

Monitoring and Assessment of Maine's Sea Urchin Resource

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Photo by Kerry Lyons

EXECUTIVE SUMMARY:

During 2005 – 2009, information about the Maine green sea urchin was collected through a commercial fishery monitoring (port sampling) program, and an annual fisheries-independent dive survey.

PURPOSE:

The objective of this program is to collect information about the Maine sea urchin (*Strongylocentrotus droebachiensis*) fishery and resource in order to assess the status of the resource, monitor trends in the fishery, and provide information for the management of the fishery.

JOB#1

JOB TITLE: Sea Urchin Port Sampling

OBJECTIVE: Determine spatial/temporal patterns in catch, effort, catch per unit effort, gonad condition, size composition, percent roe, and test (shell) condition of dive and drag harvested urchins, which could be useful for resource monitoring, assessment, and management.

APPROACH:

The commercial sea urchin port sampling program was initiated during the 1994-1995 fishing season. During that season, interviews were collected coast wide by telephone surveys. Since the 1995-1996 season, we have collected interview and size information from a commercial port sampling program conducted at buying stations along the entire coast. We attempt to sample once a week in each of the two management zones during the open season (Table 1) at randomly selected buying stations, during weather conditions when harvesters are active. Sampling activities are usually confined to locations where at least five harvesters are expected to unload their catches. The sampling season begins in September, when management Zone 1 opens for ten days, usually spread over about three weeks, and continues as the Zone 2 early season opens, usually in October with about three open days per week; then the Zone 2 late season opens in December, and continues for about three days per week through March.

We try to proportionally allocate the sampling trips to each coastal county (Lincoln, Knox, Hancock, and Washington - see Figure 1a) by the importance of the county to overall landings. More interviews and samples are obtained in counties with more buying stations and more landings. The sampling of urchin landings by proportional allocation is complicated by a constant change in the numbers and locations of buying stations during the course of the season. Achieving representative sampling has been a challenge, and random sampling approaches have not worked because of the shifting and mobile nature of the buying stations (which vary from long-established buyers with their own wharves to buyers in a truck parked on the side of the road), because of a limited market which shuts some buyers down on some days, and because of severe weather conditions during what is predominantly a winter fishery.

During a sampling trip, as many divers and draggers as possible arriving at the buying station to sell their catch are asked about their fishing experience (age and years fishing), effort for the day (bottom hours and away hours for divers; drag hours and away hours for draggers), boat length, location of fishing (10-minute square), depths fished, total catch (lbs), price, and estimated urchin roe content (%). A random sample of 20 urchins is collected from each catch when possible, and each of these is weighed, measured, evaluated for shell/spine condition, and returned to the buyer.

Our lead sea urchin sampler for 2004 – 2009 was DMR scientist Kerry Lyons.

FINDINGS:

The total number of interviews conducted, sea urchins measured, and calculations of sampling intensity are listed in Table 2 for all sampled seasons to date. Note that in general, the number of interviews has declined as landings (Figure 2) have declined. During the most recent five sampling seasons, the greatest number of interviews obtained in a season was 117 during the 2006-07 season, which were from harvesters whose landings on those days added up to about 2.87% of the total Maine landings for the season. The 1,415 urchins measured from those catches were about 0.010% of the estimated 13.59 million urchins caught that season. The fewest number of interviews were obtained during the 2008-09 season, due in part to illness.

That season, about 1.29% of landings were sampled, and 0.007% of the estimated total number of urchins caught were measured.

Information recorded from diver and dragger interviews during the 2004-2005 through 2008-09 seasons is shown in Tables 3 and 4 respectively, and summarized over all sampled seasons in Table 5. Note that, in general, for divers, daily catches declined steadily until 2002, and have since increased. Daily diver effort – the number of hours spent fishing (mean hours on bottom) – has increased steadily to a high of 4.5 hours during the 2007-08 season, perhaps in response to improving prices, reduced fishing days allowed, and/or declining stock abundance. The mean age of divers has also increased steadily, not surprising in a closed fishery. Dragger effort, as measured by the number of hours towing per day, has also risen slightly, with a high mean of 6.5 hours during the 2006-07 season.

Catch per unit effort (CPUE) for both divers and draggers is presented in Table 6 and Figures 3a-b. A comparison of the median pounds per bottom hour summarized from diver interviews conducted during fifteen consecutive harvesting seasons (Figure 3a), shows that CPUE is consistently higher in Zone 2 than in Zone 1. Zone 2 CPUE dropped steadily over the first eight years of the series, to what is probably an economic threshold, about 125 to 150 lbs/hr. Zone 1 CPUE had probably already declined to that threshold before the project began.

Increases in CPUE in Zone 2 between 2003 and 2006 do not necessarily indicate an improvement in stock conditions, according to our survey results (see next section) and our analytical analyses. It is likely that CPUE is not a good index of stock abundance for this fishery. This is discussed in more detail in previous reports.

No attempt was made to identify trends in dragger CPUE information (Table 6 and Figure) because of small sample sizes and high variance. Only three draggers were sampled in Zone 1 during the 2002-03 to 2008-09 seasons, because few fished.

Expanded size (diameter) frequency information summarized from commercial samples, and expressed as a relative percentage is shown for the 2004-05 through 2008-09 sampling seasons

for each zone in Figures 4a-e. In Figure 7, median urchin diameter, as well as the 1st and 3rd quartile diameters, is plotted over time for each zone. In 1995-96 and 1996-97 we believe there was a minimum size compliance problem, especially in Zone 2. There was noticeable improvement in 1997-98, then a worrying decline in urchin size over the next three seasons, suggesting that the proportion of smaller urchins in the catches was increasing. The increase in the minimum size in 2001-02, from 2 inches to $2\frac{1}{16}$ inches (50.8 to 52.4 mm) was successful in reducing the proportion of small urchins. Since then, the median sea urchin diameter has consistently been about 60mm in both zones. Note that there is generally a wider range of sizes in Zone 2 than in Zone 1, probably because of the occurrence of smaller urchins in Cobscook Bay and very large ones in the Jonesport to the Cutler shore area.

Port sampling continued during the 2009-10 fishing season. The number of trips made, interviews conducted, and sea urchins measured through December 2009 were described in our semi-annual report, and the data collected will be presented in the next annual report.

EVALUATION: The project goals and objectives were attained, by obtaining catch, effort, and biological data over the temporal and spatial range of the dive and drag sea urchin fisheries each year.

DISSEMINATION: The latest annual CPUE data are routinely provided to the Maine Sea Urchin Zone Council, which provides management advice to the Maine DMR. Annual reports are compiled and published on the DMR web site at <http://www.maine.gov/dmr/rm/seaurchin/research.htm>. The CPUE data and sample size distributions are also used in a formal stock assessment (Chen & Hunter, 2003) which was last conducted in 2004 (Kanaiwa et al, 2005) and will be updated soon.

JOB#2

JOB TITLE: Sea Urchin Survey

OBJECTIVE: Conduct a survey of Maine's sea urchin resource using SCUBA diving, to develop a time series of abundance indices and biomass estimates for the state by region.

APPROACH:

An annual spring dive survey of the Maine coastline was begun in 2001. The same methods have been used every year since, with minor changes and additions. A video camera survey conducted in deeper sites during 2001-2004 was discontinued in 2005 because of problems with the camera cable, and the lack of sea urchins found at the deeper sites in the six westernmost regions.

The state's coastline was divided into nine regions in 2001 (Figure 1b), each of roughly equal economic importance, that is, with roughly equal sea urchin landings in 2000 (Figure 5). Each year, eleven dive sites were chosen randomly in each of the nine regions. These sites were chosen from areas with hard bottom (Barnhardt et al, 1996) and a complete depth profile from 0-15m (0-49 ft.). In addition, five fixed dive sites in each region that have been visited each year since 2001 were visited again (sentinel sites, Figure 1b). Two fixed dive sites recommended by industry members in each region were also visited (industry sites, Figure 1b). One of the industry sites in region 4 had been visited in 2001, and the other in 2002. The rest were visited for the first time in 2005. A total of 18 sites were sampled in each of the nine regions each year, for a total of 162 sites assessed each year (see Figure 1b for all 2009 sites).

At each site, 60 quadrats were evaluated. Two divers began their dives at about 15m depth and swam a compass course toward shore. They each carried a 1-m² frame made of ¾-inch diameter PVC pipe. They each dropped this frame haphazardly ten times in the 10-15m (33-49 ft) depth range (stratum), again in the 5-10m (16-33 ft) depth range, and again in the 0-5m (0-16 ft) depth range. Once in awhile a site would have no hard substrate in the 10-15m depth range, and the survey would begin in the 5-10m range for that site.

All urchins at least 20mm in diameter within the frame (quadrat) were counted, and the algal cover was evaluated. Algae were classified as encrusting, turfing (understory), or canopy (per Steneck and Dethier, 1994), and the percent cover of each of these three classifications was

determined for each quadrat. Each diver collected all the urchins from one randomly selected quadrat from each depth stratum, brought them to the surface, measured diameter to the nearest mm, and released them.

In 2002 we began counting and measuring (carapace width) sub-samples of the crabs *Cancer borealis* and *Cancer irroratus*, which have been reported as increasingly important predators of Maine's sea urchins (Leland, 2002; Steneck et al, 2004). Beginning in 2004, crabs were also sexed. Because of underwater sampling logistics, crabs, if present, were collected in each of the three depths into one sample for the site, instead of maintaining the samples separately by depth stratum as was done for urchins.

In 2003, lobsters (*Homarus americanus*) were counted, and sea stars (*Asterias vulgaris*) were counted and measured (longest arm length in mm), and this has been continued.

In 2007, the invasive white colonial tunicate *Didemnum* sp. was evaluated as either Absent, Present at less or equal to 50% of cover, or Common at more than 50% of cover, in each quadrat. *Didemnum* sp. continues to be evaluated in this way each year.

FINDINGS:

Mean sea urchin abundances (counts per square meter) have been calculated for each site and for each depth stratum, and total abundance has been estimated, for each of the nine regions and the two management zones. It should be noted that abundances are calculated regardless of the urchin's size or quality. Some of the highest densities (such as in Cobscook Bay, region 9) were almost entirely below the legal minimum size (<53mm, Figures 7b-c and 14c).

Abundances were stratified by depth and weighted by the area of available urchin habitat at each depth. Existing GIS layers for the Gulf of Maine, developed by the Maine Geological Survey (Barnhardt et al, 1996), were used to identify areas of potential urchin habitat (hard bottom types) – see Grabowski et al, 2005 and Jones, 2005 for details. The area of available habitat in each region and depth stratum is listed in Table 8. Mean sea urchin abundance (number of urchins/m²) was calculated over the 20 quadrats evaluated in each depth stratum at each site.

These means were then averaged for the region and depth, so that each site in the region was weighted equally, even if some of the 20 quadrats at the site were missing. The mean region-depth abundance (urchins per m²) was then multiplied by the habitat area (m²) for that region-depth to get an estimated total number of urchins in that region-depth. These were then summed over depth strata 1-3 (0-15m) for each region, to get an estimated total number of urchins in the region in depths of 15m or less. This number was then divided by the habitat area for the region to give a stratified mean abundance (urchins/m²) for the region, and similarly for the management zone.

The results of these calculations for the 2005-2009 surveys are displayed in Table 9a-e and for the time series (2001-2009) in Table 10, and plotted in Figures 6a-c and 7a-c. Abundance was generally lowest in regions 1-7 and highest in regions 8-9. Note that abundances are consistently lower in Zone 1 (regions 1-3) than Zone 2 (regions 4-9). The lowest abundances were observed for Zone 1 in 2004 and for Zone 2 in 2007. Abundance in all regions has declined since the survey began in 2001, except in region 5, where it decreased and then increased. Regions 4-8 all exhibit declines during 2004-2007 with some recovery in 2008-2009.

Biomass estimates were stratified and weighted in the same manner as the abundance estimates. First, the test diameters from the sample of urchins collected at each site and depth stratum were converted to weight using the diameter (D)–weight (W) relationship (Scheibling et al 1999):

$$\ln(W) = 2.81 \times \ln(D) - 7.0$$

A mean weight per urchin was then calculated for each site and depth stratum, and then multiplied by the mean number of urchins per m² for that site and depth stratum, to get the mean biomass per m² for that site and depth stratum. These estimates were averaged for the region and depth and then weighted by the area of available urchin habitat at each depth in the same manner as the abundance estimates above, to give a stratified mean biomass (g/m²) for the region, and also for the zone, for depths 0-15m.

The results of these calculations for the 2005-2009 surveys are displayed in Table 11a-e and for the time series (2001-2009) in Table 12, and plotted in Figures 8a-c and 9a-c. In general, biomass trends were similar to abundance trends, with lower biomass in Zone 1 (regions 1-3)

than Zone 2 (regions 4-9). The lowest biomasses in the time series were observed in Zone 1 in 2009 and in Zone 2 in 2007. Although Zone 1 abundance was up slightly in 2009 compared with 2004, biomass was not, because the abundance increase was in very small urchins (10-25 mm), with a decline in the larger sizes (Figures 8b and 15).

Fixed sites – For an alternate approach to the time series indices, it is useful to look at the fixed sites alone. This removes the random variation introduced by the selection of the random sites, but reduces the number of sites involved. For each of the 45 fixed sites (5 in each of the 9 regions), mean sea urchin biomass and abundance for each depth stratum were computed by averaging the urchin biomass (g/m^2) or abundance ($\text{numbers}/\text{m}^2$) respectively for the 20 quadrats evaluated at that site and depth, and are presented in Table 13a-b and 14a-b. Sites are designated by region and a letter, 1A to 9H. Mean abundance and biomass, stratified by depth as above, were calculated for each site and are plotted in Figures 10-11. Most sites exhibit either little change, or declines over the time series.

Industry Sites – Stratified mean sea urchin abundance and biomass for the 18 industry-recommended sites are listed in Table 15 and plotted in Figures 12-13, for the years 2005-2009. The two sites in region 4 were also evaluated in 2001 and 2002, when they were randomly chosen sites. Both sites show marked declines since they were first visited.

Size distributions from sampled quadrats were expanded by the ratio of the number counted at the site to the number measured, for each 1mm size category, to give mean urchins/ m^2 at the site for each size category. These were then averaged by region and depth and stratified by the area of potential urchin habitat at that region and depth using the method described above for overall abundance. The results, excluding industry sites, are plotted in Figures 14-15. They perhaps best illustrate visually the trends noted in the abundance and biomass indices above. Note that declines between 2001 and 2007 seem to have occurred for all sizes of urchins. Note also that Region 9 (Cobscok Bay area) has both the highest total abundance and the highest density and proportion of small (<53mm) urchins. Region 8 has the highest density of legal-sized urchins (53-76mm), and oversized urchins (>76mm).

Jonah crab (*Cancer borealis*) and rock crab (*Cancer irroratus*) mean abundance (counts per square meter) have been calculated for each site and for each depth stratum (Tables 16a-e and 17a-e), for each of the nine regions, stratified in the same manner as the urchin abundance data. Crab abundances by region and zone are plotted in Figures 16 and 17. In Zone 1, Jonah crab abundances peaked in 2003 and have declined steadily since then. They peaked two years later in Zone 2, and have declined. This agrees with harvester observations that crab abundance increased dramatically in western Maine and later in eastern Maine. Rock crab abundances have generally declined in both zones since they were first counted in 2002. Crab size data have not yet been analyzed.

Sea star abundances were also averaged and stratified in the same manner and are shown in Tables 18a-e and Figure 18. Lowest abundances in all years were in region 8. Abundances have generally declined in both zones since they were first evaluated in 2003. Survey divers noted that high abundances of sea stars coincided with high abundances of small blue mussels (*Mytilis edulis*). Sea star size data have not yet been analyzed.

Lobster abundances were also averaged and stratified in the same manner (Tables 19a-e and Figure 19). Highest abundances have generally been in Regions 1-6 and lowest in Region 9. The lowest abundance by zone since counting began in 2003 was observed in both zones in 2007; the highest in 2009.

Total percent algal cover, not counting crusts, was calculated by adding the percent understory and percent canopy cover and averaging over sites within regions and depth strata 1-3, and stratifying by the areas of regions and depth strata as above (Table 20 and Figure 20). Algal cover is the most subjective of the evaluations the divers have to make and, of the two divers employed in the 2002-2007 surveys, data from one diver have been consistently higher than the other. Therefore, only algal cover data collected by the lead diver, who has worked on the project every year, were used here. Note that adding the percent understory and the percent canopy cover together sometimes results in a total percent algal cover greater than 100%. Table 20 data indicate that, as might be expected, algal cover is greatest in the shallowest depth stratum

(0-5m). Figure 20 shows that the stratified mean total percent algal cover increased and then peaked in both zones in 2004, declined until 2007, and has since increased in both zones, for depths 0-15m. Further work is necessary to evaluate variance in these estimates.

Invasive tunicates: The presence or absence of the white colonial tunicate *Didemnum* sp. in 2007-2009 is displayed in Table 21a-c and Figure 21. The highest incidence was found in region 2 in 2007 (present or common in at least one quadrat at 13 out of 16 sites evaluated), and Zone 1 consistently has a higher incidence than Zone 2.

EVALUATION: The project goals and objectives were attained, by conducting annual dive surveys of Maine's sea urchin (and related biota) resources, and developing a time series of abundance indices and biomass estimates for the state by region.

DISSEMINATION: The latest annual sea urchin abundance and biomass indices are routinely provided to the Maine Sea Urchin Zone Council, which provides management advice to the Maine DMR. Annual reports are compiled and published on the DMR web site at <http://www.maine.gov/dmr/rm/seaurchin/research.htm>. The biomass index and size distribution data will also be used in a formal stock assessment (Chen & Hunter, 2003) which was last conducted in 2004 (Kanaiwa et al, 2005) and will be updated soon. Survey results have also been provided to the Monterey Bay Aquarium Seafood Watch. The *Didemnum* data have been provided to Maine Sea Grant and the USGS Nonindigenous Aquatic Species Program. All survey data have recently been provided to Dr. James Wilson and other scientists at the University of Maine for an effort to model competition, regulation, and conservation in the lobster, sea urchin, and groundfish fisheries.

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Table 1. The annual (top) or seasonal by zone (bottom) number of open fishing days in the Maine sea urchin fishery.

Year or Season	Total Days		
1986	365		
1987	365		
1988	366		
1989	365		
1990	365		
1991	365		
1992	366		
1993	335 (Closed July 9 – Aug 7)		
		Zone 1 Days	Zone 2 Days
1994-1995		228, Aug. 16 – Mar. 31	272, Aug. 16 - May 14
1995-1996		229, Aug. 16 – Mar. 31	212, Oct. 2 – Apr. 30
1996-1997		150, Aug. – Mar.	170, Aug. – Apr.
1997-1998		120, Sep. – Feb.	120, Oct. – Apr.
1998-1999		120, Sep. – Feb.	120, Oct. – Apr.
1999-2000		120, Sep. – Feb.	120, choice of early (Oct-Mar) or late (Nov-Apr)
2000-2001		110, Sep. – Feb.	110, choice of early (Oct-Mar) or late (Nov-Apr)
2001-2002		94, Sep. – Mar.	94, choice of early (Oct-Mar) or late (Nov-Apr)
2002-2003		94, Sep. – Mar.	94, choice of early (Oct-Mar) or late (Nov-Apr)
2003-2004		94 dive, 84 drag, Sep. – Mar.	94, choice of early (Oct-Mar) or late (Nov-Apr)
2004-2005		10, Sep dive, Dec drag	45, choice of early (Sep-Jan) or late (Dec-Mar)
2005-2006		10, choice of Sep. or Dec.	45, choice of early (Sep-Jan) or late (Dec-Mar)
2006-2007		10, choice of Sep. or Dec.	45, choice of early (Sep-Jan) or late (Dec-Mar)
2007-2008		10, choice of Sep. or Dec.	45, choice of early (Oct-Jan) or late (Dec-Mar)
2008-2009		10, choice of Sep. or Dec.	45, choice of early (Oct-Jan) or late (Dec-Mar)
2009-2010		10, choice of Sep. or Dec-Jan.	45, choice of early (Sep-Jan) or late (Dec-Mar)

Table 2. Commercial sea urchin port sampling intensity.

<u>Season</u>	<u>Total Landings (lbs)</u>	<u>Number of harvester interviews</u>	<u>Total weight of interviewed catches (lbs)</u>	<u>Sampling rate for harvester interviews by catch weight</u>	<u>Mean weight of a sampled urchin (g)</u>	<u>Estimated number of urchins landed</u>	<u>Total number of urchins measured</u>	<u>Sampling rate for measured urchins</u>
1994-95	37,137,290	404	249,705	0.67%			0	0%
1995-96	30,262,499	180	115,613	0.38%	99.78	137,575,311	5,585	0.0041%
1996-97	23,854,609	537	330,568	1.39%	95.91	112,820,236	10,675	0.0095%
1997-98	16,948,700	464	280,111	1.65%	98.25	78,247,540	9,274	0.0119%
1998-99	16,702,938	499	308,119	1.84%	101.09	74,942,749	9,839	0.0131%
1999-00	14,055,115	416	243,592	1.73%	98.86	64,491,080	8,320	0.0129%
2000-01	11,817,960	343	198,336	1.68%	90.70	59,099,878	5,919	0.0100%
2001-02	7,850,572	314	167,638	2.14%	91.53	38,906,812	4,560	0.0117%
2002-03	6,700,632	219	126,003	1.88%	89.82	33,837,495	2,940	0.0087%
2003-04	6,334,522	166	97,767	1.54%	93.56	30,710,270	1,960	0.0064%
2004-05	3,787,096	111	70,936	1.87%	89.46	19,201,851	1,420	0.0074%
2005-06	3,852,905	116	90,881	2.36%	95.11	18,375,904	1,660	0.0090%
2006-07	3,029,491	117	87,047	2.87%	101.86	13,490,055	1,415	0.0105%
2007-08	2,949,228	107	74,506	2.53%	105.42	12,689,183	1,260	0.0099%
2008-09	3,099,506	60	39,902	1.29%	103.44	13,591,479	978	0.0072%

Table 3a. Maine sea urchin diver catch/effort summary by county for 2004-2005.

Catch Location		Age	Exper	Depth				Weather	Catch (per Diver-Day)				Effort (per Diver-Day)		Catch/Effort Statistics			
		(Yrs)	(Yrs)	Ft(Min)	Ft(Max)	M(Min)	M(Max)	*Code	Pounds	Price/Lb	Value(\$)	Net Roe %	BotmHrs	AwayHrs	Lbs/AwayHr	\$/AwayHr	Lbs/BotmHr	\$/BotmHr
Sagadahoc - Lincoln	Mean	36.0	8.6	21.0	30.0	6.4	9.1	2.8	541.6	1.75	955.23	12.5	3.2	5.7	93.4	165.1	165.4	293.5
	Std Dev	7.3	2.6	4.2	17.7	1.3	5.4	0.4	353.5	0.1	644.7	0.9	1.3	1.0	59.6	109.4	88.2	164.0
	Std Err	3.3	1.2	1.9	7.9	0.6	2.4	0.2	158.1	0.0	288.3	0.4	0.6	0.5	26.7	48.9	39.4	73.4
	N	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Knox-Waldo Counties	Mean	41.3	11.9	15.9	21.7	4.8	6.6	2.6	476.1	1.72	827.31	14.5	4.2	8.5	58.8	102.6	117.6	205.5
	Std Dev	5.6	2.5	6.5	7.7	2.0	2.3	0.7	172.1	0.3	364.4	2.7	1.2	1.4	25.3	52.1	40.7	86.2
	Std Err	1.0	0.4	1.1	1.3	0.3	0.4	0.1	29.5	0.1	62.5	0.5	0.2	0.2	4.34	8.9	7.0	14.8
	N	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34
Hancock County	Mean	42.1	12.3	20.6	23.3	6.3	7.1	2.2	661.2	1.35	886.19	13.2	4.4	7.4	91.6	123.1	159.6	214.9
	Std Dev	5.7	3.4	10.0	11.9	3.0	3.6	0.9	198.5	0.2	264.7	1.7	1.1	1.0	31.8	41.3	57.3	83.0
	Std Err	1.3	0.8	2.4	2.8	0.7	0.9	0.2	46.8	0.0	62.4	0.4	0.3	0.2	7.5	9.7	13.5	19.6
	N	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Washington County	Mean	42.7	13.0	20.0	29.6	6.1	9.0	1.7	830.5	1.41	1150.51	15.3	4.6	7.7	108.1	147.6	179.9	247.4
	Std Dev	6.5	4.4	9.2	11.9	2.8	3.6	0.7	354.8	0.3	499.5	2.4	1.0	1.4	37.3	49.6	62.9	85.9
	Std Err	1.3	0.9	1.9	2.4	0.6	0.7	0.1	72.4	0.1	102.0	0.5	0.2	0.3	7.6	10.1	12.8	17.5
	N	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
All Combined	Mean	41.6	12.1	18.5	24.9	5.6	7.6	2.2	626.3	1.55	944.05	14.3	4.3	7.8	82.8	124.3	148.4	225.4
	Std Dev	6.1	3.5	8.3	11.1	2.5	3.4	0.8	293.0	0.3	426.0	2.5	1.1	1.5	39.0	57.1	60.5	92.9
	Std Err	0.7	0.4	0.9	1.2	0.3	0.4	0.1	32.6	0.0	47.3	0.3	0.1	0.2	4.3	6.3	6.7	10.3
	N	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81

* Weather code: 1 = Worse than average, 2 = Average, 3 = Better than average, for this time of year.

Table 3b. Maine sea urchin diver catch/effort summary by county for 2005-2006.

Catch Location		Age	Exper	Depth				Weather	Catch (per Diver-Day)				Effort (per Diver-Day)		Catch/Effort Statistics			
		(Yrs)	(Yrs)	F(Min)	F(Max)	M(Min)	M(Max)	*Code	Pounds	Price/Lb	Value(\$)	Net Roe %	BotmHrs	AwavHrs	Lbs/AwayHr	\$/AwavHr	Lbs/BotmHr	\$/BotmHr
Sagadahoc - Lincoln	Mean	40.0	13.3	18.3	25.0	5.6	7.6	1.0	746.3	1.70	1284.90	14.7	4.8	7.8	96.3	166.1	155.5	268.2
	Std Dev	5.3	2.9	2.9	8.7	0.9	2.6	0.0	140.6	0.17	353.99	1.5	0.3	0.8	23.7	53.8	35.6	83.4
	Std Err	3.1	1.7	1.7	5.0	0.5	1.5	0.0	81.2	0.10	204.4	0.9	0.2	0.4	13.7	31.0	20.6	48.2
	N	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Knox-Waldo Counties	Mean	41.2	12.9	13.1	19.8	4.0	6.0	2.3	587.6	1.68	979.64	12.4	4.4	7.7	77	129.6	140.1	236.3
	Std Dev	6.5	3.2	5.1	4.3	1.6	1.3	0.8	203.3	0.25	350.59	1.9	1.0	1.1	27.5	51.0	63.0	119.4
	Std Err	1.4	0.7	1.1	0.9	0.3	0.3	0.2	44.4	0.06	76.51	0.4	0.2	0.2	6.0	11.1	13.8	26.0
	N	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
Hancock County	Mean	39.0	13.2	21.1	27.1	6.4	8.3	2.3	715.3	1.35	963.27	13.9	4.0	7.5	99.4	132.4	181.4	244.1
	Std Dev	3.6	2.7	10.7	10.9	3.3	3.3	0.9	260.6	0.15	348.00	2.0	1.2	1.6	42.1	52.4	53.4	75.6
	Std Err	0.7	0.5	2.0	2.1	0.6	0.6	0.2	49.3	0.03	65.8	0.4	0.2	0.3	8.0	9.9	10.1	14.3
	N	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
Washington County	Mean	41.6	12.8	16.8	23.9	5.1	7.3	1.9	820.6	1.17	950.91	14.9	4.0	7.6	109.3	126.6	200.9	232.5
	Std Dev	4.3	2.4	6.6	8.8	2.0	2.7	1.0	475.7	0.24	608.82	1.9	1.1	1.0	60.5	78.2	78.8	104.3
	Std Err	0.7	0.4	1.1	1.5	0.3	0.4	0.2	79.3	0.04	101.47	0.3	0.2	0.2	10.1	13.0	13.1	17.4
	N	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
All Combined	Mean	40.6	12.9	17.3	24.0	5.3	7.3	2.1	729.0	1.37	973.09	14.0	4.1	7.6	98.0	130.5	178.6	238.3
	Std Dev	4.8	2.7	8.3	9.0	2.5	2.8	0.9	361.2	0.30	470.57	2.1	1.1	1.2	48.7	63.5	70.1	98.2
	Std Err	0.5	0.3	0.9	1.0	0.3	0.3	0.1	38.5	0.03	50.16	0.2	0.1	0.1	5.19	6.8	7.5	10.5
	N	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88

* Weather code: 1 = Worse than average, 2 = Average, 3 = Better than average, for this time of year.

Table 3c. Maine sea urchin diver catch/effort summary by county for 2006-2007.

Catch Location		Age (Yrs)	Exper (Yrs)	Depth				Weather * Code	Catch (per Diver-Day)				Effort (per Diver-Day)		Catch/Effort Statistics			
				R(Min)	Ft(Max)	M(Min)	M(Max)		Pounds	Price/Lb	Value(\$)	Net Roe %	BotmHrs	AwayHrs	Lbs/AwayHr	\$/AwayHr	Lbs/BotmHr	\$/BotmHr
York/Cumber. County	Mean	44.0	14.0	40.0	40.0	12.2	12.2	2.0	473.0	1.00	473.00	10.0	3.5	7.0	67.6	67.6	135.1	135.1
	Std Dev	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Std Err	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	N	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Sag/Lin County	Mean	38.3	10.9	13.6	20.7	4.1	6.3	2.1	572.7	1.48	563.90	13.5	3.9	6.8	84.1	81.9	148.1	152.3
	Std Dev	7.7	4.1	6.3	5.3	1.9	1.6	0.9	131.8	0.37	294.01	2.3	0.9	1.1	13.0	38.4	23.0	83.7
	Std Err	2.9	1.5	2.4	2.0	0.7	0.6	0.3	49.8	0.14	111.13	1.0	0.4	0.4	4.92	14.5	8.7	31.6
	N	7	7	7	7	7	7	7	7	7	7	6	7	7	7	7	7	7
Knox/Waldo County	Mean	42.3	13.2	14.0	21.5	4.3	6.5	2.0	369.7	1.45	249.65	12.9	3.2	6.5	55.5	35.9	114.9	74.4
	Std Dev	7.4	1.5	4.9	5.2	1.5	1.6	0.9	223.3	0.16	345.29	1.0	1.2	1.5	25.9	40.1	50.2	85.1
	Std Err	1.5	0.3	1.0	1.1	0.3	0.3	0.2	45.6	0.03	70.48	0.2	0.2	0.3	5.3	8.2	10.3	17.4
	N	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
Hancock County	Mean	41.4	13.7	13.8	19.71	4.2	6.0	2.2	647.8	1.3	423.53	12.8	4.1	8.0	81.14	54.3	164.2	110.6
	Std Dev	5.6	2.2	4.9	7.8	1.5	2.4	0.6	157.5	0.1	269.94	1.2	0.9	0.6	17.87	36.4	54.6	84.4
	Std Err	1.4	0.5	1.2	1.9	0.4	0.6	0.2	38.2	0.0	65.5	0.3	0.2	0.1	4.3	8.8	13.2	20.5
	N	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
Washington County	Mean	42.6	14.1	17.8	25.5	5.4	7.8	2.4	843.0	1.7	590.31	14.9	4.5	7.3	115.53	82.0	189.8	131.3
	Std Dev	5.0	1.7	9.5	8.0	2.9	2.4	0.7	280.4	0.4	641.52	2.9	0.9	1.0	33.28	87.6	58.5	137.2
	Std Err	0.8	0.3	1.5	1.3	0.5	0.4	0.1	45.5	0.1	104.1	0.5	0.1	0.2	5.4	14.2	9.5	22.3
	N	38	38	38	38	38	38	38	38	38	38	35	38	38	38	38	38	38
All combined	Mean	42.0	13.5	15.9	23.0	4.8	7.0	2.2	648.3	1.5	460.3	13.7	4.0	7.2	89.2	63.7	160.1	113.3
	Std Dev	6.1	2.1	7.9	7.6	2.4	2.3	0.8	303.7	0.3	499.5	2.3	1.1	1.2	37.0	67.0	61.0	112.0
	Std Err	0.7	0.2	0.9	0.8	0.3	0.2	0.1	32.6	0.0	53.6	0.3	0.1	0.1	4.0	7.2	6.5	12.0
	N	87	87	87	87	87	87	88	87	87	87	83	87	87	87	87	87	87

* Weather code: 1 = Worse than average, 2 = Average, 3 = Better than average, for this time of year.

Table 3d. Maine sea urchin diver catch/effort summary by county for 2007-2008.

Catch Location		Age	Exper	Depth				Weather	Catch (per Diver-Day)				Effort (per Diver-Day)		Catch/Effort Statistics			
		(Yrs)	(Yrs)	Min (ft)	Max (ft)	Min (m)	Max (m)	Code*	Pounds	Price/Lb	Value(\$)	Net Roe%	BottomHrs	AwayHrs	Lbs/BotmHr	\$/BotmHr	Lbs/AwayHr	\$/AwayHr
Knox County	Mean	44.9	13.9	9.7	19.2	2.9	5.9	1.7	739.0	1.46	1,144.29	11.9	4.7	7.3	151.5	231.7	99.1	152.7
	Std Dev	5.4	1.5	5.3	2.7	1.6	0.8	0.6	454.5	0.3	827.4	1.8	1.1	0.9	77.0	148.2	60.1	109.0
	Std Err	1.0	0.3	1.0	0.5	0.3	0.2	0.1	84.4	0.1	153.6	0.3	0.2	0.2	14.3	27.5	11.2	20.2
	N	29	29	29	29	29	29	29	29	29	29	28	29	29	29	29	29	29
Hancock County	Mean	46.3	14.1	13.9	21.7	4.2	6.6	2.4	630.6	1.47	920.53	13.3	4.4	6.9	145.2	209.7	92.4	134.6
	Std Dev	5.6	1.2	6.8	6.4	2.1	2.0	0.9	247.5	0.3	416.3	2.3	1.1	1.1	53.8	79.2	33.2	55.9
	Std Err	1.4	0.3	1.6	1.5	0.5	0.5	0.2	58.3	0.1	98.1	0.5	0.2	0.3	12.7	18.7	7.8	13.2
	N	16	16	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Washington County	Mean	40.5	15.2	16.6	22.9	5.1	7.0	2.1	709.6	1.65	1,182.62	14.3	4.4	7.3	168.5	281.1	96.37	160.8
	Std Dev	6.6	3.1	6.0	7.6	1.8	2.3	0.9	179.8	0.4	445.1	2.3	1.1	0.9	53.1	129.7	20.32	58.0
	Std Err	1.2	0.6	1.1	1.4	0.3	0.4	0.2	32.3	0.1	79.9	0.4	0.2	0.2	9.5	23.3	3.7	10.4
	N	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
All combined	Mean	43.4	14.5	13.4	21.2	4.1	6.5	2.0	702.3	1.54	1,107.88	13.2	4.5	7.2	156.8	246.2	96.5	151.7
	Std Dev	6.4	2.3	6.6	6.1	2.0	1.9	0.8	320.9	0.4	612.7	2.3	1.1	0.9	63.2	129.6	41.5	80.1
	Std Err	0.7	0.3	0.8	0.7	0.2	0.2	0.1	36.3	0.0	69.4	0.3	0.1	0.1	7.2	14.7	4.7	9.1
	N	76	76	78	78	78	78	78	78	78	78	77	78	78	78	78	78	78

* Weather code: 1 = Worse than average, 2 = Average, 3 = Better than average, for this time of year.

Table 3e. Maine sea urchin diver catch/effort summary by county for 2008-2009.

Catch Location		<u>Age</u>	<u>Exper</u>	<u>Depth</u>				<u>Weather</u>	<u>Catch (per Diver-Day)</u>				<u>Effort (per Diver-Day)</u>		<u>Catch/Effort Statistics</u>			
		(Yrs)	(Yrs)	Min (ft)	Max (ft)	Min (m)	Max (m)	Code*	Pounds	Price/Lb	Value(\$)	Net Roe%	BottomHrs	AwayHrs	Lbs/BotmHr	\$/BotmHr	Lbs/AwayHr	\$/AwayHr
Knox County	Mean	46.1	14.9	6.4	17.9	2.0	5.4	2.6	586.4	2.11	1,242.43	12.3	4.0	7.0	147.3	312.8	84.7	178.5
	Std Dev	4.4	1.7	5.6	2.7	1.7	0.8	0.5	105.2	0.1	273.8	0.5	0.3	1.0	29.0	77.0	14.1	31.3
	Std Err	1.7	0.6	2.1	1.0	0.6	0.3	0.2	39.8	0.1	103.5	0.2	0.1	0.4	11.0	29.1	5.3	11.8
	N	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Hancock County	Mean	39.8	14.2	17.9	24.0	5.5	7.3	1.5	726.3	1.66	1,231.33	12.7	3.9	7.5	187.8	320.6	96.7	164.0
	Std Dev	7.0	6.7	5.8	9.7	1.8	3.0	0.9	187.4	0.4	427.5	1.5	0.4	0.5	52.9	118.8	24.3	57.3
	Std Err	2.2	2.1	1.8	2.9	0.5	0.9	0.3	56.5	0.1	128.9	0.4	0.1	0.2	15.9	35.8	7.3	17.3
	N	10	10	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Washington County	Mean	43.9	16.9	18.2	25.3	5.5	7.7	1.9	527.0	1.24	603.98	12.6	4.0	6.6	135.9	160.1	82.14	94.0
	Std Dev	3.5	4.4	5.4	10.3	1.7	3.2	0.9	273.1	0.3	214.9	2.4	1.3	1.5	56.3	60.5	41.58	36.9
	Std Err	0.8	1.0	1.2	2.3	0.4	0.7	0.2	61.1	0.1	48.1	0.5	0.3	0.3	12.6	13.5	9.3	8.2
	N	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
All combined	Mean	43.2	15.8	15.9	23.5	4.9	7.2	1.9	595.6	1.52	903.19	12.6	4.0	6.9	153.0	234.7	86.8	129.8
	Std Dev	5.2	4.8	7.1	9.4	2.2	2.9	0.9	239.2	0.5	433.0	1.9	1.0	1.2	55.2	114.0	33.5	56.9
	Std Err	0.9	0.8	1.1	1.5	0.4	0.5	0.1	38.8	0.1	70.2	0.3	0.2	0.2	9.0	18.5	5.4	9.2
	N	37	37	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38

* Weather code: 1 = Worse than average, 2 = Average, 3 = Better than average, for this time of year.

