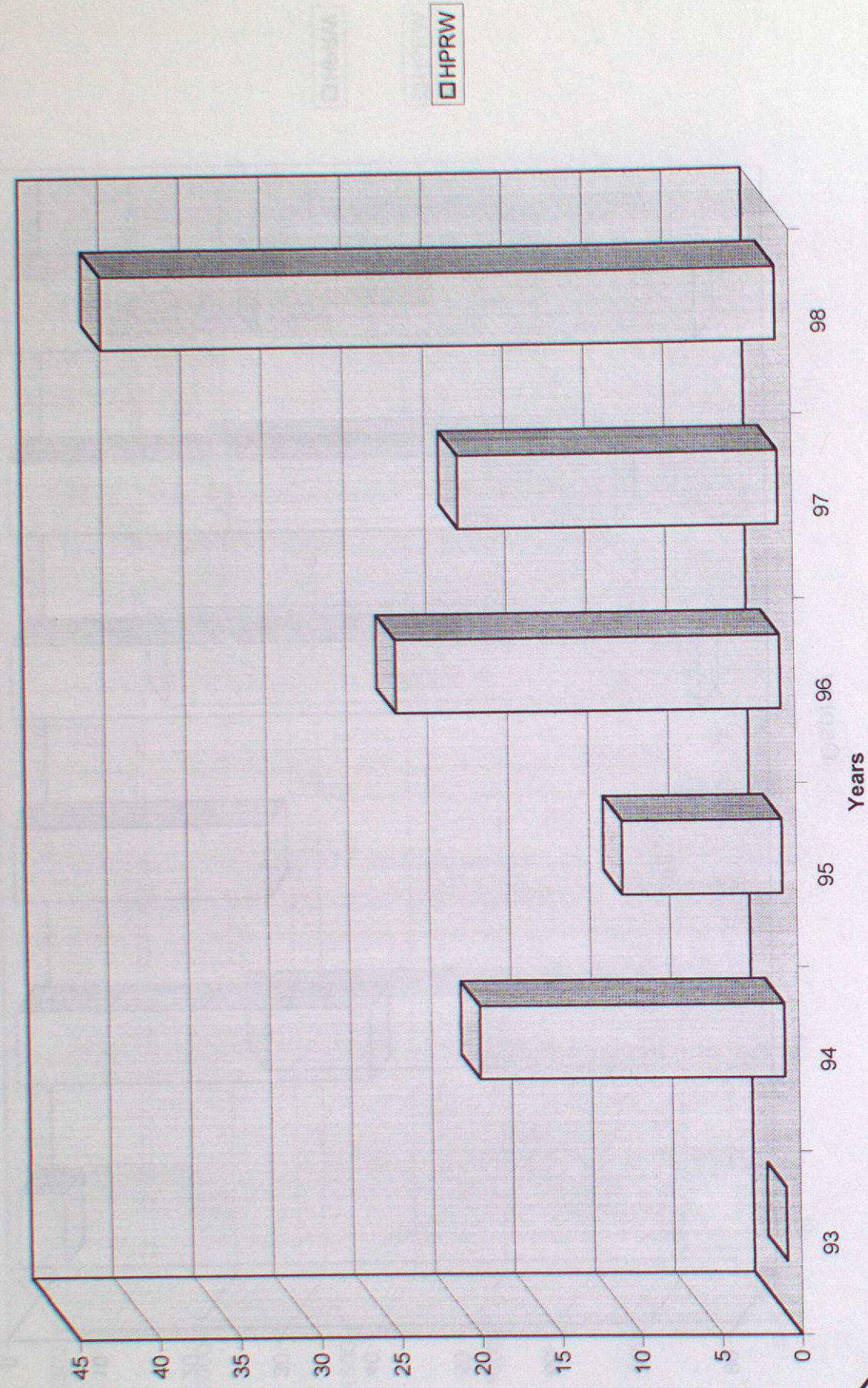
Turkey Vulture



Osprey

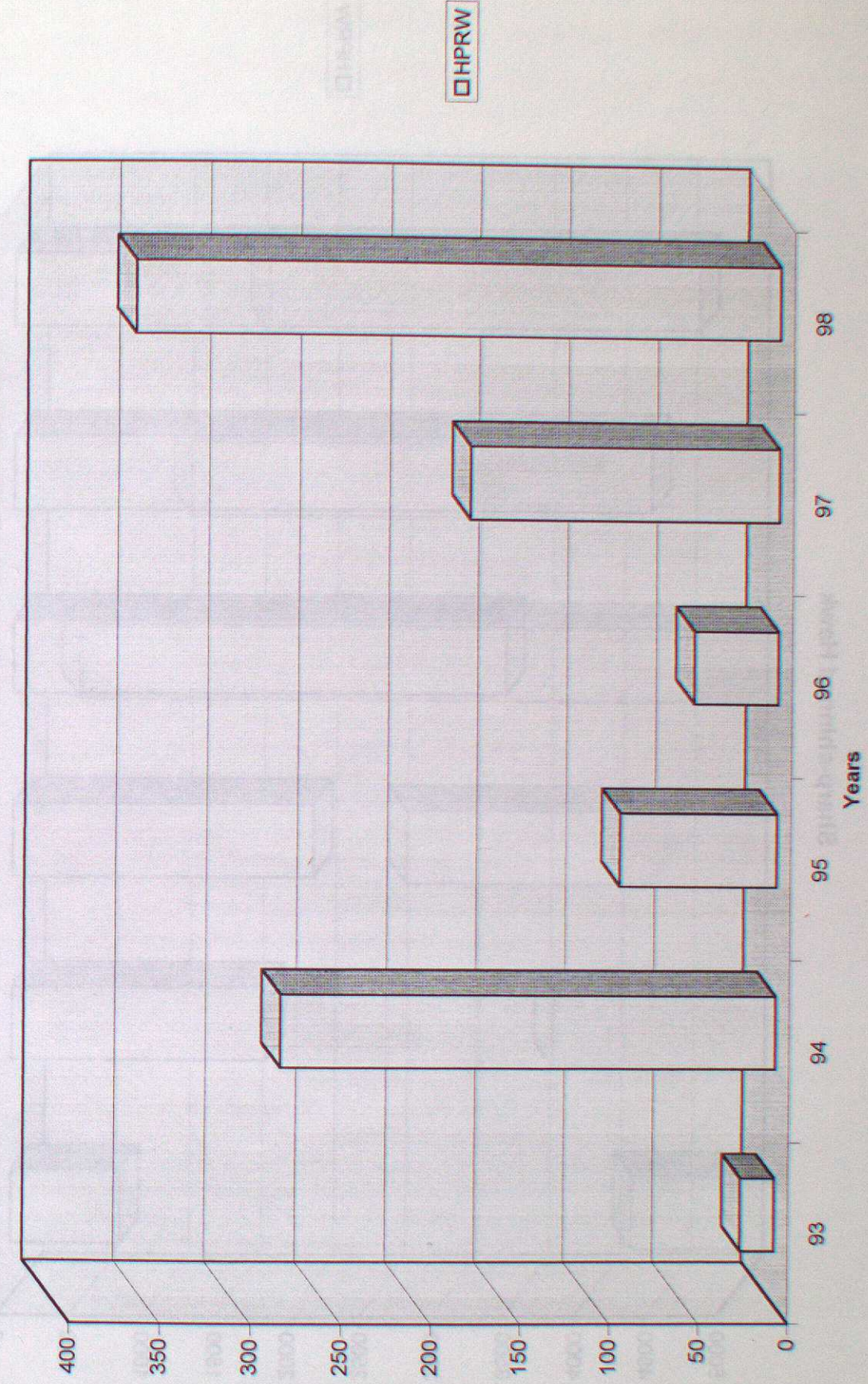


Bald Eagle



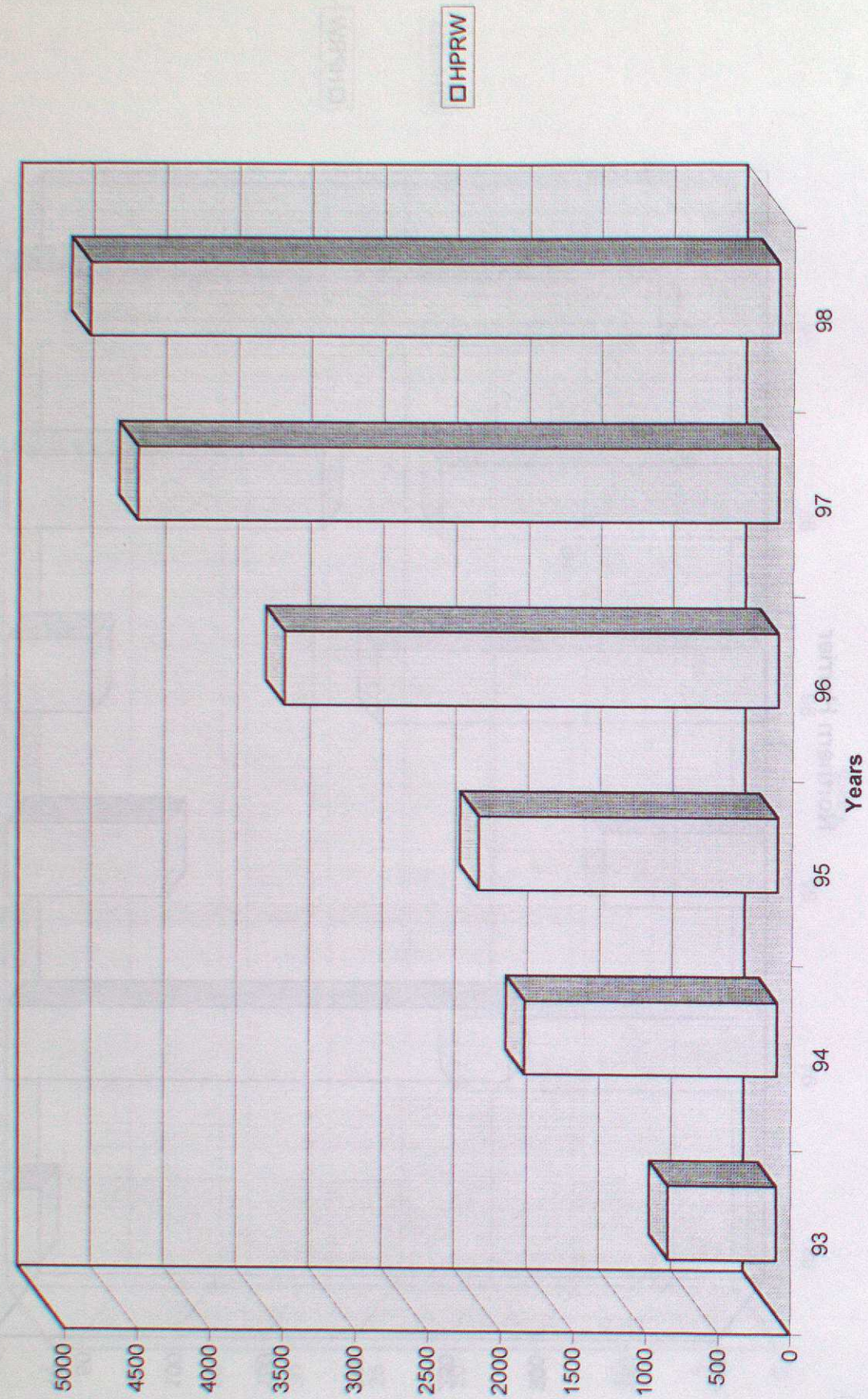
4 3

Northern Harrier



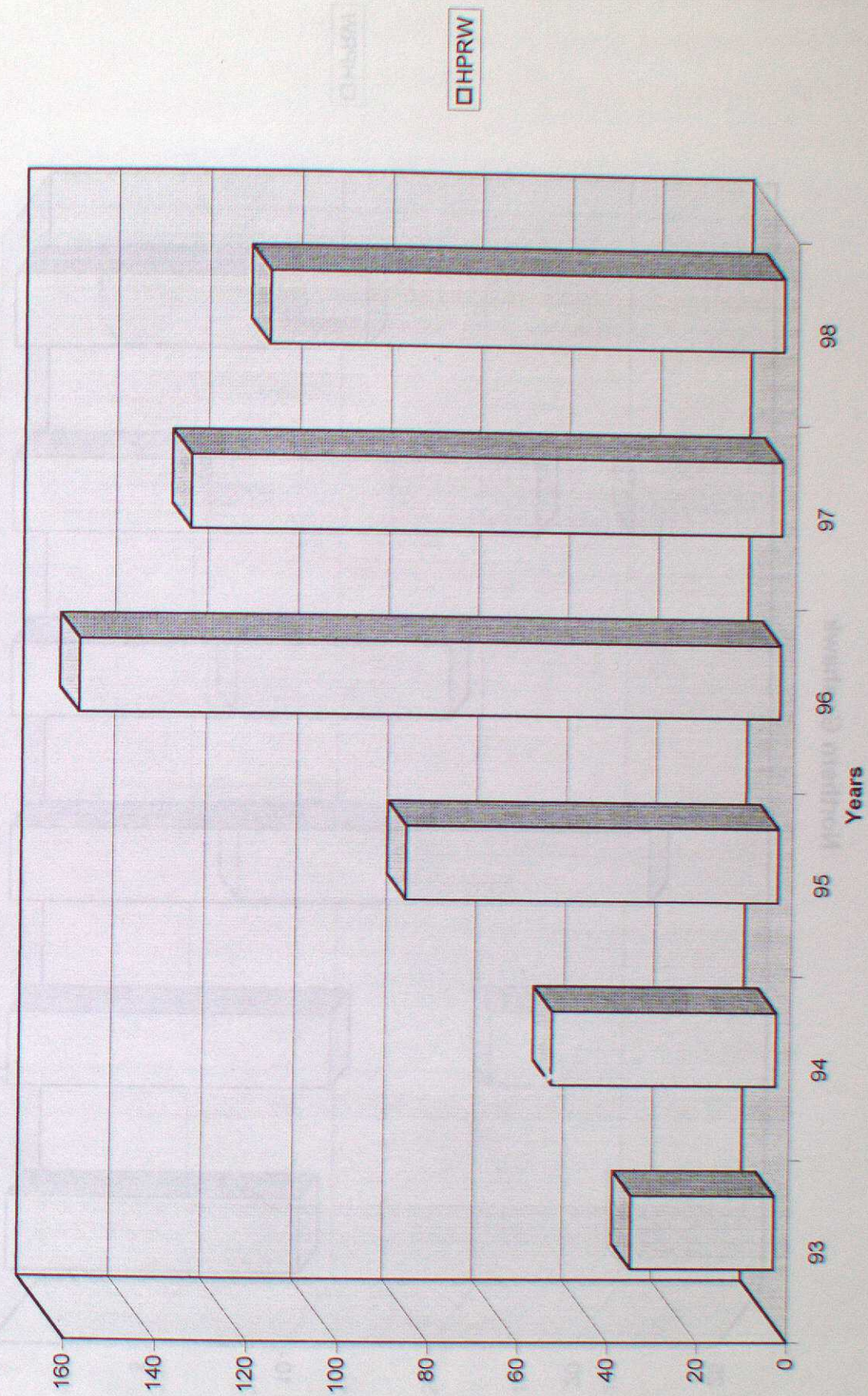
4 4

Sharp-shinned Hawk



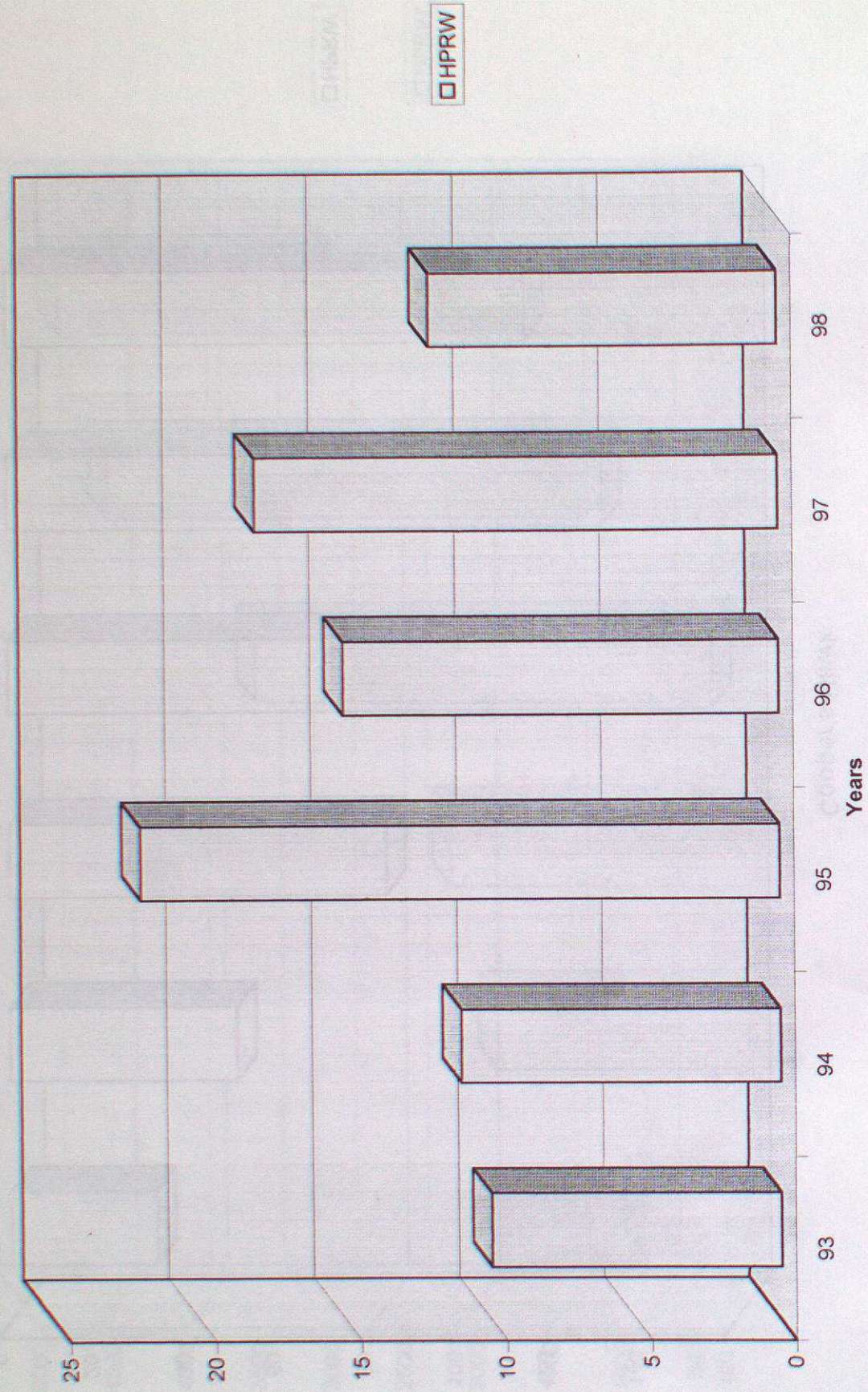
4 5

Cooper's Hawk

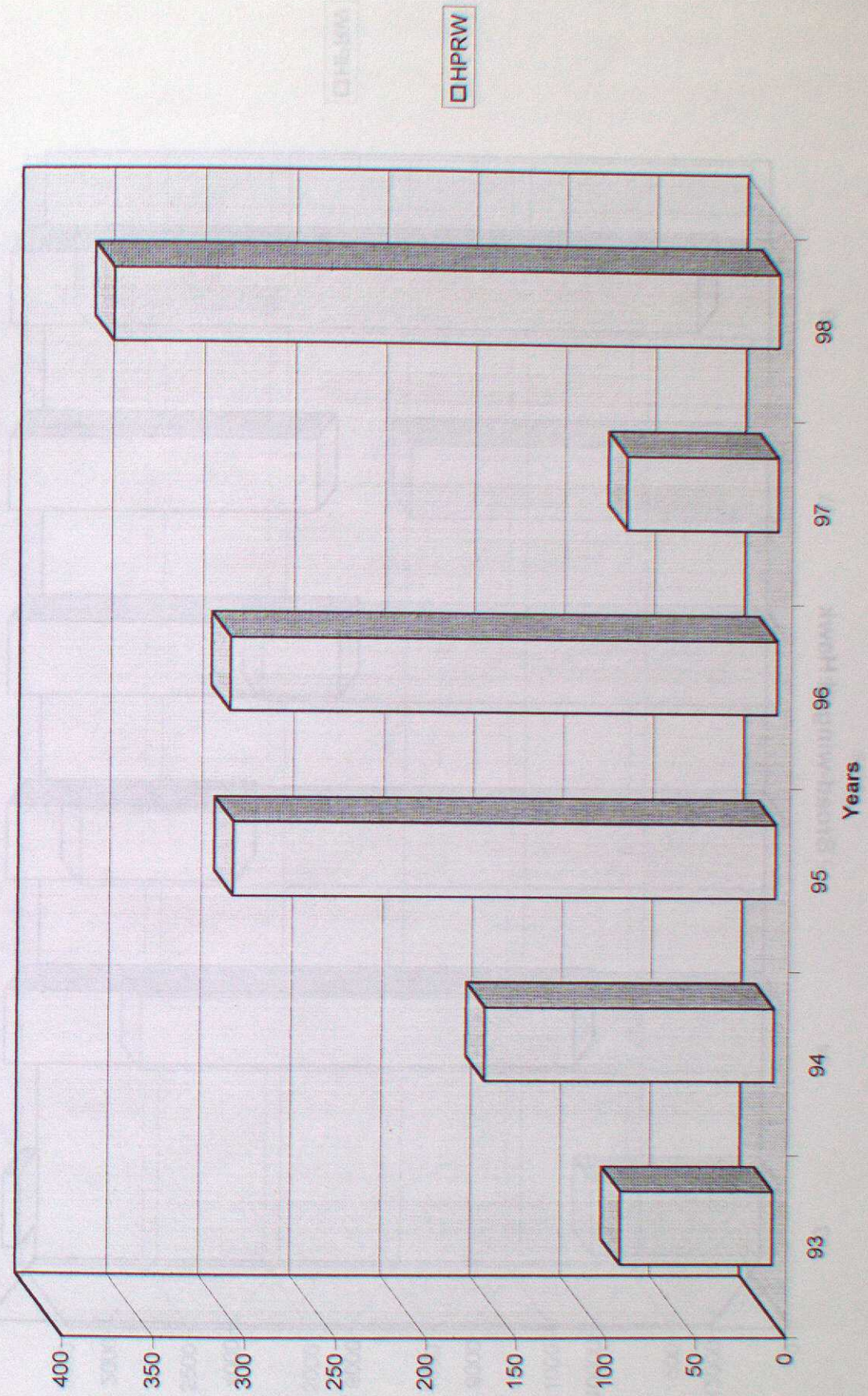


4 6

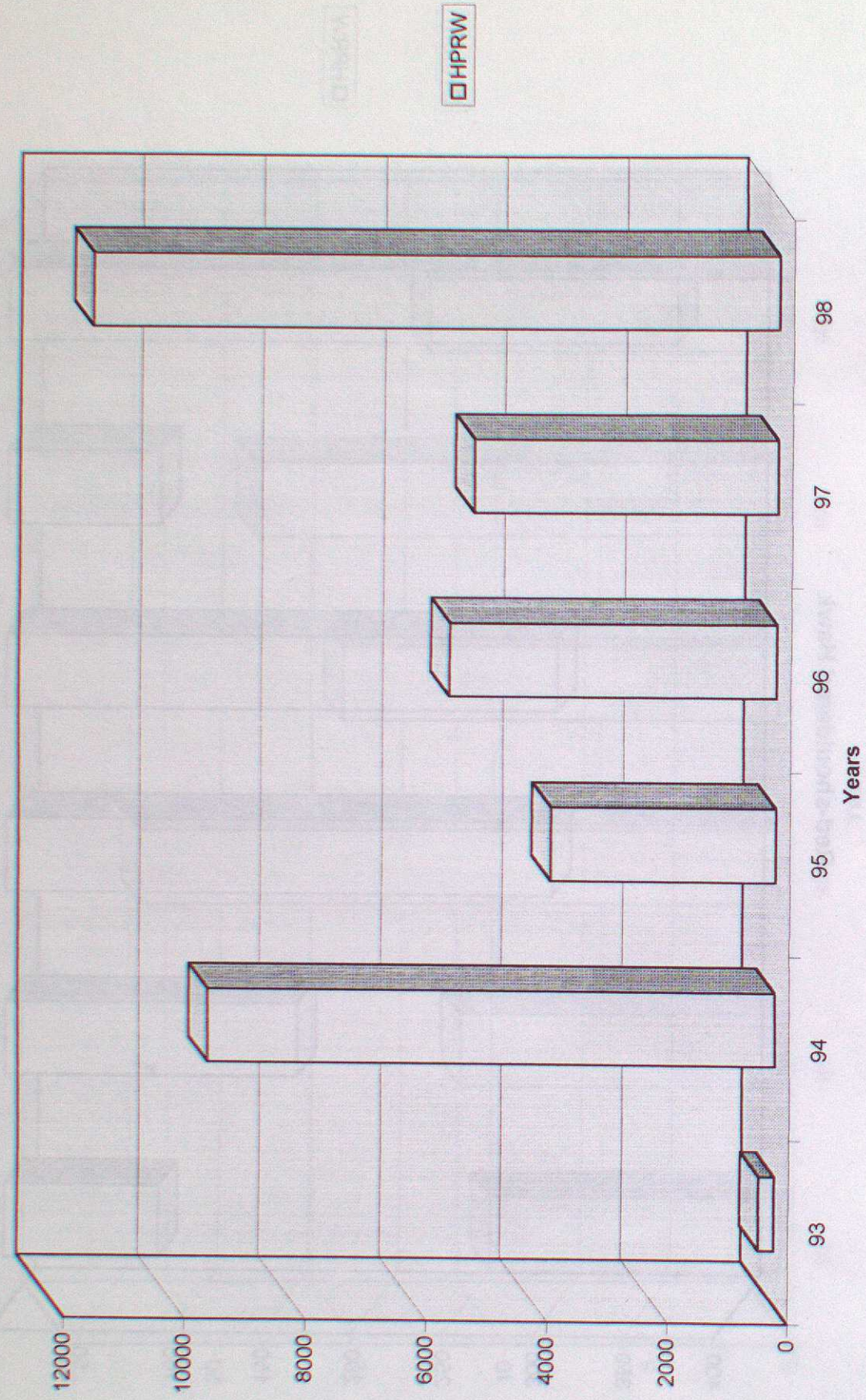
Northern Goshawk



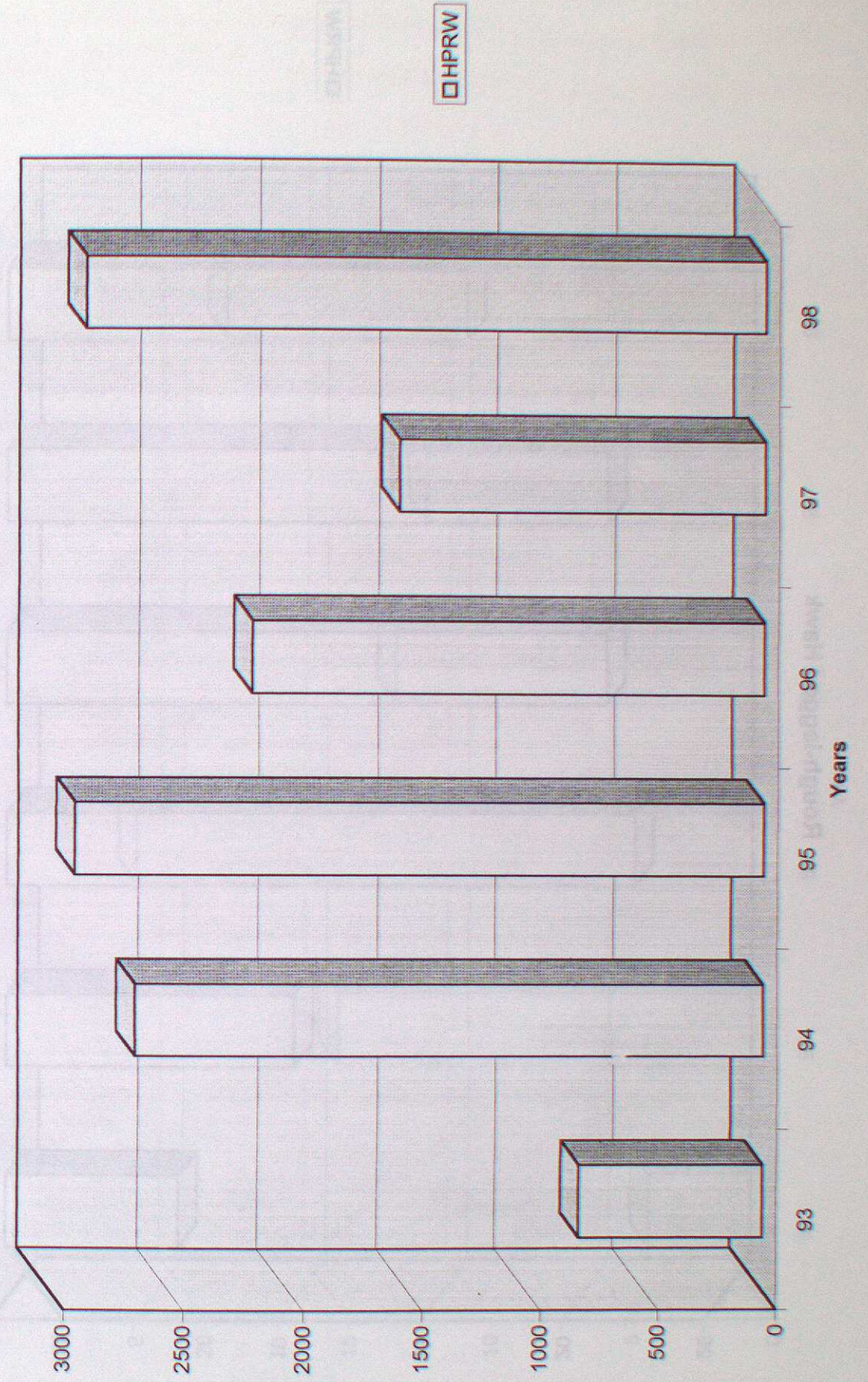
Red-shouldered Hawk



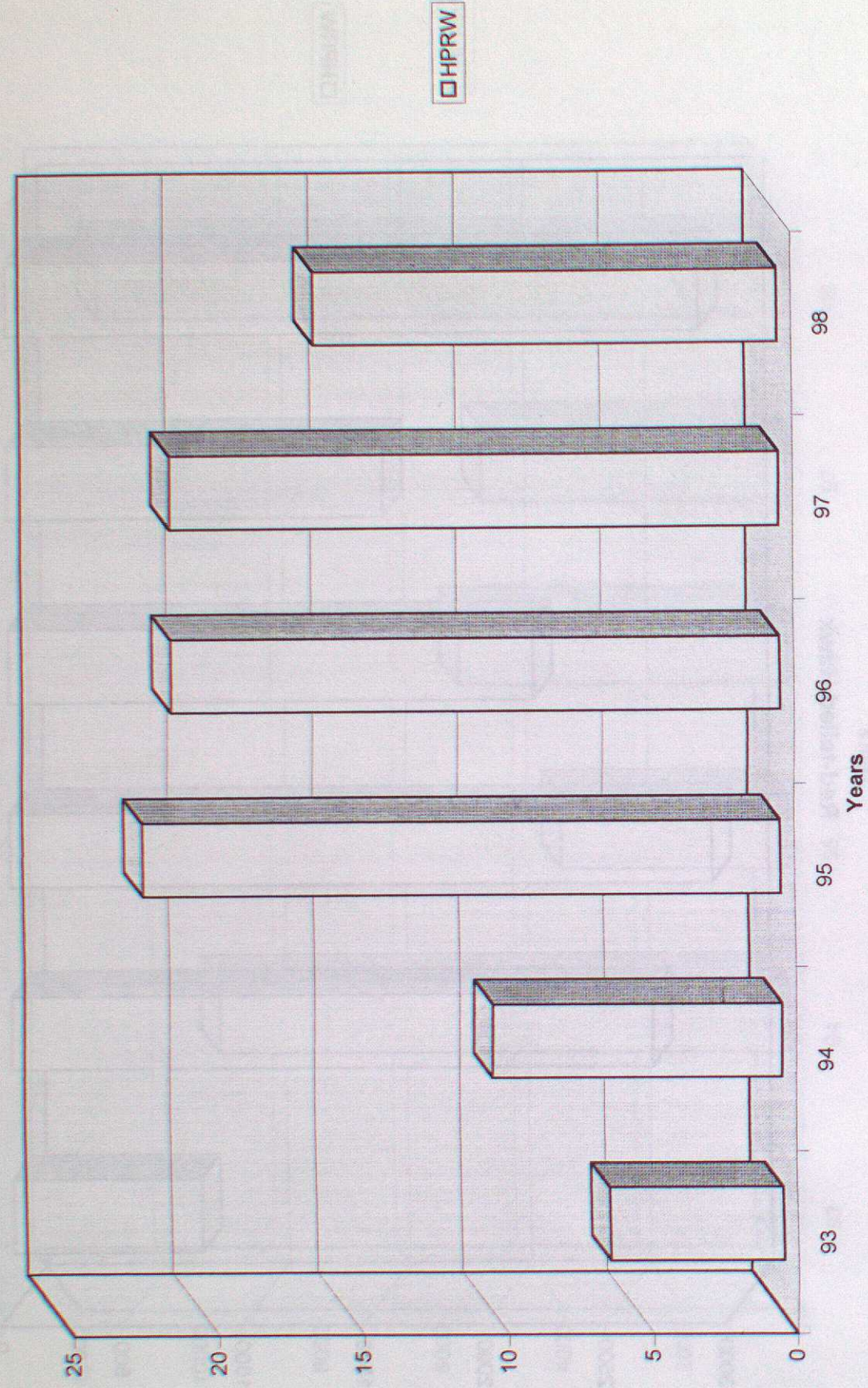
Broad-winged Hawk



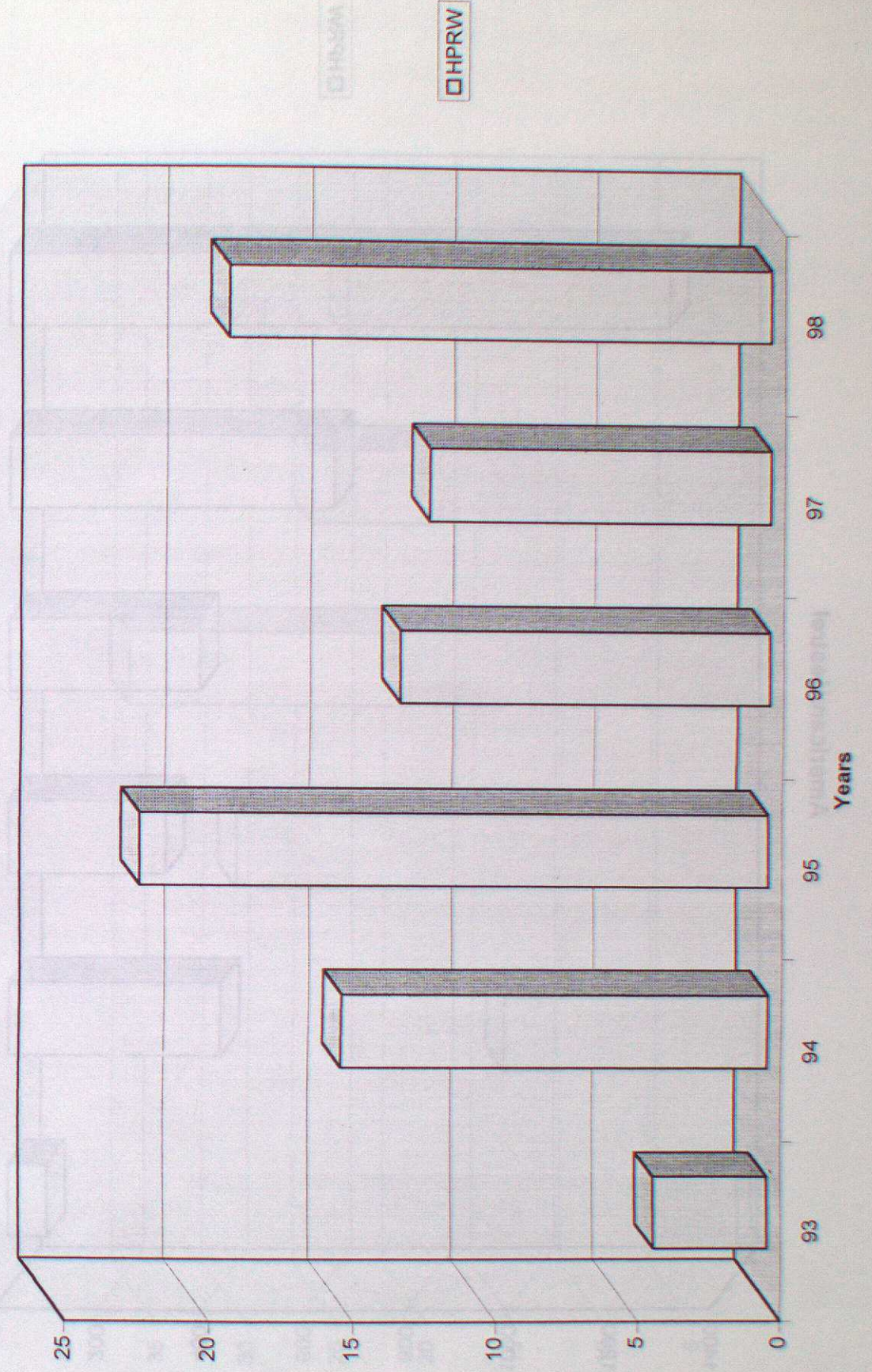
Red-tailed Hawk



Rough-legged Hawk



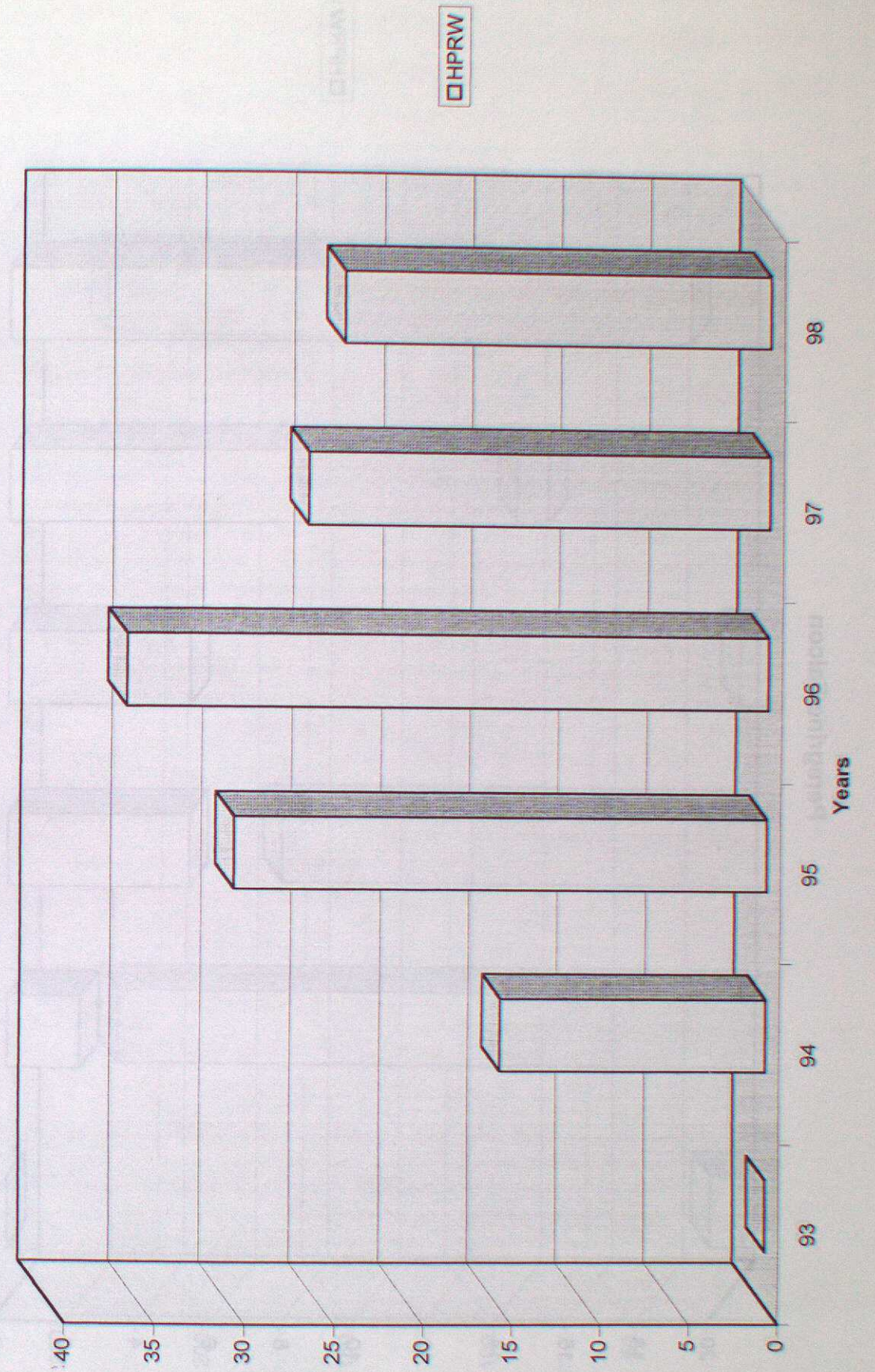
Golden Eagle



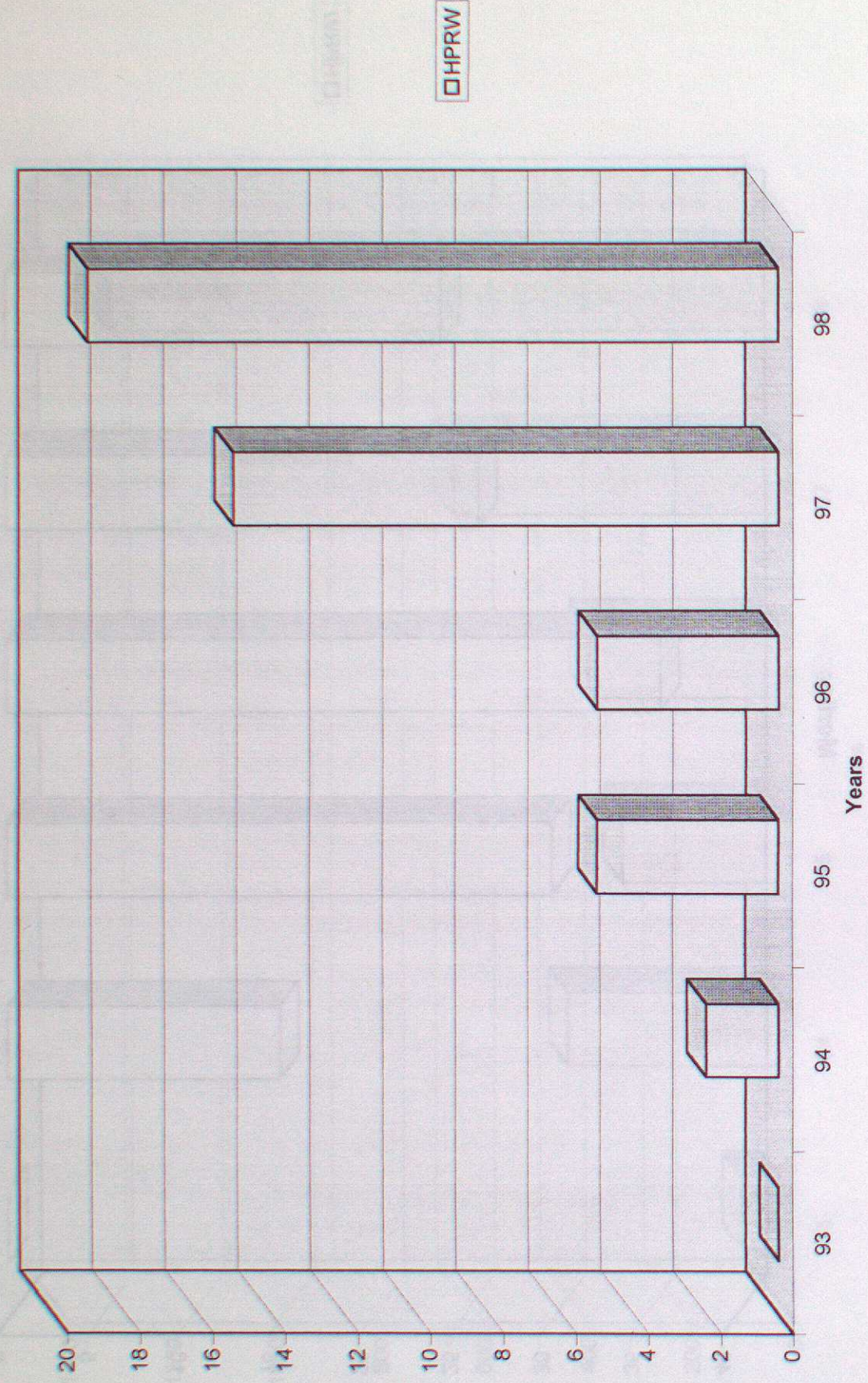
American Kestrel



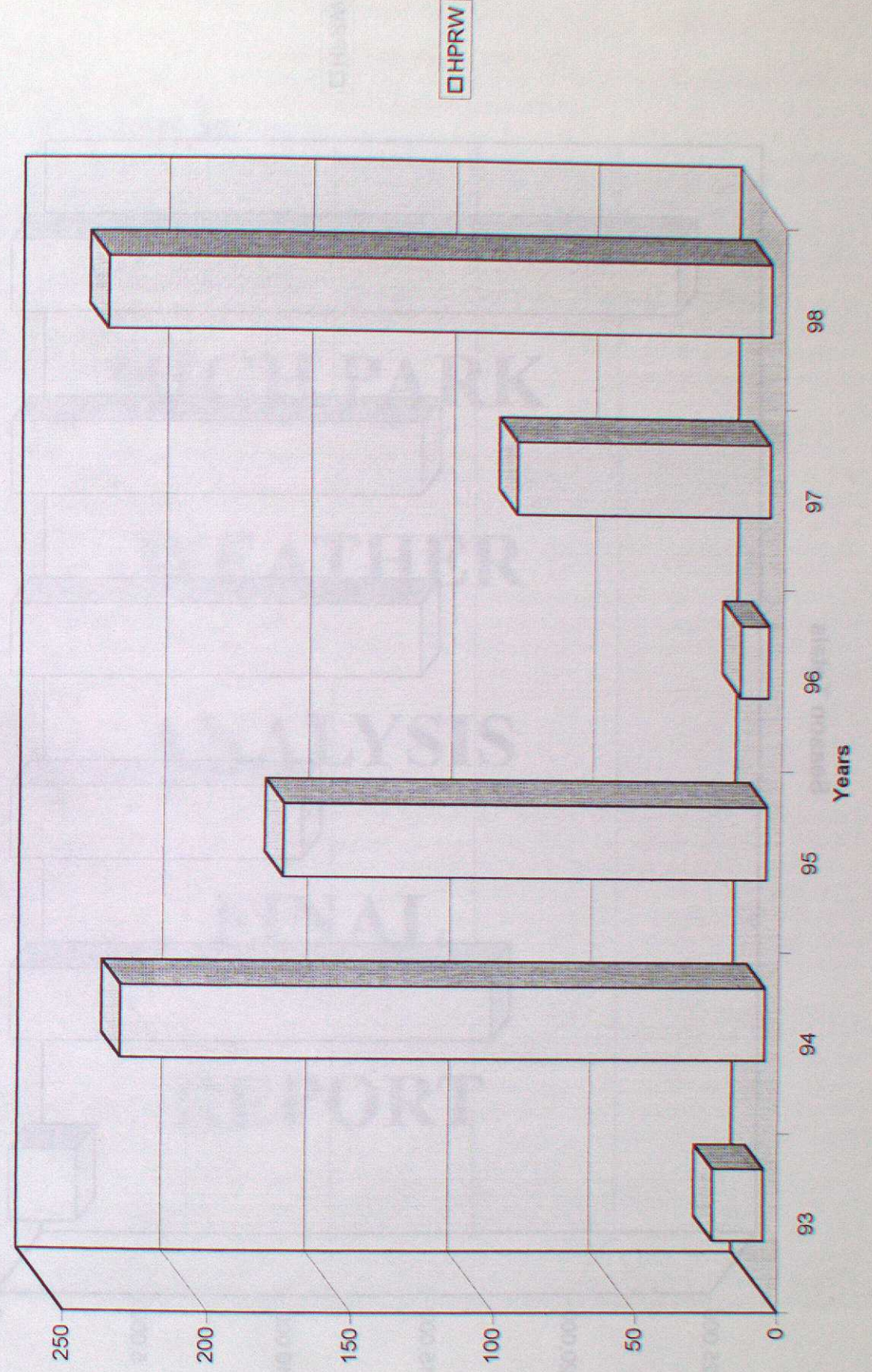
Merlin



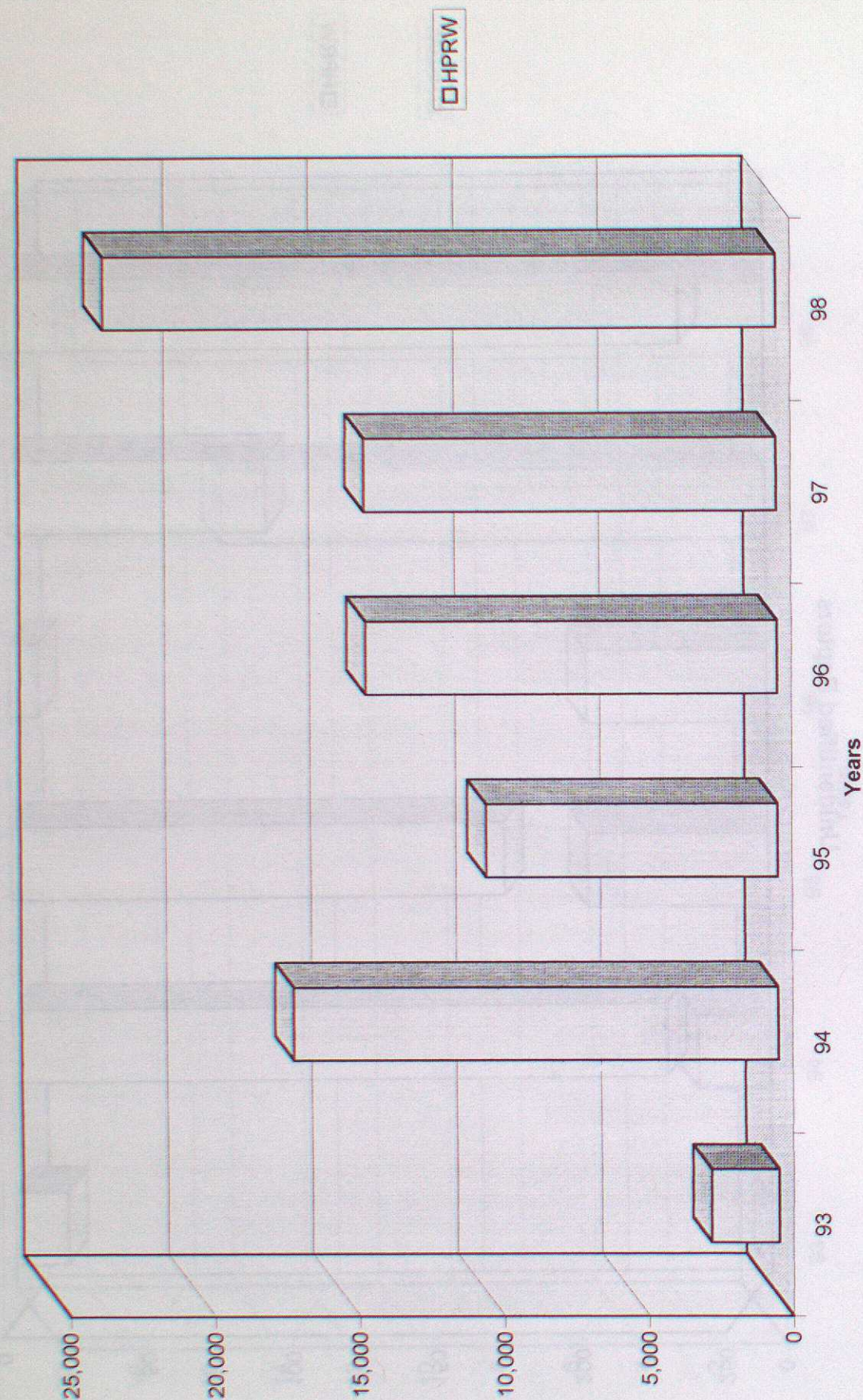
Peregrine Falcon



Unidentified Raptors



Season Totals



Title Page 3c

HIGH PARK WEATHER ANALYSIS FINAL REPORT

Weather Analysis Final Report

Station: High Park

1998 is the third and final year in which an analysis has been made of the relationships between daily numbers of raptors migrating over hawk hill in High Park, Toronto and some specific accompanying weather elements.

The purpose of the analysis was to determine whether the numbers of migrating raptors exhibited any correlation with some specific weather elements during the observation time periods.

Over the three years 1996, 1997, 1998, a total of 1,462 hours were spent recording the hourly totals of raptors observed by species. Readings were taken for wind speed, wind direction, relative humidity and barometric pressure. Readings were also taken for cloud cover, temperature and visibility but these three elements were not analyzed.

During each hour of observation, readings for wind speed and direction were taken on the monitoring site. Readings for relative humidity and barometric pressure were obtained by radio from Environment Canada at Pearson International Airport, which is, located 14 kilometres north-west of High Park. Barometric readings are expressed as sea level readings and no adjustment was made for the High Park elevation (110 metres above sea level). These weather element observations are shown in the species comparison of raptor observations with weather conditions on pages 62 to 76.

