

ENVIRONMENTAL PROTECTION AGENCY

OFFICE OF ENFORCEMENT

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*NATIONAL SHELLFISH REGISTER*  
*OF*  
*CLASSIFIED ESTUARINE WATERS*  
*1974*

NATIONAL ENFORCEMENT INVESTIGATIONS CENTER  
DENVER, COLORADO

DECEMBER 1975





ENVIRONMENTAL PROTECTION AGENCY  
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National Enforcement Investigations Center  
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## DEFINITIONS\*

*Approved* Waters classified by a state shellfish control agency as approved for the direct market harvesting of shellfish. Such waters have been determined to be free of hazardous concentration of pathogenic microorganisms and/or industrial wastes by sanitary survey.

*Conditionally Approved* Conditional areas are areas which meet approved area criteria but are subject to periodic closure due to seasonal population changes, marina operation, or temporary malfunctioning of a sewage treatment plant discharging to the areas. The term *seasonal* is used by some states to denote such areas.

*Restricted* Waters controlled for harvesting by state agencies for specific purposes. Such waters may be harvested for controlled purification or relaying. The bacterial level normally used for this classification does not exceed a median coliform MPN of 700/100 ml.

*Prohibited* Waters closed for the harvesting of shellfish due to hazardous levels of contamination. The terms *closed*, *restricted*, and *condemned* are in use by some states for this classification. A state control agency may, because of a variety of reasons, classify an area *prohibited* even though the waters may be safe for shellfish production; for example, areas in or near shipping lanes and thus subject to fresh fecal contamination, oil, etc.

*Estuarine* Saline and brackish waters from the open ocean to the junction of fresh water, normally at 5 ‰ salinity. The area where the ocean and fresh water mix.

*Internal Waters* Waters defined as wholly belonging to an individual state, but not including the Territorial Sea (0-3 mile limit or other limits as may be considered by some states).

*Non-Shellfish/Non-Productive Areas* This classification includes those areas which are inaccessible, or do not produce shellfish in commercial quantities and areas which contain no shellfish but could support commercial species either by natural or aquacultural means.

\* Definitions from *Sanitation of Shellfish Growing Areas, National Shellfish Sanitation Program, Manual of Operations, Part I, DHEW, PHS No. 33, 1965 (revision)*.

## I. INTRODUCTION

This Register is the third publication of statistical data on shellfish-growing areas in the Continental United States. It summarizes changes in these areas that have occurred from 1971 to 1974. This publication updates the 1971 Register<sup>1</sup> which summarized changes dating back to 1966 when the initial Register, *National Register of Shellfish Production Areas*, was published.<sup>2</sup> Unlike the 1971 and present Register, the 1966 document involved only classified shellfish production areas, excluding the remaining internal estuarine waters of the United States. Since shellfish production areas can fluctuate by addition or subtraction of Non-Productive/Non-Shellfish areas, it was necessary to have a common baseline; therefore, beginning with the 1971 Register all estuarine waters of the conterminous United States were identified. The purposes of the 1974 Register are similar to those of the 1971 Register:

1. To update the 1971 Register data
2. To provide methodology for future studies
3. To provide the states with water quality classifications summaries to assist them in their pollution abatement and conservation programs.

Statistical data in this Register were derived from the replotting of acreages on National Ocean Survey (formerly United States Coast and Geodetic Survey) nautical charts, which reflected changes made in the classified areas since 1971. Chart changes were generally made by

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<sup>1</sup> 1971 *National Shellfish Register of Classified Estuarine Waters*, DHEW Publication No. (FDA) 74-2013.

<sup>2</sup> Leroy S. Houser and Frank J. Silva, *National Register of Shellfish Production Areas*, DHEW, PHS Publication No. 1500, 1966.

Environmental Protection Agency (EPA) personnel in the Region offices using FDA Regional Shellfish Consultant files of states involved in the National Shellfish Sanitation Program.<sup>3</sup> These updated nautical charts were then sent to the EPA National Enforcement Investigations Center in Denver where the plotted areal changes were measured.

Terminology varies from state to state on the various classifications of water quality. This study has used the terms listed in the *National Shellfish Sanitation Program (NSSP) Manual of Operations, Part I*<sup>4</sup> (see Definitions on p. iv). Using the standard terms of the *Manual* permits a comparative overview of the entire United States.

The differences between *estuarine* and *open ocean* or *fresh water* are vague and fluctuate from tide to tide. It is generally accepted that *estuarine* implies an area where fresh and salt water mix. This zone may extend into the ocean for several miles at the mouths of large rivers like the Mississippi. Therefore, in the *Register*, the internal waters of a state were used as the outer boundary for estuarine water classification. It was realized that some discrepancies would occur, such as in Maine and California, where true ocean waters would be included in the study because they are part of the state. Similarly, estuarine areas off the Atlantic and Gulf Coasts, where fresh waters mix into the off-shore zone, were not included in the study. The interior boundary where a river or stream meets with sea water is also an undefined area, changing with the tide, season, and precipitation. Best judgment was used as a cutoff; and where records were readily available, the 5 ‰ salinity level was used for the interior boundary.

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<sup>3</sup> Administred by the Food and Drug Administration (FDA), *Shellfish Sanitation Branch*.

<sup>4</sup> *Sanitation of Shellfish Growing Areas, National Shellfish Sanitation Program, Manual of Operations, Part I, DHEW, PHS Publication No. 33, 1965 (revision)*.