Table 4a. Maine sea urchin dragger catch/effort summary by county for 2004-2005. (Note that crew includes the captain.)

Catch Location		Boat (Ft)	No. of Crew	Depth				Weather *Code	Catch (per Dragger-Day)			
				Ft(Min)	Ft(Max)	M(Min)	M(Max)		Pounds	Price/Lb	Value(\$)	Net Roe %
Sagadahoc - Lincoln	Mean	36.0	1.0	60.0	80.0	18.3	24.4	1.0	392.0	2.25	882.00	17.0
	Std Dev	-	-	-	-	-	-	-	-	-	-	-
	Std Err	-	-	-	-	-	-	-	-	-	-	-
	N	1	1	1	1	1	1	1.0	1	1	1	1
Knox-Waldo Counties	Mean	30.0	2.0	30.0	40.0	9.1	12.2	2.0	230.0	2.50	575.00	17.00
	Std Dev	-	-	-	-	-	-	-	-	-	-	-
	Std Err	-	-	-	-	-	-	-	-	-	-	-
	N	1	1	1	1	1	1	1.0	1	1	1	1
Washington County	Mean	36.5	2.5	36.5	43.6	11.1	13.3	1.6	699.4	1.20	832.75	13.3
	Std Dev	4.8	0.6	11.9	11.2	3.6	3.4	0.6	372.8	0.2	482.8	3.8
	Std Err	0.9	0.1	2.2	2.1	0.7	0.6	0.1	70.5	0.0	91.2	0.7
	N	28	28	28	28	28	28	28	28	28	28	28
All Combined	Mean	36.3	2.4	37.0	44.7	11.3	13.6	1.6	673.5	1.28	825.80	13.6
	Std Dev	4.8	0.6	12.3	12.7	3.7	3.9	0.6	373.6	0.4	468.3	3.8
	Std Err	0.9	0.1	2.2	2.3	0.7	0.7	0.1	68.2	0.1	85.5	0.7
	N	30	30	30	30	30	30	30	30	30	30	30

* Weather code: 1 = Worse than average, 2 = Average, 3 = Better than average, for this time of year.

Catch Location		Effort (per Dragger-Day)										Catch/Effort Statistics								
		Width(ft)	Width(M)	AwayHrs	FishHrs	Mins/Tow	Tows/Hr	TotalTows	TowHrs	Man-Hrs	Ft-TowHrs	Lbs/TowHr	Kg/TowHr	Lb/ManHr	Lb/Ft-TowHr	Kg/M-TowHr	\$/TowHr	\$/ManHr	\$/Ft-TowHr	\$/M-TowHr
Sagadahoc - Lincoln	Mean	5.5	1.7	8.5	7.8	15.0	3.0	23.3	5.8	8.5	32.0	67.4	30.6	46.1	12.3	18.2	151.74	103.76	27.59	90.52
	Std Dev	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Std Err	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	N	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Knox-Waldo Counties	Mean	5.5	1.7	6.5	5.0	8.0	6.0	30.0	4.0	13.0	22.0	57.5	26.1	17.7	10.5	15.6	143.75	44.23	26.14	85.75
	Std Dev	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Std Err	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	N	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Washington County	Mean	5.5	1.7	8	6.1	9.1	5.4	32.8	4.8	19.4	26.6	155.5	70.5	36.6	28.3	42.1	184.38	43.47	33.52	109.99
	Std Dev	0.0	0.0	1.6	1.5	2.3	0.9	8.4	1.4	6.4	7.6	89.7	40.7	14.0	16.3	24.3	113.4	17.8	20.6	67.6
	Std Err	0.0	0.0	0.3	0.3	0.4	0.2	1.6	0.3	1.2	1.4	16.9	7.7	2.6	3.1	4.6	21.4	3.4	3.9	12.8
	N	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
All Combined	Mean	5.5	1.7	7.8	6.1	9.2	5.3	32.4	4.8	18.8	26.6	149.3	67.7	36.3	27.1	40.4	181.94	45.50	33.08	108.54
	Std Dev	0.0	0.0	1.6	1.4	2.5	1.0	8.3	1.4	6.6	7.5	89.7	40.7	14.0	16.3	24.3	109.8	20.4	20.0	65.5
	Std Err	0.0	0.0	0.3	0.3	0.5	0.2	1.5	0.2	1.2	1.4	16.4	7.4	2.6	3.0	4.4	20.0	3.7	3.6	12.0
	N	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30

Table 4b. Maine sea urchin dragger catch/effort summary by county for 2005-2006. (Note that crew includes the captain.)

Catch Location		Boat (Ft)	No. of Crew	Depth				Weather Code	Catch (per Dragger-Day)			
				Ft(Min)	Ft(Max)	M(Min)	M(Max)		Pounds	Price/Lb	Value(\$)	Net Roe %
Knox-Waldo Counties	Mean	32.0	3.0	20.0	40.0	6.1	12.2	2.0	1200.0	1.20	1440.00	12.0
	Std Dev	-	-	-	-	-	-	-	-	-	-	-
	Std Err	-	-	-	-	-	-	-	-	-	-	-
	N	1	1	1	1	1	1	1	1	1	1	1
Hancock County	Mean	33.0	2.0	12.5	15.0	3.8	4.6	3.0	1000.0	1.10	1100.00	10.0
	Std Dev	4.2	0.0	10.6	7.1	3.2	2.2	0.0	282.8	-	-	-
	Std Err	3.0	0.0	7.5	5.0	2.3	1.5	0.0	200.0	-	-	-
	N	2	2	2	2	2	2	2	2	1	1	1
Washington County	Mean	37.2	2.7	29.9	42.5	9.1	13.0	2.0	941.3	1.21	1151.77	16.4
	Std Dev	3.9	0.7	19.7	15.4	6.0	4.7	0.9	374.8	0.2	569.8	3.6
	Std Err	0.8	0.1	3.9	3.1	1.2	0.9	0.2	75.0	0.0	114.0	0.7
	N	25	25	25	25	25	25	25	25	25	25	25
All Combined	Mean	36.8	2.6	28.3	40.5	8.6	12.3	2.1	954.7	1.21	1126.94	16.0
	Std Dev	4.0	0.7	19.3	16.3	5.9	5.0	0.9	361.0	0.2	584.2	3.7
	Std Err	0.8	0.1	3.7	3.1	1.1	0.9	0.2	68.2	0.0	110.4	0.7
	N	28	28	28	28	28	28	28	28	29	28	29

* Weather code: 1 = Worse than average, 2 = Average, 3 = Better than average, for this time of year.

Catch Location		Effort (per Dragger-Day)										Catch/Effort Statistics								
		Width(ft)	Width(M)	Away Hrs	Fish Hrs	Mins/Tow	Tows/Hr	TotalTows	Tow Hrs	Man-Hrs	Ft-TowHrs	Lbs/TowHr	Kg/TowHr	Lb/ManHr	Lb/Ft-TowHr	Kg/M-TowHr	\$/TowHr	\$/ManHr	\$/Ft-TowHr	\$/M-TowHr
Knox-Waldo Counties	Mean	5.5	1.7	8.8	7.0	8.0	10.0	70.0	9.3	26.3	51.3	128.6	58.3	45.7	23.4	34.8	154.3	54.9	28.1	92.0
	Std Dev	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Std Err	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	N	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Hancock County	Mean	5.5	1.7	9.3	7.3	7.0	7.5	53.8	5.5	18.5	30.0	192.6	87.4	53.5	35.0	52.1	282.9	66.0	51.4	168.7
	Std Dev	0.0	0.0	1.1	0.4	4.2	3.5	23.0	1.1	2.1	6.2	91.3	41.4	9.2	16.6	24.7	-	-	-	-
	Std Err	0.0	0.0	0.8	0.3	3.0	2.5	16.3	0.8	1.5	4.4	64.6	29.3	6.5	11.7	17.5	-	-	-	-
	N	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1
Washington County	Mean	5.5	1.7	7.7	6.2	8.0	6.2	38.9	4.9	20.9	26.8	198.1	89.9	48.1	36.0	53.6	239.7	57.6	43.6	143.0
	Std Dev	0.0	0.0	1.2	1.0	2.1	1.8	13.2	1.2	7.3	6.6	87.5	39.7	23.4	15.9	23.7	116.4	26.3	21.2	69.4
	Std Err	0.0	0.0	0.2	0.2	0.4	0.4	2.6	0.2	1.5	1.3	17.5	7.9	4.7	3.2	4.7	23.3	5.3	4.2	13.9
	N	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
All Combined	Mean	5.5	1.7	7.8	6.3	7.9	6.5	41.1	5.1	20.9	27.9	195.2	88.6	48.4	35.5	52.8	229.6	55.7	41.7	137.0
	Std Dev	0.0	0.0	1.2	1.0	2.2	2.0	14.9	1.4	7.0	7.9	85.4	38.7	22.2	15.5	23.1	120.0	27.2	21.8	71.6
	Std Err	0.0	0.0	0.2	0.2	0.4	0.4	2.8	0.3	1.3	1.5	16.1	7.3	4.2	2.9	4.4	22.7	5.1	4.1	13.5
	N	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28

Table 4c. Maine sea urchin dragger catch/effort summary by county for 2006-2007. (Note that crew includes the captain.)

Catch Location		Boat (Ft)	No. of Crew	Depth				Weather *Code	Catch (per Dragger-Day)			
				Ft(Min)	Ft(Max)	M(Min)	M(Max)		Pounds	Price/Lb	Value(\$)	Net Roe %
Hancock County	Mean	40.7	2.7	23.3	30.0	7.1	9.1	1.3	668.7	1.1	721.3	10.0
	Std Dev	1.2	0.6	5.8	10.0	1.8	3.0	0.6	123.3	0.2	8.0	1.7
	Std Err	0.7	0.3	3.3	5.8	1.0	1.8	0.3	71.2	0.1	4.6	1.0
	N	3	3	3	3	3	3	3	3	3	3	3
Washington County	Mean	38.9	2.6	31.4	43.6	9.6	13.3	1.9	1046.5	1.3	1272.5	13.0
	Std Dev	3.6	0.6	14.2	21.8	4.3	6.7	0.7	428.6	0.3	448.7	3.4
	Std Err	0.7	0.1	2.7	4.2	0.8	1.3	0.1	82.5	0.1	86.4	0.7
	N	27	27	27	27	27	27	27	27	27	27	26
All Combined	Mean	39.0	2.6	30.6	42.2	9.3	12.9	1.9	1008.7	1.2	1217.3	12.7
	Std Dev	3.5	0.6	13.7	21.2	4.2	6.5	0.7	423.1	0.3	457.0	3.4
	Std Err	0.6	0.1	2.5	3.9	0.8	1.2	0.1	77.2	0.0	83.4	0.6
	N	30	30	30	30	30	30	30	30	30	30	29

* Weather code: 1 = Worse than average, 2 = Average, 3 = Better than average, for this time of year.

Catch Location		Effort (per Dragger-Day)										Catch/Effort Statistics								
		Width(ft)	Width(M)	AwavHrs	FishHrs	Mins/Tow	Tows/Hr	TotalTows	TowHrs	Man-Hrs	Ft-TowHrs	Lbs/TowHr	Ka/TowHr	Lb/ManHr	Lb/Ft-TowHr	Ka/M-TowHr	\$/TowHr	\$/ManHr	\$/Ft-TowHr	\$/M-TowHr
Hancock County	Mean	5.5	1.7	8.3	6.4	7.7	6.3	39.0	4.6	22.4	3064.6	145.9	66.2	34.3	26.5	39.5	157.4	35.4	28.6	93.9
	Std Dev	0.0	0.0	1.1	0.8	2.5	3.2	14.4	0.1	7.4	566.4	27.0	12.3	20.5	4.9	7.3	3.8	14.6	0.7	2.3
	Std Err	0.0	0.0	0.7	0.5	1.5	1.9	8.3	0.0	4.3	327.0	15.6	7.1	11.8	2.8	4.2	2.2	8.4	0.4	1.3
	N	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Washington County	Mean	5.5	1.7	8.2	6.5	9.1	4.9	31.7	4.8	21.4	5344.7	239.9	108.8	50.2	43.6	64.9	296.1	62.1	53.8	176.6
	Std Dev	0	0.0	1.7	1.7	1.4	0.7	10.0	1.7	7.4	3737.8	121.4	55.1	17.4	22.1	32.9	153.4	20.3	27.9	91.5
	Std Err	0.0	0.0	0.3	0.3	0.3	0.1	1.9	0.3	1.4	719.3	23.4	10.6	3.3	4.2	6.3	29.5	3.9	5.4	17.6
	N	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
All Combined	Mean	5.5	1.7	8.2	6.5	8.9	5.0	32.5	4.8	21.5	5116.7	230.5	104.5	48.6	41.9	62.4	282.2	59.4	51.3	168.4
	Std Dev	0.0	0.0	8.2	1.6	1.5	1.2	10.5	1.6	7.3	3610.0	118.7	53.8	18.0	21.6	32.1	151.3	21.2	27.5	90.2
	Std Err	0.0	0.0	1.5	0.3	0.3	0.2	1.9	0.3	1.3	659.1	21.7	9.8	3.3	3.9	5.9	27.6	3.9	5.0	16.5
	N	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30

Table 4d. Maine sea urchin dragger catch/effort summary by county for 2007-2008. (Note that crew includes the captain.)

Catch Location		Boat (Ft)	No. of Crew	Depth				Weather Code*	Catch (per Dragger-Day)			
				Min (ft)	Max (ft)	Min (m)	Max (m)		Pounds	Price/Lb	Value(\$)	Net Roe %
Hancock County	Mean	35.7	2.6	20.3	32.4	6.2	9.9	2.1	869.4	1.47	1,264.86	13.4
	Std Dev	4.7	0.8	12.8	19.7	3.9	6.0	1.1	717.1	0.3	1007.0	2.6
	Std Err	1.8	0.3	4.9	7.5	1.5	2.3	0.4	271.0	0.1	380.6	1.0
	N	7	7	7	7	7	7	7	7	7	7	7
Washington County	Mean	38.8	2.4	39.0	45.2	11.9	13.8	2.2	620.0	1.78	1,047.58	13.8
	Std Dev	3.6	0.5	9.6	8.5	2.9	2.6	0.9	285.8	0.73	593.8	3.2
	Std Err	0.8	0.1	2.0	1.8	0.6	0.6	0.2	60.9	0.2	126.6	0.7
	N	22	22	22	22	22	22	22	22	22	22	22
All Combined	Mean	38.0	2.4	34.4	42.1	10.5	12.8	2.2	680.2	1.71	1,100.03	13.7
	Std Dev	4.0	0.6	13.3	13.0	4.0	4.0	0.9	428.1	0.7	700.5	3.0
	Std Err	0.7	0.1	2.5	2.4	0.7	0.7	0.2	79.5	0.1	130.1	0.6
	N	29	29	29	29	29	29	29	29	29	29	29

* Weather code: 1 = Worse than average, 2 = Average, 3 = Better than average, for this time of year.

Catch Location		Effort (per Dragger-Day)										Catch/Effort Statistics								
		Width(ft)	Width(M)	Away Hrs	Fish Hrs	Mins/Tow	Tows/Hr	TotalTows	Tow Hrs	Man-Hrs	Ft-TowHrs	Lbs/TowHr	Kg/TowHr	Lb/ManHr	Lb/Ft-TowHr	Kg/M-TowHr	\$/TowHr	\$/ManHr	\$/Ft-TowHr	\$/M-TowHr
Hancock County	Mean	5.5	1.7	5.9	4.2	9.7	4.0	16.1	2.7	14.3	14.9	438.6	199.0	59.9	79.8	118.7	629.0	87.4	114.4	375.2
	Std Dev	0.0	0.0	2.1	1.9	5.9	0.8	5.7	2.2	5.3	12.2	468.3	212.4	47.9	85.1	126.7	618.7	64.3	112.5	369.1
	Std Err	0.0	0.0	0.8	0.7	2.2	0.3	2.1	0.8	2.0	4.6	177.0	80.3	18.1	32.2	47.9	233.9	24.3	42.5	139.5
	N	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Washington County	Mean	5.5	1.7	7.7	6.1	7.4	6.0	36.5	4.1	18.3	22.4	166.1	75.3	34.5	30.2	44.9	278.2	57.6	50.6	166.0
	Std Dev	0	0.0	0.8	0.9	2.4	2.1	13.9	1.0	3.3	5.5	98.5	44.7	17.2	17.9	26.6	194.5	32.9	35.4	116.0
	Std Err	0.0	0.0	0.2	0.2	0.5	0.4	3.0	0.2	0.7	1.2	21.0	9.5	3.7	3.8	5.7	41.5	7.0	7.5	24.7
	N	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
All Combined	Mean	5.5	1.7	7.3	5.6	7.9	5.5	31.6	3.7	17.4	20.6	231.9	105.2	40.7	42.2	62.7	362.9	64.8	66.0	216.5
	Std Dev	0.0	0.0	1.4	1.4	3.6	2.0	15.2	1.5	4.2	8.1	261.5	118.6	28.9	47.5	70.7	365.7	43.2	66.5	218.2
	Std Err	0.0	0.0	0.3	0.3	0.7	0.4	2.8	0.3	0.8	1.5	48.6	22.0	5.4	8.8	13.1	67.9	8.0	12.3	40.5
	N	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29

Table 4e. Maine sea urchin dragger catch/effort summary by county for 2008-2009. (Note that crew includes the captain.)

Catch Location		Boat (Ft)	No. of Crew	Depth				Weather Code*	Catch (per Dragger-Day)			
				Min (ft)	Max (ft)	Min (m)	Max (m)		Pounds	Price/Lb	Value(\$)	Net Roe %
Hancock County	Mean	32.9	2.3	19.0	29.3	5.8	8.9	1.9	764.0	1.30	995.69	11.3
	Std Dev	3.6	0.5	8.8	11.0	2.7	3.3	1.1	503.3	0.2	701.4	1.1
	Std Err	1.4	0.2	3.3	4.1	1.0	1.3	0.4	190.2	0.1	265.1	0.4
	N	7	7	7	7	7	7	7	7	7	7	7
Washington County	Mean	40.3	2.5	36.8	50.5	11.2	15.4	2.4	794.7	1.37	1,073.46	12.5
	Std Dev	2.7	0.6	24.5	30.8	7.5	9.4	0.7	403.7	0.40	556.3	2.7
	Std Err	0.7	0.2	6.3	7.9	1.9	2.4	0.2	104.2	0.1	143.6	0.7
	N	15	15	15	15	15	15	15	15	15	15	15
All Combined	Mean	37.9	2.5	31.1	43.7	9.5	13.3	2.2	785.0	1.35	1,048.71	12.1
	Std Dev	4.6	0.6	22.2	27.7	6.8	8.4	0.9	425.7	0.3	590.1	2.4
	Std Err	1.0	0.1	4.7	5.9	1.4	1.8	0.2	90.8	0.1	125.8	0.5
	N	22	22	22	22	22	22	22	22	22	22	22

* Weather code: 1 = Worse than average, 2 = Average, 3 = Better than average, for this time of year.

Catch Location		Effort (per Dragger-Day)										Catch/Effort Statistics								
		Width(ft)	Width(M)	Away Hrs	Fish Hrs	Mins/Tow	Tows/Hr	Total Tows	Tow Hrs	Man-Hrs	Ft-TowHrs	Lbs/TowHr	Kg/TowHr	Lb/ManHr	Lb/Ft-TowHr	Kg/M-TowHr	\$/TowHr	\$/ManHr	\$/Ft-TowHr	\$/M-TowHr
Hancock County	Mean	6.9	5.5	1.7	5.5	8.9	4.3	24.1	3.6	15.8	19.6	259.5	117.7	55.0	47.2	70.2	328.3	70.6	59.7	195.9
	Std Dev	0.9	0.0	0.0	0.7	1.6	1.3	7.9	1.3	3.8	7.3	136.9	62.1	33.4	24.9	37.0	158.0	41.5	28.7	94.2
	Std Err	0.4	0.0	0.0	0.3	0.6	0.5	3.0	0.5	1.4	2.7	51.7	23.5	12.6	9.4	14.0	59.7	15.7	10.9	35.6
	N	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Washington County	Mean	7.9	5.5	1.7	6.2	8.3	5.9	35.8	4.6	20.0	25.5	181.1	82.2	42.2	32.9	49.0	245.4	57.9	44.6	146.4
	Std Dev	1.2	0.0	0.0	1.0	2.3	2.1	10.9	0.9	6.1	5.2	110.5	50.1	22.3	20.1	29.9	154.8	34.3	28.1	92.3
	Std Err	0.3	0.0	0.0	0.3	0.6	0.5	2.8	0.2	1.6	1.3	28.5	12.9	5.8	5.2	7.7	40.0	8.9	7.3	23.8
	N	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
All Combined	Mean	7.5	5.5	1.7	6.0	8.5	5.4	32.1	4.3	18.6	23.7	206.1	93.5	46.3	37.5	55.8	271.8	62.0	49.4	162.1
	Std Dev	1.2	0.0	0.0	1.0	2.0	2.0	11.4	1.2	5.8	6.4	122.0	55.3	26.2	22.2	33.0	157.1	36.2	28.6	93.7
	Std Err	0.3	0.0	0.0	0.2	0.4	0.4	2.4	0.2	1.2	1.4	26.0	11.8	5.6	4.7	7.0	33.5	7.7	6.1	20.0
	N	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22

Table 5. Maine sea urchin catch and effort means by season, for divers (left) and draggers (right).

Sampling Season	Age	Divers							Draggers							
		Minimum Depth (ft)	Maximum Depth (ft)	Daily Catch (lbs)	Price (\$/Lb)	Roe %	Bottom Hours	CPUE (lbs/hr)	Boat Length (ft)	Min. Depth (ft)	Max. Depth (ft)	Daily Catch (lbs)	Price (\$/Lb)	Roe %	Hours Fished	CPUE (lbs/ft-hr)
Oct 1994 - Mar 1995	Mean: 33.6 N: 254	10.9 341	21.9 341	628 341	1.07 341	12.5 340	3.4 341	195.4 341	33.2 64	16.6 64	39.4 64	564 64	0.87 64	11.1 64	5.6 64	39.1 63
Dec 1995 - Apr 1996	Mean: 32.3 N: 216	14.5 213	31.7 213	559 219	1.04 219	13.3 213	3.0 213	192.4 213	34.3 59	18.1 58	43.6 58	444 60	1.01 60	15.2 60	5.0 59	33.7 56
Aug 1996 - Apr 1997	Mean: 32.8 N: 437	8.4 425	24.5 425	607 441	1.05 441	12.2 436	3.4 425	186.1 425	35.1 86	22.6 85	54.8 85	527 86	1.01 86	13.4 86	5.4 85	31.6 85
Sep 1997 - Apr 1998	Mean: 33.5 N: 385	9.3 381	27.3 381	588 388	1.18 388	13.9 388	3.6 381	171.9 381	35.1 67	15.9 67	57.0 67	608 68	0.91 68	12.7 68	6.0 66	32.5 66
Sep 1998 - Apr 1999	Mean: 34.9 N: 423	9.0 422	24.9 422	584 425	1.19 425	14.4 406	3.3 422	183.7 422	36.2 72	20.8 72	57.4 72	665 72	1.02 72	12.9 70	5.9 72	35.5 71
Sep 1999 - Apr 2000	Mean: 35.2 N: 334	8.6 327	25.0 327	563 334	1.39 336	13.5 336	3.4 328	170.0 326	36.5 78	15.0 78	50.6 78	602 79	1.35 79	14.0 78	5.3 78	34.4 77
Sep 2000 - Apr 2001	Mean: 36.7 N: 272	9.8 272	27.0 272	571 273	1.30 272	13.4 272	3.5 270	172.1 270	35.2 66	19.6 66	51.0 62	575 66	1.13 66	13.0 66	5.4 66	33.3 66
Sep 2001 - Apr 2002	Mean: 36.7 N: 263	11.7 266	26.2 266	530 265	1.09 265	13.4 265	3.7 266	144.8 265	35.2 48	21.7 48	38.2 48	532 48	0.97 48	13.8 48	5.8 48	24.8 48
Sep 2002 - Apr 2003	Mean: 38.4 N: 180	16.0 180	24.0 180	535 180	1.28 174	14.4 176	3.6 180	150.3 180	36.3 39	28.2 39	39.0 39	728 39	1.16 39	14.1 39	6.1 39	30.2 39
Sep 2003 - Apr 2004	Mean: 40.1 N: 128	19.9 128	25.7 128	579 128	1.49 122	14.3 122	3.9 128	157.7 128	36.3 38	24.5 38	39.6 38	616 38	1.19 38	15.0 38	5.2 38	29.6 38
Sep 2004 - Mar 2005	Mean: 41.6 N: 81	18.5 81	24.9 81	626 81	1.55 81	14.3 81	4.3 81	148.4 81	36.3 30	37.0 30	44.7 30	673 30	1.28 30	13.6 30	6.1 30	27.1 30
Sep 2005 - Mar 2006	Mean: 40.6 N: 88	17.3 88	24.0 88	729 88	1.37 88	14.0 88	4.1 88	178.6 88	36.8 28	28.3 28	40.5 28	955 28	1.21 29	16.0 29	6.3 28	35.5 28
Sep 2006 - Mar 2007	Mean: 42.0 N: 87	15.9 87	23.0 87	648 87	1.52 87	13.7 83	4.0 87	160.1 87	39.0 30	30.6 30	42.2 30	1009 30	1.25 30	12.7 29	6.5 30	41.9 30
Sep 2007 - Mar 2008	Mean: 43.4 N: 76	13.4 78	21.2 78	702 78	1.54 78	13.2 77	4.5 78	156.8 78	38.0 29	34.4 29	42.1 29	680 29	1.71 29	13.7 29	5.6 29	42.2 29
Sep 2008 - Mar 2009	Mean: 43.2 N: 37	15.9 37	23.5 38	596 38	1.52 38	12.6 38	4.0 38	153.0 38	37.9 22	31.1 22	43.7 22	785 22	1.35 22	12.1 22	6.0 22	37.5 22

Table 6. Maine sea urchin catch per unit effort season medians by management zone and season, for divers (left) and draggers (right).

<u>Season</u>	<u>Diver pounds per bottom hour</u>				<u>Season</u>	<u>Dragger pounds per ft width tow hour</u>			
	<u>Zone 1</u>		<u>Zone 2</u>			<u>Zone 1</u>		<u>Zone 2</u>	
	median	std err	median	std err		median	std err	median	std err
1994-95	150	8.13	220	11.64	1994-95	24.56	5.07	31.33	8.06
1995-96	126	9.38	208	13.48	1995-96	17.90	7.65	28.42	7.75
1996-97	134	6.19	204	6.87	1996-97	23.10	5.79	24.80	3.38
1997-98	117	6.79	189	7.78	1997-98	28.12	5.31	28.53	4.18
1998-99	154	6.10	185	7.34	1998-99	27.25	3.18	33.61	3.46
1999-00	146	6.00	176	8.34	1999-00	19.39	11.41	28.31	3.25
2000-01	161	10.43	152	7.56	2000-01	20.55	2.01	29.14	3.93
2001-02	136	5.29	130	7.44	2001-02	22.24	-	22.47	2.84
2002-03	135	7.51	145	8.71	2002-03			25.93	3.23
2003-04	128	9.99	164	14.09	2003-04			26.38	3.21
2004-05	120	12.75	150	10.50	2004-05	11.36	1.13	23.40	3.86
2005-06	137	15.34	189	10.81	2005-06	23.38	-	34.98	3.81
2006-07	122	11.14	177	9.97	2006-07			35.24	4.94
2007-08	122	17.65	152	9.95	2007-08			29.25	11.06
2008-09	147	13.74	154	13.34	2008-09			28.56	5.62

Table 7. Maine sea urchin diameters (mm) by management zone and season, from port samples.

Zone 1

<u>Season</u>	<u>No. of samples</u>	<u>Total urchins</u>	<u>Mean</u>	<u>S.D.</u>	<u>Min</u>	<u>1 st quartile</u>	<u>Median</u>	<u>3rd quartile</u>	<u>Max</u>
1995-96	111	2,220	60.6	7.1	41	55	60	65	101
1996-97	194	3,840	58.8	6.5	39	54	58	63	90
1997-98	199	3,980	61.2	6.5	44	56	60	65	89
1998-99	239	4,600	60.9	6.5	42	56	60	65	91
1999-00	177	3,540	60.1	6.5	40	55	59	64	88
2000-01	134	2,680	58.8	6.1	43	55	58	62	86
2001-02	96	1,920	60.5	6.4	47	55	60	65	88
2002-03	43	860	61.4	5.5	45	58	61	64	86
2003-04	31	620	59.4	4.3	47	56	59	62	86
2004-05	27	540	60.9	5.0	50	57	60	64	82
2005-06	15	300	61.6	5.0	50	58	60	64	78
2006-07	16	320	61.5	5.3	50	57	60	65	77
2007-08	14	280	61.6	6.4	48	57	60	65	81
2008-09	6	120	61.0	4.9	52	58	60	64	74

Zone 2

<u>Season</u>	<u>No. of samples</u>	<u>Total urchins</u>	<u>Mean</u>	<u>S.D.</u>	<u>Min</u>	<u>1 st quartile</u>	<u>Median</u>	<u>3rd quartile</u>	<u>Max</u>
1995-96	169	3,365	60.6	8.9	40	54	59	66	95
1996-97	340	6,794	60.9	8.5	39	55	59	66	94
1997-98	268	5,354	62.4	7.9	41	57	61	67	97
1998-99	286	5,719	62.1	7.9	44	56	61	67	110
1999-00	244	4,880	61.9	8.2	44	55	61	67	99
2000-01	162	3,239	58.7	6.7	44	54	57	63	90
2001-02	132	2,640	59.3	6.1	45	55	58	63	85
2002-03	104	2,080	61.0	6.0	37	56	60	65	81
2003-04	67	1,340	60.3	6.3	45	55	60	65	81
2004-05	44	880	61.6	5.4	51	58	61	65	83
2005-06	68	1,360	61.4	5.9	45	56	60	64	86
2006-07	55	1,095	62.4	6.2	47	57	60	65	85
2007-08	49	980	62.5	6.1	47	57	60	63	80
2008-09	43	858	63.1	6.6	47	57	61	66	83

Table 8. Area of potential Maine sea urchin habitat (hard substrates) in the spring survey areas from GIS depth and bottom type layers, depths 0-15m only.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth stratum</u>	<u>Habitat Area (m²) for stratum</u>	<u>Habitat Area (m²) for region</u>
<u>Zone 1</u>				
Kittery to Phippsburg	1	1 (1-5m)	3.89E+07	1.65E+08
		2 (5-10m)	5.98E+07	
		3 (10-15m)	6.58E+07	
Phippsburg - Boothbay - - Bristol - Bremen	2	1	2.07E+07	7.35E+07
		2	2.66E+07	
		3	2.62E+07	
Friendship - Port Clyde - - Tenants - Rockland	3	1	5.35E+07	1.28E+08
		2	3.70E+07	
		3	3.75E+07	
<u>Zone 2</u>				
Isleboro - Vinalhaven - - Stonington	4	1	1.55E+08	2.74E+08
		2	6.40E+07	
		3	5.51E+07	
Blue Hill - Swans Is - - Mount Desert Is	5	1	5.23E+07	1.48E+08
		2	4.95E+07	
		3	4.64E+07	
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	3.81E+07	6.20E+07
		2	1.20E+07	
		3	1.19E+07	
Milbridge - Addison - - Jonesport	7	1	1.23E+08	1.80E+08
		2	3.66E+07	
		3	2.05E+07	
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	5.40E+07	9.79E+07
		2	2.66E+07	
		3	1.74E+07	
Cobscook Bay	9	1	3.44E+07	5.20E+07
		2	8.72E+06	
		3	8.90E+06	
<hr/>				
Zone 1	1-3	1	1.13E+08	3.66E+08
		2	1.23E+08	
		3	1.30E+08	
Zone 2	4-6	1	4.56E+08	8.14E+08
		2	1.97E+08	
		3	1.60E+08	
Statewide	1-9	1	5.69E+08	1.18E+09
		2	3.21E+08	
		3	2.90E+08	

Note: “E+06” is MS-Excel scientific notation for millions (10⁶), “E+07” is tens of millions (10⁷), “E+08” is hundreds of millions (10⁸), etc.

