

North Sea Stock Survey 2005

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On behalf of the North Sea Commission Fisheries Partnership.

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INTRODUCTION

This report comprises a preliminary detailed synopsis of the North Sea Stock Survey 2005 data for the attention of the North Sea Demersal Working Group (WGNSSK). A more comprehensive review will be produced in due course, which will include information on the financial climate of the fleets and a synopsis of the written comments generated by the fishermen.

THE SURVEY IN 2005

The survey covered eight demersal species cod, haddock, whiting, saithe, monkfish, nephrops, sole and plaice in ten areas across the North Sea (Figure 1). The questionnaire followed a similar format to previous years (an example is presented in Appendix 2) and was sent out to fishermen by industry representatives during June - July. The results were collated in an Access database and each countries completed database was sent to the North Atlantic Fisheries College in Shetland by 09 August 2005.

Questionnaires were received from skippers of vessels registered in Belgium, Denmark, England, The Netherlands and Scotland. Dutch German flagships contributed to the survey for the first time in 2005. The numbers of respondents from each country are presented in Figure 2. Overall the total numbers of responses remained similar to those in previous years, however there were country specific changes in the number of returns. A decrease in responses from Dutch beam trawlers over 24m was offset by an increase in the number of under 15m Danish gill netters. A total of 340 questionnaire returned expressing a total of 2377 views on the eight species over the ten areas. The number of questions answered for each species was similar to previous years (Figure 3), with cod and plaice attracting the most responses.

As in previous years the data have only been analysed by the main gear type noted on the questionnaires. Vessels that noted a major change in gear type from the previous year that may influence the perception of the state of the stock were omitted from the analysis; these numbered two.

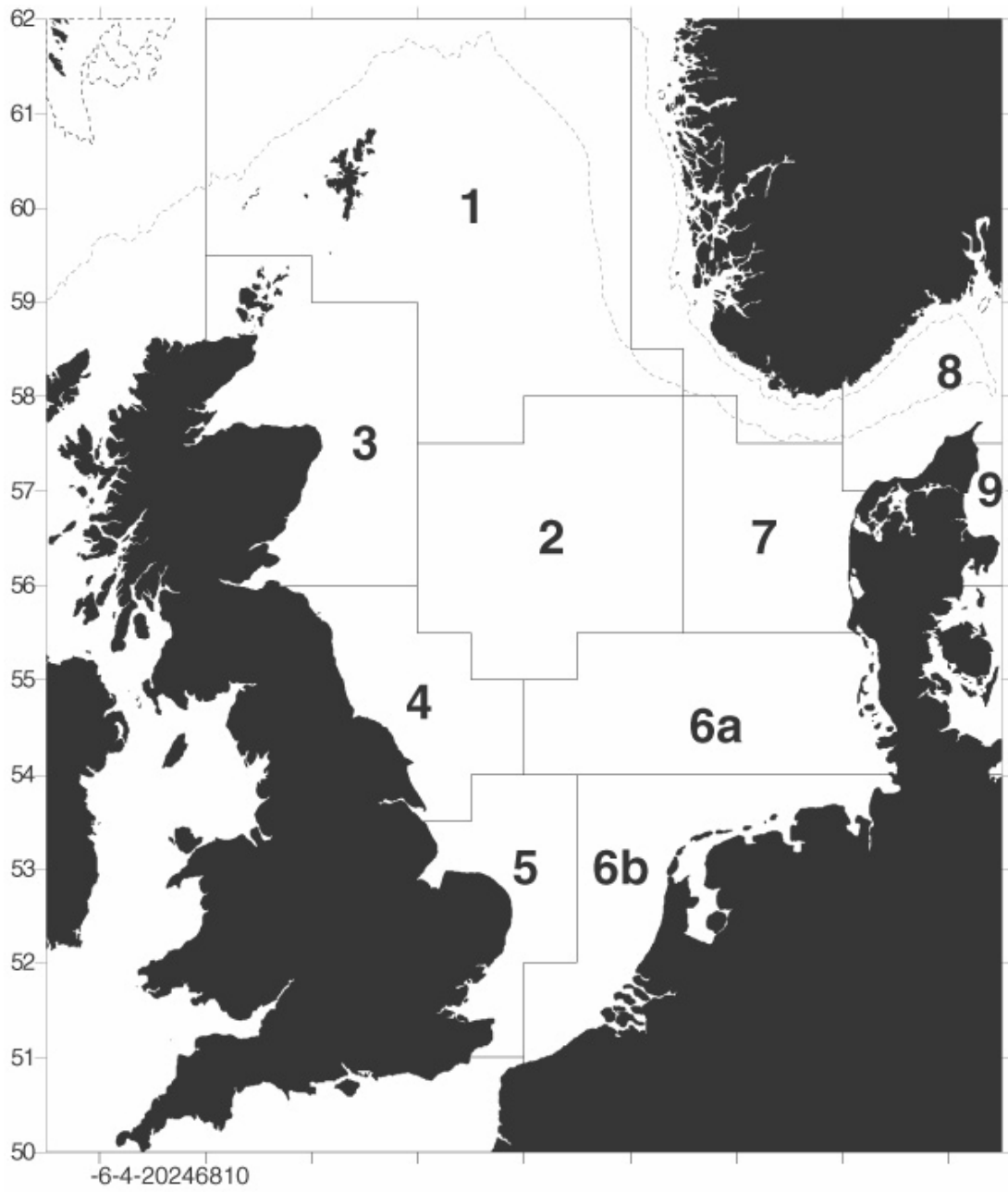


Figure 1 Areas of Fishing

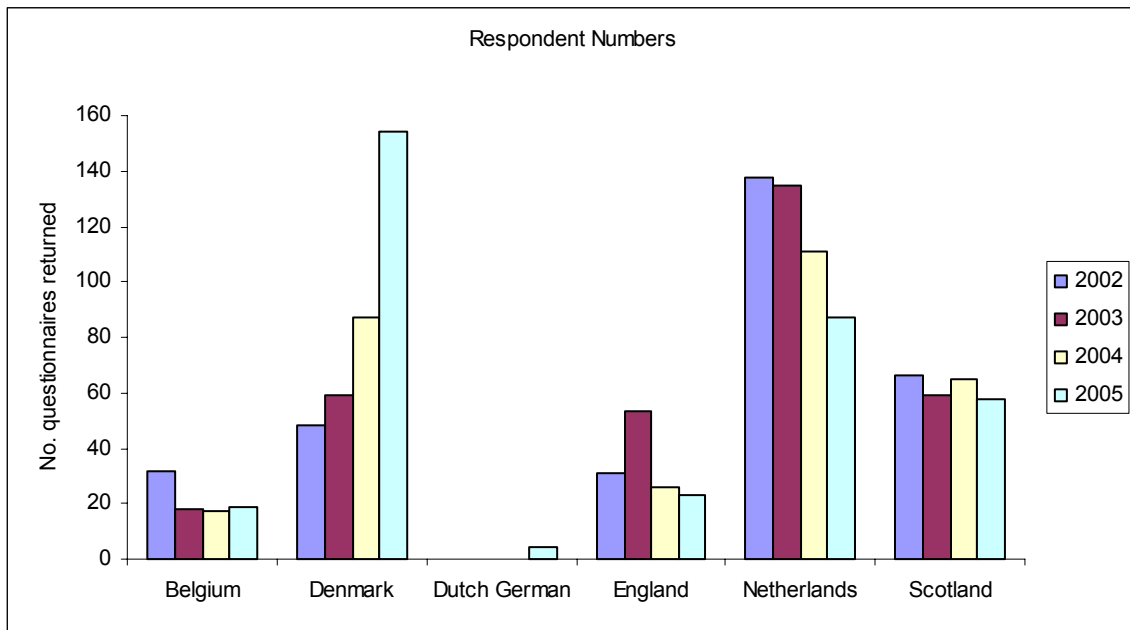


Figure 2 Numbers of respondents in the stock survey 2002 - 2005 by country of vessel registration.

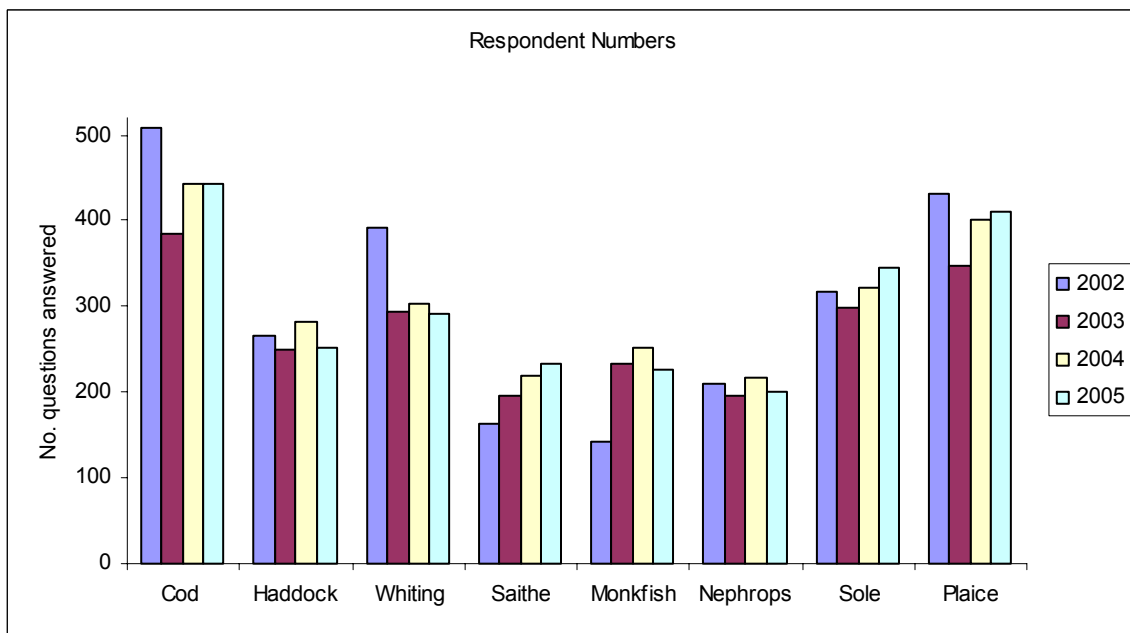


Figure 3 Numbers of respondents in the stock survey 2002 - 2004 for each species.

The North Sea fisheries are very complex both spatially and in that many different types of gear and sizes of vessel may target the same species. Therefore the responses have been collated according to: area fished; main gear type; and vessel size. The histograms are presented in Appendix 1.

Table 1 Summary of the vessel size, main fishing method and number of respondents from each of the countries participating in the 2005 survey.

	Belgium	Denmark	Dutch/Ger	England	Netherlands	Scotland	Totals
<i>Size</i>							
<15m	0	80	0	4	1	5	90
15-24m	5	17	3	3	34	17	79
>24m	14	56	1	16	49	35	171
Totals	19	153	4	23	84	57	340
<i>Main Fishing Method</i>							
Trawl	3	31	1	16	5	21	77
<i>Nephrops</i> trawl	1	23	0	5	2	23	54
Beam	15	0	3	1	69	0	88
Gill	0	77	0	1	0	0	78
Seine	0	17	0	0	0	10	27
Other	0	5	0	0	8	3	16
Totals	19	153	4	23	84	57	340

COMMENTS ON THE FORM AND QUALITY OF THE DATA

The results from the survey are neither quantitative nor absolute, the value of the data therefore increases as the time series grows. A time series of abundance data was developed by CEFAS, whereby responses were assigned a score (-1,-0.5,0,0.5,1 for the categories 'much less', 'less', 'same', 'more' and 'much more' respectively), a weighted score for each area and species was calculated ($\Sigma(\text{score} \times \text{percentage})$), thus giving an index of change for each year of ± 100 . The year 2001 was assigned a value of zero and the time series were generated by cumulatively summing the indices for each area over the years. These figures have been updated for 2005 and are included in Appendix 1. However there are disadvantages to this approach; although it is known that the data are not quantitative the temptation to assign a meaning to the slope of the lines that join the points is great.

The data are a representation of the views of fishermen on the state of the stocks. It should be emphasised that no explanation of these changes has been attempted. It therefore should be born in mind that the changes in abundance could be due either to changes in the fish or in management practises.

Ideally the data should be analysed using methods that are specifically designed for subjective data. As a first consideration of this the 2005 responses were compared to those of the 2004 data set using chi-squared tests. Where an option in 2004 had not been selected and hence generated a zero expected value which is not permissible in chi-squared the categories were pooled. In some instances the extent of the pooling was such that the categories were no longer meaningful and no analysis was undertaken. Descriptions of these tests on the abundance data are included in the area synopses and the results of the statistical tests are presented in Table 9.

COD

As in previous years there were more responses for cod than any other species, with a similar number of returns to 2004 at 444. Responses referred to all ten areas, with the least from area 5 where there were only 18 respondents. The areas in the south east of the North Sea (6b, 7 & 8) had the greatest number of respondents, numbering in the 70s - 80s. Responses were dominated by vessels of the intermediate size class (44%), with the largest vessels making up 33% of the responses and the smallest 23%. Under 15m vessels were predominantly from areas 7, 8 & 9 and mainly operated gill nets. Vessels in the 15 - 24m size class were fairly evenly spread throughout the North Sea, with the exception of area 5, from where there were only 2 respondents. The modal fishing method was otter trawling (38%), followed by nephrops and beam trawling, then gill and seine netting. The largest vessels mainly fished in area 6b and deployed either beam or otter trawls (50 & 42%).

Abundance

It was perceived that cod abundance in areas 1, 7, 8 and 9 continues to increase. There were no significant differences in the perceptions between 2004 and 2005 in areas 1 and 9, however in areas 7 and 8 the view that abundance was increasing had strengthened. In areas 2 & 3 the majority of respondents stated that abundance had remained the same, whilst in areas 4, 5 & 6b the overall perception was that stock abundance was on the decline. In area 6b this is a marked change from 2004, where it was perceived that stocks were increasing in abundance. There is no strong pattern in area 6a with a weak mode of 58% reporting no change in abundance and 19% reporting less or much less and 23% reporting either more or much more.

The smallest size class of vessels reported an increase in stock abundance, whilst the weak (36-38% of respondents) modal response for both the large and intermediate sized vessels was for abundance to have remained the same over the reference period. The remaining responses for the two larger size class of vessels were fairly evenly split between an increase and a decrease in abundance. Seine netters, gill netters and otter trawlers all returned a modal response of 'more', whilst responses from the nephrops trawlers strongly indicated (67% of respondents) that abundance has remained the same. The responses from beam trawlers were skewed towards there being a decrease in abundance with 44% responding 'same' and 37% and 6% responding either 'less' or 'much less'.

Size Range

Throughout the North Sea the modal response was 'all sizes' of cod to be observed in the catches, although between 30-40% of respondents in areas 2, 3 & 6b indicated that their catches comprised mostly small fish. The modal response of 'all sizes' is also reflected in responses by vessel size and gear type. In the latter 30 and 38% of beam and nephrops trawlers reported 'mostly small' in the catches, whilst 30% of seine netter reported 'mostly large'.

Discards

The modal response for discarding in areas 1 - 7 to was for discarding to have remained the same between reference periods. However in areas 4, 5 & 6b the responses were skewed towards less discards and conversely in area 7, the responses were skewed towards there being more discards. In areas 8 & 9 the modal response for discarding was 'more' with 38% & 39% for each. In area 8 28% of respondents selected the 'much more' option, whilst in area 9 30% selected the 'same' option.

Vessels deploying all gear types returned a modal response of 'same' for discarding, however otter trawlers, gill and seine netters were skewed towards an increase in discards, whilst beam trawlers were skewed towards a decrease. When categorised by vessel size, under 15m vessels indicated that discarding was on the increase, whilst both other size class of vessel were strongly modal for there to be no change in discarding.

Recruits

The pattern for new recruits to the fishery was not so clear, with respondents in areas 1, 2, 4 & 5 indicating a moderate recruitment, whilst those in 3 & 6a indicated a low to moderate recruitment and those in 6b low. The modal response in area 8, was 'high', and there was no clear trend in area 9, with all responses being fairly equally split between the four options of 'low', 'moderate', 'high' & 'don't know'.

The five gear types reported a broad range of perceptions of cod recruitment, with nephrops trawlers reporting a low recruitment, beam trawlers low to moderate (37 & 34% respectively), otter trawlers moderate, seine netters moderate to high (both at 33%, although low had a return rate of 22%), and gill netters reporting a high recruitment. A similar range of responses were observed when the data were sorted by vessel size, respondents with under 15m boats reporting a high recruitment and the modal response for vessels greater than 24m in length was moderate (41%), with low being second with 29% of the responses. Respondents with vessels in the intermediate size class of 15 - 24m had fairly mixed views, with the options of 'low', 'moderate' and 'don't know' all representing between 25 - 30% of the responses.

Table 2 Summary of the responses for cod.

Area	Abundance					Size Range			Discards					Recruits				n
	M. Less	Less	Same	More	M. More	M. Small	All Sizes	M. Large	M. Less	Less	Same	More	M. More	Low	Moderate	High	Unknown	
1	5	11	35	44	5	18	54	28	9	13	61	16	2	23	44	11	23	57
2	12	8	52	28	0	40	52	8	8	20	52	20	0	28	44	12	16	25
3	12	8	64	16	0	31	65	4	0	5	90	5	0	35	23	4	38	25
4	20	32	48	0	0	28	68	4	8	21	71	0	0	32	56	4	8	25
5	6	33	56	6	0	17	78	6	11	22	67	0	0	17	39	0	44	18
6a	3	28	41	19	9	19	72	9	3	16	58	13	10	34	31	6	28	32
6b	9	45	35	11	0	30	58	12	14	28	51	6	1	46	22	4	28	74
7	3	7	24	56	10	20	61	19	7	9	47	30	7	16	36	31	17	70
8	1	1	7	54	36	15	83	2	7	9	17	38	28	19	19	52	11	81
9	0	0	12	76	12	18	70	12	6	9	30	39	15	27	18	30	24	33

HADDOCK

Returns for haddock have remained fairly steady over the four years of the survey and range between 241 and 281 responses; in 2005, there were 252. Responses were received for all areas, however only 2 were received for area 5, and these results are therefore not reported. The majority of the respondents reported on areas 1 & 7 (20 & 18%, respectively). There were only 12, 12 & 11 respondents for areas 6a, 6b & 9 respectively and the commentaries on these areas should be treated with caution due to the small sample size.

Just over half (52%) of the respondents operated vessels in the 15-24m size category, 34% were in the largest size category and 14% were under 15m in length. The smaller vessels tended to operate primarily in areas 7-9, whilst there were intermediate sized vessels throughout the North Sea, although especially in areas 1, 3 & 8. Responses from those operating the largest size class of vessel were also evident across the North Sea, but were especially represented in area 1, to which 33% of the views expressed related. There were no vessels of length greater than 24m in area 9.

Abundance

The modal response for haddock abundance throughout the North Sea to a greater or lesser degree was 'same', with the exception of areas 4 & 9 where respondents indicated that haddock abundance had decreased. The response for area 6a is somewhat confused with a bimodal response; 'same' was the most popular category followed by 'much less', but this may be a reflection of the small sample size.

This unchanging view was also reflected in the responses by vessel size. The majority (56%) of respondents with vessels under 15m considered that haddock abundance had remained the same, with the remaining respondents in this size category being fairly evenly split between an increase and a decrease. This pattern was also the case in the largest size class, but with a less strong mode of 40% for 'same'. Although the modal response from intermediately sized vessel operators was also for 'same', this was not a strong mode and in fact slightly more respondents indicated that there was a decline in the abundance over the reference period.

In terms of gear deployed there was no clear pattern from those who operated otter trawls or seine nets. Gill netters, nephrops and beam trawlers all had a modal response of same; this was particularly marked for the gill netter, of whom 67% reported that they considered the catches to have remained the same.

In comparison to 2004, there appears to be a significant shift of responses towards the same or less categories throughout the North Sea; the distributions of responses in all areas (with the exception of area 8) were significantly different in 2005 when compared to 2004.

Size Range

Respondents from all areas, with the exception of area 9, reported that all sizes of haddock were present in the catches. In area 9 it was reported by 64% of the respondents that the catches comprised mostly small fish. When the results were categorised by vessel size it was noted that respondents operating smaller

vessels reported mostly small fish, whilst those in the larger two size class reported all sizes of haddock in their catches, with mostly small being the second most popular option.

These trends are also reflected in the summary by gear size, with respondents deploying all gear types reporting all sizes in the catches, with the exception of gill netters who reported mostly small.

Discards

The pattern for discards throughout the North Sea is fairly uniform with the majority of respondents in areas 1 - 8 reporting that discarding had remained the same or decreased over the reference period. In area 9, the majority of respondents stated that discarding was much less than in 2004. When the data were collated by vessel size, respondents in both the larger two size categories of vessel reported that discarding had either remained the same or had decreased. The results from the under 15m sector were split, with 47% reporting that discarding had remained the same and 38% reporting that it was much less; this possibly reflects the pattern noted in the Kattegat (area 9).

The modal response from the majority of gear types was for discarding to have remained the same or decreased; however 69% of seine netters noted that discarding had decreased (54% and 15% for 'less' and 'much less').

Recruits

There was a fairly marked north south divide in the views on haddock recruitment. Respondents from areas 1 - 3, 6a & 7 all reported recruitment to be moderate, whilst those in areas 4, 6b, 8 & 9 reported that recruitment was low, although this was less marked in area 8, with responses being fairly evenly split (43 & 39%) between 'low' and 'moderate'.

When the responses were grouped by vessel size category those operating smaller vessels perceived a low recruitment, whilst those in the larger two size categories thought recruitment to be 'moderate' to 'low'. In all size categories, between 12 & 17% felt that they could not comment. Gill netters reported recruitment to be low (54%), whilst all other gear types mainly reported that recruitment was moderate, with 'low' being the second most frequent response. This pattern was less marked from otter trawlers and seine netters, 33 - 38% of whom reported recruitment to be 'low'.

Table 3 Summary of the responses for haddock.

Area	Abundance					Size Range			Discards					Recruits				n
	M. Less	Less	Same	More	M. More	M. Small	All Sizes	M. Large	M. Less	Less	Same	More	M. More	Low	Moderate	High	Unknown	
1	8	18	39	25	10	20	73	8	22	35	41	2	0	20	49	12	20	51
2	8	25	33	25	8	33	54	13	13	21	67	0	0	33	46	4	17	24
3	5	5	41	35	14	35	65	0	8	38	51	3	0	11	59	14	16	37
4	24	52	14	10	0	38	57	5	19	14	67	0	0	52	33	0	14	21
5	0	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0	2
6a	8	25	42	25	0	25	58	17	0	33	67	0	0	33	50	0	17	12
6b	33	8	50	8	0	42	58	0	33	8	58	0	0	67	8	0	25	12
7	15	12	50	18	6	38	50	12	21	6	62	12	0	32	47	9	12	34
8	11	35	37	17	0	28	50	22	26	20	48	7	0	43	39	2	15	46
9	0	55	45	0	0	64	18	18	45	27	27	0	0	64	27	0	9	11

WHITING

Responses to the question on whiting have remained consistently in the 290-300s, after an initial high of 392 in the first year of the questionnaire. In 2005, there were 291 responses to the whiting questions. Data were gathered on all ten areas in the North Sea, with the greatest number from area 6b (61) and the least in area 9 (15). The responses were dominated by fishermen operating the larger two size classes of vessel with only 9% of the responses originating from the under 15m sector and the remaining being split equally between in the 15 - 24m and greater than 24m size classes. The three classes of trawling - otter, nephrops and beam - were the main fishing methods of the respondents for this species, with only 2% and 4% of returns from the gill and seine netters, respectively.

Abundance

In area 4, to the east of northern England and south Scotland whiting abundance in the catches continues to increase. Elsewhere throughout the rest of the North Sea, the majority of respondents reported that whiting abundance remained the same as in 2004; this is particularly evident in areas 2, 5, 7 & 8 where 62 - 67% of the respondents selected the option 'same'.

In 2004 the modal response was also for 'same', however in that year most of the other responses were in the 'more' or 'much more' categories. In 2005 most of the distributions of the majority responses were skewed to the 'less' & 'much less' categories. This was significant at 95% (chi-squared) in areas 1, 3, 5, 6a, 6b & 8. The distribution of responses in area 4 was also significantly different from that in 2004, however in this case the difference reflected an increase in the number of 'more' and 'much more' responses; a strengthening of the perceived increase in abundance in this area.

When the responses were sorted by vessel size class the modal response throughout was for abundance to remain the same, however the under 15m sector responses were skewed towards an increase, whilst those of the larger vessels were skewed towards a decrease. This latter trend is also evident in the responses of the otter, nephrops and beam trawlers, whilst the response of the gill netters was for abundance to have remained the same, with a skew to an increase. There was no trend apparent in the results of the seine netters.

Size Range

Virtually all the responses to the size range question were split between 'mostly small' and 'all sizes'. With the exceptions of area 4, where 83% of respondents noted all sizes of fish in the catches and area 3 where 67% reported mostly small, responses to the size range question were fairly equally split between 'mostly small' and 'all sizes'. In areas 1, 2, 5 & 7 this split was roughly equal, whilst in areas 6a, 6b, 8 & 9 the split was roughly 60:40 'mostly small': 'all sizes'.

Sixty-seven percent of respondents from the smaller vessels in the survey reported small whiting in the catches, with the remainder reported all sizes. Responses from the larger two size classes of vessel were fairly equal split between small and all sizes, with a few (3-4%) in both cases reporting 'mostly large'. Both otter and nephrops trawlers reported a slight bias towards mostly small whiting (53 & 57% respectively) in the catches, whilst the beam trawlers

were split equally between mostly small and all sizes. Sixty-seven percent of gill netters reported 'mostly small' and 62% of seine netters reported 'all sizes'.

Discards

In the northern North Sea (areas 1, 2, 3 & 7), there was a strong modal response (all greater than 70%) for discarding to have remained the same over the reference period. In the southern North Sea (areas 4 - 6b) the modal response was also for discarding to have remained the same, however this is less pronounced than in the northern North Sea, although the class 'same' still represents 41 - 62% of the responses in this region. In the Skagerrak & Kattegat (areas 8 & 9) discarding remained the same or decreased overall, with approximately half of respondents stating that discarding was either 'less' or 'much less' in each area. The perception that discarding has remained the same is also apparent from the users of the main gear types, and in the largest two size classes of fishing vessel. However the pattern is not so clear in the smallest vessel size class, with 41% selecting 'same' and 48% selecting either less or much less.