## II. SUMMARY

Since 1971, the total number of classified acres of estuarine water for both Shellfish and Non-Productive/Non-Shellfish areas have remained essentially unchanged; only 700 acres have been added in response to minor enlargements of boundaries of the classified waters in several states. The percentage of total classified waters that are considered shellfish waters has increased from 68.7% in 1971 to 71.3% in 1974. This corresponds to reclassification of nearly 700,000 acres from Non-Productive/Non-Shellfish to Productive waters in Louisiana. For classified Shellfish waters, the period 1971-1974 experienced an increase in Approved waters of over 123,000 acres, and the number of Prohibited acres increased nearly 500,000 acres. The Conditional category for Shellfish waters was depleted by over 74,000 acres during the four-year period; almost all of this loss occurred in Maryland. Of the six states not employing the concept of Conditionally Approved waters in 1971, only California and Oregon have subsequently adopted this category.



### III. DISCUSSION

For the first time since the concept of a National Register of Estuarine Waters, this study allows statistical comparisons to be made resulting from measurements of classified estuarine areas. The 1974 statistics presented in the accompanying tables are current, as practicality permitted, as of December 31, 1974. Designation of water classifications and their boundaries were determined, as they were previously, by the coastal states' shellfish control agencies. Total acreages for some states differ when comparing the 1971 and 1974 Register data. Differences reflected in the 1974 Register resulted from remeasuring classified waters and adding new areas since 1971.

The criteria used to classify these estuarine areas are based mainly on the bacterial levels of the waters overlying the shellfish beds. However, in addition to bacteriological standards, the New England and North Pacific states have routinely monitored and closed shellfish growing waters periodically due to the presence of paralytic shellfish poison (PSP) related to a species of dinoflagellate known as *Gonyaulax*. In the eastern Gulf region, closures have also occurred periodically as a result of Red Tides caused by a bloom of *Gymnodinium breve*.

Although biological causes have been the main reason for restricting the harvesting of shellfish, an oil spill in Buzzards Bay, Massachusetts in 1973 caused a prolonged closure of shellfish beds along the southwest shore of Cape Cod.

At this time no known closures have resulted from the presence of excessive quantities of heavy metals or radionuclides.

It is anticipated that during the next several years there will be some minor changes in classified acreages since some states have adopted the fecal coliform criteria for approved shellfish growing areas.

#### IV. STATE REVIEWS

With few exceptions, the various classifications of the National Shellfish Sanitation Program assigned to the estuarine areas within coastal states have not changed substantially from 1971-1974. However, even minor changes in classification are worth noting. These changes are discussed in the following coastal state reviews presented in clockwise order (discussions are based mainly on data presented in Table 3).

*Maine* This state ranks eighth in total acreage with 100% of its estuarine waters classified. The percentage of state classified waters designated as Prohibited increased from 8.5% in 1971 to 9.7% in 1974, which continues the increase noted from 1966-1971 (5.9 to 8.5%). Approved waters, constituting 90.2% of classified waters in 1971, decreased by 1.2% during the following four-year period to 89.0%.

*New Hampshire*

The state does not commercially harvest shellfish, but it actively participates in other facets of the NSSP. The state does not classify the estuarine waters; all areas are open for recreational harvesting. Only state residents can obtain permission to harvest for personal consumption. The state ranks 21st in estuarine acreage.

*Massachusetts*

This state's estuarine waters are 100% classified. Of these, 43% contain harvestable shellfish [Table 2]. During the 1971-1974 period, the Prohibited areas of the state decreased from 4.1 to 3.6% of the total classified

area. The amount of Restricted area acreage is confined to the intertidal zone where shellfish are harvested for controlled purification at a State-operated plant. Only a 0.4% increase in percentage of Approved area acreage occurred from 1971-1974.

#### *Rhode Island*

The estuarine waters of this state are 100% classified. Only small changes occurred in the designated categories for these waters since 1971: Open areas decreased from 76.9 to 75.6%; Prohibited areas increased from 14.6 to 15.9%; and Conditional areas decreased from 8.6 to 8.5% of the total classified waters.

#### *Connecticut*

This state has 100% of its estuarine waters classified, 81.4% of which are shellfish harvesting waters [Table 2]. A decrease of 5.8% in the percentage of Approved area occurred during the four-year period, while a 5.7% increase was noted in the percentage of closed areas.

*New York* The changes in areas of New York's classified waters were so slight that they are not observed in the percentage changes of Table 3.

#### *New Jersey*

The state continued to lose Approved acres during the last four years. The decrease in percentage of Approved acreage of 2.8% was, however, less than the 9.7% decrease observed from 1966-1971. These acres were reassigned to the remaining three shellfish growing water categories: Prohibited waters increased by 1.2%; Conditional waters

increased by 0.5%; and Restricted waters increased by 1.0% of the total classified waters in New Jersey during the 1971-1974 period.

*Pennsylvania*

Similar to New Hampshire, Pennsylvania does not commercially harvest shellfish, but it does participate in the other aspects of the NSSP. The state has less than 6,000 acres of estuarine water, which is in the lower Delaware River. All the waters are considered Prohibited and in the Non-Shellfish/Non-Productive category. The state ranks last in estuarine acreage.

*Delaware*

No change in acreages assigned to the various categories occurred during the four-year period.

