



**Wild Rice (Manoomin)
Abundance and Harvest
in Northern Wisconsin in 2001**

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MANOOMIN (WILD RICE) ABUNDANCE AND HARVEST IN NORTHERN WISCONSIN IN 2001

INTRODUCTION

As part of its wild rice management program, the Great Lakes Indian Fish and Wildlife Commission (GLIFWC) conducts annual surveys of wild rice abundance on northern Wisconsin waters. These surveys provide a long term data base on wild rice abundance and annual variability in the ceded territory.

GLIFWC also conducts an annual survey to estimate the amount of wild rice harvested off-reservation in the Wisconsin ceded territory. The Wisconsin Department of Natural Resources (WDNR) cooperates with this survey by providing the names and addresses of state wild rice harvest license purchasers, so that both state and tribal harvest can be estimated. The 2001 survey was similar in design to a survey first conducted in 1987, and repeated each year since 1989, with minor modifications as described in the Methods section.

METHODS

Abundance Estimation

A select group of thirty lakes and 10 river or flowage sites have been ground surveyed most years since 1985; abundance information from these waters is used to derive a yearly index of rice abundance in the ceded territory. The index is derived by multiplying the number of acres of rice on each water surveyed by a factor ranging from 1 to 5 which relates to rice density (1=sparse, 5=dense) and then summing the values derived for each of the 40 waters. In addition to abundance information, ground surveys include information on habitat suitability (e.g. abundance of competing vegetation, presence of beaver, obvious development impacts). Ground surveys were conducted from mid-July through late August.

Aerial surveys of some of these waters, and additional waters not ground surveyed, were conducted on August 3rd and 4nd. Aerial survey information is limited to an estimate of the size and approximate density of the rice beds. These surveys provide abundance information from waters not ground surveyed, help verify ground estimates of manoomin acreage, occasionally fill in survey gaps when ground crews are unable to access lakes, and help the Commission direct ricers to the more productive stands.

Harvest Estimation

Slightly different techniques were used to estimate harvest by tribal and state ricers. Tribal members who wished to harvest rice off-reservation were required to obtain an off-reservation harvesting permit validated for ricing. This permit was obtained by 884 individuals in 2001. When individuals obtained their 2001 permit, they were asked if they harvested rice the

previous year. Fifty-one percent (69/134) of the individuals who indicated they had riced in 2000 (“active” ricers) were surveyed by phone, as well as 12% (80/656) of those individuals who indicated they had not riced the previous year (“inactive” ricers). Since 94 permit holders failed to answer the question, these individuals were treated as a third group in this survey (unlike previous years); 59% (55/94) of these individuals were also surveyed (“non-responsive” ricers) (Table 1).

The number of tribal members actually harvesting off-reservation in 2001 was estimated by extrapolating the percent of active respondents in each group (Table 1). Due to differences in sampling and activity rates among groups, separate harvest estimates were made for each group, then combined to estimate total tribal harvest.

Table 1. Summary of 2001 tribal off-reservation manoomin harvest survey sampling.

GROUP	TOTAL NUMBER	# SURVEYED	% SAMPLED	% ACTIVE OFF-RESERVATION	EST. # ACTIVE OFF-RESERVATION
ACTIVE ¹	134	69	51%	47.8%	64
INACTIVE ¹	656	80	12%	10.0%	66
NON-RESPONSIVE ¹	94	55	59%	9.1%	9
TOTAL	884	204			139

¹ Based on activity the previous year; see discussion in text.

State ricers were required to obtain a state license. A mail questionnaire was mailed to each of the 488 individuals who obtained the state license. The number of active ricers was estimated by expanding the results reported by the 243 (50%) respondents to the state survey.

Among state respondents were two individuals who riced together (under two licenses) who reported a harvest that far exceeded that of other state ricers. Because of this, total state harvest was estimated by extrapolating the harvest reported by all other state respondents to the other 422 estimated active state ricers, then adding the harvest reported by these two individuals.

RESULTS AND DISCUSSION

Abundance Estimation

Ground survey results and abundance information for the 40 waters surveyed annually are reported in Figures 1 and 2, and Table 2. In addition, abundance estimates for 49 additional waters surveyed only from the air are listed in Table 3. A total of 2,370 acres of wild rice were estimated for these 89 surveyed waters. Andryk (1986) estimated that the Wisconsin ceded territories supported approximately 5,000 acres of rice in 1985, a year with an abundance index considerably higher than in 2001.