Recruits

In areas 1 - 3 & 7, recruitment is noted as being 'low' to 'moderate', although in each of these areas there were a fairly high percentage (29 - 47%) of respondents who felt unable to answer this question. Areas 6a & b were similar to one another with a modal (39 - 46%) response of 'moderate' also with responses in both the low and high categories, with the low responses roughly double that of those for high. In area 4 there was a strong modal response (65%) for a high recruitment, whilst in area 5 there was a strong modal response (62%) for a moderate recruitment.

There was quite a variation between the responses from the three size classes of vessel. There was no strong trend in the 15 - 24m size class with between 26 & 31% of respondents selecting either 'low', 'moderate' or 'don't know' and 16% selecting high. The under 15m class reported that recruitment was low, whilst the over 24m class reported moderate recruitment. A fairly mixed message emerged from the responses of those operating different gear, types but overall the pattern was for low to moderate recruitment.

Table 3 Summary of the responses for whiting.

Area	Abundance					Size Range			Discards					Recruits				n
	M. Less	Less	Same	More	M. More	M. Small	All Sizes	M. Large	M. Less	Less	Same	More	M. More	Low	Moderate	High	Unknown	
1	2	33	51	14	0	45	47	8	12	12	73	2	0	22	27	4	47	49
2	10	19	67	0	5	52	48	0	14	10	76	0	0	43	19	10	29	21
3	0	27	47	20	7	67	27	7	13	7	73	3	3	23	23	13	40	30
4	0	4	30	22	43	17	83	0	26	17	48	9	0	4	17	65	13	23
5	0	24	62	14	0	48	52	0	0	10	62	29	0	10	62	14	14	21
6a	4	26	52	9	9	57	43	0	4	26	52	13	4	26	39	13	22	23
6b	18	33	36	10	3	59	39	2	18	18	41	20	3	30	46	13	11	61
7	11	11	63	16	0	53	42	5	16	5	74	5	0	42	26	0	32	19
8	7	22	67	4	0	59	37	4	19	33	48	0	0	52	19	0	30	27
9	0	27	40	27	7	60	40	0	7	40	33	13	7	47	20	27	7	15

SAITHE

There has been a steady increase in the number of responses to the questions on saithe over the four years of the survey, from 163 in 2002 to 234 in 2005. Responses were received from all areas, however as there were only two from area 5 this area is excluded from the following synopsis. Responses from areas 6a,b, 9 and 4 were also fairly low (8 - 14) and the results should be treated with caution. The majority of responses came from area 1 (56) and area 8 (47). Of the 234 responses 48% were from the intermediate size class of vessel, 34% from greater than 24m size class and 18% from the under 15m. The majority (51%) of respondents deployed otter trawls and 17% deployed nephrops trawls. Beam trawlers and gill-netters represented about 10-11% each, and seine netters made up the remaining 6%.

Abundance

With the exception of area 9, where the fishermen reported an increase in abundance, the modal response throughout the North Sea was for abundance to have remained the same. In areas 1, 7 & 8, this was skewed to an increase in abundance and in areas 6a & 6b the distribution was skewed towards a decrease. There was no significant difference in the distribution of responses in most of the areas when compared to 2004. In area 3 there were more respondents who noted abundance to be much less; in area 8 the increase reported in 2004 has moderated and in area 9 there was an increase in the number of respondents who noted an increase in abundance.

When the data are collated by vessel size the modal response (50 - 52%) is for abundance to have remained the same in all size classes, with the data being skewed towards an increase in both the smallest and largest classes. The pattern is more complex when the responses are grouped by gear type, although the modal response throughout was still for 'same' - results from otter trawlermen and gill netters were both skewed to an increase in abundance, whilst results from nephrops and beam trawlermen were skewed towards a decrease.

Size Range

There was no clear pattern across the North Sea for the size distribution of saithe, other than that there were virtually no respondents reporting mostly large in the catches. 56 - 64% of respondents who fished areas 3,6b and 9 reported mostly small saithe in the catches and 54 - 75% of those in the remaining areas reported that all sizes were found in the catches. Interestingly, the under 15m sector reported mostly small saithe in the catches, the 15-24m sectors had a fairly even split between the categories 'mostly small' and 'all sizes', whilst responses from the fishermen operating vessels of length greater than 24m mainly reported all sizes in their catches. Gill netters and nephrops trawlermen both reported mostly small saithe in their catches, whilst seine netters, otter and beam trawlermen reported 'all sizes'.

Discards

In areas 1 - 7 there was a strong modal response (>65%) for discarding to have remained the same over the reference period. This pattern was still evident but less pronounced (51% selected the option 'same') in area 8, whilst in area 9 the

results were more spread between the lower four categories (ie 'much less' - 'more'). The majority of fishermen from both of the larger size classes of vessels reported that discarding had remained the same, however 31% the under 15m sector reported discarding to be much less and 43% reported that it had remained the same. When the results were grouped by gear type, it was evident that all three types of trawler and to a lesser extent seine netters considered that discarding had remained the same. Gill netters gave a split response with 33% reporting that discarding was much less and 50% reporting that it had remained the same.

Recruits

In areas 4, 6b & 7 & 9, the most frequently selected response was for recruitment to be poor; this was selected by 42 - 44% of respondents in these areas. There was no clear pattern in the responses from fishermen in the remaining areas. 50% of respondents from vessels in the under 15m size category reported that recruitment was low, respondents from the 15-24m length vessels reported recruitment to be low - moderate and there was no apparent pattern in the returns from the larger vessels.

The perception of saithe recruitment is quite variable depending on the main gear type deployed by the respondent. Responses from otter trawlermen were split between low and high. Both nephrops and beam trawlermen considered recruitment to be moderate to low, whilst gill netters considered recruitment to be low and seine netters moderate to high.

Table 5 Summary of the responses for saithe.

Area	Abundance					Size Range			Discards					Recruits				n
	M. Less	Less	Same	More	M. More	M. Small	All Sizes	M. Large	M. Less	Less	Same	More	M. More	Low	Moderate	High	Unknown	
1	7	13	45	27	9	38	61	2	7	11	70	7	5	16	29	30	25	56
2	8	21	50	13	8	46	54	0	13	4	79	0	4	33	29	17	21	24
3	14	11	50	18	7	64	36	0	14	11	68	7	0	18	32	7	43	28
4	7	7	86	0	0	43	50	7	7	14	79	0	0	43	21	14	21	14
5	0	0	100	0	0	0	100	0	0	0	100	0	0	0	50	0	50	2
6a	0	25	75	0	0	25	75	0	0	25	75	0	0	38	38	0	25	8
6b	33	0	56	11	0	56	44	0	33	0	67	0	0	44	22	0	33	9
7	6	15	50	24	6	41	56	3	18	6	65	6	6	44	26	21	9	34
8	4	6	47	34	9	43	55	2	15	15	51	17	2	36	11	32	21	47
9	0	8	42	50	0	58	33	8	25	17	33	25	0	42	25	8	25	12

MONKFISH

The numbers of fishermen supplying data on monkfish has remained steady at the mid 200s after a marked increase between 2002 & 2003 from 142. Responses were received from all areas, particularly area 1 which accounted for 25% of all responses. Responses from areas 5 and 9 were very low (n = 2 & 5, respectively) and have been disregarded in the following synopsis. There were relatively few responses from areas 6a & 6b and the data presented forthwith should be interpreted with caution. The majority (50%) of respondents had vessels in the 15 - 24m size class, 38% had over 24m vessels and the remaining 12% under 15m.

Otter trawlermen dominated the responses with 51% operating this gear type. This was followed by nephrop and beam trawlermen who made up 14% each; seine and gill netters each represented 6 - 7% of the responses.

Abundance

Monkfish abundance continues to increase in areas 1 - 3, however the perceived increase has moderated in areas 1 & 3, with a significant change in the distribution of responses between the last two years of the survey and fewer respondents selecting the much more category in 2005 than in 2004. Monkfish abundance was also perceived to be on the increase in area 7, indicating that this species appears to be on the increase throughout the northern North Sea. In the southern North Sea the situation appears different; with the majority of respondents noting that abundance has remained the same (areas 4, 6b & 8) or decreased (area 6a).

The modal response from fishermen operating the two smaller size classes of vessel was for abundance to have remained the same. 'Same' was also the most frequently selected option from the over 24m class of vessels (35%), however there were a large number who reported monkfish to be either 'more' (30%) or 'much more' (22%). Gill and seine netters both reported abundance to have remained the same over the reference period. The modal response from beam trawlermen was also 'same' however at 37% this was less marked and 37% of respondents indicated that monkfish abundance was either less or much less. The converse was true for otter and nephrops trawlermen, where 51 & 43%, respectively, of respondents indicated that there had been an increase in monkfish abundance.

Size Range

More than 70% of respondents in areas 1 - 4, 6a & 7 reported that all sizes of monkfish were present in their catches. In areas 6b and 8, there was a fairly equal split between mostly small monkfish and all sizes. The strong modal response was also evident from the larger two size classes of vessel, however the responses from the under 15m sector were split 46:54 between 'mostly small' and 'all sizes'.

Discards

The overwhelming response to the discarding question was for discarding to have remained the same throughout the North Sea, for all vessel sizes and gear types.

Recruits

There were no strong trends in the reported monkfish recruitment by area in North Sea. In areas 1 & 2 observations on recruitment tended towards moderate to high. There was no discernable pattern to the responses in areas 3 & 7, whilst in areas 4, 6a & 6b reported recruitment was moderate to low. In area 8 however, 48% of respondents said recruitment was low.

A clearer pattern emerges when the data are collated by vessel size, with the smaller vessels reporting poor recruitment, intermediate vessels being split 35:30 low: moderate and the largest size class of vessels reporting moderate to high (38 & 28% respectively) recruitment. Both nephrops and beam trawlermen clearly indicated that recruitment was moderate (52 - 56%), whilst the responses from otter trawlermen were fairly equally split between all the three levels. Gill netters who expressed an opinion (54% did not) reported recruitment to be low (38%) and the responses of seine netters were split equally between 'low', 'moderate' and 'don't know'.

Table 6 Summary of the responses for monkfish.

Area	Abundance					Size Range			Discards					Recruits				n
	M. Less	Less	Same	More	M. More	M. Small	All Sizes	M. Large	M. Less	Less	Same	More	M. More	Low	Moderate	High	Unknown	
1	2	4	32	37	26	9	88	4	14	9	63	9	5	12	37	18	33	57
2	5	9	32	36	18	27	73	0	14	5	64	5	14	18	32	27	23	22
3	7	10	30	37	17	13	87	0	10	7	57	13	13	17	30	20	33	30
4	9	22	70	0	0	17	83	0	13	4	78	4	0	39	48	4	9	23
5	0	0	100	0	0	0	100	0	0	0	100	0	0	0	50	0	50	2
6a	14	29	36	21	0	29	71	0	7	14	71	7	0	29	50	0	21	14
6b	22	0	56	22	0	56	44	0	22	0	67	11	0	33	22	11	33	9
7	10	10	33	27	20	17	80	3	20	3	60	3	13	30	33	20	17	30
8	9	9	58	12	12	48	48	3	27	0	64	3	6	48	12	15	24	33
9	0	40	60	0	0	60	40	0	40	0	60	0	0	29	0	0	71	5

NEPHROPS

Two hundred and one sets of questions were answered on nephrops; this is comparable with previous years when numbers have ranged from 197 - 218. Area 5 has been omitted from the following synopsis due to low numbers (n = 6). Numbers were also low (ie less than 20) in areas 4, 6b, 7 & 9, which should be born in mind when viewing the results.

The majority (48%) of the respondents operated vessels in the 15 - 24m size class, 37% were in the greater than 24m size class and 13% in the smallest class. More than half (54%) of the respondents used otter trawls as their main gear-type, but it should be noted that many of these fishermen would also use nephrops trawls. 26% of the respondents used nephrops trawls and 20% beam trawls. Again it should be noted that the beam trawlermen will switch to nephrops trawls at certain times of the year, and the data here do not infer that beam trawls are used to catch nephrops. A small number of responses (2 - 3 in total) were received from gill or seine netters, however these have not been reported. Given the reservations expressed as to gear type descriptions have not been given for specific gear types, however the interested reader is directed to Appendix 1.

Abundance

There were no strong modes in the frequency distribution of responses to questions on abundance throughout the North Sea. In areas 1 - 4 & 7 - 9, the tendency is for abundance responses to be skewed towards an increase. In areas 6a & 6b, however, the converse is true. The perception of changes in the stock abundance in 2005 did not significantly differ from that in 2004 in areas 3, 4 & 7 - 9. In the remaining areas where a significant difference was noted, this was caused by more respondents reporting that there were less nephrops than in the previous year.

Vessels in the under 15m size class reported an increase in abundance (58% reported 'more'), however the larger two size classes had a weak mode of 'same' (36 - 41%) and a fairly even split between an increase and a decrease in abundance. These results may reflect a difference in inshore and offshore fisheries, with smaller vessels working closer inshore in areas 3, 4 & 6a - 9.

Size Range

The modal response in all areas, with the exception of area 7, was 'all sizes'. The strength of this mode varied throughout the North Sea. In areas 1, 3, 4 & 9 more than 60% of respondents reported that all sizes of nephrops were present in the catches. In areas 6a - 7 the split between 'all sizes' and small was fairly even with both categories scoring in the regions 40 - 50% in all three areas.

When the results were pooled by vessel size it became evident that the smaller vessels reported mostly small in the catches, with more than 60% of each of the larger size categories of vessel reporting all sizes of nephrops.

Discards

With the exception of area 9, where there is a marked decrease in discarding reported, discarding is perceived to have remained the same throughout the North Sea. This is particularly evident in the responses for the northern North

Sea (areas 1 - 3 & 7) where 61 - 74% of respondents stated that discarding had remained constant. In the remaining areas (4, 6a, 6b & 8) 40 - 55% of replies were for 'same'. Results from the largest two size classes of vessel also reflect this distribution, however the results for the under 15m sector are less well defined with a fairly even split of answers between a decrease, an increase and remaining the same.

Recruits

There is no clear pattern for nephrops recruitment, with responses for most areas being evenly spread between the available categories. The exception to this was in both areas 6, where recruitment was reported to be moderate to high. There were notable differences between the experiences of respondents from the three size classes of vessel: the under 15m sector reported that recruitment was mainly 'high' (50%); fishermen from the largest class of vessels reported recruitment to be moderate; and there was no strong pattern in the responses from those working intermediate sized vessels.

Table 6 Summary of the responses for nephrops.

Area	Abundance					Size Range			Discards					Recruits				n
	M. Less	Less	Same	More	M. More	M. Small	All Sizes	M. Large	M. Less	Less	Same	More	M. More	Low	Moderate	High	Unknown	
1	0	16	36	32	16	28	64	8	8	16	72	4	0	16	32	16	36	25
2	0	24	29	35	12	35	59	6	0	24	71	6	0	18	35	24	24	17
3	0	15	33	41	11	30	63	7	4	15	74	7	0	11	30	26	33	27
4	0	13	40	33	13	20	80	0	7	13	53	27	0	40	27	33	0	15
5	0	33	33	33	0	17	83	0	0	17	50	17	17	0	50	50	0	6
6a	0	37	30	33	0	43	57	0	3	20	40	27	10	3	60	33	3	30
6b	5	45	25	20	5	45	55	0	10	25	40	15	10	5	55	35	5	20
7	0	11	39	44	6	50	44	6	6	11	61	17	6	39	22	22	17	18
8	0	11	39	44	6	28	59	14	14	17	55	14	0	34	24	28	14	18
9	0	8	50	42	0	8	75	17	0	50	42	8	0	42	17	42	0	12

SOLE

The number of responses to the questions on sole has ranged between 317 and 345 in the 4 years the survey has been in its current format; in 2005 the number was 345. Responses were received from all areas, with the lowest recorded in areas 1 & 2, where only 11 & 22 responses were received. Area 6b had considerably more records at 85 than any other – the next greatest number of records was 46 in area 8. The majority (41%) of the respondents operated vessels in the intermediate size category; 34% were from the largest size class and the remaining 26% from the smallest. The smallest vessels mainly deployed gill nets (76%) and the largest vessels were primarily beam trawlers (77%), whereas the gear types deployed from the intermediate sized vessel were more varied, with all 5 main gear types being represented in descending frequency from trawl (33%), nephrops, beam trawler, gill to seine nets at 7%.

Abundance

In areas 1, 3 & 4 it was reported that sole abundance had remained the same as in 2004. In area 2, the results are split equally between 'same' and 'more', however due to the small number of observations, these results should perhaps be treated with caution. There was no pattern to the results in area 5, with the number of responses being split evenly between remaining the same, a decrease and an increase. Responses in area 6a were quite divided with 36% reporting a decrease and 48% an increase. In area 6b the distribution of responses is clearly skewed to show a decrease, however the converse is true in areas 7- 8 where the perception is clearly that there has been an increase in the abundance of sole. The decrease reported in area 6b is in marked contrast to the responses of 2004, where the majority of respondents noted that abundance was much more.

It would appear that it was the fishermen with smaller vessels that perceived there to be an increase in the abundance of sole, with 69% indicating that there were either more or much more. Responses from the intermediate size category were split between 'same' and an increase of some degree; however there was no clear indication from the largest size category, with results being spread between the three directions of change.

The three types of trawler reported differing experience of sole abundance between 2004 and 2005. Nephrops trawlers noted a clear increase; beam trawlers reported a decrease and otter trawler an increase. Both gill and seine netters reported an increase in abundance over the reference period.

Size Range

The distribution of responses to the question on size range is uniform throughout the North Sea, with respondents from all areas reporting that they observed all sizes of sole in the catches. This is also reflected in the results when they are presented by vessel size and gear type.

Discards

Discarding was reported to have remained the same for the majority of areas in the North Sea. In area 6a all respondents noted that discarding had decreased: 28% 'much less' and 72% 'less'. In areas 8 & 9, although the modal response

was for discarding to have remained the same there are indications that an increase in discarding has been noted in these areas.

When the results are split by gear type the pattern is for discarding to have remained the same over the reference period, with the exception of the experiences of seine netters, where no trend was discernable. The same message holds true when the data are collated by vessel size.

Recruits

The perception of the pattern of recruitment throughout the North Sea was mixed. In areas 1 - 3, 45 - 59% respondents felt unable to respond; those who did, reported recruitment to be moderate. In areas 4 - 6b the majority of respondents also noted recruitment to be moderate. Responses from area 8 were quite confused, with 'low' and 'high' both scoring equally high (18 - 20%), this split response was also evident in area 7. In area 9, by way of contrast, 60% of respondents noted recruitment to be high.

This mixed pattern of responses was also reflected in the results when collated by vessel size and gear type. Respondents from the largest vessels clearly indicated recruitment to be moderate; 15-24m vessel operators also reported mainly moderate recruitment, but this was less marked than for the over 24m size class. The under 15m sector had mixed results with 'high' being the most frequently recorded category at 40%, followed by 'low' at 27%. Beam trawlermen and seine netters both perceived recruitment to be moderate followed by high, whilst nephrops fishermen who expressed an opinion (50% did not) considered recruitment to be moderate. There was no clear pattern in the responses from otter trawlermen, and a mixed response from the gill netters, with the results of those who expressed an opinion being split equally (36 & 37%) between low and high.

Table 7 Summary of the responses for sole.

Area	Abundance					Size Range			Discards					Recruits				n
	M. Less	Less	Same	More	M. More	M. Small	All Sizes	M. Large	M. Less	Less	Same	More	M. More	Low	Moderate	High	Unknown	
1	5	5	68	23	0	36	64	0	18	14	64	5	0	5	32	5	59	22
2	9	0	45	45	0	27	73	0	18	9	64	9	0	0	45	9	45	11
3	0	4	70	26	0	35	65	0	9	17	74	0	0	4	43	0	52	23
4	4	17	63	13	4	25	75	0	4	4	63	29	0	21	50	29	0	24
5	3	28	34	31	3	34	66	0	7	10	52	24	7	3	52	38	7	29
6a	4	32	16	48	0	28	72	0	28	72	0	0	0	16	56	16	12	25
6b	6	42	28	19	5	16	82	1	9	19	51	20	1	14	59	20	7	85
7	5	19	27	38	11	32	51	16	16	16	59	3	5	38	5	22	35	37
8	0	4	22	41	33	26	67	7	11	4	46	24	15	33	13	33	22	46
9	0	0	14	40	47	26	65	9	2	9	37	28	23	23	5	60	12	43

PLAICE

Plaice attracted the second highest number of responses of the eight species with 410 – this number has remained reasonably consistent over the 4 years of the survey, with the exception of a dip to the mid three hundreds in 2003. Responses referred to all areas of the North Sea and as with other species in 2005, the majority of the responses (44%) were from intermediate sized vessels, followed by over 24m (34%) then under 15m (22%). Most of the respondents were beam trawlermen (32%), closely followed by otter trawlermen (30%). Gill netters were also well represented (20%) and the remaining responses were split between nephrops trawlermen (10%) and seine netters (8%).

Abundance

There is a marked north south divide in the perception of the plaice stocks: respondents from the north (areas 1 -3, 7 & 8) reported that the abundance was the same as last years; however in the more southern areas of 4 – 6a & 9, an increase in abundance was reported. There was no trend apparent in the data for areas 6b, with responses being spit between less, same and more. In most areas the observations on abundance were not significantly different from those reported in 2004. There were differences in areas 6a & 6b where the increase that was reported in 2004 appeared to have moderated.

Respondents from the smallest two size classes of vessel perceived abundance to have remained the same, whilst 39% of the largest size class reported an increase and 39% reported that abundance had remained the same. Gill netters, nephrops and otter trawlermen all mainly reported that abundance had remained the same. Beam trawlermen and seine netters returned responses that were fairly evenly split between 'less', 'same' and 'more'.

Size Range

Responses for the size of plaice in the North Sea were fairly mixed. In areas 3, 8 & 9, responses were fairly evenly spit between 'mostly small' & 'all sizes'. In the remaining areas the modal response was for 'all sizes'; this was particularly marked in area 2 where 95% of respondents selected this option.

When the results were pooled by vessel size class, respondents with the largest vessels clearly noted (80%) all sizes of plaice in the catches, this mode was less marked (58%) for the intermediate sized vessel group and the under 15 sector were divided between 'mostly small' and 'all sizes'. Otter and beam trawlermen noted all sizes of plaice in the catches, whilst approximately half of the remaining three metiers also reported mostly small plaice.

Discards

Throughout the North Sea and for all vessel types it was reported that discarding had remained the same as in 2004.

Recruits

A large number (95%) of respondents in area 2 felt unable to comment on plaice recruitment. In areas 1, 2 & 4 – 6b, the most frequently recorded response of those who did respond was for recruitment to be moderate. In areas 7 & 8, the results tended towards a low recruitment; whilst in area 9 there responses were fairly evenly split between 'low', 'moderate' and 'high'. The results by vessel size show marked differences: for the largest vessel operators, there was a strong modal response for a moderate recruitment; this was less marked in the intermediate size class, whilst the under 15m sector were clearly skewed towards recruitment being low.

There were marked differences in the observations when pooled by gear type. Beam trawlermen clearly noted moderate recruitment (70%), as did nephrops trawlermen (47%), although an equal number of the latter felt that they did not know. There was no trend in the responses from otter trawlermen, and seine netters had peaks in the responses for both low and high. Fifty percent of gill netters considered recruitment to be low.

Table 8 Summary of the responses for plaice.

Area	Abundance					Size Range			Discards					Recruits				n
	M. Less	Less	Same	More	M. More	M. Small	All Sizes	M. Large	M. Less	Less	Same	More	M. More	Low	Moderate	High	Unknown	
1	10	17	60	13	0	33	67	0	13	3	77	7	0	33	67	0	0	30
2	10	10	52	24	5	5	95	0	5	10	81	5	0	9	91	0	0	21
3	13	13	57	17	0	53	47	0	13	10	70	7	0	17	20	7	57	30
4	8	16	32	40	4	32	68	0	12	8	64	16	0	24	48	16	12	25
5	0	21	26	47	5	26	68	5	0	11	53	37	0	11	58	21	11	19
6a	4	18	35	41	2	20	75	6	6	20	61	14	0	16	59	14	12	51
6b	5	32	29	30	4	32	68	0	7	21	52	21	0	15	64	12	8	73
7	5	21	46	25	4	23	65	12	9	9	70	12	0	33	35	19	12	57
8	2	18	60	20	0	48	52	0	15	11	71	3	0	40	28	23	9	65
9	0	14	46	37	3	49	51	0	6	11	71	11	0	37	23	40	0	35

Table 9 Results of chi-squared tests comparing abundance responses in 2005 with those in 2004 where NS denotes no significant difference, * - denotes a significant difference at 0.05, ** denotes a significant difference at 0.01, *** denotes a significant difference at 0.001, NA indicates that either the data set were too small for analysis or that there were too many zero values to for the pooled categories to be meaningful, df indicates the degrees of freedom (i.e. number of categories - 1).

Area	Cod		Haddock		Whiting		Saithe		Monkfish		Nephrops		Sole		Plaice	
	df	p	df	p	df	p	df	p	df	p	df	p	df	p	df	p
1	4	NS	3	***	4	**	4	NS	3	***	4	**	2	NA	4	NS
2	4	*	2	*	3	NS	4	NS	3	NS	4	**	3	***	3	NS
3	3	NS	3	*	3	*	4	***	3	**	4	NS	2	NA	4	**
4	3	NS	4	***	3	*	3	NS	4	*	2	NS	4	NS	3	NS
5	3	NS	4	NA	3	***	0	NA	1	NS NA	2	NS	2	***	3	NS
6a	4	**	3	*	3	***	3	NS	2	NS NA	3	**	3	***	4	**
6b	4	***	4	**	4	***	1	NS NA	2	NS NA	2	*	2	***	4	***
7	4	*	4	**	3	NS	4	NS	4	*	4	NS	3	NS	3	NS
8	3	***	4	NS	1	**	3	**	3	NS NA	3	NS	4	NS	4	*
9	2	NS	2	*	1	NS NA	2	*	1	NS NA	3	NS	3	**	3	NS

The results of this table give an indication of whether the fisherman's perception of the state of the stocks is different from the previous year. Any number of stars indicates a significant difference, the greater the number of stars the stronger the difference. For a description of whether the change in a for a greater or lesser abundance refer to the relevant preceding text and the abundance time series figures in the appendix.