*Maryland*

Estuarine or tidal waters within Maryland not containing commercial shellfish or with low salinities that would not support the setting or growth of shellfish are designated as unclassified. The unclassified figure of 203,641 acres appears in the Other column of the Non-Productive/Non-Shellfish category in Table 1. Maryland also contains two areas closed for conservation. One area (727 acres) is in the lower Corsica River and the other (2,005 acres) is in the lower Chester River. During the 1971-1974 period, the Approved acreage decreased by 1.5%.

*Virginia*

During the last four years there has been an approximate 2.4% decrease in the percentage of Approved shellfish growing waters in Virginia. This reflects a correspondingly equal amount in the percentage increase in the Closed Shellfish waters. Virginia's estuarine waters are presently considered to be 100% classified.

*North Carolina*

From 1971 to 1974, the percentage of Open waters decreased 4.0%. The area was assigned to the Prohibited category. Most of the downgrading occurred in the Neuse River and Pamlico River estuaries; a combined number of over 80,000 acres were reassigned to the Prohibited category.

*South Carolina*

Only slight changes in assigned acreages were made during the 1971-1974 period in South Carolina. Percentage of Approved waters increased by 0.3%; percentage of Conditional waters increased by 0.4%; and percentage of Prohibited waters declined by 0.7%.

*Georgia*

During the last four years, the largest percentage of changes in classified waters in the U.S. occurred in Georgia. A total of 74,034 acres were removed from the Approved category, representing a decline of 36.3%, and placed in the Prohibited category, producing a comparable percentage increase in this classified area.

*Florida*

Changes in assigned acreages in Florida waters were so slight that they are not reflected in the percentage changes of Table 3. Florida remains the state with the largest number of Prohibited acres of water (more than one million), although California and Georgia rank higher than Florida on the basis of percentage of total classified waters.

*Alabama* Areas assigned to the various NSSP categories in Alabama changed little from 1971-1974. The largest Conditionally Approved area in the U.S. is here -- over 187,000 acres -- involving a large percentage of Mobile Bay. Offshore in Mississippi Sound the state has not made surveys and, therefore, it classifies the area Prohibited, although most of these waters are probably of excellent quality.

*Mississippi*

Approved acreage in this state has not changed during the last four years. Prohibited acreage has decreased from 8.3% to 7.1% of the total classified water. Mississippi has taken the option, similar to Alabama, to show the Mississippi Sound area as Prohibited because they have not surveyed it. As in Alabama's review, most of these waters are probably of excellent quality.

*Louisiana*

Since 1971 the state increased its Approved acreage from 45.0 to 56.7% and its Prohibited acreage from 5.6 to 13.2% of the total classified waters. Most of these increases were attributed to the reclassification of Approved, Non-Shellfish waters amounting to nearly 700,000 acres.

*Texas*

From 1971-1974, Approved areas increased from 50.3% to 50.4%; Conditional areas comprising 0.7% of the classified waters in 1971 were completely eliminated by 1974; Closed areas increased from 16.9% to 17.5% during the same four-year period.

*California*

Like the other two Pacific Coast states, only a small percentage of estuarine waters is classified as Approved shellfish waters. Since 1971 this percentage has decreased from 2.8 to 2.1%; the change occurred in Humboldt Bay where 3,609 Approved shellfish acres were changed to Conditionally Approved. In addition, the small decrease in percentage of Prohibited shellfish waters (0.3%) for this state occurred in Humboldt Bay.

*Oregon*

This state had the third smallest estuarine acreage in the NSS with most of its area classified as Non-Productive. Approved waters of the state decreased from 12,323 acres (14.7%) in 1971 to 7,075 acres (8.5%) in 1974. The classifying of Yaquina and Tillamook Bays as Conditionally Approved added 7,693 acres to this category. These acres were derived from formerly Approved and Closed shellfish growing waters.

*Washington*

During 1971-1974, Approved acreage decreased from 8.7 to 7.6%, mainly due to a reassignment of 20,620 acres to the Conditionally Approved category in Grays Harbor. Prohibited acreage increased slightly and therefore is not reflected in the percentages contained in Table 3.

*The Nation*

The Nation increased Approved acreage from 1971-1974 by 123,121 acres. Most of this increase was from the reclassification of Non-Productive/Non-Shellfish waters. Since 1971, California and Oregon have adopted the



Conditional concept for classifying shellfish waters, while North Carolina, Mississippi, Georgia, and Louisiana, continue to exclude this category.

Prohibited areas have increased during the last four years from 16.1% of shellfish waters to 18.5%. This represents a more gradual annual percentage increase, 0.6% per year, than was observed for the previous five-year period, 1.3% per year.

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## V. TABLES

*Table 1* lists the number of acres assigned to all the classified waters of each state and region according to the system designed for the National Shellfish Sanitation Program. Comparison of 1971 and 1974 Register data reveals differences in the total acreages for about half the states listed (10 of 22). These differences resulted from the remeasurement of classified waters and the addition of newly classified areas since 1971. The national total acreage of all classified waters derived from remeasurement of 1971 data was 3,816 acres greater than the previous measurement. Since 1971, 700 acres, excluded in the former publication, have been added to the nation's waters. There have been no changes in the ranking of states by percentage of the nation's available Shellfish waters since 1971.