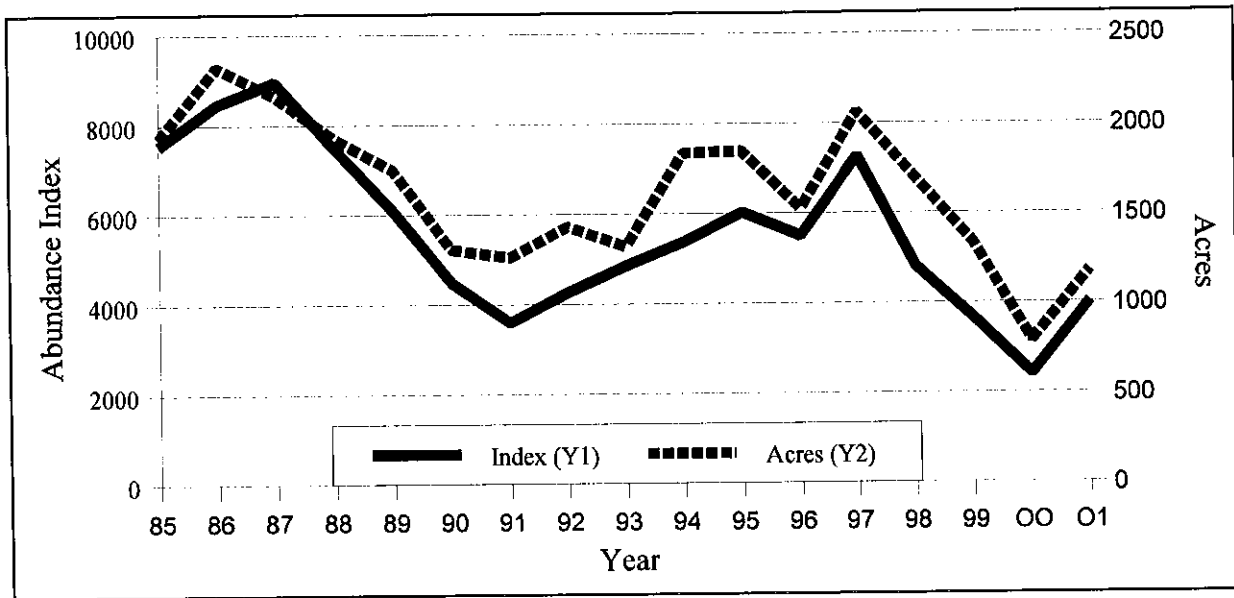


Figure 1. Manoomin acreage and abundance index from 40 Wisconsin rice waters surveyed annually from 1985-2001.

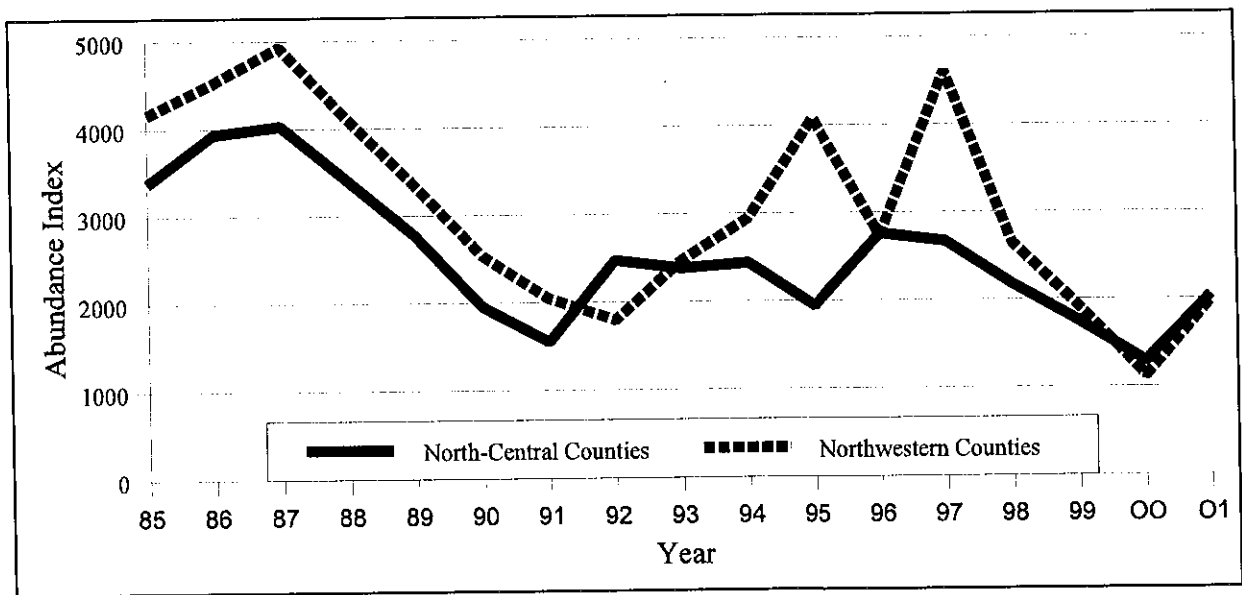


Figure 2. Manoomin abundance index from 40 Wisconsin rice waters surveyed annually from 1985-2001; northwestern versus north-central Wisconsin waters (Highway 13 used to separate northwestern from north-central waters).

Table 2. Manoomin acreage, density and abundance index from 40 Wisconsin waters for 1998-2001, and the 1985-2001 means.
(Data for 1985-1997 can be found in David, 2001.)