STEERING GROUP MEMBERS

M Andersen – Danmarks Fiskeriforening (Danish Fishermen's Association)
Denmark

D Beveridge – National Federation of Fishermen's Organisations, England

F Brocken (Natalie Steins) – Productschap Vis (Dutch Fish Product Board)
Netherlands

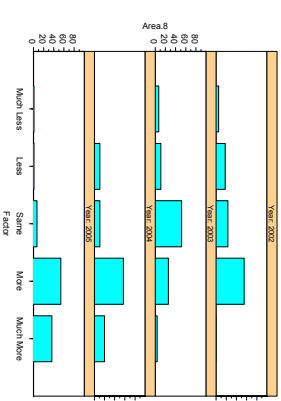
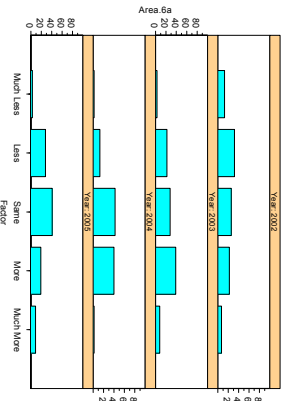
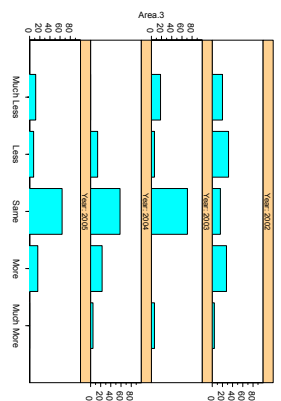
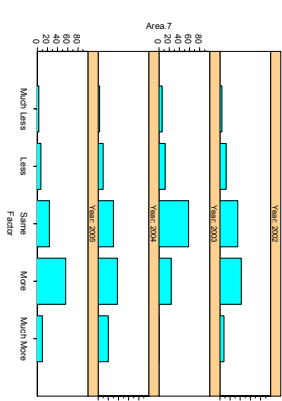
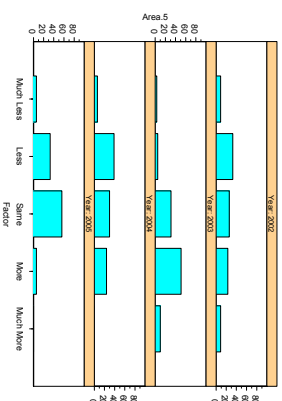
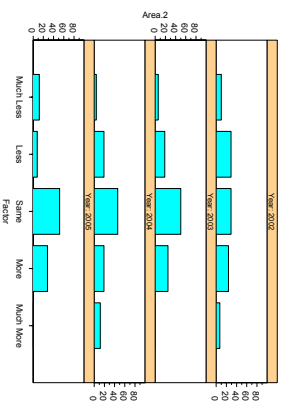
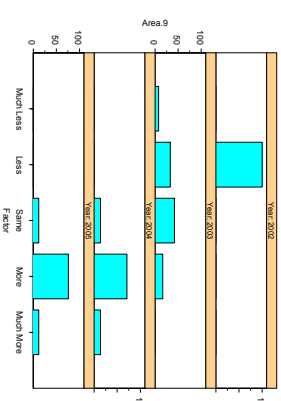
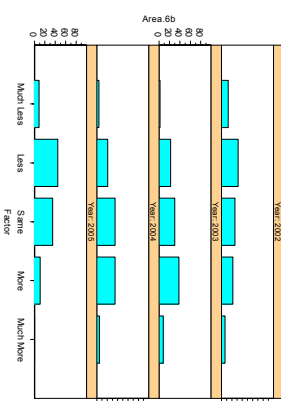
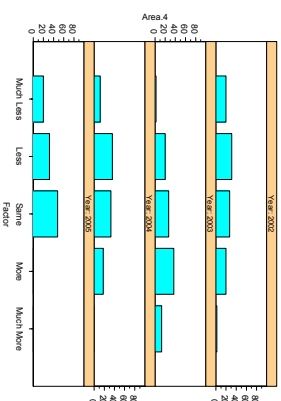
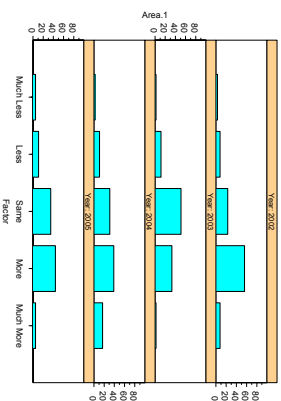
F Gowland – Scottish Fishermen's Federation

A Hawkins – North Sea Commission Fisheries Partnership, Scotland.

S Marrs – North Atlantic Fisheries College, Scotland (consultant).

Appendix 1

North Sea Stock Survey Abundance Time Series 2005 Cod

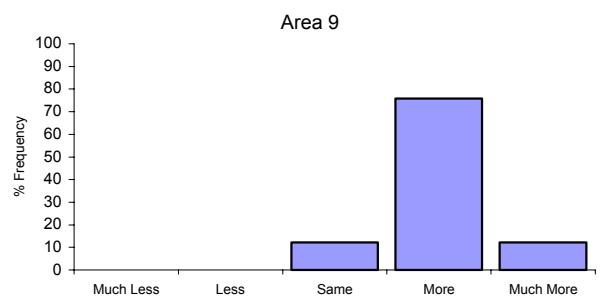
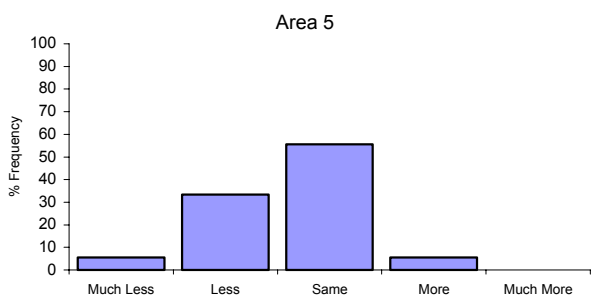
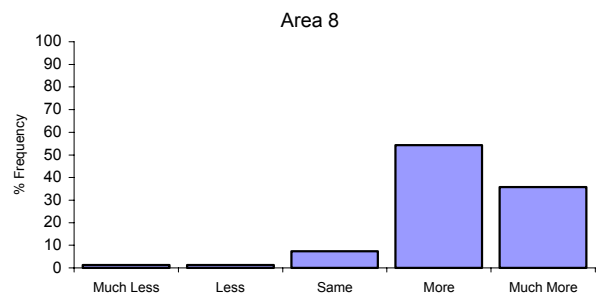
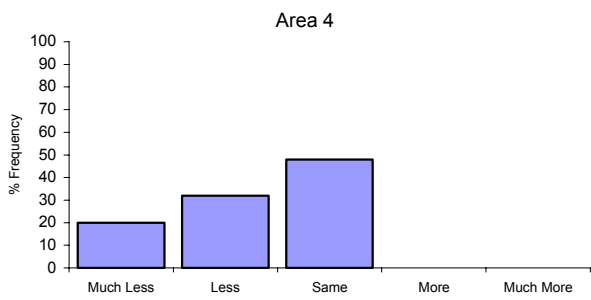
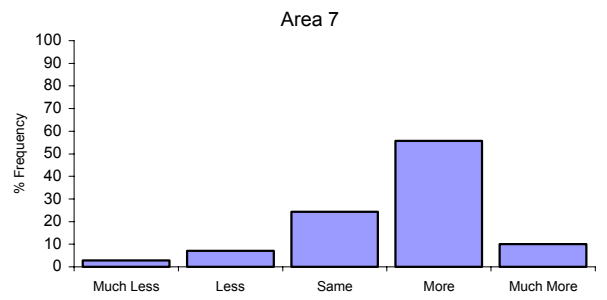
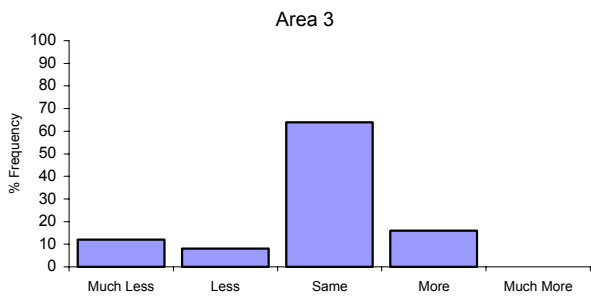
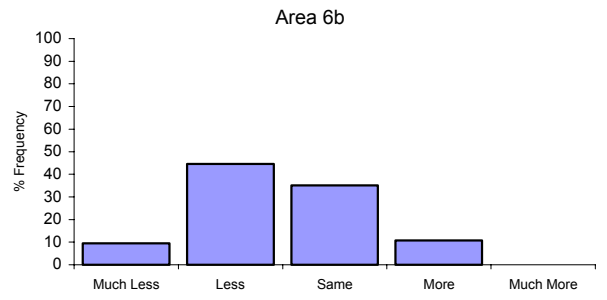
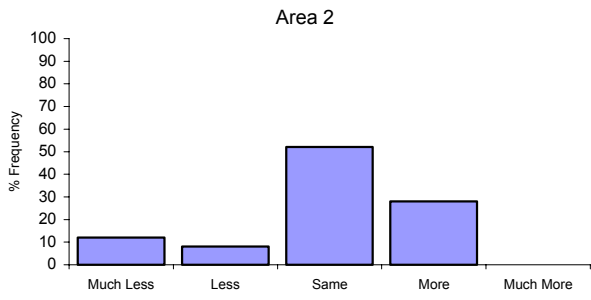
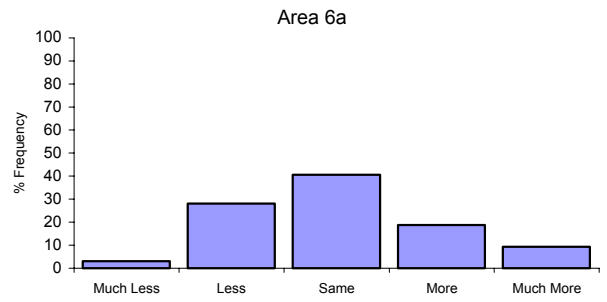
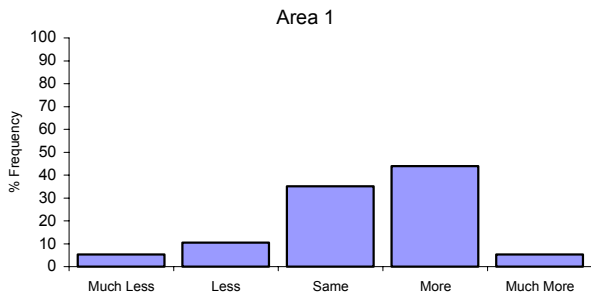


Number of observations

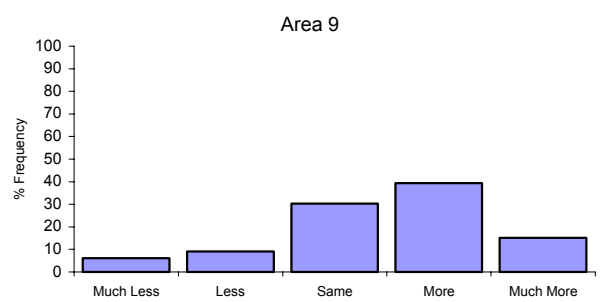
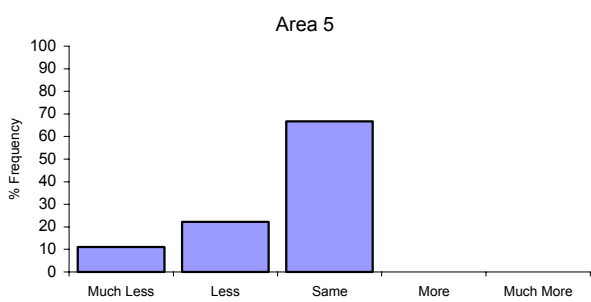
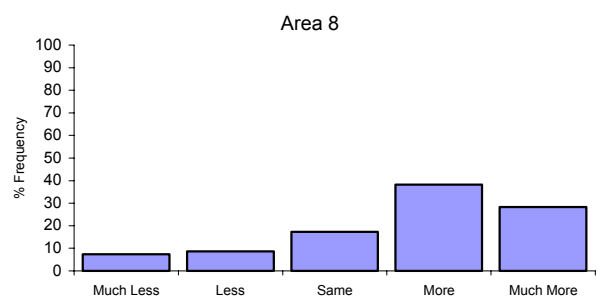
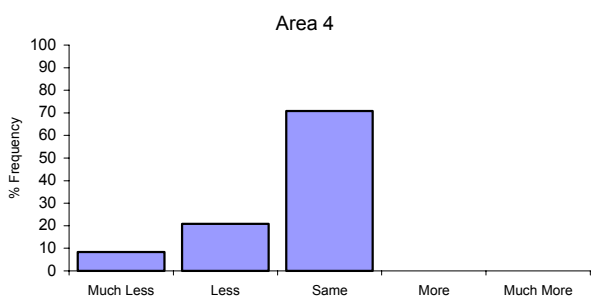
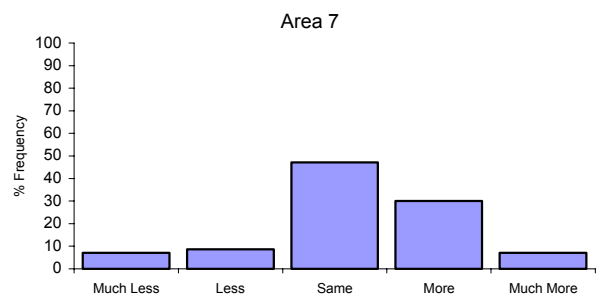
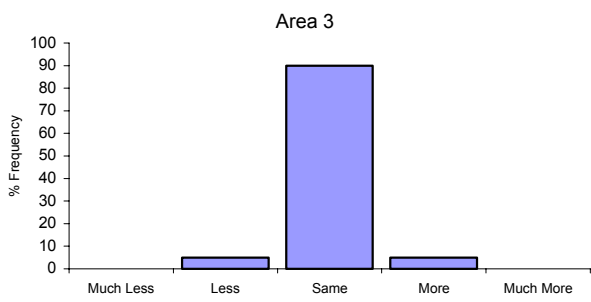
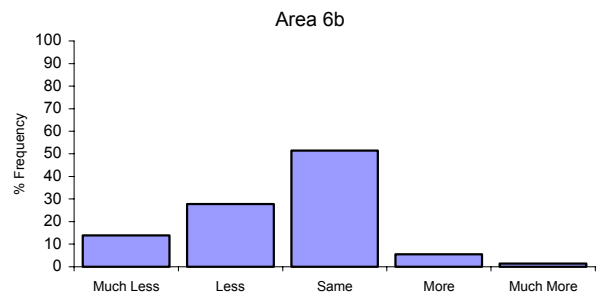
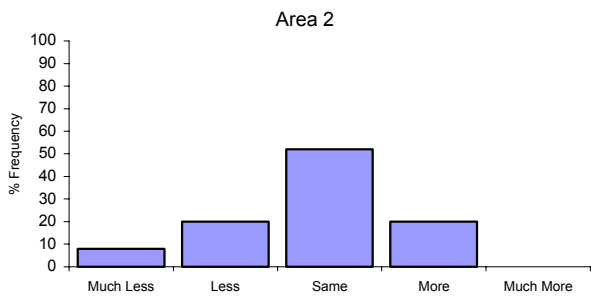
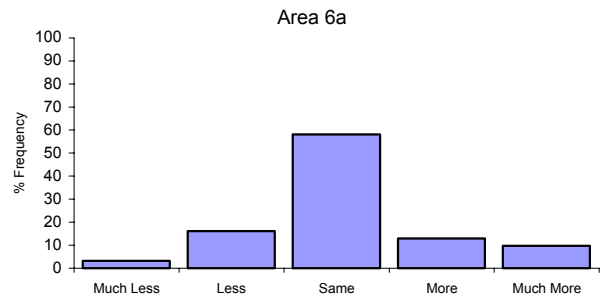
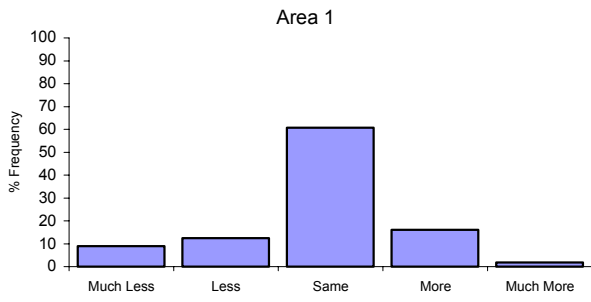
Area	2002	2003	2004	2005
1	73	51	54	57
2	41	16	26	25
3	25	17	43	25
4	51	45	33	25
5	81	39	33	18
6a	162	36	52	32
6b	162	87	75	74
7	52	33	31	70
8	22	27	44	81
9	1	12	14	33

Note in 2002 area 6 was not split into a & b, so the data have been presented twice.

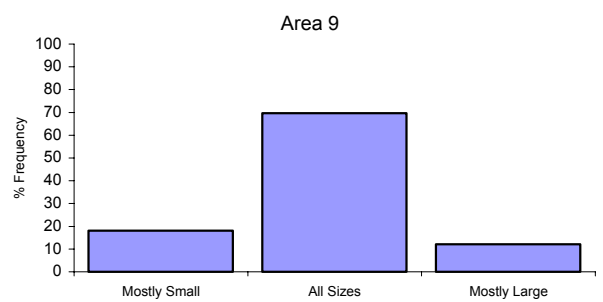
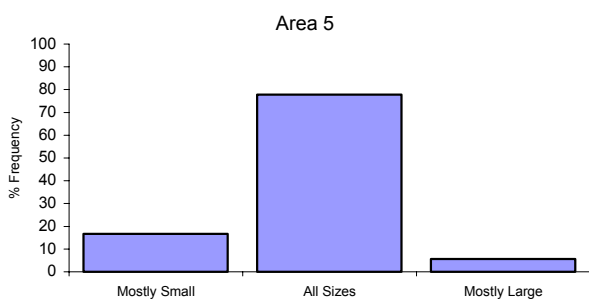
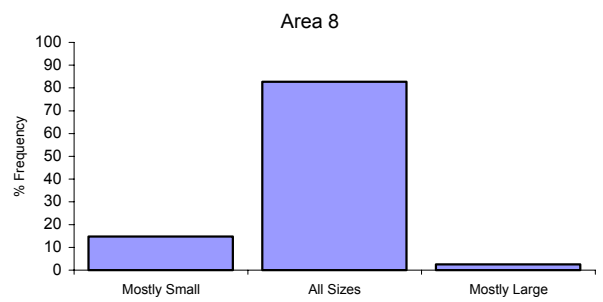
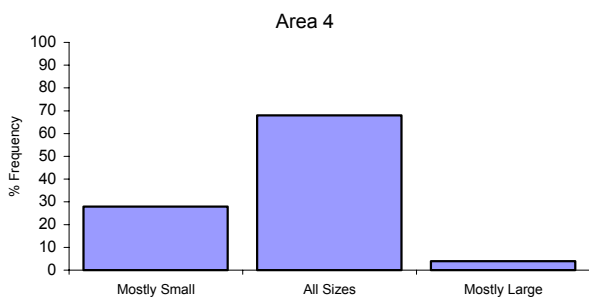
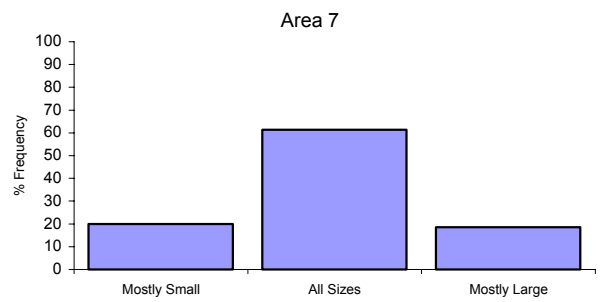
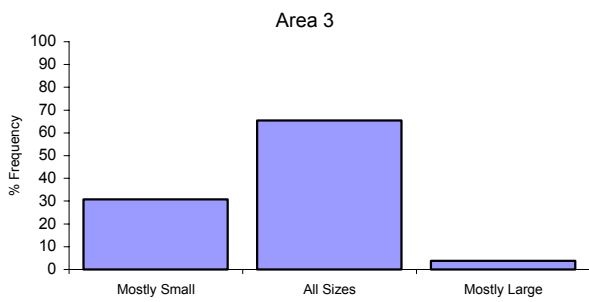
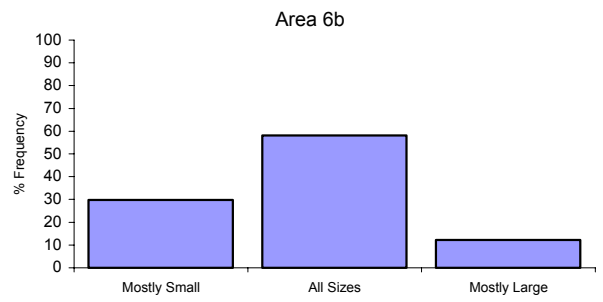
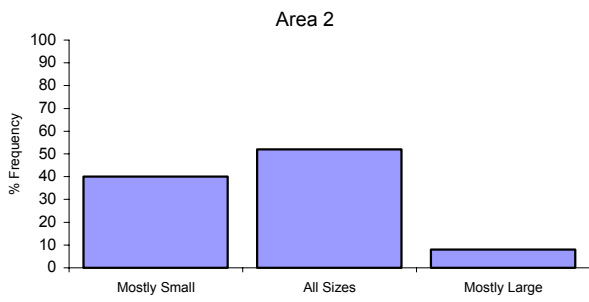
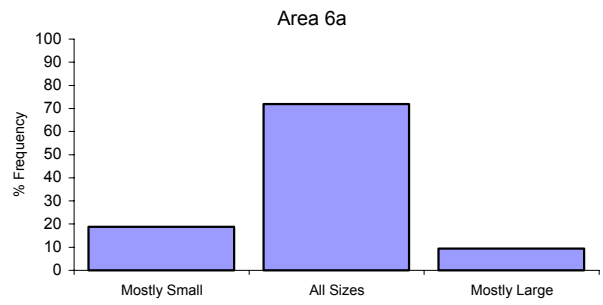
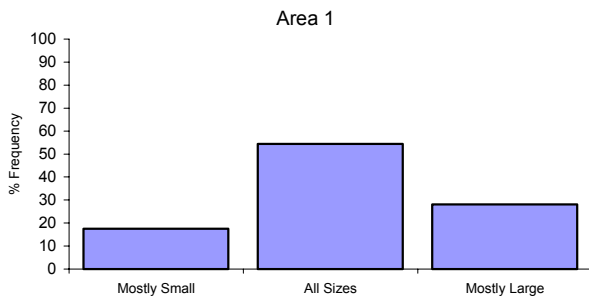
Cod Abundance



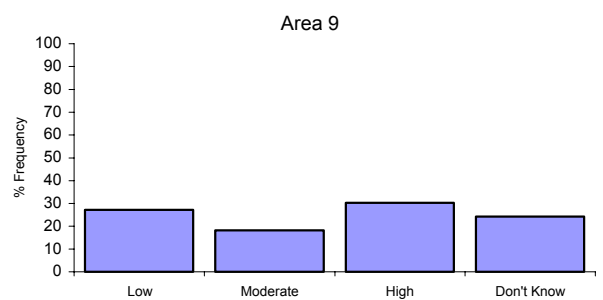
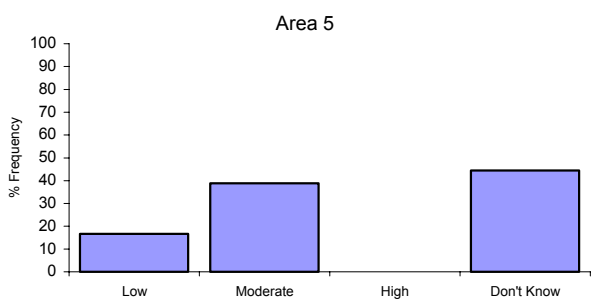
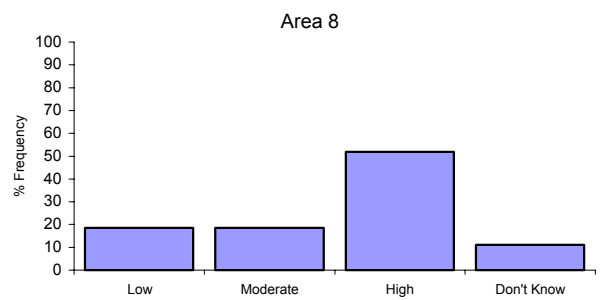
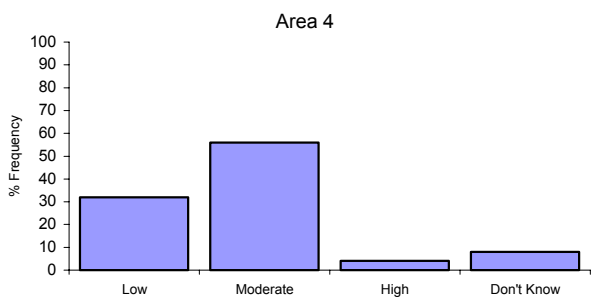
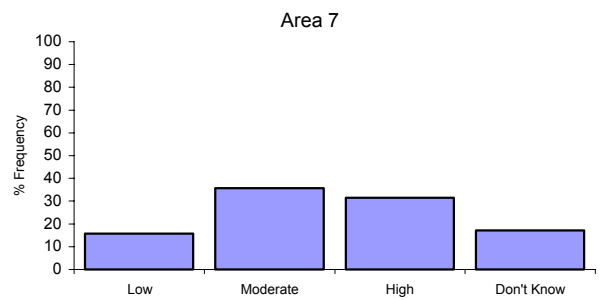
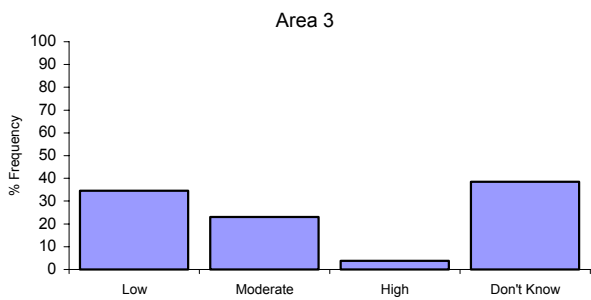
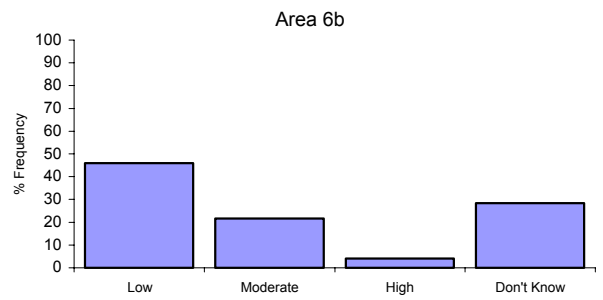
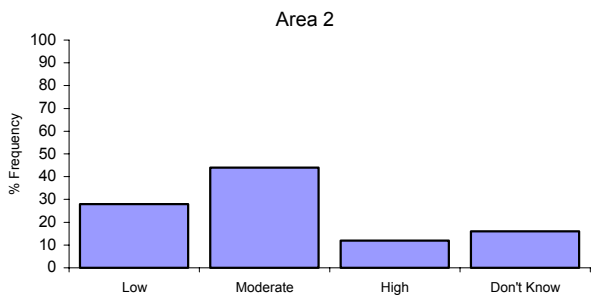
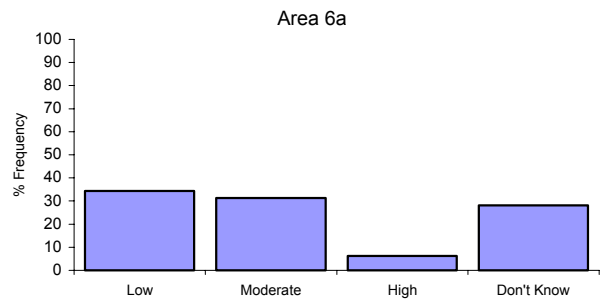
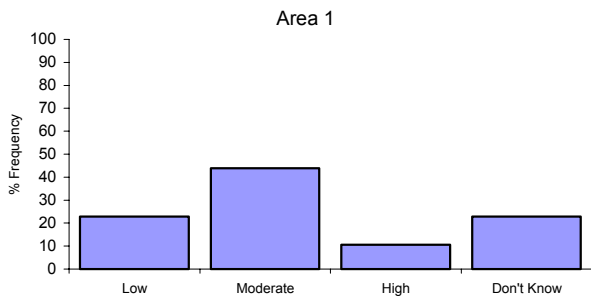
Cod Discards