*Tables 2 and 3* are concerned with waters classified for Shellfish harvesting. Table 2 lists the number of acres assigned to each Shellfish category for both the 1971 remeasured areas and the 1974 measured areas by state and region. Table 3 lists the corresponding percentages these areas represent of all classified waters for each state and region. Major changes that have occurred in the interim four years are:

1. The addition of nearly 700,000 acres of Shellfish waters from Non-Productive/Non-Shellfish classified waters, which occurred in Louisiana. The addition accounted for Louisiana's having the largest increases in both Approved and Prohibited Shellfish acreages.
2. The deletion of 74,034 acres of Approved Shellfish waters by Georgia, which was the largest single change noted in the

percentage of state classified waters. The addition of these acres to the Prohibited Shellfish category produced the largest percentage increase in state Prohibited Shellfish waters.

3. The deletion of 84,885 acres of Approved Shellfish waters by the state of North Carolina, the largest decrease in Approved acreage observed.
4. The deletion of 101,499 acres from the Conditionally Approved category by the state of Maryland. This represents the largest actual and percentage change in this classified area.

*Table 4* presents the information of *Table 1* on a coastal basis. The dividing line for the Atlantic and Gulf coasts was drawn at the southern tip of Florida.

*Tables 5 and 6* show the data of *Table 1* for each state and region by national percentage [*Table 5*] and regional percentage [*Table 6*].

*Table 7* indicates the changes made in the classified Shellfish areas of each region based on percentage of the national total, between 1971 and 1974. As observed in the totals column, the U. S. has increased its productive Shellfish area by 2.6% since 1971.

*Table 8* lists the charts used in delineating the classified areas of each state. The first chart number listed is that assigned by the National Ocean Survey, while the chart number in parentheses is the corresponding number assigned by the former United States Coast and Geodetic Survey.

Table 1  
NATIONAL SHELLFISH REGISTER  
CLASSIFICATION OF U. S. WATERS IN ACRES  
1974

REGION	STATE	WATERS				NON-PRODUCTIVE/NON-SHELLFISH			TOTALS	RANK
		OPEN	CONDITIONAL	RESTRICTED	CLOSED	OPEN	CLOSED	OTHER		
I	ME	930,325	6,531	6,728	101,281				1,044,865	8
	NH					10,603			10,603	21
	MA	310,881	335	4,091	29,060	437,184	18,874		800,425	10
	RI	96,019	10,836		20,134				126,989	19
	CT	248,751	2,227		68,956	71,265	1,961		393,160	13
	TOTAL	1,585,976	19,929	10,819	219,431	519,052	20,835		2,376,042	
II	NY	477,241	266		151,096	369,205	22,838		1,020,646	9
	NJ	244,695	7,544	23,370	119,581				395,190	12
	TOTAL	721,936	7,810	23,370	270,677	369,205	22,838		1,415,836	
III	PA						5,796		5,796	22
	DE	205,153	153		28,251		40,540		274,097	17
	MD	1,213,576			111,319		2,732*	203,641**	1,531,268	6
	VA	1,315,209	724		120,271	821	66,838		1,503,863	7
	TOTAL	2,733,938	877		259,841	821	115,906	203,641	3,315,024	
IV	NC	1,379,563			604,038		134,110		2,117,711	3
	SC	199,323	1,344		74,917				275,584	16
	GA	49,494			154,473				203,967	18
	FL	663,126	84,099		1,024,966	447,311	47,597		2,267,099	2
	AL	81,937	187,513		85,589	2,468	17,452		374,959	15
	MS	76,232			27,678	1,469	267,030	17,845	390,254	14
	TOTAL	2,449,675	272,956		1,971,661	451,248	466,189	17,845***	5,629,574	
VI	LA	2,000,117			464,161	682,129	380,283		3,526,690	1
	TX	822,447			285,168	518,986	4,136		1,630,737	5
	TOTAL	2,822,564			749,329	1,201,115	384,419		5,157,427	
IX& X	CA	11,178	4,718		263,045	34,132	59,592	153,068****	525,733	11
	OR	7,075	7,693		13,305	50,376	5,232		83,681	20
	WA	155,655	21,313		42,382	1,809,267	7,502		2,036,119	4
	TOTAL	173,908	33,724		318,732	1,893,775	72,326	153,068	2,645,533	
GRAND TOTALS		10,487,997	335,296	34,189	3,789,671	4,435,216	1,082,513	374,554	20,539,436	