The Number of raptors, by species observed for each grade of the weather elements, were recorded by numbers and also as a percentage of the total observation of that species. To be meaningful, the number of hours during which each weather element grade occurred is expressed as a percentage of total hours of observations.

A comparison was then made between the percentage of each species totals for each weather element grade and the percentage of total observer hours in which that grade occurred. This was accomplished with a chi square analysis of each weather element grade.

Definitions of wind speed were:

Light 0 - 11 Km/h, **Medium** 12 - 19 Km/h, **Strong** 20 - 38 Km/h, **Very Strong** > 39 Km/h

Wind speed

In comparing this data over the three years of the study, there was a consistent correlation between medium wind speed and numbers of fall migrating raptors. Light, strong and very strong winds were underrepresented.

Wind Direction

For all fifteen raptor species, the percentage of birds migrating on a north-west wind significantly exceeded the percentage of the total hours in which that weather element grade occurred. There was also a very much weaker correlation with a north wind direction and raptor numbers for the following species; Bald Eagle, Northern Harrier, Cooper's Hawk, Northern Goshawk, Red-shouldered Hawk, Red-tailed Hawk, Rough-legged Hawk and Golden Eagle.

Relative Humidity

For the three grades of this weather element (26 - 40 %, 41 - 55%, 56 - 70%) there was a higher than expected number of raptors observed. Raptor numbers were less than expected for relative humidity readings greater than 70%. There is a suggestion that this observation could be a result of the typical time of day distribution of raptor flights rather than a cause of the raptor flights since relative humidity tends to be lowest at peak daily raptor flights perhaps as a result of thermal activity.