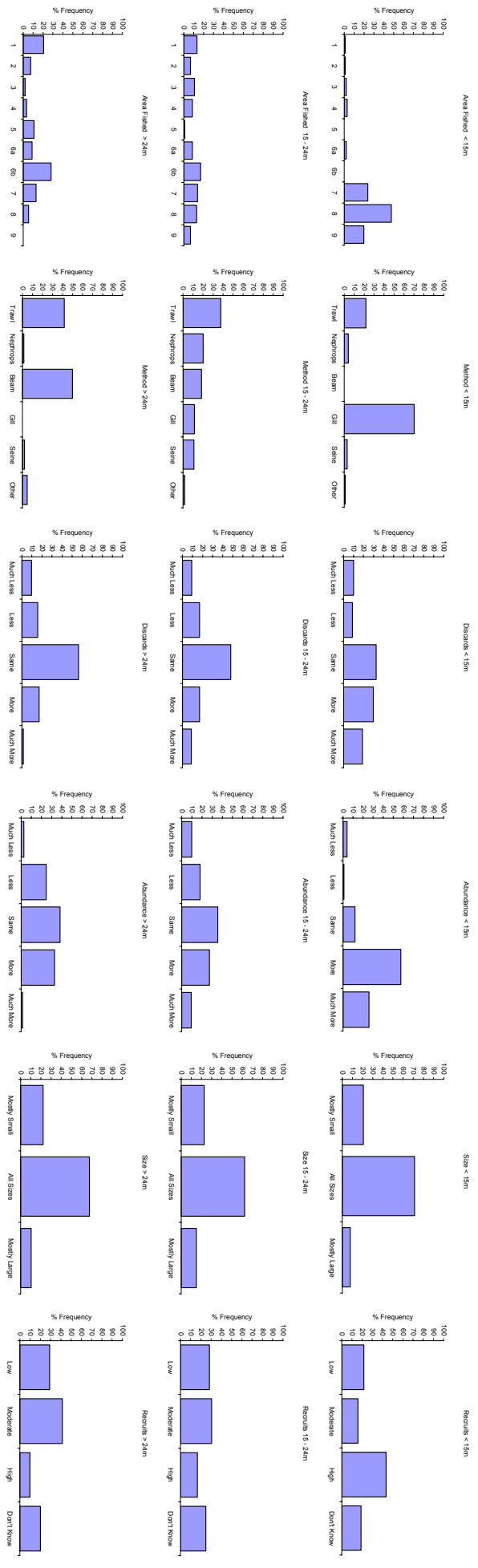


Cod Size

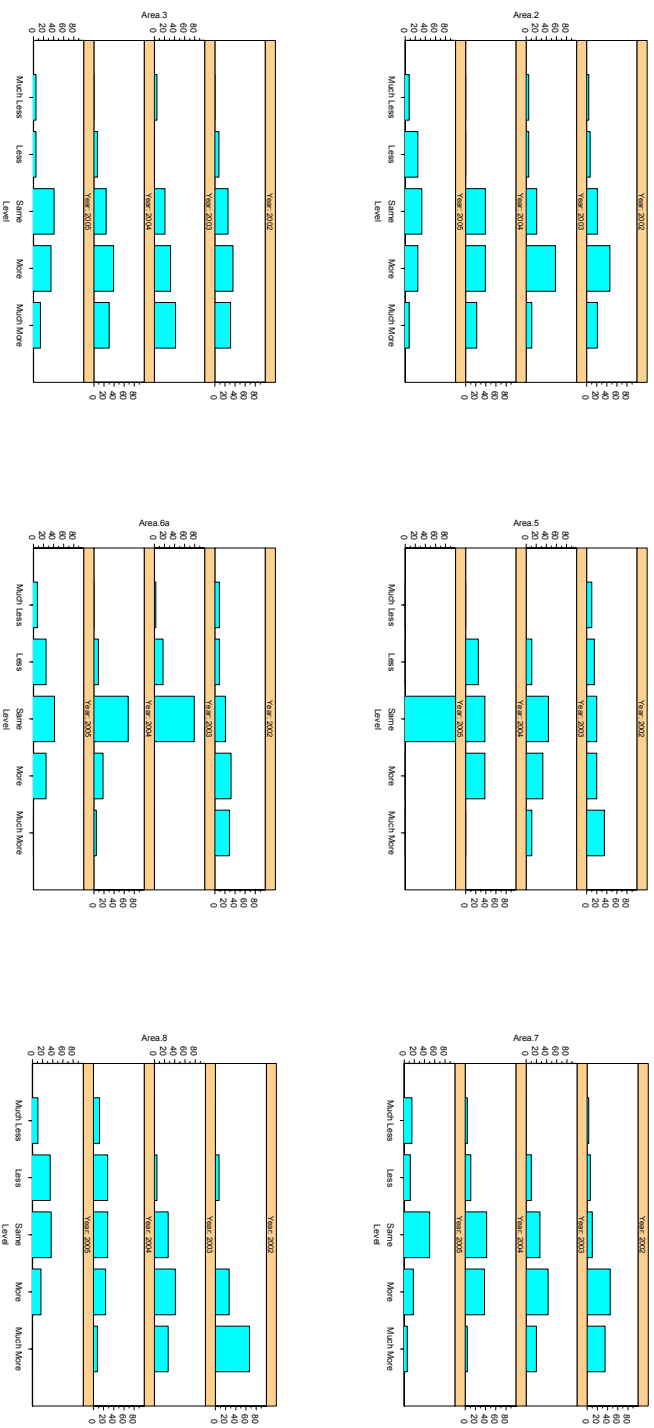
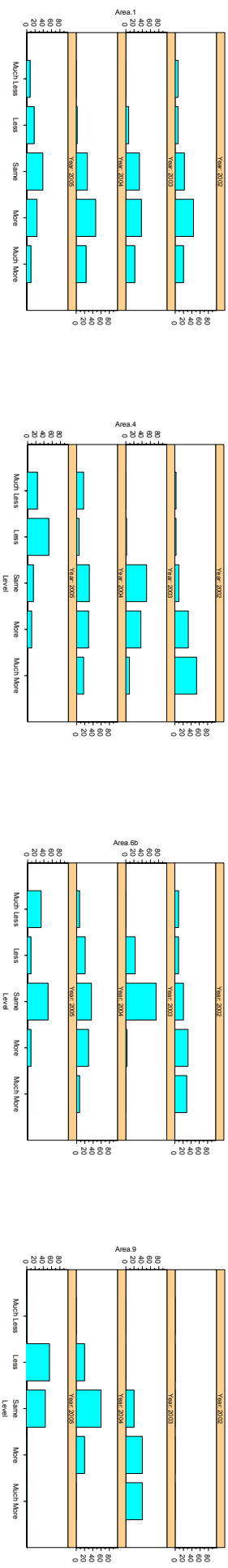


Cod Recruits





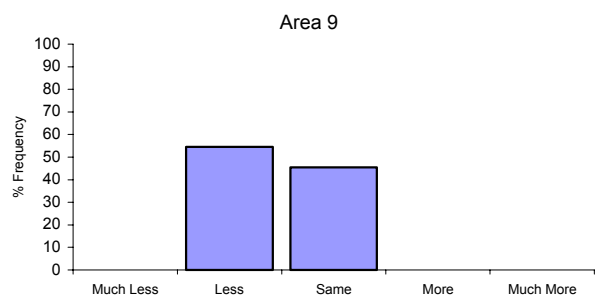
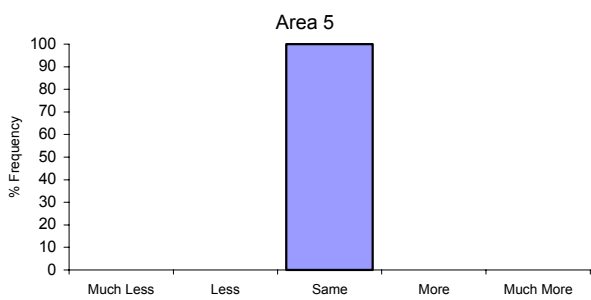
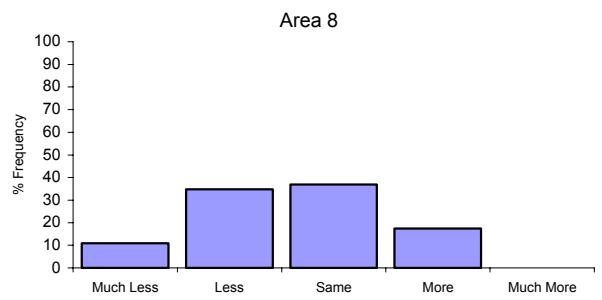
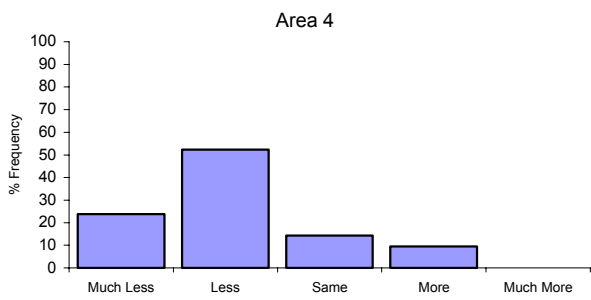
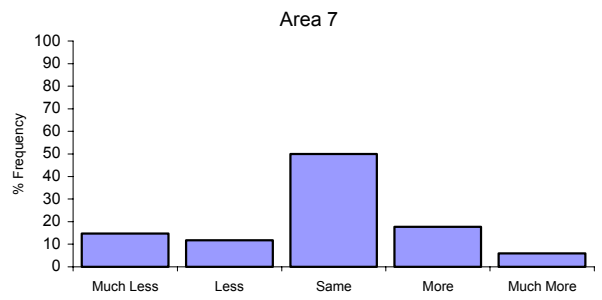
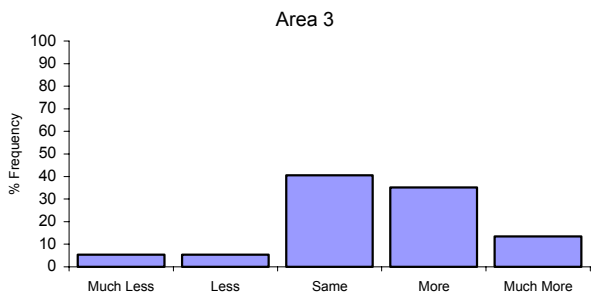
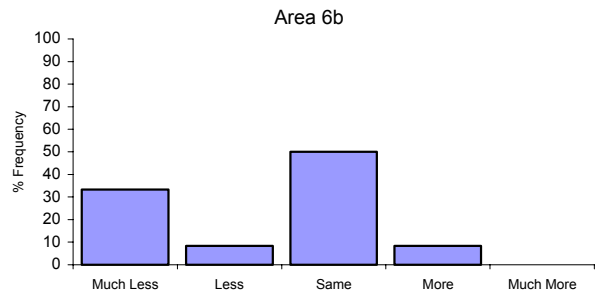
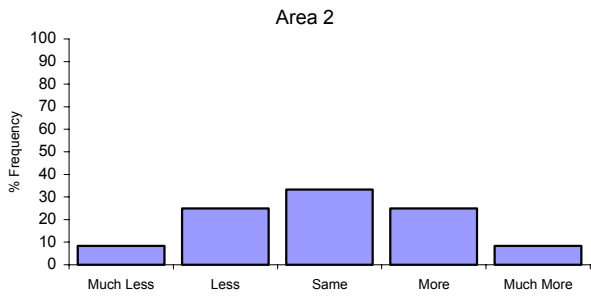
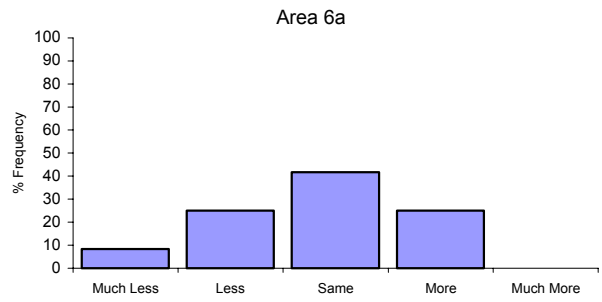
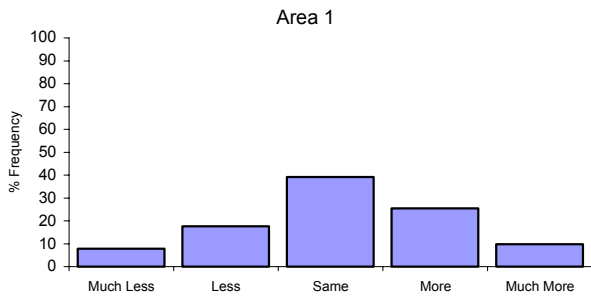
North Sea Stock Survey Abundance Time Series 2005 Haddock



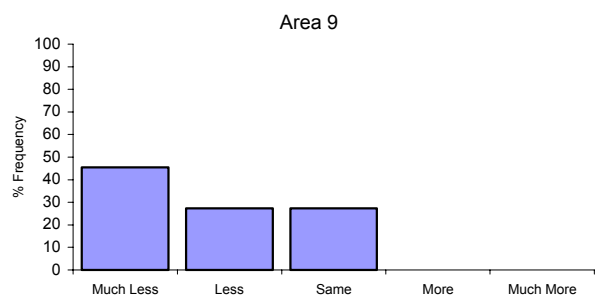
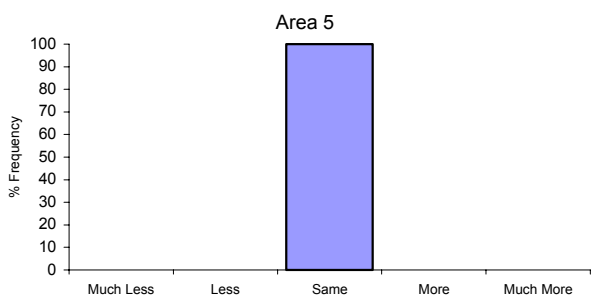
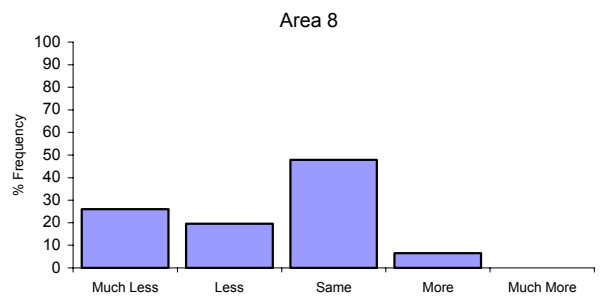
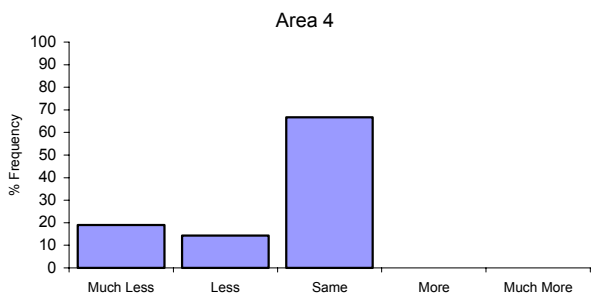
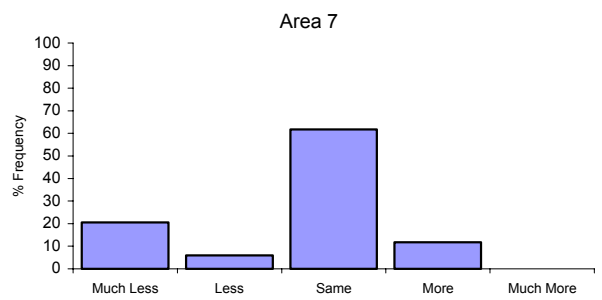
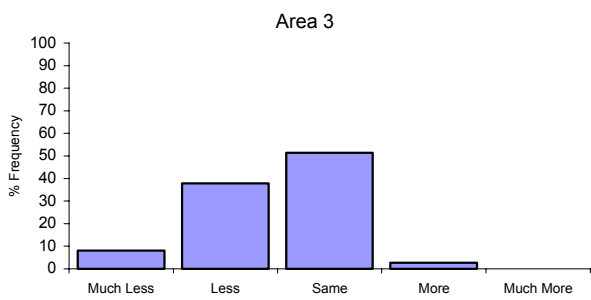
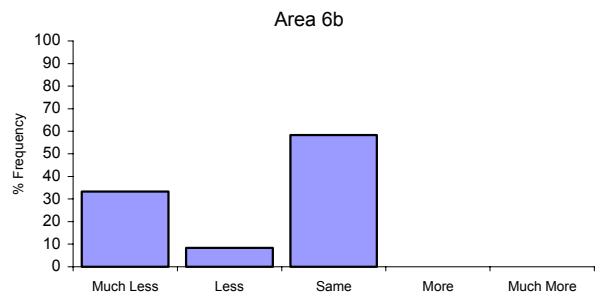
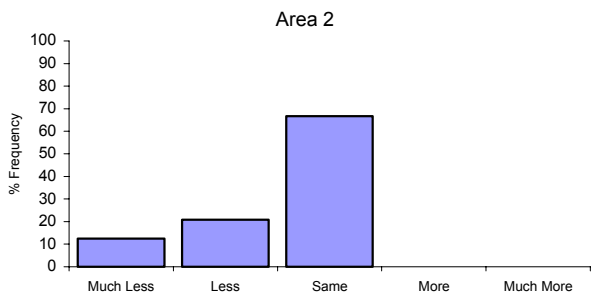
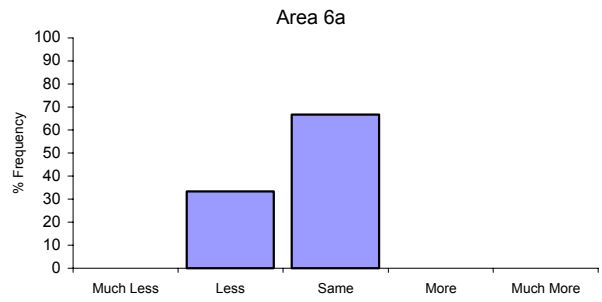
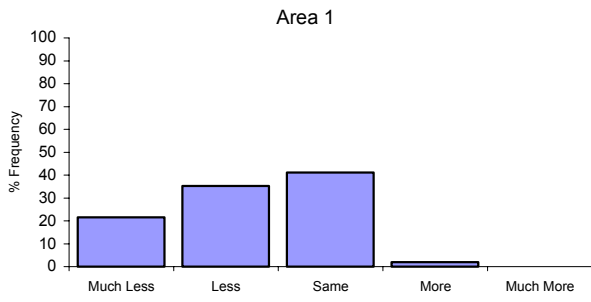
Number of observations				
Area	2002	2003	2004	2005
1	59	49	49	51
2	28	23	23	24
3	39	20	46	37
4	40	20	35	21
5	20	9	8	2
6a	34	29	22	12
6b	34	36	14	12
7	30	31	45	34
8	15	23	25	46
9	0	5	5	11

Note in 2002 area 6 was not split into a & b, so the data have been presented twice.

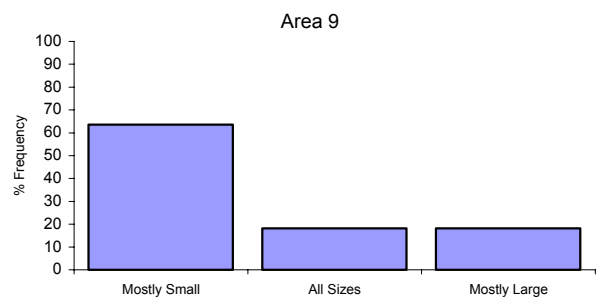
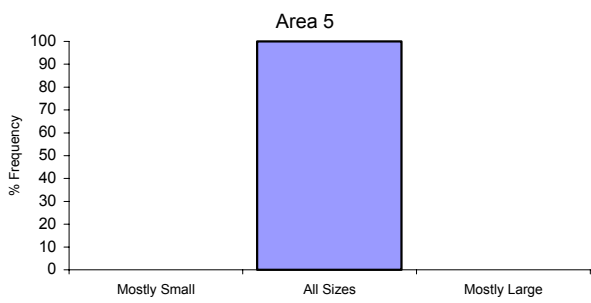
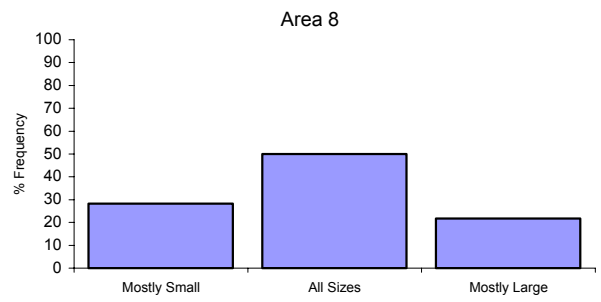
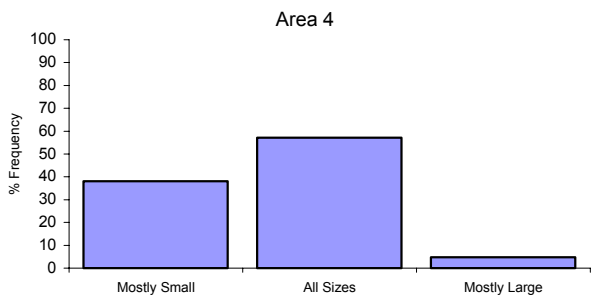
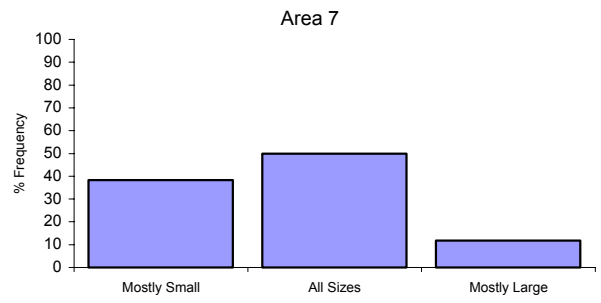
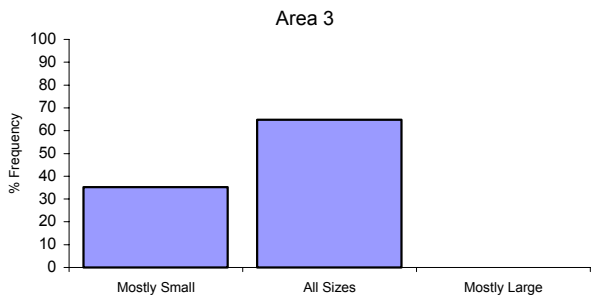
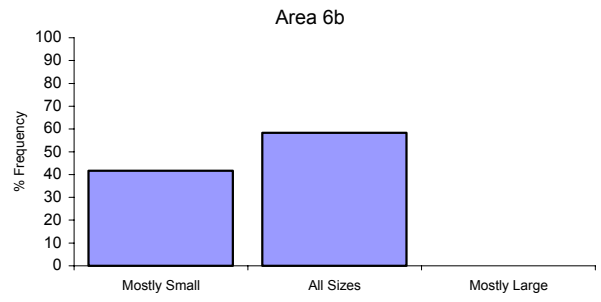
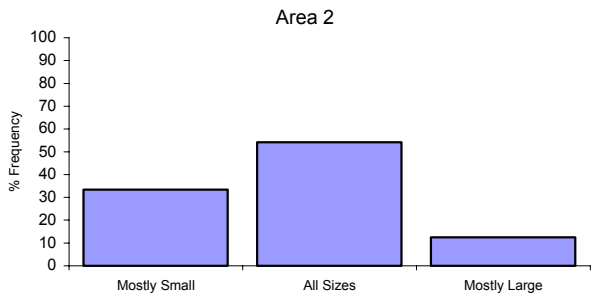
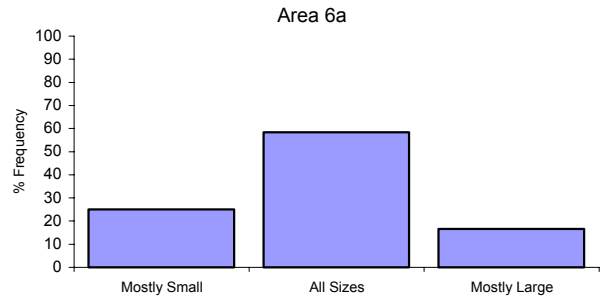
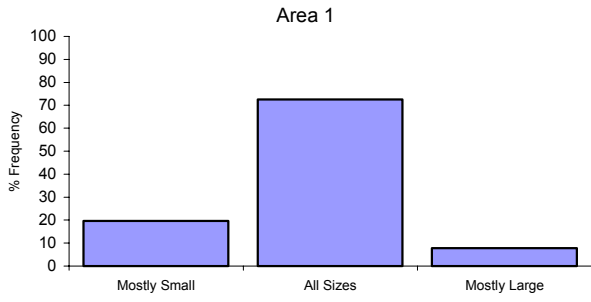
Haddock Abundance 2005