\* 2,732 acres Conservation Area, Closed Non-Shellfish

\*\* 203,641 acres Unclassified, Non-Shellfish

\*\*\* 17,845 acres Conditional, Non-Shellfish

\*\*\*\* 19,381 acres Conditional, Non-Shellfish; 133,687 acres Ocean

Table 2  
NATIONAL SHELLFISH REGISTER  
CHANGES IN ACREAGE OF SHELLFISH WATERS  
1971-1974

STATE	OPEN		CONDITIONAL		CLOSED		RESTRICTED		TOTAL		% SURVEYED FOR SHELLFISH	
	1971	1974	1971	1974	1971	1974	1971	1974	1971	1974	1971	1974
ME	942,501	930,325	6,723	6,531	88,913	101,281	6,278	6,728	1,044,865	1,044,865	100.0	100.0
MA	307,234	310,881	220	335	32,658	29,060	4,255	4,091	344,367	344,367	43.0	43.0
RI	97,551	96,019	10,846	10,836	18,464	20,134			126,861	126,989	100.0	100.0
CT	271,509	248,751	1,796	2,227	46,557	68,956			319,862	319,934	81.4	81.4
TOTAL	1,618,795	1,585,976	19,585	19,929	186,592	219,431	10,983	10,819	1,835,955	1,836,155	77.3	77.3
NY	477,279	477,241	266	266	151,058	151,096			628,603	628,603	61.6	61.6
NJ	255,611	244,695	5,354	7,544	114,814	119,581	19,370	23,370	395,149	395,190	100.0	100.0
TOTAL	732,890	721,936	5,620	7,810	265,872	270,677	19,370	23,370	1,023,752	1,023,793	72.3	72.3
DE	205,153	205,153	153	153	28,251	28,251			233,557	233,557	85.2	85.2
MD	1,236,735	1,213,576	101,499		119,212	111,319			1,457,446	1,324,895	95.2	86.5
VA	1,352,505	1,315,209	724	724	82,975	120,271			1,436,204	1,436,204	95.5	95.5
TOTAL	2,794,393	2,733,938	102,376	877	230,438	259,841			3,127,207	2,994,656	94.3	90.3
NC	1,464,448	1,379,563			519,153	604,038			1,983,601	1,983,601	93.7	93.7
SC	198,237	199,323	347	1,344	76,735	74,917			275,319	275,584	100.0	100.0
GE	123,528	49,494			80,439	154,473			203,967	203,967	100.0	100.0
FL	663,834	663,126	83,334	84,099	1,025,023	1,024,966			1,772,191	1,772,191	78.2	78.2
AL	81,937	81,937	186,903	187,513	86,199	85,589			355,039	355,039	94.7	94.7
MS	76,232	76,232			32,471	27,678			108,703	103,910	27.9	26.6
TOTAL	2,608,216	2,449,675	270,584	272,956	1,820,020	1,971,661			4,698,820	4,694,292	83.5	83.4
LA	1,586,166	2,000,117			198,812	464,161			1,784,978	2,464,278	50.6	69.9
TX	820,043	822,447	11,251		275,653	285,168			1,106,947	1,107,615	67.9	67.9
TOTAL	2,406,209	2,822,564	11,251		474,465	749,329			2,891,925	3,571,893	56.1	69.3
CA	14,787	11,178		4,718	264,154	263,045			278,941	278,941	53.1	53.1
OR	12,323	7,075		7,693	15,766	13,305			28,089	28,073	33.6	33.5
WA	177,263	155,655	224	21,313	41,863	42,382			219,350	219,350	10.8	10.8
TOTAL	204,373	173,908	224	33,724	321,783	318,732			526,380	526,364	19.9	19.9
GRAND TOTAL	10,364,876	10,487,997	409,640	335,296	3,299,170	3,789,671	30,353	34,189	14,104,039	14,647,153	68.7	71.3

Table 3  
NATIONAL SHELLFISH REGISTER  
CHANGE IN PERCENT OF SHELLFISH WATERS  
1971-1974

AREA	OPEN		CONDITIONAL		RESTRICTED		CLOSED	
	1971	1974	1971	1974	1971	1974	1971	1974
ME	90.2	89.0	0.6	0.6	0.7	0.7	8.5	9.7
MA	38.4	38.8	0.1	0.1	0.5	0.5	4.1	3.6
RI	76.9	75.6	8.6	8.5			14.6	15.9
CT	69.1	63.3	0.5	0.6			11.8	17.5
Region I	68.1	66.7	0.8	0.8	0.5	0.5	7.9	9.2
NY	46.8	46.8	T *	T			14.8	14.8
NJ	64.7	61.9	1.4	1.9	4.9	5.9	29.1	30.3
Region II	51.8	51.0	0.4	0.6	1.4	1.7	18.8	19.1
DE	74.8	74.8	0.1	0.1			10.3	10.3
MD	80.8	79.3	6.6	0.0			7.8	7.3
VA	89.9	87.5	T	T			5.5	8.0
Region III	84.3	82.5	3.1	T			7.0	7.8
NC	69.1	65.1					24.5	28.5
SC	72.0	72.3	0.1	0.5			27.9	27.2
GE	60.6	24.3					39.4	75.7
FL	29.3	29.2	3.7	3.7			45.2	45.2
AL	21.9	21.9	49.8	50.0			23.0	22.8
MS	19.5	19.5					8.3	7.1
Region IV	46.3	43.5	4.8	4.8			32.3	35.0
LA	45.0	56.7					5.6	13.2
TX	50.3	50.4	0.7	0.0			16.9	17.5
Region VI	46.7	54.7	0.2	0.0			9.2	14.5
CA	2.8	2.1	0.0	0.9			50.3	50.0
OR	14.7	8.5	0.0	9.2			18.8	15.9
WA	8.7	7.6	T	1.0			2.1	2.1
Region IX & X	7.7	6.6	T	1.3			12.2	12.0
TOTAL UNITED STATES	50.5	51.1	2.0	1.6	0.1	0.2	16.1	18.5