WATER	1998			1999			2000			2001			'1985-2001		
	ACRES	DEN.	INDEX	ACRES	DEN.	INDEX	ACRES	DEN.	INDEX	ACRES	DEN.	INDEX	ACRES	DEN.	INDEX
NORTHWESTERN CTYS.															
BARRON															
SWEENEY CREEK	8	4	32	3	3	9	5	2	10	3	2	6	11	2.7	40
BAYFIELD															
TOTOGATIC LAKE	135	3	405	95	2	190	51	3	153	65	3	195	162	2.8	539
BURNETT															
BASHAW LAKE	2	3	6	4	2	8	7	1	7	7	3	21	12	2.6	35
BIG CLAM LAKE	210	3	630	180	4	720	31	2	62	125	2	250	150	3.5	523
BRIGGS LAKE	25	3	75	18	2	36	22	4	88	41	4	164	31	3.8	122
GASLYN LAKE	18	3	54	23	2	46	18	2	36	15	3	45	27	3.3	95
LONG LAKE	65	2	130	40	2	80	20	1	20	20	3	60	77	2.5	201
MUD LAKE (2)	11	3	33	6	3	18	6	3	18	15	3	45	14	3.4	50
WEBB CREEK	12	4	48	16	3	48	20	5	100	20	5	100	12	3.9	57
DOUGLAS															
MULLIGAN LAKE	10	2	20	16	2	32	15	4	60	18	3	54	26	1.9	56
POLK															
RICE BED CREEK	8	4	32	6	3	18	4	4	16	15	4	60	10	4.5	49
RICE LAKE (1)	15	1	15	15	2	30				50	3	150	53	3.3	185
WHITE ASH LAKE	14	3	42	10	4	40	8	2	16	6	4	24	14	3.2	44
SAWYER															
BILLY BOY FLOW.	0	0	0	3	1	3	5	2	10	4	2	8	14	2.1	47
BLAISDELL LAKE	100	4	400	75	2	150	30	3	90	72	3	216	75	3.1	243
PACWAWONG LAKE	100	4	400	67	3	201	48	4	192	120	3	360	88	3.6	328
PHIPPS FLOWAGE	35	4	140	24	4	96	19	4	76	18	5	90	33	4.1	131
WASHBURN															
DILLY LAKE	24	3	72	30	4	120	21	4	84	18	3	54	23	4.1	95
POTATO LAKE	12	3	36	9	3	27	12	2	24	12	2	24	13	2.9	38
RICE LAKE	14	2	28	10	3	30	14	4	56	11	4	44	26	3.4	97
SPRING LAKE (1)	14	3	42	5	3	15	0	0	0	5	1	5	16	2.9	56
TRANUS LAKE	8	1	8	2	2	4	2	1	2	5	2	10	41	1.5	65
SUBTOTAL	840		2648	657		1912	358		1120	665		1985	928		3099
NORTH-CENTRAL CTYS															
FOREST															
ATKINS LAKE	0	0	0	0	0	0	0	0	0	0	0	0	22	0.8	65
INDIAN/RILEY LAKE	4	3	12	5	3	15	7	3	21	5	5	25	5	3.0	14
PAT SHAY LAKE	100	1	100	60	2	120	4	1	4	8	4	32	50	1.6	82
RAT RIVER	24	4	96	21	4	84	16	4	64	18	5	90	22	4.6	101
WABIKON LAKE	80	3	240	30	2	60	24	2	48	36	5	180	40	2.6	105
LINCOLN															
ALICE LAKE	50	1	50	20	3	60	24	3	72	12	4	48	54	3.2	193
ONEIDA															
FISH LAKE	40	4	160	58	2	116	10	2	20	14	2	28	40	3.5	143
LITTLE RICE LAKE	0	0	0	0	0	0	0	0	0	0	0	0	9	1.6	37
RICE LAKE	100	1	100	100	1	100	60	1	60	70	1	70	73	1.4	133
SPUR LAKE	95	4	380	56	3	168	25	1	25	45	2	90	76	3.4	304
WISCONSIN RIVER	150	3	450	180	3	540	165	4	660	180	5	900	147	4.5	651
PRICE															
BLOCKHOUSE LAKE	28	2	56	2	2	4	4	1	4	4	1	4	21	3.1	75
VILAS															
ALLEQUASH LAKE	80	3	240	60	3	180	40	3	120	35	5	175	76	4.1	324
LITTLE RICE LAKE	20	3	60	16	3	48	4	3	12	20	4	80	11	2.4	30
MANITOWISH RIVER	15	3	45	16	4	64	14	5	70	16	5	80	16	4.3	73
PARTRIDGE LAKE	27	3	81	17	4	68	21	4	84	18	5	90	20	4.4	90
RICE LAKE	25	3	75	20	4	80	10	2	20	28	5	140	23	3.4	74
WEST PLUM LAKE	14	2	28	20	2	40	2	2	4	6	2	12	24	3.3	83
SUBTOTAL	852		2173	681		1747	430		1288	515		2044	726		2576
COUNT:			40			40			39			40			40
TOTAL:	1692		4821	1338		3659	788		2408	1180		4029	1654		5675
AVERAGE:			121			91			62			101			142