Table 9a. 2005 spring survey mean, estimated totals, and stratified mean sea urchin abundances and standard errors (SE) by depth stratum, region, and zone, depths 0-15m, not including industry sites.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth stratum</u>	Mean Numbers per m ² <u>for stratum</u>	SE <u>for stratum</u>	Total Numbers <u>for stratum</u>	Stratified Mean Numbers per m ² <u>for region</u>	SE <u>for region</u>	Total Numbers <u>for region</u>
Zone 1								
Kittery to Phippsburg	1	1 (1-5m)	0.03	0.01	1.34E+06	0.16	0.08	2.63E+07
		2 (5-10m)	0.24	0.19	1.42E+07			
		3 (10-15m)	0.16	0.10	1.07E+07			
Phippsburg - Boothbay - - Bristol - Bremen	2	1	0.13	0.07	2.59E+06	0.37	0.08	2.70E+07
		2	0.59	0.19	1.57E+07			
		3	0.33	0.11	8.69E+06			
Friendship - Port Clyde - - Tenants - Rockland	3	1	2.09	1.14	1.12E+08	1.54	0.52	1.97E+08
		2	1.11	0.46	4.11E+07			
		3	1.17	0.57	4.37E+07			
Zone 2								
Isleboro - Vinalhaven - - Stonington	4	1	0.67	0.37	1.04E+08	0.43	0.21	1.17E+08
		2	0.14	0.08	8.75E+06			
		3	0.08	0.07	4.50E+06			
Blue Hill - Swans Is - - Mount Desert Is	5	1	1.11	0.67	5.79E+07	1.16	0.38	1.72E+08
		2	1.32	0.72	6.52E+07			
		3	1.06	0.53	4.91E+07			
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	5.41	2.08	2.06E+08	6.24	1.75	3.87E+08
		2	7.76	4.28	9.33E+07			
		3	7.37	4.55	8.74E+07			
Milbridge - Addison - - Jonesport	7	1	1.26	0.70	1.54E+08	1.94	0.67	3.48E+08
		2	4.04	2.27	1.48E+08			
		3	2.26	0.98	4.64E+07			
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	5.55	1.82	2.99E+08	6.87	1.38	6.73E+08
		2	9.84	3.31	2.61E+08			
		3	6.44	1.80	1.12E+08			
Cobscook Bay	9	1	30.97	5.24	1.07E+09	28.42	3.74	1.48E+09
		2	29.46	7.14	2.57E+08			
		3	17.55	4.48	1.56E+08			
Zone 1	1-3	1-3				0.68	0.19	2.50E+08
Zone 2	4-6	1-3				3.90	0.37	3.18E+09

Table 9b. 2006 spring survey mean, estimated totals, and stratified mean sea urchin abundances and standard errors (SE) by depth stratum, region, and zone, depths 0-15m, not including industry sites.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth stratum</u>	Mean Numbers per m ² for stratum	SE for stratum	Total Numbers for stratum	Stratified Mean Numbers per m ² for region	SE for region	Total Numbers for region
Zone 1								
Kittery to Phippsburg	1	1 (1-5m)	0.29	0.11	1.14E+07	0.55	0.13	9.08E+07
		2 (5-10m)	0.68	0.25	4.06E+07			
		3 (10-15m)	0.59	0.22	3.87E+07			
Phippsburg - Boothbay - - Bristol - Bremen	2	1	0.17	0.08	3.50E+06	0.69	0.27	5.08E+07
		2	0.88	0.51	2.34E+07			
		3	0.91	0.53	2.39E+07			
Friendship - Port Clyde - - Tenants - Rockland	3	1	1.02	0.50	5.43E+07	0.60	0.22	7.65E+07
		2	0.44	0.18	1.64E+07			
		3	0.15	0.06	5.80E+06			
Zone 2								
Isleboro - Vinalhaven - - Stonington	4	1	4.14	1.97	6.42E+08	2.73	1.14	7.48E+08
		2	1.57	1.15	1.00E+08			
		3	0.12	0.10	6.61E+06			
Blue Hill - Swans Is - - Mount Desert Is	5	1	1.46	0.92	7.64E+07	0.83	0.35	1.23E+08
		2	0.51	0.30	2.53E+07			
		3	0.46	0.30	2.15E+07			
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	2.76	1.09	1.05E+08	2.08	0.70	1.29E+08
		2	1.80	1.10	2.16E+07			
		3	0.20	0.08	2.43E+06			
Milbridge - Addison - - Jonesport	7	1	0.61	0.39	7.51E+07	0.92	0.37	1.65E+08
		2	2.22	1.25	8.11E+07			
		3	0.41	0.22	8.42E+06			
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	5.14	1.91	2.77E+08	6.43	1.42	6.29E+08
		2	7.61	2.98	2.02E+08			
		3	8.63	2.91	1.50E+08			
Cobscook Bay	9	1	32.11	6.02	1.11E+09	28.13	4.15	1.46E+09
		2	22.21	4.99	1.94E+08			
		3	18.53	4.85	1.65E+08			
Zone 1	1-3	1-3				0.60	0.11	2.18E+08
Zone 2	4-6	1-3				4.00	0.51	3.26E+09

Table 9c. 2007 spring survey mean, estimated totals, and stratified mean sea urchin abundances and standard errors (SE) by depth stratum, region, and zone, depths 0-15m, not including industry sites.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth stratum</u>	Mean Numbers per m ² <u>for stratum</u>	SE <u>for stratum</u>	Total Numbers <u>for stratum</u>	Stratified Mean Numbers per m ² <u>for region</u>	SE <u>for region</u>	Total Numbers <u>for region</u>
Zone 1								
Kittery to Phippsburg	1	1 (1-5m)	1.83	1.80	7.14E+07	0.91	0.49	1.50E+08
		2 (5-10m)	0.65	0.43	3.89E+07			
		3 (10-15m)	0.60	0.44	3.95E+07			
Phippsburg - Boothbay - - Bristol - Bremen	2	1	0.42	0.30	8.68E+06	0.34	0.12	2.49E+07
		2	0.40	0.21	1.06E+07			
		3	0.22	0.12	5.71E+06			
Friendship - Port Clyde - - Tenants - Rockland	3	1	0.75	0.37	3.99E+07	0.52	0.18	6.60E+07
		2	0.43	0.26	1.60E+07			
		3	0.27	0.23	1.01E+07			
Zone 2								
Isleboro - Vinalhaven - - Stonington	4	1	4.79	1.57	7.42E+08	2.86	0.89	7.83E+08
		2	0.55	0.23	3.54E+07			
		3	0.10	0.04	5.51E+06			
Blue Hill - Swans Is - - Mount Desert Is	5	1	1.21	0.48	6.35E+07	1.39	0.73	2.07E+08
		2	1.95	1.93	9.68E+07			
		3	1.00	0.96	4.64E+07			
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	1.69	0.75	6.44E+07	1.35	0.48	8.37E+07
		2	0.96	0.44	1.16E+07			
		3	0.65	0.47	7.65E+06			
Milbridge - Addison - - Jonesport	7	1	0.13	0.06	1.61E+07	0.21	0.05	3.82E+07
		2	0.38	0.12	1.39E+07			
		3	0.40	0.23	8.21E+06			
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	3.62	1.69	1.95E+08	5.11	1.28	5.01E+08
		2	7.93	2.91	2.11E+08			
		3	5.45	2.11	9.48E+07			
Cobscook Bay	9	1	28.03	7.28	9.65E+08	24.26	4.95	1.26E+09
		2	21.39	5.82	1.86E+08			
		3	12.53	3.73	1.12E+08			
Zone 1	1-3	1-3				0.66	0.23	2.41E+08
Zone 2	4-6	1-3				3.53	0.48	2.88E+09

Table 9d. 2008 spring survey mean, estimated totals, and stratified mean sea urchin abundances and standard errors (SE) by depth stratum, region, and zone, depths 0-15m, not including industry sites.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth stratum</u>	Mean Numbers per m ² <u>for stratum</u>	SE <u>for stratum</u>	Total Numbers <u>for stratum</u>	Stratified Mean Numbers per m ² <u>for region</u>	SE <u>for region</u>	Total Numbers <u>for region</u>
<u>Zone 1</u>								
Kittery to Phippsburg	1	1 (1-5m)	0.10	0.06	3.91E+06	0.84	0.45	1.39E+08
		2 (5-10m)	0.46	0.13	2.76E+07			
		3 (10-15m)	1.63	1.12	1.07E+08			
Phippsburg - Boothbay - - Bristol - Bremen	2	1	0.43	0.15	8.94E+06	2.53	1.35	1.86E+08
		2	2.78	1.83	7.41E+07			
		3	3.94	3.31	1.03E+08			
Friendship - Port Clyde - - Tenants - Rockland	3	1	1.82	0.66	9.72E+07	1.14	0.30	1.45E+08
		2	0.71	0.28	2.63E+07			
		3	0.58	0.27	2.19E+07			
<u>Zone 2</u>								
Isleboro - Vinalhaven - - Stonington	4	1	11.38	5.14	1.76E+09	6.97	2.91	1.91E+09
		2	2.10	0.81	1.34E+08			
		3	0.21	0.13	1.16E+07			
Blue Hill - Swans Is - - Mount Desert Is	5	1	2.39	1.61	1.25E+08	1.43	0.62	2.12E+08
		2	0.60	0.26	2.99E+07			
		3	1.24	0.71	5.73E+07			
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	5.05	2.40	1.93E+08	4.13	1.57	2.56E+08
		2	3.32	2.51	3.99E+07			
		3	1.99	1.09	2.36E+07			
Milbridge - Addison - - Jonesport	7	1	0.97	0.38	1.18E+08	1.02	0.29	1.84E+08
		2	1.15	0.61	4.22E+07			
		3	1.13	0.61	2.31E+07			
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	4.52	2.08	2.44E+08	6.32	1.57	6.19E+08
		2	9.15	3.52	2.43E+08			
		3	7.58	2.78	1.32E+08			
Cobscook Bay	9	1	36.88	8.86	1.27E+09	29.87	5.90	1.55E+09
		2	18.80	3.28	1.64E+08			
		3	13.64	2.69	1.21E+08			
Zone 1	1-3	1-3				1.28	0.35	4.70E+08
Zone 2	4-6	1-3				5.82	1.08	4.73E+09

Table 9e. 2009 spring survey mean, estimated totals, and stratified mean sea urchin abundances and standard errors (SE) by depth stratum, region, and zone, depths 0-15m, not including industry sites.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth stratum</u>	<u>Mean Numbers per m² for stratum</u>	<u>SE for stratum</u>	<u>Total Numbers for stratum</u>	<u>Stratified Mean Numbers per m² for region</u>	<u>SE for region</u>	<u>Total Numbers for region</u>
Zone 1								
Kittery to Phippsburg	1	1 (1-5m)	0.14	0.07	5.47E+06	0.13	0.04	2.10E+07
		2 (5-10m)	0.12	0.06	7.29E+06			
		3 (10-15m)	0.13	0.08	8.23E+06			
Phippsburg - Boothbay - - Bristol - Bremen	2	1	0.28	0.16	5.83E+06	0.34	0.10	2.52E+07
		2	0.44	0.22	1.17E+07			
		3	0.30	0.13	7.72E+06			
Friendship - Port Clyde - - Tenants - Rockland	3	1	1.28	0.50	6.82E+07	1.39	0.38	1.77E+08
		2	1.27	0.40	4.71E+07			
		3	1.66	1.02	6.22E+07			
Zone 2								
Isleboro - Vinalhaven - - Stonington	4	1	6.25	1.88	9.68E+08	3.96	1.07	1.08E+09
		2	1.58	0.62	1.01E+08			
		3	0.27	0.15	1.49E+07			
Blue Hill - Swans Is - - Mount Desert Is	5	1	8.15	4.01	4.27E+08	4.76	1.55	7.06E+08
		2	4.35	1.87	2.15E+08			
		3	1.37	0.30	6.34E+07			
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	6.29	2.15	2.40E+08	4.31	1.33	2.67E+08
		2	1.58	0.55	1.89E+07			
		3	0.73	0.23	8.66E+06			
Milbridge - Addison - - Jonesport	7	1	4.22	2.28	5.17E+08	4.72	1.70	8.49E+08
		2	7.13	3.26	2.60E+08			
		3	3.47	1.60	7.12E+07			
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	8.63	3.92	4.66E+08	8.67	2.42	8.49E+08
		2	9.18	3.45	2.44E+08			
		3	8.02	3.21	1.39E+08			
Cobscook Bay	9	1	29.57	6.52	1.02E+09	24.32	4.37	1.27E+09
		2	18.61	4.00	1.62E+08			
		3	9.62	1.70	8.57E+07			
Zone 1	1-3	1-3				0.61	0.14	2.24E+08
Zone 2	4-6	1-3				6.17	0.72	5.02E+09

Table 10. Spring survey stratified mean sea urchin abundance in number of urchins/m² by region, depths 0-15m, all survey years, not including industry sites.

<u>Region Name</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>
<u>Zone 1</u>									
1 Kittery to Phippsburg	0.19	0.85	0.36	0.14	0.16	0.55	0.91	0.84	0.13
2 Phippsburg - Boothbay - - Bristol - Bremen	2.86	4.91	1.10	0.73	0.37	0.69	0.34	2.53	0.34
3 Friendship - Port Clyde - - Tenants - Rockland	3.79	5.12	3.02	0.51	1.54	0.60	0.52	1.14	1.39
<u>Zone 2</u>									
4 Isleboro - Vinalhaven - - Stonington	6.08	2.38	2.04	0.99	0.42	2.73	2.86	6.97	3.96
5 Blue Hill - Swans Is - - Mount Desert Is	4.70	3.03	2.74	1.72	1.15	0.83	1.39	1.43	4.76
6 Frenchman Bay - Winter Harbor - Corea - Steuben	10.64	12.08	8.38	4.35	6.24	2.08	1.35	4.13	4.31
7 Milbridge - Addison - - Jonesport	7.20	5.41	3.77	1.89	1.94	0.92	0.21	1.02	4.73
8 Roque Is - Machiasport - - Cutler - W. Quoddy Hd	12.23	12.35	6.63	5.33	6.87	6.43	5.11	6.32	8.67
9 Cobscook Bay	38.72	46.10	37.75	36.47	28.41	28.13	24.26	29.87	24.32

Table 11a. 2005 spring survey mean, estimated totals, and stratified mean sea urchin biomass and standard errors (SE) by depth stratum, region, and zone, depths 0-15m only, not including industry sites.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth stratum</u>	Mean Biomass (g/m ²) <u>for stratum</u>	SE <u>for stratum</u>	Total Biomass (g) <u>for stratum</u>	Stratified Mean Biomass (g/m ²) <u>for region</u>	SE <u>for region</u>	Total Biomass (mt) <u>for region</u>
<u>Zone 1</u>								
Kittery to Phippsburg	1	1 (1-5m)	0.52	0.38	2.02E+07	1.75	1.12	288
		2 (5-10m)	3.29	3.01	1.97E+08			
		3 (10-15m)	1.07	0.54	7.07E+07			
Phippsburg - Boothbay - - Bristol - Bremen	2	1	6.03	3.00	1.25E+08	12.02	3.97	884
		2	18.32	9.26	4.88E+08			
		3	10.37	5.51	2.71E+08			
Friendship - Port Clyde - - Tenants - Rockland	3	1	105.07	54.97	5.62E+09	62.89	24.49	8,051
		2	31.47	17.03	1.16E+09			
		3	33.80	23.72	1.27E+09			
<u>Zone 2</u>								
Isleboro - Vinalhaven - - Stonington	4	1	19.09	14.37	2.96E+09	12.20	8.18	3,342
		2	5.53	4.22	3.54E+08			
		3	0.59	0.54	3.24E+07			
Blue Hill - Swans Is - - Mount Desert Is	5	1	55.80	38.92	2.92E+09	48.38	19.07	7,174
		2	48.46	31.56	2.40E+09			
		3	39.91	25.51	1.85E+09			
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	183.50	70.87	6.99E+09	227.47	70.87	14,100
		2	244.48	138.05	2.94E+09			
		3	351.57	256.46	4.17E+09			
Milbridge - Addison - - Jonesport	7	1	105.48	48.73	1.29E+10	146.28	41.29	26,277
		2	265.02	113.14	9.69E+09			
		3	178.41	73.02	3.66E+09			
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	396.01	110.31	2.14E+10	473.62	85.06	46,385
		2	613.75	197.50	1.63E+10			
		3	500.48	145.70	8.71E+09			
Cobscook Bay	9	1	488.49	83.69	1.68E+10	435.40	57.56	22,661
		2	337.38	55.92	2.94E+09			
		3	326.15	74.17	2.90E+09			
Zone 1	1-3	1-3				25.19	8.62	9,222
Zone 2	4-6	1-3				147.38	15.82	119,939

Table 11b. 2006 spring survey mean, estimated totals, and stratified mean sea urchin biomass and standard errors (SE) by depth stratum, region, and zone, depths 0-15m only, not including industry sites.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth stratum</u>	Mean Biomass (g/m ²) <u>for stratum</u>	SE <u>for stratum</u>	Total Biomass (g) <u>for stratum</u>	Stratified Mean Biomass (g/m ²) <u>for region</u>	SE <u>for region</u>	Total Biomass (mt) <u>for region</u>
<u>Zone 1</u>								
Kittery to Phippsburg	1	1 (1-5m)	3.75	1.89	1.46E+08	10.91	4.03	1,796
		2 (5-10m)	9.32	4.38	5.57E+08			
		3 (10-15m)	16.61	9.20	1.09E+09			
Phippsburg - Boothbay - - Bristol - Bremen	2	1	10.68	5.54	2.22E+08	24.11	13.05	1,773
		2	38.54	34.31	1.03E+09			
		3	20.08	10.34	5.25E+08			
Friendship - Port Clyde - - Tenants - Rockland	3	1	53.50	32.54	2.86E+09	25.23	13.70	3,229
		2	8.64	6.06	3.20E+08			
		3	1.31	0.54	4.90E+07			
<u>Zone 2</u>								
Isleboro - Vinalhaven - - Stonington	4	1	192.20	92.83	2.98E+10	123.35	53.80	33,785
		2	61.88	50.85	3.96E+09			
		3	1.25	1.22	6.90E+07			
Blue Hill - Swans Is - - Mount Desert Is	5	1	69.36	46.61	3.63E+09	41.37	19.55	6,135
		2	23.37	18.00	1.16E+09			
		3	29.02	27.76	1.35E+09			
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	109.27	50.99	4.16E+09	86.87	33.28	5,385
		2	99.35	57.68	1.19E+09			
		3	2.26	0.87	2.68E+07			
Milbridge - Addison - - Jonesport	7	1	50.14	31.19	6.14E+09	76.06	28.87	13,664
		2	182.54	94.73	6.67E+09			
		3	41.22	25.82	8.46E+08			
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	385.58	122.50	2.08E+10	461.75	83.58	45,223
		2	546.69	149.87	1.45E+10			
		3	568.40	156.74	9.89E+09			
Cobscook Bay	9	1	634.06	125.47	2.18E+10	509.58	83.90	26,522
		2	304.29	54.60	2.65E+09			
		3	229.38	48.31	2.04E+09			
Zone 1	1-3	1-3				18.50	5.73	6,772
Zone 2	4-6	1-3				160.62	22.75	130,713

Table 11c. 2007 spring survey mean, estimated totals, and stratified mean sea urchin biomass and standard errors (SE) by depth stratum, region, and zone, depths 0-15m only, not including industry sites.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth stratum</u>	<u>Mean Biomass (g/m²) for stratum</u>	<u>SE for stratum</u>	<u>Total Biomass (g) for stratum</u>	<u>Stratified Mean Biomass (g/m²) for region</u>	<u>SE for region</u>	<u>Total Biomass (mt) for region</u>
Zone 1								
Kittery to Phippsburg	1	1 (1-5m)	4.99	3.53	1.94E+08	6.20	2.51	1,020
		2 (5-10m)	5.71	2.50	3.41E+08			
		3 (10-15m)	7.37	5.45	4.85E+08			
Phippsburg - Boothbay - - Bristol - Bremen	2	1	36.29	28.37	7.53E+08	18.51	10.11	1,361
		2	20.95	17.05	5.58E+08			
		3	1.94	1.14	5.09E+07			
Friendship - Port Clyde - - Tenants - Rockland	3	1	30.44	19.15	1.63E+09	14.57	8.06	1,866
		2	5.11	3.31	1.89E+08			
		3	1.31	0.95	4.93E+07			
Zone 2								
Isleboro - Vinalhaven - - Stonington	4	1	245.01	89.16	3.79E+10	146.54	50.85	40,136
		2	33.91	28.91	2.17E+09			
		3	0.63	0.30	3.47E+07			
Blue Hill - Swans Is - - Mount Desert Is	5	1	48.56	25.15	2.54E+09	68.79	39.40	10,202
		2	103.33	102.97	5.12E+09			
		3	54.76	54.49	2.54E+09			
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	62.12	31.13	2.37E+09	50.93	20.48	3,157
		2	23.59	12.08	2.84E+08			
		3	42.71	36.11	5.06E+08			
Milbridge - Addison - - Jonesport	7	1	18.76	8.84	2.30E+09	22.44	7.01	4,032
		2	32.58	15.74	1.19E+09			
		3	26.40	13.76	5.42E+08			
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	240.14	89.71	1.30E+10	323.40	64.75	31,674
		2	463.45	129.11	1.23E+10			
		3	367.94	128.64	6.40E+09			
Cobscook Bay	9	1	349.42	73.13	1.20E+10	324.03	51.55	16,864
		2	348.16	94.72	3.04E+09			
		3	202.24	47.54	1.80E+09			
Zone 1	1-3	1-3				11.60	3.65	4,247
Zone 2	4-6	1-3				130.33	20.51	106,065

Table 11d. 2008 spring survey mean, estimated totals, and stratified mean sea urchin biomass and standard errors (SE) by depth stratum, region, and zone, depths 0-15m only, not including industry sites.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth stratum</u>	<u>Mean Biomass (g/m²) for stratum</u>	<u>SE for stratum</u>	<u>Total Biomass (g) for stratum</u>	<u>Stratified Mean Biomass (g/m²) for region</u>	<u>SE for region</u>	<u>Total Biomass (mt) for region</u>
Zone 1								
Kittery to Phippsburg	1	1 (1-5m)	1.09	0.69	4.24E+07	5.17	3.15	851
		2 (5-10m)	1.92	0.56	1.15E+08			
		3 (10-15m)	10.54	7.85	6.93E+08			
Phippsburg - Boothbay - - Bristol - Bremen	2	1	22.04	11.84	4.57E+08	38.52	25.76	2,832
		2	77.09	70.10	2.05E+09			
		3	12.34	7.99	3.23E+08			
Friendship - Port Clyde - - Tenants - Rockland	3	1	42.41	35.11	2.27E+09	20.65	14.69	2,643
		2	7.07	2.48	2.62E+08			
		3	3.03	1.63	1.14E+08			
Zone 2								
Isleboro - Vinalhaven - - Stonington	4	1	219.80	105.18	3.40E+10	130.66	59.63	35,786
		2	26.62	19.84	1.70E+09			
		3	0.99	0.83	5.44E+07			
Blue Hill - Swans Is - - Mount Desert Is	5	1	48.05	26.63	2.52E+09	31.19	12.06	4,625
		2	19.55	15.99	9.68E+08			
		3	24.59	17.06	1.14E+09			
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	227.44	135.75	8.67E+09	164.59	84.84	10,202
		2	84.23	68.67	1.01E+09			
		3	44.09	39.12	5.23E+08			
Milbridge - Addison - - Jonesport	7	1	113.57	39.67	1.39E+10	106.32	29.97	19,098
		2	88.65	52.35	3.24E+09			
		3	94.47	63.33	1.94E+09			
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	297.74	87.22	1.61E+10	428.09	82.87	41,926
		2	611.55	224.31	1.62E+10			
		3	552.47	164.62	9.61E+09			
Cobscook Bay	9	1	428.53	75.28	1.48E+10	376.93	52.92	19,617
		2	258.35	67.54	2.25E+09			
		3	293.55	81.41	2.61E+09			
Zone 1	1-3	1-3				17.28	7.43	6,326
Zone 2	4-6	1-3				161.29	24.58	131,255

Table 11e. 2009 spring survey mean, estimated totals, and stratified mean sea urchin biomass and standard errors (SE) by depth stratum, region, and zone, depths 0-15m only, not including industry sites.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth stratum</u>	Mean Biomass (g/m ²) <u>for stratum</u>	SE <u>for stratum</u>	Total Biomass (g) <u>for stratum</u>	Stratified Mean Biomass (g/m ²) <u>for region</u>	SE <u>for region</u>	Total Biomass (mt) <u>for region</u>
Zone 1								
Kittery to Phippsburg	1	1 (1-5m)	2.31	1.43	8.99E+07	2.22	0.75	365
		2 (5-10m)	1.39	0.50	8.33E+07			
		3 (10-15m)	2.92	1.62	1.92E+08			
Phippsburg - Boothbay - - Bristol - Bremen	2	1	25.51	20.41	5.29E+08	14.76	7.14	1,086
		2	16.54	11.59	4.40E+08			
		3	4.45	1.26	1.16E+08			
Friendship - Port Clyde - - Tenants - Rockland	3	1	25.18	10.67	1.35E+09	18.67	5.46	2,390
		2	16.54	8.59	6.12E+08			
		3	11.49	6.68	4.31E+08			
Zone 2								
Isleboro - Vinalhaven - - Stonington	4	1	145.51	49.89	2.25E+10	87.55	28.26	23,980
		2	21.47	7.83	1.37E+09			
		3	1.44	0.62	7.95E+07			
Blue Hill - Swans Is - - Mount Desert Is	5	1	122.32	47.02	6.40E+09	58.84	17.43	8726
		2	38.26	15.80	1.89E+09			
		3	9.24	2.38	4.29E+08			
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	222.18	80.60	8.47E+09	144.47	49.61	8,955
		2	24.71	11.67	2.97E+08			
		3	16.16	5.98	1.92E+08			
Milbridge - Addison - - Jonesport	7	1	227.46	78.75	2.79E+10	265.30	62.10	47,656
		2	408.50	141.98	1.49E+10			
		3	236.21	101.73	4.85E+09			
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	522.70	206.56	2.82E+10	527.19	124.85	51,632
		2	553.55	161.13	1.47E+10			
		3	500.89	150.77	8.71E+09			
Cobscook Bay	9	1	425.20	75.09	1.46E+10	358.84	50.94	18,676
		2	265.43	38.83	2.31E+09			
		3	193.77	54.15	1.73E+09			
Zone 1	1-3	1-3				10.49	2.41	3,841
Zone 2	4-6	1-3				196.15	23.22	159,626

Table 12. Spring survey stratified mean sea urchin biomass in grams/m² by region, depths 0-15m, all survey years, not including industry sites.

<u>Region Name</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>
<u>Zone 1</u>									
1 Kittery to Phippsburg	5.34	6.35	4.54	5.60	1.75	10.91	6.20	5.17	2.22
2 Phippsburg - Boothbay - - Bristol - Bremen	143.14	245.72	60.06	31.92	12.02	24.11	18.51	38.52	14.76
3 Friendship - Port Clyde - - Tenants - Rockland	206.57	158.40	155.62	23.34	62.89	25.23	14.57	20.65	18.67
<u>Zone 2</u>									
4 Isleboro - Vinalhaven - - Stonington	200.27	139.46	89.64	55.70	12.20	123.35	146.54	130.66	87.55
5 Blue Hill - Swans Is - - Mount Desert Is	100.74	83.95	123.69	63.39	48.38	41.37	68.79	31.19	58.84
6 Frenchman Bay - Winter Harbor - Corea - Steuben	413.95	456.66	376.23	225.57	227.47	86.87	50.93	164.59	144.47
7 Milbridge - Addison - - Jonesport	410.17	262.25	224.84	125.13	146.28	76.06	22.44	106.32	265.30
8 Roque Is - Machiasport - - Cutler - W. Quoddy Hd	576.52	568.43	381.01	336.79	473.62	461.75	323.40	428.09	527.19
9 Cobscook Bay	587.43	564.36	699.51	616.96	435.40	509.58	324.03	376.93	358.84

Table 13a. Spring survey mean sea urchin abundance in number of urchins/m² at the fixed sites by region and depth stratum (strata 1-3, 0-15m only), all survey years, Zone 1 (Regions 1-3) only.

Zone 1												
Number of urchins/m ²												
Region	Site	Depth	2001	2002	2003	2004	2005	2006	2007	2008	2009	
1	1A	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1D	1	0.00	0.00	0.50	0.25	0.10	0.50	0.00	0.50	0.00	
		2	0.07	0.00	0.15	0.15	0.00	1.90	0.80	0.80	0.10	
		3	0.00	0.10	0.10	1.30	1.15	0.90	0.95	0.95	1.35	
	1F	1	0.00	49.65	0.25	0.00	0.00	0.70	0.00	0.85	0.90	
		2	0.00	0.00	0.05	0.05	0.00	0.40	0.15	0.20	0.30	
		3	0.00	0.00		0.00	0.00	0.00	0.00	0.10	0.10	
	1H	1	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	
		2	0.00	0.65	0.15	0.25	0.05	0.25	0.00	0.40	0.05	
		3	0.30	0.00	0.05	0.00	0.00	0.10	0.10	0.05	0.05	
	1I	1	6.55				0.10	0.40	0.05	0.00	0.10	
		2	2.37				0.35	3.30	0.10	0.55	0.25	
		3	1.23				0.00	2.40		0.15	0.15	
	2	2A	1	6.21	4.10	2.15	0.30	0.55	1.15	1.25	1.25	0.70
			2	4.30	1.05	0.25	0.00	0.00	0.00	0.15	0.05	0.05
		2B	1	5.57	6.65	0.30	1.40	1.00	0.35	0.40	0.30	0.65
2			1.30	3.20	0.00	0.10	0.00	1.65	0.00	0.80	0.00	
2D		1	3.17	0.65	0.00	0.00	0.00	0.00	0.05	0.10	0.05	
		2	0.67	1.75	0.85	0.05	1.75	0.10	0.10	0.15	0.15	
		3	0.57	2.10	2.20	0.10	1.05	0.45	0.30	0.85	1.10	
2E		1	4.63	19.85	5.05	0.00	0.00	0.00	0.05	0.20	0.00	
		2	36.90	11.80	2.30	0.75	1.75	1.25	0.15	2.60	0.50	
		3	20.93	3.70	1.80	0.65	0.30	0.70	0.00	0.95	0.20	
2H		1	0.97	0.95	0.50	0.40	0.05	0.00	0.05	0.10	0.00	
		2	21.23	22.50	16.70	9.50	1.60	7.65	0.00	0.00	0.15	
	3	22.13	2.55	0.65	3.00	0.05	2.25	0.40	0.75	0.10		
3	3A	1	1.30	1.55	3.65	2.45	3.25	6.40	3.70	7.15	2.60	
		2	1.90	0.60	1.35	0.95	1.50	1.35	0.20	0.45	0.80	
		3	0.50	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	3B	1	0.30	0.00	0.00	0.00	0.15	0.05	0.00	0.50	0.30	
		2	0.30	0.00	0.00	0.20	0.95	0.15	0.00	2.25	0.70	
		3	1.40	0.65	0.00	0.00	0.15	0.20	0.00	1.50	0.45	
	3D	1	0.07	0.00	0.05	0.00	0.10	0.00	0.00	0.25	0.50	
		2	6.30	1.35	0.15	0.10	0.30	0.25	0.05	0.10	0.40	
		3	3.80	1.80	2.45	1.75	1.20	0.20	0.00	0.55	0.35	
	3F	1	0.50	0.65	1.35	1.00	1.30	0.40	0.00	0.80	1.25	
		2	3.47	24.95	6.10	6.90	7.10	0.30	0.00	0.70	3.00	
		3	14.77	38.35	4.85	2.30	1.60	0.65	0.00	3.45	12.60	
	3H	1	45.50	0.05	1.35	0.55	2.30	0.00	2.15	4.45	4.90	
		2	7.13	10.05	6.10	0.45	2.20	0.45	1.85	4.15	3.85	
		3	0.77	0.05	2.35	0.30	0.00	0.00	0.05	0.75	0.70	

Table 13b. Spring survey mean sea urchin abundance in number of urchins/m² at the fixed sites by region and depth stratum (strata 1-3, 0-15m only), all survey years, Zone 2 (Regions 4-9) only.

Zone 2												
Number of urchins/m ²												
Region	Site	Depth	2001	2002	2003	2004	2005	2006	2007	2008	2009	
4	4A	1	3.27	6.00	9.80	5.70	5.90	7.45	9.25	13.00	13.85	
		2	0.73	2.80	2.10	0.35	0.30	2.70	0.30	0.10	2.70	
		3	0.17	0.30	0.35	0.00	0.00	0.10	0.00	0.00	0.00	0.05
	4B	1	55.30	14.70	18.25	0.00	0.35	0.00	0.00	0.00	79.85	7.40
		2	12.67	1.65	0.00	0.00	0.00	0.00	0.45	10.20	10.10	
	4C	1	12.83	2.10	6.65	0.15	0.00	0.00	0.00	0.00	0.45	1.10
		2	11.30	6.00	0.00	0.00	0.00	0.00	0.00	2.90	1.25	
		3	12.50	1.00	0.00	0.00	0.00	0.00	0.05	0.60	0.20	
	4D	1	11.17	10.65	3.15	1.30	0.30	0.00	0.00	0.60	0.80	
		2	0.15	0.15	1.20	0.30	0.10	1.75	0.00	1.30	0.10	
	4E	1	0.03	0.50	0.00	0.00	0.25	0.00	0.05	0.00	0.65	
		2	0.23	0.00	0.00	0.00	0.00	0.00	0.05	0.15	1.75	
5	5A	1	8.10	9.00	5.65	4.95	1.40	3.55	3.20	1.90	7.85	
		2	4.27	4.35	21.25	0.70	0.85	1.25	0.10	1.10	1.55	
		3	15.13	15.50	0.00	0.25	0.00	0.45	0.25	0.90	0.35	
	5B	1	15.93	0.30	0.00	0.40	0.00	0.00	0.20	0.65	0.05	
		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	
	5C	1	0.70	0.05	0.05	0.05	0.05	0.00	0.00	0.00	0.00	
		2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.15	
		3	0.00	0.00	0.00	0.00	0.05	0.00	0.05	0.80	1.30	
	5D	1	16.50	1.10	0.00	0.05	0.00	0.00	0.10	0.00	1.15	
		2	38.27	6.70	2.40	0.65	0.10	1.60	0.10	0.00	5.45	
		3	37.80	33.10	6.05	1.05	0.75	0.80	0.00	2.90	2.55	
	5H	1	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2		0.03	0.00	0.05	0.00	0.00	0.00	0.00	0.20	1.05		
3		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	2.45		
6	6A	1	16.80	19.45	0.00	1.15	0.45	0.00	0.00	0.00	2.80	
		2	30.87	9.20	9.85	0.25	0.55	0.00	0.00	0.40	4.50	
		3	19.10	7.20	1.70	0.05	0.35	0.00	0.00	0.15	0.95	
	6C	1	23.60	0.60	0.05	0.00	0.05	0.05	0.00	0.00	0.65	
		2	20.97	9.35	0.35	0.00	0.00	0.15	0.10	0.60	0.40	
		3	19.17	6.95	0.05	0.00	0.30	0.00	0.00	0.30	0.35	
	6D	1	18.43	39.05	36.70	12.85	13.50	14.15	8.10	33.60	27.10	
		2	51.23	54.05	26.55	22.85	57.15	9.35	6.35	1.55	1.55	
		3	47.20	35.95	3.40	0.00	11.60	0.00	0.05	3.50	2.10	
	6E	1	1.27	0.40	0.35	0.00	0.50	0.90	0.75	0.70	0.80	
		2	1.00	0.35	0.10	0.15	0.35	0.05	0.30	0.10	0.50	
		3	0.20	4.75	0.00	0.00	0.15	0.35		0.10	0.50	
6H	1	0.87	2.05	4.65	1.95	13.15	8.30	6.05	11.60	8.80		
	2	0.50	0.35	0.05	0.10	0.30	0.25	0.10	0.05	0.05		

Zone 2 cont.											
Number of urchins/m ²											
Region	Site	Depth	2001	2002	2003	2004	2005	2006	2007	2008	2009
7	7A	1	21.50	21.85	7.55	0.80	0.75	0.00	0.00	0.00	0.05
		2	37.47	22.25	21.15	16.25	5.40	0.00	0.00	0.80	0.50
		3	18.47	13.25	9.55	4.05	1.30	0.00	0.00	0.70	0.10
	7D	1	1.17	1.05	0.05	0.00	0.05	0.00	0.00	0.00	0.05
		2	9.27	9.20	1.95	0.00	0.10	0.00	0.20	0.10	0.15
		3	15.97	10.00	7.70	0.00	0.30	0.00	0.00	0.00	0.00
	7F	1	1.17	0.00	0.05	0.05	0.85	0.00	0.00	0.00	0.00
		2	1.13	0.70	0.00	0.00	0.05	0.00	0.00	0.00	0.00
		3	20.07	3.35	0.15	0.00	0.00	0.00	0.05	0.00	0.00
	7G	1	0.60	0.75	0.00	0.00	0.15	0.00	0.00	0.00	0.00
		2	4.70	1.95	0.00	0.00	0.05	0.05	0.55	0.00	0.00
		3	19.80	9.20	0.00	0.05	0.00	0.00	0.00	0.00	0.00
7H	1	0.03	1.45	0.70	0.25	0.00	0.00	0.00	0.00	0.00	
	2	0.00	2.10	0.10	0.05	0.00	0.05	0.00	0.00	0.00	
8	8A	1	0.80	5.65	5.55	1.65	2.60	2.75	0.05	2.40	0.75
		2	18.13	23.05	7.80	0.90	2.50	1.10	1.40	1.35	0.20
		3	19.93	6.10	13.25	0.95	0.05	0.10	1.70	0.05	0.00
	8B	1	0.13	0.00	0.00	0.45	0.00	0.40	0.00	0.15	0.20
		2	0.40	0.20	0.20	0.00	0.20	0.40	0.25	0.60	0.05
	8F	1	20.37	6.10	5.80	3.20	5.00	5.90	1.00	2.55	2.10
		2	9.37	6.80	4.65	1.60	3.30	2.20	1.85	5.40	2.70
		3	6.67	14.00	5.85	9.45	2.35	0.55	0.65	1.70	3.65
	8H	1	13.90	14.15	8.05	7.50	17.00	16.95	24.15	34.80	35.75
		2	42.50	37.35	29.70	22.20	32.25	42.50	39.60	42.75	42.10
		3	34.53	14.30	20.05	11.20	15.25	35.30	24.15	33.10	44.65
	8I	1	3.30			1.10	3.15	4.50	0.30	3.15	1.75
2		24.83			14.00	10.85	15.00	10.35	10.15	10.85	
3		29.37			14.60	7.20	3.00	4.15	3.20	3.95	
9	9A	1	56.33	43.70	35.90	43.35	41.80	23.10	18.25	25.40	35.00
		2	51.83	35.95	20.10	23.95	27.00	13.20	8.75	14.95	16.35
		3	55.17	28.80	12.70	20.75	20.75	8.75	7.90	10.15	11.85
	9B	1	60.40	76.05	54.40	60.05	40.60	38.05	28.05	35.85	28.35
		2	50.90	40.80	41.35	44.15	29.50	22.15	14.10	16.35	22.60
		3	45.03	21.25	31.25	23.20	13.55	14.60	17.00	8.80	13.85
	9C	1	3.13	1.85	6.80	5.45	8.20	6.20	4.05	3.45	13.10
		2	2.80	4.40	10.45	7.75	8.45	7.35	5.00	3.30	7.70
		3	10.83	9.20	15.15	11.90	6.75	8.90	7.50	7.05	9.70
	9D	1	4.53	2.10	6.20	2.80	2.30	0.95	2.15	3.35	3.90
		2	12.60	8.70	10.55	16.85	6.30	2.80	1.65	5.20	7.05
		3	8.23	6.00	7.30	9.45	3.55	1.60	1.00	1.85	2.80
9H	1	44.50	87.30	66.15	28.05	35.95	41.90	46.35	106.15	77.05	
	2	13.97	38.25	71.60	21.15	8.35	30.40	20.50	10.30	15.95	
	3	8.30	14.15	50.45	14.75	11.10	15.00	11.35	9.40	6.20	

Table 14a. Spring survey mean sea urchin biomass in grams/m² at the fixed sites by region and depth stratum (strata 1-3, 0-15m only), all survey years, Zone 1 (Regions 1-3) only.