Barometric Pressure

When observing absolute barometric pressure readings, there appears to be no consistent year to year correlation between absolute barometric pressure readings and raptor numbers.

"Big Days"

Page # 61 shows the dates of 1998 "Big Days" at High Park in which 100 or more raptors per day were observed along with total daily numbers, wind direction, barometric pressure and relative change.

For the 1998 fall migration there were 30 "Big Days" out of a Total of 87 observer days. These 30 days accounted for 21,763 or 93.68% of the seasons' total. Of this total 20,990 or 90.35% flew on north-west winds. Only 498 raptors or 2.14% flew on a north wind. On these same 30 days, 18,575 or 79.95% of total raptors flew under conditions of a rising barometer with no consistency in the absolute barometric readings. On 19 of these "Big Days" a total of 18,171 or 78.26% of the season total flew under the combined conditions of a north-west wind and a rising barometer.

Conclusions

From all of the above observations, a suggestion could be made that a north-west wind direction and a rising pressure reading are certainly the two most important weather element grades associated with migrating raptors at High Park. To a lesser extent consideration could be given to conditions of a medium wind speed of 12 - 19 Km/h and relative humidity readings of less than 70%.

These observations suggest that for future seasonal raptor counts, the key weather elements to be recorded should be wind speed, wind direction, relative humidity, barometric reading and relative change.

The observations also suggest that the total number of observer hours could be compromised by avoiding those days which present weather conditions which have historically produced a smaller than expected numbers of raptors. We already know from observations, the weather conditions under which raptors do not fly.

The challenge will be to know, a day in advance, which potentially unproductive days to avoid. Secondly, by restricting observer hours, the consistency of the sampling procedure will be altered so that year to year comparisons of raptor numbers and particularly birds per hour comparisons will be distorted.

It would however be very difficult to resist the temptation to venture out on an unlikely day, with the wind in the wind in the wrong direction, in the hope of seeing even a lone Bald Eagle or Osprey high overhead.

Don Barnett

Greater Toronto Raptor Watch
Station: High Park Year:1998

"Big Raptor Days" in which 100 or more raptors were observed and accompanying
wind direction and barometric pressure

Note: Barometric Pressure is recorded in Kilopascals

Date	Total of Raptors	Wind Direction	Barometric Pressure	Relative Change	B.P. % of Raptors
31-Aug	130	NW	101.65	Rising	
4-Sep	760	NW	101.36	Steady	
7-Sep	1,013	NW	100.72	Falling	
8-Sep	5,524	NW	100.77	Rising	
9-Sep	4,068	NW	101.46	Rising	
10-Sep	3,457	NW	102.06	Rising	
12-Sep	281	NW	101.24	Rising	
17-Sep	161	Variable	102.06	Falling	
21-Sep	114	SW	100.92	Rising	
22-Sep	208	North	101.47	?	
23-Sep	162	North	102.37	Rising	
28-Sep	161	NW	101.49	Rising	
30-Sep	130	NW	101.15	Falling	

Month Total 16,169 out of total of 17,062 Raptors 94.77%

1-Oct	347	NW	101.40	Rising
2-Oct	128	North	102.55	Rising
8-Oct	176	NW	101.78	Rising
9-Oct	472	Variable	102.20	Falling
10-Oct	483	NW	102.11	Rising
11-Oct	116	Variable	102.37	Rising
15-Oct	219	NW	102.42	Rising
21-Oct	517	NW	101.86	Rising
22-Oct	1,113	NW	102.85	Rising
28-Oct	125	NW	100.87	Rising
29-Oct	665	NW	102.11	Rising
30-Oct	329	NW	101.81	Falling
31-Oct	301	NW	101.97	Rising

Month Total 4,991 out of total of 5,135 raptors 96.86%

1-Nov	278	NW	102.09	Rising
3-Nov	115	NW	101.86	Falling
17-Nov	101	NW	102.35	Rising
21-Nov	109	NW	101.64	Rising

Month Total 603 out of total of 677 raptors 89.07%

30 Days total 21,763 out of total of 23,232 raptors 93.68%

On 19 of the above days 18,171 or 78.26% of the season total flew,
under combined conditions of a north-west wind and rising barometric pressure.

Greater Toronto Raptor Watch

Station: High Park Year: 1998

Comparison of Raptor observations with weather conditions

Species: Turkey Vulture Total Hours: 519 Total Birds:1,693 Aug.19 to Nov.30

Wind Speed

	Light	Medium	Strong	Very Strong
# of Birds	892	599	193	9
% of Species	52.69	35.38	11.40	0.53
Total				
% of Total Hours	48.27	37.86	12.52	1.35

Wind Direction From

	N	NW	W	NE	SW	S	SE	E
# of Birds	323	1153	20	130	24	1	42	
% of Species	19.08	68.10	11.81	7.68	1.42	0.06	2.48	
Total								
% of Total Hours	6.36	45.57	8.48	4.73	18.11	4.62	9.06	3.08

Relative Humidity

	26 - 40 %	41 - 55 %	56 - 70 %	71 - 85 %	86 - 100 %
# of Birds	243	232	1148	70	
% of Species	14.35	13.70	67.81	4.14	
Total					
% of Total Hours	5.40	24.86	42.29	22.83	4.62

Barometric Pressure - Kilopascals

	99.0 - 99.99	100.0 - 100.99	101.0 - 101.99	102.0 - 102.99	103.0 - 103.99
# of Birds		22	746	925	
% of Species		1.30	44.06	54.64	
Total					
% of Total Hours	0.00	11.75	53.57	34.30	0.39

Time of Day Distribution - Eastern Standard Time

Hour	8 to 9	9 to 10	10 to 11	11 to 12	12 to 13	13 to 14	14 to 15	15 to 16	16 to 17
# of Birds		18	61	233	278	514	448	99	42
% of Species		1.06	3.60	13.76	16.42	30.36	26.46	5.85	2.48
Total									
% of Total Hours									

Station: High Park Year: 1998

Comparison of Raptor observations with weather conditions

Species: Osprey Total Hours: 519 Total Birds: 76

Aug.19 to Nov.30

Wind Speed

	Light	Medium	Strong	Very Strong
# of Birds	37	36	3	
% of Species Total	48.68	47.37	3.95	
% of Total Hours	48.27	37.86	12.52	1.35

Wind Direction From

	N	NW	W	NE	SW	S	SE	E
# of Birds	1	42	5		26	1	1	
% of Species Total	1.32	55.26	6.58		34.21	1.32	1.32	
% of Total Hours	6.36	45.57	8.48	4.73	18.11	4.62	9.06	3.08

Relative Humidity

	26 - 40 %	41 - 55 %	56 - 70 %	71 - 85 %	86 - 100 %
# of Birds	8	38	24	5	1
% of Species Total	10.53	50.00	31.58	6.58	1.32
% of Total Hours	5.40	24.86	42.29	22.83	4.62

Barometric Pressure - Kilopascals

	99.0 - 99.99	100.0 - 100.99	101.0 - 101.99	102.0 - 102.99	103.0 - 103.99
# of Birds		16	52	8	
% of Species Total		21.05	68.42	10.53	
% of Total Hours	0.00	11.75	53.57	34.30	0.39

Time of Day Distribution - Eastern Standard Time

Hour	8 to 9	9 to 10	10 to 11	11 to 12	12 to 13	13 to 14	14 to 15	15 to 16	16 to 17
# of Birds	3	3	10	13	22	11	5	5	3
% of Species Total	3.95	3.95	13.16	17.11	28.95	14.47	6.58	6.58	3.95
% of Hours									

Station: High Park Year: 1998

Comparison of Raptor observations with weather conditions

Species: Bald Eagle Total Hours: 519 Total Birds: 42 Aug.19 to Nov.30

Wind Speed

	Light	Medium	Strong	Very Strong
# of Birds	19	18	5	
% of Species Total	45.24	42.86	11.91	
% of Total Hours	48.27	37.86	12.52	1.35

Wind Direction From

	N	NW	W	NE	SW	S	SE	E
# of Birds	7	27	1	4	1	1	1	
% of Species Total	16.67	64.29	2.38	9.52	2.38	2.38	2.38	
% of Total Hours	6.36	45.57	8.48	4.73	18.11	4.62	9.06	3.08

Relative Humidity

	26 - 40 %	41 - 55 %	56 - 70 %	71 - 85 %	86 - 100 %
# of Birds	8	14	18	2	
% of Species Total	19.05	33.33	42.86	4.76	
% of Total Hours	5.40	24.86	42.29	22.83	4.62

Barometric Pressure - Kilopascals

	99.0 - 99.99	100.0 - 100.99	101.0 - 101.99	102.0 - 102.99	103.0 - 103.99
# of Birds		10	23	9	
% of Species Total		23.81	54.76	21.43	
% of Hours Total	0.00	11.75	53.57	34.30	0.39

Time of Day Distribution - Eastern Standard Time

Hour	8 to 9	9 to 10	10 to 11	11 to 12	12 to 13	13 to 14	14 to 15	15 to 16	16 to 17
# of Birds			3	8	11	10	7	3	
% of Species Total			7.14	19.05	26.19	23.81	16.67	7.14	
% of Hours									

Station: High Park Year: 1998

Comparison of Raptor observations with weather conditions

Species: Northern Harrier Total Hours: 519 Total Birds: 359 Aug.19 to Nov.30

Wind Speed

	Light	Medium	Strong	Very Strong
# of Birds	106	168	84	1
% of Species Total	29.53	46.80	23.40	0.28
% of Total Hours	48.27	37.86	12.52	1.35

Wind Direction From

	N	NW	W	NE	SW	S	SE	E
# of Birds	28	256	4	7	55	2	7	
% of Species Total	7.80	71.31	1.11	1.95	15.32	0.56	1.95	
% of Total Hours	6.36	45.57	8.48	4.73	18.11	4.62	9.06	3.08

Relative Humidity

	26 - 40 %	41 - 55 %	56 - 70 %	71 - 85 %	86 - 100 %
# of Birds	27	159	136	34	3
% of Species Total	7.52	44.29	37.88	9.47	0.84
% of Total Hours	5.40	24.86	42.29	22.83	4.62

Barometric Pressure - Kilopascals

	99.0 - 99.99	100.0 - 100.99	101.0 - 101.99	102.0 - 102.99	103.0 - 103.99
# of Birds		92	203	63	1
% of Species Total		25.63	56.55	17.55	0.28
% of Total Hours	0.00	11.75	53.57	34.30	0.39

Time of Day Distribution - Eastern Standard Time

Hour	8 to 9	9 to 10	10 to 11	11 to 12	12 to 13	13 to 14	14 to 15	15 to 16	16 to 17
# of Birds	11	23	54	76	86	54	38	13	4
% of Species Total	3.06	6.41	15.04	21.17	23.96	15.04	10.59	3.62	1.11
% of Hours									

Station: High Park Year: 1998

Comparison of Raptor observations with weather conditions

Species: Sharp-shinned Hawk Total Hours: 519 Total Birds: 4,749 Aug.19 to Nov.30

Wind Speed

	Light	Medium	Strong	Very Strong
# of Birds	1133	3036	555	25
% of Species Total	23.86	63.93	11.69	0.53
% of Total Hours	48.27	37.86	12.52	1.35

Wind Direction From

	N	NW	W	NE	SW	S	SE	E
# of Birds	216	3727	193	69	416	31	82	15
% of Species Total	4.55	78.48	4.06	1.45	8.76	0.65	1.73	0.32
% of Total Hours	6.36	45.57	8.48	4.73	18.11	4.62	9.06	3.08

Relative Humidity

	26 - 40 %	41 - 55 %	56 - 70 %	71 - 85 %	86 - 100 %
# of Birds	440	2055	1675	558	21
% of Species Total	9.27	43.27	35.27	11.75	0.44
% of Total Hours	5.40	24.86	42.29	22.83	4.62

Barometric Pressure - Kilopascals

	99.0 - 99.99	100.0 - 100.99	101.0 - 101.99	102.0 - 102.99	103.0 - 103.99
# of Birds		1276	2647	826	
% of Species Total		26.87	55.74	17.39	
% of Total Hours	0.00	11.75	53.57	34.30	0.39

Time of Day Distribution - Eastern Standard Time

Hour	8 to 9	9 to 10	10 to 11	11 to 12	12 to 13	13 to 14	14 to 15	15 to 16	16 to 17
# of Birds	111	435	820	976	967	695	450	228	64
% of Species Total	2.34	9.16	17.27	20.55	20.36	14.64	9.48	4.80	1.35
% of Hours									

Station: High Park Year: 1998

Comparison of Raptor observations with weather conditions

Species: Cooper's Hawk Total Hours: 519 Total Birds: 114 Aug.19 to Nov.30

Wind Speed

	Light	Medium	Strong	Very Strong
# of Birds	36	67	11	
% of Species Total	31.57	58.72	9.65	
% of Total Hours	48.27	37.86	12.52	1.35

Wind Direction From

	N	NW	W	NE	SW	S	SE	E
# of Birds	12	82	1	5	10		4	
% of Species Total	10.53	71.93	0.88	4.39	8.78		3.51	
% of Total Hours	6.36	45.51	8.48	4.73	18.11	4.62	9.06	3.08

Relative Humidity

	26 - 40 %	41 - 55 %	56 - 70 %	71 - 85 %	86 - 100 %
# of Birds	13	33	43	24	1
% of Species Total	11.40	28.95	37.72	21.05	0.88
% of Total Hours	5.40	24.86	42.29	22.83	4.62

Barometric Pressure - Kilopascals

	99.0 - 99.99	100.0 - 100.99	101.0 - 101.99	102.0 - 102.99	103.0 - 103.99
# of Birds		8	66	40	
% of Species Total		7.02	57.90	35.09	
% of Total Hours	0.00	11.75	53.57	34.30	0.39

Time of Day Distribution - Eastern Standard Time

Hour	8 to 9	9 to 10	10 to 11	11 to 12	12 to 13	13 to 14	14 to 15	15 to 16	16 to 17
# of Birds	3	9	14	25	28	24	7	3	1
% of Species Total	2.63	7.90	12.28	21.93	24.56	21.05	6.14	2.63	0.88
% of Hours									

Station: High Park Year: 1998

Comparison of Raptor observations with weather conditions

Species: Northern Goshawk Total Hours: 519 Total Birds: 12 Aug.19 to Nov.30

Wind Speed

	Light	Medium	Strong	Very Strong
# of Birds	2	9	0	1
% of Species Total	16.67	75.00	0.00	8.33
% of Total Hours	48.27	37.86	12.52	1.35

Wind Direction From

	N	NW	W	NE	SW	S	SE	E
# of Birds	1	11						
% of Species Total	8.33	91.67						
% of Total Hours	6.36	45.57	8.48	4.73	18.11	4.62	9.06	3.08

Relative Humidity

	26 - 40 %	41 - 55 %	56 - 70 %	71 - 85 %	86 - 100 %
# of Birds		3	7	2	
% of Species Total		25.00	58.33	16.67	
% of Total Hours	5.40	24.86	42.29	22.83	4.62

Barometric Pressure - Kilopascals

	99.0 - 99.99	100.0 - 100.99	101.0 - 101.99	102.0 - 102.99	103.0 - 103.99
# of Birds		1	9	2	
% of Species Total		8.33	75.00	16.67	
% of Total Hours	0.00	11.75	53.57	34.30	0.39

Time of Day Distribution - Eastern Standard Time

Hour	8 to 9	9 to 10	10 to 11	11 to 12	12 to 13	13 to 14	14 to 15	15 to 16	16 to 17
# of Birds			2	4	3	1		1	
% of Species Total			16.67	33.33	25.00	8.33		8.33	
% of Hours									

Greater Toronto Raptor Watch

Station: High Park Year: 1998

Comparison of Raptor observations with weather conditions

Species: Red-shouldered Hawk Total Hours: 519 Total Birds: 368 Aug.19 to Nov.30

Wind Speed

	Light	Medium	Strong	Very Strong
# of Birds	11	265	90	2
% of Species Total	2.99	72.01	24.46	0.54
% of Total Hours	48.27	37.86	12.52	1.35

Wind Direction From

	N	NW	W	NE	SW	S	SE	E
# of Birds	40	315	4	2	2		3	2
% of Species Total	10.87	85.60	1.09	0.54	0.54		0.82	0.54
% of Total Hours	6.36	45.57	8.48	4.73	18.11	4.62	9.06	3.08

Relative Humidity

	26 - 40 %	41 - 55 %	56 - 70 %	71 - 85 %	86 - 100 %
# of Birds	17	98	237	16	
% of Species Total	4.62	26.63	64.40	4.35	
% of Total Hours	5.40	24.86	42.29	22.83	4.62

Barometric Pressure - Kilopascals

	99.0 - 99.99	100.0 - 100.99	101.0 - 101.99	102.0 - 102.99	103.0 - 103.99
# of Birds		17	123	228	
% of Species Total		4.62	33.42	61.96	
% of Total Hours	0.00	11.75	53.57	34.30	0.39

Time of Day Distribution - Eastern Standard Time

Hour	8 to 9	9 to 10	10 to 11	11 to 12	12 to 13	13 to 14	14 to 15	15 to 16	16 to 17
# of Birds	2	11	46	85	96	75	38	10	5
% of Species Total	0.54	2.99	12.50	23.10	26.09	20.38	10.33	2.72	1.36
% of Hours									

Greater Toronto Raptor Watch

Station: High Park Year: 1998

Comparison of Raptor observations with weather conditions

Species: Broad-winged Hawk Total Hours: 519 Total Birds: 11,361 Aug.19 to Nov.30

Wind Speed

	Light	Medium	Strong	Very Strong
# of Birds	1047	6721	3593	
% of Species Total	9.22	59.16	31.63	
% of Total Hours	48.27	37.86	12.52	1.35

Wind Direction From

	N	NW	W	NE	SW	S	SE	E
# of Birds	51	11,248	8	14	38		2	
% of Species Total	0.45	99.01	0.07	0.12	0.33		0.02	
% of Total Hours	6.36	45.57	8.48	4.73	18.11	4.62	9.06	3.08

Relative Humidity

	26 - 40 %	41 - 55 %	56 - 70 %	71 - 85 %	86 - 100 %
# of Birds	627	6222	3769	737	6
% of Species Total	5.52	54.77	33.18	0.33	0.05
% of Total Hours	5.40	24.86	42.29	22.83	4.62

Barometric Pressure - Kilopascals

	99.0 - 99.99	100.0 - 100.99	101.0 - 101.99	102.0 - 102.99	103.0 - 103.99
# of Birds		4607	6245	509	
% of Species Total		40.56	54.97	4.49	
% of Total Hours	0.00	11.75	53.57	34.30	0.39

Time of Day Distribution - Eastern Standard Time

Hour	8 to 9	9 to 10	10 to 11	11 to 12	12 to 13	13 to 14	14 to 15	15 to 16	16 to 17
# of Birds	174	672	2016	2442	2738	2072	1034	193	19
% of Species Total	1.53	5.92	17.75	21.50	24.10	18.24	9.10	1.70	0.17
% of Hours									

Station: High Park Year: 1998

Comparison of Raptor observations with weather conditions

Species: Red-tailed Hawk Total Hours: 519 Total Birds: 2,861 Aug.19 to Nov.30

Wind Speed

	Light	Medium	Strong	Very Strong
# of Birds	602	2044	204	11
% of Species Total	21.04	71.44	7.13	0.38
% of Total Hours	48.27	37.86	12.52	1.35

Wind Direction From

	N	NW	W	NE	SW	S	SE	E
# of Birds	351	2411	24	11	36	4	10	14
% of Species Total	12.27	84.27	0.84	0.38	1.26	0.14	0.35	0.49
% of Total Hours	6.36	45.57	8.48	4.73	18.11	4.62	9.06	3.08

Relative Humidity

	26 - 40 %	41 - 55 %	56 - 70 %	71 - 85 %	86 - 100 %
# of Birds	256	1446	1075	81	3
% of Species Total	8.95	50.54	3.67	2.83	0.11
% of Total Hours	5.40	24.86	42.29	22.83	4.62

Barometric Pressure - Kilopascals

	99.0 - 99.99	100.0 - 100.99	101.0 - 101.99	102.0 - 102.99	103.0 - 103.99
# of Birds		139	1277	1445	
% of Species Total		4.86	44.64	50.51	
% of Total Hours	0.00	11.75	53.57	34.30	0.39

Time of Day Distribution - Eastern Standard Time

Hour	8 to 9	9 to 10	10 to 11	11 to 12	12 to 13	13 to 14	14 to 15	15 to 16	16 to 17
# of Birds	11	61	208	638	629	683	383	217	31
% of Species Total	0.38	2.14	7.27	22.30	21.99	23.87	13.39	7.59	1.08
% of Hours									

Station: High Park Year: 1998

Comparison of Raptor observations with weather conditions

Species: Rough-legged Hawk Total Hours: 519 Total Birds: 16 Aug.19 to Nov.30

Wind Speed

	Light	Medium	Strong	Very Strong
# of Birds	2	9	5	
% of Species Total	12.50	56.25	31.25	
% of Total Hours	48.27	37.86	12.52	1.35

Wind Direction From

	N	NW	W	NE	SW	S	SE	E
# of Birds	2	14						
% of Species Total	12.50	87.50						
% of Total Hours	6.36	45.57	8.48	4.73	18.11	4.62	9.06	3.08

Relative Humidity

	26 - 40 %	41 - 55 %	56 - 70 %	71 - 85 %	86 - 100 %
# of Birds		11	4	1	
% of Species Total		68.75	25.00	6.25	
% of Total Hours	5.40	24.86	42.29	22.83	4.62

Barometric Pressure - Kilopascals

	99.0 - 99.99	100.0 - 100.99	101.0 - 101.99	102.0 - 102.99	103.0 - 103.99
# of Birds		1	8	7	
% of Species Total		6.25	50.00	43.75	
% of Total Hours	0.00	11.75	53.57	34.30	0.39

Time of Day Distribution - Eastern Standard Time

Hour	8 to 9	9 to 10	10 to 11	11 to 12	12 to 13	13 to 14	14 to 15	15 to 16	16 to 17
# of Birds			1	2	3	6	1	3	
% of Species Total			6.25	12.50	18.75	37.50	6.25	18.75	
% of Hours									

Station: High Park Year: 1998

Comparison of Raptor observations with weather conditions

Species: Golden Eagle Total Hours: 519 Total Birds: 19 Aug.19 to Nov.30

Wind Speed

	Light	Medium	Strong	Very Strong
# of Birds	2	10	7	
% of Species Total	10.53	52.63	36.84	
% of Total Hours	48.27	37.86	12.52	1.35

Wind Direction From

	N	NW	W	NE	SW	S	SE	E
# of Birds	5	12	1		1			
% of Species Total	26.32	63.16	5.26		5.26			
% of Total Hours	6.36	45.57	8.48	4.73	18.11	4.62	9.06	3.08

Relative Humidity

	26 - 40 %	41 - 55 %	56 - 70 %	71 - 85 %	86 - 100 %
# of Birds	1	8	9	1	
% of Species Total	5.26	42.11	47.37	5.26	
% of Total Hours	5.40	24.86	42.29	22.83	4.62

Barometric Pressure - Kilopascals

	99.0 - 99.99	100.0 - 100.99	101.0 - 101.99	102.0 - 102.99	103.0 - 103.99
# of Birds		1	15	3	
% of Species Total		5.26	78.95	15.79	
% of Total Hours	0.00	11.75	53.57	34.30	0.39

Time of Day Distribution - Eastern Standard Time

Hour	8 to 9	9 to 10	10 to 11	11 to 12	12 to 13	13 to 14	14 to 15	15 to 16	16 to 17
# of Birds					6	8	4		1
% of Species Total					31.58	42.11	21.05		5.26
% of Hours									

Station: High Park Year: 1998

Comparison of Raptor observations with weather conditions

Species: American Kestrel Total Hours: 519 Total Birds:1,287 Aug.19 to Nov.30

Wind Speed

	Light	Medium	Strong	Very Strong
# of Birds	189	1029	68	1
% of Species Total	14.69	79.95	5.28	0.08
% of Total Hours	48.27	37.86	12.52	1.35

Wind Direction From

	N	NW	W	NE	SW	S	SE	E
# of Birds	55	1115	16	9	78	4	8	2
% of Species Total	4.27	86.64	1.24	0.70	6.06	0.31	0.62	0.16
% of Total Hours	6.36	45.57	8.48	4.73	18.11	4.62	9.06	3.08

Relative Humidity

	26 - 40 %	41 - 55 %	56 - 70 %	71 - 85 %	86 - 100 %
# of Birds	142	814	205	117	9
% of Species Total	11.03	63.25	15.93	9.09	0.70
% of Total Hours	5.40	24.86	42.29	22.83	4.62

Barometric Pressure - Kilopascals

	99.0 - 99.99	100.0 - 100.99	101.0 - 101.99	102.0 - 102.99	103.0 - 103.99
# of Birds		495	745	47	
% of Species Total		38.46	57.89	3.65	
% of Total Hours	0.00	11.75	53.57	34.30	0.39

Time of Day Distribution - Eastern Standard Time

Hour	8 to 9	9 to 10	10 to 11	11 to 12	12 to 13	13 to 14	14 to 15	15 to 16	16 to 17
# of Birds	36	81	113	115	210	160	214	231	117
% of Species Total	2.80	6.29	8.78	8.93	16.32	12.43	16.63	17.95	9.09
% of Hours									

Station: High Park Year: 1998

Comparison of Raptor observations with weather conditions

Species: Merlin Total Hours: 519 Total Birds: 24 Aug.19 to Nov.30

Wind Speed

	Light	Medium	Strong	Very Strong
# of Birds	9	14	1	
% of Species Total	37.50	58.33	4.17	
% of Total Hours	48.27	37.86	12.52	1.35

Wind Direction From

	N	NW	W	NE	SW	S	SE	E
# of Birds	1	17	1		3		1	1
% of Species Total	4.17	70.83	4.17		12.50		4.17	4.17
% of Total Hours	6.36	45.57	8.48	4.73	18.11	4.62	9.06	3.08

Relative Humidity

	26 - 40 %	41 - 55 %	56 - 70 %	71 - 85 %	86 - 100 %
# of Birds	3	8	10	3	
% of Species Total	12.50	33.33	41.67	12.50	
% of Total Hours	5.40	24.86	42.29	22.83	4.62

Barometric Pressure - Kilopascals

	99.0 - 99.99	100.0 - 100.99	101.0 - 101.99	102.0 - 102.99	103.0 - 103.99
# of Birds		10	8	6	
% of Species Total		41.67	33.33	25.00	
% of Total Hours	0.00	11.75	53.57	34.30	0.39

Time of Day Distribution - Eastern Standard Time

Hour	8 to 9	9 to 10	10 to 11	11 to 12	12 to 13	13 to 14	14 to 15	15 to 16	16 to 17
# of Birds	3	1	4	2	4	6	2		2
% of Species Total	12.50	4.17	16.67	8.33	16.67	25.00	8.33		8.33
% of Hours									

Station: High Park Year: 1998

Comparison of Raptor observations with weather conditions

Species: Peregrine Falcon Total Hours: 519 Total Birds: 19 Aug.19 to Nov.30

Wind Speed

	Light	Medium	Strong	Very Strong
# of Birds	9	7	3	
% of Species Total	47.37	36.84	15.79	
% of Total Hours	48.27	37.86	12.52	1.35

Wind Direction From

	N	NW	W	NE	SW	S	SE	E
# of Birds		13	1	1	3			1
% of Species Total		68.42	5.26	5.26	15.79			5.26
% of Total Hours	6.36	45.57	8.48	4.73	18.11	4.62	9.06	3.08

Relative Humidity

	26 - 40 %	41 - 55 %	56 - 70 %	71 - 85 %	86 - 100 %
# of Birds		5	5	9	
% of Species Total		26.32	26.32	47.37	
% of Total Hours	5.40	24.86	42.29	22.83	4.62