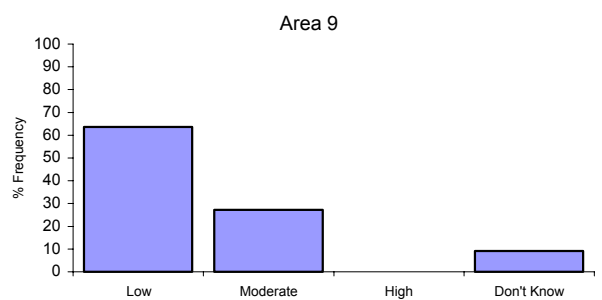
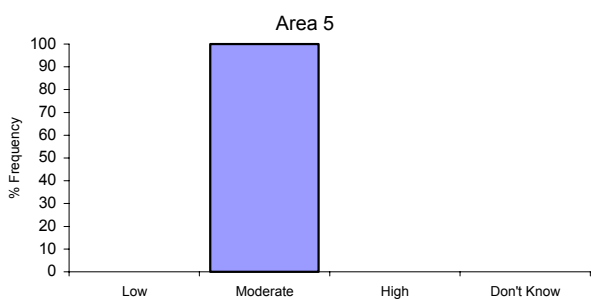
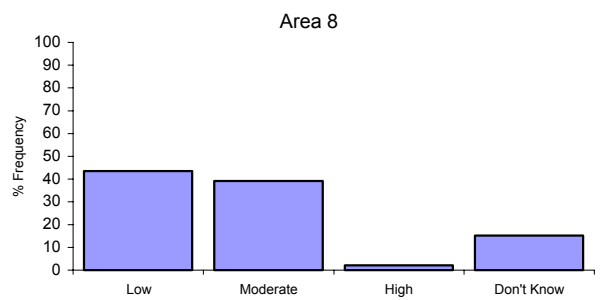
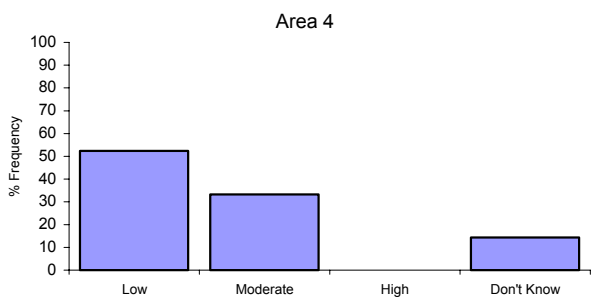
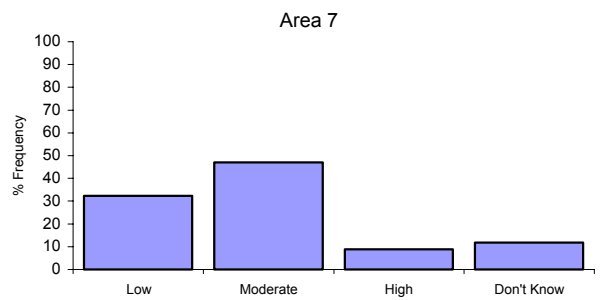
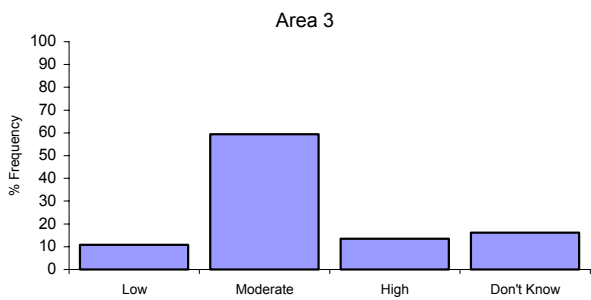
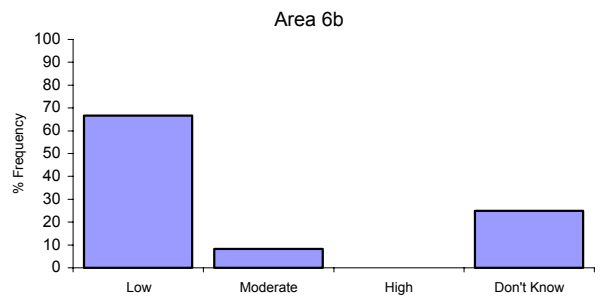
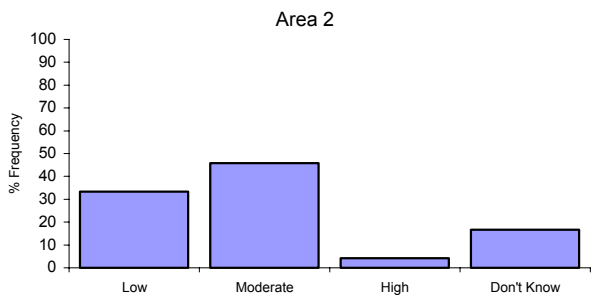
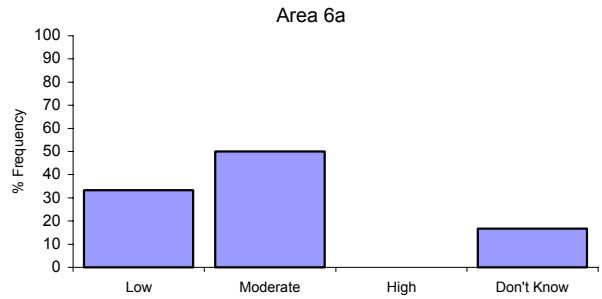
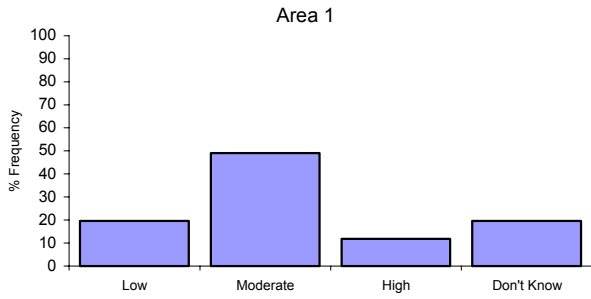
Haddock Discards 2005



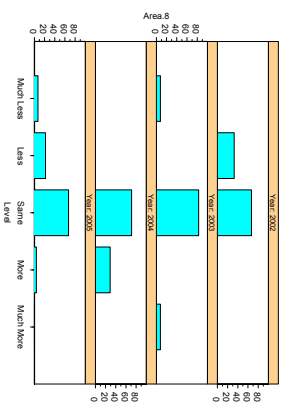
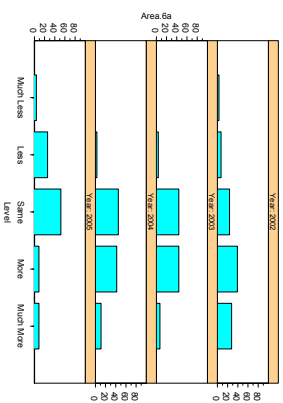
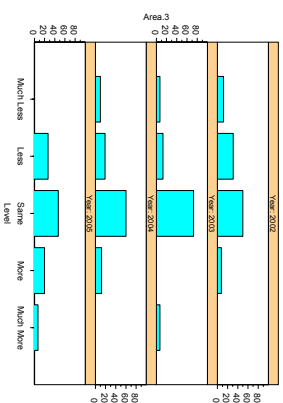
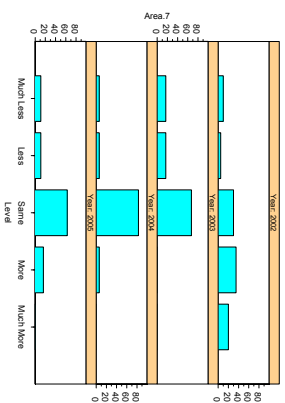
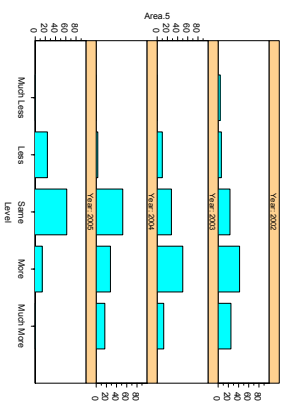
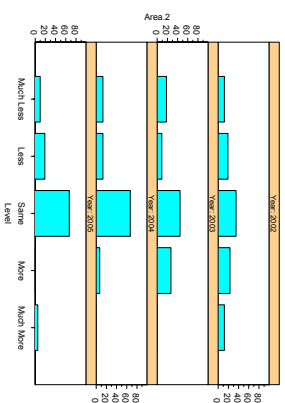
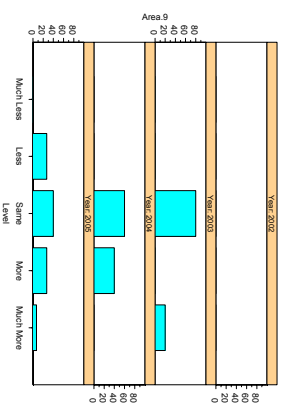
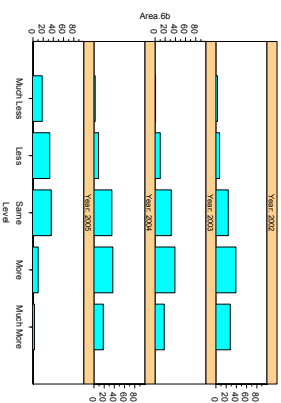
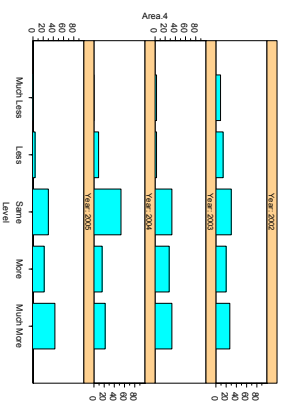
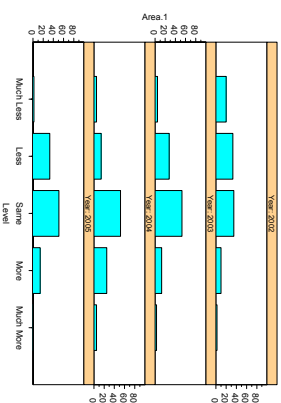
Haddock Size 2005



Haddock Recruits 2005



North Sea Stock Survey Abundance Time Series 2005 Whiting

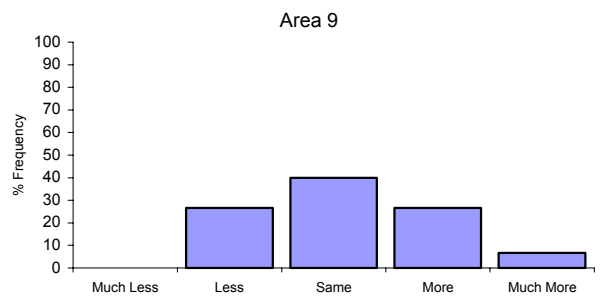
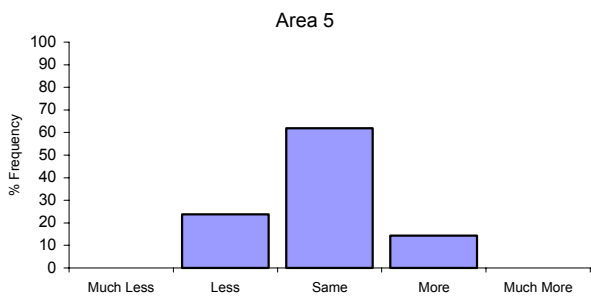
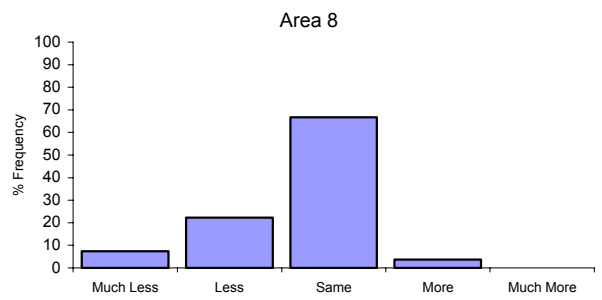
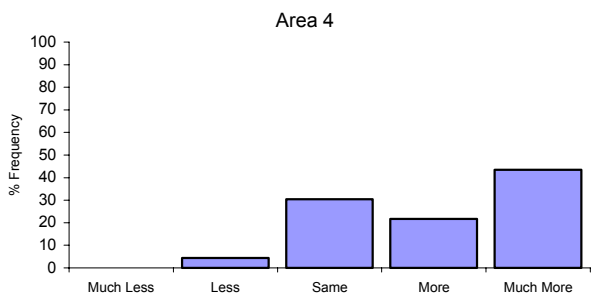
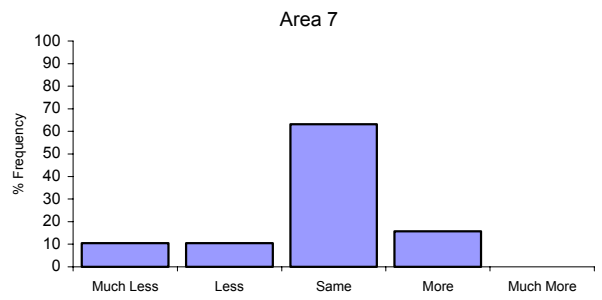
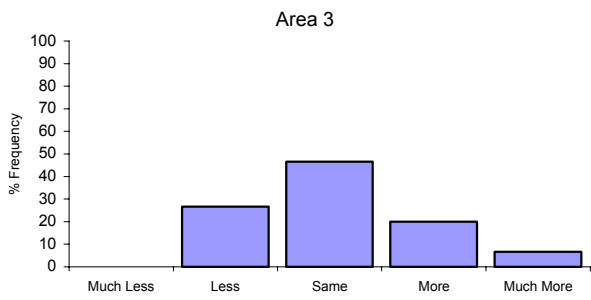
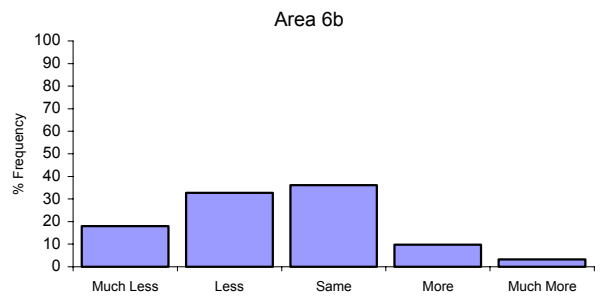
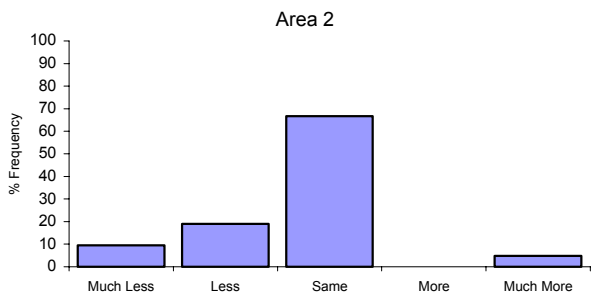
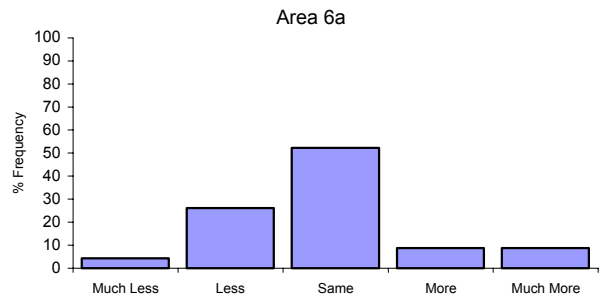
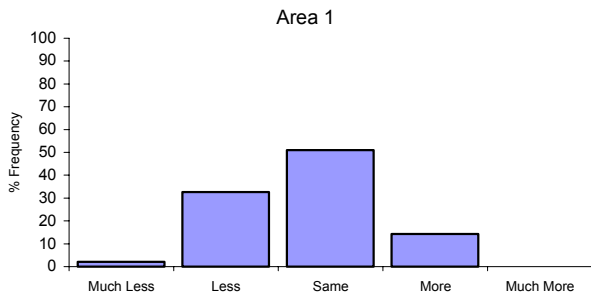


Number of observations

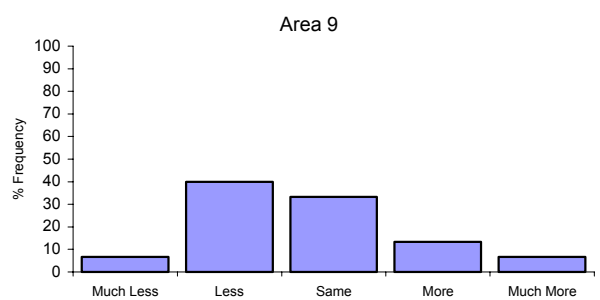
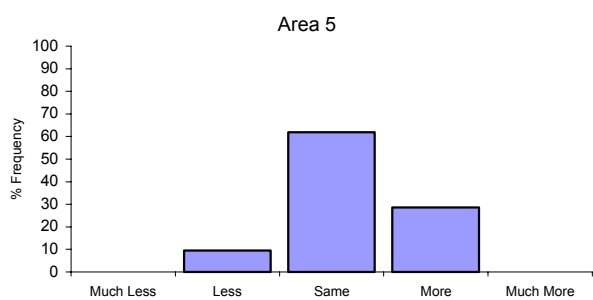
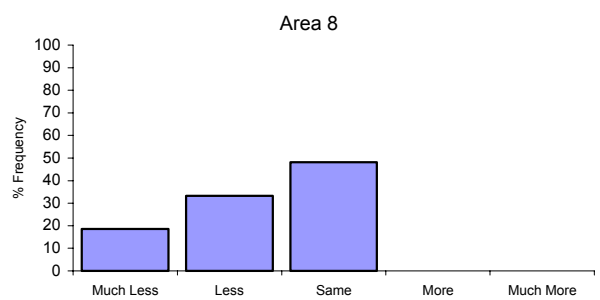
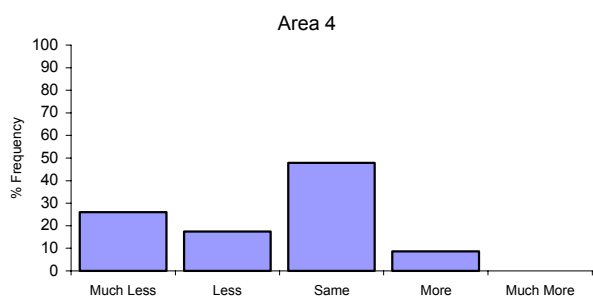
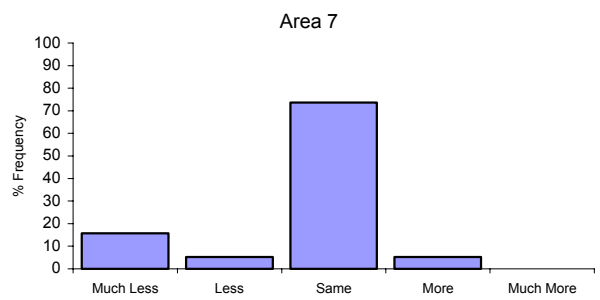
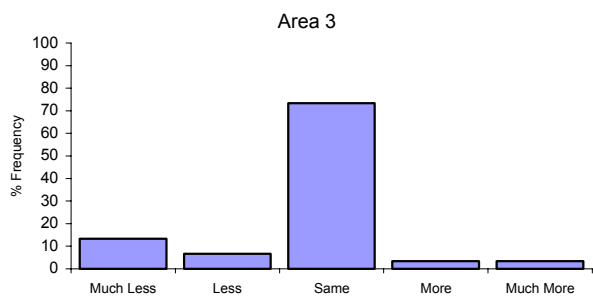
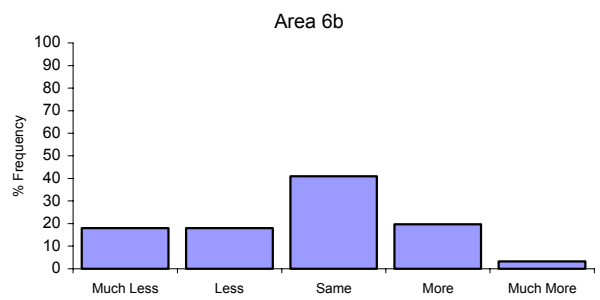
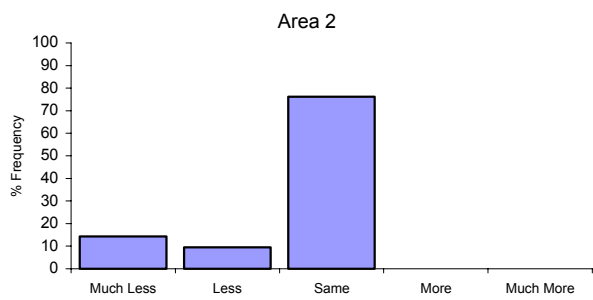
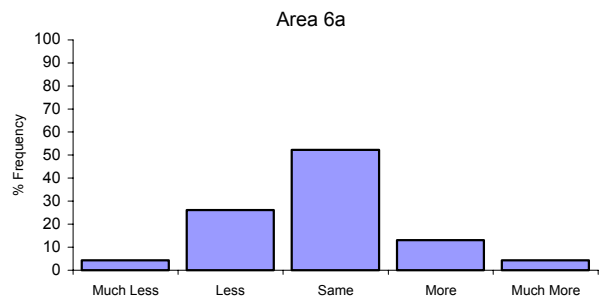
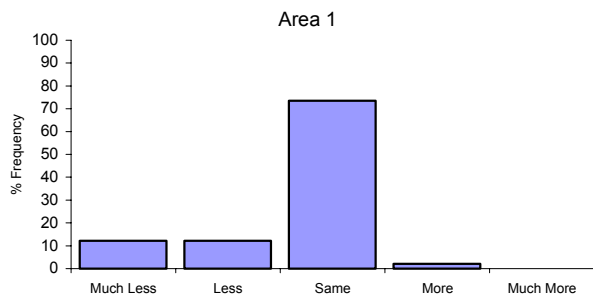
Area	2002	2003	2004	2005
1	49	41	44	49
2	26	12	15	21
3	26	16	42	30
4	44	45	32	23
5	77	44	29	21
6a	147	28	28	23
6b	147	85	57	61
7	20	6	18	19
8	3	12	14	27
9	0	5	5	15

Note in 2002 area 6 was not split into a & b, so the data have been presented twice.