Zone 1												
g/m ²												
Region	Site	Depth	2001	2002	2003	2004	2005	2006	2007	2008	2009	
1	1A	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
		2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
		3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	1D	1	0.0	0.0	0.1	0.9	0.1	1.4	0.0	0.9	0.0	
		2	0.0	0.0	0.3	0.7	0.0	4.9	7.7	4.7	2.5	
		3	0.0	3.1	1.8	7.8	7.5	6.6	2.3	9.9	16.3	
	1F	1	0.0	39.0	0.1	0.0	0.0	12.5	0.0	5.5	22.7	
		2	0.0	0.0	0.0	0.0	0.0	3.5	5.0	5.3	5.6	
		3	0.0	0.0		0.0	0.0	0.0	0.0	0.8	21.8	
	1H	1	8.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.7	
		2	0.0	7.0	0.1	0.5	0.2	2.3	0.0	2.1	2.7	
		3	24.2	0.0	1.2	0.0	0.0	0.5	6.4	0.2	1.3	
	1I	1	121.6				6.1	0.8	0.0	0.0	2.0	
		2	8.5				2.4	16.4	0.0	0.2	2.2	
		3	13.7				0.0	18.9		2.8	0.5	
	2	2A	1	284.4	104.3	164.3	1.8	30.5	55.1	99.6	94.6	32.2
			2	228.5	78.4	8.4	0.0	0.0	0.0	10.1	0.3	0.0
		2B	1	179.6	634.7	27.1	82.4	31.2	6.2	18.4	8.1	5.6
2			90.8	76.6	0.0	0.5	0.0	7.7	0.0	10.3	0.0	
2D		1	115.0	4.6	0.0	0.0	0.0	0.0	0.8	0.0	0.8	
		2	12.6	12.3	0.5	0.1	2.3	1.3	0.1	0.2	1.8	
		3	0.8	14.8	0.4	7.5	8.3	12.1	2.8	2.5	9.6	
2E		1	549.7	436.0	187.4	0.0	0.0	0.0	0.1	0.0	0.0	
		2	1,567.2	573.9	248.3	69.8	125.6	26.2	7.8	14.9	2.9	
		3	971.9	164.2	167.0	91.0	34.7	107.0	0.0	3.9	5.2	
2H		1	129.5	60.4	54.5	55.1	5.7	0.0	0.0	1.3	0.0	
		2	1,084.6	988.0	1,195.6	486.8	64.2	518.2	0.0	0.0	3.3	
	3	1,085.0	105.7	61.4	163.5	0.3	81.2	2.8	11.1	2.1		
3	3A	1	129.3	79.3	224.4	111.7	258.2	389.7	237.6	567.6	148.8	
		2	132.9	86.9	137.4	150.0	49.7	98.1	4.7	18.4	140.7	
		3	42.3	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	3B	1	45.3	0.0	0.0	0.0	1.6	0.0	0.0	0.1	4.8	
		2	16.0	0.0	0.0	1.4	8.8	1.1	0.0	23.3	14.3	
		3	77.5	10.1	0.0	0.0	2.6	0.5	0.0	5.8	0.8	
	3D	1	4.1	0.0	3.2	0.0	8.6	0.0	0.0	0.9	10.4	
		2	371.0	2.3	20.1	5.0	28.4	6.7	0.2	0.9	6.9	
		3	249.0	227.3	4.7	8.5	4.4	3.6	0.0	2.6	6.1	
	3F	1	29.1	37.5	110.3	81.2	94.1	56.5	0.0	8.5	5.9	
		2	289.8	798.9	255.2	230.2	260.4	1.5	0.0	14.4	23.1	
		3	484.1	619.2	299.4	129.1	23.2	4.3	0.0	21.3	83.3	
	3H	1	2,181.7	3.6	85.7	54.9	71.2	0.0	11.2	18.9	59.3	
		2	231.7	26.2	318.1	3.7	6.2	5.4	7.5	31.1	13.6	
		3	11.9	7.0	14.8	0.8	0.0	0.0	0.8	3.9	12.8	

Table 14b. Spring survey mean sea urchin biomass in grams/m² at the fixed sites by region and depth stratum (strata 1-3, 0-15m only), all survey years, Zone 2 (Regions 4-9) only.

Zone 2												
g/m ²												
Region	Site	Depth	2001	2002	2003	2004	2005	2006	2007	2008	2009	
4	4A	1	208.9	460.8	440.8	368.4	232.1	465.8	387.6	784.4	544.3	
		2	174.1	53.3	262.7	8.8	12.8	75.7	0.1	0.2	76.2	
		3	1.9	23.4	1.6	0.0	0.0	0.2	0.0	0.0	0.0	0.9
	4B	1	2,121.1	1,168.0	951.7	0.0	8.3	0.0	0.0	0.0	330.1	44.5
		2	208.8	47.0	0.0	0.0	0.0	0.0	0.9	1.0	73.7	
	4C	1	329.1	54.1	177.8	3.5	0.0	0.0	0.0	0.0	8.2	15.7
		2	190.4	59.3	0.0	0.0	0.0	0.0	0.0	0.0	31.0	6.5
		3	45.0	10.6	0.0	0.0	0.0	0.0	1.7	0.3	0.2	
	4D	1	357.8	732.8	207.1	77.5	7.5	0.0	0.0	10.1	8.0	
		2	8.8	4.0	0.9	2.9	1.8	7.0	0.0	4.1	0.4	
	4E	1	1.0	0.8	0.0	0.0	0.1	0.0	0.0	0.0	7.5	
		2	0.3	0.0	0.0	0.0	0.0	0.0	0.7	0.1	53.0	
	5	5A	1	517.3	584.8	303.0	293.8	60.7	169.9	296.6	151.2	613.8
			2	189.1	277.9	1,512.6	46.5	18.1	69.9	3.3	19.7	16.4
			3	124.2	454.1	0.0	0.6	0.0	5.3	1.1	47.4	27.4
5B		1	651.1	3.5	0.0	6.1	0.0	0.0	4.3	11.9	1.1	
		2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.8	
5C		1	47.7	1.0	0.2	0.8	0.4	0.0	0.0	0.0	0.0	
		2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.1	
		3	0.0	0.0	0.0	0.0	0.4	0.0	1.2	3.5	1.3	
5D		1	122.3	7.3	0.0	0.8	0.0	0.0	0.6	0.0	35.1	
		2	434.6	90.9	63.2	2.5	1.4	8.0	0.8	0.0	68.5	
		3	230.4	851.2	192.6	8.7	11.0	3.6	0.0	20.6	18.7	
5H		1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
		2	0.0	0.0	0.9	0.0	0.0	0.0	0.0	1.0	3.2	
		3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	4.8	
6		6A	1	944.7	699.3	0.0	72.8	12.7	0.0	0.0	0.0	85.6
	2		1,978.1	449.7	491.1	1.1	5.3	0.0	0.0	1.6	26.6	
	3		1,082.4	404.6	87.4	0.5	2.3	0.0	0.0	3.4	2.6	
	6C	1	688.9	45.0	0.3	0.0	0.1	1.4	0.0	0.0	43.0	
		2	616.5	390.7	22.0	0.0	0.0	0.4	0.1	5.5	1.6	
		3	867.3	454.2	1.7	0.0	1.2	0.0	0.0	1.2	2.4	
	6D	1	701.1	1,367.5	1,480.0	528.8	656.4	786.3	336.9	2,151.2	902.4	
		2	902.3	1,261.4	481.8	403.9	2,008.8	493.9	167.1	93.3	8.8	
		3	942.1	944.8	64.3	0.0	660.8	0.0	2.6	23.7	34.8	
	6E	1	89.0	57.0	34.1	0.0	27.5	38.6	55.3	28.0	48.9	
		2	30.2	21.3	14.5	6.9	12.6	1.3	10.0	4.6	32.7	
		3	19.6	222.3	0.0	0.0	4.8	8.5		1.0	23.8	
6H	1	15.7	159.7	186.8	28.8	191.8	92.5	58.9	171.6	162.7		
	2	33.6	71.1	1.3	9.1	0.6	2.5	0.7	1.6	0.7		

Zone 2 cont.											
g/m ²											
Region	Site	Depth	2001	2002	2003	2004	2005	2006	2007	2008	2009
7	7A	1	1,263.6	916.4	383.4	52.5	39.6	0.0	0.0	0.0	0.5
		2	1,302.7	416.2	539.8	587.8	390.2	0.0	0.0	6.9	3.3
		3	458.6	359.2	266.0	167.4	29.6	0.0	0.0	2.5	1.3
	7D	1	89.6	60.6	4.5	0.0	3.7	0.0	0.0	0.0	0.9
		2	360.5	380.3	109.6	0.0	5.8	0.0	4.3	0.4	1.2
		3	455.4	441.9	146.3	0.0	2.3	0.0	0.0	0.0	0.0
	7F	1	172.9	0.0	3.9	3.9	79.8	0.0	0.0	0.0	0.0
		2	192.8	69.9	0.0	0.0	1.7	0.0	0.0	0.0	0.0
		3	1,156.5	305.1	13.6	0.0	0.0	0.0	7.0	0.0	0.0
	7G	1	19.1	73.4	0.0	0.0	4.2	0.0	0.0	0.0	0.0
		2	628.2	139.3	0.0	0.0	3.0	6.4	33.3	0.0	0.0
		3	2,875.1	628.6	0.0	1.7	0.0	0.0	0.0	0.0	0.0
	7H	1	7.8	177.3	101.6	35.2	0.0	0.0	0.0	0.0	0.0
		2	0.0	160.3	17.6	10.5	0.0	5.7	0.0	0.0	0.0
	8	8A	1	55.5	454.7	386.4	142.6	232.3	260.1	7.6	251.1
2			286.1	591.6	386.0	70.5	132.6	145.6	142.6	6.3	45.1
3			484.5	101.8	536.5	46.8	0.1	7.8	165.2	0.0	0.0
8B		1	19.4	0.0	0.0	55.3	0.0	61.1	0.0	21.8	29.7
		2	89.0	30.5	6.8	0.0	30.0	50.0	22.8	75.9	8.2
8F		1	979.7	378.7	458.0	232.4	413.0	667.0	100.0	182.6	211.3
		2	1,144.1	373.4	517.9	117.9	302.9	194.5	215.4	490.2	238.4
		3	516.2	1,135.8	454.9	904.4	105.7	52.1	74.4	206.1	244.3
8H		1	528.9	775.9	545.9	457.2	1,103.1	824.2	1,233.0	1,450.5	1,066.5
		2	1,037.5	943.5	1,186.2	972.0	1,159.8	2,091.9	1,609.4	1,398.6	1,648.1
		3	895.3	468.4	694.6	523.6	624.8	956.5	1,255.1	1,327.1	2,120.2
8I		1	282.0			92.7	230.8	307.7	31.4	210.7	117.5
		2	1,406.4			1,042.5	848.7	1,165.4	647.2	702.2	850.0
		3	2,573.0			1,019.1	575.5	197.1	250.9	180.3	230.7
9		9A	1	1,702.2	845.2	993.9	1,142.4	918.5	565.5	180.7	398.9
	2		1,393.7	925.3	248.9	468.1	434.0	140.6	112.7	125.6	224.7
	3		946.6	530.3	250.5	418.1	325.6	103.2	83.6	111.5	93.5
	9B	1	560.6	781.8	1,285.4	767.6	493.5	579.8	343.6	587.8	441.9
		2	404.1	304.7	437.2	409.4	367.0	428.9	265.0	267.6	167.1
		3	421.1	274.9	368.8	241.4	236.6	193.8	301.0	149.2	116.3
	9C	1	315.5	164.4	537.9	582.1	523.1	604.6	358.6	362.8	677.6
		2	197.5	343.7	586.6	456.6	394.5	425.2	331.1	144.6	485.3
		3	778.4	716.9	1,242.8	690.2	506.0	450.5	436.9	544.4	492.8
	9D	1	173.2	70.7	361.4	183.5	155.9	35.2	105.1	140.9	144.6
		2	536.1	237.7	206.1	674.6	149.2	100.8	78.6	150.6	165.9
		3	184.0	133.5	218.0	205.6	154.6	55.1	15.1	72.2	93.7
	9H	1	498.8	368.3	404.2	233.8	339.9	276.0	392.0	696.7	543.6
		2	301.9	527.9	499.1	301.3	139.0	269.7	390.7	190.9	298.1
		3	218.0	257.4	351.9	200.7	202.3	205.5	220.5	150.9	155.2

Table 15. Spring survey mean sea urchin abundance in number of urchins/m² and biomass in grams/m² at the industry sites by region, depth stratum (1-3 only) and year.

	Region	Site	Depth	Abundance Number of urchins/m ²						Biomass Grams/m ²					
				2001	2002	2005	2006	2007	2008	2009	2001	2002	2005	2006	2007
Zone 1	1	1X	1	2.90	6.60	2.75	2.95	0.00	95.66	280.61	223.57	207.27	0.00		
			2	0.00	0.15	0.05	0.00	0.00	0.00	0.33	0.05	0.00	0.00		
		1Y	1	0.00	0.10	0.00	0.25	0.20	0.00	7.83	0.00	0.14	12.10		
			2	0.00	0.20	0.20	0.75	0.55	0.00	1.80	3.37	0.76	0.54		
			3	0.00	0.00	0.35	0.15	0.15	0.00	0.00	0.81	0.81	2.94		
		2	2X	1	0.00	0.00	0.00	0.20	0.50	0.00	0.00	0.00	0.04	9.95	
	2			0.35	0.00	0.15	0.35	0.05	0.73	0.00	0.15	0.39	0.06		
	3			2.30	0.70	0.15	0.45	1.20	16.08	6.34	2.23	6.77	26.62		
	2Y		1	0.00	0.00	11.85	10.25	14.10	0.00	0.00	1,016.80	956.51	1,219.56		
			2	0.00	0.65	3.00	7.00	7.70	0.00	16.29	311.17	117.28	985.67		
			3	0.80	0.50	2.35	8.15	3.50	8.44	2.26	61.54	31.84	397.61		
	3	3X	1	0.50	0.00	0.00	0.20	0.30	91.56	0.00	0.00	0.67	2.30		
			2	0.75	0.00	0.05	0.95	0.65	23.54	0.00	0.01	5.51	6.32		
			3	0.35	0.00	0.30	0.10	0.40	48.56	0.00	4.95	0.36	6.06		
		3Y	1	40.15	0.80	0.05	0.90	1.10	2,503.00	1.62	0.06	2.61	11.15		
			2	1.50	0.10	0.05	1.60	1.95	4.00	0.11	0.08	5.54	2.18		
			3	0.00	0.30	0.80	4.65	0.00	0.00	0.24	1.10	10.71			
	Zone 2	4	4X	1	8.80	0.00	0.00	0.20	0.10	248.64	0.00	0.00	0.31	0.42	10.54
2				2.90	0.00	0.00	0.05	0.40	98.12	0.00	0.00	0.06	2.91	0.29	
3				5.20	0.00	0.00	0.00	0.85	165.36	0.00	0.00	0.00	0.00	4.12	
4Y			1	2.80	0.20	0.00	0.00	0.35	0.60	252.40	12.83	0.00	0.00	10.86	13.10
			2	5.95	0.75	0.35	0.20	0.70	1.10	195.80	35.57	8.40	1.92	16.69	5.59
			3	5.35	0.30	0.25	0.15	1.20	135.45	1.04	0.46	0.33	8.62		
5		5X	1	2.45	0.00	0.00	1.10	3.40	45.71	0.00	0.00	17.78	13.01		
			2	2.55	0.00	0.05	0.05	3.05	75.90	0.00	0.02	0.77	13.53		
			3	61.00	25.35	18.10	21.95	0.05	1,717.29	1,057.95	435.47	899.91	2.28		
		5Y	1	14.55	7.35	0.00	0.50	0.80	505.72	422.98	0.00	9.17	5.00		
			2	10.90	6.05	0.00	0.45	0.85	578.87	407.92	0.00	17.03	15.81		
			3	6.20	6.00	0.20	6.75	0.40	437.68	352.69	6.51	556.96	2.39		
6		6X	1	10.55	6.20	0.00	0.25	0.20	733.26	493.70	0.00	4.02	1.92		
			2	1.40	0.05	0.00	0.25	0.05	108.80	1.55	0.00	9.47	1.66		
			3	7.00	0.20	0.35	0.00	0.65	369.69	13.28	1.98	0.00	10.38		
		6Y	1	1.00	0.00	0.00	4.05	1.05	3.48	0.00	0.00	37.42	8.76		
			2	0.30	0.00	0.00	0.55	1.25	1.82	0.00	0.00	5.71	11.74		
			3	15.30	26.25	18.85	50.90	27.85	706.47	1,317.51	957.47	2,579.60	1,302.37		
7		7X	1	22.05	12.40	11.25	14.10	19.30	1,567.43	684.84	612.18	971.21	977.74		
			2	8.70	5.80	7.10	11.75	9.30	523.77	376.71	650.24	1,219.68	898.53		
			3	0.20	0.00	1.20	0.50	0.30	20.48	0.00	120.51	57.94	39.82		
		7Y	1	2.35	3.45	13.25	18.15	2.15	173.95	326.87	1,232.72	1,941.50	260.05		
			2	11.45	4.65	16.20	12.05	12.95	986.66	451.06	1,574.92	1,181.55	764.53		
			3	4.85	2.15	2.75	0.95	1.10	325.40	181.04	214.98	65.77	63.32		
8		8X	1	3.90	2.60	13.20	7.85	11.50	283.93	257.09	911.31	553.01	846.69		
			2	9.35	8.25	15.50	10.05	13.35	633.24	945.81	1,502.04	798.50	1,188.98		
			3	18.85	21.90	24.00	19.85	6.60	872.64	1,061.15	1,323.23	1,091.47	407.34		
	8Y	1	9.00	3.70	2.85	0.85	1.00	670.99	224.64	191.30	65.07	16.43			
		2	0.40	0.05	0.10	0.10	0.50	36.36	2.56	8.99	13.41	1.90			
		3	0.40	1.20	0.50	1.15	1.70	23.01	64.33	52.72	45.65	77.28			
9	9X	1	1.45	0.15	1.35	0.95	107.15	107.15	8.09	70.61	60.71				
		2	1.10	0.65	0.80	3.95	1.70	73.70	46.05	91.08	153.07	84.77			
	9Y	1	1.10	0.65	0.80	3.95	1.70	73.70	46.05	91.08	153.07	84.77			

Table 16a. 2005 spring survey mean and stratified mean Jonah crab (*Cancer borealis*) abundances and standard errors (SE) by depth stratum, region, and zone, depths 0-15m, not including industry sites.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth stratum</u>	<u>Mean Numbers per m² for stratum</u>	<u>SE for stratum</u>	<u>Stratified Mean Numbers per m² for region</u>	<u>SE for region</u>
<u>Zone 1</u>						
Kittery to Phippsburg	1	1 (1-5m)	0.0719	0.0233	0.1067	0.0162
		2 (5-10m)	0.1000	0.0266		
		3 (10-15m)	0.1333	0.0295		
Phippsburg - Boothbay - - Bristol - Bremen	2	1	0.0313	0.0111	0.1004	0.0156
		2	0.1406	0.0310		
		3	0.1143	0.0289		
Friendship - Port Clyde - - Tenants - Rockland	3	1	0.0531	0.0161	0.1052	0.0148
		2	0.1000	0.0258		
		3	0.1846	0.0369		
<u>Zone 2</u>						
Isleboro - Vinalhaven - - Stonington	4	1	0.2031	0.0895	0.2211	0.0621
		2	0.2867	0.1263		
		3	0.1955	0.1032		
Blue Hill - Swans Is - - Mount Desert Is	5	1	0.2656	0.1264	0.2293	0.0502
		2	0.1969	0.0414		
		3	0.2231	0.0590		
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	0.2281	0.0626	0.2172	0.0416
		2	0.1767	0.0439		
		3	0.2231	0.0692		
Milbridge - Addison - - Jonesport	7	1	0.2031	0.0501	0.1952	0.0357
		2	0.1875	0.0495		
		3	0.1615	0.0220		
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	0.0750	0.0237	0.0714	0.0143
		2	0.0688	0.0182		
		3	0.0643	0.0177		
Cobscook Bay	9	1	0.0031	0.0031	0.0021	0.0021
		2	0.0000	0.0000		
		3	0.0000	0.0000		
Zone 1	1-3	1-3			0.1049	0.0095
Zone 2	4-6	1-3			0.1846	0.0244

Table 16b. 2006 spring survey mean and stratified mean Jonah crab (*Cancer borealis*) abundances and standard errors (SE) by depth stratum, region, and zone, depths 0-15m, not including industry sites.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth stratum</u>	<u>Mean Numbers per m² for stratum</u>	<u>SE for stratum</u>	<u>Stratified Mean Numbers per m² for region</u>	<u>SE for region</u>
<u>Zone 1</u>						
Kittery to Phippsburg	1	1 (1-5m)	0.0344	0.0088	0.1062	0.0223
		2 (5-10m)	0.1133	0.0383		
		3 (10-15m)	0.1423	0.0434		
Phippsburg - Boothbay - - Bristol - Bremen	2	1	0.0313	0.0111	0.0480	0.0083
		2	0.0467	0.0091		
		3	0.0625	0.0196		
Friendship - Port Clyde - - Tenants - Rockland	3	1	0.0406	0.0146	0.0816	0.0177
		2	0.1406	0.0509		
		3	0.0818	0.0263		
<u>Zone 2</u>						
Isleboro - Vinalhaven - - Stonington	4	1	0.0906	0.0333	0.0929	0.0226
		2	0.1267	0.0414		
		3	0.0600	0.0400		
Blue Hill - Swans Is - - Mount Desert Is	5	1	0.2375	0.0628	0.2087	0.0370
		2	0.2214	0.0806		
		3	0.1625	0.0398		
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	0.1438	0.0382	0.1698	0.0263
		2	0.1821	0.0350		
		3	0.2409	0.0504		
Milbridge - Addison - - Jonesport	7	1	0.0563	0.0151	0.0754	0.0117
		2	0.1031	0.0201		
		3	0.1400	0.0340		
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	0.0500	0.0188	0.0513	0.0116
		2	0.0500	0.0121		
		3	0.0571	0.0228		
Cobscook Bay	9	1	0.0094	0.0094	0.0062	0.0062
		2	0.0000	0.0000		
		3	0.0000	0.0000		
Zone 1	1-3	1-3			0.0859	0.0119
Zone 2	4-6	1-3			0.1054	0.0108

Table 16c. 2007 spring survey mean and stratified mean Jonah crab (*Cancer borealis*) abundances and standard errors (SE) by depth stratum, region, and zone, depths 0-15m, not including industry sites.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth stratum</u>	<u>Mean Numbers per m² for stratum</u>	<u>SE for stratum</u>	<u>Stratified Mean Numbers per m² for region</u>	<u>SE for region</u>
<u>Zone 1</u>						
Kittery to Phippsburg	1	1 (1-5m)	0.0188	0.0111	0.0374	0.0126
		2 (5-10m)	0.0219	0.0102		
		3 (10-15m)	0.0625	0.0295		
Phippsburg - Boothbay - - Bristol - Bremen	2	1	0.0188	0.0063	0.0473	0.0104
		2	0.0357	0.0097		
		3	0.0818	0.0272		
Friendship - Port Clyde - - Tenants - Rockland	3	1	0.0156	0.0075	0.0587	0.0125
		2	0.0906	0.0286		
		3	0.0885	0.0300		
<u>Zone 2</u>						
Isleboro - Vinalhaven - - Stonington	4	1	0.0281	0.0120	0.0265	0.0078
		2	0.0219	0.0091		
		3	0.0273	0.0156		
Blue Hill - Swans Is - - Mount Desert Is	5	1	0.0500	0.0151	0.1019	0.0247
		2	0.1000	0.0363		
		3	0.1625	0.0666		
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	0.0156	0.0060	0.0593	0.0152
		2	0.1033	0.0379		
		3	0.1550	0.0669		
Milbridge - Addison - - Jonesport	7	1	0.0813	0.0273	0.0929	0.0197
		2	0.1094	0.0238		
		3	0.1333	0.0361		
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	0.0219	0.0079	0.0399	0.0085
		2	0.0625	0.0212		
		3	0.0615	0.0254		
Cobscook Bay	9	1	0.0000	0.0000	0.0012	0.0012
		2	0.0071	0.0071		
		3	0.0000	0.0000		
Zone 1	1-3	1-3			0.0468	0.0075
Zone 2	4-6	1-3			0.0574	0.0070

Table 16d. 2008 spring survey mean and stratified mean Jonah crab (*Cancer borealis*) abundances and standard errors (SE) by depth stratum, region, and zone, depths 0-15m, not including industry sites.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth stratum</u>	<u>Mean Numbers per m² for stratum</u>	<u>SE for stratum</u>	<u>Stratified Mean Numbers per m² for region</u>	<u>SE for region</u>
Zone 1						
Kittery to Phippsburg	1	1 (1-5m)	0.0318	0.0102	0.0647	0.0110
		2 (5-10m)	0.0906	0.0238		
		3 (10-15m)	0.0607	0.0159		
Phippsburg - Boothbay - - Bristol - Bremen	2	1	0.0313	0.0120	0.0810	0.0185
		2	0.0563	0.0143		
		3	0.1455	0.0488		
Friendship - Port Clyde - - Tenants - Rockland	3	1	0.0438	0.0120	0.0749	0.0165
		2	0.0750	0.0183		
		3	0.1192	0.0505		
Zone 2						
Isleboro - Vinalhaven - - Stonington	4	1	0.0188	0.0077	0.0328	0.0082
		2	0.0563	0.0213		
		3	0.0450	0.0241		
Blue Hill - Swans Is - - Mount Desert Is	5	1	0.1156	0.0213	0.1133	0.0203
		2	0.1094	0.0247		
		3	0.1150	0.0543		
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	0.0625	0.0248	0.0837	0.0189
		2	0.0900	0.0214		
		3	0.1455	0.0541		
Milbridge - Addison - - Jonesport	7	1	0.0500	0.0137	0.0717	0.0121
		2	0.0875	0.0280		
		3	0.1727	0.0454		
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	0.0563	0.0143	0.0844	0.0190
		2	0.0733	0.0188		
		3	0.1885	0.0929		
Cobscook Bay	9	1	0.0063	0.0063	0.0047	0.0042
		2	0.0031	0.0031		
		3	0.0000	0.0000		
Zone 1	1-3	1-3			0.0716	0.0085
Zone 2	4-6	1-3			0.0643	0.0060

Table 16e. 2009 spring survey mean and stratified mean Jonah crab (*Cancer borealis*) abundances and standard errors (SE) by depth stratum, region, and zone, depths 0-15m, not including industry sites.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth stratum</u>	Mean Numbers per m ² <u>for stratum</u>	SE <u>for stratum</u>	Stratified Mean Numbers per m ² <u>for region</u>	SE <u>for region</u>
<u>Zone 1</u>						
Kittery to Phippsburg	1	1 (1-5m)	0.0188	0.0077	0.0343	0.0084
		2 (5-10m)	0.0375	0.0168		
		3 (10-15m)	0.0406	0.0139		
Phippsburg - Boothbay - - Bristol - Bremen	2	1	0.0219	0.0102	0.0285	0.0071
		2	0.0321	0.0145		
		3	0.0300	0.0111		
Friendship - Port Clyde - - Tenants - Rockland	3	1	0.0219	0.0091	0.0386	0.0072
		2	0.0344	0.0127		
		3	0.0667	0.0167		
<u>Zone 2</u>						
Isleboro - Vinalhaven - - Stonington	4	1	0.0313	0.0120	0.0336	0.0125
		2	0.0250	0.0137		
		3	0.0500	0.0500		
Blue Hill - Swans Is - - Mount Desert Is	5	1	0.0344	0.0088	0.0538	0.0103
		2	0.0700	0.0200		
		3	0.0583	0.0229		
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	0.0344	0.0099	0.0562	0.0084
		2	0.0821	0.0186		
		3	0.1000	0.0236		
Milbridge - Addison - - Jonesport	7	1	0.0188	0.0090	0.0229	0.0069
		2	0.0344	0.0135		
		3	0.0273	0.0156		
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	0.0250	0.0121	0.0383	0.0111
		2	0.0625	0.0308		
		3	0.0429	0.0173		
Cobscook Bay	9	1	0.0031	0.0031	0.0021	0.0021
		2	0.0000	0.0000		
		3	0.0000	0.0000		
Zone 1	1-3	1-3			0.0346	0.0048
Zone 2	4-6	1-3			0.0352	0.0051

Table 17a. 2005 spring survey mean and stratified mean rock crab (*Cancer irroratus*) abundances and standard errors (SE) by depth stratum, region, and zone, depths 0-15m, not including industry sites.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth stratum</u>	<u>Mean Numbers per m² for stratum</u>	<u>SE for stratum</u>	<u>Stratified Mean Numbers per m² for region</u>	<u>SE for region</u>
<u>Zone 1</u>						
Kittery to Phippsburg	1	1 (1-5m)	0.0094	0.0050	0.0121	0.0056
		2 (5-10m)	0.0125	0.0097		
		3 (10-15m)	0.0133	0.0103		
Phippsburg - Boothbay - - Bristol - Bremen	2	1	0.0094	0.0050	0.0210	0.0073
		2	0.0156	0.0075		
		3	0.0357	0.0185		
Friendship - Port Clyde - - Tenants - Rockland	3	1	0.0313	0.0111	0.0325	0.0065
		2	0.0400	0.0111		
		3	0.0269	0.0108		
<u>Zone 2</u>						
Isleboro - Vinalhaven - - Stonington	4	1	0.1219	0.0494	0.0943	0.0284
		2	0.0733	0.0206		
		3	0.0409	0.0132		
Blue Hill - Swans Is - - Mount Desert Is	5	1	0.0813	0.0213	0.0585	0.0132
		2	0.0750	0.0306		
		3	0.0154	0.0119		
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	0.1000	0.0292	0.0769	0.0184
		2	0.0267	0.0128		
		3	0.0538	0.0165		
Milbridge - Addison - - Jonesport	7	1	0.0875	0.0304	0.0659	0.0209
		2	0.0219	0.0091		
		3	0.0154	0.0087		
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	0.0094	0.0050	0.0052	0.0028
		2	0.0000	0.0000		
		3	0.0000	0.0000		
Cobscook Bay	9	1	0.0063	0.0043	0.0068	0.0035
		2	0.0000	0.0000		
		3	0.0154	0.0119		
Zone 1	1-3	1-3			0.0210	0.0037
Zone 2	4-6	1-3			0.0639	0.0110

Table 17b. 2006 spring survey mean and stratified mean rock crab (*Cancer irroratus*) abundances and standard errors (SE) by depth stratum, region, and zone, depths 0-15m, not including industry sites.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth stratum</u>	<u>Mean Numbers per m² for stratum</u>	<u>SE for stratum</u>	<u>Stratified Mean Numbers per m² for region</u>	<u>SE for region</u>
<u>Zone 1</u>						
Kittery to Phippsburg	1	1 (1-5m)	0.0031	0.0031	0.0160	0.0044
		2 (5-10m)	0.0167	0.0063		
		3 (10-15m)	0.0231	0.0092		
Phippsburg - Boothbay - - Bristol - Bremen	2	1	0.0094	0.0068	0.0152	0.0066
		2	0.0100	0.0053		
		3	0.0250	0.0169		
Friendship - Port Clyde - - Tenants - Rockland	3	1	0.0156	0.0088	0.0200	0.0060
		2	0.0281	0.0129		
		3	0.0182	0.0102		
<u>Zone 2</u>						
Isleboro - Vinalhaven - - Stonington	4	1	0.0938	0.0241	0.0884	0.0153
		2	0.1000	0.0169		
		3	0.0600	0.0292		
Blue Hill - Swans Is - - Mount Desert Is	5	1	0.2313	0.0597	0.1069	0.0223
		2	0.0464	0.0177		
		3	0.0313	0.0132		
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	0.0750	0.0219	0.0616	0.0141
		2	0.0393	0.0093		
		3	0.0409	0.0200		
Milbridge - Addison - - Jonesport	7	1	0.0406	0.0094	0.0320	0.0066
		2	0.0125	0.0072		
		3	0.0150	0.0076		
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	0.0156	0.0099	0.0126	0.0057
		2	0.0031	0.0031		
		3	0.0179	0.0085		
Cobscook Bay	9	1	0.0125	0.0072	0.0088	0.0048
		2	0.0031	0.0031		
		3	0.0000	0.0000		
Zone 1	1-3	1-3			0.0172	0.0032
Zone 2	4-6	1-3			0.0631	0.0069

Table 17c. 2007 spring survey mean and stratified mean rock crab (*Cancer irroratus*) abundances and standard errors (SE) by depth stratum, region, and zone, untransformed, depths 0-15m, not including industry sites.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth stratum</u>	<u>Mean Numbers per m² for stratum</u>	<u>SE for stratum</u>	<u>Stratified Mean Numbers per m² for region</u>	<u>SE for region</u>
<u>Zone 1</u>						
Kittery to Phippsburg	1	1 (1-5m)	0.0000	0.0000	0.0118	0.0046
		2 (5-10m)	0.0188	0.0090		
		3 (10-15m)	0.0125	0.0082		
Phippsburg - Boothbay - - Bristol - Bremen	2	1	0.0031	0.0031	0.0161	0.0059
		2	0.0107	0.0057		
		3	0.0318	0.0155		
Friendship - Port Clyde - - Tenants - Rockland	3	1	0.0000	0.0000	0.0142	0.0082
		2	0.0219	0.0158		
		3	0.0269	0.0231		
<u>Zone 2</u>						
Isleboro - Vinalhaven - - Stonington	4	1	0.0313	0.0136	0.0248	0.0080
		2	0.0188	0.0077		
		3	0.0136	0.0070		
Blue Hill - Swans Is - - Mount Desert Is	5	1	0.0063	0.0063	0.0120	0.0044
		2	0.0214	0.0101		
		3	0.0083	0.0056		
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	0.0313	0.0164	0.0231	0.0102
		2	0.0100	0.0053		
		3	0.0100	0.0067		
Milbridge - Addison - - Jonesport	7	1	0.0313	0.0077	0.0254	0.0056
		2	0.0063	0.0043		
		3	0.0250	0.0131		
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	0.0063	0.0043	0.0074	0.0031
		2	0.0094	0.0068		
		3	0.0077	0.0052		
Cobscook Bay	9	1	0.0000	0.0000	0.0007	0.0007
		2	0.0000	0.0000		
		3	0.0038	0.0038		
Zone 1	1-3	1-3			0.0135	0.0037
Zone 2	4-6	1-3			0.0188	0.0032

Table 17d. 2008 spring survey mean and stratified mean rock crab (*Cancer irroratus*) abundances and standard errors (SE) by depth stratum, region, and zone, depths 0-15m, not including industry sites.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth stratum</u>	<u>Mean Numbers per m² for stratum</u>	<u>SE for stratum</u>	<u>Stratified Mean Numbers per m² for region</u>	<u>SE for region</u>
<u>Zone 1</u>						
Kittery to Phippsburg	1	1 (1-5m)	0.0125	0.0072	0.0161	0.0064
		2 (5-10m)	0.0125	0.0056		
		3 (10-15m)	0.0214	0.0146		
Phippsburg - Boothbay - - Bristol - Bremen	2	1	0.0125	0.0056	0.0315	0.0081
		2	0.0281	0.0112		
		3	0.0500	0.0191		
Friendship - Port Clyde - - Tenants - Rockland	3	1	0.0250	0.0091	0.0524	0.0094
		2	0.0594	0.0160		
		3	0.0846	0.0249		
<u>Zone 2</u>						
Isleboro - Vinalhaven - - Stonington	4	1	0.0406	0.0094	0.0417	0.0071
		2	0.0500	0.0165		
		3	0.0350	0.0130		
Blue Hill - Swans Is - - Mount Desert Is	5	1	0.0406	0.0114	0.0300	0.0057
		2	0.0188	0.0063		
		3	0.0300	0.0111		
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	0.0563	0.0151	0.0424	0.0098
		2	0.0133	0.0077		
		3	0.0273	0.0156		
Milbridge - Addison - - Jonesport	7	1	0.0031	0.0031	0.0051	0.0025
		2	0.0094	0.0050		
		3	0.0091	0.0061		
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	0.0156	0.0060	0.0132	0.0037
		2	0.0067	0.0045		
		3	0.0154	0.0067		
Cobscook Bay	9	1	0.0031	0.0031	0.0026	0.0021
		2	0.0031	0.0031		
		3	0.0000	0.0000		
Zone 1	1-3	1-3			0.0319	0.0047
Zone 2	4-6	1-3			0.0256	0.0028

Table 17e. 2009 spring survey mean and stratified mean rock crab (*Cancer irroratus*) abundances and standard errors (SE) by depth stratum, region, and zone, depths 0-15m, not including industry sites.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth stratum</u>	<u>Mean Numbers per m² for stratum</u>	<u>SE for stratum</u>	<u>Stratified Mean Numbers per m² for region</u>	<u>SE for region</u>
<u>Zone 1</u>						
Kittery to Phippsburg	1	1 (1-5m)	0.0031	0.0031	0.0089	0.0034
		2 (5-10m)	0.0156	0.0060		
		3 (10-15m)	0.0063	0.0063		
Phippsburg - Boothbay - - Bristol - Bremen	2	1	0.0188	0.0090	0.0224	0.0079
		2	0.0179	0.0066		
		3	0.0300	0.0200		
Friendship - Port Clyde - - Tenants - Rockland	3	1	0.0063	0.0063	0.0229	0.0055
		2	0.0406	0.0123		
		3	0.0292	0.0114		
<u>Zone 2</u>						
Isleboro - Vinalhaven - - Stonington	4	1	0.0406	0.0160	0.0307	0.0095
		2	0.0188	0.0090		
		3	0.0167	0.0105		
Blue Hill - Swans Is - - Mount Desert Is	5	1	0.0344	0.0135	0.0227	0.0064
		2	0.0200	0.0095		
		3	0.0125	0.0090		
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	0.0188	0.0077	0.0188	0.0055
		2	0.0179	0.0085		
		3	0.0200	0.0111		
Milbridge - Addison - - Jonesport	7	1	0.0063	0.0043	0.0049	0.0030
		2	0.0031	0.0031		
		3	0.0000	0.0000		
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	0.0063	0.0043	0.0068	0.0029
		2	0.0031	0.0031		
		3	0.0143	0.0082		
Cobscook Bay	9	1	0.0000	0.0000	0.0010	0.0010
		2	0.0063	0.0063		
		3	0.0000	0.0000		
Zone 1	1-3	1-3			0.0165	0.0029
Zone 2	4-6	1-3			0.0179	0.0035