Barometric Pressure - Kilopascals

	99.0 - 99.99	100.0 - 100.99	101.0 - 101.99	102.0 - 102.99	103.0 - 103.99
# of Birds		1	10	8	
% of Species Total		5.26	52.63	42.11	
% of Total Hours	0.00	11.75	53.57	34.30	0.39

Time of Day Distribution - Eastern Standard Time

Hour	8 to 9	9 to 10	10 to 11	11 to 12	12 to 13	13 to 14	14 to 15	15 to 16	16 to 17
# of Birds		2	5	3	2	6		1	
% of Species Total		10.53	26.32	15.79	10.53	31.58		5.26	
% of Hours									

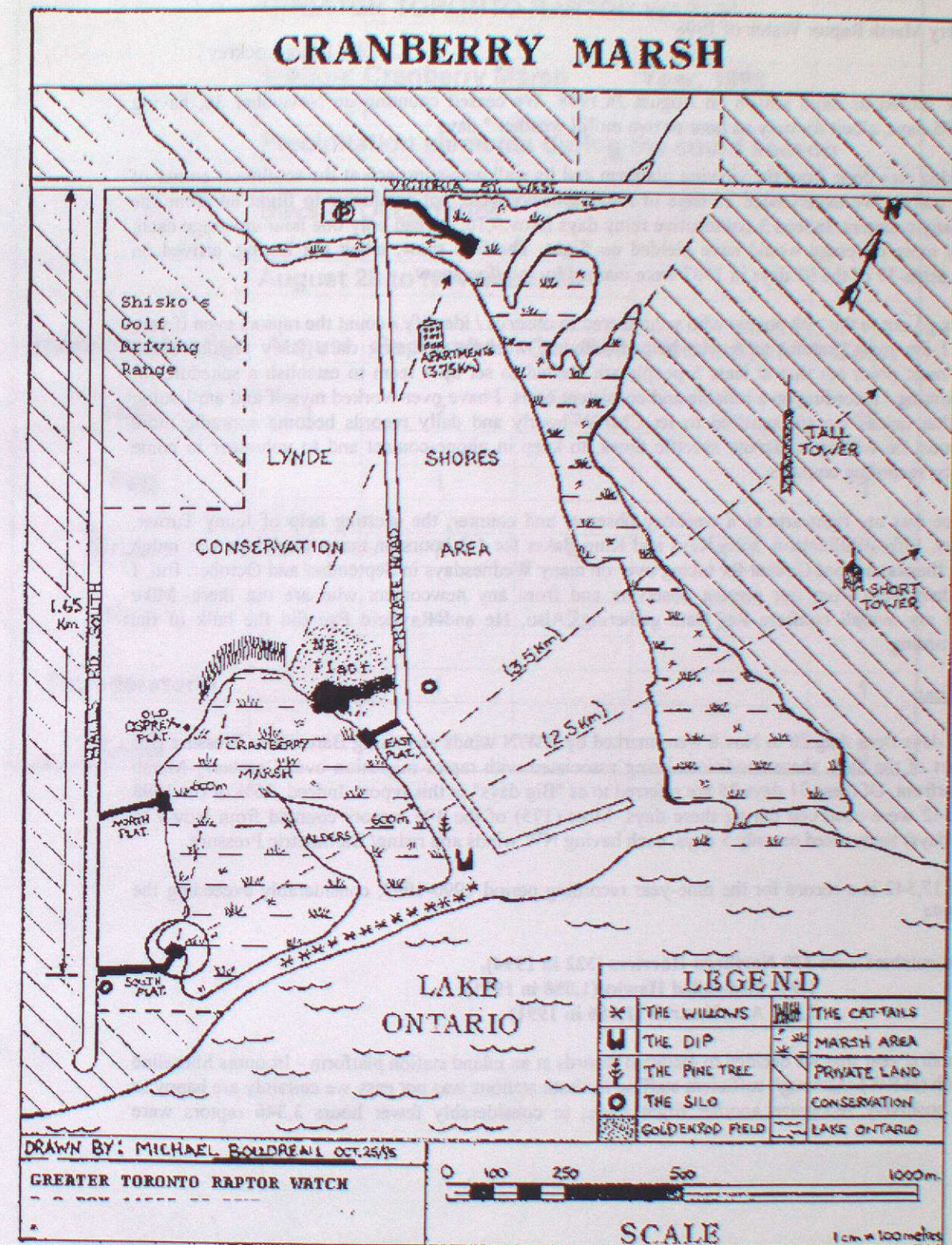
Chapter 4

CRANBERRY MARSH

SOUTH-PLATFORM

WHITBY

DURHAM R.M. ONTARIO



The Cranberry Marsh Raptor Watch of 1998

By Doug Lockrey

The CMRW started its ninth season on August 28, 1998. We ceased counting on November 30, having covered all 95 days, albeit for only an hour or two on "ill weather " days.

The monitoring was done from the viewing platform and its walkway-approach at the southwest corner of the shallow marsh. We experienced 15 days of rain/fog/heavy haze, not conducive to flight let alone the arrival of many counters. Indeed 3 consecutive rainy days (Nov.9,10,11) had only one hour coverage each; undoubtedly more coverage would have yielded no flight. The first snow, albeit not lasting, arrived on Nov.16. An aside-17 of the 93 days in 1997 were marked by rain/fog/snow.

Many thanks go out to the >90 people who volunteered to observe / identify / count the raptors even if very occasional; I am most grateful to 5 who helped with the weekday counting on a fairly regular basis. However, I must point out that at least 5 people are needed to set up a team to establish a schedule for weekday counting / recording on a reliable and consistent basis. I have over-worked myself and am issuing a warning that unless we are satisfied to let CMRW hourly and daily records become sporadic more volunteers must be willing to devote specific times, to keep in phone-contact and to volunteer to come prepared to be recording counters.

Martin Bence was my right arm as a weekday observer and counter; the spotting help of Jenny Turner, Donna Foster, Mike Williamson, John Keys and King Baker for 1-3 hours on many weekdays was much appreciated; thanks to Gord Gallant for taking over on many Wednesdays in September and October. But, I need more help both from our present observers and from any newcomers who are out there. Mike Boudreau is my overall confrere Re. Data gathering. Also, He and Rayfield Pye did the bulk of the weekend recording.

A Record Year

31 of the 73 days from Aug 28 to Nov.8 were marked by NW/N winds and rising Barometric Pressure (for at least a part of the day), these conditions being associated with raptor migration over Cranberry Marsh and the waterfront. Of these 31 days 25 are referred to as "Big days" in this report. Indeed, 96% of the 1998 total of 17,542 were observed during these days. Most (175) of the 193 raptors counted from Nov.9 to Nov.30 (22 days) were noted on only 5 days, each having NW winds and rising/ Barometric Pressure.

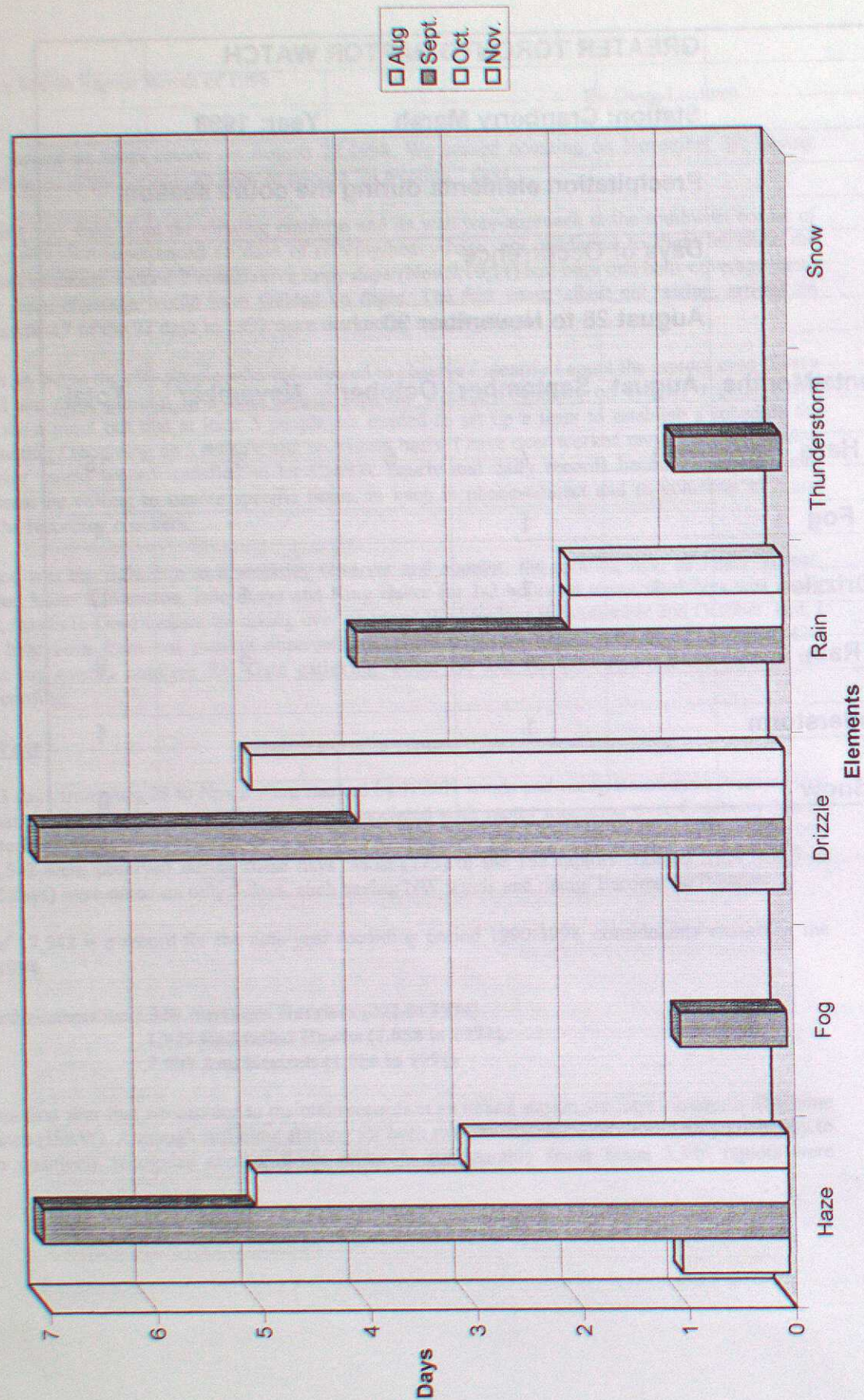
The total of 17,542 is a record for the nine-year recording period 1990-1998, considerably exceeding the 16,135 of 1994.

Other record numbers were **330 Northern Harriers (322 in 1994),**
1,949 Red-tailed Hawks (1,858 in 1991),
2,007 Am. Kestrels (1,086 in 1991)

This was the first year that we decided to maintain records at an inland station platform - Iroquois Shoreline Raptor Watch (ISRW). Although sufficient staffing for both stations was not easy we certainly are happy to be able to positively recognize another flight route; in considerably fewer hours 3,346 raptors were observed.

GREATER TORONTO RAPTOR WATCH					
Station: Cranberry Marsh			Year: 1998		
Precipitation elements during the count season					
Days of Occurrence					
August 28 to November 30					
Elements\Months	August	September	October	November	Total
Haze	1	7	5	3	16
Fog		1			1
Drizzle	1	7	4	5	17
Rain		4	2	2	8
Thunderstorm		1			1
Snow					0

CMRW-Precipitation



Title Page 4a

CRANBERRY MARSH SOUTH- PLATFORM RAPTORS

GREATER TORONTO RAPTOR WATCH									
Station: Cranberry Marsh									
1990 to 1998 Season Totals									
Species/ Year	1990	1991	1992	1993	1994	1995	1996	1997	1998
Turkey Vulture	886	1721	772	681	1869	644	1652	1434	1368
Osprey	76	94	61	33	52	57	86	140	121
Bald Eagle	15	20	12	13	11	27	19	30	29
Northern Harrier	129	177	129	93	322	157	76	230	330
Sharp-shinned Hawk	1037	1846	2117	1084	1296	1310	1363	3907	3419
Cooper's Hawk	66	164	132	59	31	57	42	99	93
Northern Goshawk	36	37	33	11	9	49	13	13	14
Red-shouldered Hawk	81	186	168	16	20	28	7	61	120
Broad-winged Hawk	5631	6357	1118	700	11303	1477	2423	3004	7821
Swainson's Hawk	0	0	0	0	0	1	0	0	0
Red-tail Hawk	1269	1858	1483	496	283	1303	527	1221	1949
Rough-legged Hawk	101	222	30	5	17	119	21	60	58
Golden Eagle	19	13	8	5	4	21	9	9	11
American Kestrel	410	1086	758	269	681	479	378	1050	2007
Merlin	21	74	40	17	31	50	17	47	49
Peregrine Falcon	21	38	29	13	19	15	14	24	23
Gyrfalcon	0	1	0	0	0	0	0	0	0
Unidentified Raptor	81	466	352	84	208	171	76	192	130
Season Total	9879	14360	7242	3579	16135	5965	6723	11519	17542
Hours Observed	-	426	321	182	255.5	388	287	415	411
Days	43	76	62	56	57	80	71	94	95
Year Total minus BW	4248	8003	6124	2879	4832	4488	4300	8515	9721
									53110

Italics Denotes Station Record

Station: Cranberry Marsh

Year: 1998

One Day Peaks For Migrating Raptors

SPECIES	Au.	SEPTEMBER E M L	OCTOBER E M L	NOVEMBER E M L	1998 Peak	Peak Date	Range 1990 - 97
TV			//////		337	Oct.22	250 - 800
OS		////			13	Se.9	6 - 24
BE		////			7 *	Se.7	4 - 5
NH		//////	//////		43	Se.10	11 - 68
SS		//////	//////		659 *	Se. 8	140 - 427
CH		//////	//////		16	Se. 8	7 - 25
NG		...	////		4	Oct.21	2 - 6
RS			//////		36 *	Oct.29	3 - 20
BW		////			3996	Se. 9	540 - 5200
RT		////	//////	//////	382	Oct.29	113 - 600
RL		...	//////	//////	11	Oct.29	2 - 47
GE			//////	////	3	Oct.28	2 - 10
AK		//////	//////		540 *!	Se. 4	60 - 230
ML		////	//////		8	Se. 4	4 - 9
PG		////	////		4	Oct.10	2 - 7

Range of Migration —, 1998 Peak //, 1997 Peak . . . , 90 - 97 Peak —, Early Sightings, Early = E, Middle = M, Late = L, New Record > Station = *, Region = !

GREATER TORONTO RAPTOR WATCH						
Station: Cranberry Marsh						
Comparison of 1998 Season Totals and Birds Per Hour to the 1990-97 Average						
Species	Totals			Birds Per Hour		
	Average			Average		
	1990-97	1998	% Change	1990-97	1998	% Change
Turkey Vulture	1,311	1,368	4.35%	4.444	3.328	-25.10%
Osprey	86	121	40.70%	0.292	0.294	0.82%
Bald Eagle	21	29	38.10%	0.071	0.071	-0.62%
Northern Harrier	188	330	75.53%	0.637	0.803	26.05%
Sharp-shinned Hawk	1,994	3,419	71.46%	6.759	8.319	23.08%
Cooper's Hawk	93	93	0.00%	0.315	0.226	-28.17%
Northern Goshawk	29	14	-51.72%	0.098	0.034	-65.24%
Red-shouldered Hawk	81	120	48.15%	0.275	0.292	6.17%
Broad-winged Hawk	4,573	7,821	71.03%	15.502	19.029	22.75%
Red-tailed Hawk	1,206	1,949	61.61%	4.088	4.742	16.00%
Rough-legged Hawk	82	58	-29.27%	0.278	0.141	-49.24%
Golden Eagle	13	11	-15.38%	0.044	0.027	-39.17%
American Kestrel	727	2,007	176.07%	2.464	4.883	98.18%
Merlin	42	49	16.67%	0.142	0.119	-16.04%
Peregrine Falcon	25	23	-8.00%	0.085	0.056	-34.16%
Unidentified Raptors	229	130	-43.23%	0.776	0.316	-59.24%
Total Raptors	10,994	17,542	59.56%	37.268	42.681	14.53%
Observer Hours	295	411	39.32%	NA	NA	NA

GREATER TORONTO RAPTOR WATCH						
Station: Cranberry Marsh						
Comparison of 1997 - 1998 Season Totals and Birds Per Hour						
Species	TOTALS			BIRDS PER HOUR		
	1997	1998	% Change	1997	1998	% Change
Turkey Vulture	1434	1368	-0.05	3.455	3.328	-3.66%
Osprey	140	121	-0.14	0.337	0.294	-12.64%
Bald Eagle	30	29	-0.03	0.072	0.071	-2.00%
Northern Harrier	230	330	0.43	0.554	0.803	44.93%
Sharp-shinned Hawk	3907	3419	-0.12	9.410	8.319	-11.60%
Cooper's Hawk	99	93	-0.06	0.239	0.226	-5.32%
Northern Goshawk	13	14	0.08	0.031	0.034	9.88%
Red-shouldered Hawk	61	120	0.97	0.147	0.292	98.62%
Broad-winged Hawk	3004	7821	1.60	7.239	19.029	162.87%
Red-tailed Hawk	1221	1949	0.60	2.942	4.742	61.19%
Rough-legged Hawk	60	58	-0.03	0.145	0.141	-2.68%
Golden Eagle	9	11	0.22	0.022	0.027	21.65%
American Kestrel	1050	2007	0.91	2.530	4.883	93.01%
Merlin	47	49	0.04	0.113	0.119	5.51%
Peregrine Falcon	24	23	-0.04	0.058	0.056	-3.52%
Unidentified Raptors	192	130	-0.32	0.463	0.316	-31.68%
Total Raptors	11519	17542	0.52	27.757	42.681	53.77%
Observer Hours	415	411	-0.01	NA	NA	NA

GREATER TORONTO RAPTOR WATCH																					
Station: CMRW																					
Location: South-platform, Cranberry Marsh,Whitby, Durham R.M., Ontario																					
Viewing Period: Aug.28 to Nov.30, 1998																					
Date	TV	OS	BE	NH	SS	CH	NG	RS	BW	RT	RL	GE	AK	ML	PG	UR	Totals	WIND	SPEED	HRS	OBS
28-Aug			1	2	1								1				5	ESE	Light	5	3
29-Aug		1	1	2	24					3			1	1			33	SSW	Light	7	8
30-Aug		2	1	4	10	3				5			2				27	Var	Light	7	7
31-Aug	1	9		5	102	1			3	10			180	2		5	318	NW	Var	7	6
Total	1	12	3	13	137	4	0	0	3	18	0	0	184	3	0	5	383			26	

GREATER TORONTO RAPTOR WATCH																					
Station: CMRW																					
Location: South-platform, Cranberry Marsh,Whitby, Durham R.M., Ontario																					
Viewing Period: Aug.28 to Nov.30, 1998																					
Date	TV	OS	BE	NH	SS	CH	NG	RS	BW	RT	RL	GE	AK	ML	PG	UR	Totals	WIND	SPEED	HRS	OBS
1-Sep		3		4	15					2			2	1		2	29	SE	Calm	5	5
2-Sep			1		1								3	1			6	West	M	4	1
3-Sep	1	3		1	32					2			12				51	Var	Var	5.5	4
4-Sep		6		3	325					17			540	8		4	903	NW	Light	9	8
5-Sep		1			27			1					2	2	1	1	35	Var	Var	6	7
6-Sep					5												5	SW	Var	4.5	6
7-Sep	1	11			137	1				1			275	3	1	3	433	NW	Light	8	7
8-Sep	1	11	7	18	659	16			2614	34			255	3	1	3	3622	Var	Var	8	8
9-Sep	10	13	5	37	344	2			3996	9			79	1		2	4498	Var	Extreme	8.5	8
10-Sep	5	6		43	268	4	1		1163	8			64	1	1		1564	Var	Var	7.5	11
11-Sep	1	1		1	9					2			1				15	WSW	Calm	5	7
12-Sep		12	3	16	165				31	7			53	4		3	294	Var	Var	7	8
13-Sep	1	6		7	83								62			4	163	Var	Calm	6	10
14-Sep				8	9	1				2				1			21	Var	Light	5	6
15-Sep																	0	WSW	Calm	1	1
16-Sep	1	2		1	4				1	2			4	1		1	17	Var	Var	6	4
17-Sep		4		1	10								5	1		1	22	Var	Light	5	6
18-Sep		1		7	22						1		3			1	35	East	Calm	5	6
19-Sep		1		1	5								1	1			9	Var	Light	4.5	6
20-Sep		3															3	Var	Var	4	10
21-Sep	2				12	1				1				2	2		20	Var	Light	7	5
22-Sep		2		7	26								10			1	46	North	Var	4.5	7
23-Sep	63	2		5	38			1	4	10			39	3		5	170	Var	Light	7	9
24-Sep		1			4								1				6	NW	Light	4	5
25-Sep													8				8	West	Light	3	2
26-Sep																	0	NW	Light	3	1
27-Sep	6	1			11												18	SW	M	4	2
28-Sep	54	1		4	256	5	1	3	7	4			128		1	1	465	Var	Var	6	6
29-Sep		3		2	8												13	SE	Light	3.5	3
30-Sep	7			3	22					4			5	1	1		43	Var	Light	5	5
Total	153	94	16	169	2497	30	2	5	7816	105	1	0	1552	34	8	32	12514			161.5	

GREATER TORONTO RAPTOR WATCH																					
Station: CMRW																					
Location: South-platform, Cranberry Marsh,Whitby, Durham R.M.,Ontario																					
Viewing Period: Aug.28 to Nov.30, 1998																					
Date	TV	OS	BE	NH	SS	C.I	NG	RS	BW	RT	RL	GE	AK	ML	PG	UR	Totals	WIND	SPEED	HRS	OBS
1-Oct	72	1		3	69	4			1	1			219	3	1		374	NW	Strong	8	8
2-Oct	10			1	61		1			1			15		1	3	93	NW	Var	6	7
3-Oct	7	2	1	22	116	3			4				6		1	2	164	Var	Var	5.5	8
4-Oct	63	2	1	14	55	5			4				1			1	146	Var	Var	4	4
5-Oct	29	1	1	4	8	2			14				1			1	61	East	Light	3.5	3
6-Oct		1			2												3	East	Extreme	3	3
7-Oct																	0	SE	Calm	1.5	2
8-Oct	35			2	29	1	2	1		13		1	5	2		2	93	Var	Light	7	8
9-Oct	140			1	11	3				8	1		1				165	Var	Light	5	5
10-Oct	321	3	1	5	26					23	2		5		4		390	NNW	M	7	6
11-Oct	84		1	5	70	3				27		1	7		1		199	Var	M	6	10
12-Oct	1	2		1	1												5	Var	Light	5	7
13-Oct				1													1	Var	Calm	4.5	5
14-Oct	25			2	14	4			9						3	2	59	Var	Light	5	5
15-Oct	9			1	10	2			4			1				1	28	Var	M	5	4
16-Oct									1								1	Var	Light	4	5
17-Oct				1	1												2	South	Light	4	4
18-Oct																	0	SW	Var	3	5
19-Oct	1				7	1				13	1		1	1		1	26	Var	Strong	5	4
20-Oct				1	15				5					1	1		23	Var	Strong	3.5	6
21-Oct	19	1	1	2	73	6	4	2		69	4	1	2	3		10	197	Var	Var	5.5	6
22-Oct	337			5	88	13	4	21	1	99	5		1	1		15	590	NW	Strong	6.5	6
23-Oct	3				4												7	West	Var	4	5
24-Oct				3	4	1		2		2							12	Var	Light	4	7
25-Oct				8							1		5		1	1	16	Var	Light	6	8
26-Oct				3													3	East	Strong	3	3
27-Oct				2	1												3	Var	Light	4	3
28-Oct	8				1					48	2	3	2	1			65	Var	Var	5	6
29-Oct	40		1	15	5	1		36		382	11					27	518	NW	Var	6.5	6
30-Oct	6			11	7	2		17		289	3					13	348	Var	Var	5	6
31-Oct				4	11	1		23		150	4					6	199	NW	M	6	11
Total	1210	13	7	117	689	52	10	103	2	1166	34	6	272	12	13	85	3791			151	

GREATER TORONTO RAPTOR WATCH																					
Station: CMRW																					
Location: South-platform, Cranberry Marsh,Whitby, Durham R.M., Ontario																					
Viewing Period: Aug.28 to Nov.30, 1998																					
Date	TV	OS	BE	NH	SS	CH	NG	RS	BW	RT	RL	GE	AK	ML	PG	UR	Totals	WIND	SPEED	HRS	OBS
1-Nov	2			9	13			3		254	4	3				4	292	NW	M	6	10
2-Nov	4		1	3	1			2		87	3						101	WNW	Var	6	5
3-Nov				3	2			2		70	4					1	82	NW	Var	5.5	6
4-Nov				1	2		1	2		55	1		1			2	65	NW	M	4	6
5-Nov					1					5							6	Var	M	3	3
6-Nov				1	1					4						1	7	Var	Light	3	6
7-Nov				1	4	1				21							27	NW	M	5	8
8-Nov										24			1			3	28	Var	Light	3.5	7
9-Nov																	0	SW		1	1
10-Nov																	0	SE	Strong	1	1
11-Nov																	0	West	Extreme	1	2
12-Nov										6	3						9	WSW	Strong	4	4
13-Nov			2		2	1	1			12		1					19	West	Var	4	3
14-Nov																	0	SE	Light	3	3
15-Nov				2	2					7						1	12	Var	Light	4	7
16-Nov																	0	SW	Calm	1	1
17-Nov				7	4			2		59	7	1					80	North	Var	5	5
18-Nov					2					1							3	Calm	Calm	3	5
19-Nov																	0	ESE	Var	1.45	2
20-Nov																	0	WNW	Var	1.5	3
21-Nov					2					23	8						33	Var	Strong	4	7
22-Nov						1											1	South	Var	3	3
23-Nov																	0	SW	Light	2.5	6
24-Nov																	0	West	Strong	2	4
25-Nov																	0	SE	M	2	5
26-Nov				1							1						2	West	Var	2.5	4
27-Nov				3	3					29					1		36	NW	Var	4.5	5
28-Nov								1									1	SW	Light	4.5	10
29-Nov				2													2	SE	Light	3.5	8
30-Nov				1						1							2	WSW	Light	2	8
Total	6	0	3	34	39	3	2	12	0	658	31	5	2	0	1	12	808			96.45	