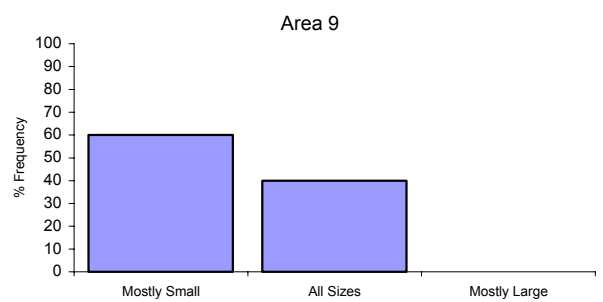
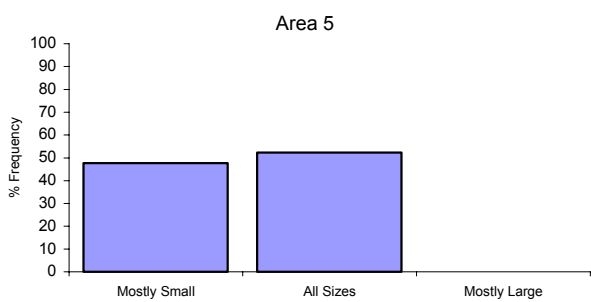
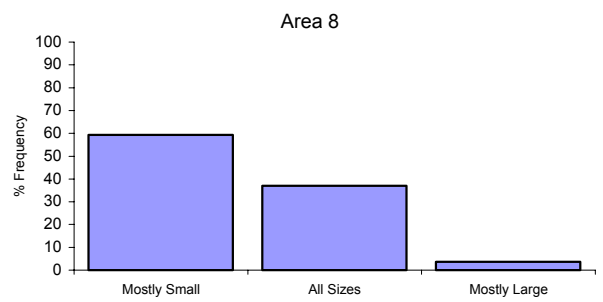
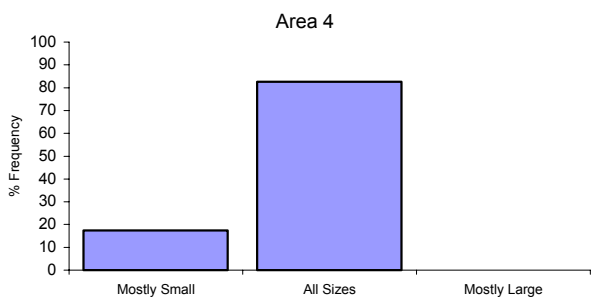
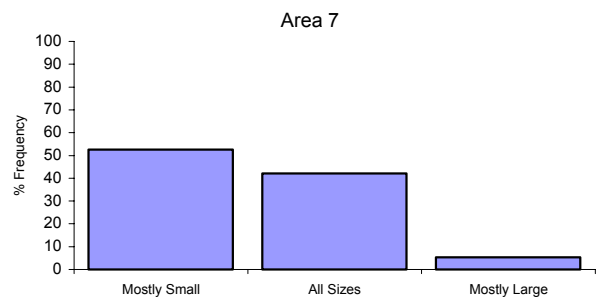
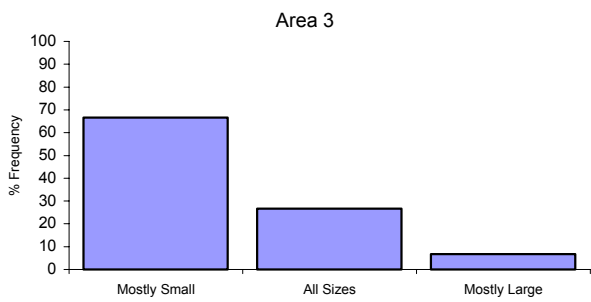
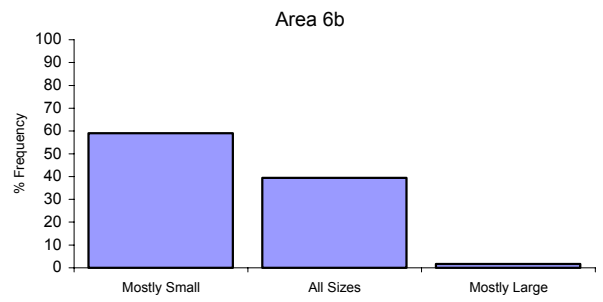
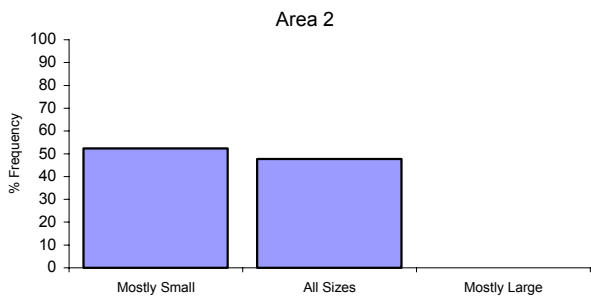
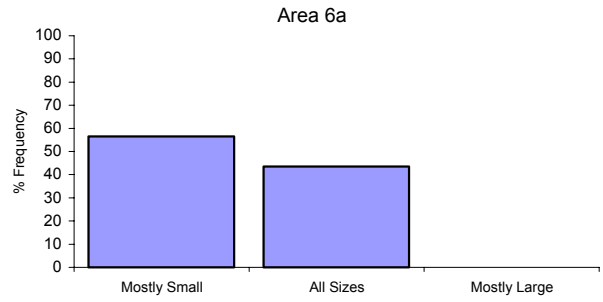
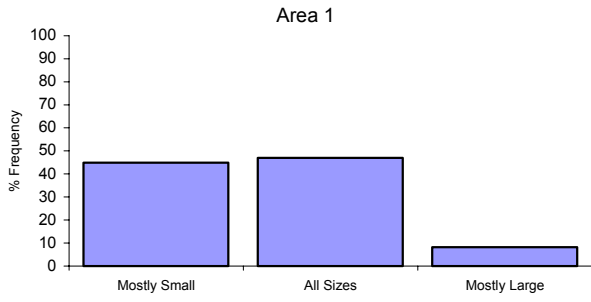
Abundance 2005 Whiting



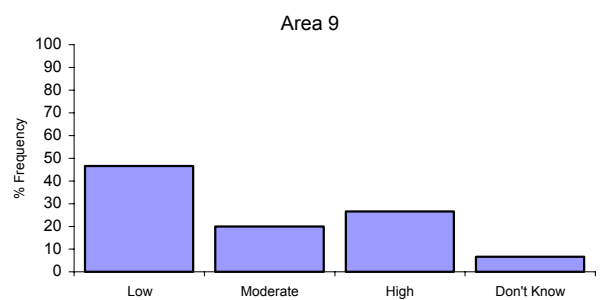
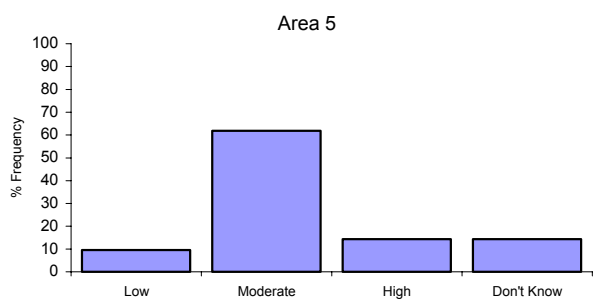
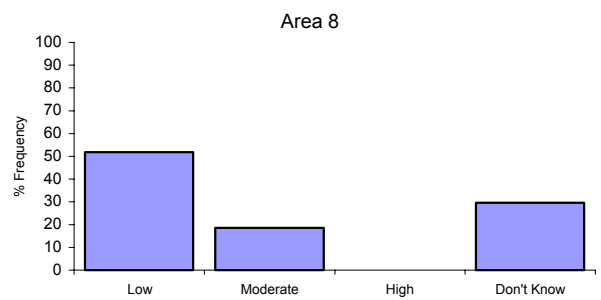
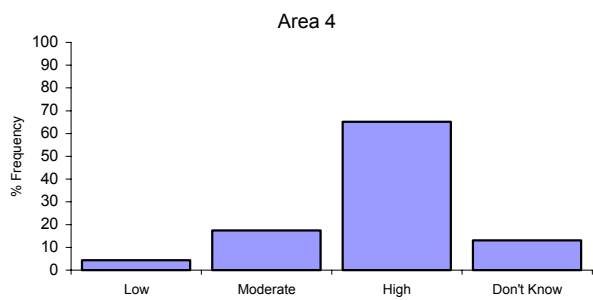
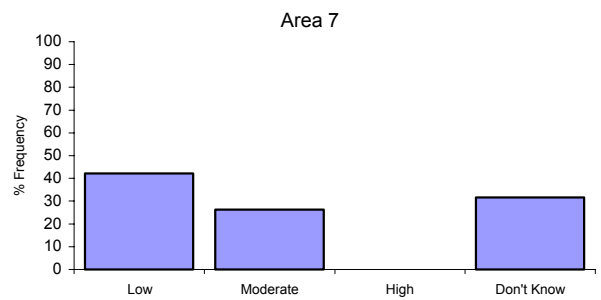
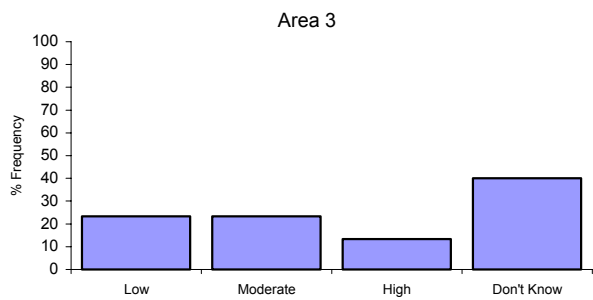
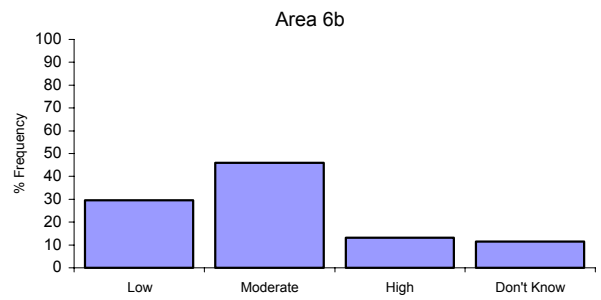
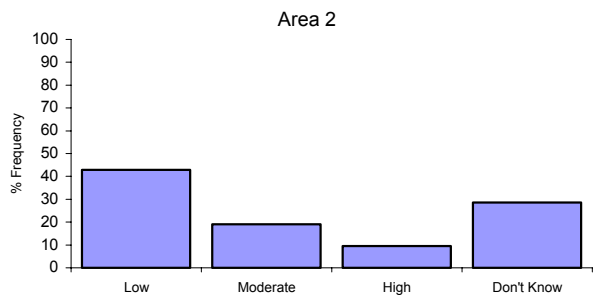
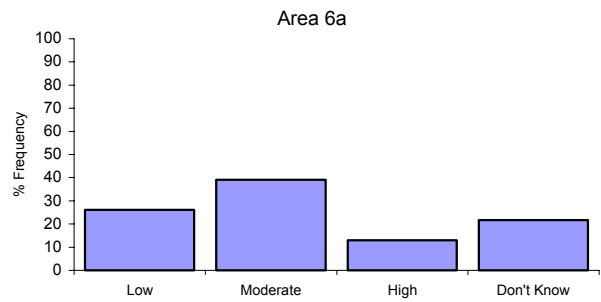
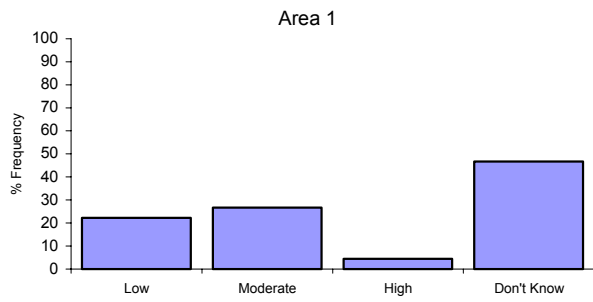
Discards 2005 Whiting

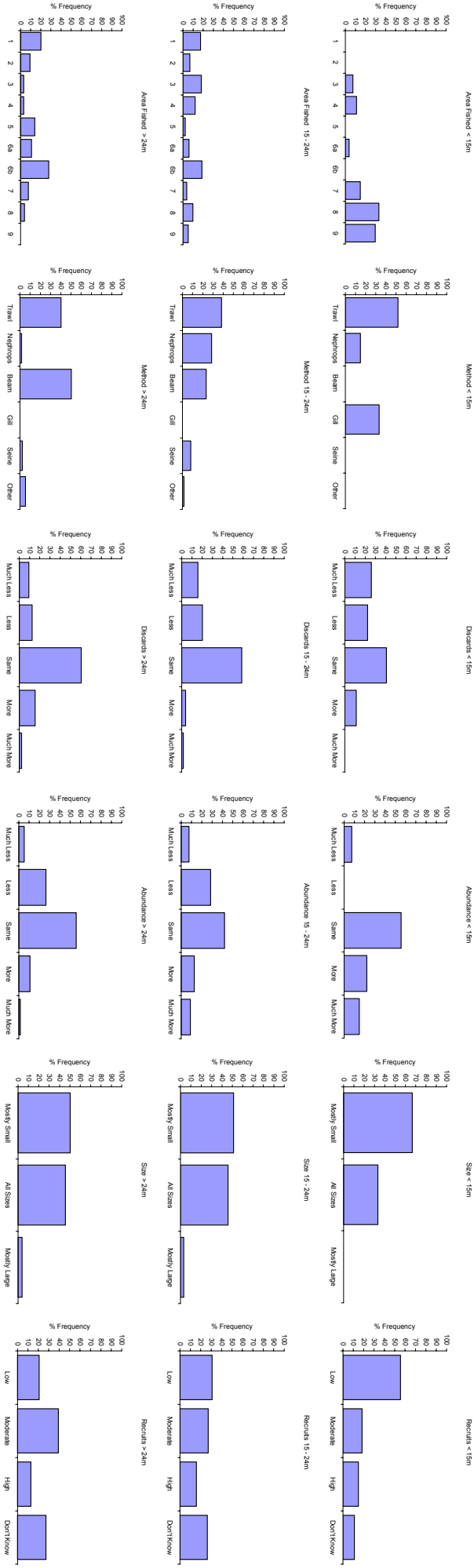


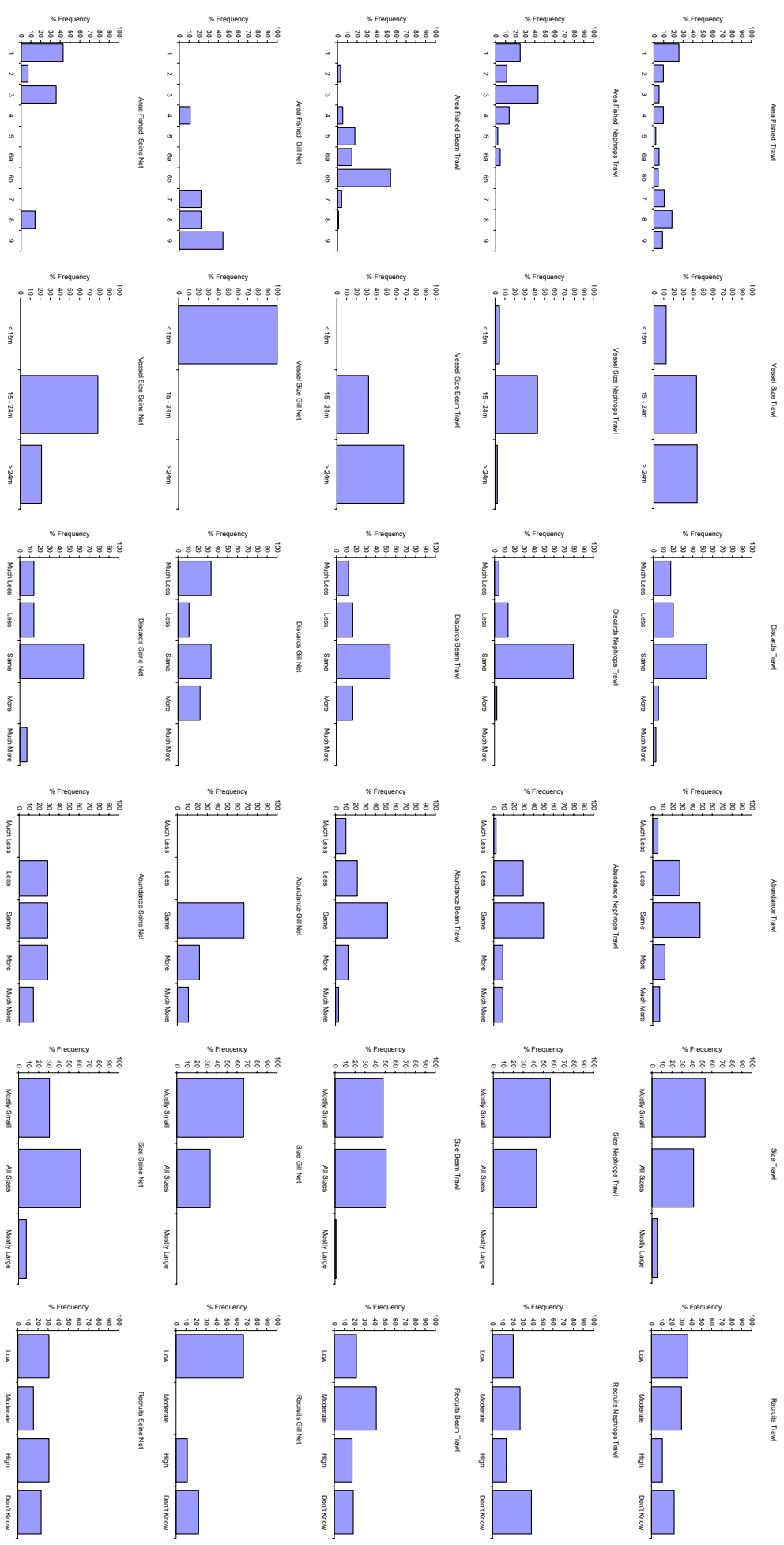
Size 2005 Whiting



Recruits 2005 Whiting

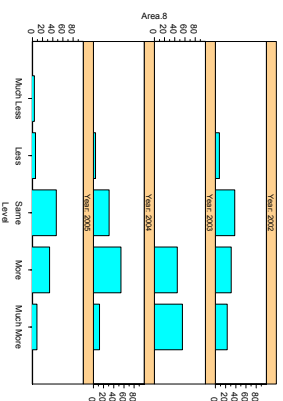
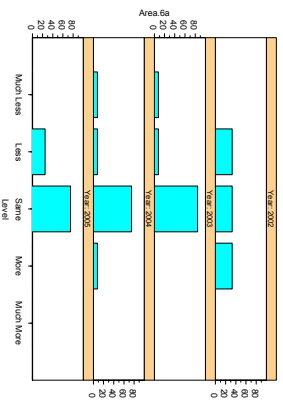
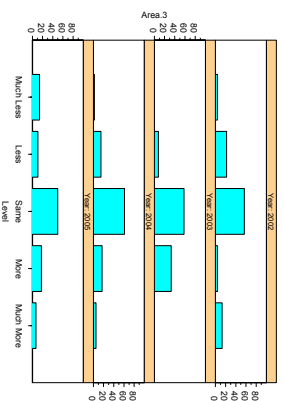
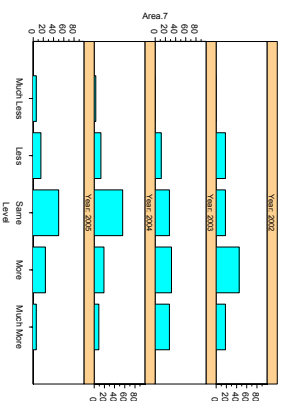
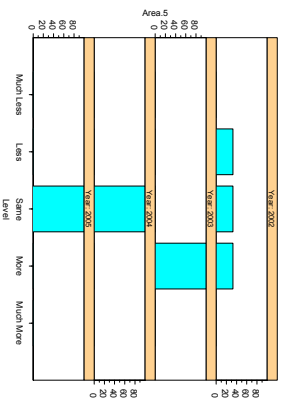
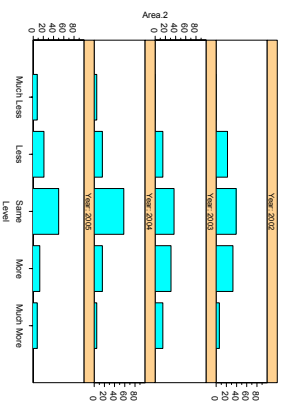
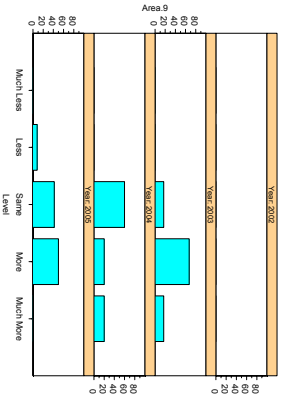
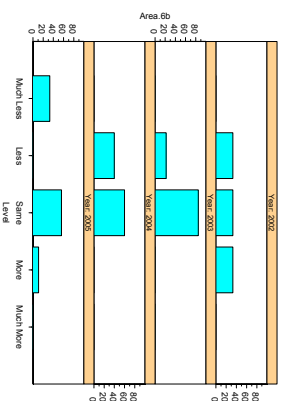
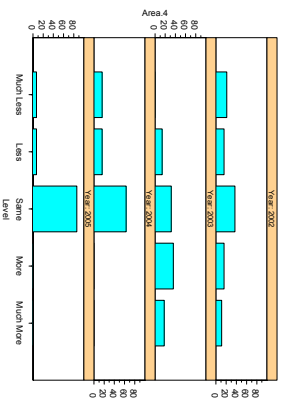
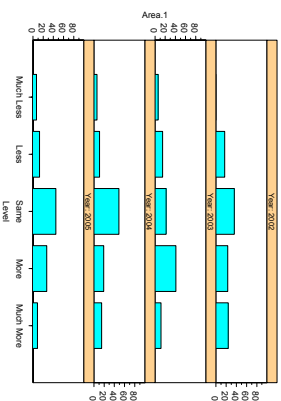






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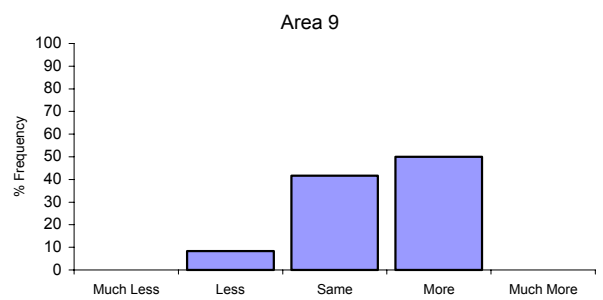
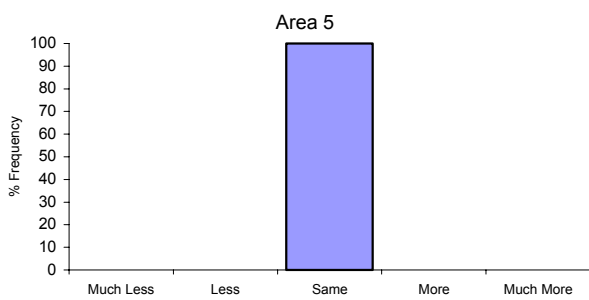
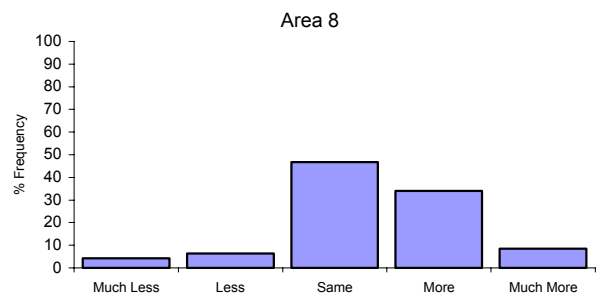
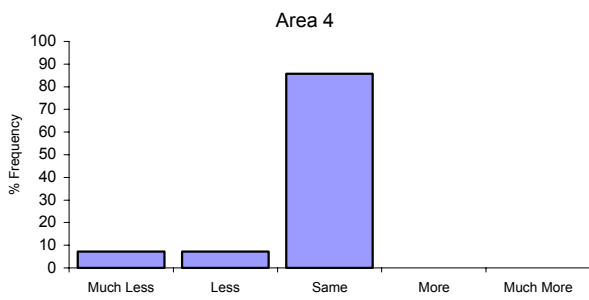
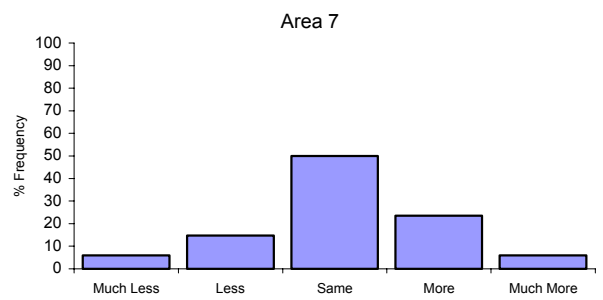
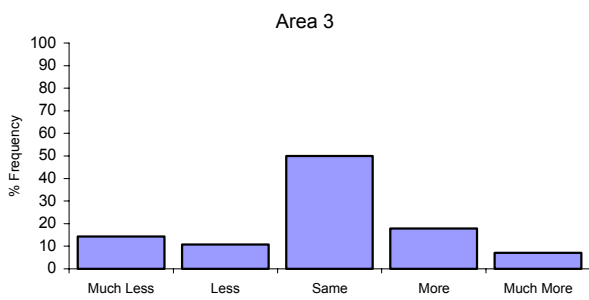
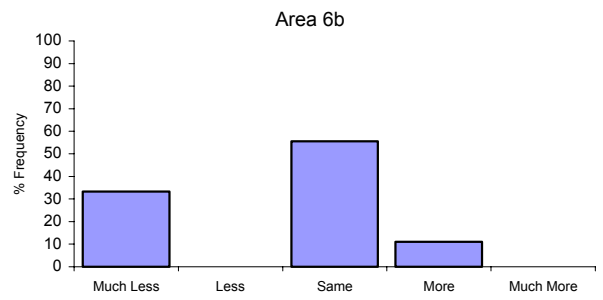
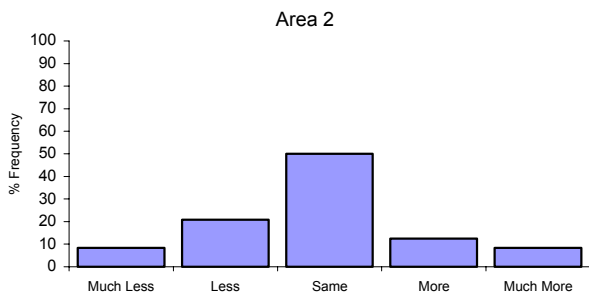
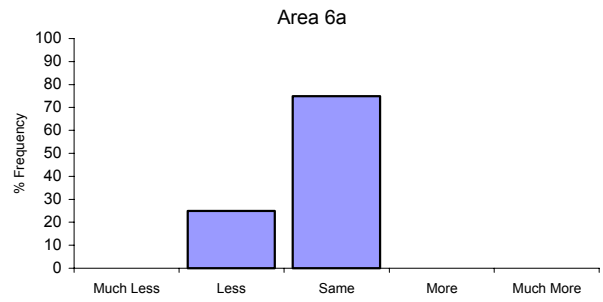
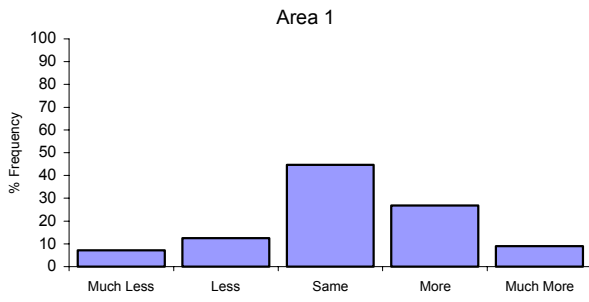