Table 18a. 2005 spring survey mean, stratified mean, and estimated total sea star (*Asterias vulgaris*) abundances and standard errors (SE) by depth stratum, region, and zone, depths 0-15m, not including industry sites.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth stratum</u>	Mean		Total Numbers for stratum	Stratified Mean		Total Numbers for region
			Numbers per m ² for stratum	SE for stratum		Numbers per m ² for region	SE for region	
<u>Zone 1</u>								
Kittery to Phippsburg	1	1 (1-5m)	1.05	0.39	4.10E+07	0.79	0.16	1.30E+08
		2 (5-10m)	0.93	0.33	5.55E+07			
		3 (10-15m)	0.52	0.15	3.39E+07			
Phippsburg - Boothbay - - Bristol - Bremen	2	1	0.11	0.04	2.36E+06	0.45	0.11	32731148
		2	0.77	0.28	2.06E+07			
		3	0.38	0.14	9.81E+06			
Friendship - Port Clyde - - Tenants - Rockland	3	1	0.44	0.11	2.35E+07	0.53	0.09	6.75E+07
		2	0.56	0.16	2.06E+07			
		3	0.63	0.22	2.35E+07			
<u>Zone 2</u>								
Isleboro - Vinalhaven - - Stonington	4	1	1.30	0.42	2.01E+08	1.42	0.26	3.88E+08
		2	1.56	0.35	9.96E+07			
		3	1.59	0.34	8.74E+07			
Blue Hill - Swans Is - - Mount Desert Is	5	1	2.13	0.44	1.12E+08	1.44	0.21	2.14E+08
		2	1.34	0.41	6.63E+07			
		3	0.77	0.14	3.59E+07			
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	3.27	0.64	1.24E+08	2.31	0.40	1.43E+08
		2	1.05	0.33	1.27E+07			
		3	0.50	0.06	5.93E+06			
Milbridge - Addison - - Jonesport	7	1	2.39	0.55	2.93E+08	1.86	0.38	3.35E+08
		2	0.82	0.23	3.01E+07			
		3	0.56	0.12	1.14E+07			
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	0.03	0.02	1.80E+06	0.03	0.01	2.62E+06
		2	0.01	0.00	2.21E+05			
		3	0.03	0.02	5.98E+05			
Cobscook Bay	9	1	0.14	0.06	4.78E+06	0.18	0.04	9.32E+06
		2	0.20	0.07	1.77E+06			
		3	0.31	0.08	2.77E+06			
Zone 1	1-3	1-3				0.63	0.08	2.31E+08
Zone 2	4-6	1-3				1.34	0.13	1.092E+09

Table 18b. 2006 spring survey mean, stratified mean, and estimated total sea star (*Asterias vulgaris*) abundances and standard errors (SE) by depth stratum, region, and zone, depths 0-15m, not including industry sites.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth stratum</u>	Mean Numbers per m ² <u>for stratum</u>	SE <u>for stratum</u>	Total Numbers <u>for stratum</u>	Stratified Mean Numbers per m ² <u>for region</u>	SE <u>for region</u>	Total Numbers <u>for region</u>
<u>Zone 1</u>								
Kittery to Phippsburg	1	1 (1-5m)	1.03	0.25	4.02E+07	1.00	0.17	1.65E+08
		2 (5-10m)	1.09	0.31	6.49E+07			
		3 (10-15m)	0.91	0.27	6.02E+07			
Phippsburg - Boothbay - - Bristol - Bremen	2	1	0.48	0.19	9.91E+06	0.31	0.10	22945790
		2	0.12	0.05	3.13E+06			
		3	0.38	0.25	9.91E+06			
Friendship - Port Clyde - - Tenants - Rockland	3	1	0.29	0.06	1.54E+07	0.34	0.04	4.39E+07
		2	0.41	0.08	1.52E+07			
		3	0.35	0.09	1.33E+07			
<u>Zone 2</u>								
Isleboro - Vinalhaven - - Stonington	4	1	0.54	0.11	8.30E+07	0.51	0.07	1.40E+08
		2	0.60	0.10	3.86E+07			
		3	0.34	0.05	1.88E+07			
Blue Hill - Swans Is - - Mount Desert Is	5	1	1.46	0.67	7.63E+07	0.97	0.31	1.44E+08
		2	1.01	0.57	4.98E+07			
		3	0.39	0.10	1.79E+07			
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	1.06	0.27	4.04E+07	0.73	0.16	4.51E+07
		2	0.18	0.04	2.18E+06			
		3	0.21	0.05	2.46E+06			
Milbridge - Addison - - Jonesport	7	1	0.44	0.13	5.34E+07	0.36	0.09	6.51E+07
		2	0.16	0.05	5.69E+06			
		3	0.29	0.10	5.99E+06			
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	0.04	0.02	1.95E+06	0.04	0.01	3.47E+06
		2	0.04	0.01	1.03E+06			
		3	0.03	0.01	4.89E+05			
Cobscook Bay	9	1	0.19	0.05	6.50E+06	0.20	0.04	1.04E+07
		2	0.25	0.06	2.15E+06			
		3	0.20	0.04	1.75E+06			
Zone 1	1-3	1-3				0.63	0.08	2.32E+08
Zone 2	4-6	1-3				0.50	0.06	4.09E+08

Table 18c. 2007 spring survey mean, stratified mean, and estimated total sea star (*Asterias vulgaris*) abundances and standard errors (SE) by depth stratum, region, and zone, depths 0-15m, not including industry sites.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth stratum</u>	Mean		Total Numbers <u>for stratum</u>	Stratified Mean		Total Numbers <u>for region</u>
			Numbers per m ² <u>for stratum</u>	SE <u>for stratum</u>		Numbers per m ² <u>for region</u>	SE <u>for region</u>	
<u>Zone 1</u>								
Kittery to Phippsburg	1	1 (1-5m)	0.41	0.15	1.58E+07	0.47	0.11	7.74E+07
		2 (5-10m)	0.54	0.24	3.20E+07			
		3 (10-15m)	0.45	0.15	2.96E+07			
Phippsburg - Boothbay - - Bristol - Bremen	2	1	0.74	0.52	1.53E+07	0.40	0.15	29078985
		2	0.29	0.08	7.82E+06			
		3	0.23	0.10	5.94E+06			
Friendship - Port Clyde - - Tenants - Rockland	3	1	0.13	0.04	7.13E+06	0.35	0.09	4.50E+07
		2	0.34	0.14	1.27E+07			
		3	0.67	0.27	2.51E+07			
<u>Zone 2</u>								
Isleboro - Vinalhaven - - Stonington	4	1	0.57	0.10	8.82E+07	0.82	0.08	2.26E+08
		2	1.07	0.16	6.83E+07			
		3	1.26	0.24	6.93E+07			
Blue Hill - Swans Is - - Mount Desert Is	5	1	0.77	0.21	4.01E+07	0.95	0.20	1.41E+08
		2	0.72	0.23	3.58E+07			
		3	1.41	0.52	6.55E+07			
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	0.95	0.35	3.63E+07	0.78	0.22	4.81E+07
		2	0.41	0.06	4.98E+06			
		3	0.57	0.14	6.77E+06			
Milbridge - Addison - - Jonesport	7	1	0.29	0.12	3.57E+07	0.27	0.08	4.86E+07
		2	0.17	0.05	6.30E+06			
		3	0.32	0.07	6.53E+06			
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	0.02	0.01	1.20E+06	0.03	0.01	3.12E+06
		2	0.05	0.02	1.40E+06			
		3	0.03	0.02	5.22E+05			
Cobscook Bay	9	1	0.05	0.01	1.82E+06	0.09	0.01	4.79E+06
		2	0.16	0.04	1.37E+06			
		3	0.18	0.04	1.61E+06			
Zone 1	1-3	1-3				0.41	0.07	1.52E+08
Zone 2	4-6	1-3				0.58	0.05	4.72E+08

Table 18d. 2008 spring survey mean, stratified mean, and estimated total sea star (*Asterias vulgaris*) abundances and standard errors (SE) by depth stratum, region, and zone, depths 0-15m, not including industry sites.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth stratum</u>	<u>Mean Numbers per m² for stratum</u>	<u>SE for stratum</u>	<u>Total Numbers for stratum</u>	<u>Stratified Mean Numbers per m² for region</u>	<u>SE for region</u>	<u>Total Numbers for region</u>
Zone 1								
Kittery to Phippsburg	1	1 (1-5m)	0.75	0.31	2.90E+07	0.53	0.12	8.80E+07
		2 (5-10m)	0.60	0.21	3.57E+07			
		3 (10-15m)	0.35	0.14	2.33E+07			
Phippsburg - Boothbay - - Bristol - Bremen	2	1	0.65	0.39	1.34E+07	0.36	0.14	26658199
		2	0.40	0.24	1.07E+07			
		3	0.10	0.04	2.52E+06			
Friendship - Port Clyde - - Tenants - Rockland	3	1	0.59	0.32	3.16E+07	0.48	0.15	60906165
		2	0.36	0.15	1.33E+07			
		3	0.43	0.14	1.60E+07			
Zone 2								
Isleboro - Vinalhaven - - Stonington	4	1	0.55	0.19	8.56E+07	0.64	0.12	1.75E+08
		2	0.68	0.14	4.32E+07			
		3	0.84	0.20	4.60E+07			
Blue Hill - Swans Is - - Mount Desert Is	5	1	0.52	0.20	2.72E+07	0.58	0.10	8.57E+07
		2	0.71	0.18	3.49E+07			
		3	0.51	0.16	2.36E+07			
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	0.48	0.12	1.84E+07	0.46	0.08	2.84E+07
		2	0.34	0.05	4.14E+06			
		3	0.50	0.14	5.88E+06			
Milbridge - Addison - - Jonesport	7	1	0.33	0.12	3.98E+07	0.32	0.08	5.74E+07
		2	0.31	0.10	1.13E+07			
		3	0.31	0.10	6.32E+06			
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	0.07	0.04	3.75E+06	0.05	0.02	5.19E+06
		2	0.02	0.01	6.25E+05			
		3	0.05	0.02	8.12E+05			
Cobscook Bay	9	1	0.11	0.03	3.73E+06	0.13	0.02	6.90E+06
		2	0.18	0.03	1.54E+06			
		3	0.18	0.04	1.63E+06			
Zone 1	1-3	1-3				0.48	0.08	1.76E+08
Zone 2	4-6	1-3				0.44	0.05	3.59E+08

Table 18e. 2009 spring survey mean, stratified mean, and estimated total sea star (*Asterias vulgaris*) abundances and standard errors (SE) by depth stratum, region, and zone, depths 0-15m, not including industry sites.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth stratum</u>	<u>Mean Numbers per m² for stratum</u>	<u>SE for stratum</u>	<u>Total Numbers for stratum</u>	<u>Stratified Mean Numbers per m² for region</u>	<u>SE for region</u>	<u>Total Numbers for region</u>
Zone 1								
Kittery to Phippsburg	1	1 (1-5m)	0.37	0.16	1.44E+07	0.45	0.16	7.40E+07
		2 (5-10m)	0.38	0.16	2.24E+07			
		3 (10-15m)	0.56	0.36	3.72E+07			
Phippsburg - Boothbay - - Bristol - Bremen	2	1	0.42	0.26	8.70E+06	0.68	0.25	4.99E+07
		2	0.78	0.36	2.06E+07			
		3	0.79	0.55	2.06E+07			
Friendship - Port Clyde - - Tenants - Rockland	3	1	0.13	0.04	6.68E+06	0.19	0.04	2.49E+07
		2	0.24	0.07	8.94E+06			
		3	0.25	0.08	9.25E+06			
Zone 2								
Isleboro - Vinalhaven - - Stonington	4	1	0.58	0.11	9.03E+07	0.63	0.07	1.73E+08
		2	0.76	0.09	4.84E+07			
		3	0.63	0.07	3.46E+07			
Blue Hill - Swans Is - - Mount Desert Is	5	1	0.51	0.15	2.69E+07	0.83	0.11	1.23E+08
		2	1.18	0.26	5.84E+07			
		3	0.82	0.14	3.81E+07			
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	0.34	0.11	1.30E+07	0.48	0.12	2.97E+07
		2	0.45	0.13	5.37E+06			
		3	0.95	0.48	1.13E+07			
Milbridge - Addison - - Jonesport	7	1	0.36	0.16	4.40E+07	0.38	0.11	6.91E+07
		2	0.33	0.12	1.22E+07			
		3	0.63	0.17	1.29E+07			
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	0.04	0.02	2.40E+06	0.04	0.01	3.79E+06
		2	0.02	0.01	5.16E+05			
		3	0.05	0.01	8.70E+05			
Cobscook Bay	9	1	0.08	0.02	2.58E+06	0.09	0.02	4.81E+06
		2	0.10	0.02	8.97E+05			
		3	0.15	0.03	1.34E+06			
Zone 1	1-3	1-3				0.41	0.09	1.49E+08
Zone 2	4-6	1-3				0.50	0.04	4.04E+08

Table 19a. 2005 spring survey mean and stratified mean lobster (*Homarus americanus*) abundances and standard errors (SE) by depth stratum, region, and zone, depths 0-15m, not including industry sites.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth stratum</u>	<u>Mean Numbers per m² for stratum</u>	<u>SE for stratum</u>	<u>Stratified Mean Numbers per m² for region</u>	<u>SE for region</u>
<u>Zone 1</u>						
Kittery to Phippsburg	1	1 (1-5m)	0.0063	0.0043	0.0344	0.0069
		2 (5-10m)	0.0281	0.0112		
		3 (10-15m)	0.0567	0.0137		
Phippsburg - Boothbay - - Bristol - Bremen	2	1	0.0250	0.0112	0.0558	0.0128
		2	0.0188	0.0063		
		3	0.1179	0.0342		
Friendship - Port Clyde - - Tenants - Rockland	3	1	0.0188	0.0077	0.0265	0.0065
		2	0.0100	0.0053		
		3	0.0538	0.0183		
<u>Zone 2</u>						
Isleboro - Vinalhaven - - Stonington	4	1	0.0031	0.0031	0.0317	0.0066
		2	0.0500	0.0224		
		3	0.0909	0.0176		
Blue Hill - Swans Is - - Mount Desert Is	5	1	0.0219	0.0102	0.0654	0.0109
		2	0.0719	0.0250		
		3	0.1077	0.0195		
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	0.0375	0.0141	0.0776	0.0137
		2	0.1600	0.0423		
		3	0.1231	0.0352		
Milbridge - Addison - - Jonesport	7	1	0.0219	0.0219	0.0247	0.0151
		2	0.0219	0.0064		
		3	0.0462	0.0165		
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	0.0000	0.0000	0.0070	0.0025
		2	0.0188	0.0077		
		3	0.0107	0.0077		
Cobscook Bay	9	1	0.0000	0.0000	0.0000	0.0000
		2	0.0000	0.0000		
		3	0.0000	0.0000		
Zone 1	1-3	1-3			0.0359	0.0046
Zone 2	4-9	1-3			0.0348	0.0046

Table 19b. 2006 spring survey mean and stratified mean lobster (*Homarus americanus*) abundances and standard errors (SE) by depth stratum, region, and zone, untransformed, depths 0-15m, not including industry sites.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth stratum</u>	<u>Mean Numbers per m² for stratum</u>	<u>SE for stratum</u>	<u>Stratified Mean Numbers per m² for region</u>	<u>SE for region</u>
<u>Zone 1</u>						
Kittery to Phippsburg	1	1 (1-5m)	0.0125	0.0056	0.0596	0.0104
		2 (5-10m)	0.0500	0.0169		
		3 (10-15m)	0.0962	0.0208		
Phippsburg - Boothbay - - Bristol - Bremen	2	1	0.0156	0.0088	0.0715	0.0196
		2	0.0500	0.0154		
		3	0.1375	0.0523		
Friendship - Port Clyde - - Tenants - Rockland	3	1	0.0094	0.0050	0.0370	0.0069
		2	0.0500	0.0137		
		3	0.0636	0.0180		
<u>Zone 2</u>						
Isleboro - Vinalhaven - - Stonington	4	1	0.0375	0.0161	0.0484	0.0125
		2	0.0733	0.0341		
		3	0.0500	0.0158		
Blue Hill - Swans Is - - Mount Desert Is	5	1	0.0094	0.0050	0.0518	0.0124
		2	0.0750	0.0201		
		3	0.0750	0.0327		
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	0.0375	0.0125	0.0583	0.0109
		2	0.0607	0.0175		
		3	0.1227	0.0365		
Milbridge - Addison - - Jonesport	7	1	0.0063	0.0043	0.0164	0.0044
		2	0.0344	0.0118		
		3	0.0450	0.0189		
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	0.0031	0.0031	0.0087	0.0026
		2	0.0188	0.0063		
		3	0.0107	0.0057		
Cobscook Bay	9	1	0.0031	0.0031	0.0021	0.0021
		2	0.0000	0.0000		
		3	0.0000	0.0000		
Zone 1	1-3	1-3			0.0541	0.0066
Zone 2	4-9	1-3			0.0350	0.0050

Table 19c. 2007 spring survey mean and stratified mean lobster (*Homarus americanus*) abundances and standard errors (SE) by depth stratum, region, and zone, depths 0-15m, not including industry sites.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth stratum</u>	<u>Mean Numbers per m² for stratum</u>	<u>SE for stratum</u>	<u>Stratified Mean Numbers per m² for region</u>	<u>SE for region</u>
<u>Zone 1</u>						
Kittery to Phippsburg	1	1 (1-5m)	0.0188	0.0090	0.0394	0.0085
		2 (5-10m)	0.0344	0.0118		
		3 (10-15m)	0.0563	0.0175		
Phippsburg - Boothbay - - Bristol - Bremen	2	1	0.0094	0.0068	0.0188	0.0066
		2	0.0179	0.0085		
		3	0.0273	0.0156		
Friendship - Port Clyde - - Tenants - Rockland	3	1	0.0031	0.0031	0.0241	0.0063
		2	0.0281	0.0151		
		3	0.0500	0.0150		
<u>Zone 2</u>						
Isleboro - Vinalhaven - - Stonington	4	1	0.0000	0.0000	0.0121	0.0036
		2	0.0281	0.0112		
		3	0.0273	0.0124		
Blue Hill - Swans Is - - Mount Desert Is	5	1	0.0125	0.0072	0.0304	0.0071
		2	0.0464	0.0133		
		3	0.0333	0.0155		
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	0.0219	0.0112	0.0451	0.0109
		2	0.0500	0.0162		
		3	0.1150	0.0409		
Milbridge - Addison - - Jonesport	7	1	0.0094	0.0068	0.0162	0.0058
		2	0.0250	0.0121		
		3	0.0417	0.0220		
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	0.0063	0.0043	0.0127	0.0031
		2	0.0063	0.0043		
		3	0.0423	0.0096		
Cobscook Bay	9	1	0.0000	0.0000	0.0012	0.0012
		2	0.0071	0.0071		
		3	0.0000	0.0000		
Zone 1	1-3	1-3			0.0299	0.0046
Zone 2	4-9	1-3			0.0182	0.0024

Table 19d. 2008 spring survey mean and stratified mean lobster (*Homarus americanus*) abundances and standard errors (SE) by depth stratum, region, and zone, depths 0-15m, not including industry sites.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth stratum</u>	<u>Mean Numbers per m² for stratum</u>	<u>SE for stratum</u>	<u>Stratified Mean Numbers per m² for region</u>	<u>SE for region</u>
<u>Zone 1</u>						
Kittery to Phippsburg	1	1 (1-5m)	0.0125	0.0072	0.0426	0.0089
		2 (5-10m)	0.0500	0.0171		
		3 (10-15m)	0.0536	0.0152		
Phippsburg - Boothbay - - Bristol - Bremen	2	1	0.0313	0.0151	0.0795	0.0158
		2	0.0656	0.0227		
		3	0.1318	0.0358		
Friendship - Port Clyde - - Tenants - Rockland	3	1	0.0406	0.0153	0.0628	0.0123
		2	0.1000	0.0292		
		3	0.0577	0.0211		
<u>Zone 2</u>						
Isleboro - Vinalhaven - - Stonington	4	1	0.0063	0.0043	0.0197	0.0066
		2	0.0563	0.0245		
		3	0.0150	0.0107		
Blue Hill - Swans Is - - Mount Desert Is	5	1	0.0844	0.0315	0.0976	0.0190
		2	0.1563	0.0387		
		3	0.0500	0.0269		
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	0.0438	0.0193	0.0635	0.0145
		2	0.1033	0.0367		
		3	0.0864	0.0225		
Milbridge - Addison - - Jonesport	7	1	0.0125	0.0072	0.0225	0.0063
		2	0.0406	0.0166		
		3	0.0500	0.0178		
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	0.0094	0.0050	0.0247	0.0053
		2	0.0467	0.0142		
		3	0.0385	0.0129		
Cobscook Bay	9	1	0.0000	0.0000	0.0000	0.0000
		2	0.0000	0.0000		
		3	0.0000	0.0000		
Zone 1	1-3	1-3			0.0571	0.0067
Zone 2	4-9	1-3			0.0372	0.0045

Table 19e. 2009 spring survey mean and stratified mean lobster (*Homarus americanus*) abundances and standard errors (SE) by depth stratum, region, and zone, depths 0-15m, not including industry sites.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth stratum</u>	<u>Mean Numbers per m² for stratum</u>	<u>SE for stratum</u>	<u>Stratified Mean Numbers per m² for region</u>	<u>SE for region</u>
<u>Zone 1</u>						
Kittery to Phippsburg	1	1 (1-5m)	0.0281	0.0079	0.0549	0.0109
		2 (5-10m)	0.0813	0.0241		
		3 (10-15m)	0.0469	0.0155		
Phippsburg - Boothbay - - Bristol - Bremen	2	1	0.0344	0.0118	0.0634	0.0131
		2	0.0500	0.0216		
		3	0.1000	0.0279		
Friendship - Port Clyde - - Tenants - Rockland	3	1	0.0344	0.0109	0.0690	0.0113
		2	0.0750	0.0237		
		3	0.1125	0.0262		
<u>Zone 2</u>						
Isleboro - Vinalhaven - - Stonington	4	1	0.0406	0.0220	0.0414	0.0146
		2	0.0500	0.0165		
		3	0.0333	0.0333		
Blue Hill - Swans Is - - Mount Desert Is	5	1	0.0469	0.0216	0.0692	0.0126
		2	0.0833	0.0222		
		3	0.0792	0.0217		
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	0.0531	0.0180	0.1055	0.0159
		2	0.1536	0.0338		
		3	0.2250	0.0490		
Milbridge - Addison - - Jonesport	7	1	0.0781	0.0313	0.0679	0.0220
		2	0.0281	0.0158		
		3	0.0773	0.0395		
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	0.0219	0.0112	0.0271	0.0071
		2	0.0250	0.0065		
		3	0.0464	0.0170		
Cobscook Bay	9	1	0.0063	0.0043	0.0047	0.0029
		2	0.0031	0.0031		
		3	0.0000	0.0000		
Zone 1	1-3	1-3			0.0616	0.0068
Zone 2	4-9	1-3			0.0531	0.0074

Table 20. Spring survey mean and stratified mean algal cover (% canopy + % understory, which can be greater than 100%) by depth stratum, region, zone, and year, depths 0-15m, not including industry sites.

<u>Region Name</u>	<u>Region No.</u>	<u>Depth Stratum</u>	<u>Mean % algal cover by depth</u>								
			<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>
Zone 1											
Kittery to Phippsburg	1	1 (0-5m)	103.5	98.7	114.4	111.0	107.8	109.4	87.5	98.7	116.0
		2 (5-10m)	94.8	99.5	92.6	99.5	98.3	92.5	73.3	82.5	88.4
		3 (10-15m)	67.8	55.6	65.8	66.3	68.4	59.0	38.4	50.3	54.8
		region mean	86.1	81.8	87.0	88.9	88.6	83.1	62.7	73.5	81.5
Phippsburg - Boothbay - - Bristol - Bremen	2	1	91.2	103.1	116.6	115.3	118.6	100.8	89.1	105.7	120.0
		2	67.0	81.6	99.8	110.1	97.8	86.9	76.6	94.2	92.6
		3	47.3	70.4	61.0	81.9	65.6	63.4	54.9	47.4	68.6
		region mean	66.8	83.7	90.7	101.5	92.2	82.4	72.4	80.8	91.8
Friendship - Port Clyde - - Tenants - Rockland	3	1	88.7	116.1	126.9	128.4	118.4	101.2	95.6	117.2	127.1
		2	85.4	81.9	80.6	110.6	103.0	78.8	66.6	87.9	99.5
		3	56.8	49.3	32.3	66.5	52.0	50.2	36.4	31.0	55.1
		region mean	78.4	86.6	85.8	105.1	94.5	79.7	69.8	83.5	98.0
Zone 2											
Isleboro - Vinalhaven - - Stonington	4	1	77.3	116.9	119.2	117.7	106.7	91.7	69.2	82.1	88.3
		2	52.9	87.3	77.2	90.9	80.5	76.8	47.4	64.0	40.7
		3	22.8	26.1	20.2	46.2	36.4	25.0	10.5	31.7	14.0
		region mean	60.6	91.7	89.5	97.1	86.4	74.8	52.3	67.7	62.2
Blue Hill - Swans Is - - Mount Desert Is	5	1	78.6	103.7	123.0	125.8	115.3	89.9	88.1	113.7	101.6
		2	62.1	64.1	64.5	88.4	86.4	67.2	58.6	88.4	68.8
		3	34.0	19.7	19.8	54.7	35.5	42.6	22.2	42.4	30.5
		region mean	59.1	64.2	71.1	91.0	80.7	67.5	57.6	82.9	68.4
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	69.3	89.3	111.8	115.1	107.3	86.8	109.9	96.7	103.9
		2	39.1	35.8	54.4	77.8	60.5	55.5	52.4	87.3	78.9
		3	18.0	7.2	9.7	42.6	14.7	14.6	11.4	50.8	31.8
		region mean	53.6	63.2	81.1	94.0	80.5	66.9	79.9	86.1	85.3
Milbridge - Addison - - Jonesport	7	1	109.9	141.8	142.4	142.0	146.3	122.9	131.9	143.8	130.5
		2	61.3	79.2	75.0	89.4	76.1	54.4	66.7	86.2	63.7
		3	16.1	28.1	21.4	32.6	22.5	15.9	11.2	24.7	21.0
		region mean	89.3	116.1	114.9	118.8	117.9	96.8	104.9	118.5	104.4
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	128.7	150.7	143.6	132.4	138.9	106.4	127.7	150.8	134.9
		2	79.4	65.6	76.2	69.0	62.6	36.1	67.9	89.5	60.1
		3	22.9	14.1	21.9	31.0	10.4	6.1	35.3	37.9	18.8
		region mean	96.5	103.3	103.7	97.2	95.4	69.5	95.1	114.1	94.0
Cobscook Bay	9	1	40.2	28.7	25.4	35.7	27.0	13.1	35.6	24.9	24.9
		2	18.3	10.3	10.9	16.6	7.7	7.8	10.9	7.9	7.1
		3	8.5	1.5	8.5	7.4	1.4	1.6	5.4	4.4	0.7
		region mean	31.1	21.0	20.1	27.6	19.4	10.2	26.3	18.6	17.8
Zone 1	1-3	1-3	79.5	83.8	87.3	97.1	91.4	81.8	67.2	78.4	76.3
Zone 2	4-6	1-3	68.6	86.8	88.4	96.1	88.7	73.0	70.2	85.5	75.4

Table 21a. 2007 spring survey incidence of *Didemnum* (absent, present ($\leq 50\%$ cover), or common ($> 50\%$ cover)) by depth stratum, region, and zone, depths 0-15m, not including industry sites.

Region Name	Region No.	Depth Stratum	Number of Quadrats With <i>Didemnum</i> ...				Percent of Quadrats With <i>Didemnum</i> ...			
			Absent	Present ($\leq 50\%$)	Common ($> 50\%$)	Total	Absent	Present ($\leq 50\%$)	Common ($> 50\%$)	Present or Common
Zone 1										
Kittery to Phippsburg	1	1 (0-5m)	308	11	1	320	96.3%	3.4%	0.3%	3.8%
		2 (5-10m)	317	3		320	99.1%	0.9%	0.0%	0.9%
		3 (10-15m)	160			160	100.0%	0.0%	0.0%	0.0%
		Total	785	14	1	800	98.1%	1.8%	0.1%	1.9%
Phippsburg - Boothbay - - Bristol - Bremen	2	1	303	17		320	94.7%	5.3%	0.0%	5.3%
		2	220	49	1	270	81.5%	18.1%	0.4%	18.5%
		3	196	14		210	93.3%	6.7%	0.0%	6.7%
		Total	719	80	1	800	89.9%	10.0%	0.1%	10.1%
Friendship - Port Clyde - - Tenants - Rockland	3	1	309	11		320	96.6%	3.4%	0.0%	3.4%
		2	307	12	1	320	95.9%	3.8%	0.3%	4.1%
		3	246	4		250	98.4%	1.6%	0.0%	1.6%
		Total	862	27	1	890	96.9%	3.0%	0.1%	3.1%
Zone 2										
Isleboro - Vinalhaven - - Stonington	4	1	319	1		320	99.7%	0.3%	0.0%	0.3%
		2	309	11		320	96.6%	3.4%	0.0%	3.4%
		3	218	2		220	99.1%	0.9%	0.0%	0.9%
		Total	846	14		860	98.4%	1.6%	0.0%	1.6%
Blue Hill - Swans Is - - Mount Desert Is	5	1	316	4		320	98.8%	1.3%	0.0%	1.3%
		2	273	7		280	97.5%	2.5%	0.0%	2.5%
		3	234	6		240	97.5%	2.5%	0.0%	2.5%
		Total	823	17		840	98.0%	2.0%	0.0%	2.0%
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	320			320	100.0%	0.0%	0.0%	0.0%
		2	298	2		300	99.3%	0.7%	0.0%	0.7%
		3	183	7		190	96.3%	3.7%	0.0%	3.7%
		Total	801	9		810	98.9%	1.1%	0.0%	1.1%
Milbridge - Addison - - Jonesport	7	1	320			320	100.0%	0.0%	0.0%	0.0%
		2	319	1		320	99.7%	0.3%	0.0%	0.3%
		3	235	5		240	97.9%	2.1%	0.0%	2.1%
		Total	874	6		880	99.3%	0.7%	0.0%	0.7%
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	320			320	100.0%	0.0%	0.0%	0.0%
		2	320			320	100.0%	0.0%	0.0%	0.0%
		3	259	1		260	99.6%	0.4%	0.0%	0.4%
		Total	899	1		900	99.9%	0.1%	0.0%	0.1%
Cobscook Bay	9	1	320			320	100.0%	0.0%	0.0%	0.0%
		2	280			280	100.0%	0.0%	0.0%	0.0%
		3	260			260	100.0%	0.0%	0.0%	0.0%
		Total	860			860	100.0%	0.0%	0.0%	0.0%
Zone 1	1-3	1-3	2366	121	3	2490	95.0%	4.9%	0.1%	5.0%
Zone 2	4-9	1-3	5103	47	0	5150	99.1%	0.9%	0.0%	0.9%
Totals for State	1-9	1-3	7469	168	3	7640	97.8%	2.2%	0.0%	2.2%

Table 21b. 2008 spring survey incidence of *Didemnum* (absent, present ($\leq 50\%$ cover), or common ($> 50\%$ cover)) by depth stratum, region, and zone, depths 0-15m, not including industry sites.

Region Name	Region No.	Depth Stratum	Number of Quadrats With <i>Didemnum</i> ...				Percent of Quadrats With <i>Didemnum</i> ...			
			Absent	Present ($\leq 50\%$)	Common ($> 50\%$)	Total	Absent	Present ($\leq 50\%$)	Common ($> 50\%$)	Present or Common
Zone 1										
Kittery to Phippsburg	1	1 (0-5m)	285	19	1	305	93.4%	6.2%	0.3%	6.6%
		2 (5-10m)	294	16		310	94.8%	5.2%	0.0%	5.2%
		3 (10-15m)	269	11		280	96.1%	3.9%	0.0%	3.9%
		Total	848	46	1	895	94.7%	5.1%	0.1%	5.3%
Phippsburg - Boothbay - Bristol - Bremen	2	1	288	32		320	90.0%	10.0%	0.0%	10.0%
		2	304	16		320	95.0%	5.0%	0.0%	5.0%
		3	212	8		220	96.4%	3.6%	0.0%	3.6%
		Total	804	56		860	93.5%	6.5%	0.0%	6.5%
Friendship - Port Clyde - Tenants - Rockland	3	1	286	34		320	89.4%	10.6%	0.0%	10.6%
		2	297	23		320	92.8%	7.2%	0.0%	7.2%
		3	231	9		240	96.3%	3.8%	0.0%	3.8%
		Total	814	66		880	92.5%	7.5%	0.0%	7.5%
Zone 2										
Isleboro - Vinalhaven - Stonington	4	1	320			320	100.0%	0.0%	0.0%	0.0%
		2	310			310	100.0%	0.0%	0.0%	0.0%
		3	200			200	100.0%	0.0%	0.0%	0.0%
		Total	830			830	100.0%	0.0%	0.0%	0.0%
Blue Hill - Swans Is - Mount Desert Is	5	1	318	2		320	99.4%	0.6%	0.0%	0.6%
		2	316	4		320	98.8%	1.3%	0.0%	1.3%
		3	197	3		200	98.5%	1.5%	0.0%	1.5%
		Total	831	9		840	98.9%	1.1%	0.0%	1.1%
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	308	2		310	99.4%	0.6%	0.0%	0.6%
		2	282	8		290	97.2%	2.8%	0.0%	2.8%
		3	213	7		220	96.8%	3.2%	0.0%	3.2%
		Total	803	17		820	97.9%	2.1%	0.0%	2.1%
Milbridge - Addison - Jonesport	7	1	311	3		314	99.0%	1.0%	0.0%	1.0%
		2	316	4		320	98.8%	1.3%	0.0%	1.3%
		3	213	7		220	96.8%	3.2%	0.0%	3.2%
		Total	840	14		854	98.4%	1.6%	0.0%	1.6%
Roque Is - Machiasport - Cutler - W. Quoddy Hd	8	1	320			320	100.0%	0.0%	0.0%	0.0%
		2	300			300	100.0%	0.0%	0.0%	0.0%
		3	260			260	100.0%	0.0%	0.0%	0.0%
		Total	880			880	100.0%	0.0%	0.0%	0.0%
Cobscook Bay	9	1	320			320	100.0%	0.0%	0.0%	0.0%
		2	320			320	100.0%	0.0%	0.0%	0.0%
		3	300			300	100.0%	0.0%	0.0%	0.0%
		Total	940			940	100.0%	0.0%	0.0%	0.0%
Zone 1	1-3	1-3	2466	168	1	2635	93.6%	6.4%	0.0%	6.4%
Zone 2	4-9	1-3	5124	40	0	5164	99.2%	0.8%	0.0%	0.8%
Totals for State	1-9	1-3	7590	208	1	7799	97.3%	2.7%	0.0%	2.7%

Table 21c. 2009 spring survey incidence of *Didemnum* (absent, present ($\leq 50\%$ cover), or common ($> 50\%$ cover)) by depth stratum, region, and zone, depths 0-15m, not including industry sites.