Title Page 4b

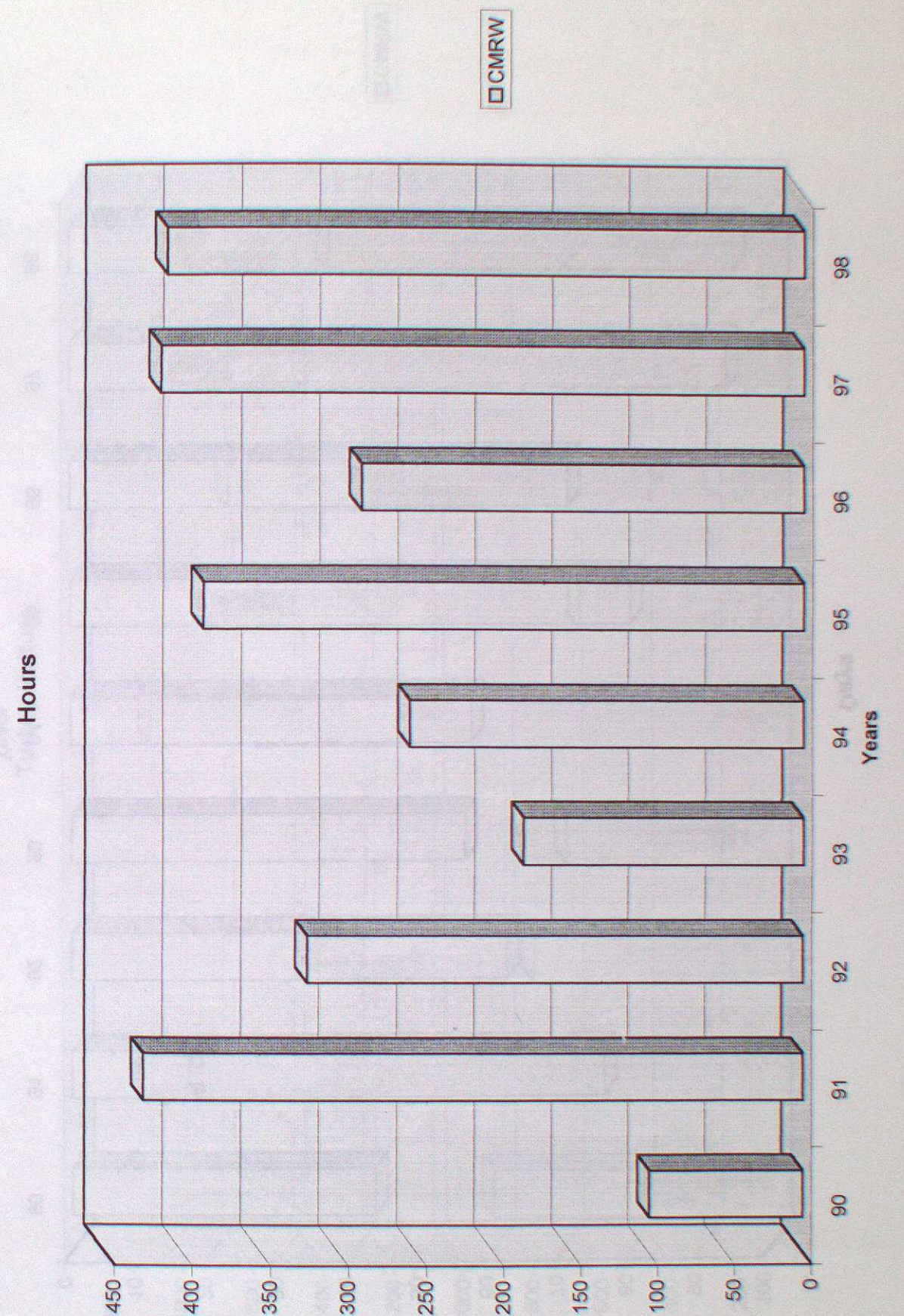
CRANBERRY

MARSH

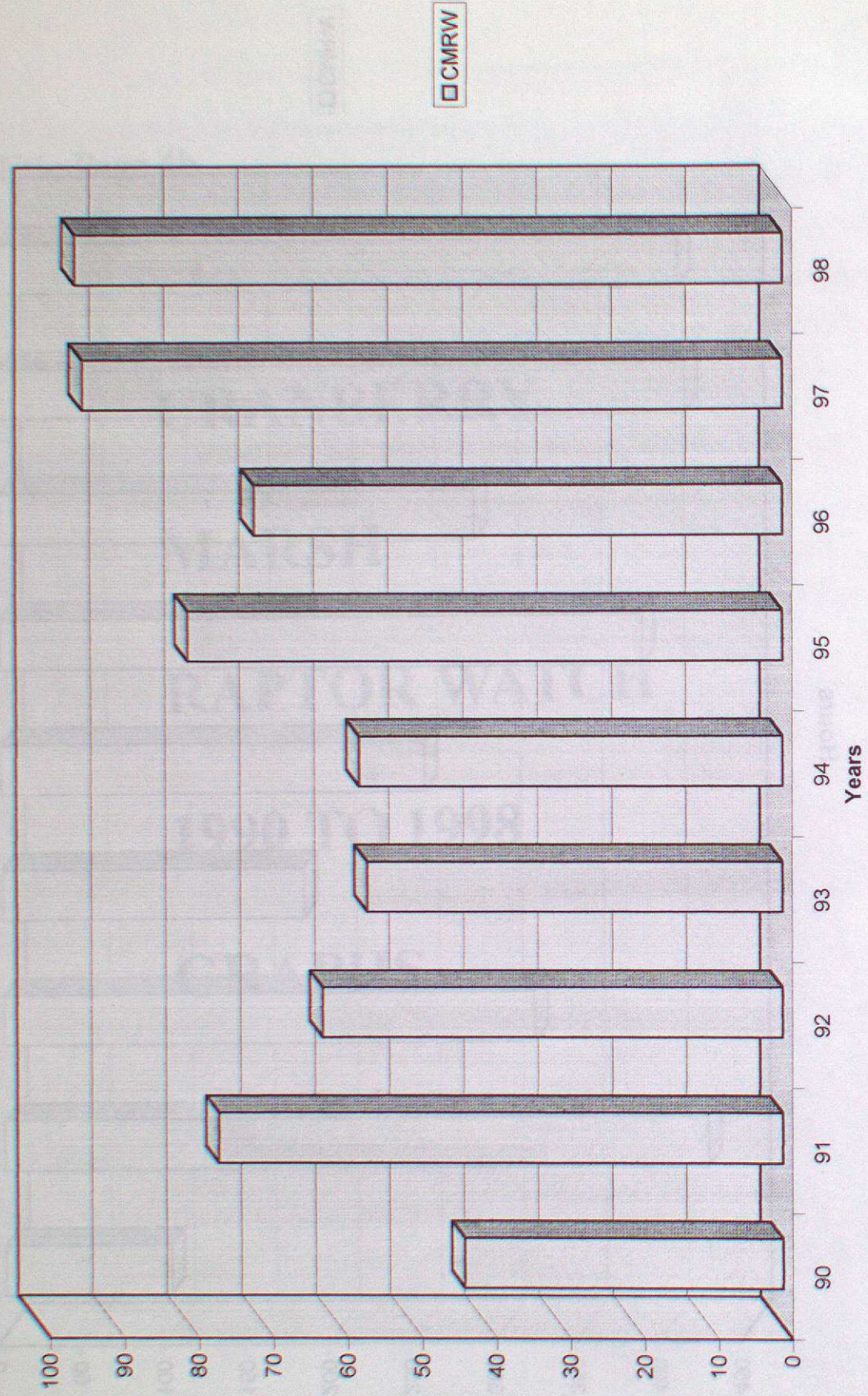
RAPTOR WATCH

1990 TO 1998

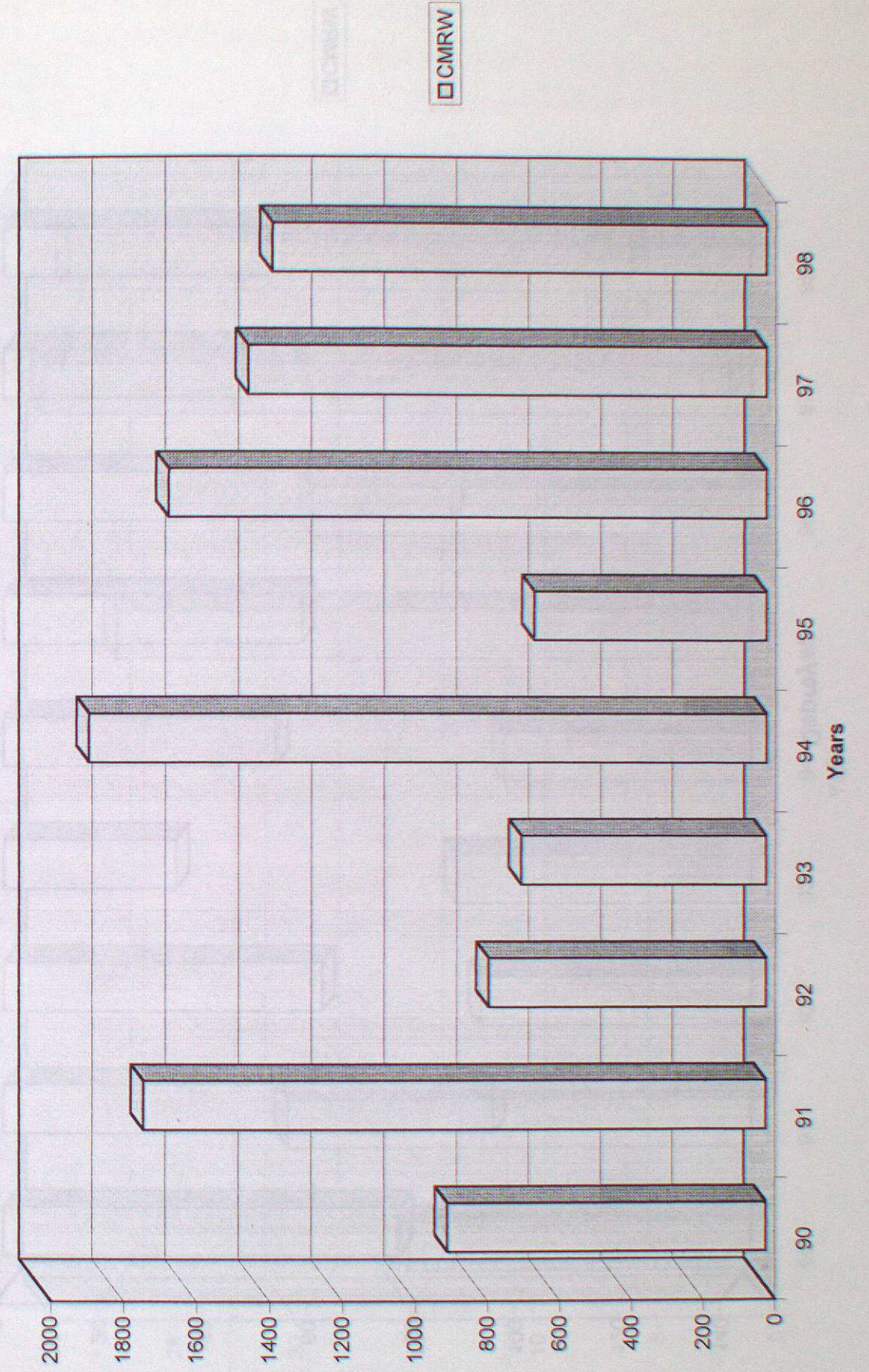
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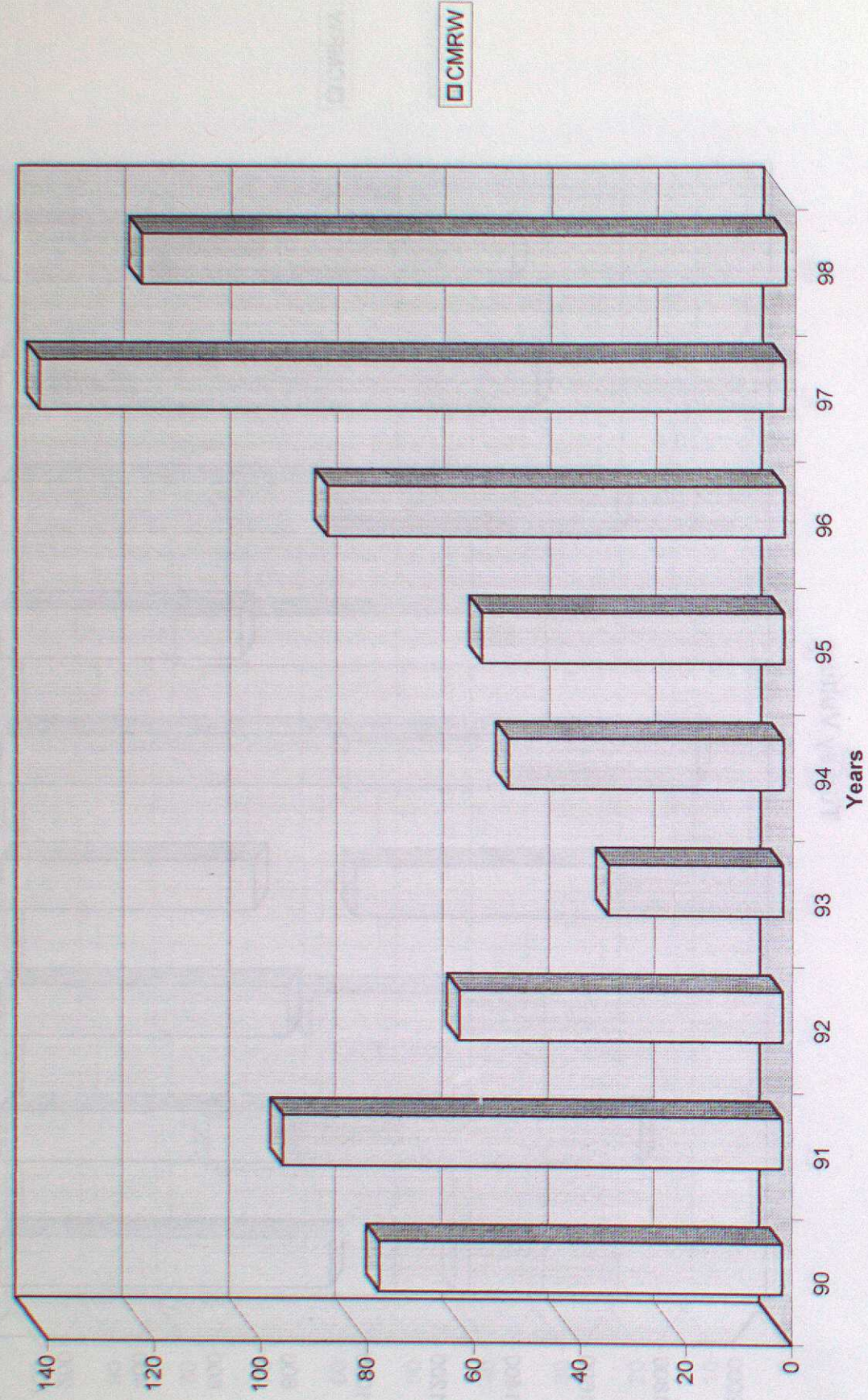
Days



Turkey Culture



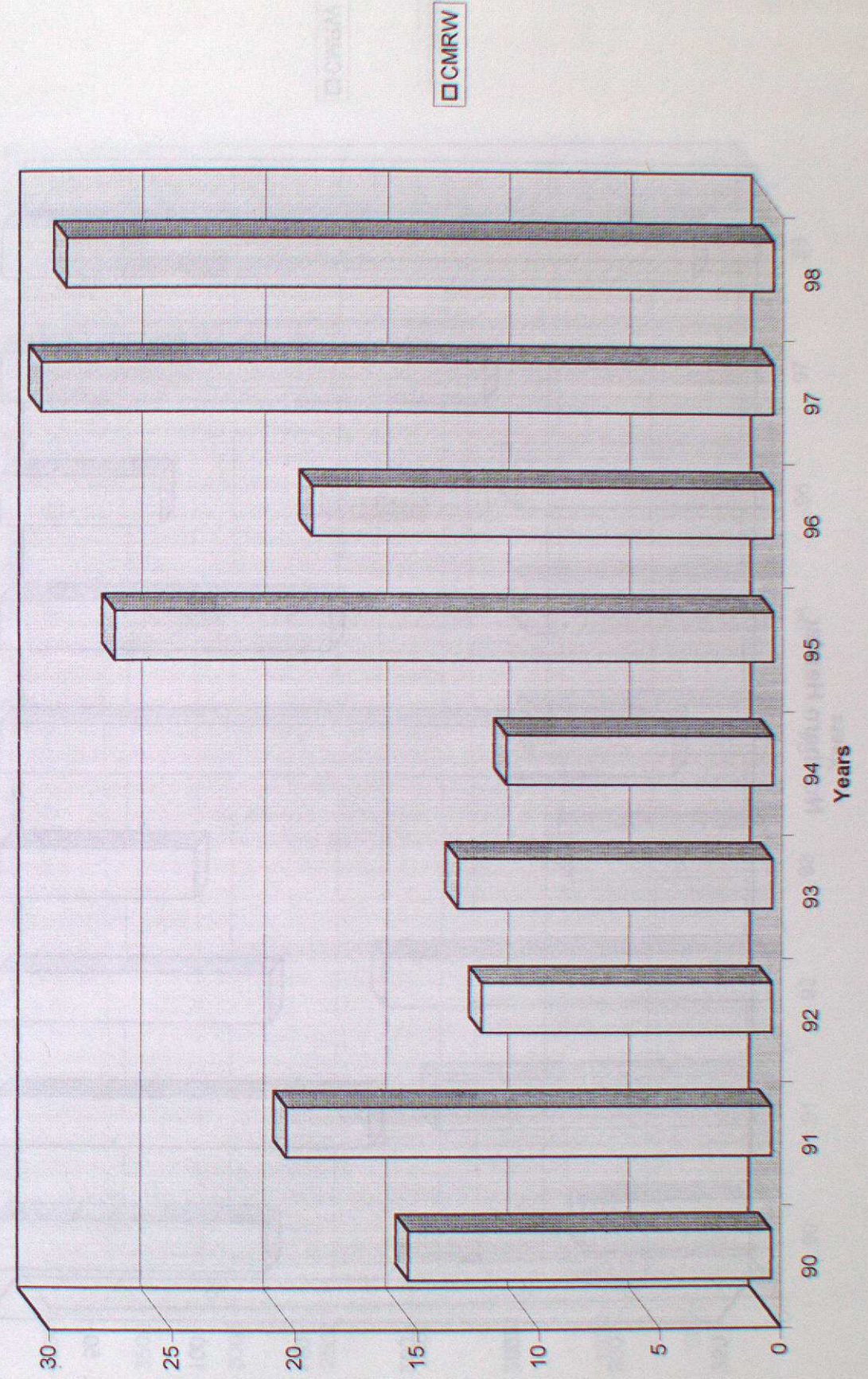
Osprey



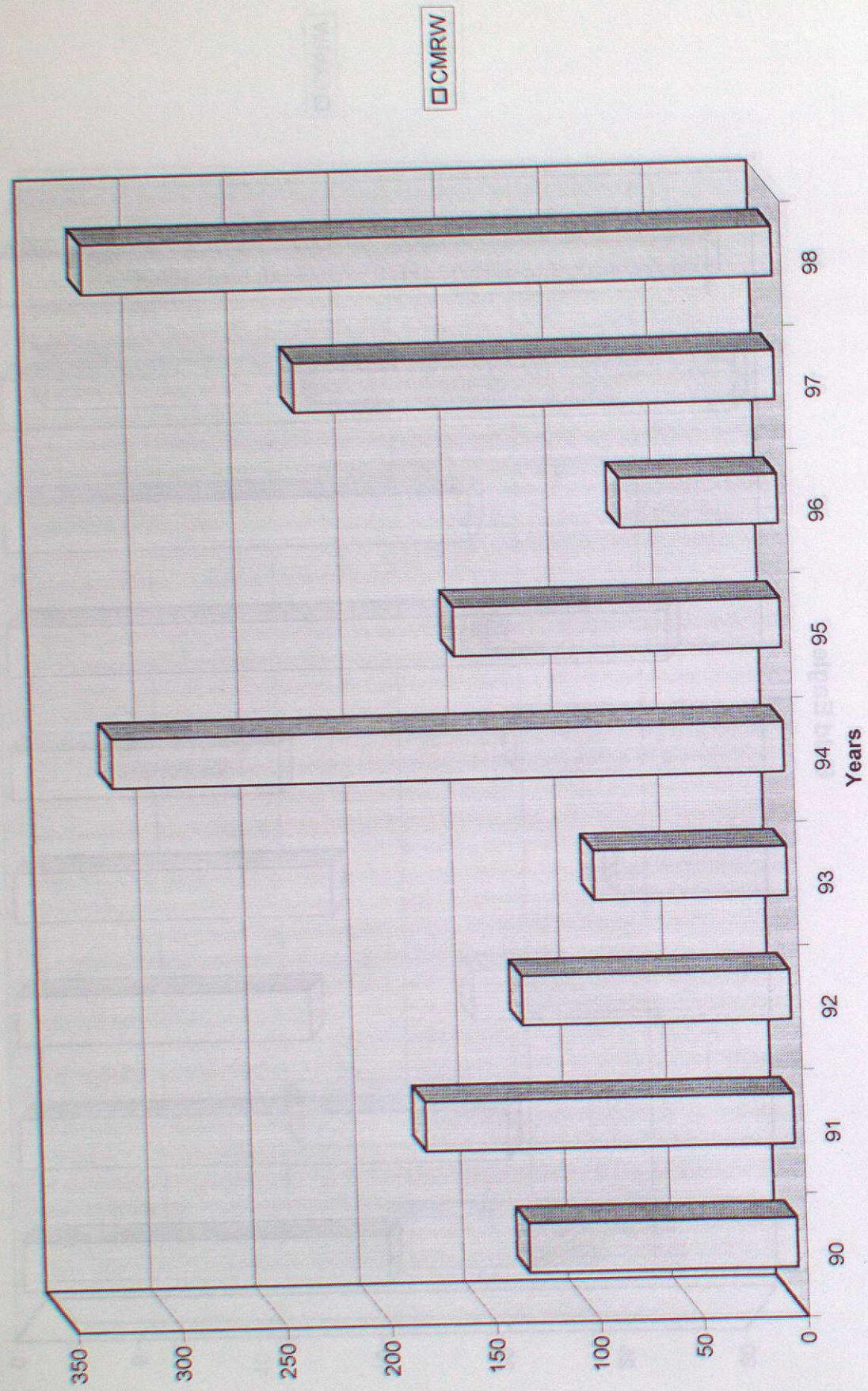
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96