Number of observations

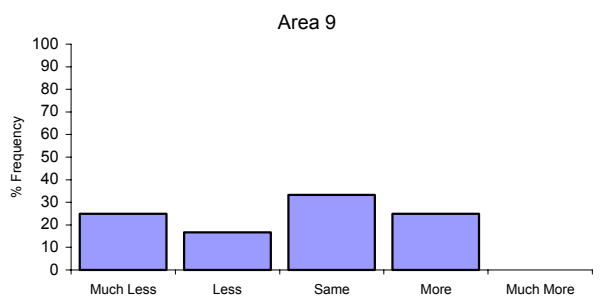
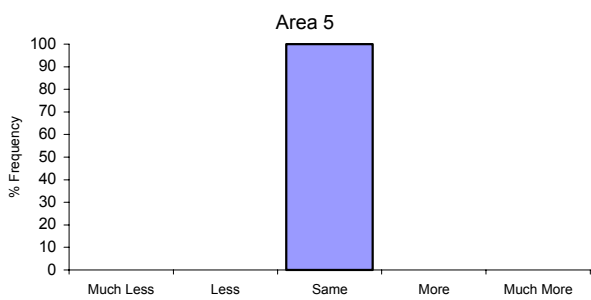
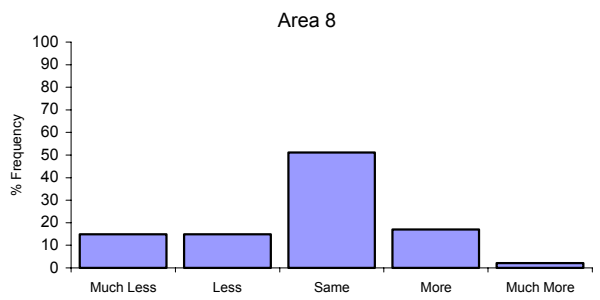
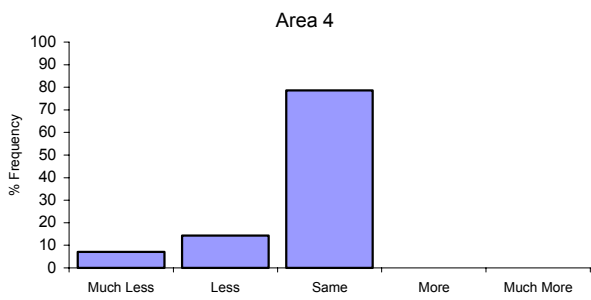
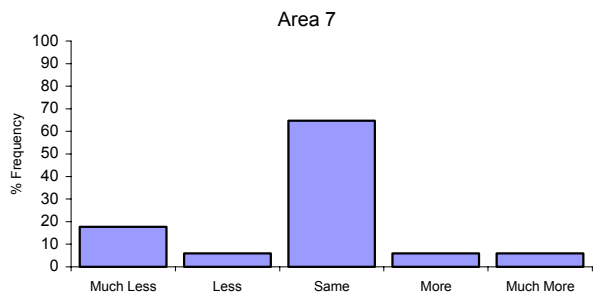
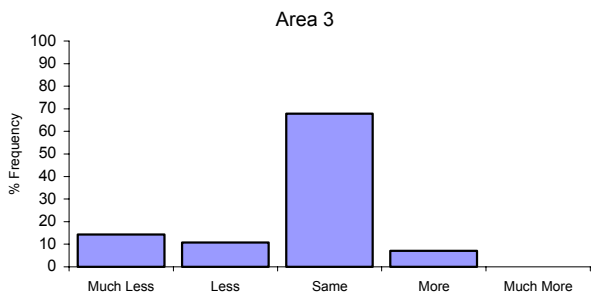
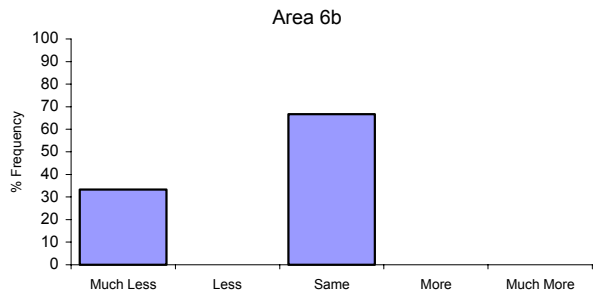
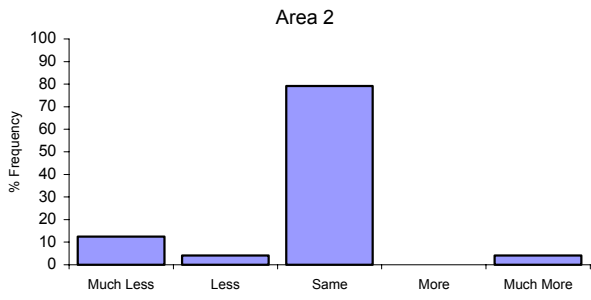
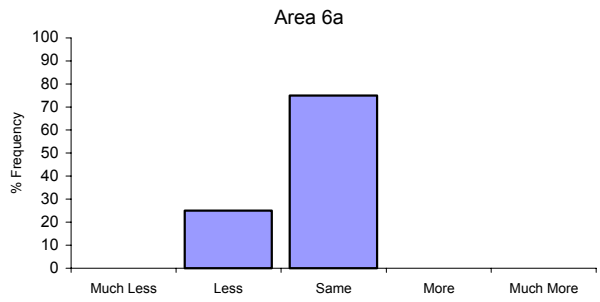
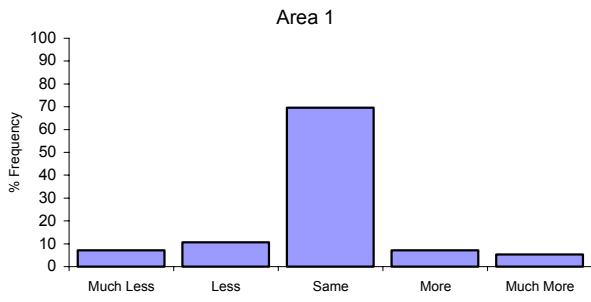
Area	2002	2003	2004	2005
1	70	52	53	56
2	18	13	19	24
3	23	14	41	28
4	19	25	19	14
5	3	2	2	2
6a	6	13	12	8
6b	6	23	5	9
7	11	25	32	34
8	13	22	26	47
9	0	6	5	12

Note in 2002 area 6 was not split into a & b, so the data have been presented twice.

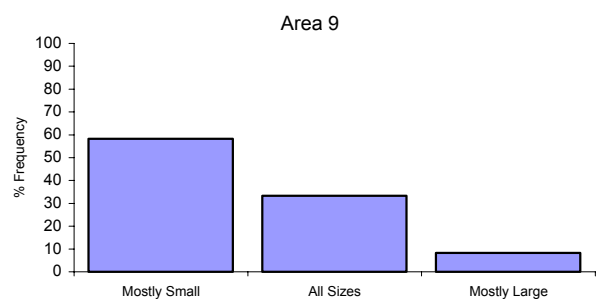
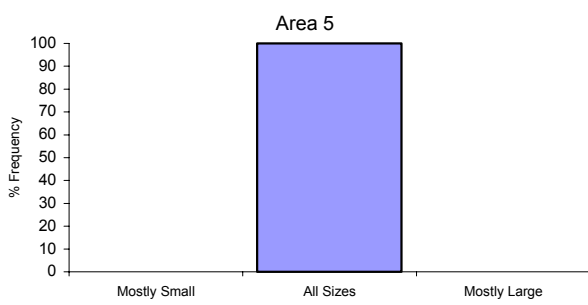
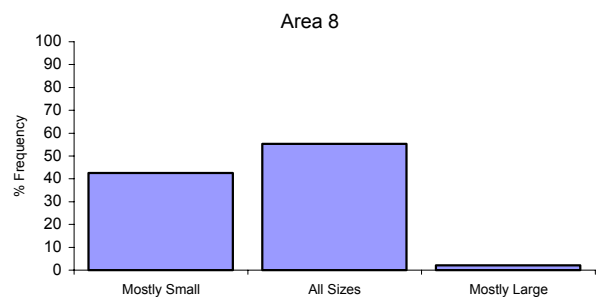
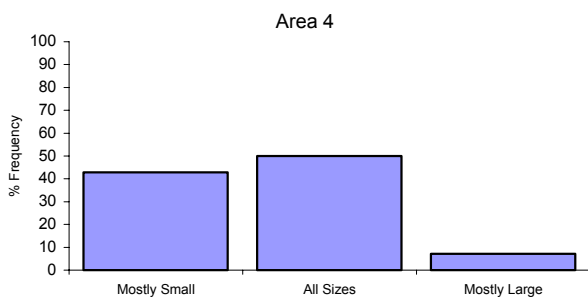
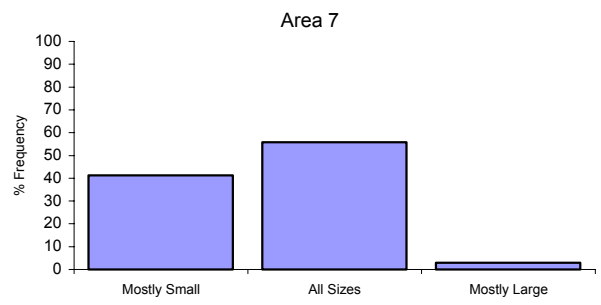
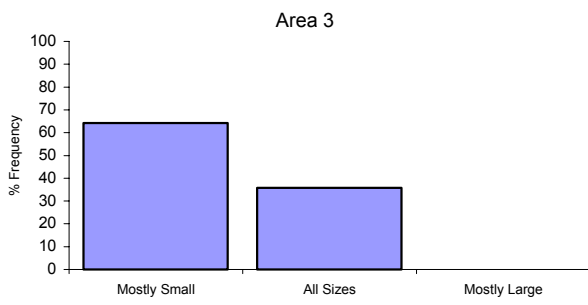
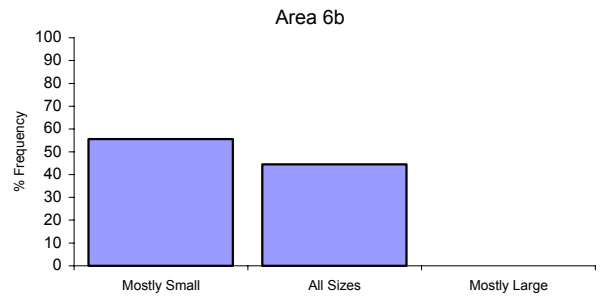
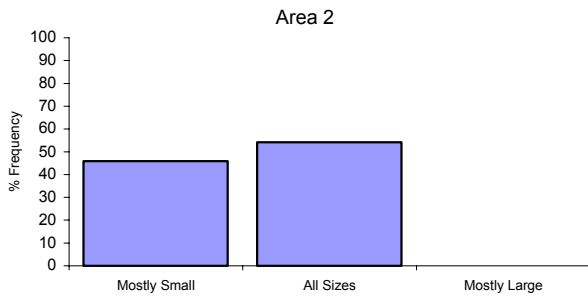
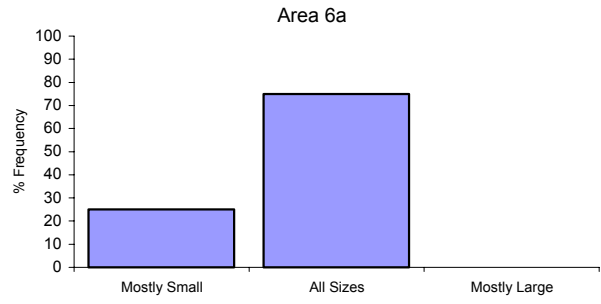
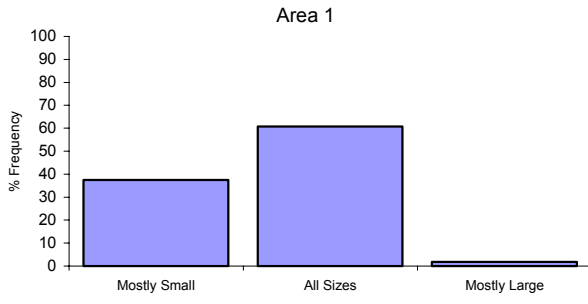
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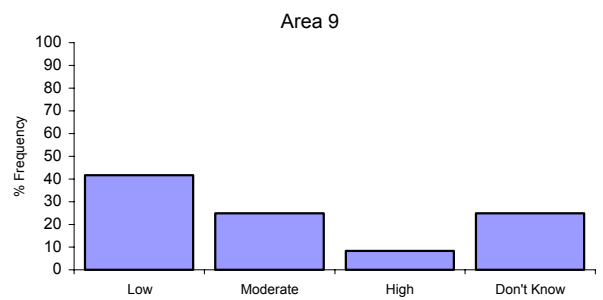
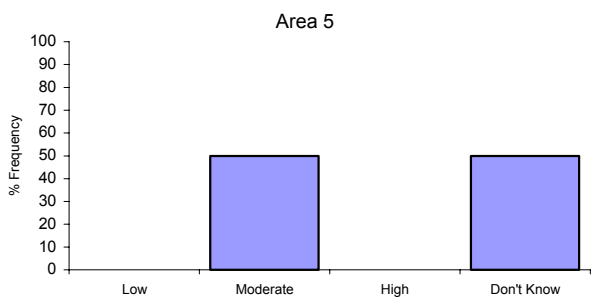
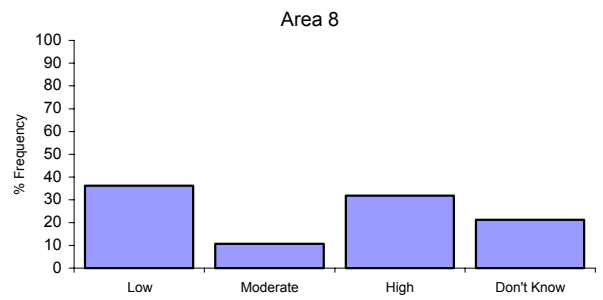
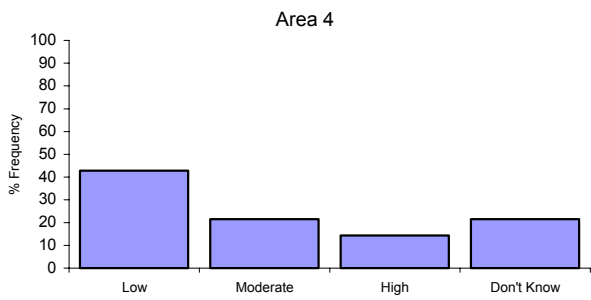
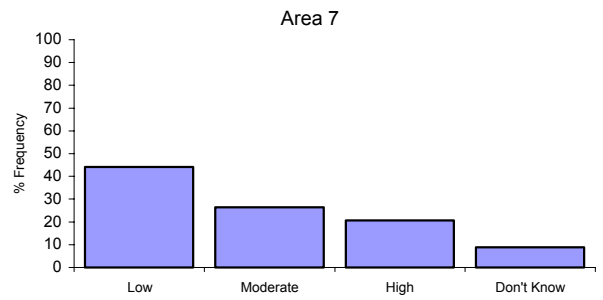
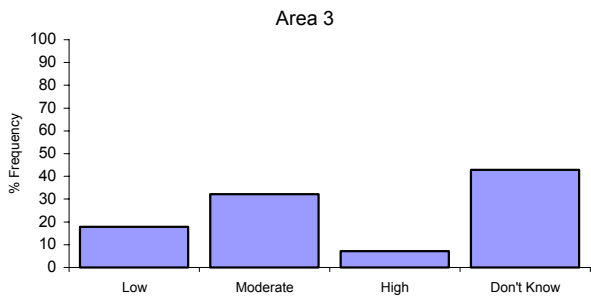
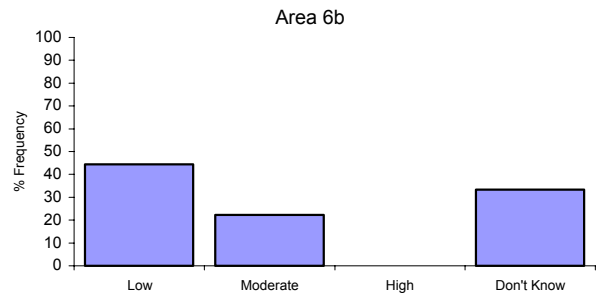
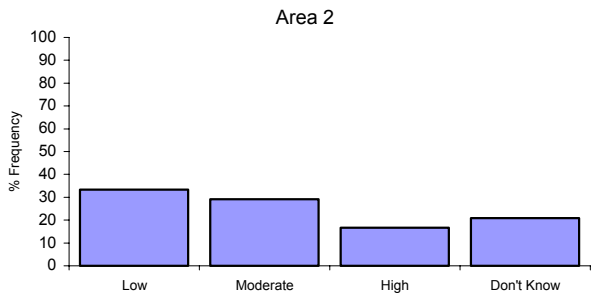
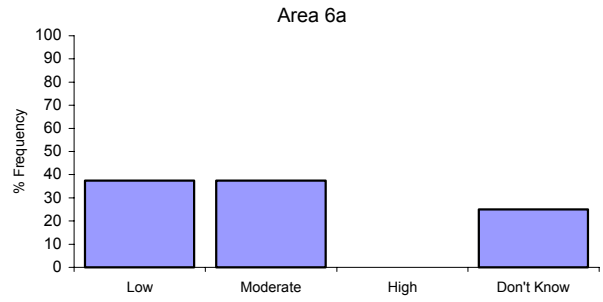
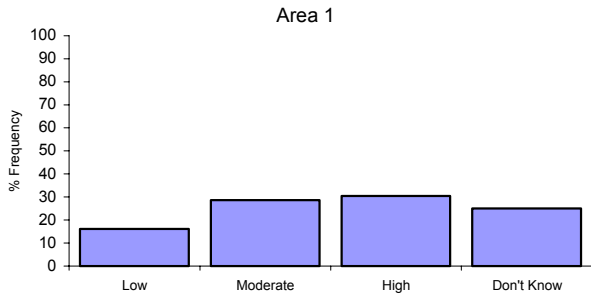
Discards 2005 Saithe

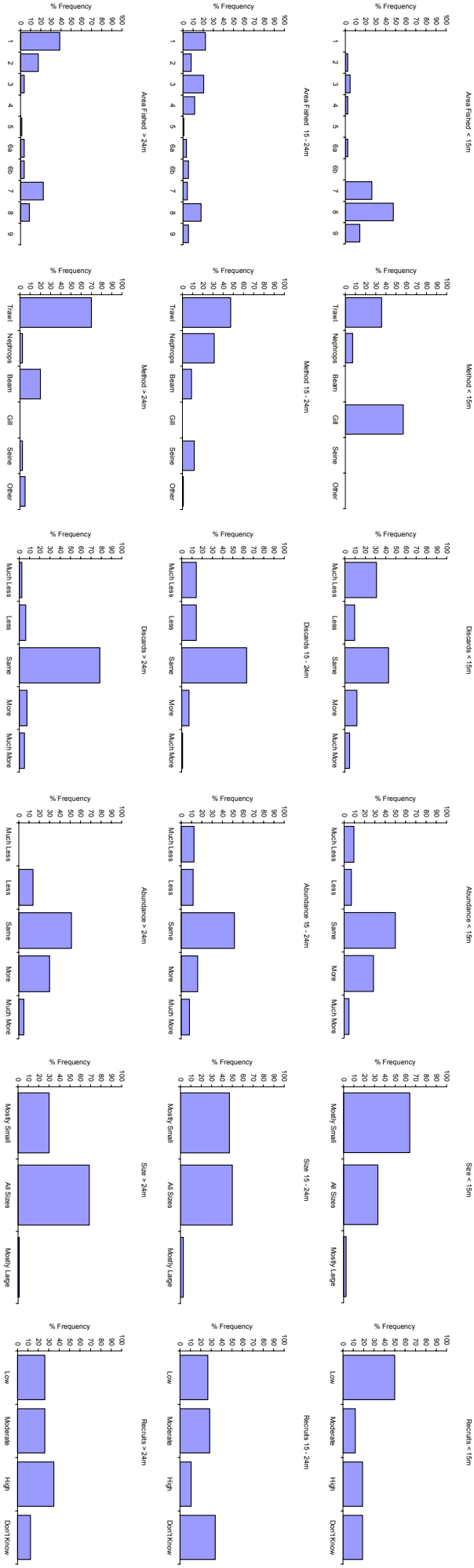


Size 2005 Saithe

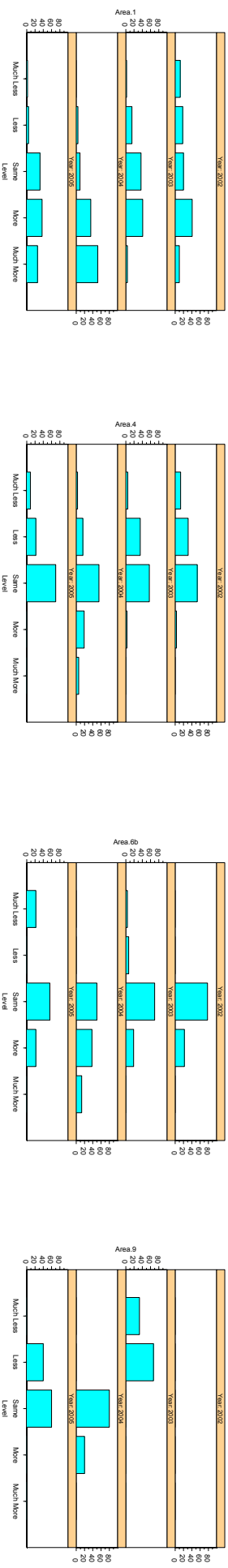


Recruits 2005 Saithe





North Sea Stock Survey Abundance Time Series 2005 Monkfish

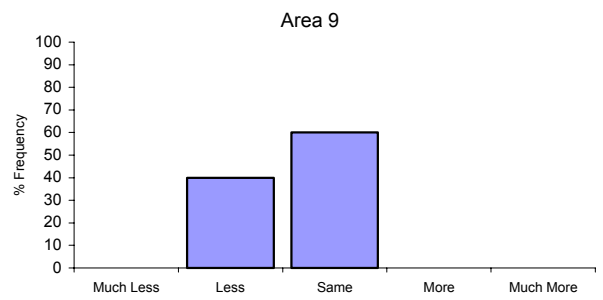
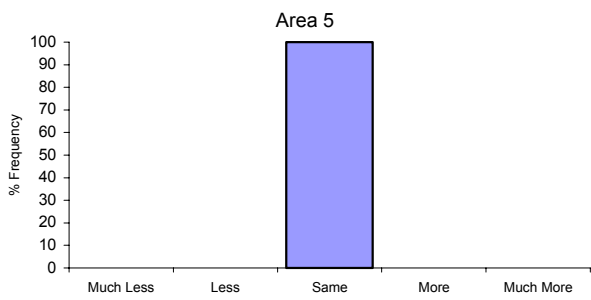
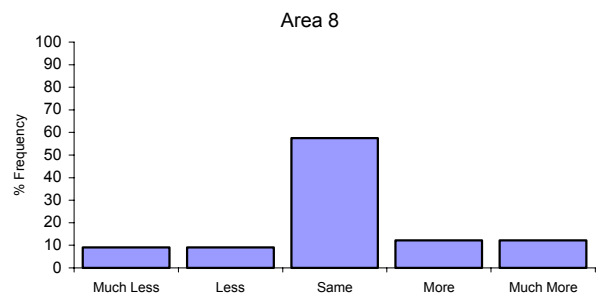
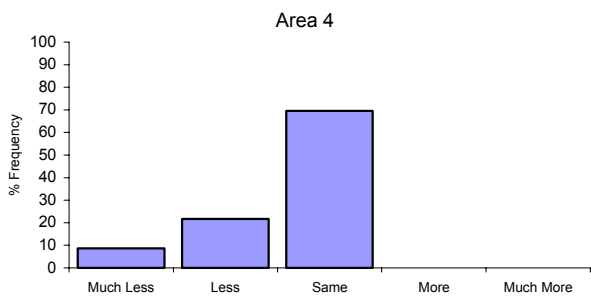
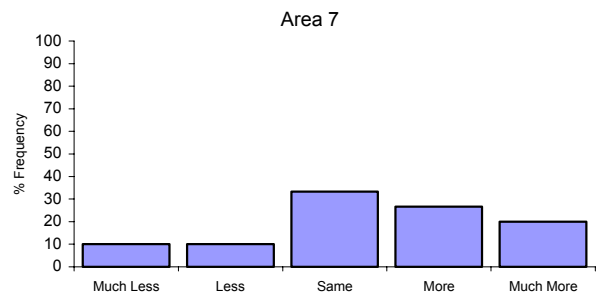
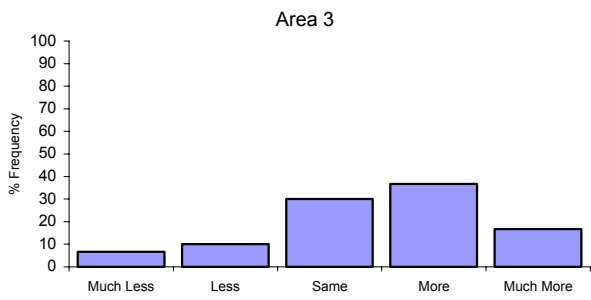
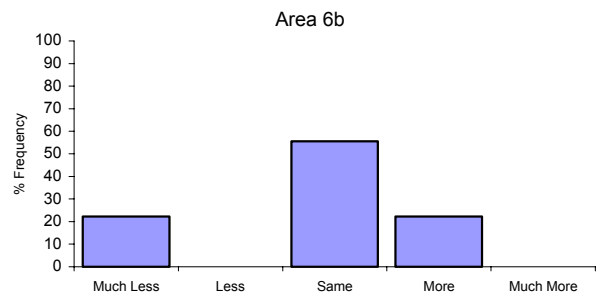
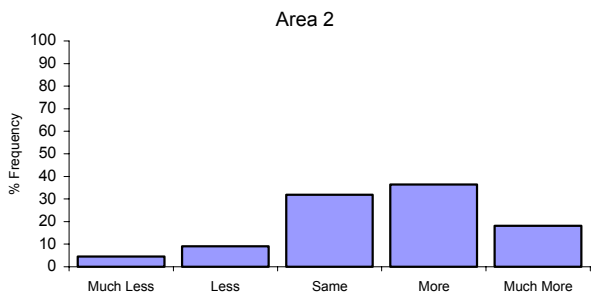
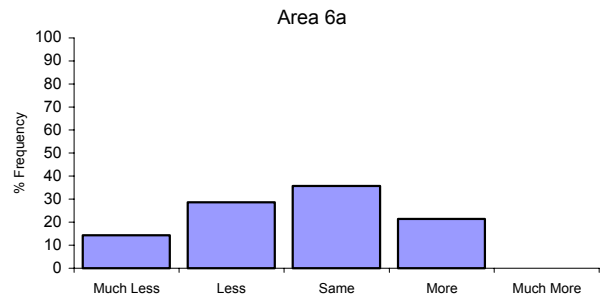
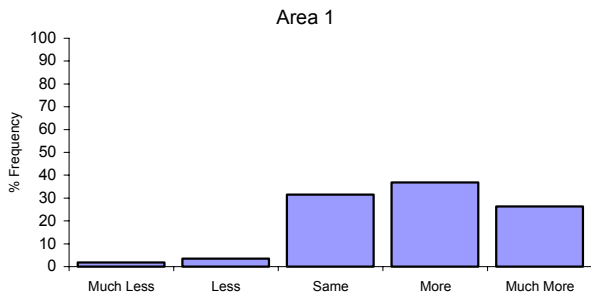