Table 3. Estimated manoomin acreage and density for waters aerially surveyed in 2001.					
COUNTY	WATER	2001 EST. ACRES	2001 EST. DENSITY	2000 EST. ACRES	2000 EST. DENSITY
Barron	Bear Lake	4	sparse	12	medium
Bayfield	Chippewa Lake	35	medium-dense	20	sparse-dense
Burnett	Carter's Bridge - Loon Lake	70	medium-dense	70	dense
	- Gull Lake	20	medium-dense	35	medium
	Clam River Flowage	45	medium-dense	42	dense
	North Fork Flowage	42	dense	45	dense
	North Lang Lake	4	medium-dense	3	medium-dense
	Phantom Flowage	8	medium	50	medium-dense
	Rice Lake ¹	7	sparse-medium	7	medium
	Rice Lake ²	12	medium	7	medium-dense
	Rice Lake ³	12	sparse-medium	2	sparse
	Spencer Lake	4	sparse	2	sparse
Yellow Lake	20	sparse-medium	12	sparse-medium	
Douglas	Lower Ox Lake	9	medium-dense	7	medium
	Minong Flowage (Smiths Bridge)	30	medium-dense	6	medium
	Radigan Flowage	42	dense	16	medium
	St.Croix River/Cutaway Dam	48	dense	4	medium-dense
	Upper Ox Lake	9	dense	7	dense
Forest	Hiles Millpond	25	medium	3	sparse-medium
	Little Rice Flowage	120	medium-dense	20	medium
Iron	Gile Flowage	4	medium-dense	3	medium-dense
	Little Turtle Flowage	10	dense	8	dense
Oneida	Big Lake	12	medium-dense	11	dense
	Cuenin Lake	20	medium-dense	12	medium
	Scott Creek Impoundment	12	medium-dense	6	medium-dense
	The Thoroughfare	75	medium-dense	90	medium-dense
	Wolf River ⁴	14	dense	14	dense
Polk	Joel Flowage	3	dense	16	medium
	Little Butternut	3	medium	6	medium
	Rice Lake ⁵	0	-	2	sparse
Sawyer	West Branch Chippewa River	18	dense	18	medium-dense
Vilas	Aurora Lake	85	medium-dense	62	medium-dense
	Devine Lake	20	sparse-medium	4	medium-dense
	Frost Lake	18	medium	13	medium
	Irving Lake	30	medium	40	medium-dense
	Island Lake	100	medium	40	medium-dense
	Lower Ninemile Lake	25	medium-dense	8	medium-dense
	Mickeys Mud Lake	1	sparse	0	-
	Mud Creek ⁶	28	medium-dense	22	medium-dense
	Nixon Lake / Creek	6	dense	4	dense
	Rest Lake	4	medium	4	medium-dense
	Rice Creek ⁷	15	dense	10	dense
	Rice Creek ⁸	10	dense	12	medium
	Round Lake	6	medium-dense	4	medium-dense
Upper Ninemile Lake	80	medium-dense	60	medium-dense	
Washburn	Long, Mud, & Little Mud Lakes	20	medium	30	medium-dense
	Trego Flowage	5	dense	7	medium-dense

¹ NE of Trade Lake, (T37N, R18W, S10); ² NE of Hertel, (T39N, R14W, S15); ³ W of Frederic, (T37N, R18W, S36);

⁴ NW of Lennox; ⁵ NW of Frederic; ⁶ E of HWY 17; ⁷ N of Big Lake; ⁸ N of Island Lake

Survey results and field observations indicate that the 2001 rice crop showed some rebound from the exceptionally poor year experienced in 2000. The 2001 abundance index increased 67% from 2000, which had the lowest index since surveys were initiated (Table 2). Nevertheless, the 2001 index was 71% of the long-term index average (1985-2001). Marked increases from 2000 were recorded for both northwestern and north-central waters (Figure 2). For northwestern waters, 14 of the 21 waters surveyed both years (including Upper Clam Lake, which displayed an appreciable increase despite having a tornado cross its rice beds early in the growing season) showed an increase in abundance. Among the north-central waters, 14 of 18 waters showed an increase from the previous year. Overall, 28 of the 39 waters surveyed both years showed an increase from 2000, and of the remaining 11 only 2 had their index decline by more than 10 points.

It remains difficult to determine the why rice changes in abundance on either the regional or local scale because the environmental factors that influence abundance are not well understood. Wild rice is affected by a variety of factors, and the relative impact of each varies by year. Some of these factors, such as spring temperatures and water levels, can affect rice regionally, and may account for instances where beds in the north-central counties display one trend in abundance while those in the northwestern region may show another. At the other extreme, a localized impact can cause a stand to fail while those around it flourish. Furthermore, those factors that might explain some of the variation in rice abundance are not being monitored systematically. Thus, explanations about changes in rice abundance remain largely a matter of conjecture.

Annual variability in rice abundance may be inversely related to the amount of water flow through the system. Relatively open systems such as rivers and flowages appear to vary less in rice abundance than relatively closed lake systems. Although open systems may still experience boom and bust years, the level of abundance tends to be closer to the average level most years. This may be because some environmental variables, such as nutrient availability or spring water temperatures, are more consistent in these systems from year to year.

Harvest Estimation

Responses were obtained from 204 tribal permit holders and 243 state licensees. Survey respondents were asked to report all harvest which occurred under their permit. For state licensees, this included on-and off-reservation harvest; for tribal members it included only off-reservation harvest, since no permit is required to harvest on-reservation. Forty-six of the tribal and 211 of the state licensees surveyed reported harvesting rice in 2001. The total number estimated active in each group was 139 tribal members and 424 state licensees (Table 4).