Bald Eagle



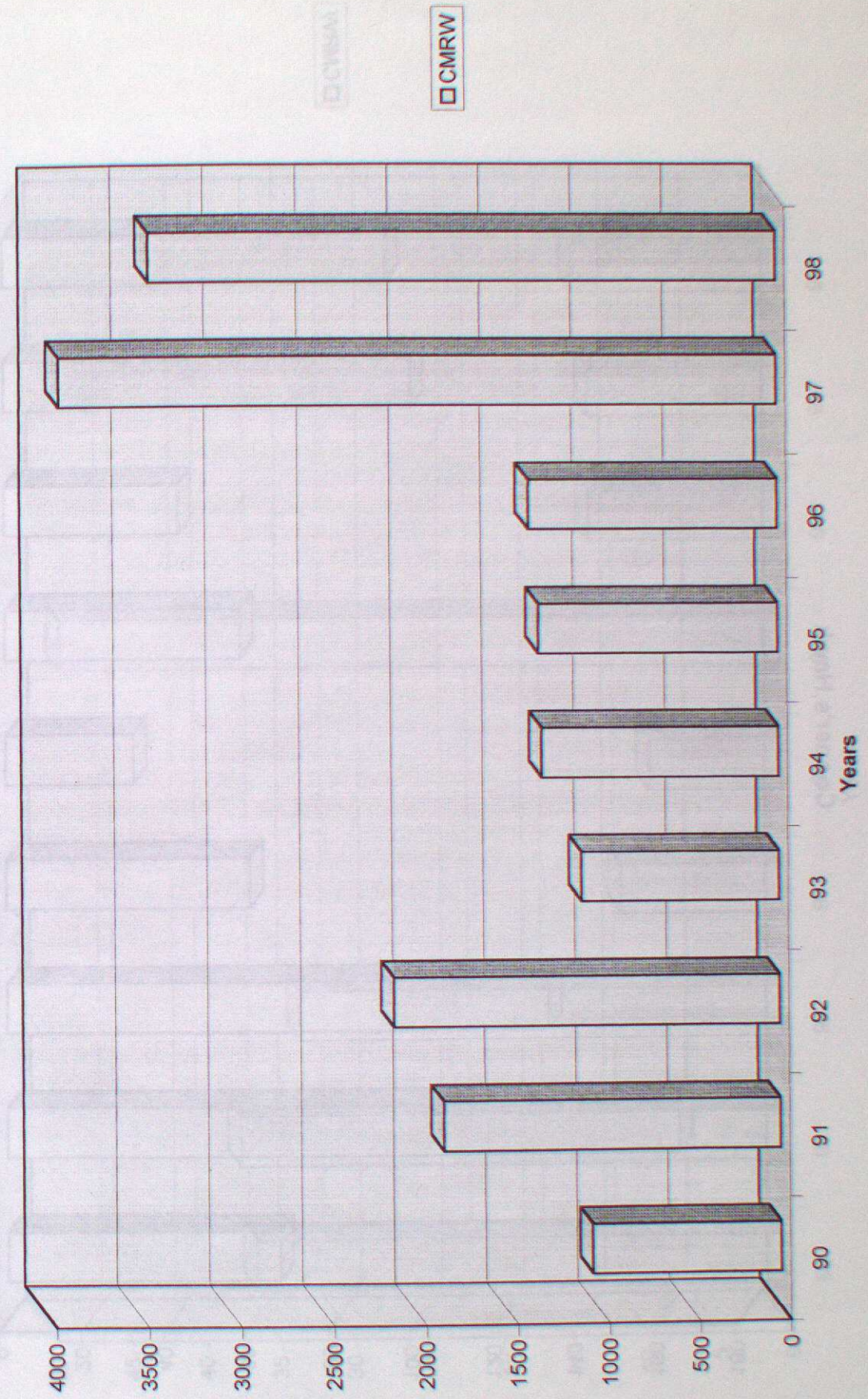
Northern Harrier



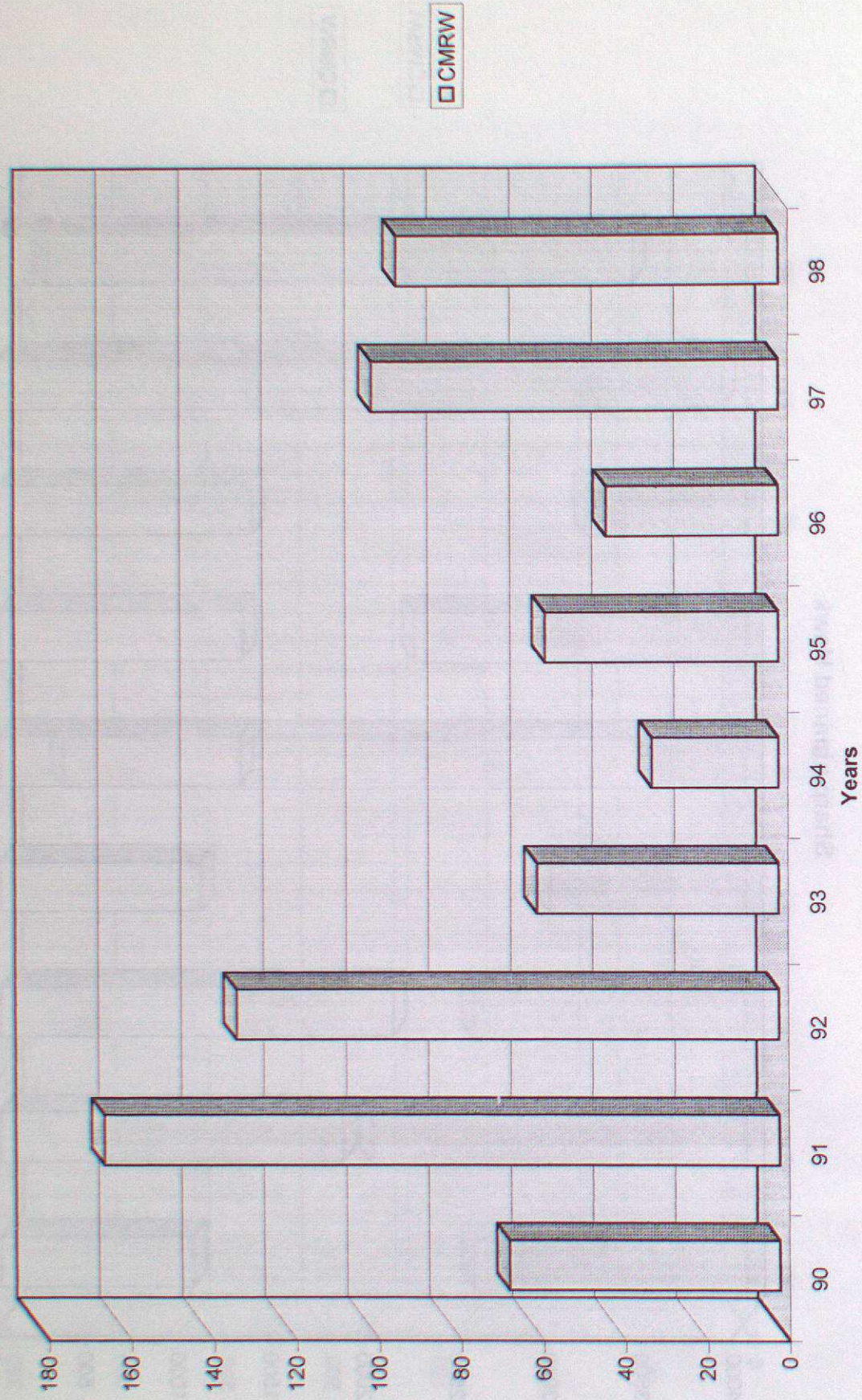
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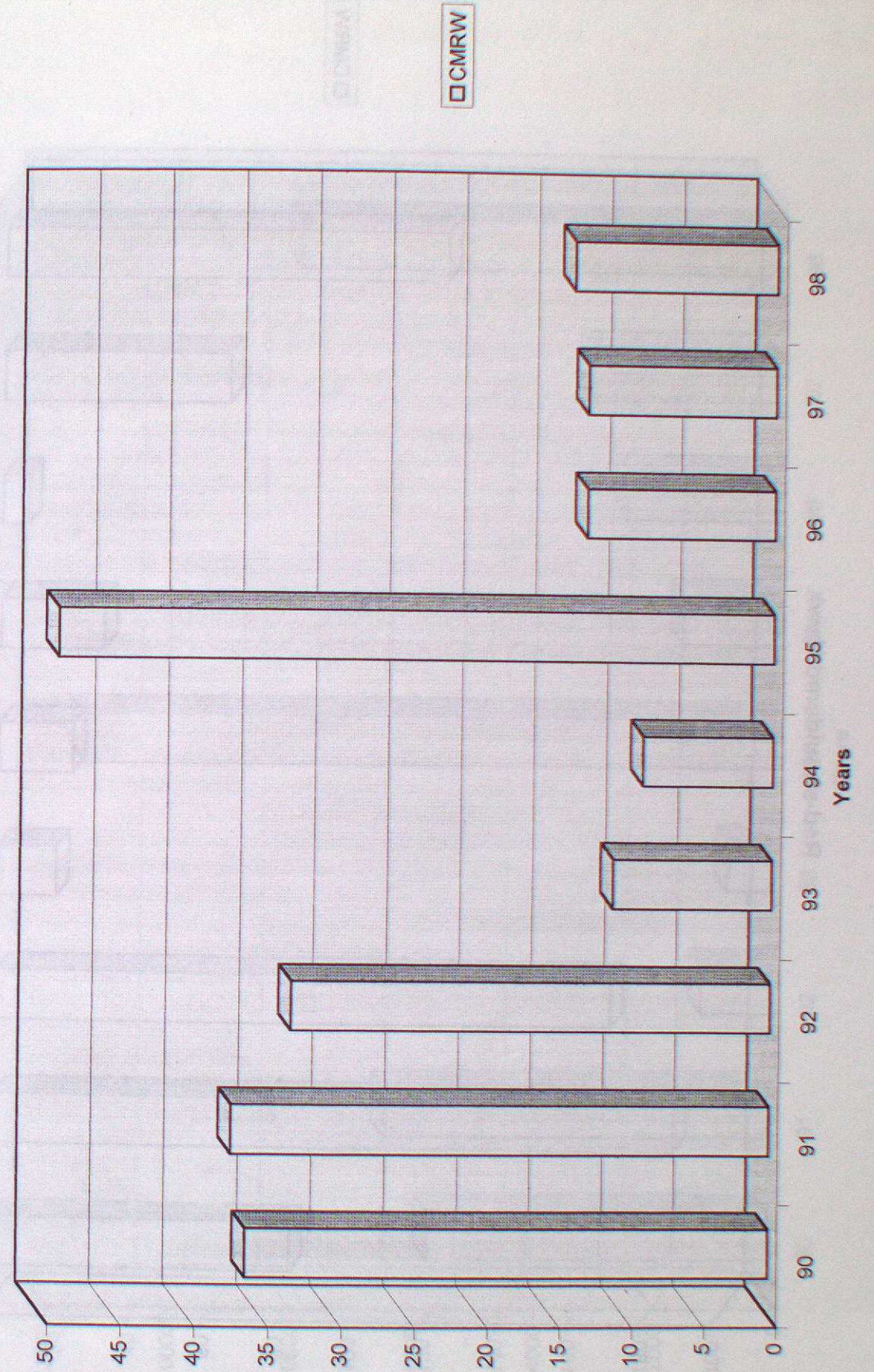
Sharp-shinned Hawk



