Welke 1988

ANNUAL REPORT

by Kurt Welke

Project: Commercial Harvest of Freshwater Mussels in Wisconsin in 1988.

Period: April 1,1988 to September 30,1988.

Objective: To summarize monthly harvest data and provide an annual harvest report from inland and Wisconsin's Mississippi river boundry waters. To provide documentation of relevant statistics of the commercial clamming industry.

INTRODUCTION

The commercial harvest of mussels from Wisconsin waters has been,and continues to be of economic and biological significance. Historically,mussel fishing for the pearl and pearl button industries contributed greatly to the economies of Upper Mississippi River (UMR) towns (Knott 1980). Stock depletion was well documented subsequent to the establishment of these industries (Perry 1979).

Currently the taking of mussels can be seperated into 2 components. Clamming in the boundry waters of the Mississippi R. occurs to supply raw material to the Japanese cultured pearl industry (Thiel 1981). Collection from smaller inland rivers and streams furnishes specimens to biological supply houses for distribution to schools used in teaching zoology classes.

Shelling activity on the Mississippi R. is targeted toward 2 species (Heath et al 1988).The Washboard is of primary importance due to its large size and thick valve structure. Of lesser significance is the Three ridge clam, a smaller,therefore less desired form. A limited amount of effort is directed inland towards gathering high quality three ridges.

In 1988 there were 98 resident commercial clam licenses sold. Resident license fees were $30.00. Of these licensees, 89 worked navigation pools 4A-12 of the Mississippi R.,with the remaining 9 shellers limiting their harvest to inland waters.

Non-resident licenses were eliminated under revision of the Natural Resources codes in May 1988.The only shelling allowed by non-residents is that which occurs under reciprocity agreement with Iowa on boundry waters exclusively.

Five clam buyer licenses were issued in 1988 at a cost of

$300.00/license. Two of the 5 buyers were based in Prarie du Chien Wis. purchasing shell for the cultured pearl industry. 2 buyers were associated with biological supply firms. One buyer while licensed,recorded no transactions.

A generalized summary of regulations in effect during the 1988 season is presented in Table 1.

The manner in which clams are harvested differs in relation to where they are harvested. Commercial shellers on the Mississippi R. rely almost completely upon diving to gather marketable shell. The low flow and reduced current conditions of 1988 did allow for a small amount of hand harvest (polliwogging). Brailing was virtually nonexistant with only 1 sheller reporting having used this gear type in 1988. Inland clam harvest is most frequently by hand while wading. One inland sheller made use of a compressor supplied "hookah" apparatus.

METHODS

Pursuant to Wisconsin statutes,individuals engaged in commercial clam shelling or buying are required to report the activities of a given month to DNR by the 10th of the following month. Required information includes weight harvested,sold or bought,percent dead,location fished,buyer to which clams were sold and monies paid/recieved.

Upon reciept of monthly sheller and buyer reporting forms, a preliminary sorting took place to combine complimentry reports,identify reporting discrepencies,track compliance and compile relevant statistics. Monthly entries were made to appropriate LOTUS and DBASE computer files and intermediate calculations performed. Data was sorted by pool and source. Where reports did not exist to define a pool (as in the case of a buyers report for clams purchased from an Iowa resident),the designation Pool=0 was made. Five sources of information were considered:

source 1= complete sheller report with complimentry buyer report.
source 2= buyer report only,Wisc. resident.
source 3= buyer report only,Iowa resident.
source 4= sheller report only,Wisc. resident,sold in Iowa.
source 5= sheller report only,Iowa resident,sold in Wisc. or Iowa.

In this format,harvest in a particular pool by any component of the fishery could be determined,for any month in question. Annual totals and percentages are the summation of individual monthly records.

RESULTS

A. Harvest

Washboards

The reported harvest of Washboard mussels transacted in Wisconsin from all sources was 861,851 lbs. or 431 tons. Wisconsin licensees accounted for 624,203 lbs. or 72.4% of all washboards shelled or bought that were reported to DNR. Mussels from Iowa residents who either shelled in Wisc. waters or sold their catch to Wisc. buyers represented 237,648 lbs. or 27.6% of the 1988 harvest in the UMR known to Wisconsin resource managers.

Dead shell constituted roughly half of the harvest (51.9%) and was taken at a relatively constant rate throughout the season, Table 2.

The majority of harvest took place during May through August. June and July contributed 53.9% towards the season total,Figure 1.

Harvest by pool information is presented in Table 3.Harvest in pool 10 was 2.6 times the magnitude of either pool 9 or pool 11 and far exceeded the harvest in pool 12,Figure 2. Pool 0 weights largely represent those clams sold in Wisc. by Iowa shellers. Given the residence of individuals involved,the fact that sales were often conducted at buyer's docks,and that the majority of Iowa commercial activity also occurs in pool 10, it is likely that pool 10 contributes more closely to 50% or greater of the UMR harvest.