Tribal harvesters active off-reservation reported making from 1 to 14 ricing trips, averaging 3.1 trips. Tribal survey respondents made a total of 156 off-reservation harvesting trips, gathering 5,758 pounds of green rice (Appendix 1), with an extrapolated total harvest estimate of 17,098 pounds in 432 trips, an average of 40 pounds per trip (Table 4). The total off-reservation harvest per active license averaged 123 pounds.

Table 4. A comparison of tribal (off-reservation) and state manoomin harvest in 2001.

	NUMBER OF PERMIT HOLDERS	ESTIMATED NUMBER ACTIVE	AVERAGE NUMBER OF TRIPS	AVERAGE HARVEST/ TRIP	AVE. HARVEST/ ACTIVE LICENSE	TOTAL ESTIMATED HARVEST / TRIPS
TRIBAL	884	139	3.1	40	123	17,098 / 432
STATE	488	424	2.5	34	86	36,668 / 1,076
TOTAL	1,372	563	2.7	36	95	53,766 / 1,508

In comparison, active state licensees reported making from 1 to 30 ricing trips, averaging 2.5 trips. Collectively, state survey respondents made 567 trips and harvested a total of 20,677 pounds of green rice (Appendix 1), an average of 34 pounds per trip. The total harvest per active state license averaged 86 pounds.

The amount of rice harvested per individual varied greatly (Table 5). The two unique state ricers discussed in the methods section reported harvesting 5,000 pounds of rice together, while the most reported by one tribal ricer was 600 pounds.

Eighty-seven percent of the state-licensed respondents gathered rice in 2001, versus 16% for the tribes. Differences in permit systems between the two groups accounts for the different activity levels observed. The tribal ricing permit is a simple check-off category on a general natural resources harvesting permit available at no cost to tribal members. The category is frequently checked by individuals whose primary interest is one of the other harvest activities listed on the permit. The state permit is a unique license available for a fee, and thus is rarely obtained by individuals without a strong intention of ricing. The tribal activity rate is also lowered because members are asked to respond only if they harvested rice off-reservation. When on-reservation rice beds have good stands, many tribal ricers concentrate their efforts there.

The data collected in this survey can be used to estimate off-reservation harvest by tribal permit holders, and both total and off-reservation harvest by state licensees. It cannot be used to estimate on-reservation harvest by tribal members, who are not required to have a permit to harvest on-reservation.

Using the approach to estimate harvest described above in the Methods section, total off-reservation harvest for tribal permit holders was estimated at 17,098 pounds of green rice (Table 4). The total harvest for state permittees was estimated at 36,668 pounds, with all but 1,030 pounds of it coming from off-reservation waters. Thus, the total off-reservation harvest was estimated at 52,736 pounds, with tribal ricers accounting for 32% of the harvest.

This harvest estimate is 25% above the 2000 off-reservation harvest estimate of 42,333 pounds (David, 2008). While both state and tribal harvest increased from 2000, state harvest showed a 30% increase, while tribal harvest increased 15%. For both the state and tribes, the increase in harvest was attributable primarily to an increase in the number of active ricers rather than the amount harvested per license. Manoomin harvest tends to vary with abundance as well as other factors (Figure 3).

Table 5. Distribution of harvest among active respondents to the 2001 harvest survey.			
TRIBAL			
POUNDS OF GREEN RICE HARVESTED	INDIVIDUALS		PERCENT OF TOTAL HARVEST
	NUMBER	PERCENT	
0 - 50	15	32.6	9.3
51 - 100	12	26.1	19.0
101 - 150	11	23.9	25.6
151 - 200	3	6.5	8.8
201 - 300			
301 - 500	4	8.7	26.9
501 - 1000	1	2.2	10.4
1001 +			
STATE			
POUNDS OF GREEN RICE HARVESTED	INDIVIDUALS		PERCENT OF TOTAL HARVEST
	NUMBER	PERCENT	
0 - 50	118	55.9	14.6
51 - 100	55	26.1	19.3
101 - 150	17	8.1	10.1
151 - 200	5	2.4	4.1
201 - 300	6	2.8	7.2
301 - 500	6	2.8	11.5
501 - 1000	1	0.5	3.6
1001 +	3	1.4	29.6

The distribution of ricing effort and harvest has tended to reflect the distribution of rice waters in the state, and the abundance of rice on those waters (Figure 4). Seventy-seven waters were reported riced in 2001 (not including 8 unnamed locations), up by at least 10 waters from 2000, perhaps reflecting the improved crop. Nearly all (99%) of the harvest reported by surveyed state licensees came from waters within the ceded territory (Appendix 1). Approximately 12% of harvest reported from named locations came from sites planted by the WDNR, the U.S. Forest Service, GLIFWC, or other seeding cooperators. This was down from 32 % in 2000, when many historic (non-seeded) sites had very poor crops.

Opinions of Respondents

Annual abundance: Individuals were asked if they felt the 2001 wild rice crop was better, the same, or worse than the 2000 crop. Among the 175 active respondents with an opinion, 55% felt 2001 was better than 2000, 29% felt both years were about the same, and 16% were of the opinion that 2001 was worse than 2000.