Region Name	Region No.	Depth Stratum	Number of Quadrats With <i>Didemnum</i> ...				Percent of Quadrats With <i>Didemnum</i> ...			
			Absent	Present ($\leq 50\%$)	Common ($> 50\%$)	Total	Absent	Present ($\leq 50\%$)	Common ($> 50\%$)	Present or Common
Zone 1										
Kittery to Phippsburg	1	1 (0-5m)	294	26		320	91.9%	8.1%	0.0%	8.1%
		2 (5-10m)	315	4	1	320	98.4%	1.3%	0.3%	1.6%
		3 (10-15m)	308	2		310	99.4%	0.6%	0.0%	0.6%
		Total	917	32	1	950	96.5%	3.4%	0.1%	3.5%
Phippsburg - Boothbay - - Bristol - Bremen	2	1	295	25		320	92.2%	7.8%	0.0%	7.8%
		2	248	32		280	88.6%	11.4%	0.0%	11.4%
		3	188	2		190	98.9%	1.1%	0.0%	1.1%
		Total	731	59		790	92.5%	7.5%	0.0%	7.5%
Friendship - Port Clyde - - Tenants - Rockland	3	1	303	17		320	94.7%	5.3%	0.0%	5.3%
		2	315	5		320	98.4%	1.6%	0.0%	1.6%
		3	233	7		240	97.1%	2.9%	0.0%	2.9%
		Total	851	29		880	96.7%	3.3%	0.0%	3.3%
Zone 2										
Isleboro - Vinalhaven - - Stonington	4	1	320			320	100.0%	0.0%	0.0%	0.0%
		2	308	2		310	99.4%	0.6%	0.0%	0.6%
		3	120			120	100.0%	0.0%	0.0%	0.0%
		Total	748	2		750	99.7%	0.3%	0.0%	0.3%
Blue Hill - Swans Is - - Mount Desert Is	5	1	305			305	100.0%	0.0%	0.0%	0.0%
		2	298	2		300	99.3%	0.7%	0.0%	0.7%
		3	227	3		230	98.7%	1.3%	0.0%	1.3%
		Total	830	5		835	99.4%	0.6%	0.0%	0.6%
Frenchman Bay - Winter Harbor - Corea - Steuben	6	1	320			320	100.0%	0.0%	0.0%	0.0%
		2	270			270	100.0%	0.0%	0.0%	0.0%
		3	200			200	100.0%	0.0%	0.0%	0.0%
		Total	790			790	100.0%	0.0%	0.0%	0.0%
Milbridge - Addison - - Jonesport	7	1	316			316	100.0%	0.0%	0.0%	0.0%
		2	320			320	100.0%	0.0%	0.0%	0.0%
		3	220			220	100.0%	0.0%	0.0%	0.0%
		Total	856			856	100.0%	0.0%	0.0%	0.0%
Roque Is - Machiasport - - Cutler - W. Quoddy Hd	8	1	320			320	100.0%	0.0%	0.0%	0.0%
		2	320			320	100.0%	0.0%	0.0%	0.0%
		3	270			270	100.0%	0.0%	0.0%	0.0%
		Total	910			910	100.0%	0.0%	0.0%	0.0%
Cobscook Bay	9	1	320			320	100.0%	0.0%	0.0%	0.0%
		2	320			320	100.0%	0.0%	0.0%	0.0%
		3	310			310	100.0%	0.0%	0.0%	0.0%
		Total	950			950	100.0%	0.0%	0.0%	0.0%
Zone 1	1-3	1-3	2499	120	1	2620	95.4%	4.6%	0.0%	4.6%
Zone 2	4-9	1-3	5084	7	0	5091	99.9%	0.1%	0.0%	0.1%
Totals for State	1-9	1-3	7583	127	1	7711	98.3%	1.6%	0.0%	1.7%

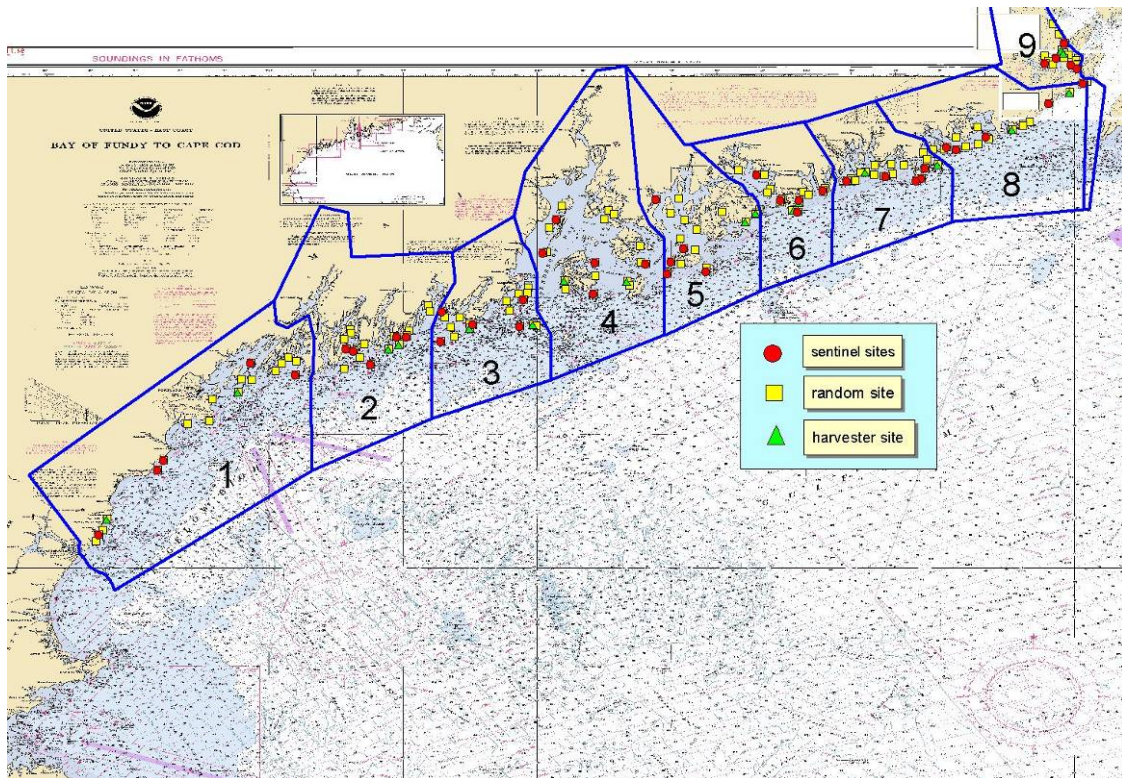
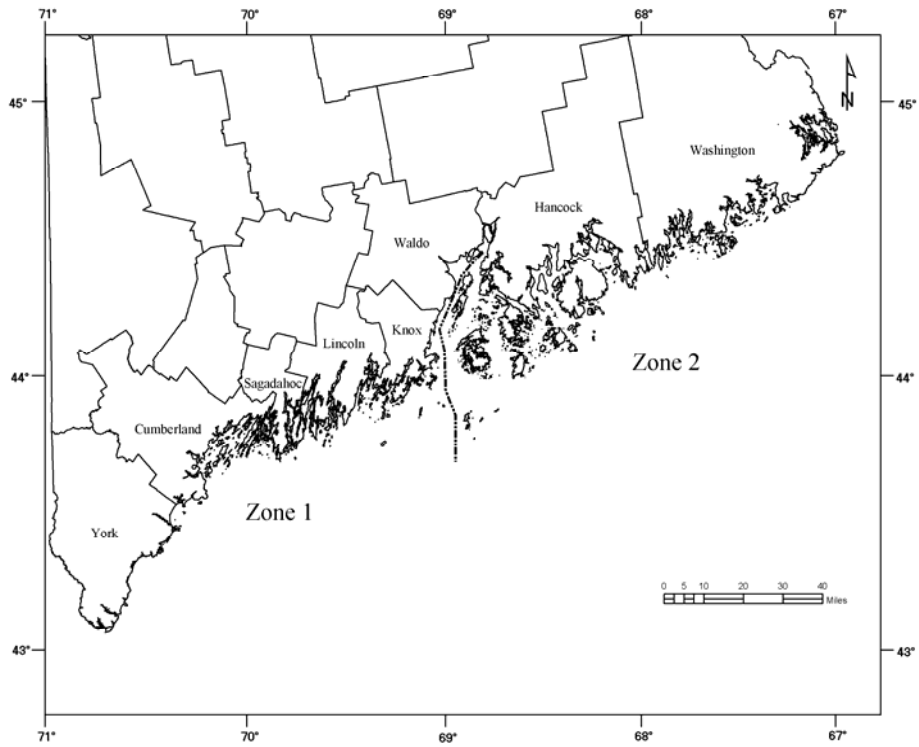


Figure 1a-b. Maine coastal counties and the two sea urchin management zones (above), and the nine survey regions with 2009 survey sites (below).

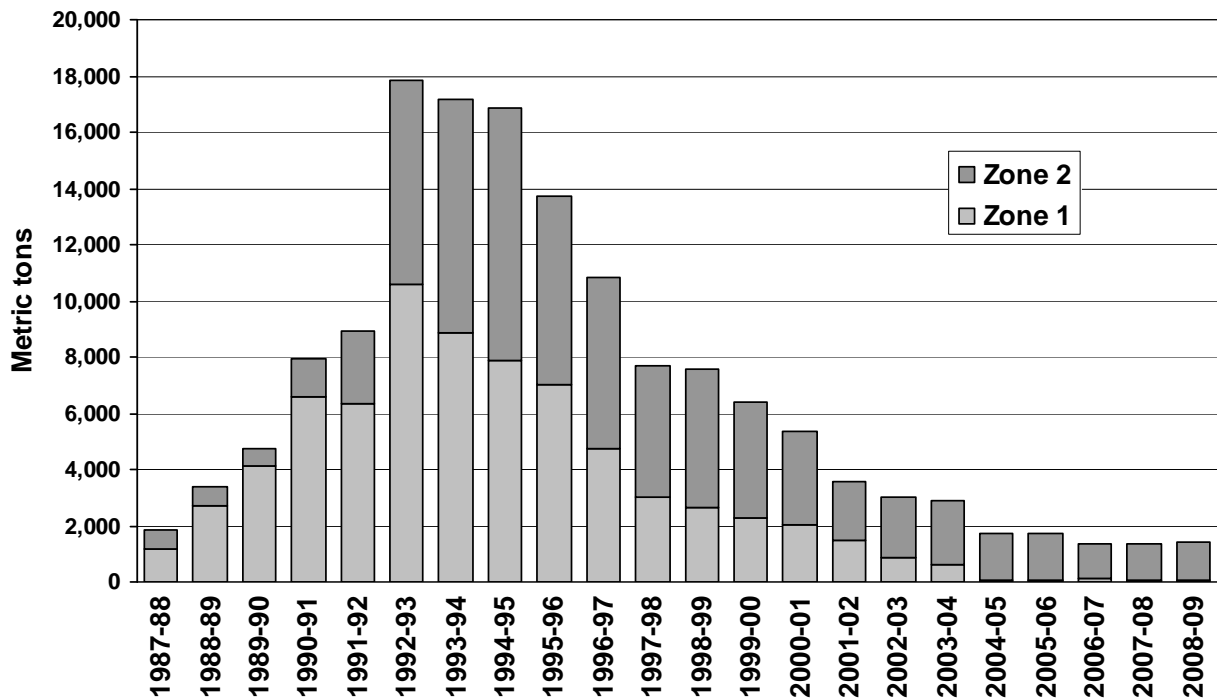
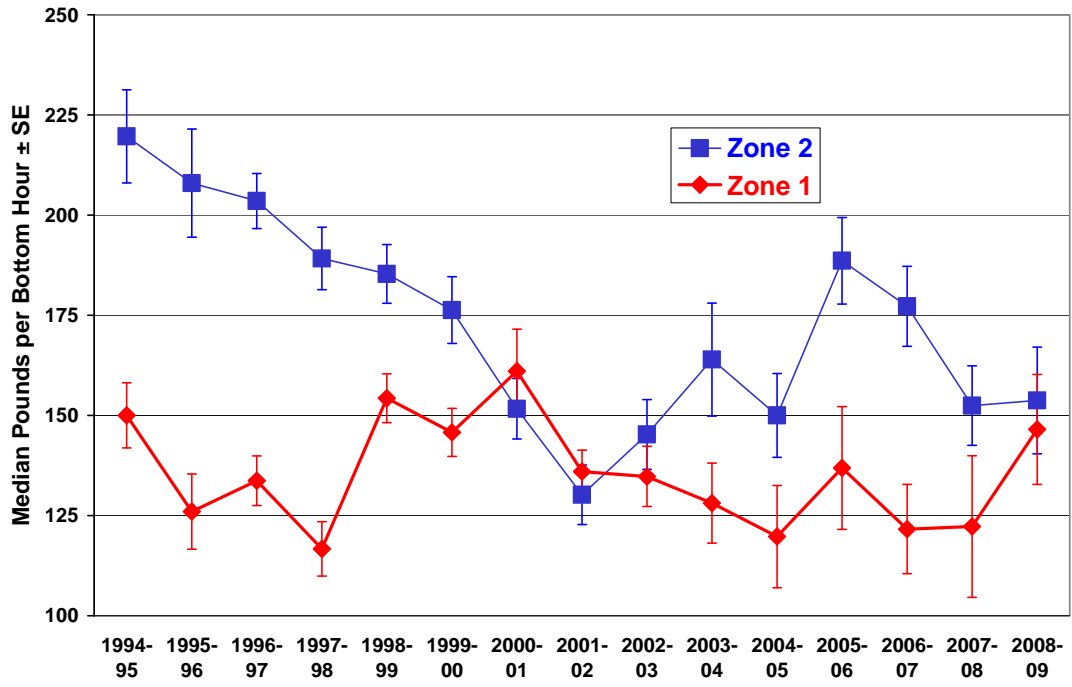


Figure 2. Maine sea urchin landings by fishing season and zone, from dealer reports.

Maine Sea Urchin Diver Catch/Effort by Season and Zone



Maine Sea Urchin Dragger Catch/Effort by Season and Zone

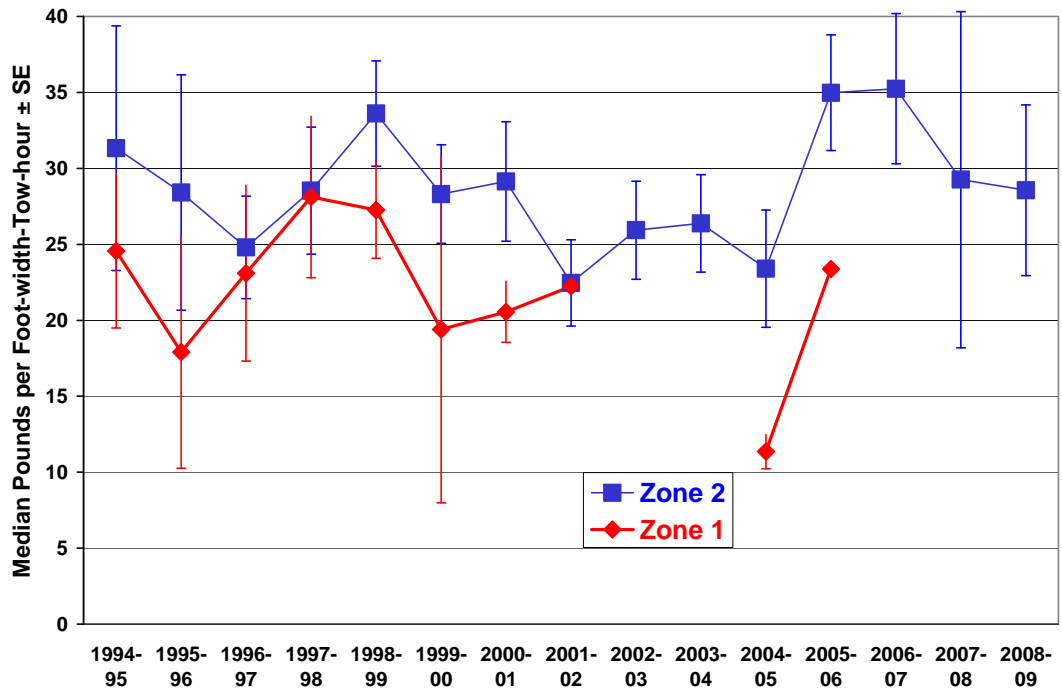


Figure 3a-b. Maine sea urchin diver (above) and dragger (below) median catch/effort by season and zone, from port interviews.

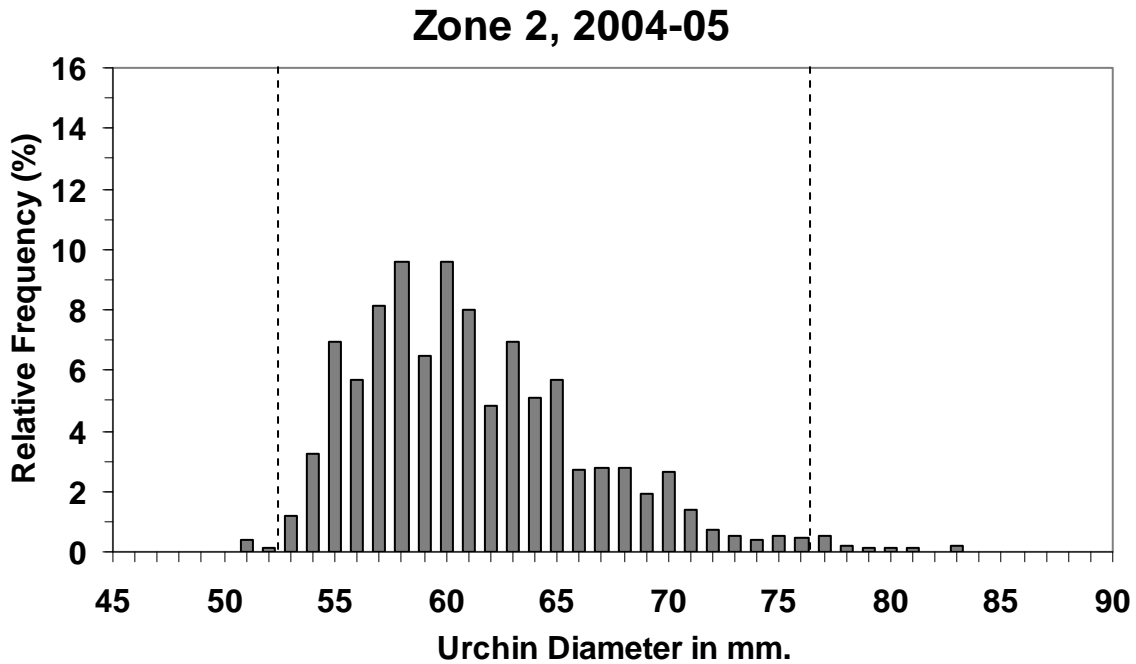
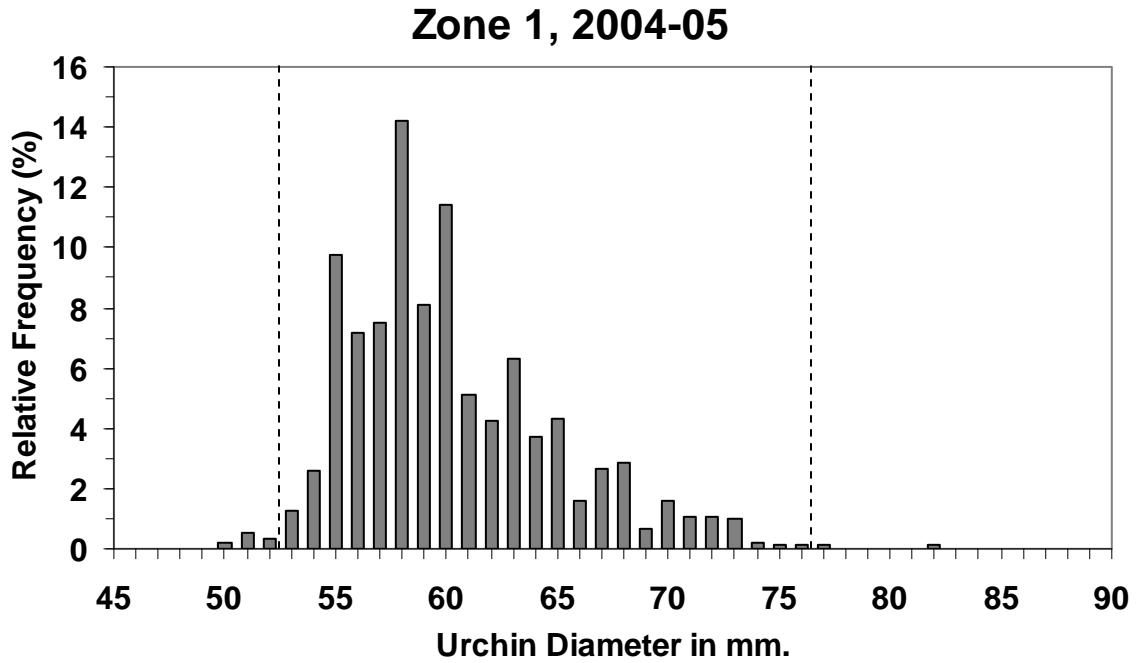


Figure 4a. Relative size frequency for Zone 1 (above) and Zone 2 (below) from the commercial sea urchin catch for 2004-05.
Note: the legal size range is $2\frac{1}{16}$ (52.4mm) to 3 inches (76.2mm), (dashed lines) with a 5% tolerance for undersized and a 5% tolerance for oversized urchins, by number.

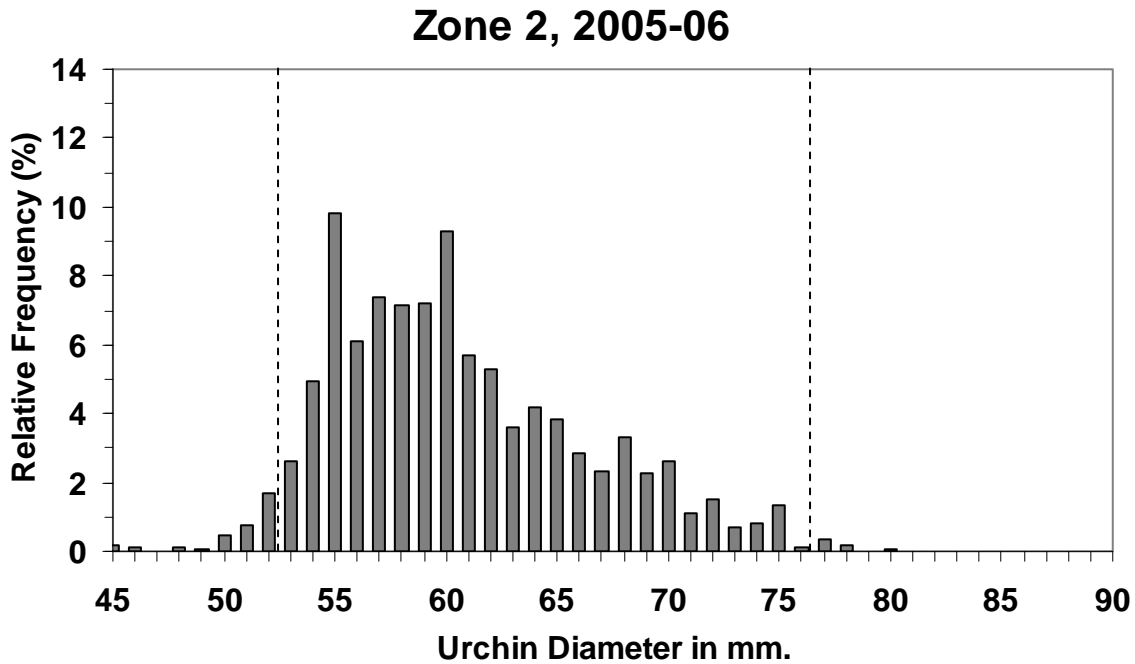
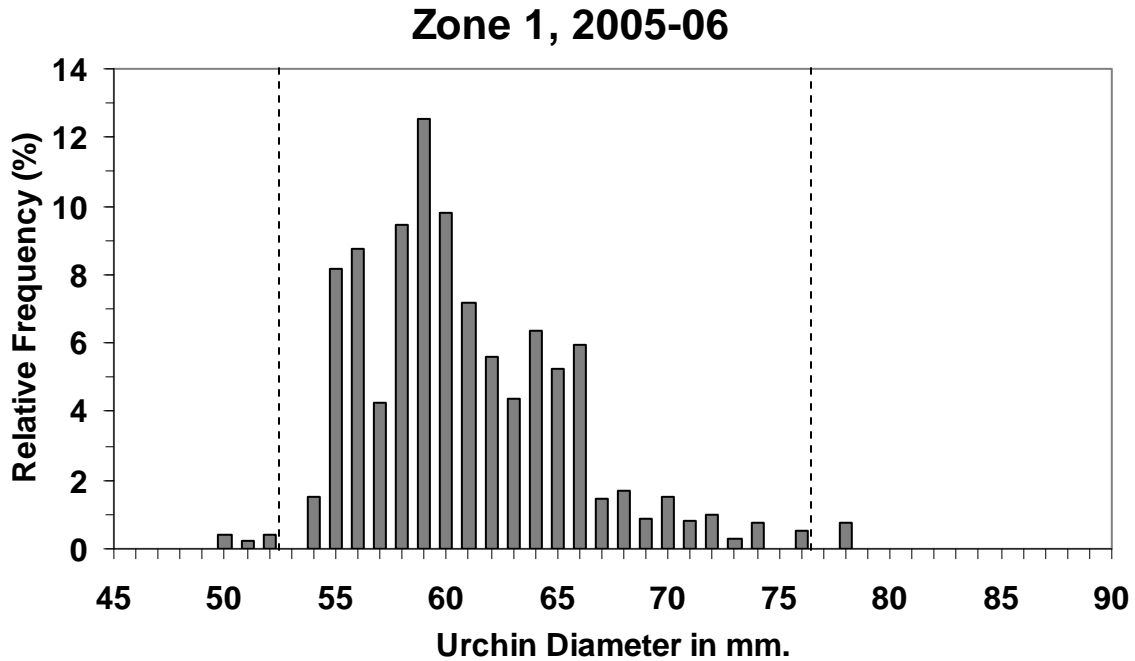


Figure 4b. Relative size frequency for Zone 1 (above) and Zone 2 (below) from the commercial sea urchin catch for 2005-06.
Note: the legal size range is $2\frac{1}{16}$ (52.4mm) to 3 inches (76.2mm), (dashed lines) with a 5% tolerance for undersized and a 5% tolerance for oversized urchins, by number.

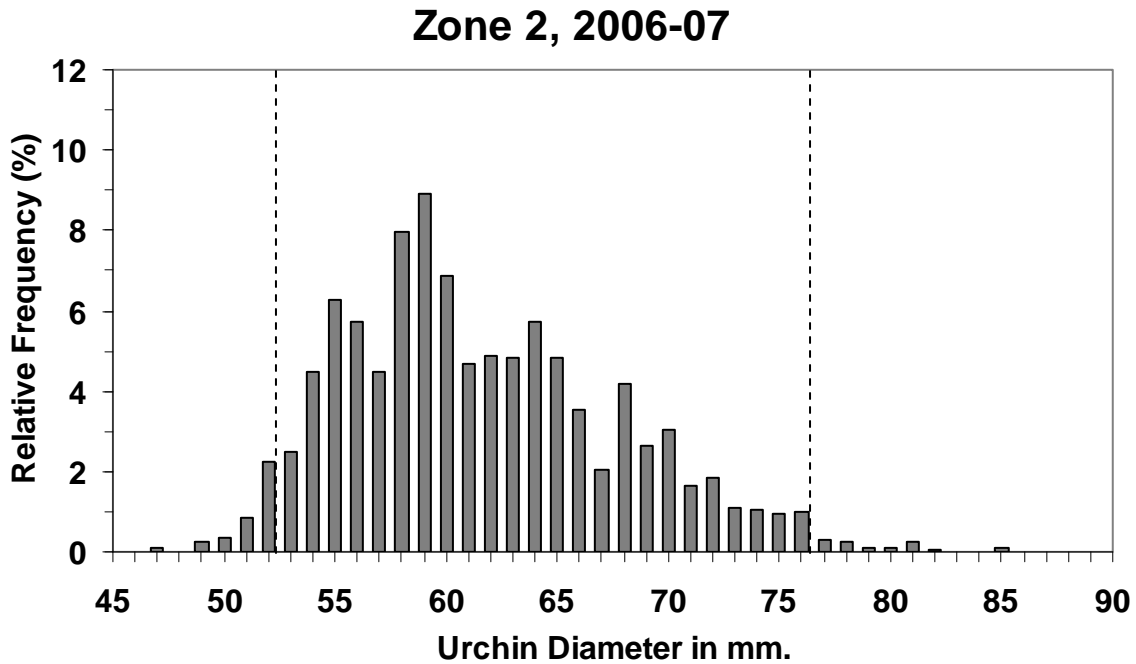
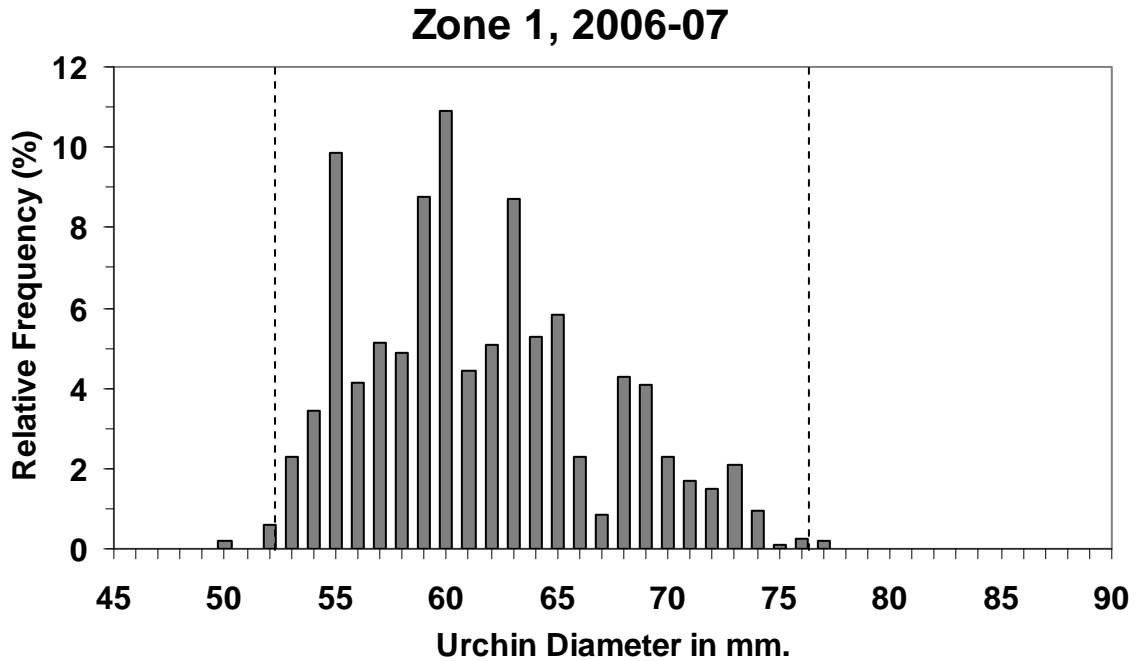


Figure 4c. Relative size frequency for Zone 1 (above) and Zone 2 (below) from the commercial sea urchin catch for 2006-07.
Note: the legal size range is $2\frac{1}{16}$ (52.4mm) to 3 inches (76.2mm), (dashed lines) with a 5% tolerance for undersized and a 5% tolerance for oversized urchins, by number.

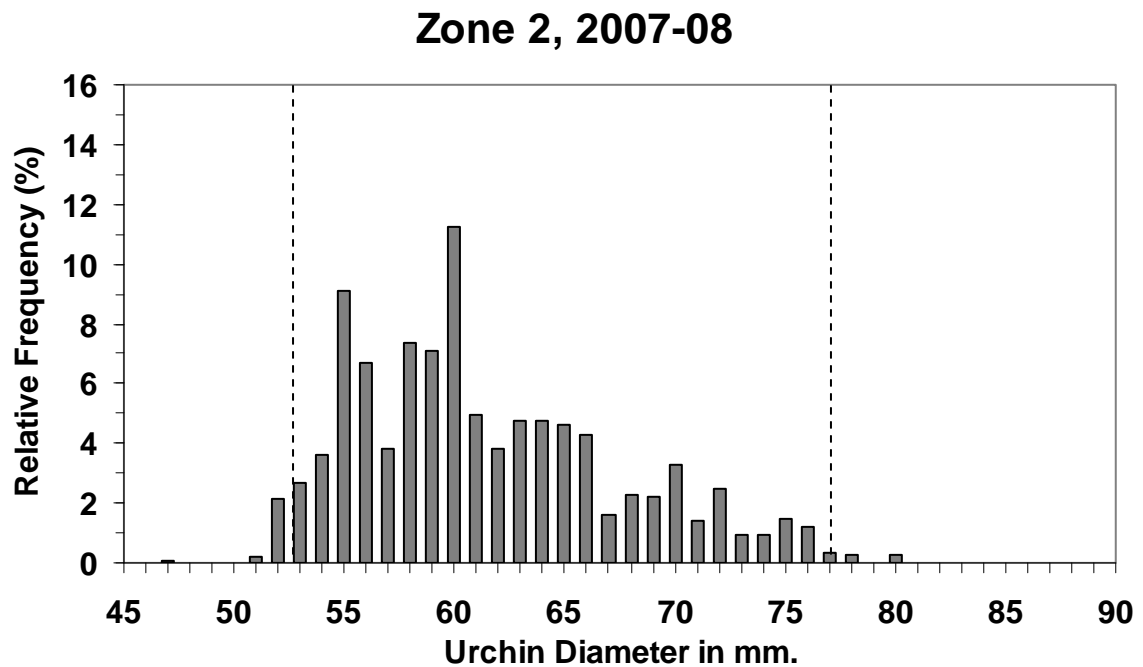
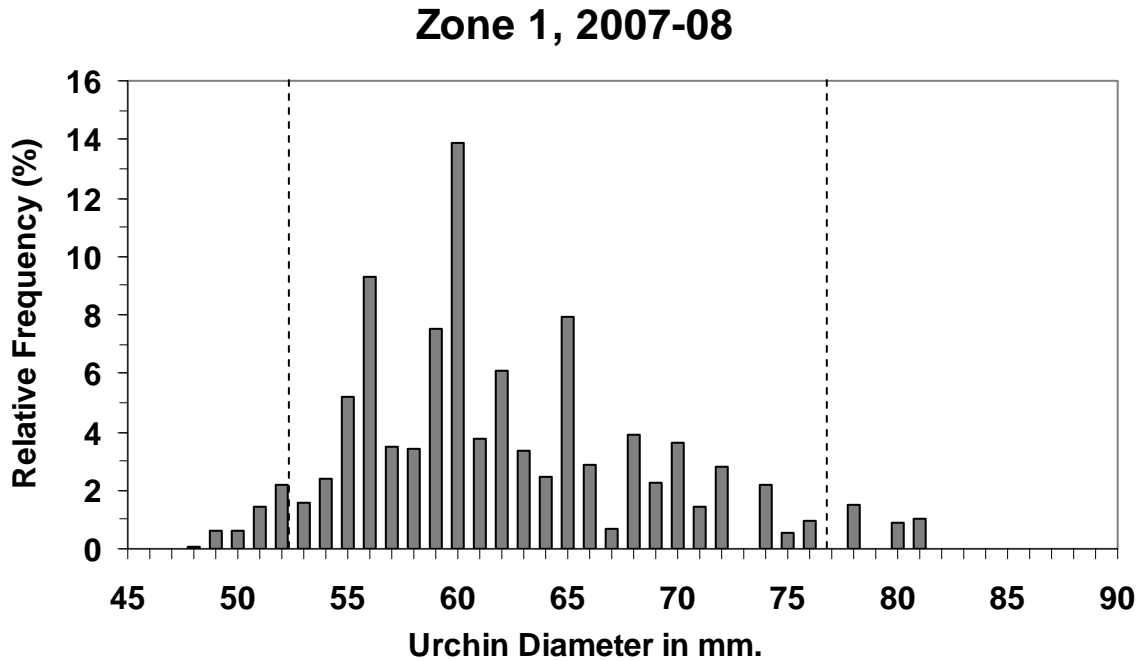


Figure 4d. Relative size frequency for Zone 1 (above) and Zone 2 (below) from the commercial sea urchin catch for 2007-08.
 Note: the legal size range is $2\frac{1}{16}$ (52.4mm) to 3 inches (76.2mm), (dashed lines) with a 5% tolerance for undersized and a 5% tolerance for oversized urchins, by number.

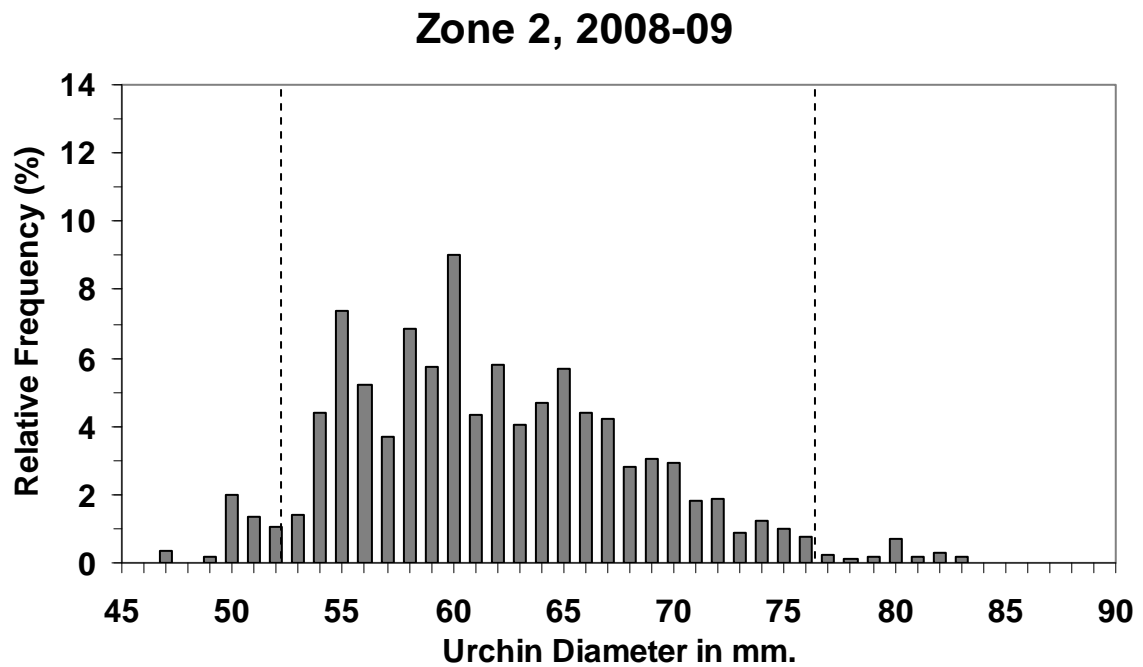
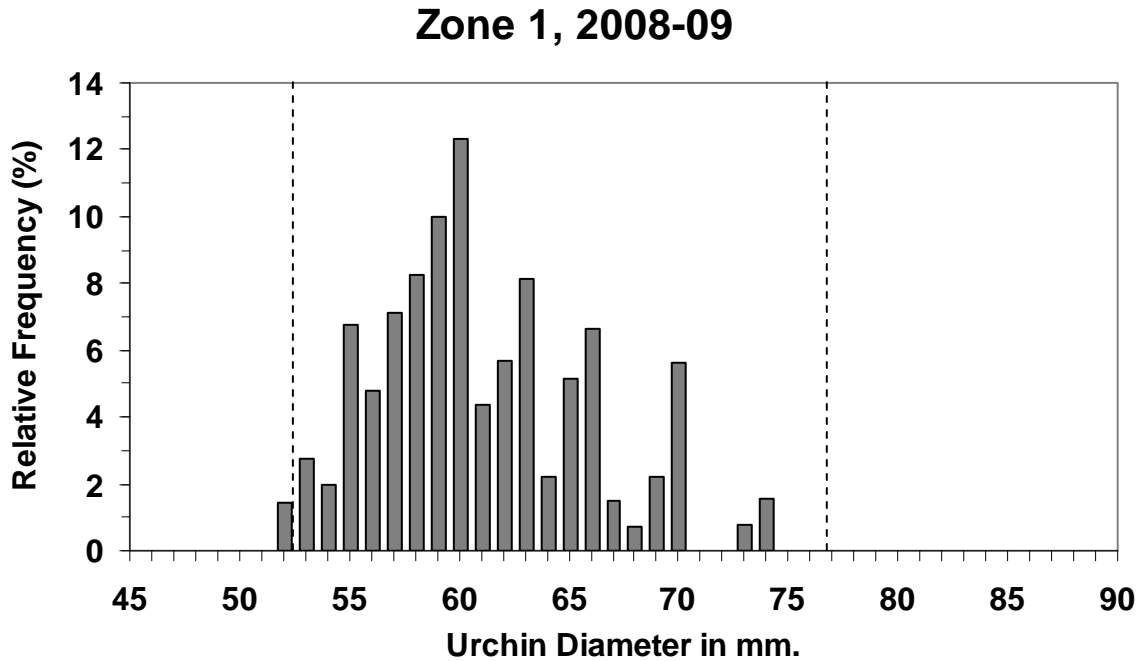


Figure 4e. Relative size frequency for Zone 1 (above) and Zone 2 (below) from the commercial sea urchin catch for 2008-09.
 Note: the legal size range is $2\frac{1}{16}$ (52.4mm) to 3 inches (76.2mm), (dashed lines) with a 5% tolerance for undersized and a 5% tolerance for oversized urchins, by number.