Three ridge

The harvested weight of Three ridge clams for supply to the cultured pearl industry was 100,336 lbs. (50.2 tons). This weight was comprised of 56% from Mississippi R. sources and 44% from two inland rivers,Figure 3.

Pools 4A and 10 accounted for 83% of all Three ridges taken from the Mississippi R.,contributing 25,440 lbs. and 21,222 lbs.respectively,Table 4.

Inland

Inland yield of clams to the biological supply industry totalled 236,828 individuals gathered from 6 known and 1 unspecified rivers,Table 5.

The bulk of clams came from the Peshtigo,Wolf, and Little Wolf rivers with lesser quantities coming from the Red, Embarrass, and Wisconsin rivers,Figure 4.

B. Economic Assessment

Washboards

The price per pound paid by Wisconsin buyers for washboards

varied throughout the season. Live shell ranged from .20/lb to .30/lb and dead shell flucuated between .25-.35/lb. The "standard" price paid for the great majority of transactions involving Wisconsin buyers was .20/lb for live washboards and .25/lb for dead shell.

Prices paid in Iowa were somewhat higher than Wisconsin. Average transactions recieved .25/lb for live clams and .35 for dead washboard shell. During July and August dead shell prices reached .45/lb which attracted both Wisconsin and Iowa shellers to conduct more of their sales in Iowa,Table 6.

A minimum estimate of washboard value using an "average" price of .20/lb for live and .25/lb for dead for all shell tranasacted in 1988 in Wisconsin would be $194,718. In light of comments made by buyers, this figure may be approximately half of the income generated by the sale of washboard clams.

Three ridge

Three ridge clam price is dependant upon source of supply.Mississippi river stocks recieved a steady .12/lb price for a total reported value of $6723. Inland shell was of apparent higher quality,reflected by a price of .21/lb for Wisconsin river clams and an average price of .31/lb for clams originating from Honey creek in Walworth county.

Total inland three ridge were valued at $12,651,bringing the net value of three ridge collected for cultured pearl supply to $19374.

All reported three ridge harvest was fresh (live) shell.

Inland

Inland clam harvest is predicated on a marketable size rather than any particular species. In general,if a clam exceeds 3" in it's longest measure it has commercial value. Prices recieved by shellers were:

.03 for 3" to 4" clams
.05 for 4" to 5" clams
.08 for 5" to 7" clams

Sale of clams to biological supply firms were worth an estimated $13,954.

Only 1 buyer actively purchased clams during the harvest season. Clams were sold between buyers after the season with the corresponding price increase:

.10 for 3" to 4" clams
.14 for 4" to 5" clams
.22 for 5" to 7" clams

The net retail value of inland clams would therefore be within the $38,375 to $46,048 range.

C.Yearly Comparisons

Washboards

A comparison of the harvest of washboard mussels from 1986 through 1988 is given in Table 7.

1986 values were calculated by taking known harvest weights from buyers reports from the period 6/1/86 to 9/30/86.(Heath et al 1988). These weights were divided by .7775,the average percentage contribution to harvest for June - September for all three years. The same live and dead weight percentages from the known weights were applied to the total calculated weight harvested.

1987 harvest statistics were taken from the summary report of the annual harvest of mussels (Calentine and Ivanov 1988).

Over the period, there has been a constant reduction in the harvest of live shell,Figure 5., and an overall decrease in total pounds from the 1986 base.

The take of dead shell in 1988 was less than what occured in 1987 but remained at 1.3 times the 1986 harvest.

Three ridge

The harvest of three ridge clams has decreased since 1986,Table 8.

The reduction is approximately 50% year to year if only shell with UMR origins are considered.

Inland

The number of clams bought by the biological supply industry increased by nearly 68,000 individuals (29%) over that purchased in 1987. No comparison to 1986 purchases is possible.

SUMMARY and DISCUSSION

A. Harvest

Washboards

The harvest of mussel resources are expected to undergo significant change in 1989. These changes are contigent upon revision of chapter NR 24 of the state administrative code affecting minimum size and season length for the washboard clam. An increase in the minimum harvestable size from 3 1/2" to 4" and the elimination of September harvest is advocated by DNR to increase recruitment and work towards restoration of 1980-level

densities. These problems, and recommendations to address them, were identified in the MRWU 1986 summary report (Heath et al 1988).

Implementation of the rule would reduce the 1989 harvest of live washboards by approximately 60%. Reduction in dead shell harvest is expected to be of similar magnitude.

These reductions would result in an acceptable exploitation rate that conserves sufficient brood stock to encourage future recruitment.

Despite a lowered harvest in 1988, the rate of exploitation of legal sized stock continues to exceed a condition where losses to the population equal gains from recruitment or where the population experiences growth.

The decreased poundage of live shell taken, coupled with the trend of increasing prices paid for all shell offer additional evidence that washboard stocks are in jeopardy.

While limitation on harvest will not gain immediate popularity or acceptance within the clamming industry, it remains the only comprhensive alternative which serves the needs of the resource and the industry.