\* Trace

Table 4  
NATIONAL SHELLFISH REGISTER  
ACREAGE AND PERCENT OF U. S. COASTAL WATERS  
1974

AREA	WATERS				NON-SHELLFISH/NON-PRODUCTIVE			TOTALS
	OPEN	CONDITIONAL	RESTRICTED	CLOSED	OPEN	CLOSED	OTHER	
<u>ATLANTIC COAST</u>								
ACREAGE	6,724,516	40,874	34,189	1,998,505	1,011,549	306,133	203,641*	10,319,407
% of Classification	64.1	12.2	100.0	52.7	22.8	28.3	54.4	
% of Coastal Water	65.2	0.4	0.3	19.4	9.8	3.0	2.0	
% of Nation	32.7	0.2	0.2	9.7	4.9	1.5	1.0	50.2
<u>PACIFIC COAST</u>								
ACREAGE	173,908	33,724		318,732	1,893,775	72,326	153,068**	2,645,553
% of Classification	1.7	10.1		8.4	42.7	6.7	40.9	
% of Coastal Water	6.6	1.3		12.0	71.6	2.7	5.8	
% of Nation	0.8	0.2		1.6	9.2	0.4	0.7	12.9
<u>GULF COAST</u>								
ACREAGE	3,589,573	260,698		1,472,434	1,529,892	704,054	17,845***	7,574,496
% of Classification	34.2	77.8		38.9	34.5	65.0	4.8	
% of Coast Water	47.4	3.4		19.4	20.2	9.3	0.2	
% of Nation	17.5	1.3		7.2	7.4	3.4	0.1	36.9
UNITED STATES TOTAL	10,487,997	335,296	34,189	3,789,671	4,435,216	1,082,513	374,554	20,539,436

\* 203,641 acres Unclassified

\*\* 19,381 acres Conditional, 133,687 acres Ocean

\*\*\* 17,845 acres Conditional



Table 5  
NATIONAL SHELLFISH REGISTER  
PERCENT OF NATIONAL ACREAGE BY STATE AND REGION  
1974

AREA	WATERS				NON-SHELLFISH/NON-PRODUCTIVE			TOTALS
	OPEN	CONDITIONAL	RESTRICTED	CLOSED	OPEN	CLOSED	OTHER	
ME	4.5	T *	T	0.5				5.1
NH					0.1			0.1
MA	1.5	T	T	0.1	2.1	0.1		3.9
RI	0.5	T		0.1				0.6
CT	1.2	T		0.4	0.3	T		1.9
Region I	7.7	0.1	T	1.1	2.5	0.1		11.6
NY	2.3	T		0.7	1.8	0.1		5.0
NJ	1.2	T	0.1	0.6				1.9
Region II	3.5	T	0.1	1.3	1.8	0.1		6.9
PA						T		T
DE	1.0	T		0.1		0.2		1.3
MD	5.9			0.5		T	1.0**	2.5
VA	6.4	T		0.6	T	0.3		7.3
Region III	13.3	T		1.3	T	0.6	1.0	16.2
NC	6.7			2.9		0.7		10.3
SC	1.0	T		0.4				1.4
GE	0.2			0.8				1.0
FL	3.2	0.4		5.0	2.2	0.2		11.0
AL	0.4	0.9		0.4	T	0.1		1.8
MS	0.4			0.1	T	1.3	0.1***	1.9
Region IV	11.9	1.3		9.6	2.2	2.3	0.1	27.4
LA	9.7			2.3	3.3	1.9		17.2
TX	4.0			1.4	2.5	T		7.9
Region VI	13.7			3.7	5.8	1.9		26.1
CA	T	T		1.3	0.2	0.3	0.7****	2.6
OR	T	T		0.1	0.2	T		0.4
WA	0.8	0.1		0.2	8.8	T		9.9
Regions IX & X	0.8	0.2		1.6	9.2	0.4	0.7	12.9

\* Trace

\*\* Includes Unclassified area

\*\*\* Includes Conditional area

\*\*\*\* Includes Conditional and Ocean areas

Table 6  
NATIONAL SHELLFISH REGISTER  
PERCENT OF ACREAGE BY STATE AND REGION  
1974

AREA	WATERS				NON-SHELLFISH/NON-PRODUCTIVE			TOTALS
	OPEN	CONDITIONAL	RESTRICTED	CLOSED	OPEN	CLOSED	OTHER	
ME	89.0	0.6	0.7	9.7				100
NH					100.0			100
MA	38.8	0.1	0.5	3.6	54.6	2.4		100
RI	75.6	8.5		15.9				100
CT	63.3	0.6		17.5	18.1	0.5		100
Region I	66.7	0.8	0.5	9.2	21.9	0.9		100
NY	46.8	T*		14.8	36.2	2.2		100
NJ	61.9	1.9	5.9	30.3				100
Region II	51.0	0.6	1.6	19.1	26.1	1.6		100
PA						100.0		100
DE	74.8	0.1		10.3		14.8		100
MD	79.3			7.3		0.2	13.3	100
VA	87.5	T		8.0	0.1	4.4		100
Region III	82.5	T		7.8	T	3.5	6.1	100
NC	65.2			28.5		6.3		100
SC	72.3	0.5		27.2				100
GE	24.3			75.7				100
FL	29.3	3.7		45.2	19.7	2.1		100
AL	21.9	50.0		22.8	0.7	4.6		100
MS	19.5			7.1	0.4	68.4	4.6	100
Region IV	43.5	4.9		35.0	8.0	8.3	0.3	100
LA	56.7			13.2	19.3	10.8		100
TX	50.4			17.5	31.8	0.3		100
Region VI	54.7			14.5	23.3	23.3		100
CA	2.1	0.9		50.0	6.5	11.4	29.1	100
OR	8.5	9.2		15.9	60.2	6.2		100
WA	7.6	1.0		2.1	88.9	0.4		100
Regions IX & X	6.6	1.3		12.0	71.6	2.7	5.8	100
UNITED STATES TOTAL	51.1	1.6	0.2	18.5	21.6	5.2	1.8	100