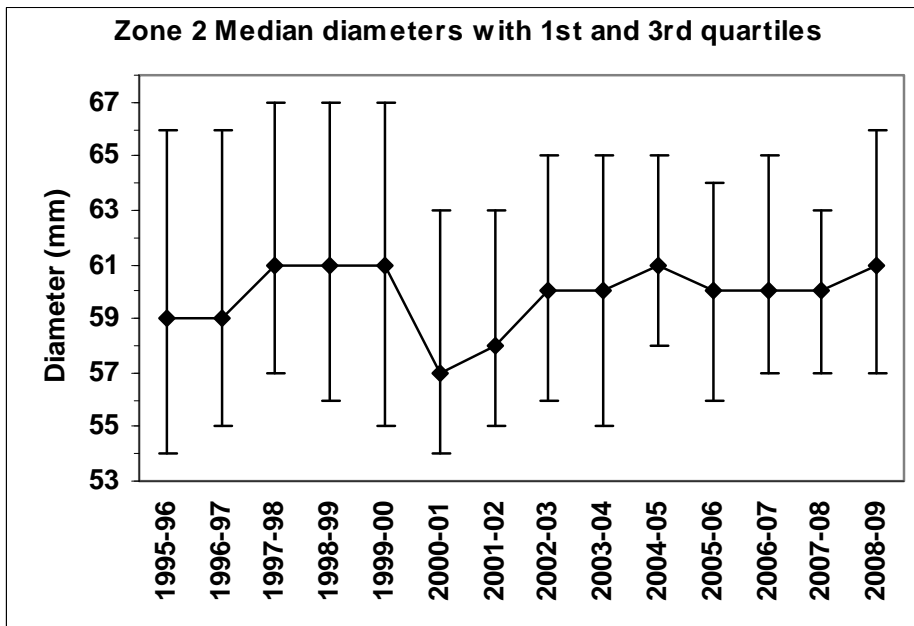
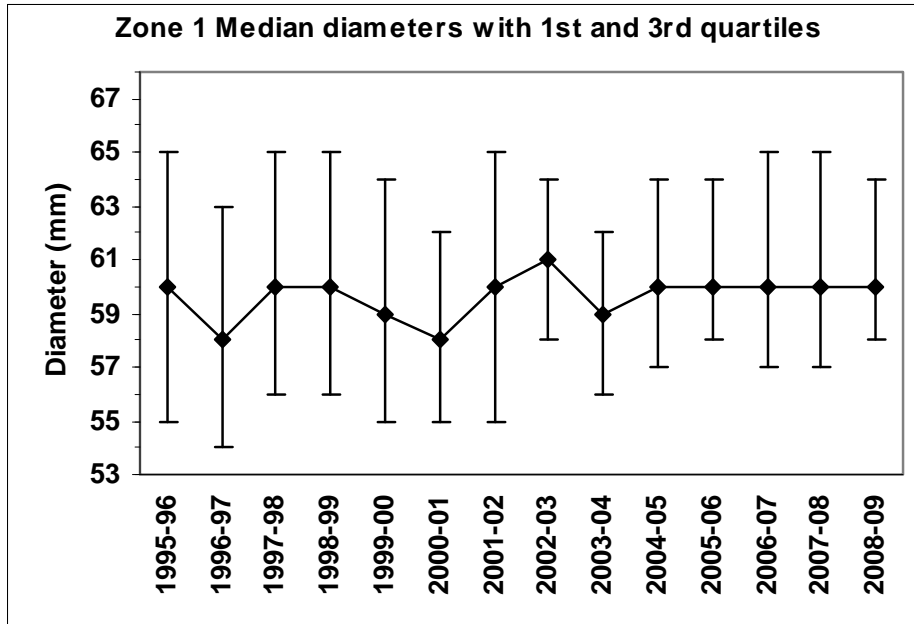
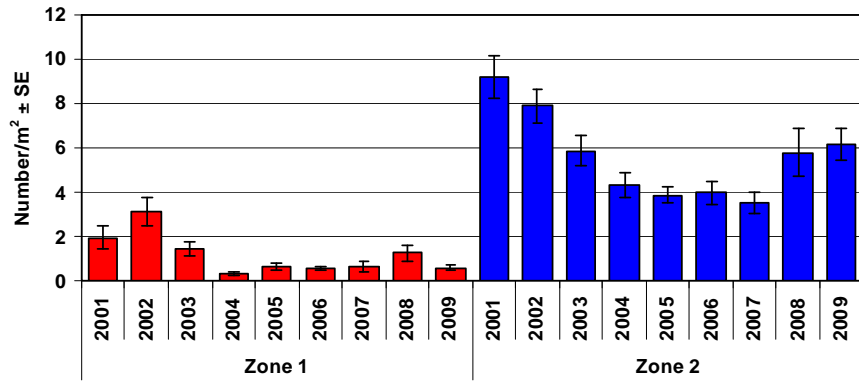
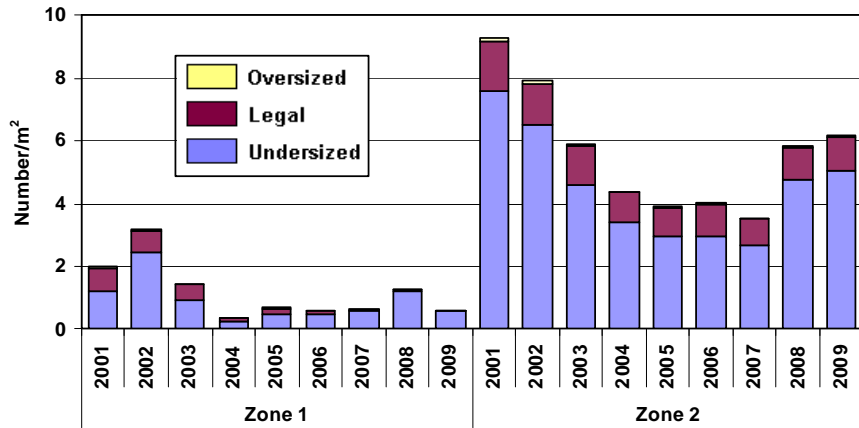


Figure 5. Median sea urchin diameters from catch samples, Zone 1 (above) and Zone 2 (below), with 1st and 3rd quartiles (brackets). Minimum legal size was 2 inches (50.8 mm) until 2001-02, when it increased to 2 ¹/₁₆ inches (52.4mm).

Mean Sea Urchin Abundance by Zone and Year



Mean Sea Urchin Abundance by Zone, Year, and Size



Estimated Total Numbers (millions) by Zone, Year, and Size

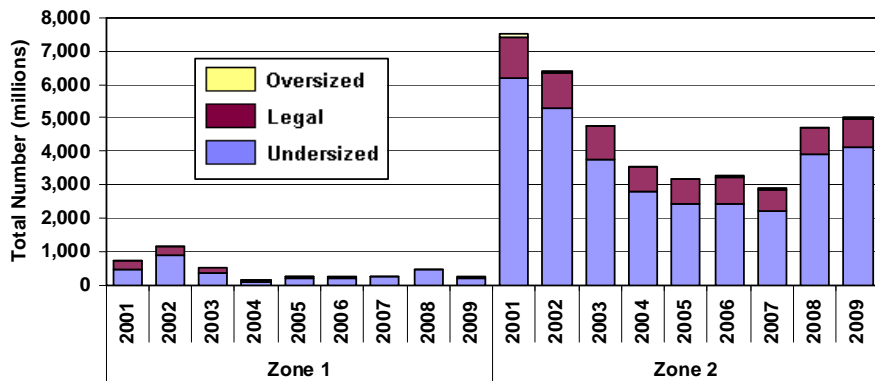
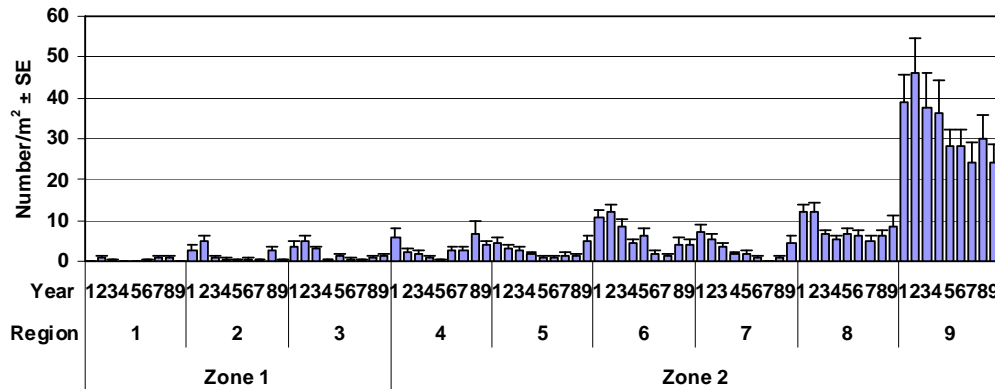
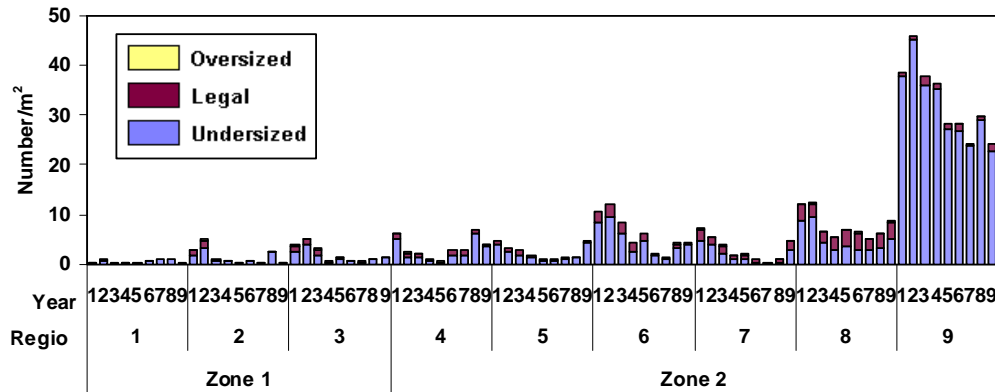


Figure 6a-c. 2001 - 2009 spring survey stratified mean sea urchin abundance (above and middle), and total abundance (bottom) by zone and year, depths 0-15m, not including industry sites.

Mean Sea Urchin Abundance by Region and Year



Mean Sea Urchin Abundance by Region, Year, and Size



Estimated Total Numbers (millions) by Region, Year and Size

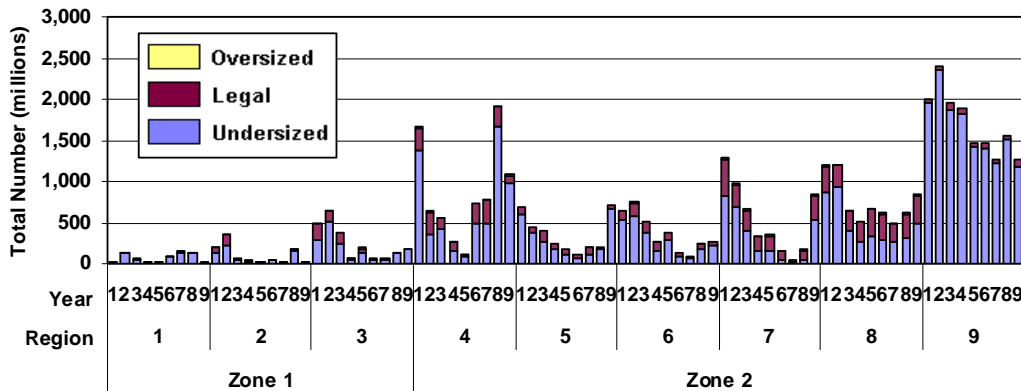
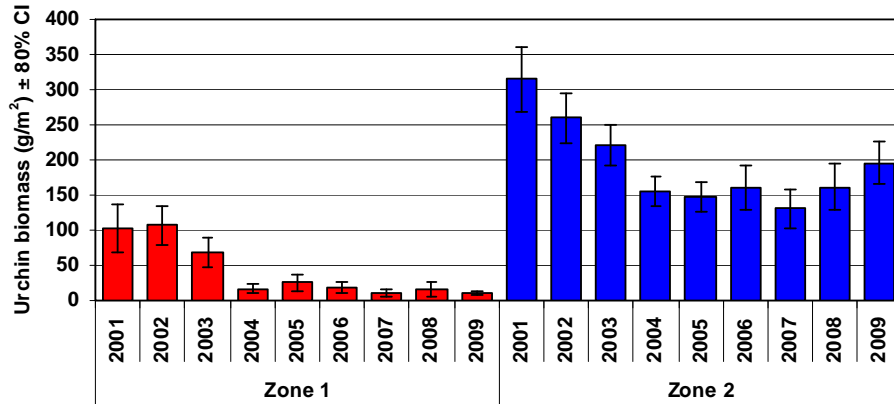
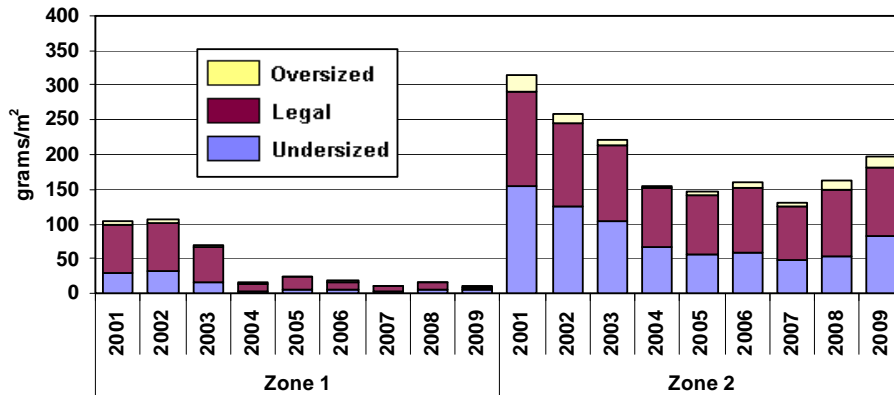


Figure 7a-c. 2001 - 2009 spring survey stratified mean sea urchin abundance (above and middle), and total abundance (bottom) by region and year, depths 0-15m, not including industry sites. Year "1" is 2001, etc.

Mean Sea Urchin Biomass by Zone and Year



Mean Sea Urchin Biomass by Zone, Year, and Size



Estimated Total Biomass (mt) by Zone, Year, and Size

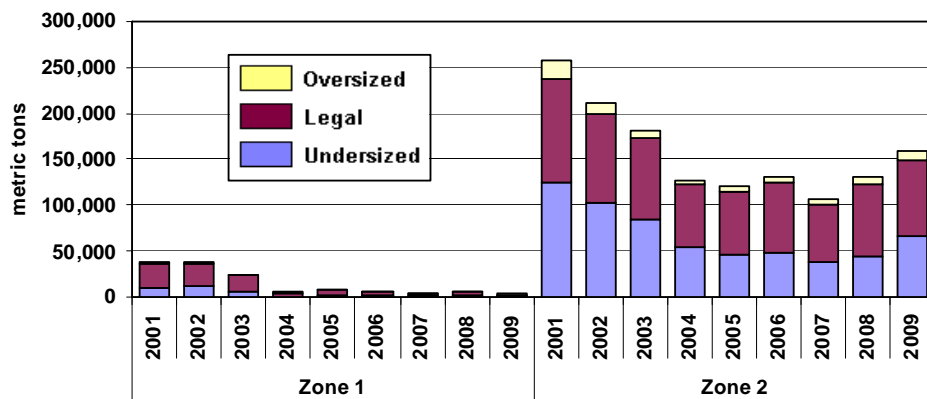
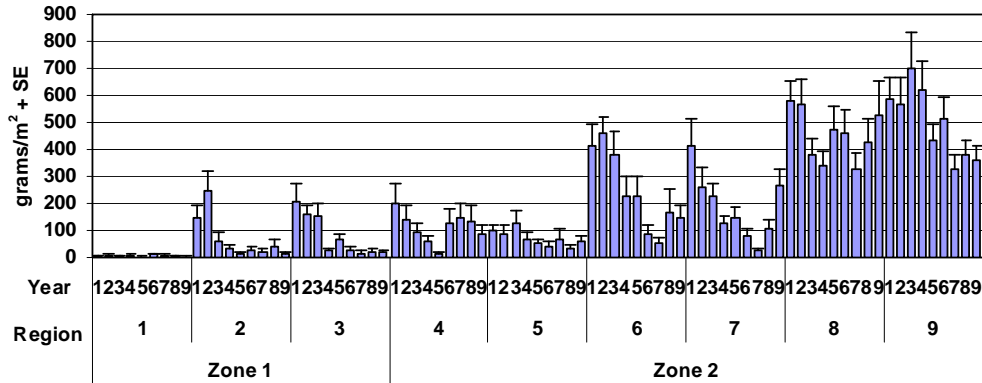
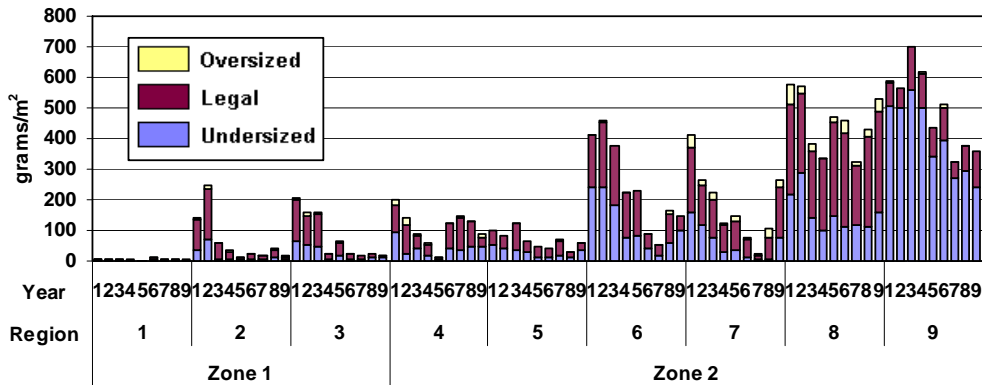


Figure 8a-c. 2001 - 2009 spring survey stratified mean sea urchin biomass (above and middle), and total biomass (bottom) by zone and year, depths 0-15m, not including industry sites.

Mean Sea Urchin Biomass by Region and Year



Mean Sea Urchin Biomass by Region, Year, and Size



Estimated Total Biomass (mt) by Region, Year, and Size

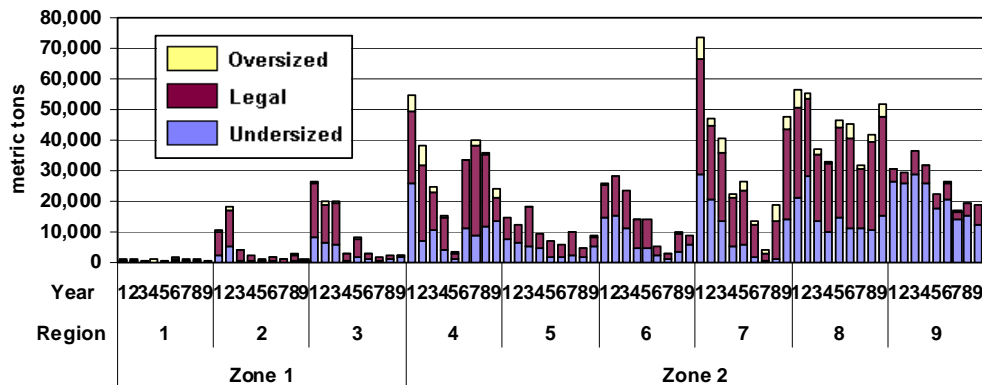


Figure 9a-c. 2001 - 2009 spring survey stratified mean sea urchin biomass (above and middle), and estimated total biomass, by region and year, depths 0-15m, not including industry sites. Year “1” is 2001, etc.

Zone 1

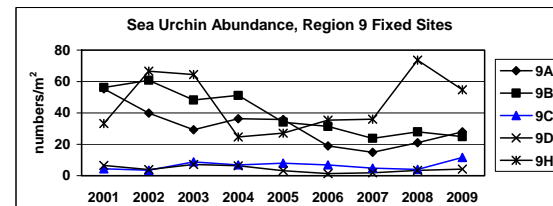
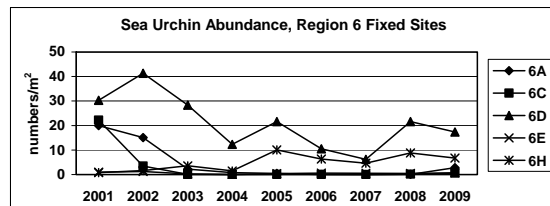
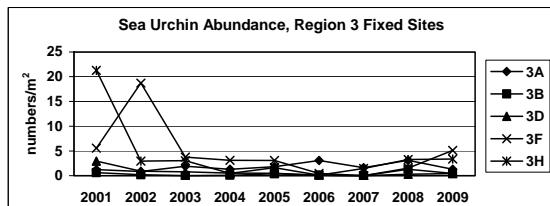
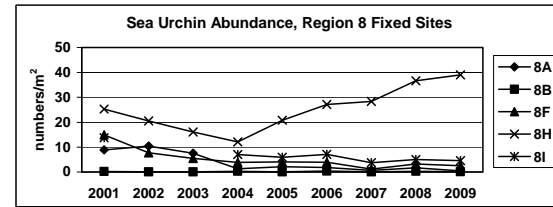
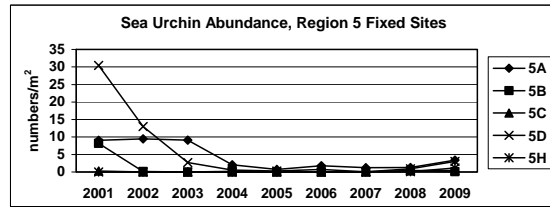
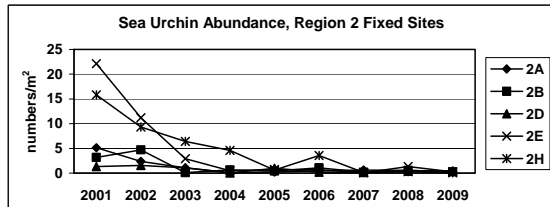
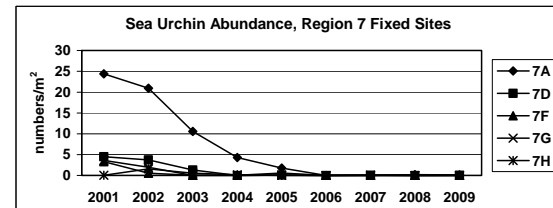
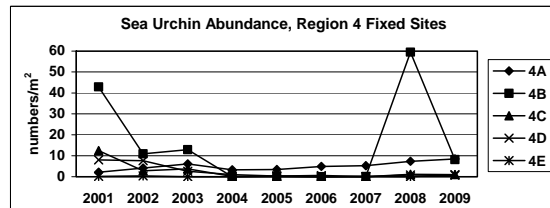
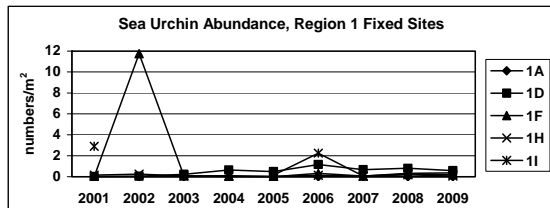


Figure 10. Spring survey stratified mean sea urchin abundance in number of urchins/m² at the fixed sites by region and year. Note that Y-axis scales are all different.

Zone 1

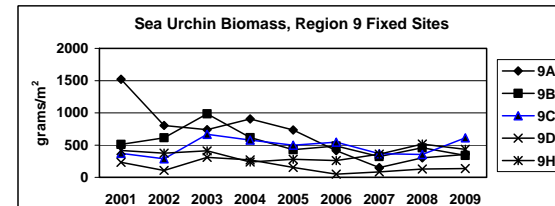
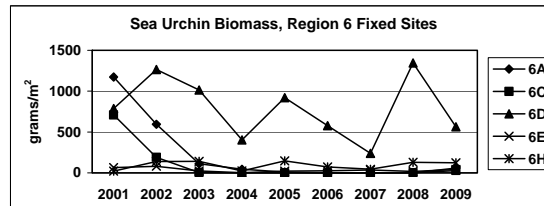
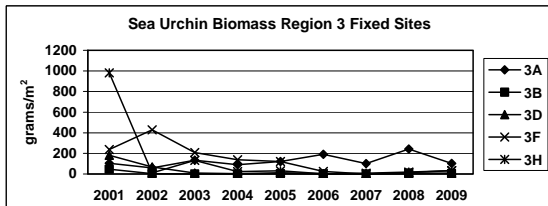
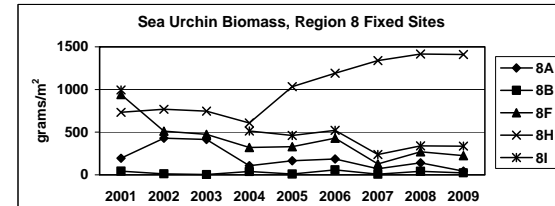
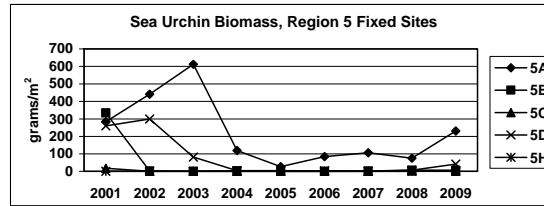
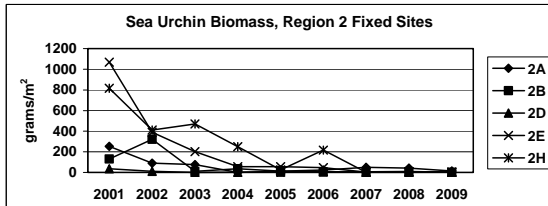
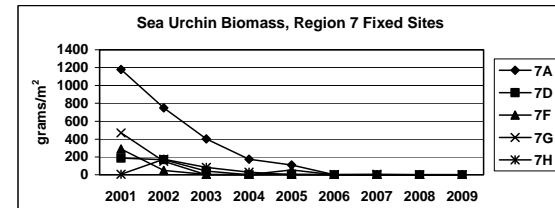
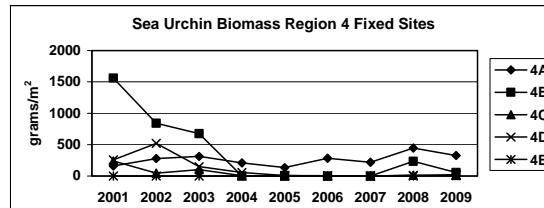
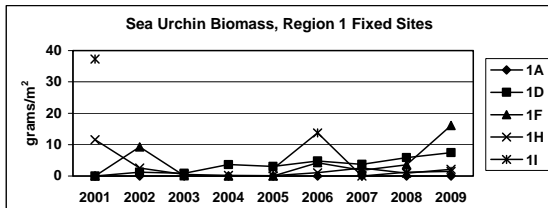
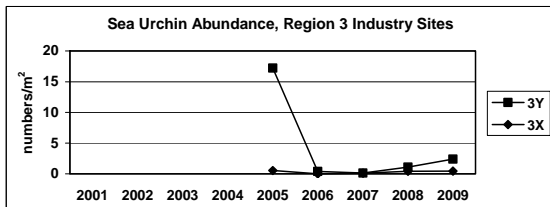
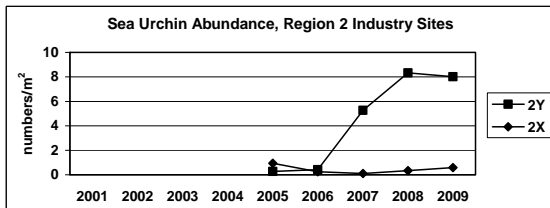
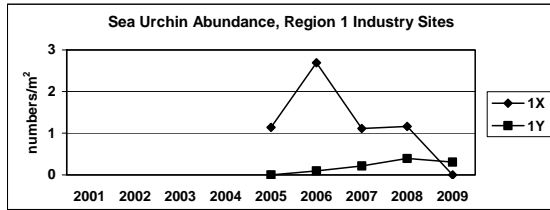


Figure 11. Spring survey stratified mean sea urchin biomass in grams of urchins/m² at the fixed sites by region and year. Note that Y-axis scales are all different.

Zone 1



Zone 2

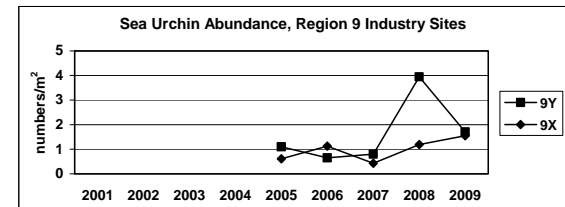
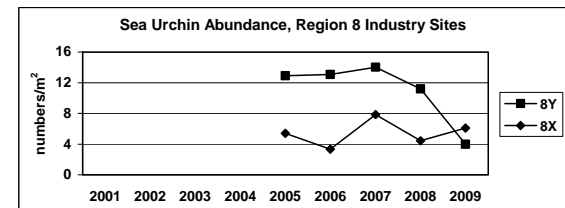
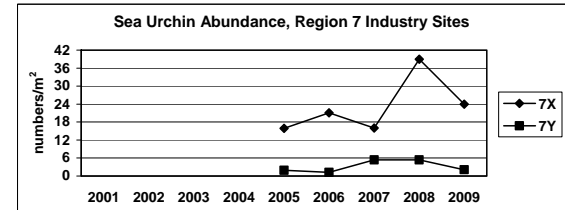
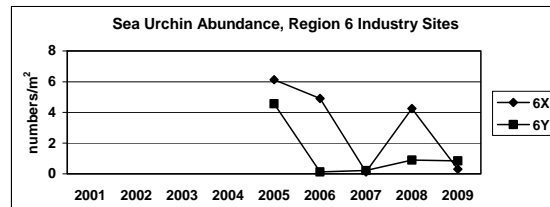
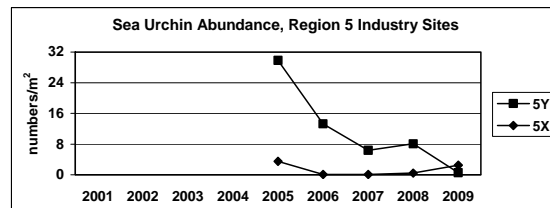
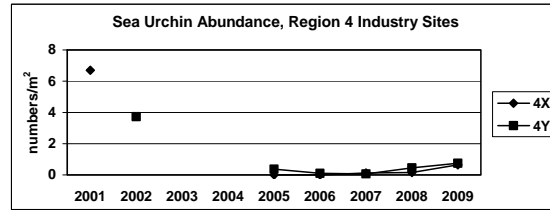


Figure 12. Spring survey stratified mean sea urchin abundance in number of urchins/m² at the industry sites by region and year. Note that Y-axis scales are all different.

Zone 1

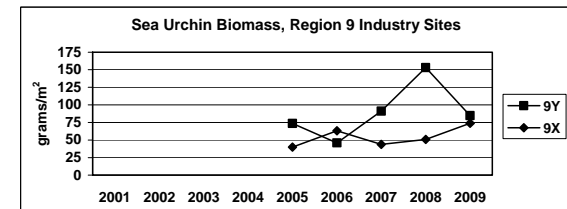
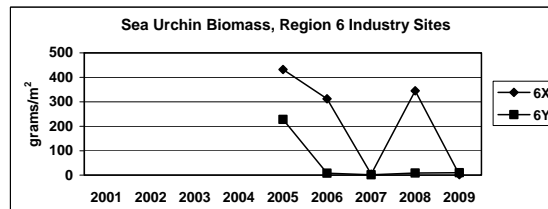
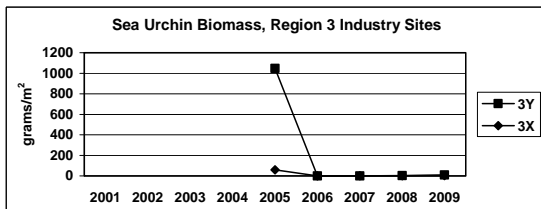
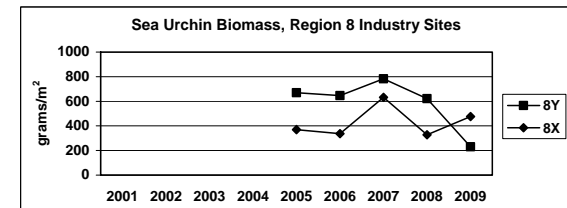
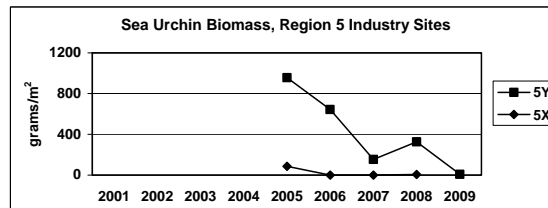
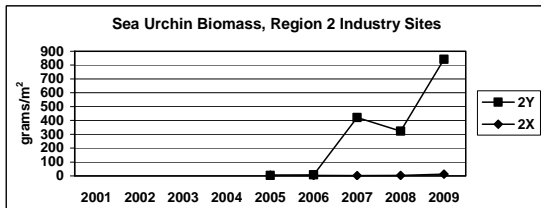
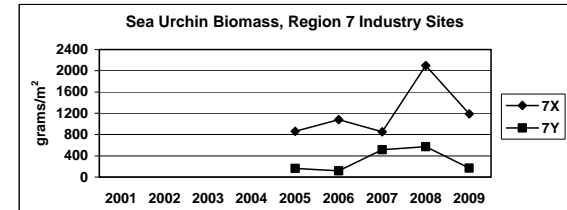
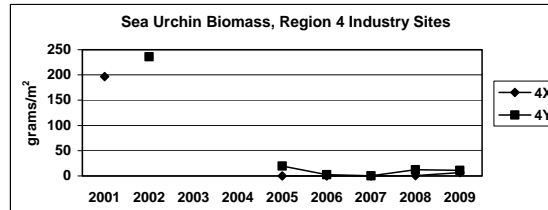
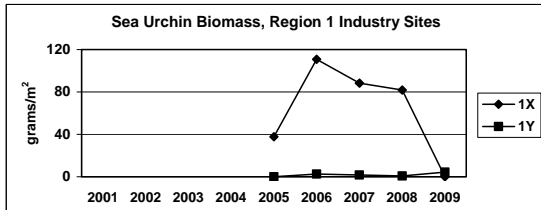


Figure 13. Spring survey stratified mean sea urchin biomass in grams of urchins/m² at the industry sites by region and year. Note that Y-axis scales are all different.

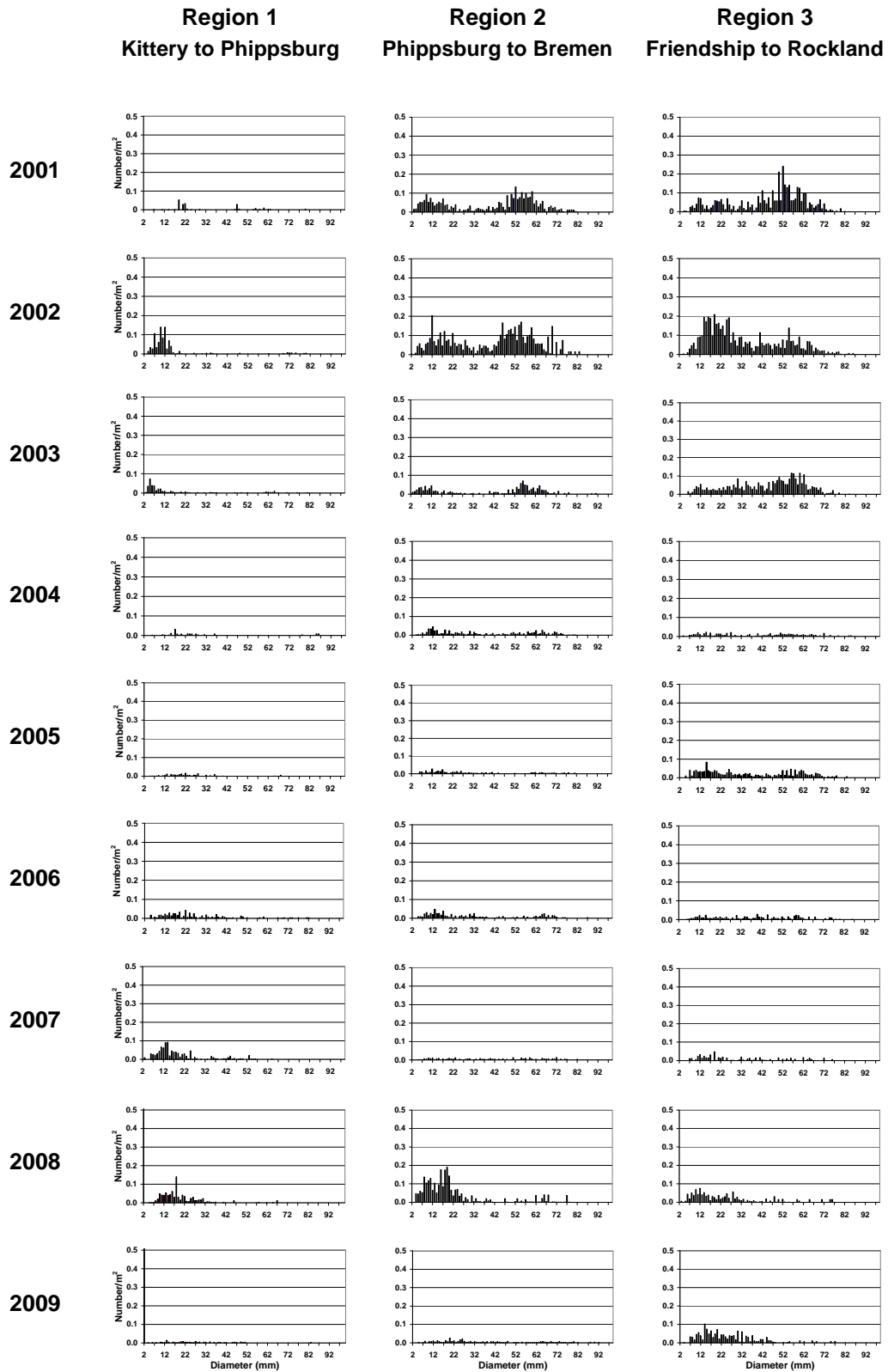


Figure 14a. Spring survey expanded stratified mean size (diameter) frequencies for regions 1, 2, and 3 (Zone 1), by region and year, depths 0-15m, not including industry sites.