Inland

The inland harvest of three ridge clams is of concern in lieu of a potentially deteriorating washboard market. Should market influences select for quality shell from inland origins, the possibility exists for a shift of effort to interior rivers. Such a shift would comprimise law enforcement effectiveness and impact the reporting process. Degradation of inland populations would likely occur.

Clamming for biological supply is not without potentially damaging effects. Little is known of the distribution, reproduction, population structure and life history of the affected species. Continued harvest at current levels may result in localized and widespread damage and disturbance of significant populations and communities. Consideration must be given to regulations which require inland shellers to limit their activities to identifiable species in areas where known surpluses exist.

B. Economic Assessment

The monetary value of the commercial clamming industry cannot be absolutely measured because of the variations in sale price due to location sold, shell disposition, size, and quality, market demand and competition.

Taking all segments of the industry into account, a

conservative estimate of the value of all clams sold in 1988 would be $228,047

C. Reporting

Beginning in June,all applicants,including those already licensed,recieved a letter outlining their statutory obligations. A supply of reporting forms and a copy of all pertinant regulations (in laymen's terms) was included in each letter. Compliance with reporting obligations improved significantly in July through September.

A tracking form identified only 5 of 98 licensees who repeatedly failed to report.

Certain problems identified in the 1987 annual report on commercial harvest persisted in the 1988 reporting process. Failure to correctly perform mathematic calculation,identify pool location, and the inability to cross-check Wisconsin sheller tranasactions with Iowa buyers were the most common and important problems limiting an accurate harvest assessment. Late,incomplete, and discrepant reports were also a cause of concern.

Simplification and streamlining the reporting form may be the most effective way to correct these problems. Eliminating math operations and limiting the information requested to only what is relevant are neccesary first steps.

An example of a revised reporting form is presented in Figure 6. This format is suggested to determine the exact harvest of mussels in the Mississippi river and inland waters by species,live and dead weights,location,value,and effort expended.

Efforts with Iowa need to continue and produce tangible results to encourage uniform reporting standards,buyer and sheller compliance,law enforcement, and the elimination of duplicate reporting.

Literature Cited

Calentine, R.L. and J.Ivanov. 1988. Summary Report to Determine the Annual Harvest of Mussels for the State of Wisconsin,1987. Wis Dept of Natural Resources; Madison,WI.

Heath, D.J., M.P. Engel,and J.A. Holzer. 1988. An Assesssment of the 1986 Commercial Harvest of Freshwater Mussels in the Mississippi River bordering Wisconsin. Mississippi Work Unit Summary Report. Wis Dept of Natural Resources; LaCrosse WI.

Knott, M.J. 1980. The Pearl Button Industry and Its Impacts on Mississippi River Mussel Fauna. Pages 11-17 in J.L. Rasmussen, ed. Proceedings of the UMRCC Symposium on Upper Mississippi River Bivalve Mollusks. Upper Miss. R. Conserv. Comm., Rock Is.,Ill. 270 pp.

Perry, E.W. 1979. A Survey of Upper Mississippi River Mussels. Pages 118-139 in J.L. Rasmussen, ed. Upper Mississippi River Conservation Committee Fisheries Compendium. Upper Miss. R. Conserv. Comm., Rock Is.,Ill.259 pp.

Thiel, P.A. 1981. A Survey of the Unionid Mussels in the Upper Mississippi River (Pools 3-11). Wis. Dep. Nat. Resour.Tech. Bull. No. 124. 24 pp.