These opinions trended similarly with the results from the abundance surveys of 40 rice waters discussed above, which found increases in abundance of 10 points or more on 54% of the waters surveyed, a change of less than 10 points on 38% of the waters, and a decline of more than 10 points on 8%.

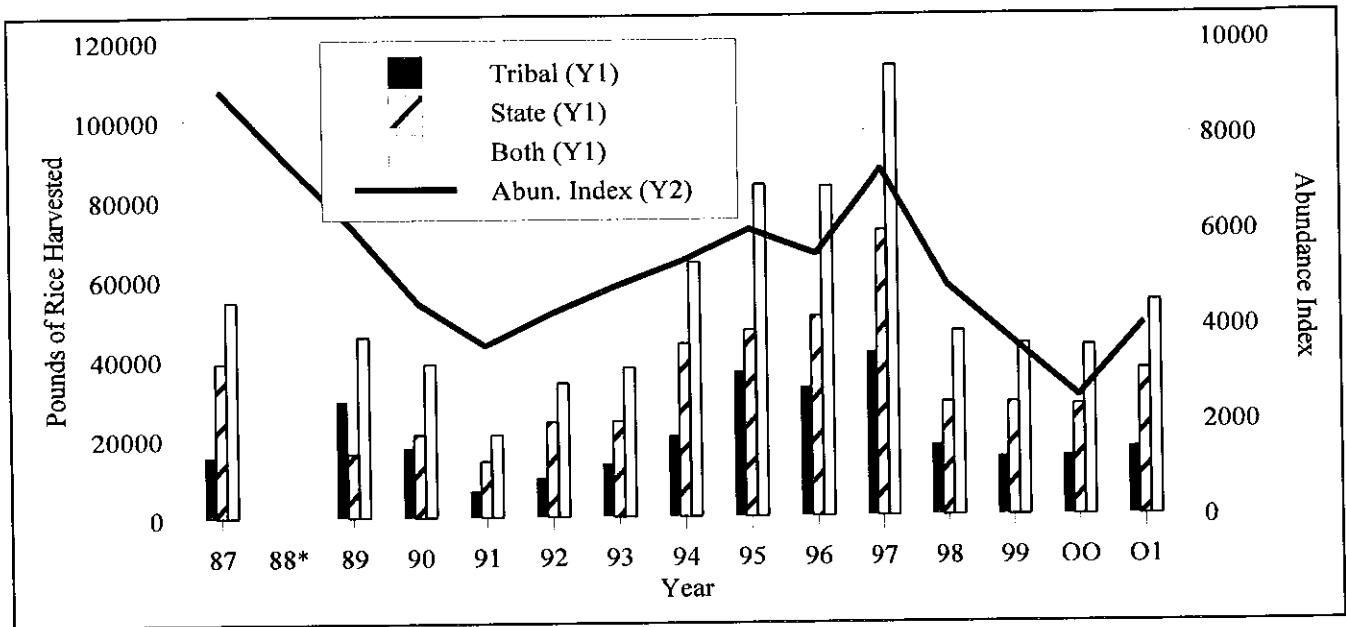


Figure 3. Harvest trends versus abundance index, 1987-2001 (* no harvest estimates for 1988).