\* Trace

Table 7  
 NATIONAL SHELLFISH REGISTER  
 SHELLFISH WATERS  
 PERCENT OF NATIONAL TOTAL BY REGIONS  
 1971-1974

REGION	YEAR	OPEN	CONDITIONAL	RESTRICTED	CLOSED	TOTAL
I	1971	7.9	0.1	T*	0.9	8.9
	1974	7.7	0.1	T	1.1	9.0
II	1971	3.6	T	0.1	1.3	5.0
	1974	3.5	T	0.1	1.3	5.0
III	1971	13.6	0.5		1.1	15.2
	1974	13.3	T		1.3	14.6
IV	1971	12.7	1.3		8.9	22.9
	1974	11.9	1.3		9.6	22.8
VI	1971	11.7	0.1		2.3	14.1
	1974	13.7	0.0		3.7	17.4
IX & X	1971	1.0	T		1.6	2.6
	1974	0.8	0.2		1.6	2.6
UNITED STATES	1971	50.5	2.0	0.1	16.1	68.7
	1974	51.1	1.6	0.2	18.5	71.4

\* Trace

Table 8  
NATIONAL SHELLFISH REGISTER  
NATIONAL OCEAN SURVEY (U.S.C. & G.S.) CHART NUMBER AND DATE

CHART	DATE	CHART	DATE	CHART	DATE	CHART	DATE	CHART	DATE
REGION I		13228(237)	Jan 73	12371(218)	Sep 72	REGION III		12285(101SC)	Dec 73
MAINE		13221(353)	May 74	12370(219)	Feb 73	PENNSYLVANIA		12237(605SC)	Nov 73
13328(801)	Apr 74	13246(1208)	Dec 73	12363(1213)	Jan 74	12312(295)	Jul 74	12245(400)	Aug 74
13327(303)	Mar 73	13249(580)	Mar 74	12369(220)	Nov 73			12253(452)	Jun 74
13326(304)	Oct 70	13248(270)	Oct 71	12368(221)	Dec 72	DELAWARE		12247(492)	Apr 73
13324(305)	Nov 71	13250(581)	Sep 71	12367(222)	Nov 72	12304(1218)	Nov 73	12238(494)	Oct 70
13318(306)	Sep 74	13251(339)	Oct 73			12214(1219)	May 74	12243(495/496)	Jul 73
13316(307)	Aug 73	13239(259)	Mar 73	REGION II		12311(294)	Nov 73	12248(529)	Feb 74
13313(308)	Aug 73	13230(249)	Nov 74	NEW YORK		12312(295)	Jul 74	12251(530/531)	Mar 74
13305(310)	Feb 74	13234(260)	Nov 73	13205(1211)	Dec 73	12216(411)	Oct 74	12235(534)	Nov 73
13309(311)	Feb 74	13235(348)	Mar 73	12354(1212)	Mar 74	12277(570)	Jul 74	12233(557)	Nov 73
13301(313)	May 71	13237(1209)	Dec 73	12358(363)	Aug 74			12211(1220)	Jun 74
13293(314)	Apr 74	13243(258)	May 72	12353(1214)	Aug 74	MARYLAND		12210(1221)	Aug 74
13290(315)	Mar 74	13241(265)	Sep 73	12352(120SC)	Dec 73	12211(1220)	Jun 74	12221(1222)	Jul 74
13286(1205)	Jun 73	13233(264)	Oct 72	12362(361)	Jul 73	12230(1224)	Aug 74	12225(1223)	Jun 74
13287(231)	Aug 72			12326(1215)	Oct 74	12261(554)	Mar 74	12230(1224)	Aug 74
13283(211)	Dec 73	RHODE ISLAND		12365(224)	Oct 74	12231(555)	Mar 74	12207(1227)	Mar 74
13285(212)	Aug 73	13221(353)	May 74	12363(1213)	Jan 74	12228(568)	Aug 74	12205(129SC)	Feb 74
		13219(268)	Feb 72	12343(282)	Nov 71	12233(557)	Nov 73	12206(829SC)	Feb 74
NEW HAMPSHIRE		13205(1211)	Dec 73	12327(369)	Jul 74	12264(553)	Mar 74		
13283(211)	Dec 73	13214(358)	Oct 74			12285(101SC)	Dec 73	REGION IV	
13285(212)	Aug 73	13217(269)	Jun 73	NEW JERSEY		12266(551)	Nov 73	NORTH CAROLINA	
13278(1206)	Nov 74	13218(1210)	Jul 74	12343(282)	Nov 71	12271(550SC)	Dec 73	12207(1227)	Mar 74
				12341(746)	Oct 73	12268(552)	Mar 71	12204(1229)	Mar 74
MASSACHUSETTS		CONNECTICUT		12327(369)	Jul 74	12273(1226)	Aug 74	11548(1231)	Mar 74
13267(1207)	Nov 73	13214(358)	Oct 74	12332(375)	Nov 72	12272(548)	Dec 73	11555(1232)	Aug 74
13279(243)	Sep 74	13212(359)	Aug 72	12324(824SC)	Mar 74	12278(549)	May 74	11544(1233)	Mar 74
13282(213)	Nov 73	12354(1212)	Mar 74	12316(826SC)	Jan 74	12282(566)	Mar 74	11543(1234)	Mar 74
13275(240)	May 74	13211(214)	Nov 71	12304(1218)	Nov 73	12274(572)	Dec 73	11539(1235)	Mar 73
13270(246)	Feb 74	12375(215)	Jun 73	12311(294)	Nov 73	12277(570)	Jul 74	11536(1236)	Apr 72
13269(244)	Jan 72	12374(216)	May 71	12312(295)	Jul 74			11535(1237)	Feb 72
13253(245)	Dec 72	12373(217)	Sep 74			VIRGINIA		12205(129SC)	Feb 74