Figure 1. Washboard Clams

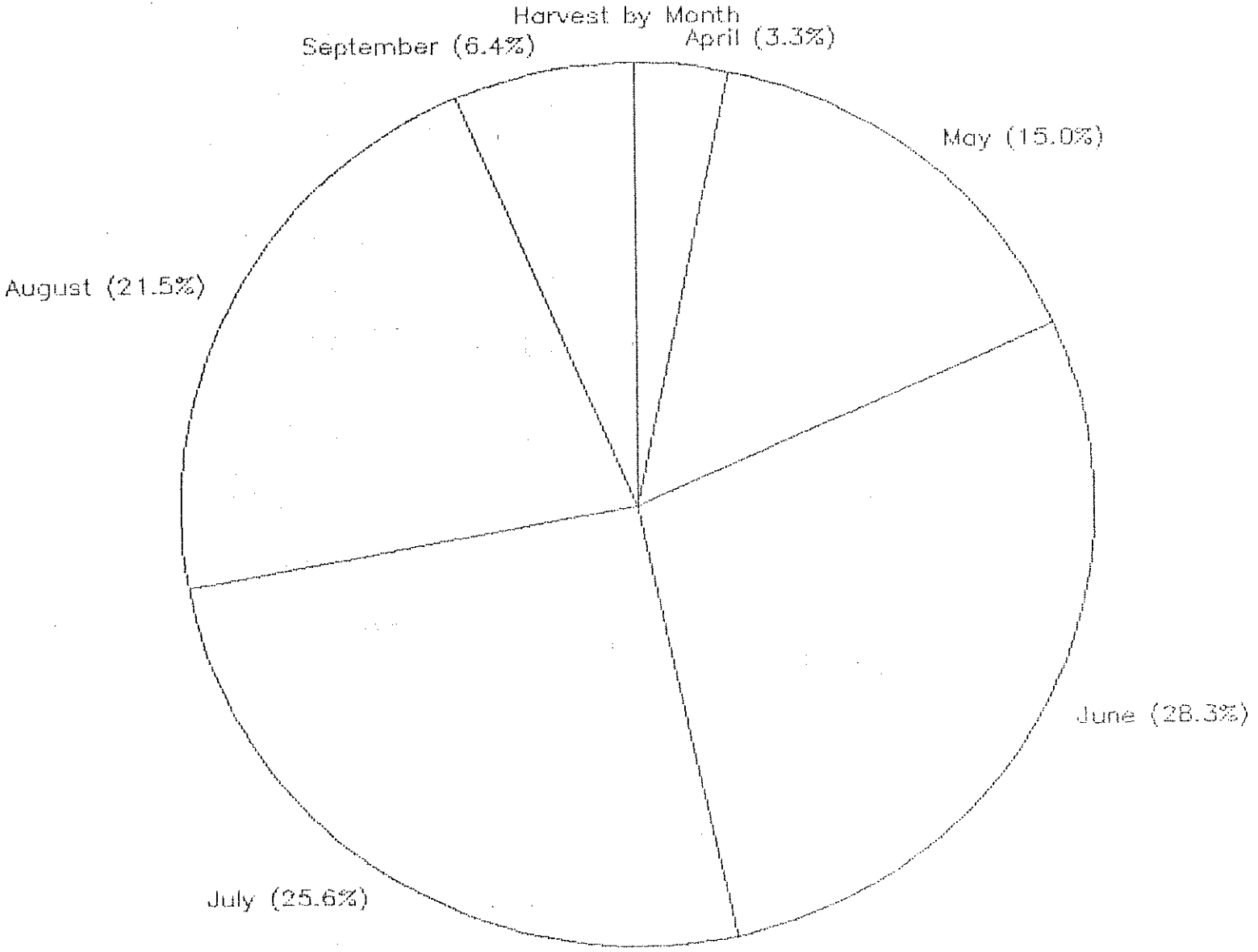

Figure 2. 1988 Washboard Clams

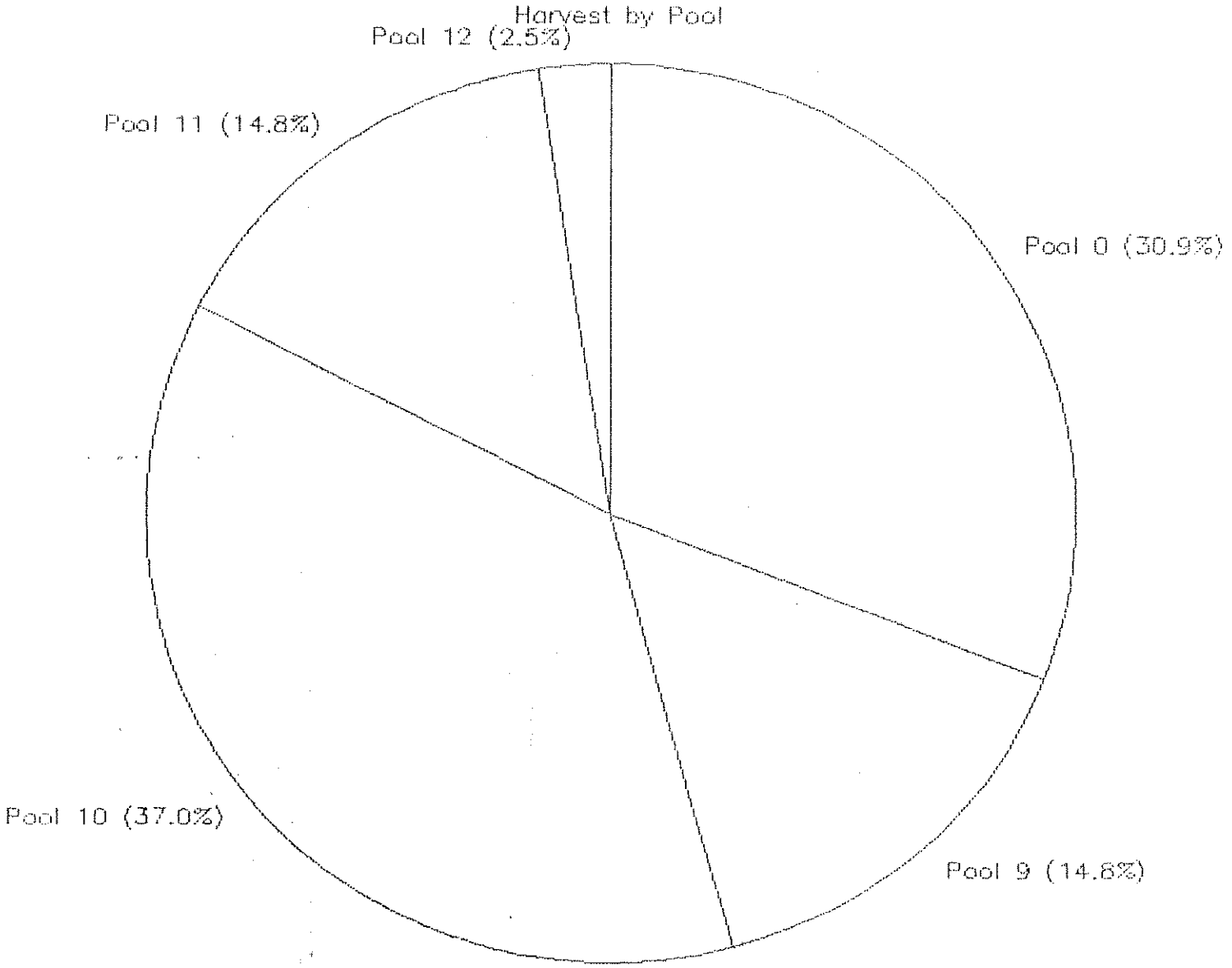

Figure 3. 1988 Three Ridge Clams

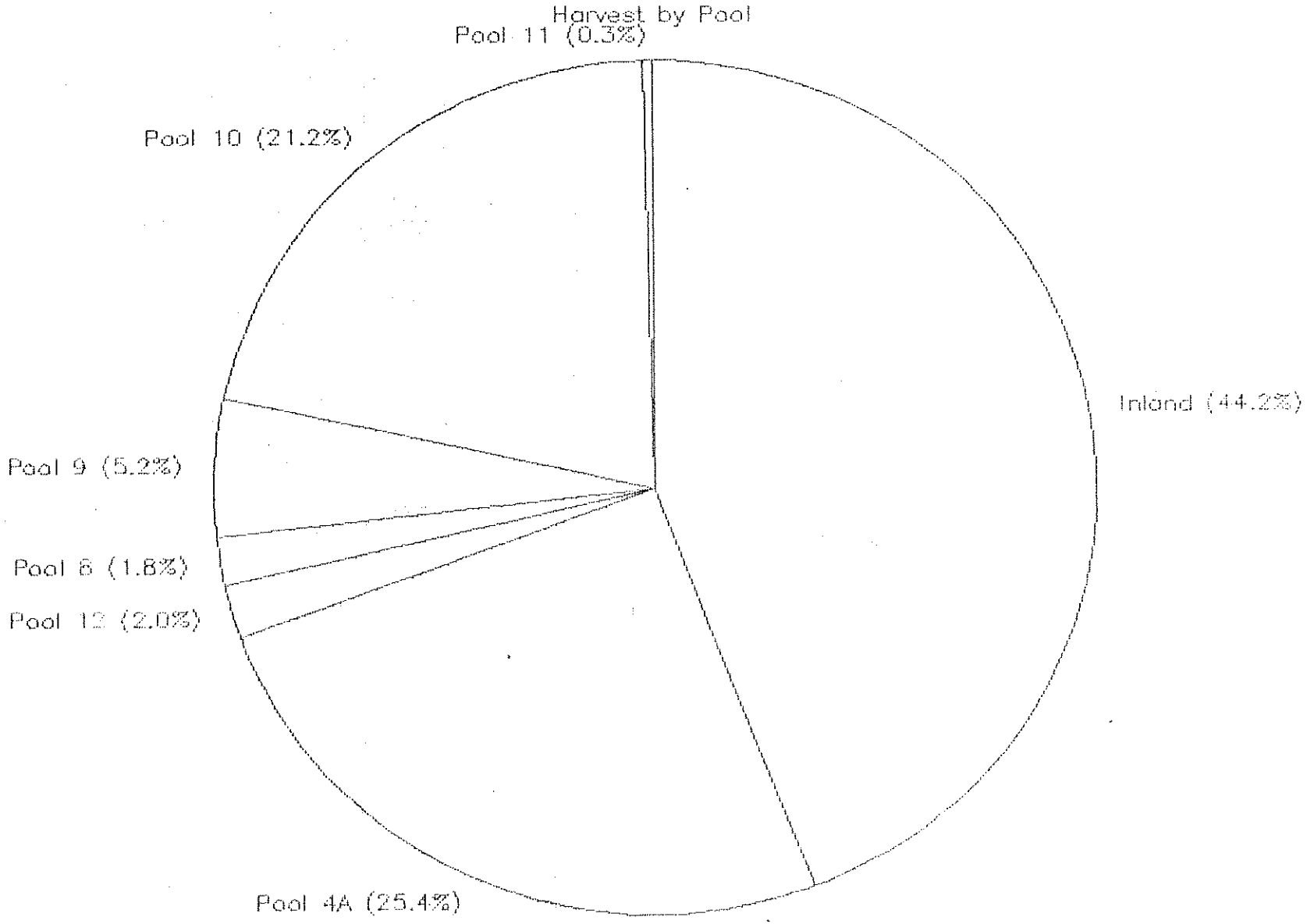

Figure 4. 1988 Inland Harvest

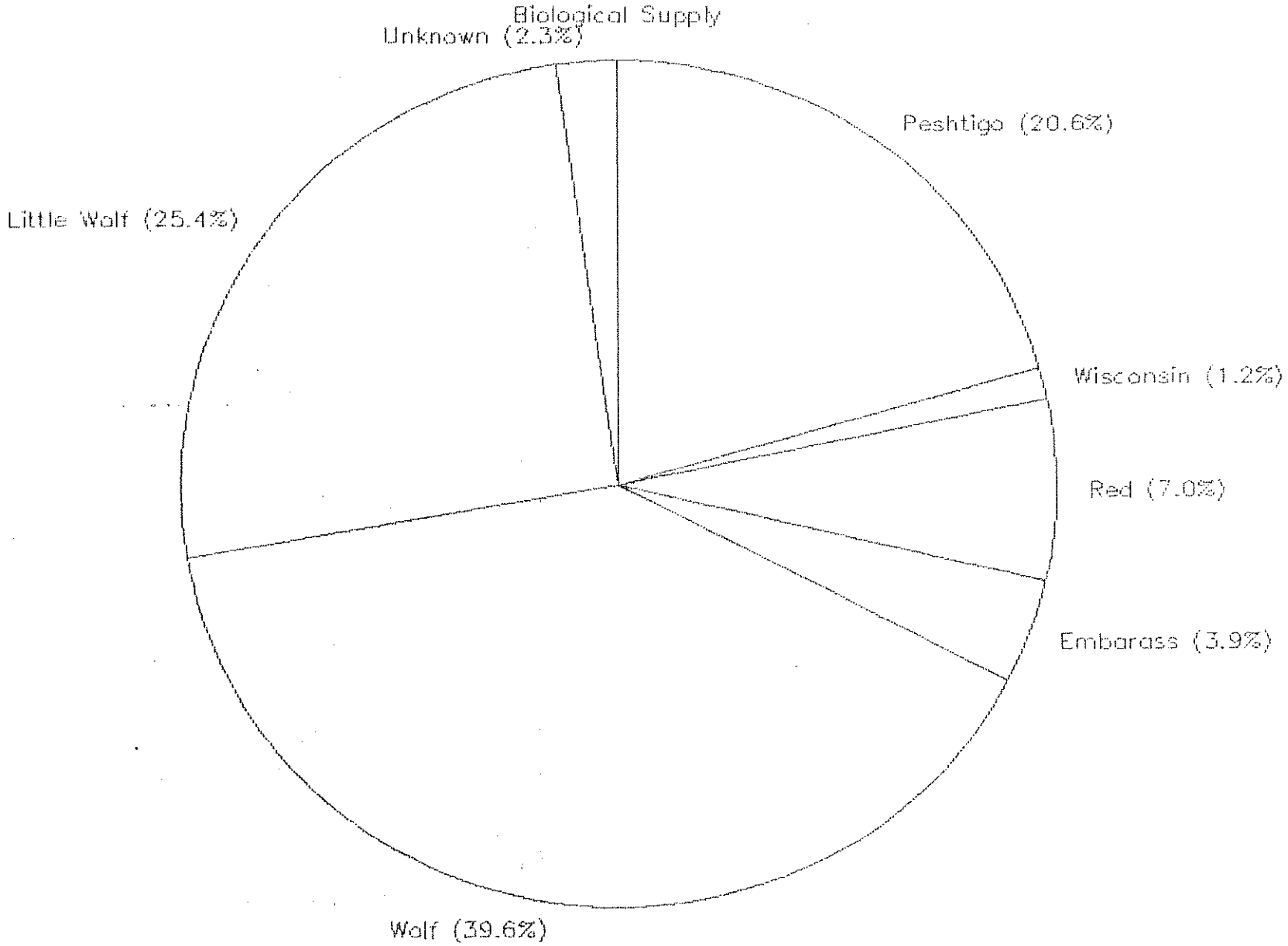

Figure 5. Harvest Comparison

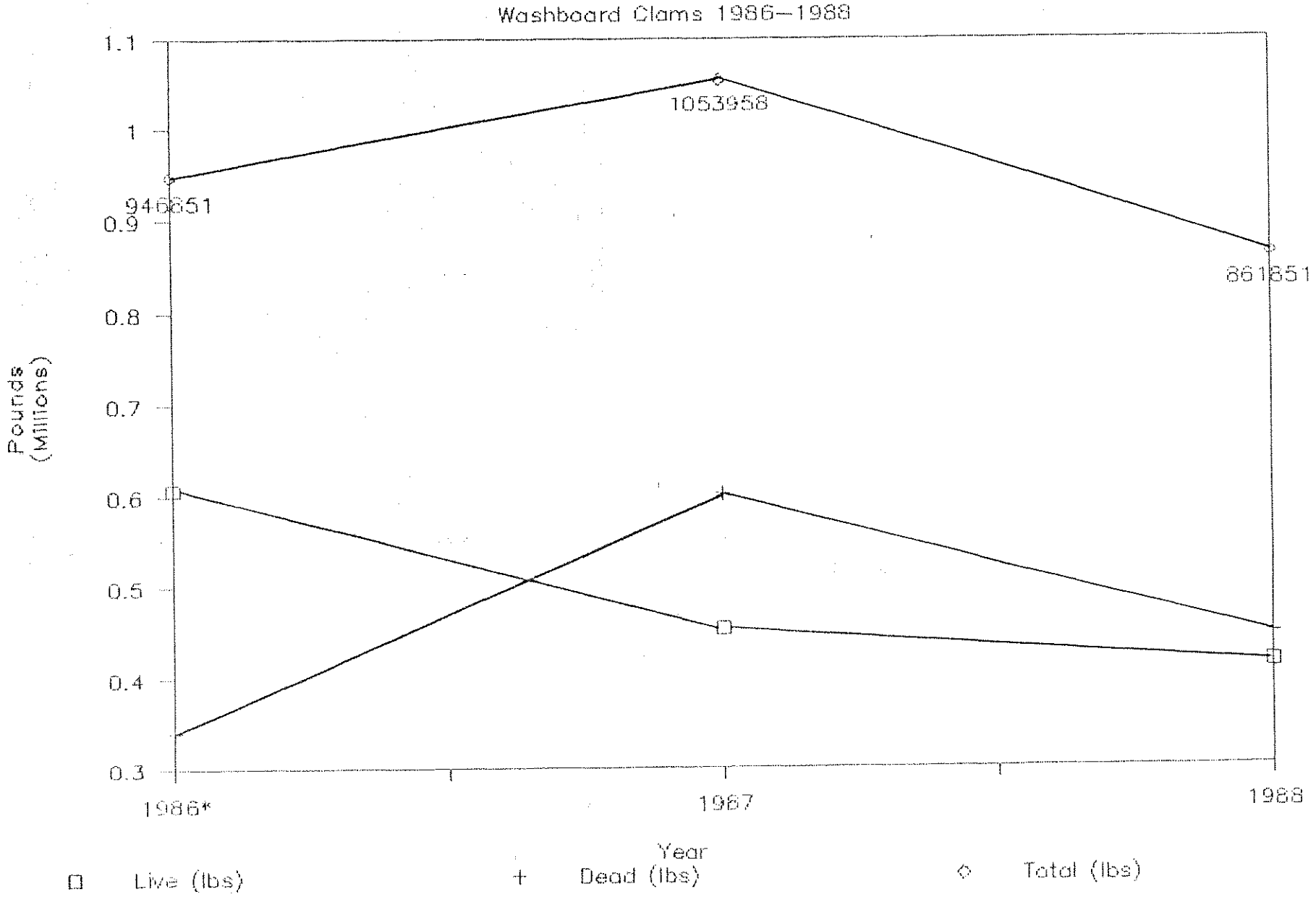