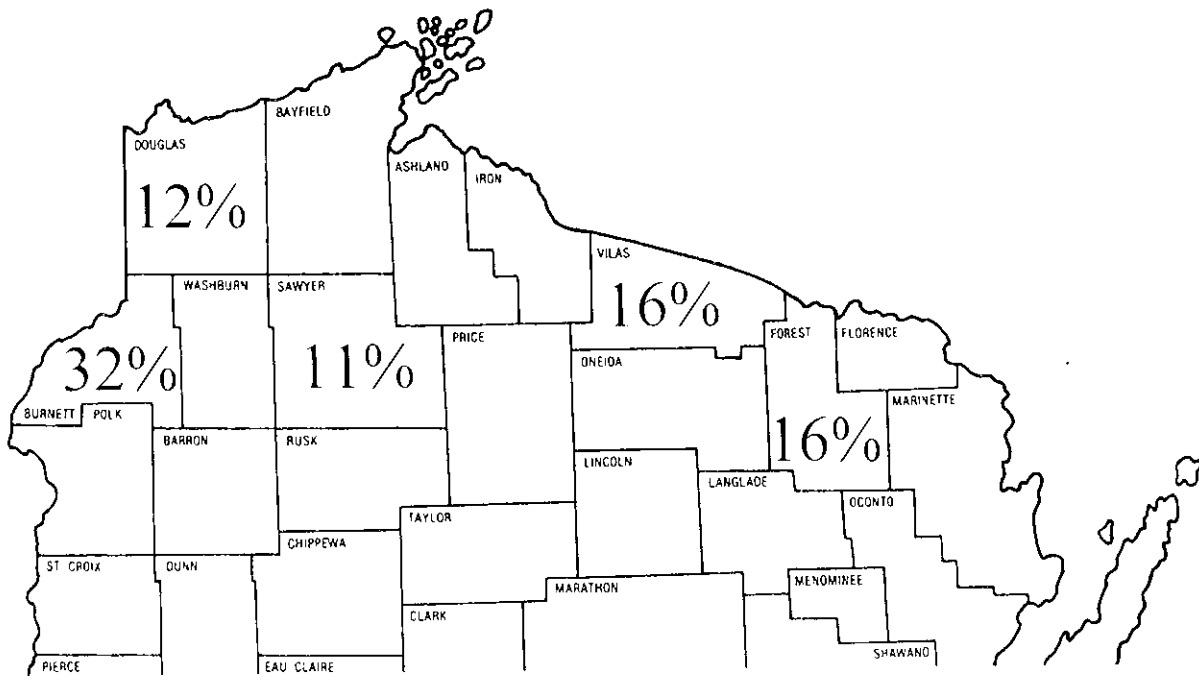


Figure 4. Distribution of counties accounting for 5% or more of the manoomin harvest reported by respondents to the 2001 harvest survey, tribal and state harvesters combined.

Comments: Respondents offered a number of comments and opinions, although relatively few consistent themes surfaced.

The most frequent comment (5 individuals) was simply thanks for managing and/or protecting the resource. Three individuals indicated that the water level was dropped on the Clam River Flowage (Burnett) during the growing season, leaving rice plants laying down. Two people mentioned appreciating the air photos and other wild rice information on the GLIFWC web site; two felt that no lakes should be date-regulated, and two commented that there seemed to be more “ghost” rice than normal. No other comments were made by more than one individual.

Potential Waters for Seeding: Respondents suggested 35 different waters which might be candidates for seeding. Sites named are listed in Appendix 2.

LITERATURE CITED

- Andryk, T. 1986. Wild rice wetland inventory of northwest Wisconsin. Great Lakes Indian Fish and Wildlife Commission Administrative Report 86-4. 51 pp.
- David, P.F. 2008. Wild rice abundance and harvest in the Wisconsin Ceded Territories in 2000. Great Lakes Indian Fish and Wildlife Commission Administrative Report 08-15. 13 pp.

Appendix 1. Ricing trips and pounds of green manoomin harvested by respondents to the 2001 harvest survey.							
COUNTY	WATER	TRIBAL		STATE		COMBINED TOTAL	
		TRIPS	POUNDS	TRIPS	POUNDS	TRIPS	POUNDS
ASHLAND	KAKAGON SLOUGHS			6	175	6	175
	UNNAMED WATER			1	30	1	30
	Subtotal	0	0	7	205	7	205
BARRON	BEAR LAKE			3	68	3	68
	CHETEK LAKE	2	25			2	25
	Subtotal	2	25	3	68	5	93
BAYFIELD	CHIPPEWA LAKE			3	70	3	70
	NAMEKAGON RIVER			3	60	3	60
	TOTOGATIC LAKE	3	80	1	10	4	90
	Subtotal	3	80	7	140	10	220
BURNETT	BLACK BROOK FLOWAGE			8	375	8	375
	BRIGGS LAKE			20	1,076	20	1,076
	BUFFALO LAKE			1	20	1	20
	CARTERS BRIDGE			12	480	12	480
	CLAM LAKE	7	220	87	2,830	94	3,050
	CLAM RIVER			1	18	1	18
	CLAM RIVER FLOWAGE			3	20	3	20
	GASLYN LAKE			7	225	7	225
	LONG LAKE			4	97	4	97
	MUD LAKE (SWISS TOWNSHIP)			3	122	3	122
	NORTH FORK FLOWAGE			18	779	18	779
	NORTH LANG LAKE			5	226	5	226
	PHANTOM FLOWAGE			36	1,304	36	1,304
	RICE LAKE			3	30	3	30
	UNNAMED WATER			1	10	1	10
	WEBB CREEK	1	75			1	75
	WEST MARSHLAND			1	58	1	58
	YELLOW LAKE	2	160	3	50	5	210
	YELLOW RIVER			3	153	3	153
Subtotal	10	455	216	7,873	226	8,328	
DOUGLAS	BEAR LAKE			7	200	7	200
	LOWER OX LAKE			1	0	1	0
	MINONG FLOWAGE	5	140	15	833	20	973
	MULLIGAN LAKE	1	70	6	165	7	235
	RADIGAN FLOWAGE			5	420	5	420
	ST. CROIX RIVER	15	580	17	751	32	1,331
	Subtotal	21	790	51	2,369	72	3,159
FOREST	LITTLE RICE LAKE	12	580	37	3,020	49	3,600
	RICE LAKE			5	335	5	335
	RILEY LAKE	1	15			1	15
	SWAMP CREEK	10	238			10	238
	WABIKON LAKE	3	45	1	50	4	95
	Subtotal	26	878	43	3,405	69	4,283
IRON	LITTLE TURTLE FLOWAGE			6	136	6	136
	TURTLE FLAMBEAU FLOWAGE			2	0	2	0
	Subtotal	0	0	8	136	8	136
LANGLADE	UNNAMED WATER			2	63	2	63
	Subtotal	0	0	2	63	2	63

(Appendix 1 continued on the next page.)