Table 8 (continued)

CHART	DATE	CHART	DATE	CHART	DATE	CHART	DATE	CHART	DATE
NORTH CAROLINA (cont.)		FLORIDA (WEST)		11345 (1051)	Apr 74	18647 (5599)	Apr 73	18400 (6300)	Jun 74
11545 (420)	Feb 74	11433 (598SC)	Sep 73	11371 (1268)	Mar 74	18649 (5532)	Jan 74	18465 (6382)	Aug 74
11554 (537)	Sep 74	11432 (599SC)	Sep 73	11369 (1269)	Dec 73	18645 (5072)	Mar 74	18441 (6450)	Jan 74
11552 (538)	Sep 72	11452 (1250)	Jan 74	11363 (1270)	Oct 74	18651 (5531)	May 74	18448 (6460)	Jun 74
11542 (777)	Aug 74	11442 (1251)	Jun 74	11364 (1271)	Feb 74	18654 (5533)	Jun 74	18502 (6195)	Sep 74
12206 (829SC)	Feb 74	11439 (1252)	Oct 73	11361 (1272)	Aug 74	18656 (5534)	Mar 74	18504 (6185)	Mar 74
11553 (831SC)	Dec 74	11431 (1253)	Jan 74	11358 (1273)	Aug 74	18685 (5403)	Apr 74	18480 (6102)	Oct 74
		11429 (1254)	Feb 74	11357 (1274)	Oct 74	18703 (5387)	May 74	18500 (6002)	May 73
		11426 (1255)	Jul 74	11356 (1275)	Dec 73	18754 (5108)	Feb 71	18521 (6151)	May 74
SOUTH CAROLINA		11424 (1256)	Apr 74	11351 (1276)	Oct 74	18772 (5107)	May 74		
11532 (787)	May 74	11412 (1257)	Nov 73	11349 (1277)	Jun 74	18686 (5476)	Mar 73		
11517 (793)	Aug 74	11409 (1258)	May 74	11344 (1278)	Sep 74	18725 (5120)	Feb 74		
11519 (794)	May 73	11408 (1259)	Jul 74	11341 (1279)	May 74	18720 (5202)	Sep 74		
11512 (440)	Aug 74	11407 (1260)	Jan 73			18700 (5302)	Mar 74		
11535 (1237)	Feb 72	11405 (1261)	Sep 74	TEXAS		18740 (5101)	Sep 74		
11531 (1238)	Jan 74	11401 (1262)	Mar 74	11341 (1279)	May 74	18746 (5142)	Apr 74		
11521 (1239)	Oct 73	11389 (1263)	Mar 74	11332 (1280)	May 73	18680 (5402)	Aug 73		
11513 (1240)	Mar 73	11388 (1264)	Oct 73	11331 (885SC)	Aug 74				
		11382 (1265)	Sep 74	11323 (1282)	Apr 74	REGION X			
GEORGIA		11427 (856SC)	Aug 74	11326 (152SC)	Jun 74	OREGON			
11512 (440)	Aug 74	11425 (857SC)	Jun 74	11321 (1283)	Dec 73	18521 (6151)	May 74		
11511 (573)	Apr 73			11316 (1284)	Feb 74	18520 (5902)	May 73		
11510 (574)	Sep 74	ALABAMA		11313 (1285)	Aug 74	18556 (6122)	Dec 73		
11504 (448)	Sep 72	11382 (1265)	Sep 74	11307 (1286)	Apr 73	18558 (6112)	Apr 73		
11509 (1241)	Mar 74	11376 (1266)	Nov 73	11308 (893SC)	Aug 74	18580 (5802)	May 73		
11502 (1242)	Aug 74	11373 (1267)	Oct 73	11304 (1287)	Oct 72	18581 (6055)	Aug 73		
				11301 (1288)	Dec 73	18583 (6023)	Oct 72		
FLORIDA (EAST)		MISSISSIPPI				18584 (6004)	Jul 74		
11502 (1242)	Aug 74	11373 (1267)	Oct 73	REGION IX		18587 (5984)	Mar 74		
11488 (1243)	Jan 73	11371 (1268)	Mar 74	CALIFORNIA		18588 (5971)	May 73		
11486 (1244)	Aug 73	11372 (876SC)	Jun 74	18600 (5702)	Jun 71	18600 (5702)	Jun 71		
11484 (1245)	May 73			18620 (5602)	Jun 73	18601 (5951)	Mar 73		
11476 (1246)	Dec 73	REGION VI		18622 (5832)	May 73	18602 (5896)	Mar 74		
11474 (1247)	Apr 72	LOUISIANA		18640 (5502)	May 73				
11466 (1248)	Aug 74	11352 (1050)	Jul 74	18643 (5603)	Mar 73	WASHINGTON			
11462 (1249)	Apr 73								

### Note

Experience has shown, following the compilation of statistics for two Estuarine Registers, that collecting the necessary material from other than the particular coastal state very often results in conflicting opinions regarding area classification and even the location of boundary lines limiting the extent of areas. Therefore, to alleviate confusion in the future concerning this type of information, it is recommended that each state should be consulted to reach mutual agreement on where the areas are located in the estuary and exactly what their correct classifications are in respect to the National Shellfish Sanitation Program.