Figure 6. Revised Reporting Form

DIVER'S NAME: THIS REPORT FOR: MONTH YEAR CHECK HERE IF YOU DID NOT DIVE

ADDRESS: WISC. LICENCE NUMBER:

CITY, STATE, ZIP: TELEPHONE NO:

PART A - DAILY ACTIVITIES

DATE	CLEANING LOCATION: MISS. RIVER ONLY: POOL NO.	STATE WATERS 1.WI 2.IA 3.IL	LOCAL SLOUGH NAME	ALL OTHER WATERS: WATER NAME	COUNTY/ STATE	NEAREST TOWN	GEAR: 1.DIVE 2.GRAPPLE 3.HAND	HOURS SHELLED PER DAY	DATE SOLD MONTH/DAY
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									
31									

PART B - HARVEST AND SALES DATA

DATE	LIVE MUSSELS SOLD IN LBS.: WB	3R	PT	PB	MI	OTHER	TOTAL WEIGHT SOLD IN LBS. (LIVE)	TOTAL DOLLARS RCVD - LIVE MUSSELS	DEAD MUSS ELS SOLD IN LBS.: WB	3R	OTHER	TOTAL WEIGHT SOLD IN LBS. (SOLD)	TOTAL DOLLARS RCVD - DEAD MUSSELS	BUYER SOLD TO: NAME OF BUYER	BUYER'S LICENSE NUMBER	STATE BUYER LICEN
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
18																
19																
20																
21																
22																
23																
24																
25																
26																
27																
28																
29																
30																
31																