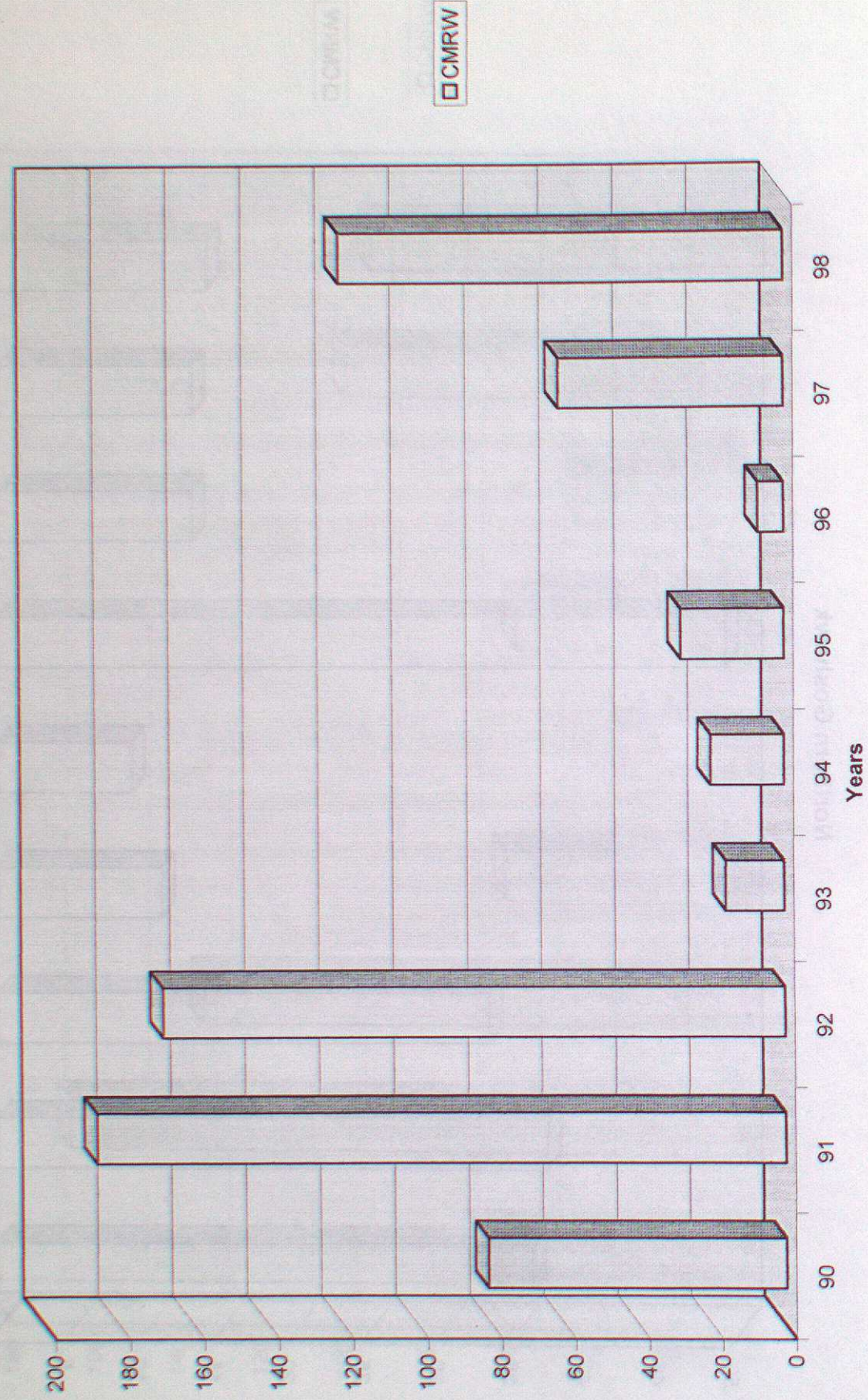
Cooper's Hawk



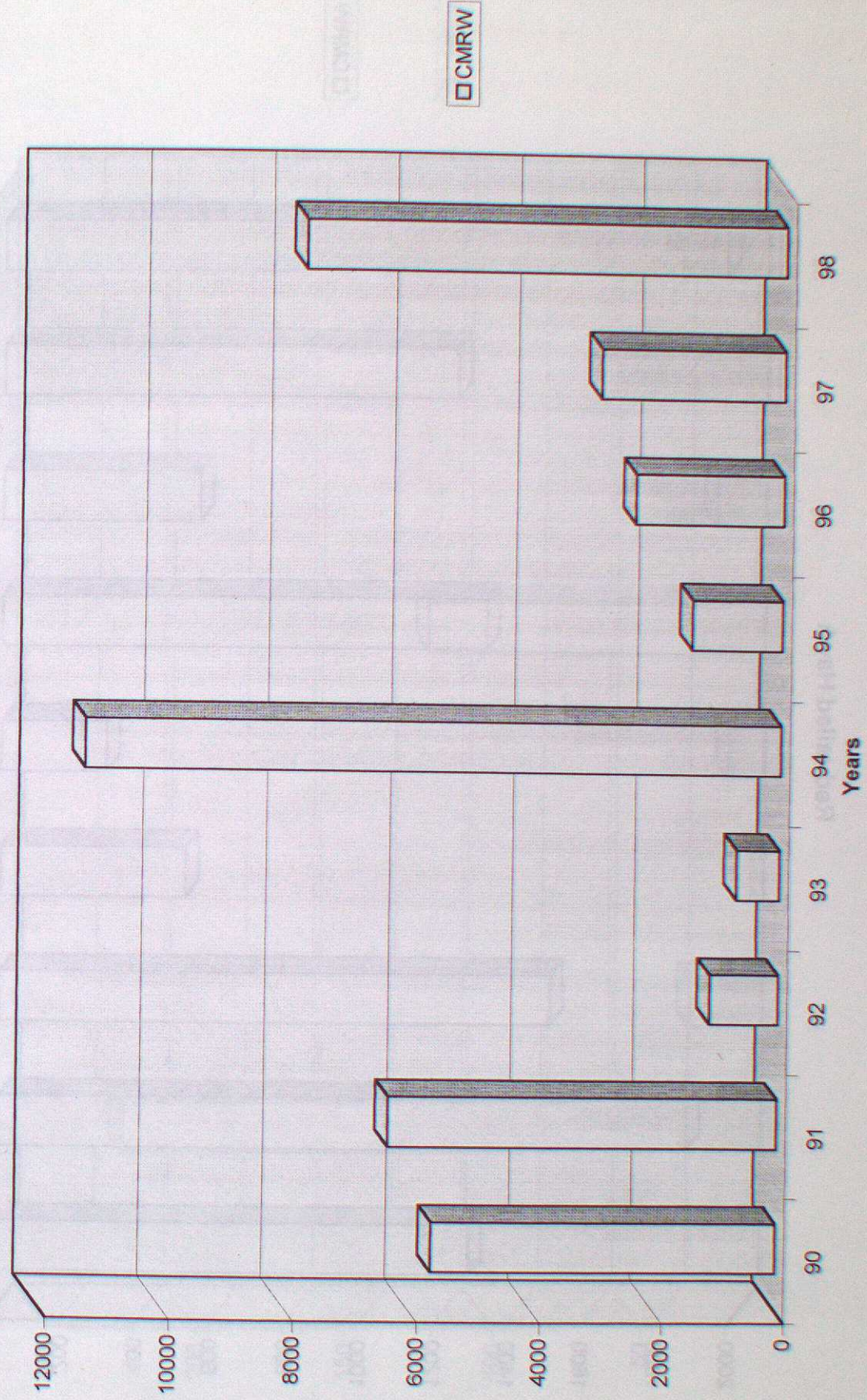
Northern Goshawk



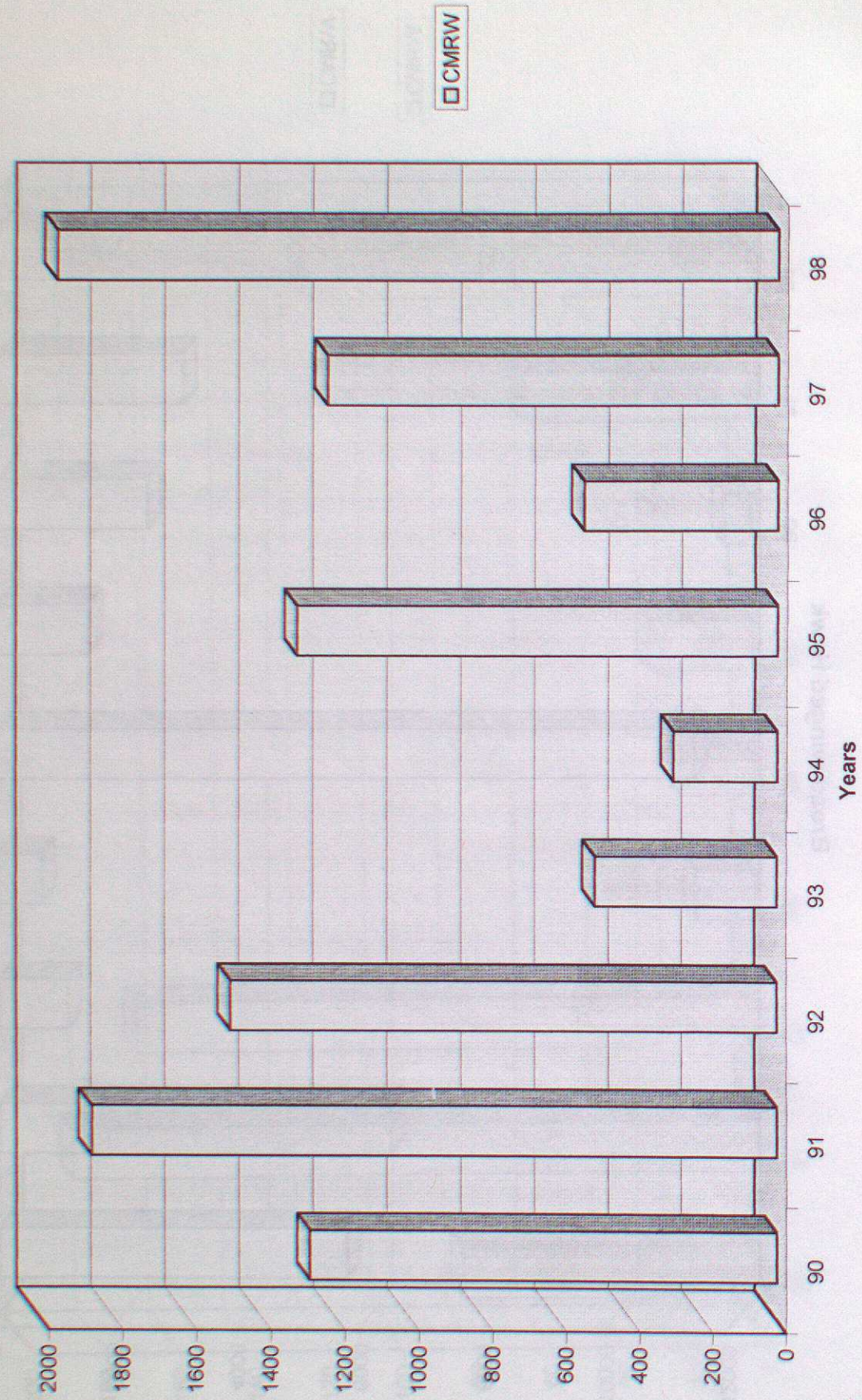
Red-shouldered Hawk



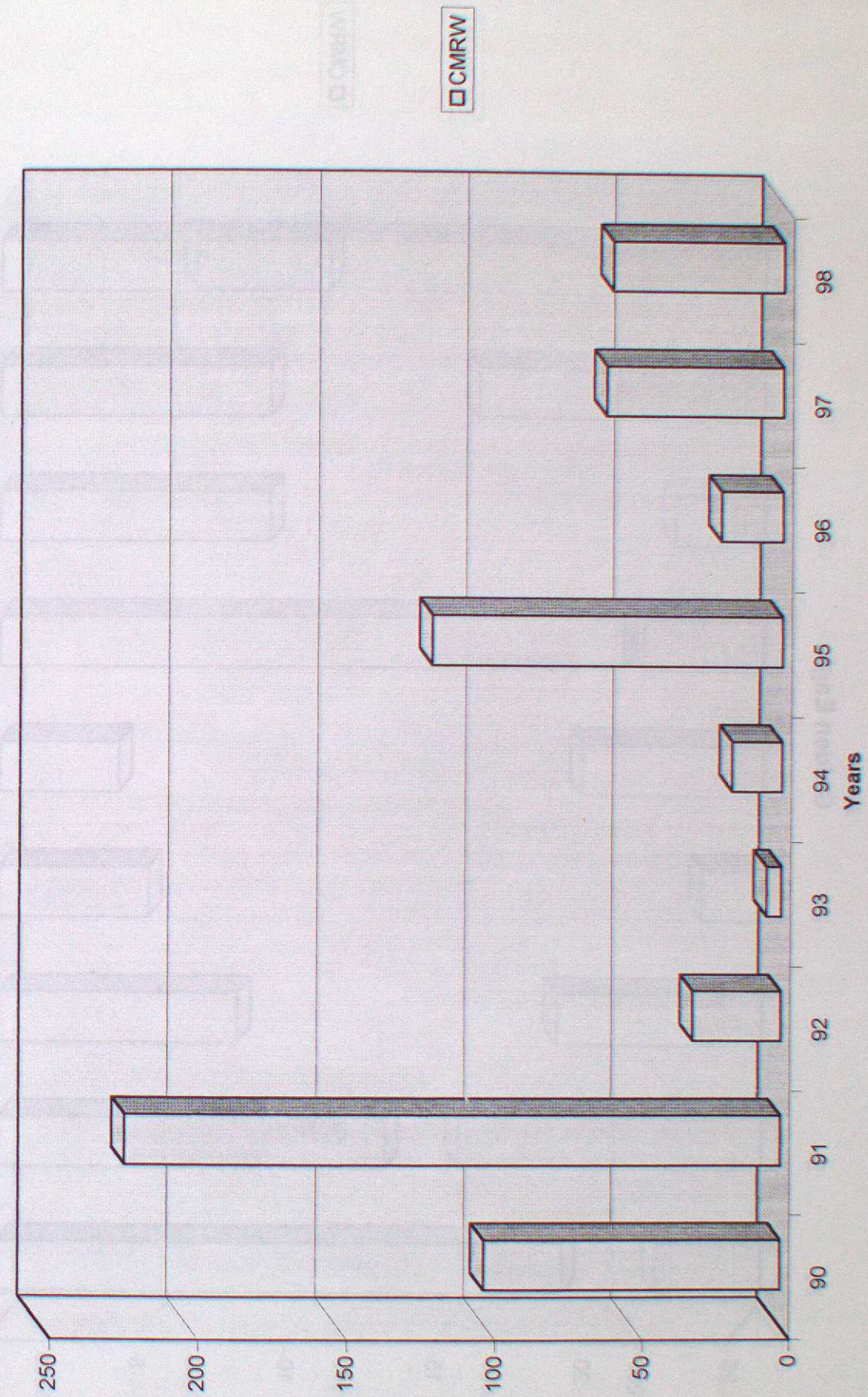
Broad-winged Hawk



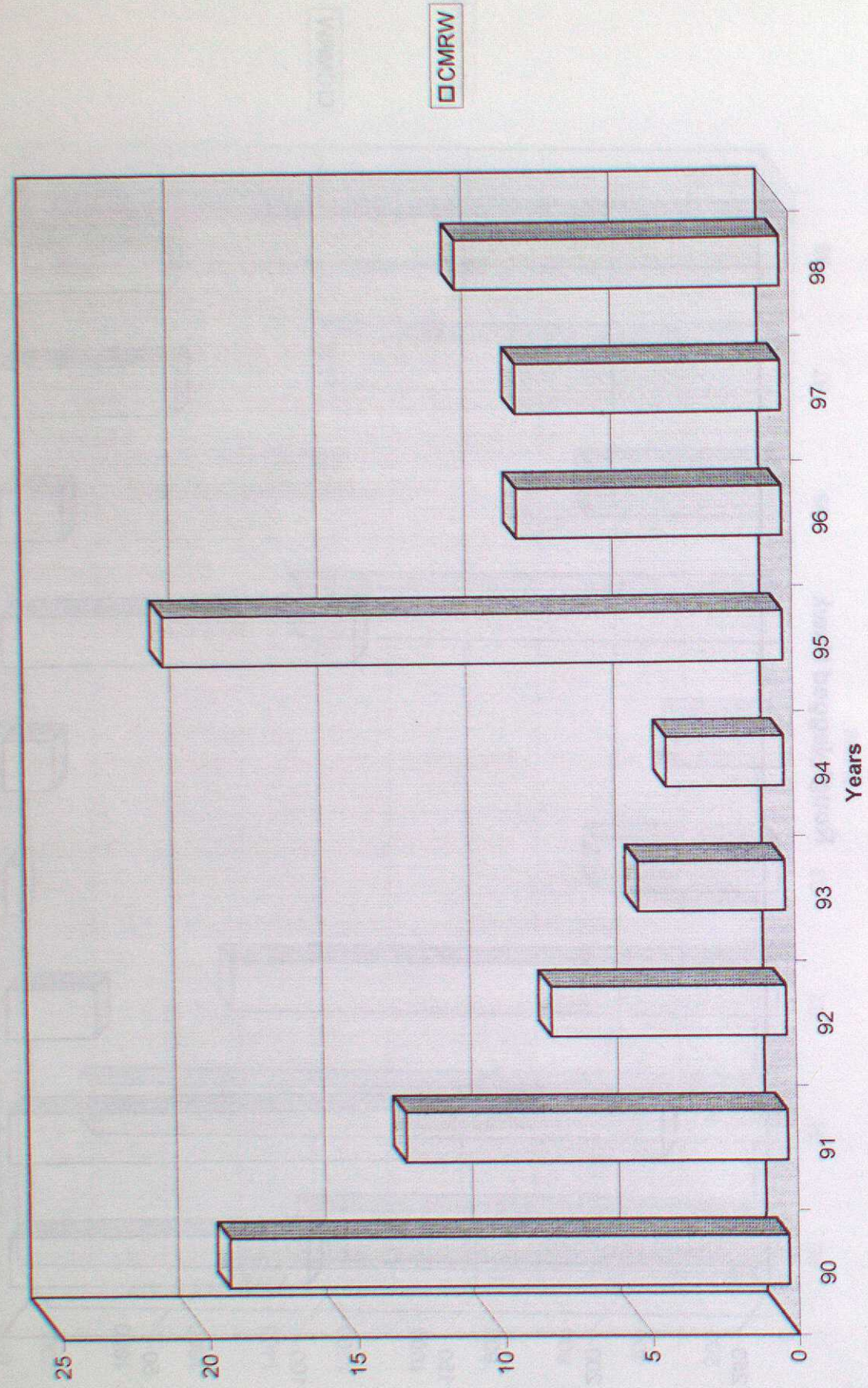
Red-tailed Hawk



Rough-legged Hawk



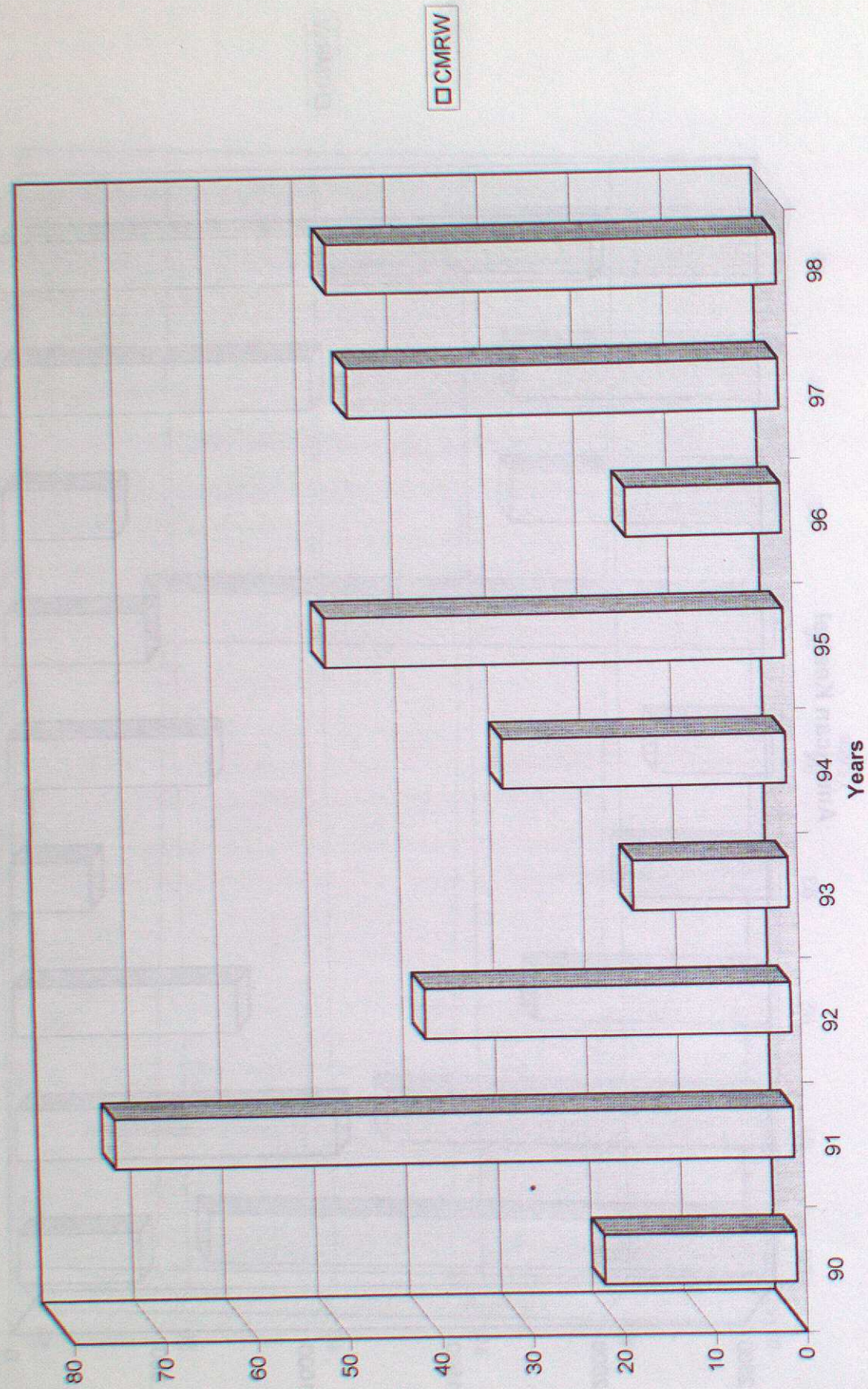
Golden Eagle



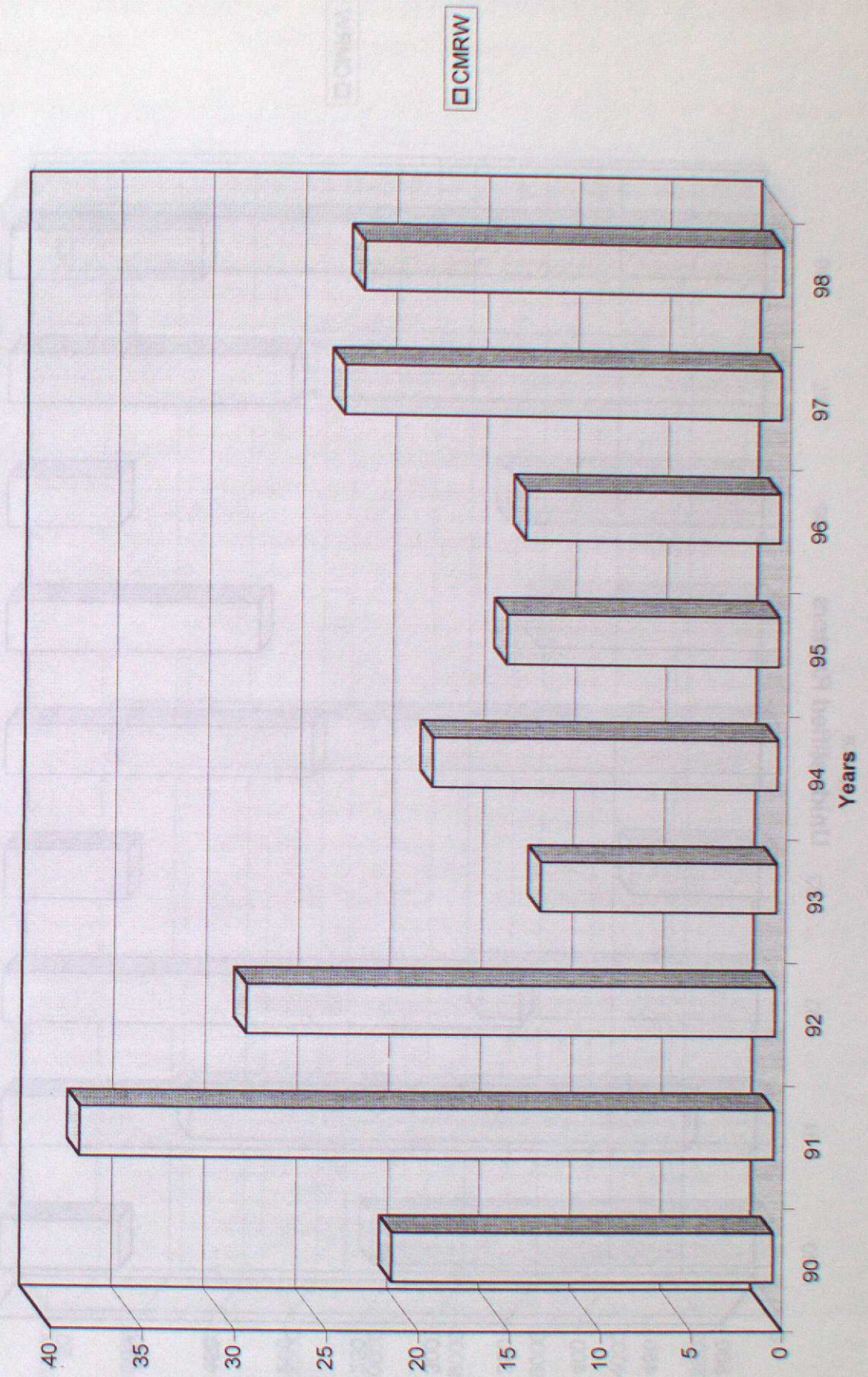
American Kestrel



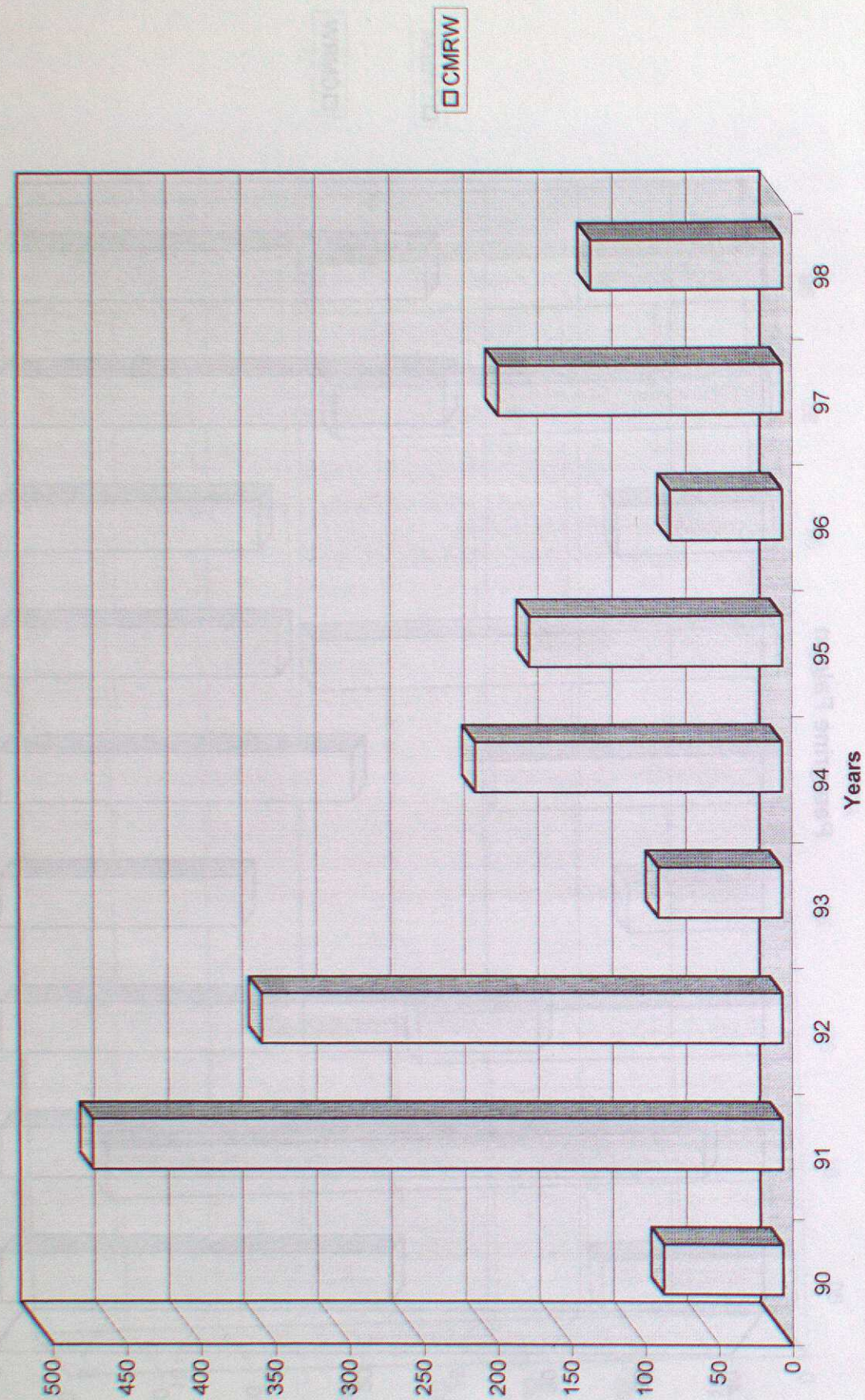
Merlin



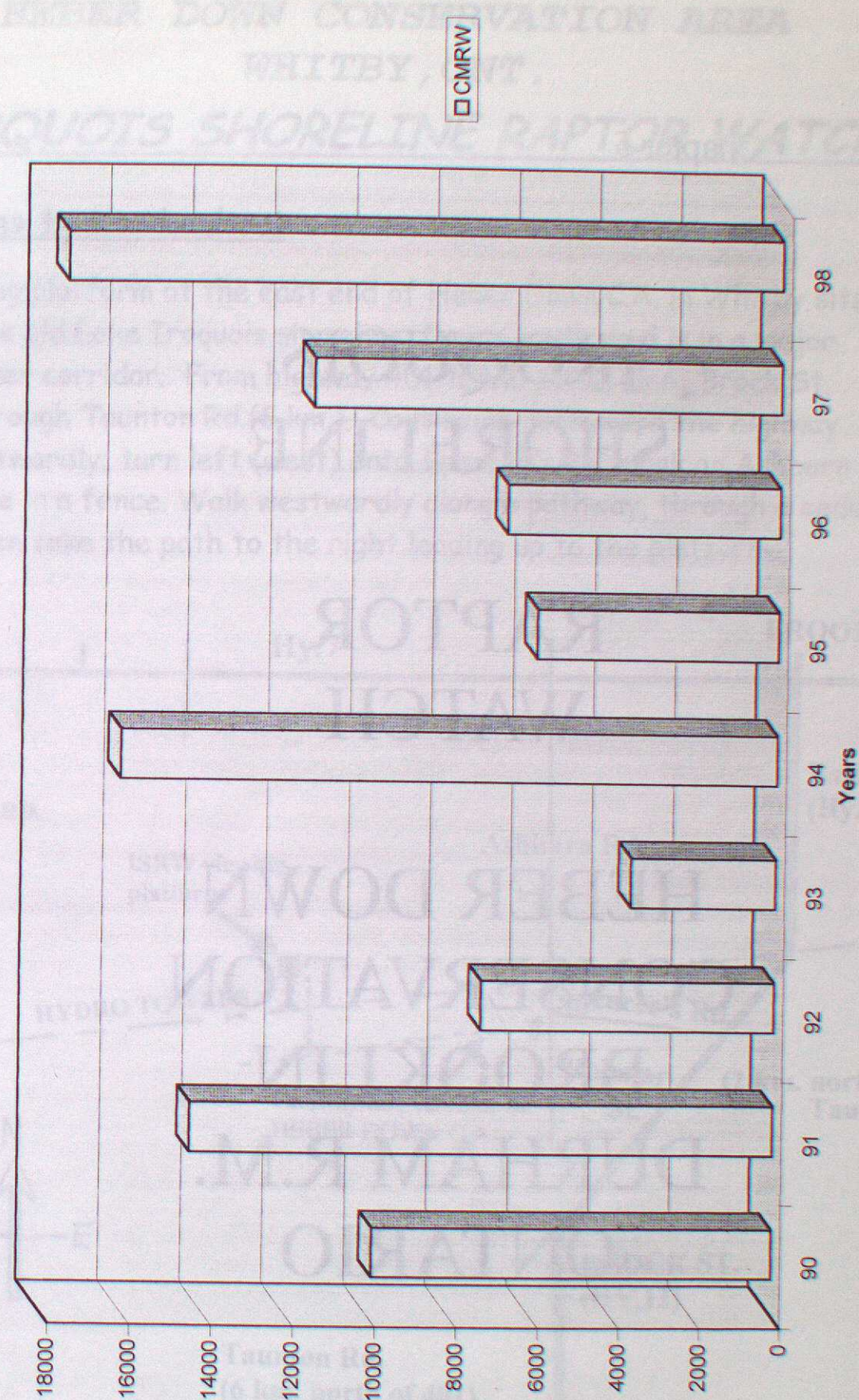
Peregrine Falcon



Unidentified Raptors



Season Totals



IROQUOIS SHORELINE

RAPTOR WATCH

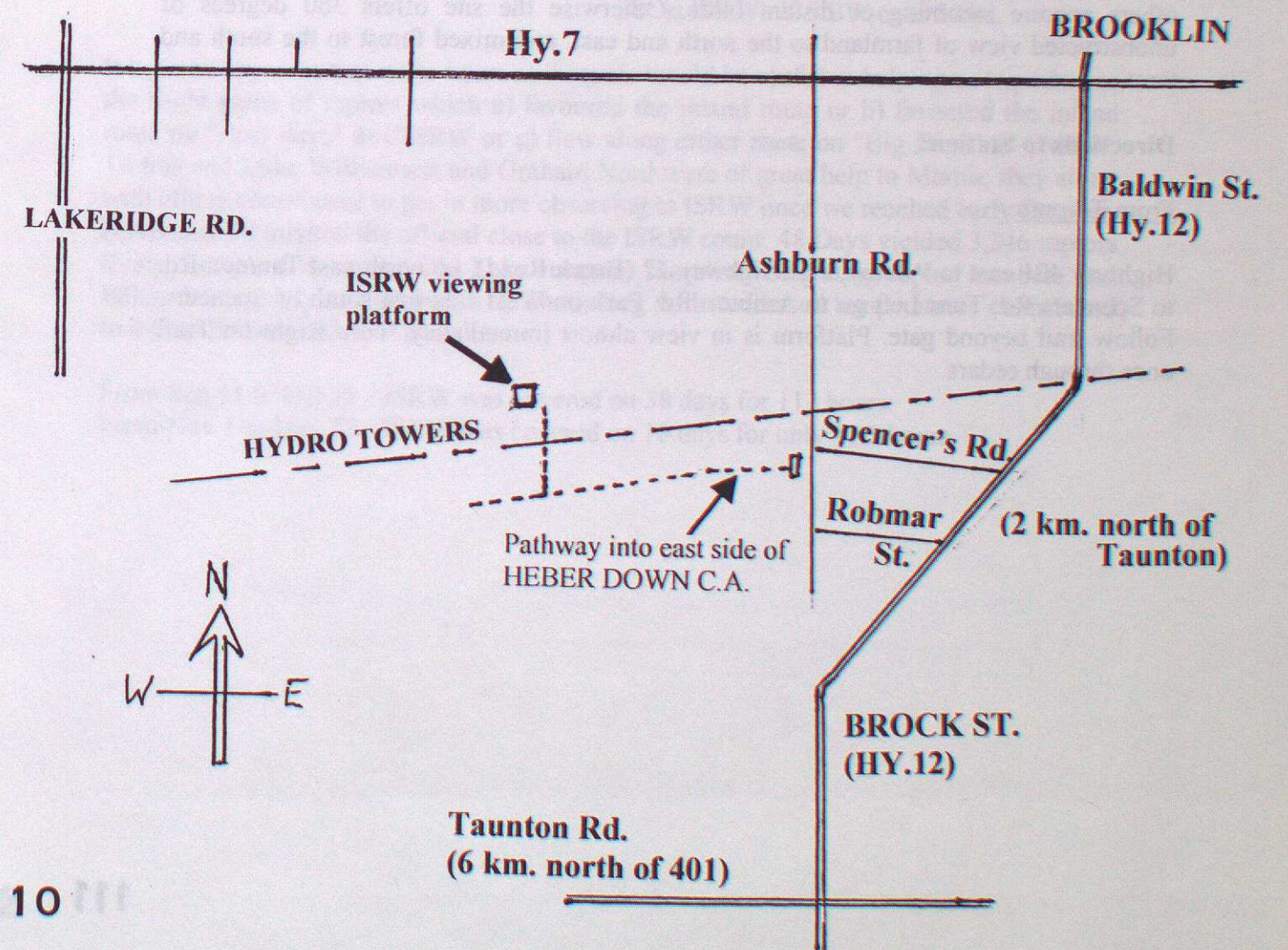
HEBER DOWN
CONSERVATION
BROOKLIN
DURHAM R.M.
ONTARIO

HEBER DOWN CONSERVATION AREA WHITBY, ONT.

IROQUOIS SHORELINE RAPTOR WATCH

Directions to the Lookout

The viewing platform at the east end of Heber Down C.A. in Whitby sits astride the old Lake Iroquois shoreline, facing south, and is in a major hydro-tower corridor. From highway 401 travel north along Brock St. (hy.12) through Taunton Rd.(6 km.). Continuing northward the highway bends eastwardly; turn left (west) onto Spencer's Rd.; park on Ashburn Rd. near a gate in a fence. Walk westwardly along a pathway, through a cedar woods; then take the path to the right leading up to the platform.



By Martin Bence

Station: Iroquois Shoreline Raptor Watch

Location: Lookout Tower, Heber Down Conservation Area, Brooklin, Durham R.M., Ontario, Canada

Land Owner: Central Lake Ontario Conservation

Latitude: 43 degrees, 53 minutes

Longitude: 79 degrees, 51 minutes

Station Description:

The Iroquois Shoreline Raptor Watch, (ISRW), station is located at the Iroquois Shoreline lookout platform at the eastern most edge of Heber Down Conservation Area, north of Whitby near the town of Brooklin. This site is approximately 10 kilometer's north of the Cranberry Marsh raptor watch site.

ISRW is an excellent alternative when the winds are wrong at the Cranberry waterfront (Lake Ontario). The I.S.R.W. platform is situated atop a small bluff formed during the last ice age. Unfortunately this ancient bluff sits virtually underneath a Hydro powerline corridor which dominates the eastern and southern views. These towers and wires, which at first might seem a hindrance, can actually be used as visual reference points to help others acquire incoming or distant birds. Otherwise the site offers 360 degrees of unobstructed view of farmland to the north and east, and mixed forest to the south and west.

Directions to Station:

From Toronto:

Highway 401 east to Whitby, exit Highway 12 (Brock Road), go north past Taunton Rd. to Spencers Rd. Turn Left go to Ashburn Rd. Park on West side just south of Spencers. Follow trail beyond gate. Platform is in view almost immediately. Turn Right on Trail once through cedars.

Iroquois Shoreline Raptor Watch, fall 1998

By Doug Lockrey

Martin Bence volunteered to occasionally view from the old Lake Iroquois shoreline lookout platform, particularly on "slow days" at CMRW. It is 10km to the north in the Hydro Corridor that cuts through Heber Down Conservation area. The platform is accessed by way of a 200 metre walk along a pathway westerly from Ashburn Rd.

Ashburn Rd. runs south from Highway 7 immediately west of Brooklin. As you approach the massive Hydro corridor you will note Spencers Rd. on the east side; Brock / Baldwin St. from Whitby wherein you travel 2 km north of Taunton, turning left (west) onto Spencers.

Consider the following: Sep.10 at CMRW - 1,163 BW (NW winds, R, 14-21c)
Sep.11 at CMRW - 0 BW (W winds, *, 18-25c) over 5 Hrs.
But at ISRW - 36 BW over 1 Hr.
Sep.13 at CMRW - 0 BW (N/S winds, R, 16-21c) over 6 Hrs.
But at ISRW- 135 BW over 3 Hrs.

It became apparent that more hours at Iroquois would be useful in helping us hypothesize the flight paths of raptors which a) favoured the inland route or b) favoured the inland route on "slow days" at CMRW or c) flew along either route on "Big Days" at CMRW. To this end Mike Williamson and Graham Nord were of great help to Martin; they along with others contributed to get in more observing at ISRW once we reached early October. November 30 marked the official close to the ISRW count: 48 Days yielded 3,346 raptors flying westward along the Old Lake Iroquois shoreline. Migrating raptor numbers had fallen dramatically by November 7. That along with decreased temperatures contributed to a drop in the number of observers.

From Sep.11 to Oct.31 - ISRW was covered on 38 days for 112 hours.
From Nov.1 to Nov.28 - ISRW was covered on 10 days for only 11.5 hours.

GREATER TORONTO RAPTOR WATCH			
Station: Iroquois Shoreline			
1998 Season and One Day Peak Totals			
Species/ Year	Total	Peak Date	Peak Total
Turkey Vulture	1175	Oct. 4	184
Osprey	8	Sep.18/30	2
Bald Eagle	9	Sep.13	4
Northern Harrier	82	Sep.13	12
Sharp-shinned Hawk	774	Sep.28	89
Cooper's Hawk	65	Oct.4	10
Northern Goshawk	2	NA	NA
Red-shouldered Hawk	191	Oct.26	87
Broad-winged Hawk	448	Sep.23	165
Red-tail Hawk	116	Oct.26	407
Rough-legged Hawk	6	Oct.26	4
Golden Eagle	17	Oct.16,21,23	3
American Kestrel	45	Sep.28	6
Merlin	10	Oct.20	2
Peregrine Falcon	1	Sep.13	1
Unidentified Raptor	106	NA	NA
Season Total	3346		
Hours Observed	123.5		
Days	46		
Year Total minus BW	2,898		

Autumn 1998



GREATER TORONTO RAPTOR WATCH																					
Station: Iroquois Shoreline Raptor Watch																					
Location: Lookout Tower, Heber Down Conservation Area, Brooklin, Durham R.M, Ontario																					
Viewing Period: September 11 to November 28, 1998																					
Date	TV	OS	BE	NH	SS	CH	NG	RS	BW	RT	RL	GE	AK	ML	PG	UR	TOTALS	WIND	SPEED	HRS.	OBS.
11-Sep				2	9	1			36				2			1	51	SW	Light	1	1
13-Sep			4	12	41	4	1		135	2			3	1	1	4	208	SE	Light	2.5	1
16-Sep				4	6				11	1			3				25	Var.	Light	2	1
17-Sep	4			5	12				86	5			2			4	118	NW	Light	2	2
18-Sep	1	2	2	2	9	1			14	2			3			1	37	South	Light	2	1
19-Sep		1			4	1											6	South	Light	1	1
20-Sep		1			3												4	South	Light	1	1
22-Sep					1					2			2	1		4	10	North	Light	1	1
23-Sep	47			5	38	2			165	7			3	1		2	270	Var.	Light	3	1
28-Sep	10		1		89	2		1		1			6				110	NW	M.	2.5	2
29-Sep				2	56				1								59	SE	Light	1	1
30-Sep	15	2		5	66	3				1			1	1		6	100	Var.	Light	2.5	2
Total	77	6	7	37	334	14	1	1	448	21	0	0	25	4	1	22	998			21.5	
																					</

GREATER TORONTO RAPTOR WATCH																					
Station: ISRW																					
Location: Lookout Tower, Heber Down Conservation Area, Brooklin, Durham R.M, Ontario																					
Viewing Period: September 11 to November 28, 1998																					
Date	TV	OS	BE	NH	SS	CH	NG	RS	BW	RT	RL	GE	AK	ML	PG	UR	TOTALS	WIND	SPEED	HRS.	OBS.
1-Oct	56	1			16	1				2			7	1			84	NW	Extreme	2	2
2-Oct	1			1	50	1											53	WNW	Extreme	1	2
4-Oct	184	1	1	3	61	10		20		19		1		1		12	313	SW	Light	5	1
5-Oct	53		1	3	55	4		14		27			5			5	167	SE	Light	3	3
6-Oct	26				4			1		4							35	SE	Strong	3	3
8-Oct	2			1	11	1							2				17	North	M.	2	2
9-Oct	4				14	2	1	4		6							31	North	Light	2	1
10-Oct	32			1	2					8							43	NW	M.	1.5	1
11-Oct	3				6			1		5		1					16	North	Light	2	1
12-Oct	205			2	10	3		1		35						5	261	NE	Light	6	2
14-Oct	5				1												6	North	Light	1	1
15-Oct	148			6	12			4		5						1	176	NW	Light	5	4
16-Oct	148			7	21	1		8		6		3				5	199	South	Light	6	4
18-Oct	13																13	SW	Extreme	3	3
19-Oct	35				9	1				3				1			49	Var.	M.	3	2
20-Oct	58			2	25			1		6		1	1	2		1	97	West	Strong	7	3
21-Oct	6			1	39	7		7		43		3	2			11	119	NW	Light	6	3
22-Oct				1	27	7		6		17		3				15	76	North	Light	3	1
23-Oct	101			2	27	1		5		11		2				8	157	Var.	Light	5	4
24-Oct	3			1	12	1		5		2			2	1		10	37	Var.	Var.	6	6
25-Oct	1			7	17		1	19		20						7	72	Var.	Light	6	6
26-Oct	5			5		4		87		116	4	2				3	226	East	M.	4	4
27-Oct	1				2												3	South	Light	3	4
28-Oct	5					1		1		4							11	WNW	Strong	2.5	4
29-Oct								1		2							3	North	M.	1	1
30-Oct	1				1	3		3		6	1						15	NW	Var.	2	3
Total	1096	2	2	43	422	48	2	188	0	347	5	16	19	6	0	83	2279			91	

GREATER TORONTO RAPTOR WATCH																			
Station: ISRW																			
Location: Lookout Tower, Heber Down Conservation Area, Brooklin, Durham R.M., Ontario																			
Viewing Period: September 11 to November 28, 1998																			
Date	TV	OS	BE	NH	SS	CH	NG	RS	BW	RT	RL	GEAK	ML PG	UR	TOTALS	WIND	SPEED	HRS.	OBS.
1-Nov					4	2		2		4		1			13	Var.	M.	2	1
5-Nov										2	1				3	NW	M.	1.5	1
6-Nov					2					1					3	West	Light	1	1
8-Nov										9		1			10	Var.	Var.	1.5	1
13-Nov										4					4	West	M.	1	1
18-Nov					2					7					9			1	2
25-Nov					1					6					7	SE	M.	0.5	2
28-Nov					1					4					5	WNW	Light	1	1
Total	0	0	0	0	10	2	0	2	0	37	1	1	1	0	54			9.5	

Chapter 6

SATELLITE 77 HUNTLEY STREET TORONTO ONTARIO

Greater Toronto Raptor Watch																		
Satellite: 77 Huntley Street, 29 Toronto, Ontario																		
Observer: Don Peuramaki																		
Location: 29th Floor (Roof Top)																		
Year: 1998																		
Date	TV	OS	BE	NH	SS	CH	NG	RS	BW	RT	RL	GE	AK	ML	PG	UR	Total	Hours
8-Sep		1	1	5	31			1	949	3			36				1027	1.5
9-Sep		1	2	1	10				3337	1			7				3359	5
10-Sep		1		4	13				1114	1			2				1135	1.5
22-Oct	59				6	3	1	5		94		2	1		1		172	1.45
Total	59	3	3	10	60	3	1	6	5400	99	0	2	46	0	1	0	5693	9.45

Chapter 7

NON- RAPTORS

All Stations Non-Raptors Index

Non-Raptors

BirdID	FamilyName	SpeciesName1	StationID
ABDU	Dabbling Ducks	Am. Black Duck	HP/CM
AGPL	Plovers	Am. Golden Plover	CMRW
AMBI	Bitterns	Am. Bittern	CMRW
AMCO	Coots	Am. Coot	CMRW
AMCR	Crows	Am. Crow	HP/CM
AMGO	Finches	Am. Goldfinch	HP/CM
AMPI	Pipits	Am. Pipit	All
AMRE	Wood-Warblers	Am. Redstart	HPRW
AMRO	Thrushes	Am. Robin	HP/CM
AMWI	Dabbling Ducks	Am. Wigeon	HP/CM
ATSP	Emberizids	Am. Tree Sparrow	HP/CM
AWPE	Pelicans	Am. White Pelican	CMRW
BANS	Swallows	Bank Swallow	HPRW
BAOR	Blackbirds	Baltimore Oriole	HPRW
BARS	Swallows	Barn Swallow	HP/CM
BAWW	Wood-Warblers	Black-and-white Warbler	HPRW
BBCU	Cuckoos	Black-billed Cuckoo	CMRW
BBPL	Plovers	Black-bellied Plover	HP/CM
BBWA	Wood-Warblers	Bay-breasted Warbler	HPRW
BCCH	Chickadees	Black-capped Chickadee	HP/CM
BCNH	Hérons	Black-cr. Night Heron	HP/CM
BEKI	Kingfishers	Belted Kingfisher	HP/CM
BGGN	Gnatcatcher	Blue-gray Gnatcatcher	CMRW
BHCO	Blackbirds	Brown-headed Cowbird	HP/CM
BHVI	Vireos	Blue-headed (Solitary)	HP/CM
BLBW	Wood-Warblers	Blackburnian Warbler	HPRW
BLJA	Jays	Blue Jays	HP/CM
BLPW	Wood-Warblers	Blackpoll Warbler	HPRW
BLSC	Sea Ducks	Black Scoter	CMRW
BLTE	Terns	Black Tern	CMRW
BOBO	Blackbirds	Bobolink	HPRW
BOGU	Gulls	Bonaparte's Gull	HP/CM
BOWA	Waxwings	Bohemian Waxwing	HPRW
BRAN	Geese	Brant	HP/CM
BRCR	Creeper	Brown Creeper	HPRW
BRTH	Thrashers	Brown Thrasher	CMRW
BTBW	Wood-Warblers	Black-thr. Blue Warbler	HP/CM
BTNW	Wood-Warblers	Black-thr. Green Warbler	HPRW
BTNW	Wood Warblers	Black-throated Green Warbler	HP/CM
BUFF	Sea Ducks	Bufflehead	CMRW
BWTE	Dabbling Ducks	Blue-winged Teal	HP/CM
CAGO	Geese	Canada Goose	HP/CM
CANV	Pochards	Canvasback	CMRW
CARW	Wren	Carolina Wren	CMRW
CATE	Terns	Caspian Tern	HP/CM
CAWA	Wood-Warblers	Canada Warbler	CMRW
CEDW	Waxwings	Cedar Waxwing	HP/CM