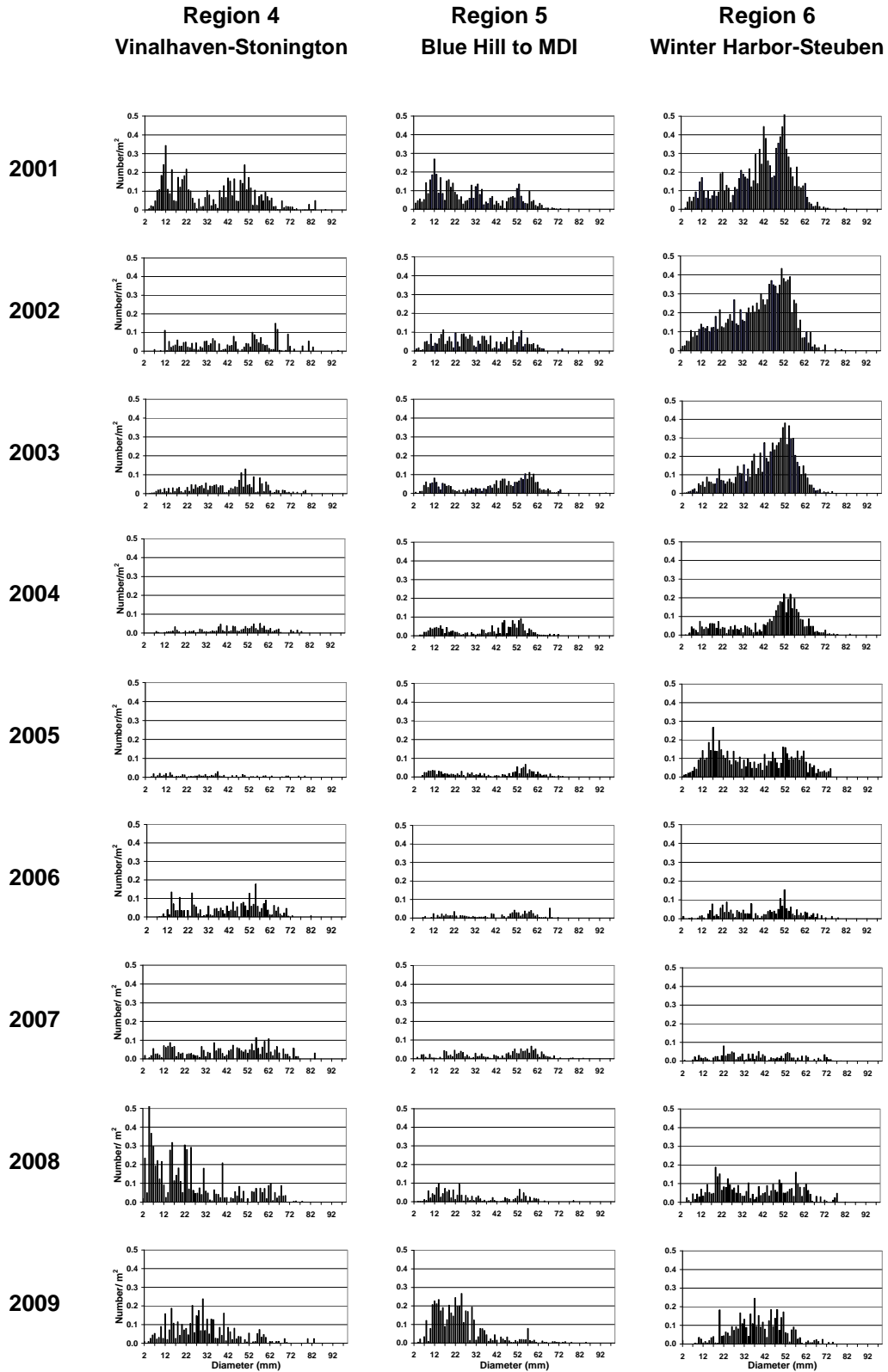


Figure 14b. Spring survey expanded stratified mean size (diameter) frequencies for regions 4, 5, and 6 (western Zone 2), by region and year, depths 0-15m, not including industry sites.

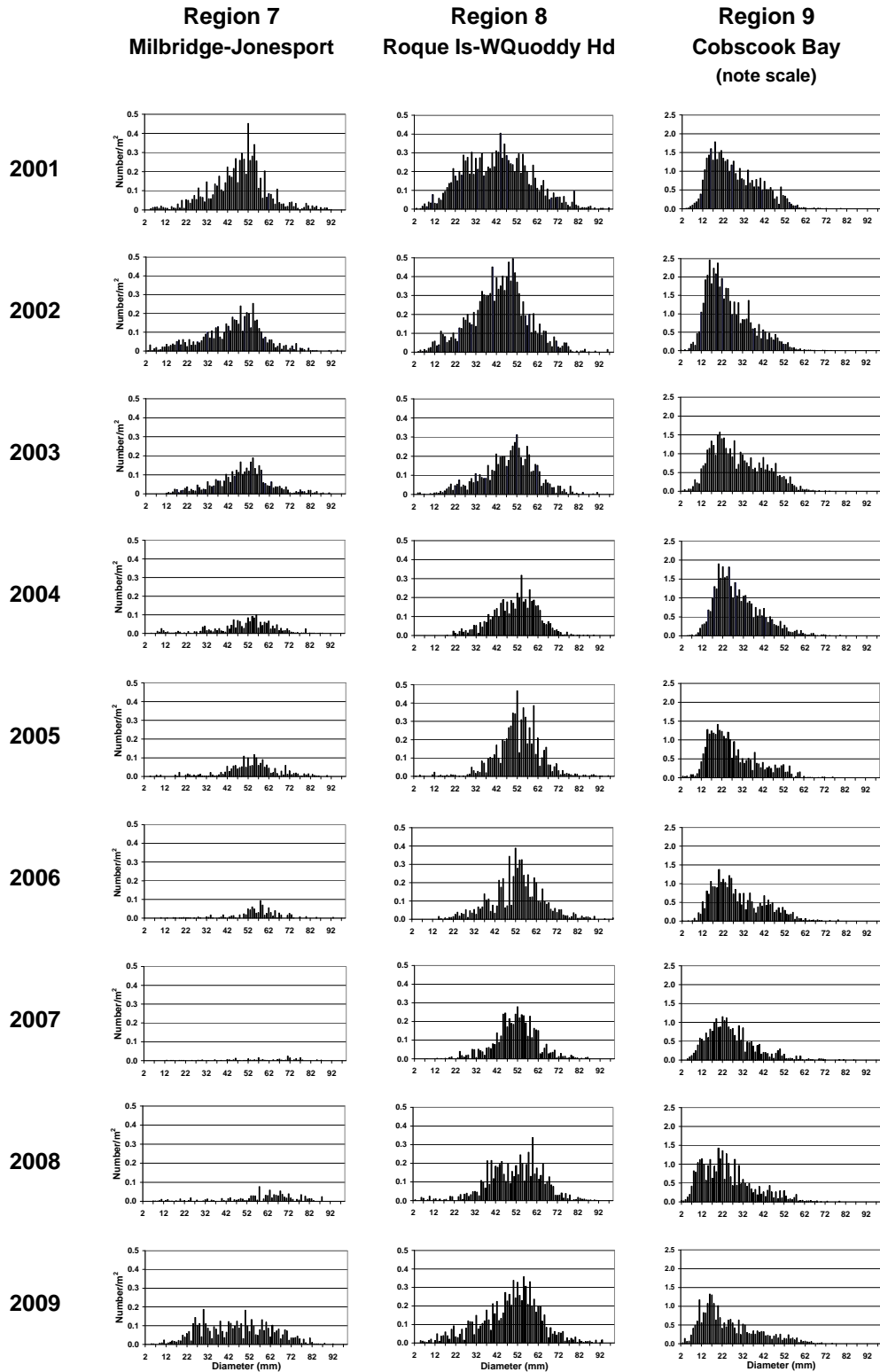


Figure 14c. Spring survey expanded stratified mean size (diameter) frequencies for regions 7, 8, and 9 (eastern Zone 2), by region and year, depths 0-15m, not including industry sites. Note that the Y-axis scale for region 9 is different (five times greater) than that used for the other regions.

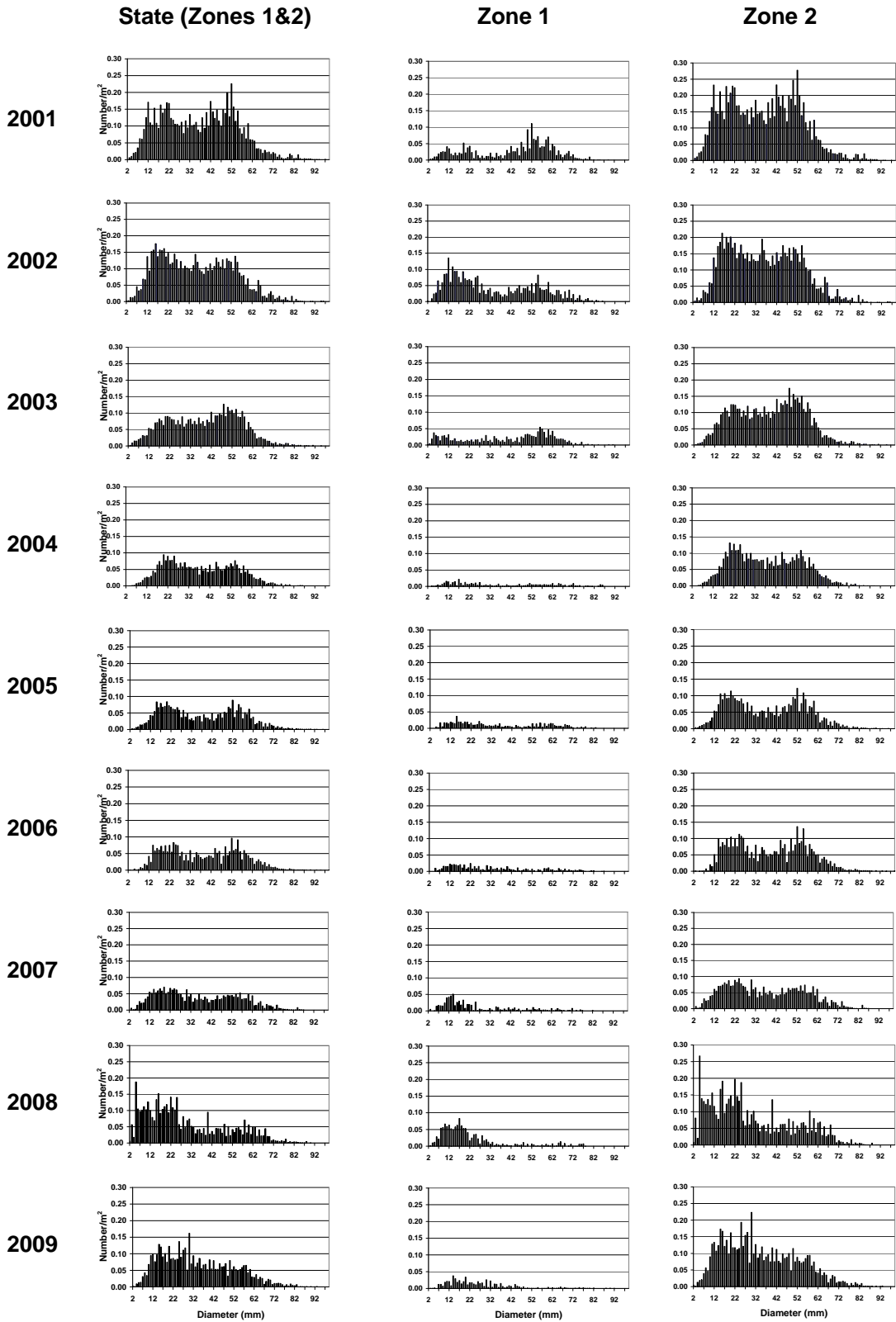
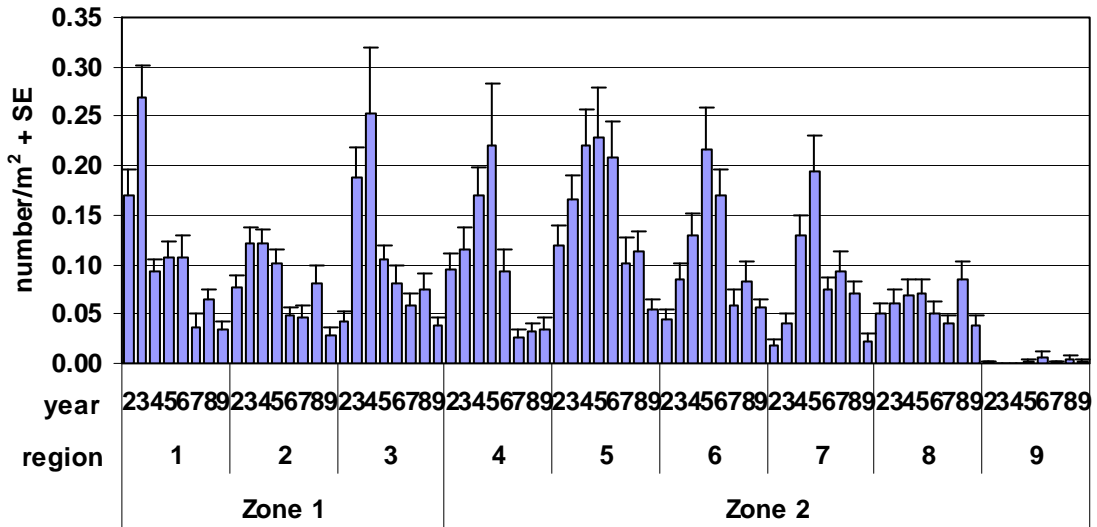


Figure 15. Spring survey expanded stratified mean size (diameter) frequencies for each zone and both zones combined, by region and year, depths 0-15m, not including industry sites.

Mean Jonah Crab Abundance by Region and Year



Mean Jonah Crab Abundance by Zone and Year

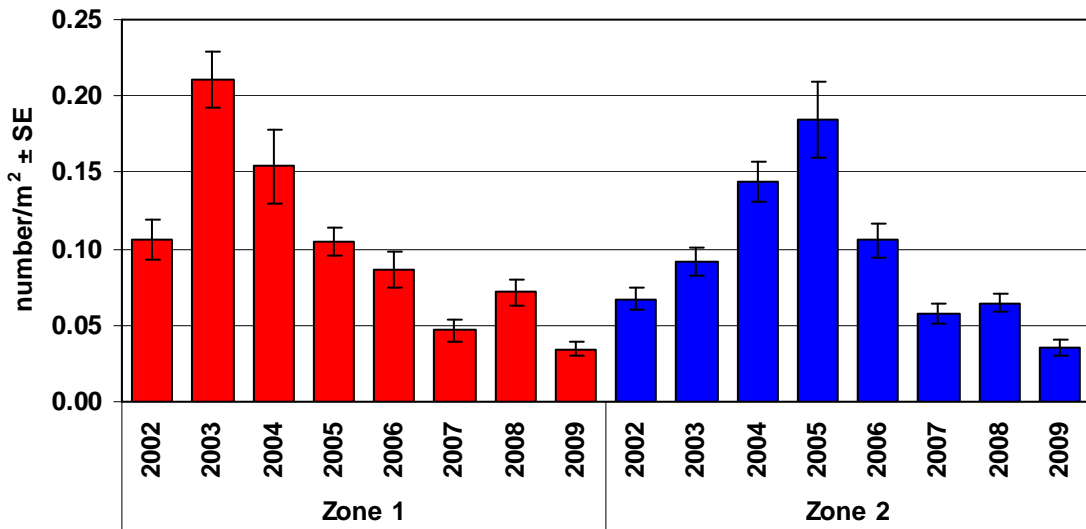
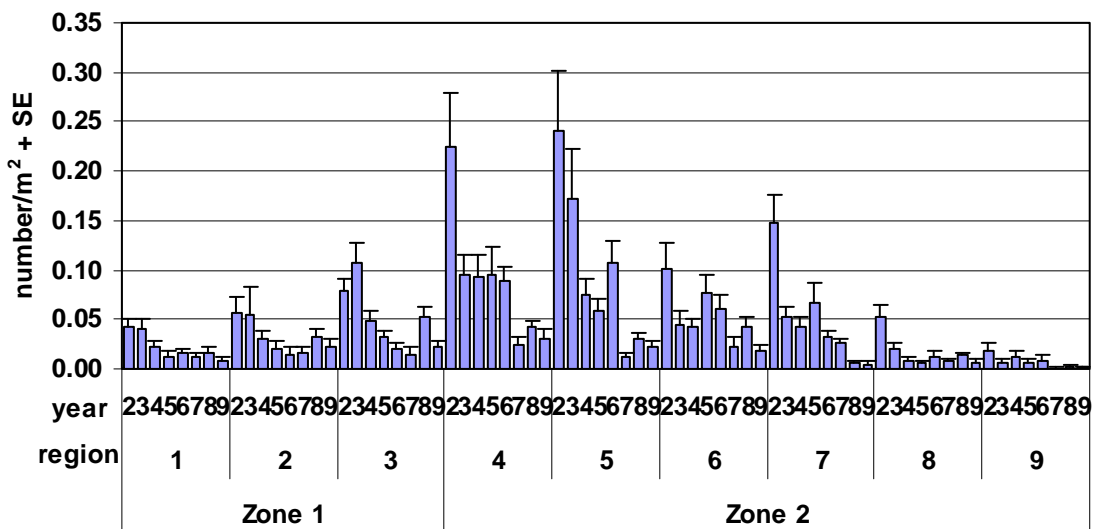


Figure 16a-b. Spring survey stratified mean Jonah crab (*Cancer borealis*) abundance by year and region (above) or zone (below), depths 0-15m, not including industry sites. In figure “a”, year “2” is 2002, etc.

Mean Rock Crab Abundance by Region and Year



Mean Rock Crab Abundance by Zone and Year

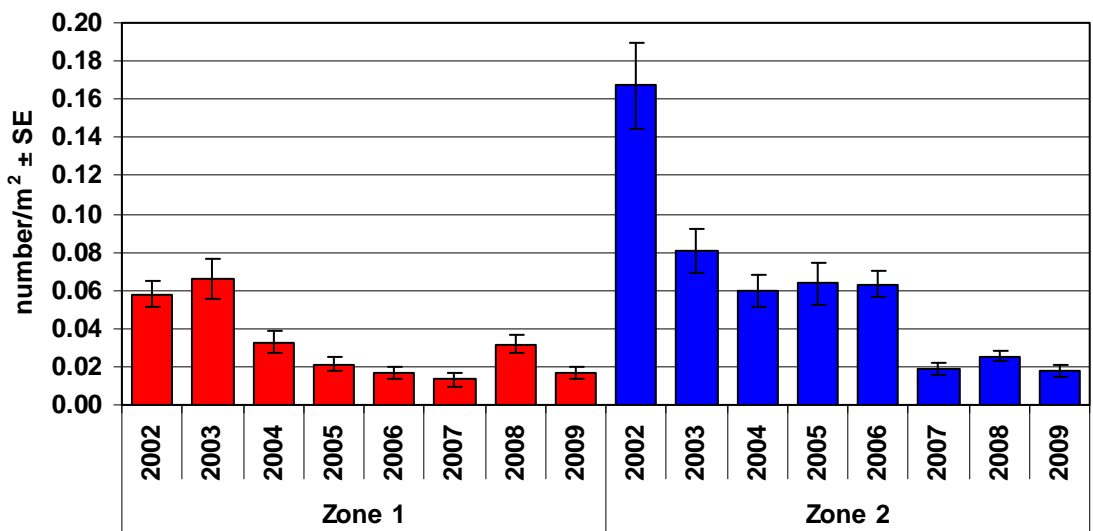
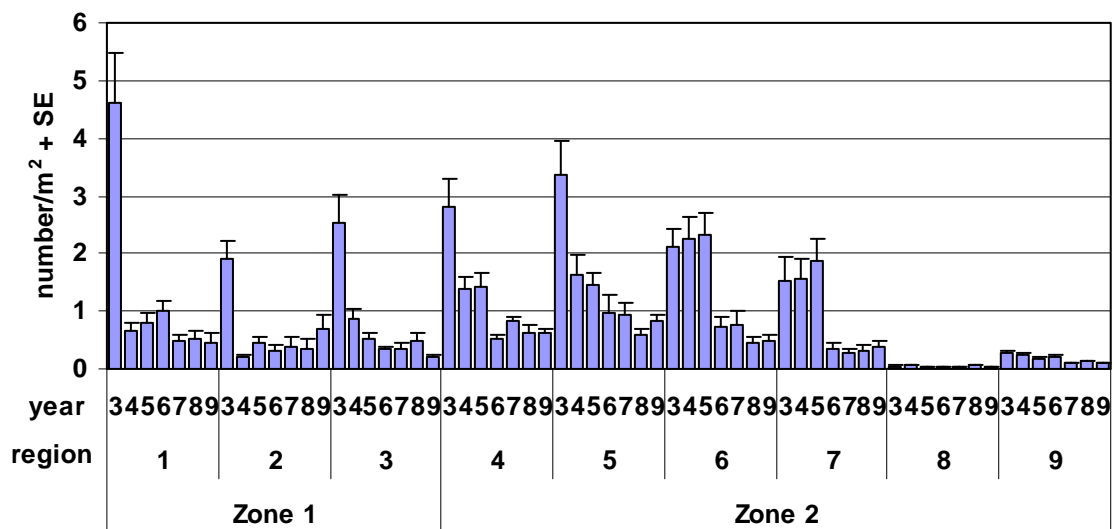


Figure 17a-b. Spring survey stratified mean rock crab (*Cancer irroratus*) abundance by year and region (above) or zone (below), depths 0-15m, not including industry sites. In figure “a”, year “2” is 2002, etc.

Mean Sea Star Abundance by Region and Year



Mean Sea Star Abundance by Zone and Year

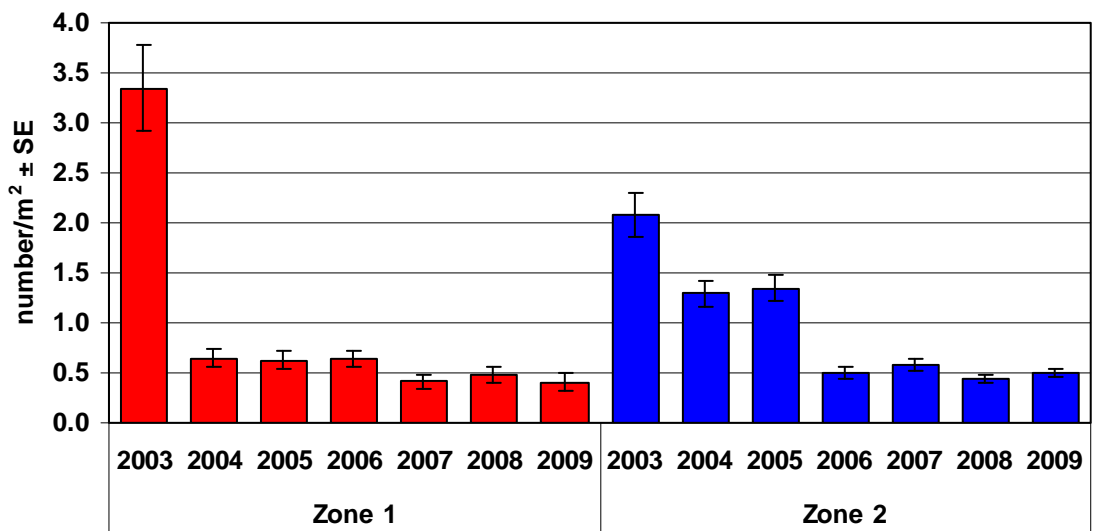
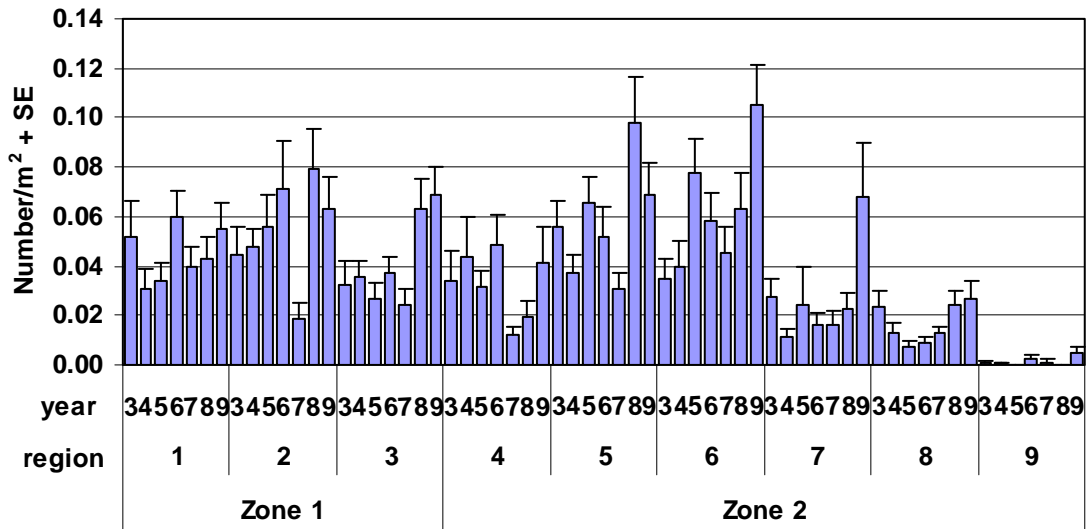


Figure 18a-b. Spring survey stratified mean sea star (*Asterias vulgaris*) abundance by year and region (above) or zone (below), depths 0-15m, not including industry sites. In figure “a”, year “3” is 2003, etc.

Mean Lobster Abundance by Region and Year



Mean Lobster Abundance by Zone and Year

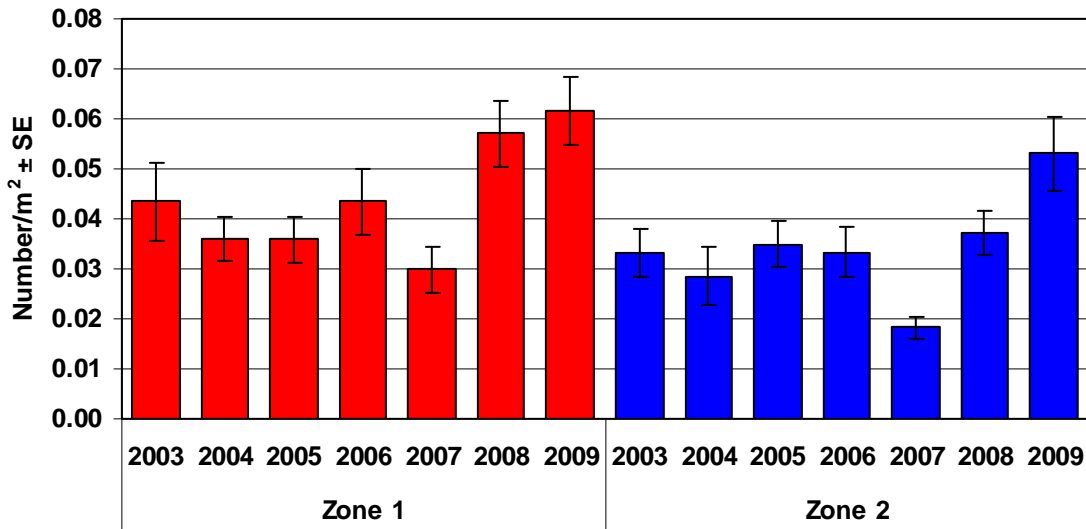
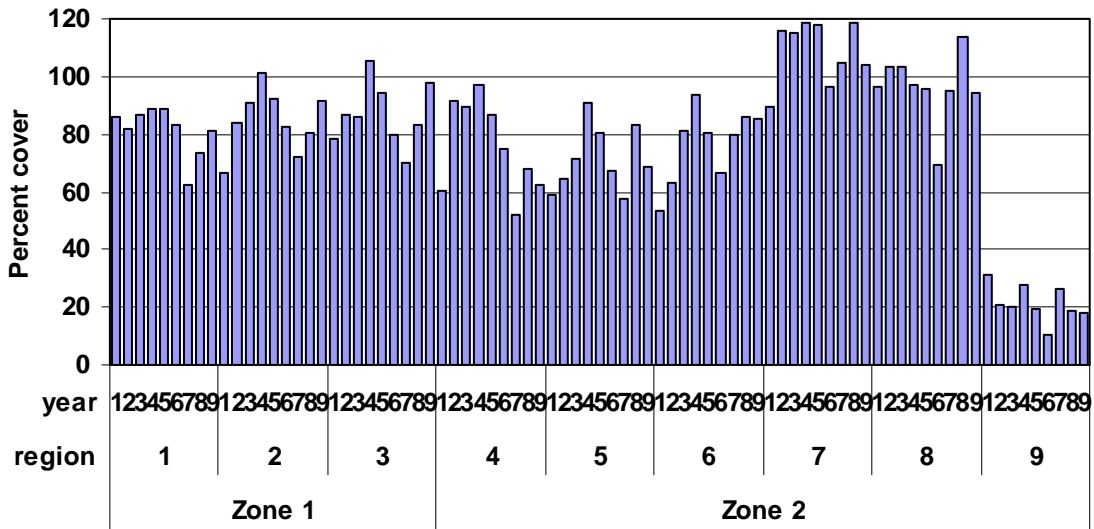


Figure 19a-b. Spring survey stratified mean lobster (*Homarus americanus*) abundance by year and region (above) or zone (below), depths 0-15m, not including industry sites. In figure “a”, year “3” is 2003, etc.

Mean Algal Cover by Region and Year



Mean Algal Cover by Zone and Year

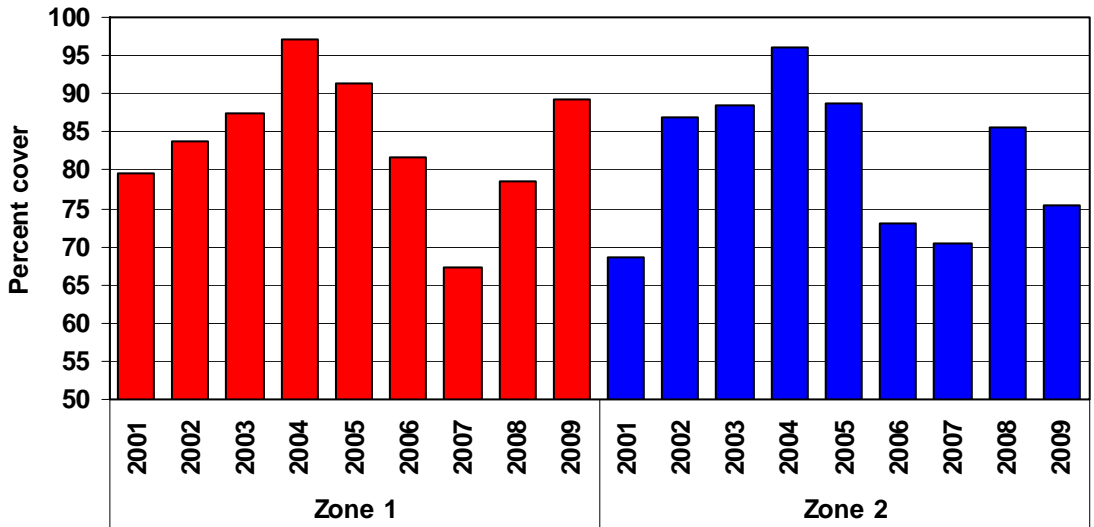


Figure 20a-b. Spring survey stratified mean algal cover (sum of percent canopy + percent understory, which can be greater than 100%) by year and region (above) or zone (below), depths 0-15m, not including industry sites. In figure “a”, year “1” is 2001, etc.

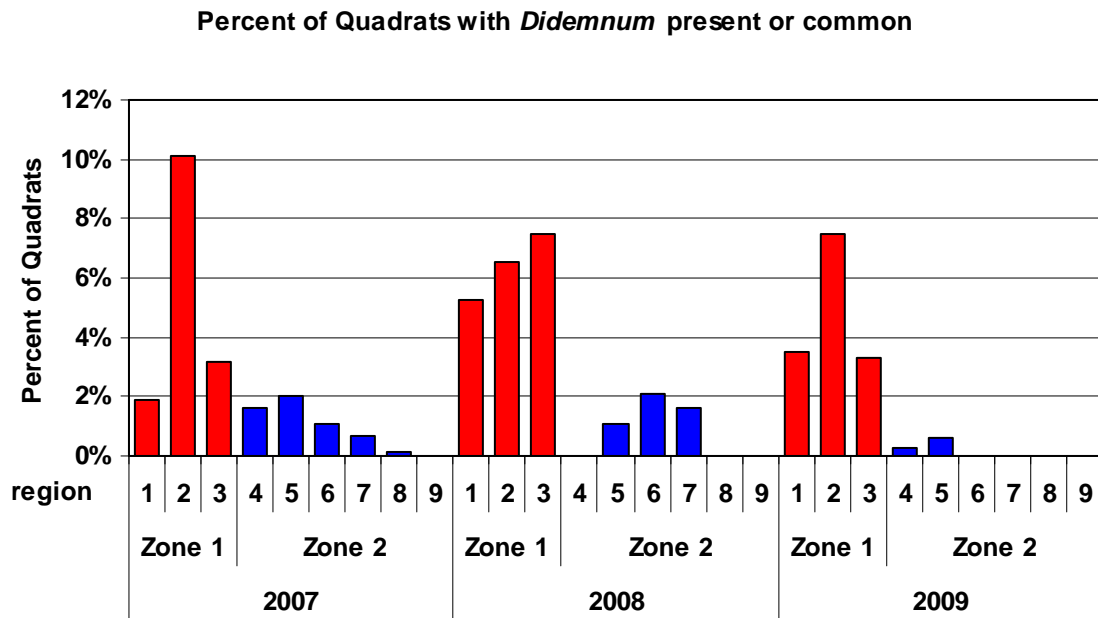
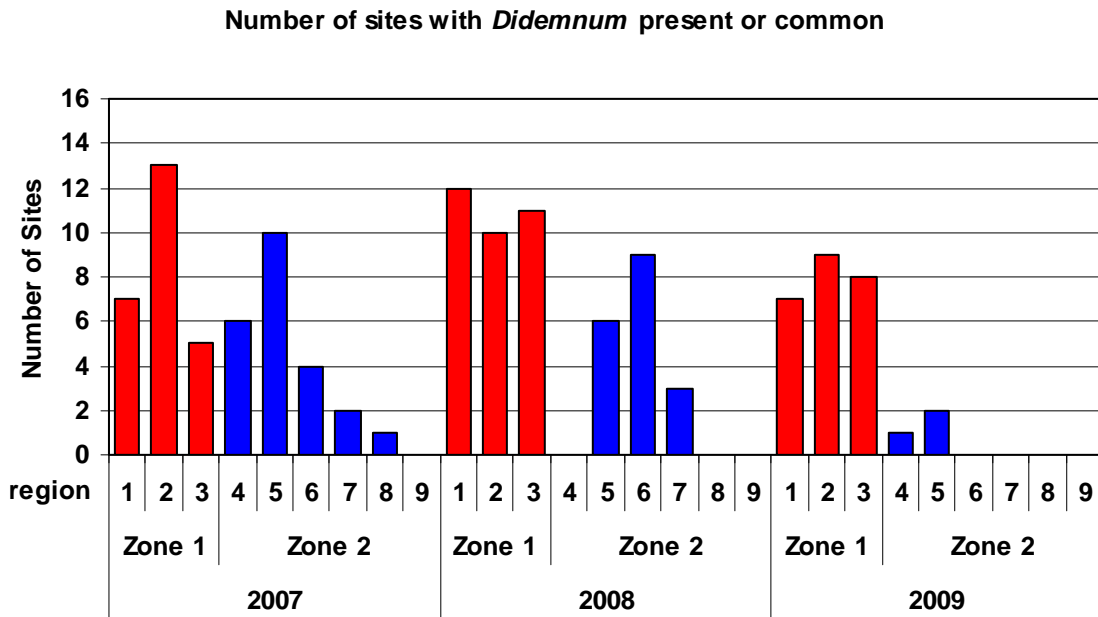


Figure 21a-b. Spring survey incidence of *Didemnum* as number of sites (above) and percent of quadrats (below) in which it was present ($\leq 50\%$ cover) or common ($> 50\%$ cover), by year, region and zone (1=red, 2=blue), depths 0-15m, not including industry sites. There were 16 sites in each region, and usually 60 quadrats were evaluated at each site.