I HEREBY CERTIFY I THAT I AM THE PERSON COMPLETING THIS REPORT AND THAT ALL THE ABOVE INFORMATION IS TRUE AND CORRECT

NATURE OF SHELLER | DATE SIGNED

Table 1. Generalized 1988 Clamming Regulations

Waters	Season Dates	Species	Minimum Size
Wisc.-Iowa Boundry Waters	4/1 through 9/30 Sunrise-Sunset	Mapleleaf	2-3/4"
		Pigtoe	
		Pimpleback	
		Threeridge	2-5/8"
		Washboard	3-1/2"
Wisc.Inland Waters*	4/1 through 9/30 Sunrise-Sunset	Mapleleaf	2-3/4"
		Pigtoe	
		Pimpleback	
		Threeridge	2-5/8"
		All others except state/federal species listed as threatened or endangered	
Wisc.-Mich. Wisc.-Minn. Boundry Waters	4/1 through 9/30 Sunrise-Sunset	Mapleleaf	2-3/4"
		Pigtoe	
		Pimpleback	
		Threeridge	2-5/8"

* exceptions and closed areas are listed in a seperate, comprhensive rules summary.

Table 2. 1988 Washboard Clams
Live/Dead Harvest by Month

Month	Live (lbs)	%	Dead (lbs)	%	Total	Monthly %
April	15609	54.5%	13045	46.8%	28654	3.3%
May	57542	44.5%	71867	55.5%	129409	15.0%
June	119004	48.9%	124570	51.1%	243574	28.3%
July	105545	47.9%	114669	52.1%	220214	25.6%
August	87996	47.6%	97088	52.5%	185084	21.5%
September	29222	53.2%	25694	46.8%	54916	6.4%
TOTAL	414918	48.1%	446933	51.9%	861851	100.0%

Table 3. 1988 Washboard Clams
Monthly Harvest by Pool

Month	Pool 0	Pool 9	Pool 10	Pool 11	Pool 12
April	5751	7260	15643	0	0
May	31946	13822	83641	0	0
June	93994	28625	60240	56654	4061
July	74245	33942	55306	51537	5184
August	49569	29616	76269	18865	10765
September	10971	13930	27497	663	1855
TOTAL	266476	127195	318596	127719	21865

Table 4. 1988 Three Ridge Clam Harvest
Mississippi R.-Inland Origins

MONTH	POOL 4A	POOL 8	POOL 9	POOL 10	POOL 11	POOL 12	MISS.R. SUBTOTAL	INLAND SUBTOTAL	GRAND TOTAL
APRIL				144			144		144
MAY			249	207			456		456
JUNE	3910	1724	2306	7874			15814	15259	31073
JULY	8900	83	1754	11178			21915	20058	41973
AUGUST	12630		556	1819	350	1997	17352	8987	26339
SEPTEMBER			351				351		351
TOTAL	25440	1807	5216	21222	350	1997	56032	44304	100336

* for supply of cultured pearl industry

Table 5. 1988 Inland Clam Harvest - Biological Supply
Individuals Collected by Month, by River

RIVER	COUNTY	MAY #	JUNE #	JULY #	AUGUST #	TOTAL #
Peshtigo	Marinette	1476	27490	10211	9565	48741
Wisconsin	Oneida		2766			2766
Red	Shawano		4896	6874	4762	16532
Embarrass	Shawano		5683	3650		9333
Wolf	Shawano			32043	61779	93822
L. Wolf	Waupaca		24676	20249	15324	60249
Unknown				3073	2312	5385
TOTAL		1475	65511	76100	93742	236828

Table 6. 1988 Washboard Clams
Monthly Harvest by Source

Month	Source 1	Source 2	Source 3	Source 4	Source 5
April	12300	679	5072	2314	8289
May	56712	13021	19987	17595	22094
June	105531	12922	80436	43534	1151
July	102197	22504	51741	41767	2005
August	73757	9473	40424	59790	1640
September	13295	6701	4270	30111	539
TOTAL	363792	65300	201930	195111	35718

Source 1= complete sheller report and complimentry buyer report
Source 2= buyer report only,Wisconsin resident
Source 3= buyer report only,Iowa resident
Source 4= sheller report only,Wisc. resident,sold in Iowa
Source 5= sheller report only,Iowa resident,sold Wisc. or Ia.

Iowa Sheller Harvest (source 3 + source 5) = 237,648 lbs.

Table 7. Washboard Clam Harvest Comparison 1986-1988

Year	Live	%	Dead	%	Total
1986*	605985	64	340866	36	946851
1987	453202	43	600756	57	1053958
1988	414918	48	446933	52	861851

* calculated values based upon known harvest

Table 8. Three Ridge Clam Harvest Comparison 1986-1988

Year	Pounds
1986	197895
1987	102994
1988	100336*

* 56032 lbs from Mississippi R.