Appendix 1. Ricing trips and pounds of green manoomin harvested by respondents to the 2001 harvest survey.							
COUNTY	WATER	TRIBAL		STATE		COMBINED TOTAL	
		TRIPS	POUNDS	TRIPS	POUNDS	TRIPS	POUNDS
LINCOLN	ALICE LAKE			2	100	2	100
	WISCONSIN RIVER			3	18	3	18
	Subtotal	0	0	5	118	5	118
MARQUETTE	HARRISVILLE POND			1	38	1	38
	NESHKORO MILL POND			8	120	8	120
	Subtotal	0	0	9	158	9	158
ONEIDA	CUENIN LAKE			3	150	3	150
	RICE LAKE			2	60	2	60
	SPUR LAKE			1	10	1	10
	THE THROUGHFARE			5	100	5	100
	WISCONSIN RIVER	1	45	13	162	14	207
	WOLF RIVER	4	162			4	162
	Subtotal	5	207	24	482	29	689
POLK	JOEL FLOWAGE	3	80			3	80
	RICE BED CREEK			1	20	1	20
	RICE LAKE			3	136	3	136
	UNNAMED WATER			1	23	1	23
	Subtotal	3	80	5	179	8	259
PRICE	SPRING CREEK WA			7	160	7	160
	WILSON FLOWAGE			2	30	2	30
	Subtotal	0	0	9	190	9	190
RUSK	LEA FLOWAGE	2	85	2	50	4	135
	Subtotal	2	85	2	50	4	135
SAWYER	HUNTER LAKE			1	1	1	1
	NAMEKAGON RIVER			1	10	1	10
	PACWAWONG FLOWAGE	19	756	61	1,678	80	2,434
	PHIPPS FLOWAGE	7	195	9	117	16	312
	UNNAMED WATER			1	11	1	11
	WEST FORK CHIPPEWA RIVER			1	1	1	1
	Subtotal	26	951	74	1,818	100	2,769
TAYLOR	CHEQAMEGON WATERS FLOWAGE			8	166	8	166
	MONDEAUX FLOWAGE			2	80	2	80
	Subtotal	0	0	10	246	10	246
UNNAMED	UNNAMED WATER	3	190	1	45	4	235
	Subtotal	3	190	1	45	4	235
VILAS	ALLEQUASH LAKE	2	40	8	115	10	155
	AURORA LAKE	3	98	12	252	15	350
	BIG LAKE			1	12	1	12
	IRVING LAKE	9	312	5	60	14	372
	ISLAND LAKE	7	285			7	285
	LITTLE RICE LAKE			4	90	4	90
	MANITOWISH RIVER			7	180	7	180
	PARTRIDGE LAKE	1	15	1	50	2	65
	RICE CREEK			1	3	1	3
	UNNAMED WATER	1	40			1	40
	UPPER NINEMILE FLOWAGE	20	497	33	2,195	53	2,692
	Subtotal	43	1,287	72	2,957	115	4,244

(Appendix 1 continued on the next page.)

Appendix 1. Ricing trips and pounds of green manoomin harvested by respondents to the 2001 harvest survey.							
COUNTY	WATER	TRIBAL		STATE		COMBINED TOTAL	
		TRIPS	POUNDS	TRIPS	POUNDS	TRIPS	POUNDS
WASHBURN	CRANBERRY CREEK			2	20	2	20
	DILLY LAKE	9	570	7	69	16	639
	LONG LAKE			1	13	1	13
	POTATO CREEK			2	11	2	11
	ST. CROIX RIVER			2	40	2	40
	UNNAMED WATER	3	160			3	160
	WHALEN CREEK			2	12	2	12
	Subtotal	12	730	16	165	28	895
WAUPACA	WHITE LAKE			3	10	3	10
	Subtotal	0	0	3	10	3	10
GRAND TOTAL		156	5,758	567	20,677	723	26,435

Appendix 2. Waters suggested for seeding by respondents to the 2001 wild rice harvest survey.	
COUNTY	WATER
Barron	Bear Lake Lake Montanis (at Mouth of Spring Creek) Rice Lake
Bayfield	Bark Bay/Slough Garden Lake (NE end) Namekagon River, above dam on Namekagon Lake Narrows between Namekagon and Jackson Lake Sand River Slough
Burnett	Doty Brook (east of South River Road) Dueholm Flowage Elbow Lake Godfrey Lake Little Yellow Lake (N end where it narrows into the Yellow River) Upper North Fork Flowage Yellow River
Douglas	Muskrat Lake St. Louis River
Forest	Armstrong Creek (T36N R 16E, north half of S12) Hay Meadow Flowage Pat Shay Lake
Lincoln	Wisconsin River (above Alexander Dam)
Marathon	McMillian Marsh WA Big Rib River, above Snake Bridge above Lake Wausau Dam
Polk	Clam Falls Flowage (suggested twice) Lotus Lake (suggested twice)
Rusk	Potato Lake
Sawyer	Chetac Chippewa Flowage Couderay River
Vilas	Nixon Lake
Washburn	Alder Lake Chippanazie Flowage (suggested twice) Harmon Lake (shallow bay west side of lake beyond narrows) Tranus Lake
Waupaca	Little Wolf River (bayou's between Manawa and Royalton)