Non-Raptors

BirdID	FamilyName	SpeciesName1	StationID
CHSP	Emberizids	Chipping Sparrow	HPRW
CHSW	Swifts	Chimney Swifts	HP/CM
CLSW	Swallows	Cliff Swallow	HPRW
COGO	Sea Ducks	Common Goldeneye	HP/CM
COGR	Blackbirds	Common Grackles	HPRW
COLO	Loons	Common Loon	All
COME	Merganser	Common Merganser	HP/CM
CONI	Goatsuckers	Common Nighthawk	HP/CM
CORA	Ravens	Common Raven	HP/CM
CORE	Finches	Common Redpoll	HPRW
COSN	Snipe	Common Snipe	HP/CM
COTE	Terns	Common Tern	HP/CM
COYE	Wood-Warblers	Common Yellowthroat	HPRW
CSWA	Wood-Warblers	Chestnut-sided Warbler	HPRW
DCCO	Cormorants	Double-crested Cormorant	HP/CM
DEJU	Emberizids	Dark-eyed Junco	HP/CM
DOWO	Woodpeckers	Downy Woodpecker	HP/CM
DUNL	Sandpiper	Dunlin	HP/CM
EABL	Thrushes	Eastern Bluebird	HP/IS
EAKI	Flycatchers	Eastern Kingbird	HPRW
EAME	Blackbirds	Eastern Meadowlark	HP/IS
EAPH	Flycatchers	Eastern Phoebe	HP/CM
EATO	Emberizids	Eastern Towhee	CMRW
EAWP	Flycatchers	Eastern Wood-Pewee	HPRW
EUGR	Finches	Evening Grosbeak	HPRW
EUST	Starlings	European Starling	HP/CM
EUWI	Dabbling Ducks	Eurasian Wigeon	CMRW
FISP	Emberizids	Field Sparrow	HP/CM
FOSP	Emberizids	Fox Sparrow	HP/CM
GADU	Dabbling Ducks	Gadwall	HP/CM
GBBG	Gulls	Great Black-b. Gull	HP/CM
GCFL	Flycatchers	Great Crested Flycatcher	HPRW
GCKI	Kinglets	Golden-crowned Kinglet	HP/CM
GHOW	Owls	Great Horned Owl	HPRW
GLCU	Gulls	Glaucous Gull	HP/CM
GNBH	Hérons	Green Heron	CMRW
GRCA	Mockingbirds	Gray Catbird	HPRW
GREG	Egrets	Great Egret	CMRW
GRSC	Pochards	Greater Scaup	CMRW
GRYE	Sandpiper	Greater Yellowlegs	HP/CM
GTBH	Hérons	Great Blue Heron	HP/CM
GWFG	Geese	Great White-fronted Goose	HP/CM
GWTE	Dabbling Ducks	Green-winged Teal	HP/CM
HAWO	Woodpeckers	Hairy Woodpecker	HPRW
HEGU	Gulls	Herring Gull	HP/CM
HETH	Thrushes	Hermit Thrush	HP/IS
HOFI	Finches	House Finch	HP/CM

Non-Raptors

BirdID	FamilyName	SpeciesName1	StationID
HOLA	Larks	Horned Lark	HP/CM
HOME	Merganser	Hooded Merganser	CMRW
HOSP	Old World Sparrows	House Sparrows	HPRW
HOWR	Wren	House Wren	CMRW
HUGO	Sandpipers	Hudsonian Godwit	CMRW
INBU	Cardinals & Allies	Indigo Bunting	CMRW
KILL	Plovers	Killdeer	HP/CM
LALO	Emberizids	Lapland Longspur	HP/CM
LBBG	Gulls	Lesser Black-b. Gull	HP/CM
LBDO	Dowitcher	Long-billed Dowitcher	CMRW
LEFL	Flycatchers	Least Flycatchers	HP/CM
LEOW	Owls	Long-eared Owl	HPRW
LESC	Pochards	Lesser Scaup	HP/CM
LEYE	Sandpiper	Lesser Yellowlegs	HP/CM
LISP	Emberizids	Lincoln's Sparrow	CMRW
MALL	Dabbling Ducks	Mallard	HP/CM
MAWA	Wood-Warblers	Magnolia Warbler	HPRW
MODO	Doves	Mourning Dove	HP/CM
MUSW	Swans	Mute Swan	HP/CM
NAWA	Wood-Warblers	Nashville Warbler	HP/CM
NOCA	Cardinals & Allies	Northern Cardinal	HPRW
NOFL	Woodpeckers	Northern Flicker	HPRW
NOMO	Mockingbirds	Northern Mockingbird	HPRW
NOPA	Wood-Warblers	Northern Parula	CMRW
NOPI	Dabbling Ducks	Northern Pintail	HP/CM
NOWA	Wood-Warblers	Northern Waterthrush	CMRW
NRWS	Swallows	N. Rough-winged Swallow	HPRW
NSHO	Dabbling Ducks	Northern Shoveler	HP/CM
NSHR	Shrikes	Northern Shrike	All
OCWA	Wood-Warblers	Orange-cr. Warbler	CMRW
OLDS	Sea Ducks	Oldsquaw	HPRW
OROR	Blackbirds	Orchard Oriole	HPRW
PAJA	Jaeger	Parasitic Jaeger	HP/CM
PAWA	Wood-Warblers	Palm Warbler	HP/CM
PBGR	Grebes	Pied-billed Grebe	CMRW
PESA	Sandpiper	Pectoral Sandpiper	CMRW
PHVI	Vireos	Philadelphia Vireo	HP/CM
PIGR	Finches	Pine Grosbeak	HPRW
PISI	Finches	Pine Siskin	HPRW
PIWA	Wood-Warblers	Pine Warbler	HPRW
PIWO	Woodpeckers	Pileated Woodpecker	All
PUFI	Finches	Purple Finch	HPRW
PUMA	Swallows	Purple Martin	HPRW
RBGR	Cardinals & Allies	Rose-breasted Grosbeak	HPRW
RBGU	Gulls	Ring-billed Gull	HP/CM
RBME	Merganser	Red-breasted Merganser	HP/CM
RBNU	Nuthatches	Red-breasted Nuthatch	HP/CM

Non-Raptors

BirdID	FamilyName	SpeciesName1	StationID
RBWO	Woodpeckers	Red-bellied Woodpecker	HPRW
RCKI	Kinglets	Ruby-crowned Kinglet	HP/CM
REDH	Pochards	Redhead	CMRW
REKN	Sandpiper	Red Knot	CMRW
REVI	Vireos	Red-eyed Vireo	HPRW
RHWO	Woodpeckers	Red-headed Woodpecker	HP/CM
RINP	Pheasant	Ring-necked Pheasant	CMRW
RNDU	Pochards	Ring-necked Duck	HP/CM
RODO	Doves	Rock Dove	HP/CM
RTHU	Hummingbirds	Ruby-throated Hummingbird	HP/CM
RTLO	Loons	Red-throated Loon	HPRW
RUBL	Blackbirds	Rusty Blackbird	HP/CM
RUDU	Stiff-tailed Ducks	Ruddy Duck	CMRW
RUGR	Grouse	Ruffed Grouse	CMRW
RWBL	Blackbirds	Red-winged Blackbird	HP/CM
SACR	Cranes	Sandhill Crane	HPRW
SAND	Sandpiper	Sanderling	CMRW
SBDO	Dowitcher	Short-billed Dowitcher	CMRW
SCTA	Tanagers	Scarlet Tanager	HPRW
SEOW	Owls	Short-eared Owl	HP/CM
SEPL	Plovers	Semipalmated Plover	CMRW
SESA	Sandpiper	Semipalmated Sandpiper	CMRW
SNBU	Emberizids	Snow Bunting	All
SNGO	Geese	Snow Goose	All
SOSA	Sandpiper	Solitary Sandpiper	HP/CM
SOSP	Emberizids	Song Sparrow	HP/CM
SPSA	Sandpiper	Spotted Sandpiper	CMRW
STSA	Sandpiper	Stilt Sandpiper	CMRW
SWSP	Emberizids	Swamp Sparrow	CMRW
SWTH	Thrushes	Swainson's Thrush	HPRW
TEWA	Wood-Warblers	Tennessee Warbler	HPRW
TRES	Swallows	Tree Swallow	HP/CM
TUSW	Swans	Tundra Swan	HP/CM
WAVI	Vireos	Warbling Vireo	HPRW
WBNU	Nuthatches	White-breasted Nuthatch	HPRW
WCSP	Emberizids	White-cr. Sparrow	HP/CM
WHIM	Sandpiper	Whimbrel	CMRW
WIWA	Wood-Warblers	Wilson's Warbler	HP/CM
WIWR	Wren	Winter Wren	CMRW
WODU	Perching Ducks	Wood Duck	HP/CM
WOTH	Thrushes	Wood Thrush	CMRW
WRSA	Sandpiper	White-rumped Sandpiper	CMRW
WTSP	Emberizids	White-thr. Sparrow	HP/CM
WWCR	Finches	White-winged Crossbill	HPRW
WWSC	Sea Ducks	White-winged Scoter	HPRW
YBCU	Cuckoos	Yellow-billed Cuckoo	HP/CM
YBSA	Woodpecker	Yellow-bellied Sapsucker	HP/CM

Non-Raptors

BirdID	FamilyName	SpeciesName1	StationID
YRWA	Wood-Warblers	Yellow-rumped Warbler	HP/CM
YTWA	Wood-Warblers	Yellow-thr. Warbler	CMRW
YWAR	Wood-Warblers	Yellow Warbler	CMRW

Title Page 7b

HIGH PARK HAWK HILL NON- RAPTORS

GREATER TORONTO RAPTOR WATCH			
Station: High Park, Toronto, Ontario			
Location: Hawk Hill			
Year: 1998			
Viewing Period: Aug 19 to Nov.28			
Species	Total	Peak Date	Peak Number
Common Loon	288	22-Sep	48
Double-crested Cormorant	628	22-Sep	161
Great Blue Heron	14	1-Sep	3
Black-cr.N.Heron	2	29-Aug	
Mute Swan	2		
Snow Goose	4	4-Oct	4
Canada Goose	634	22-Sep	161
Am. Black Duck	1	15-Oct	1
Mallard	88	15-Oct	8
Northern Shoveler	4	12-Oct	4
Gadwall	11	28-Sep	5
Oldsquaw	180	22-Oct	120
Red-breasted Merganser	9	13-Nov	5
Killdeer	2	27-Sep	1
Bonaparte's Gull	2	1-Oct	2
Iceland Gull	1	13-Nov	1
G. black-back Gull	2	8-Oct	1
Mourning Dove	287	28-Sep	20
Yellow-b.Cuckoo	1	19-Sep	1
Long-eared Owl	1	8-Nov	1
Common Nighthawk	83	10-Sep	8
Chimney Swift	1066	7-Sep	145
Ruby-thr.Hummingbird	121	31-Aug	23
Belted Kingfisher	4	7-Sep	1
Red-headed Woodpecker	4	27-Aug	1
Yellow-b.Sapsucker	9	28-Sep	2
Downy Woodpecker	35	3-Oct	5
Hairy Woodpecker	1	30-Sep	1
Northern Flicker	240	12-Sep	26
Eastern Wood-Pewee	2	12-Sep	1
Eastern Phoebe	1	2-Oct	1
Great Crested Flycatcher	1	2-Sep	1
Eastern Kingbird	28	22-Aug	9
Horned Lark	1	27-Oct	1
Tree Swallow	171	19-Aug	85
Bank Swallow	1	2-Sep	1
Barn Swallow	166	7-Sep	25
Blue Jay	3980	28-Sep	563
Am. Crow	1740	22-Oct	238
Common Raven	1	19-Oct	1

GREATER TORONTO RAPTOR WATCH			
Station: High Park, Toronto, Ontario			
Location: Hawk Hill			
Year: 1998			
Viewing Period: Aug 19 to Nov.28			
Species	Total	Peak Date	Peak Number
Black-capped Chickadee	42	6-Nov	6
Red-breasted Nuthatch	6	17-Nov	2
White-breasted Nuthatch	13	Various	1
Brown Creeper	2	9-Oct	1
Winter Wren	1	14-Oct	1
Golden-cr.Kinglet	47	3-Oct	8
Ruby-cr.Kinglet	30	3-Oct	14
Eastern Bluebird	908	28-Sep	162
Swainsons Thrush	1	2-Oct	1
Hermit Thrush	4	23-Oct	1
Am. Robin	7290	21-Oct	1957
Northern Mockingbird	1	22-Sep	1
Am. Pipit	8	20-Oct	1
Cedar Waxwing	2570	7-Sep	192
Northern Shrike	1	21-Oct	1
Solitary Vireo	1	22-Sep	1
Warbling Vireo	1	22-Sep	1
Philadelphia Vireo	1	22-Sep	1
Red-eyed Vireo	1	23-Sep	1
Nashville Warbler	10	5-Sep	3
Chestnut-sided Warbler	1	7-Sep	1
Magnolia Warbler	1	17-Sep	1
Yellow-r.Warbler	148	1-Oct	35
Black-thr.Green Warbler	3	10-Sep	1
Blackburnian Warbler	1	25-Sep	1
Palm Warbler	63	4-Oct	16
Bay-br.Warbler	1	3-Oct	1
Am. Redstart	1	4-Oct	1
Scarlet Tanager	2	9-Sep	1
Northern Cardinal	2	Various	1
Rose-br.Grosbeak	2	7-Sep	1
Am. Tree Sparrow	9	17-Nov	7
Chipping Sparrow	28	9-Oct	7
Song Sparrow	1	8-Oct	1
White-thr.Sparrow	9	2-Oct	2
White-cr.Sparrow	12	8-Oct	5
Dark-eyed Junco	111	25-Nov	17
Lapland Longspur	1	10-Nov	1
Snow Bunting	32	30-Oct	30
Red-winged Blackbird	10531	21-Oct	4318
Eastern Meadowlark	1	21-Oct	1
Rusty Blackbird	109	9-Oct	23

GREATER TORONTO RAPTOR WATCH			
Station: High Park, Toronto, Ontario			
Location: Hawk Hill			
Year: 1998			
Viewing Period: Aug 19 to Nov.28			
Species	Total	Peak Date	Peak Number
Common Grackle	4230	22-Oct	872
Brown-headed Cowbird	172	14-Nov	50
Baltimore Oriole	6	22-Aug	3
Purple Finch	12	21-Oct	3
House Finch	785	21-Oct	108
Common Redpoll	15	13-Nov	15
Pine Siskin	3	25-Oct	3
Am. Goldfinch	286	22-Sep	21
Non - Raptors			
Total Species 1998	90		
Total Species 1994 to 1998	144		

Chapter 8

Dragonflies

And

Butterflies

Title Page 8a

**HIGH
PARK**

**HAWK
HILL**

**DRAGONFLIES
BUTTERFLIES
ON MIGRATION**

GREATER TORONTO RAPTOR WATCH

Station: South-platform, Cranberry Marsh, Whitby, Durham RM, ON

Dragonflies / Butterflies on Migration

Viewing Period: August 28 to November 4, 1998

Season Total of Hours viewing	155
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Season Total of Days observed	44
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Dragonflies	Aug/Sep.	Oct/Nov.	Total	Peak Day	Peak #
Green Darner	1096	24	1120	Sep.4	407
Twelve-spotted Skimmer	15	0	15	Aug.28	5
Wandering Glider	16	0	15	Sep.10	4
Black-mantled Glider	37	0	37	Sep.7	10
Unidentified	347	8	355		
Total Dragonflies	1511	32	1543		
Butterflies					
Monarch	1524	67	1591	Sep.21	128
Cloud Sulphur		1	1	Oct.14	1
Total Butterflies	1524	68	1592		
Total Hours	128	27	155		

GREATER TORONTO RAPTOR WATCH

Station: South-platform, Cranberry Marsh, Whitby, Durham R.M., ON

Dragonflies / Butterflies on migration

Viewing Period: Aug.28 to Nov.4, 1998

August 28 to September 30

[illegible]

GREATER TORONTO RAPTOR WATCH											
Station: South-platform, Cranberry Marsh, Whitby, Durham R.M., ON											
Dragonflies / Butterflies on migration											
Viewing Period: Aug.28 to Nov.4, 1998											
October 1 to November 4											
O1	O4	O6	O8	O10	O14	O24	O25	O28	O29	N4	Total
GD			1	17			2	2	2		24
TS											0
WG											0
BG											0
UD	1		3	4							8
TD	1		4	21			2	2	2		32
MO	10	23	4	20	1	1	2	2	1	2	67
CS					1						1
TB	10	23	4	20	2	1	2	2	1	2	68
Hrs	1	4	1	4	5	2	1	3	2	2	27
Species Abbreviations											
Dragonflies									Butterflies		
Green Darner						GD			UD Monarch		
Twelve-sp.Skimmer						TS			TD Clouded Sulphur		
Wandering Glider						WG			TB		
Black-mantled Glider						BG			HRS		
									MO CS		

Chapter 9

Greater Toronto Raptor Watch

Observers

Observers

StationName	Contact First Name	Contact Last Name	CounterOrObserver
CMRW	Bill	Abnett	
CMRW	Alfred	Adamo	Observer
HPRW	Alfred	Adamo	Counter/Observer
ISRW	Alfred	Adamo	Observer
CMRW	Alex	Adams	
CMRW	Florence	Adams	
CMRW	Esther	Allen	Observer
CMRW	Anne	Anthony	
HPRW	Maris	Apse	Observer
CMRW	Margaret	Bain	Observer
HPRW	Roy	Baker	Observer
CMRW	King	Baker	Counter/Observer
ISRW	King	Baker	Observer
CMRW	Jerry	Ball	Observer
HPRW	John	Barker	Counter/Observer
CMRW	John	Barker	Counter/Observer
ISRW	John	Barker	Observer
HPRW	Don	Barnett	Counter/Observer
ISRW	Don	Barnett	Observer
ISRW	Nancy	Barrett	Observer
HPRW	Chris	Bartlett	Observer
HPRW	David	Beadle	Observer
CMRW	Eleanor	Beagan	Observer
HPRW	Eleanor	Beagan	Observer
CMRW	Bob	Beerworth	
HPRW	Ann	Bell	Observer
CMRW	Martin	Bence	Counter/Observer
ISRW	Martin	Bence	Counter/Observer
CMRW	Bill	Bennett	
CMRW	Fred	Bodsworth	Observer
HPRW	Dan	Bone	Observer
CMRW	Colleen	Boudreau	Observer
CMRW	Mike	Boudreau	Counter/Observer
ISRW	Mike	Boudreau	Observer
CMRW	John	Boxall	Counter/Observer
CMRW	Marnie	Bracht	
HPRW	Kathy	Callahan	Observer
CMRW	Maureen	Campeau	
HPRW	Marion	Chang	Observer
ISRW	Mark	Chojnacki	Observer
HPRW	Colleen	Cirillo	Observer
HPRW	Daintry	Clarke	Observer
HPRW	Phoebe	Cleverly	Observer
CMRW	Joyce	Closs	
HPRW	Glenn	Coady	Observer
CMRW	Eric	Cole	Observer
CMRW	Joyce-	Collier Brown	

Observers

StationName	Contact First Name	Contact Last Name	CounterOrObserver
CMRW	Paul	Cook	
HPRW	Ken	Cook	Observer
HPRW	Mark	Cranford	Observer
HPRW	Hugh	Currie	Counter/Observer
CMRW	Hugh	Currie	Observer
CMRW	Anthony	Dale	
HPRW	Ian	Dalton	Observer
CMRW	Mark	Deabreu	Counter/Observer
HPRW	Luther	Dean	Observer
HPRW	Jerry	Demarco	Observer
CMRW	Alex	Dobson	Observer
HPRW	Gerry	Doekes	Observer
CMRW	Ellen	Donnelly	Observer
CMRW	Keith	Donnelly	Observer
HPRW	Gay	Doolittle	Observer
HPRW	Dennis	Duckworth	Observer
CMRW	Bill	Edmonds	Observer
HPRW	Herb	Elliot	Observer
HPRW	Adam	Elliott	Observer
HPRW	Terry	Fahey	✓
CMRW	Jim	Fairchild	Observer
ISRW	Jim	Fairchild	Observer
HPRW	Jean	Fairfield	Observer
HPRW	George	Fairfield	Observer
CMRW	Bruce	Falls	Observer
CMRW	Michelle	Farrell	Observer
CMRW	Dave	Fifield	✓
HPRW	Marla	Fine	✓
HPRW	Jesse	Fine-Gagne	✓
CMRW	John	Floegal	Counter/Observer
CMRW	Donna	Foster	Observer
HPRW	Paul	Foster	Observer
ISRW	Donna	Foster	Observer
CMRW	Gerry	Furlong	Observer
HPRW	Marcel	Gahbauer	Counter/Observer
CMRW	Gord	Gallant	Counter/Observer
ISRW	Gord	Gallant	Observer
CMRW	Dave	Gascoigne	Observer
HPRW	Ray	Geras	Observer
CMRW	Carla	Gibson	
CMRW	Alan	Gilpin	
HPRW	Jim	Griffith	Observer
HPRW	Jerry	Guild	Observer
CMRW	Jill	Hall	
CMRW	John	Harper	
HPRW	Celia	Harte	Counter/Observer
CMRW	Jennifer	Hayward	

Observers

StationName	Contact First Name	Contact Last Name	CounterOrObserver
CMRW	Brian	Henshaw	Observer
HPRW	Verna	Higgins	Observer
CMRW	Tyler	Hoar	Counter/Observer
CMRW	Phil	Holder	Observer
CMRW	Steve	Holzman	✓
HPRW	Louise	Horton	Observer
CMRW	Jean	Iron	Observer
ISRW	Jean	Iron	Observer
HPRW	Jean	Iron	Observer
HPRW	Andrew	Jano	Observer
CMRW	Florence	Jerome	Observer
HPRW	Tony	Jovan	Observer
HPRW	Barbara	Kalthoff	Observer
CMRW	Harry	Kerr	Observer
CMRW	Jan	Kerr	
HPRW	Harry	Kerr	Observer
CMRW	John	Keys	Counter/Observer
HPRW	Mike	King	Observer
HPRW	Mary	Kinley	Observer
CMRW	Sam	Kohn	
CMRW	Teresa	Kroeger	
HPRW	Bob	Kubica	✓
CMRW	Judy	Kuramoto	Observer
HPRW	Judy	Kuramoto	Observer
CMRW	Jim	Larkin	Observer
CMRW	Mike	Lauzon	Counter/Observer
CMRW	Vaughan	Lawrence	
CMRW	Dale	Leadbeater	
CMRW	Rod	Lee	Counter/Observer
HPRW	Paul	Leeson	Observer
HPRW	Joan	Leeson	Observer
CMRW	Marcus	Liese	
CMRW	Alf	Lisk	Observer
ISRW	Alf	Lisk	Observer
CMRW	Don	Lloyd	
CMRW	Doug	Lockrey	Counter/Observer
ISRW	Doug	Lockrey	Observer
HPRW	Fred	Lyonde	Observer
HPRW	Joe	Mallia	Observer
HPRW	Betty	Marquette	Observer
HPRW	Fred	Marshall	Observer
HPRW	Jason	Marshall	Observer
CMRW	Jim	Martin	
HPRW	Bruce	Massey	Observer
CMRW	Doug	McColl	
ISRW	Naish	McHugh	Observer
ISRW	Sheila	McHugh	Observer

Observers

StationName	Contact First Name	Contact Last Name	CounterOrObserver
HPRW	Naish	McHugh	Counter/Observer
HPRW	Sheila	McHugh	Observer
CMRW	Gloria	McKnight	
HPRW	Gloria	McKnight	Observer
HPRW	Craig	McLaughlin	Observer
CMRW	Craig	McLaughlin	Observer
CMRW	Dave	Milsom	Observer
CMRW	Doerchan	Mohr	Observer
CMRW	Susan	Morgan	Counter/Observer
ISRW	Susan	Morgan	Observer
HPRW	Karen	Morris	Observer
CMRW	George	Morrison	Counter/Observer
CMRW	Linda	Moyle	
HPRW	Norm	Murr	Observer
CMRW	Judy	Nancekivell	Counter/Observer
CMRW	Margaret	Nevill	
CMRW	Rob	Nisbet	
CMRW	Graham	Nord	Counter/Observer
ISRW	Graham	Nord	Counter/Observer
ISRW	Linda	Nuttall	Observer
HPRW	Joanna	Oetke	Observer
CMRW	Hugh	Peacock	
CMRW	Mark	Pearson	
CMRW	Ron	Pittaway	Observer
HPRW	Ron	Pittaway	Observer
CMRW	Rayfield	Pye	Counter/Observer
ISRW	Rayfield	Pye	Observer
HPRW	Alfred	Raab	Observer
HPRW	Brigitte	Raab	✓
CMRW	Ken	Ridge	Observer
HPRW	Alex	Rivers	Observer
CMRW	Bob	Ross	Counter/Observer
HPRW	Michael	Roy	✓
CMRW	Bronwyn	Salmon	
CMRW	Patti	Santoloco	
CMRW	Les	Sayer	Observer
ISRW	Leon	Schlichter	Observer
HPRW	Leon	Schlichter	Counter/Observer
HPRW	Don	Schram	✓
CMRW	Ron	Scovell	Observer
CMRW	Cheryl	Shannon	
CMRW	Dave	Shannon	Counter/Observer
ISRW	Dave	Shannon	Observer
HPRW	Horward	Shapiro	Observer
HPRW	Terry	Shiels	Observer
CMRW	Bob	Shillabeer	Observer
CMRW	Dave	Shirley	Counter/Observer

Observers

StationName	Contact First Name	Contact Last Name	CounterOrObserver
CMRW	Jay	Silverberg	Observer
HPRW	Eric	Single	Observer
CMRW	Dr. Murray	Speirs	Observer
CMRW	Brian	Steele	Observer
ISRW	Brian	Steele	Observer
CMRW	Chris	Stephenson	
HPRW	Dave	Sutton	Observer
HPRW	Calci	Tanti	Observer
CMRW	Doug	Tate	
HPRW	Ken	Teasdale	Observer
CMRW	Jenny	Turner	Observer
HPRW	Gina	Turone	✓
HPRW	Fred	Urie	Observer
CMRW	Hans	Vanderzweep	
HPRW	Cecilia	Verkley	Observer
CMRW	Gord	Vogg	
HPRW	J. Scott	Wiedmann	✓
HPRW	Cathy	Wilkinson	✓
CMRW	Mike	Williamson	Counter/Observer
CMRW	Diana	Williamson	Counter/Observer
ISRW	Mike	Williamson	Counter/Observer
CMRW	Margaret	Wilson	Observer
CMRW	Steve	Wood	Observer
CMRW	Alan	Woods	
HPRW	Ed	Wugalter	Observer
CMRW	Karl	Wysotski	
HPRW	Bob	Yukich	Counter/Observer
HPRW	Winne	Yung	Observer