Number of observations

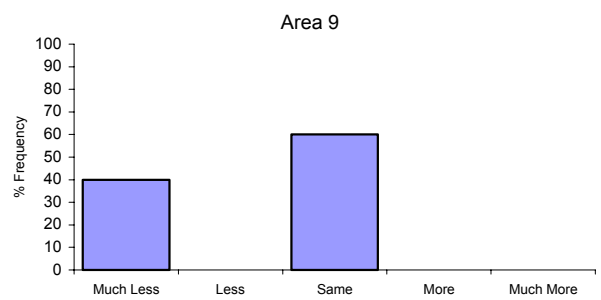
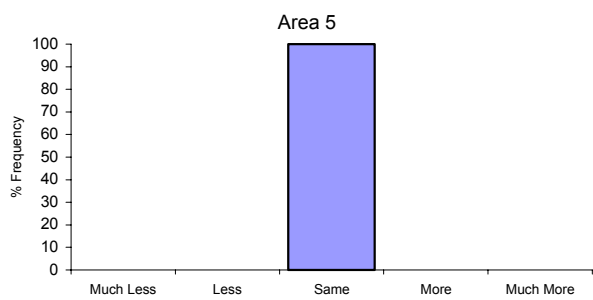
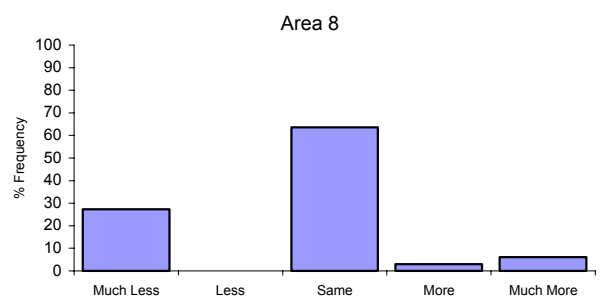
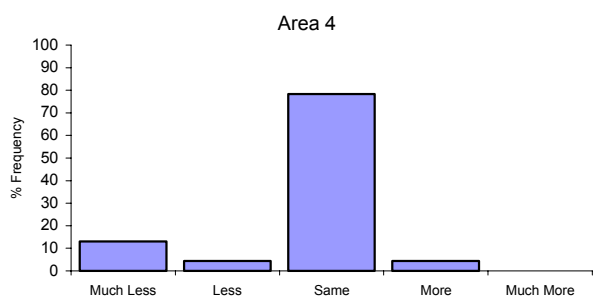
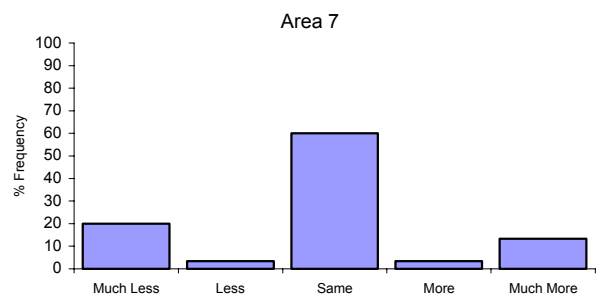
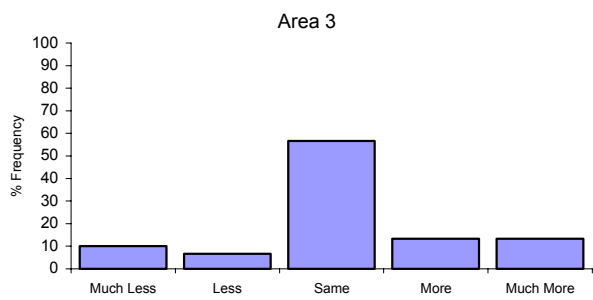
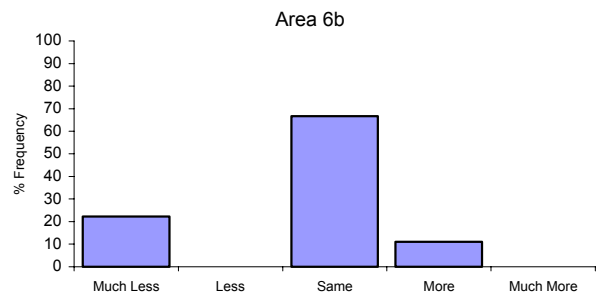
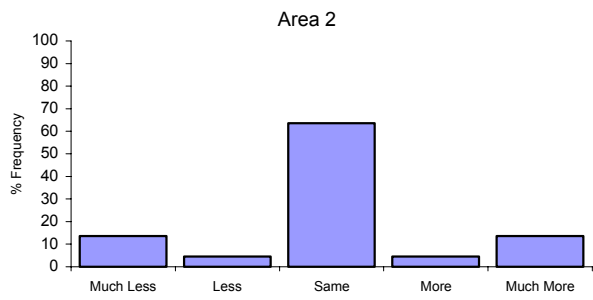
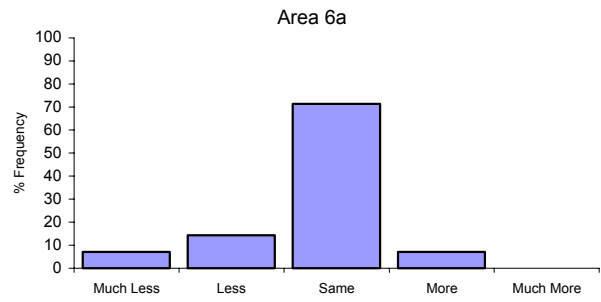
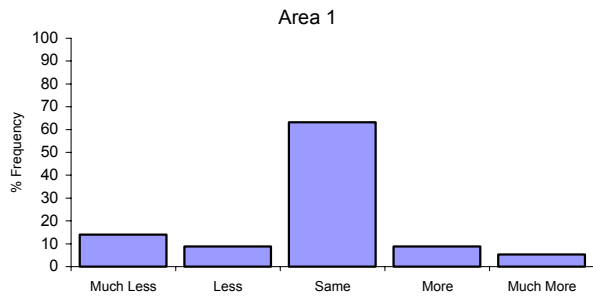
Area	2002	2003	2004	2005
1	51	50	54	57
2	13	21	22	22
3	28	22	39	30
4	32	41	31	23
5	4	7	5	2
6a	9	17	21	14
6b	9	27	8	9
7	4	26	39	30
8	1	18	20	33
9	0	4	5	5

Note in 2002 area 6 was not split into a & b, so the data have been presented twice.

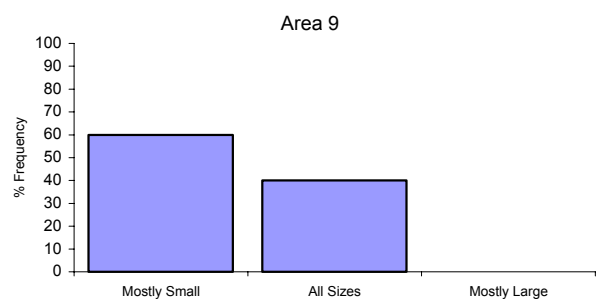
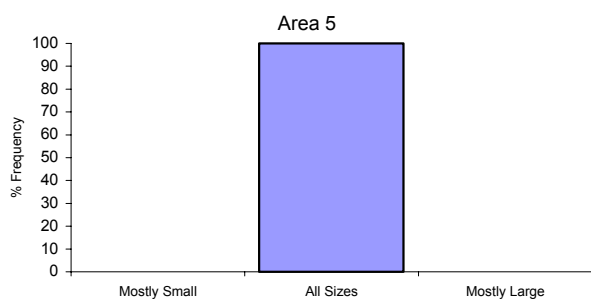
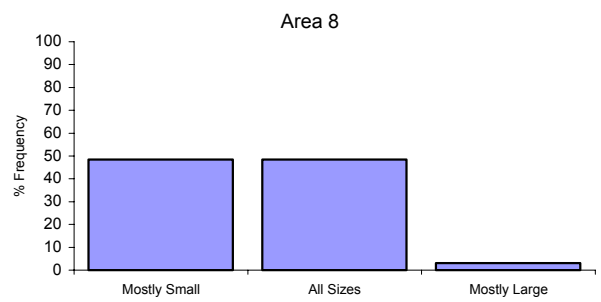
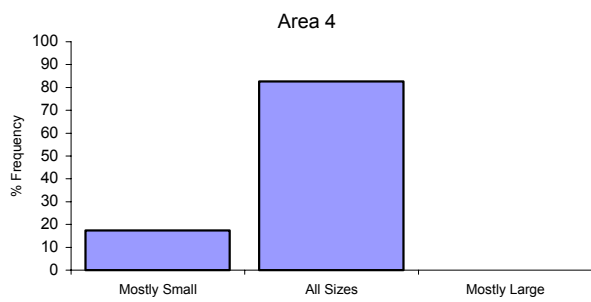
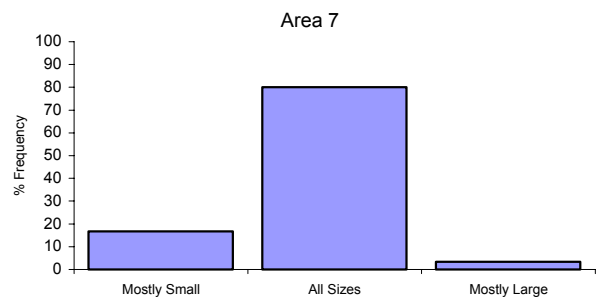
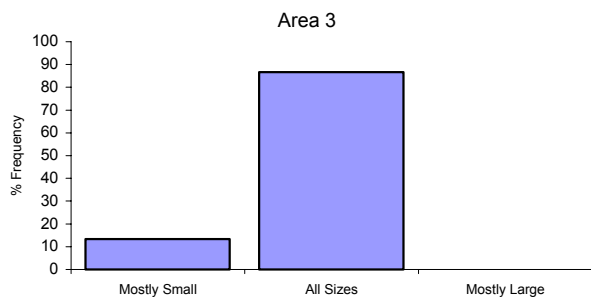
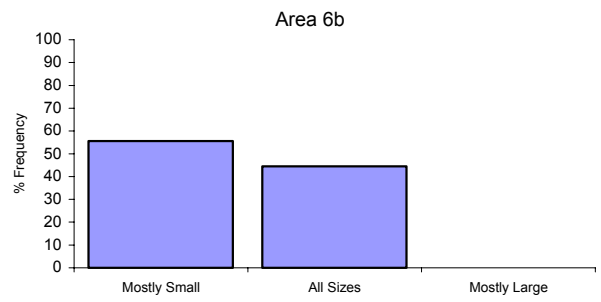
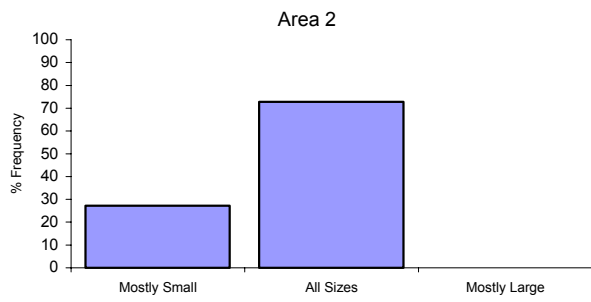
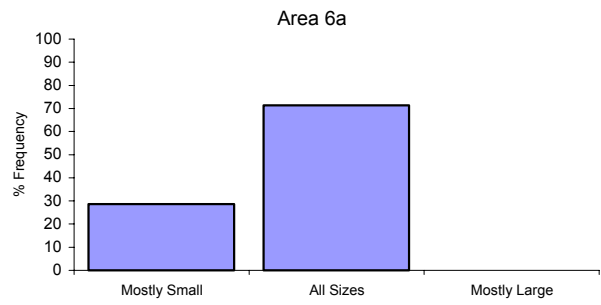
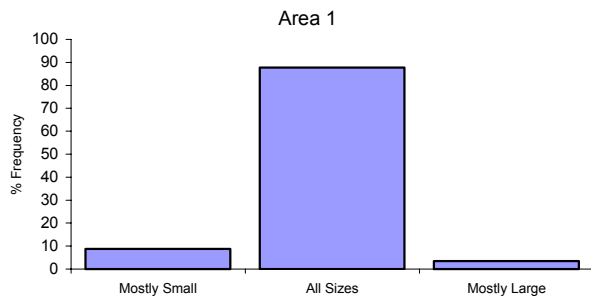
Monkfish Abundance 2005



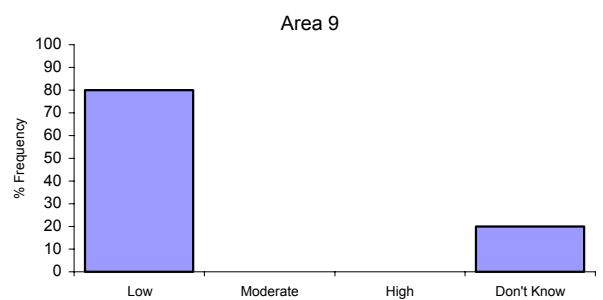
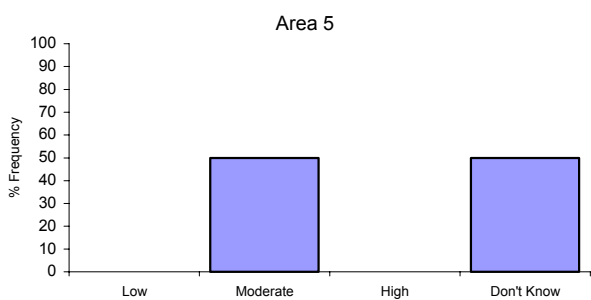
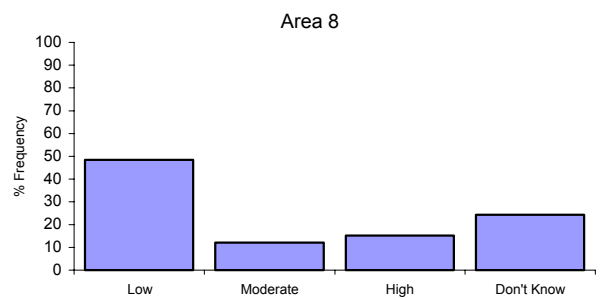
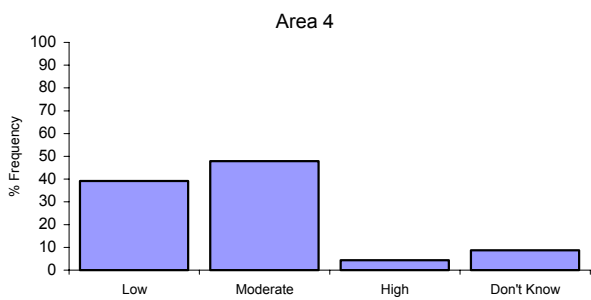
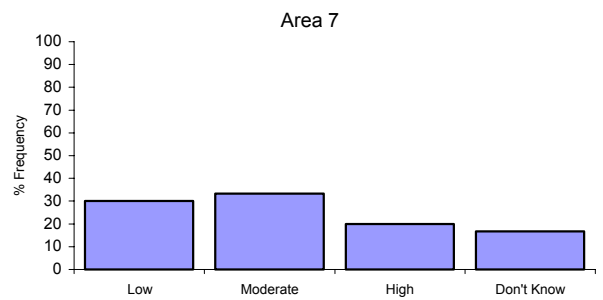
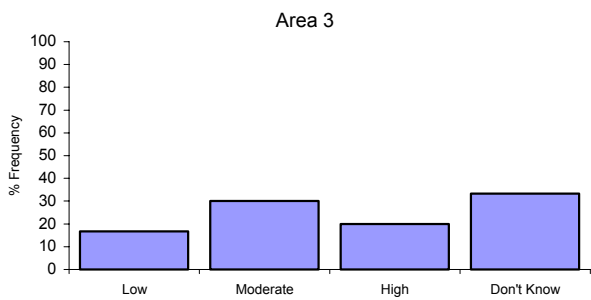
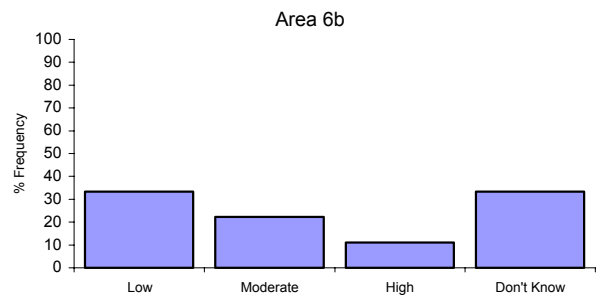
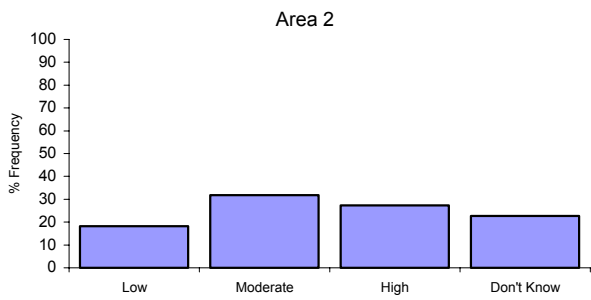
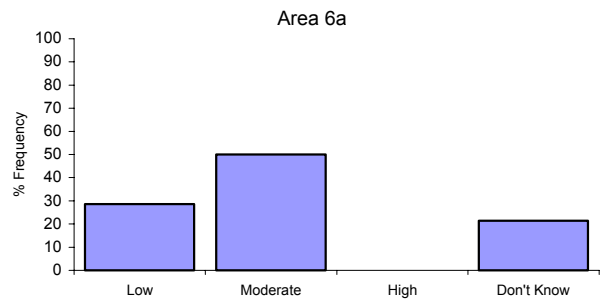
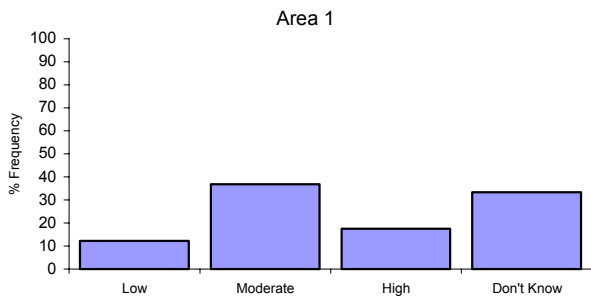
Monkfish Discards 2005

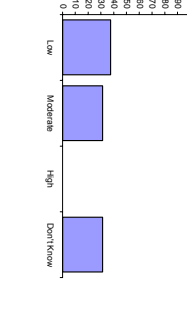
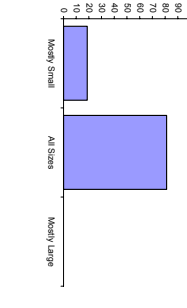
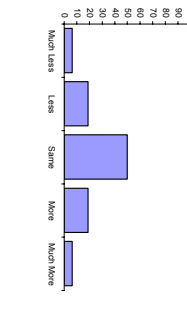
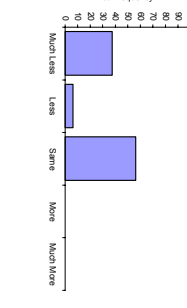
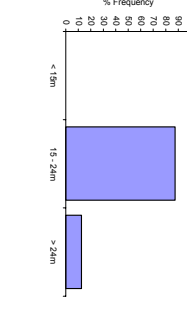
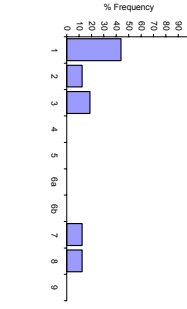
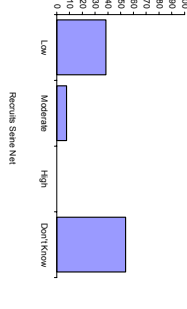
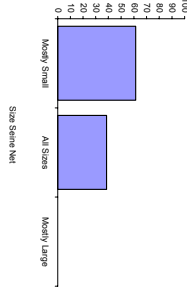
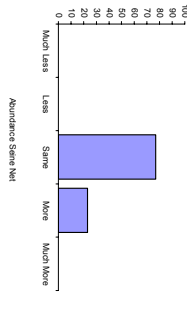
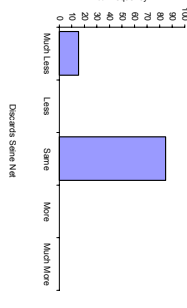
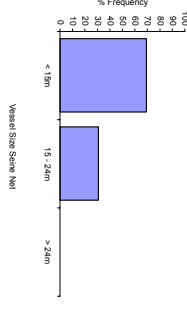
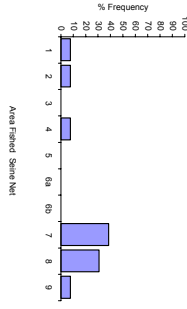
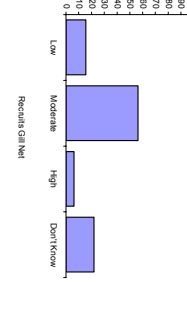
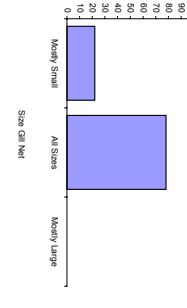
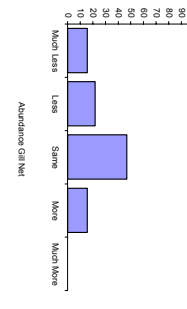
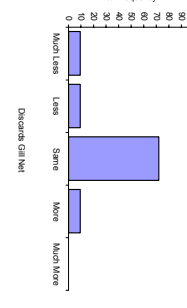
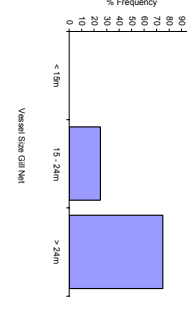
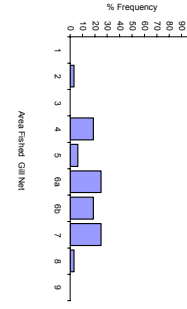
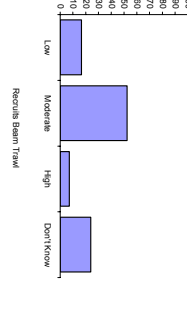
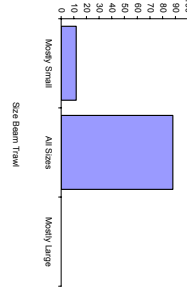
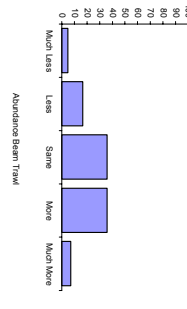
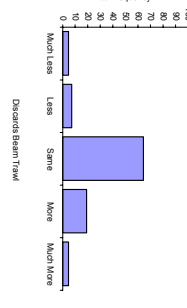
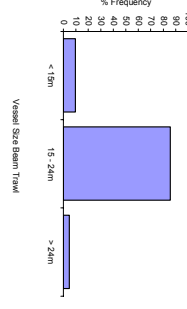
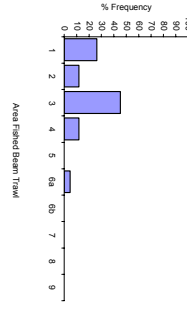
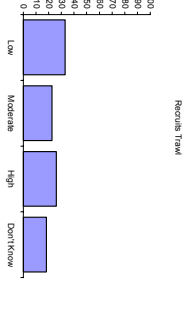
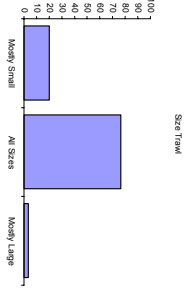
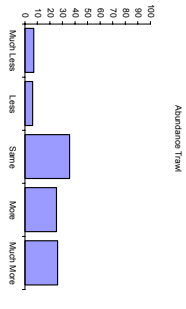
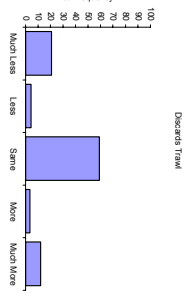
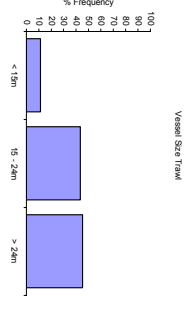
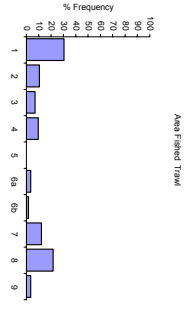


Monkfish Size 2005

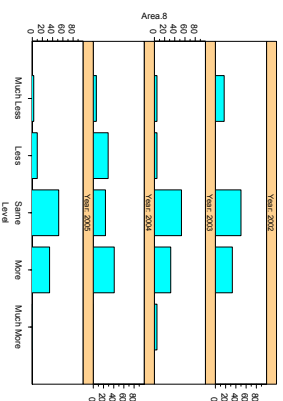
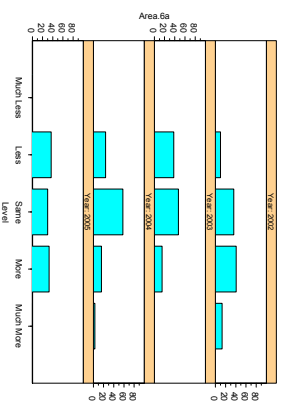
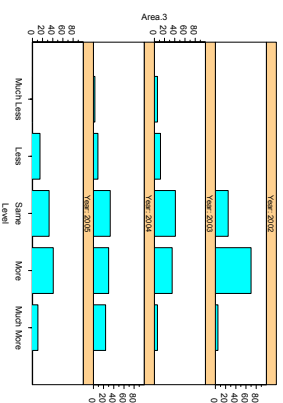
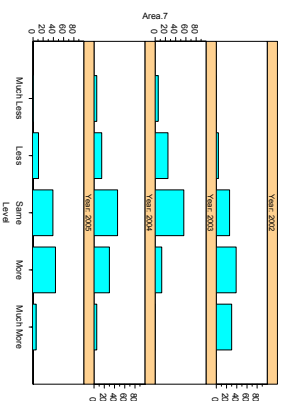
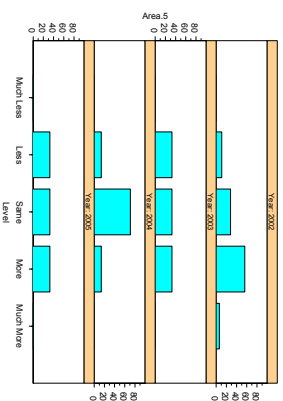
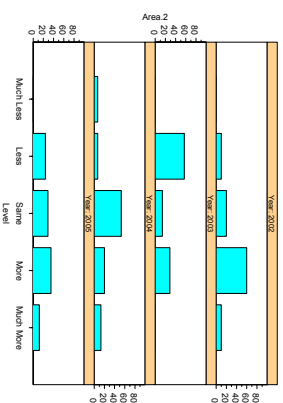
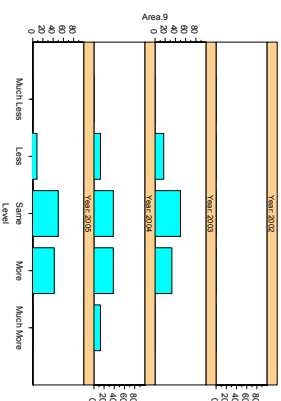
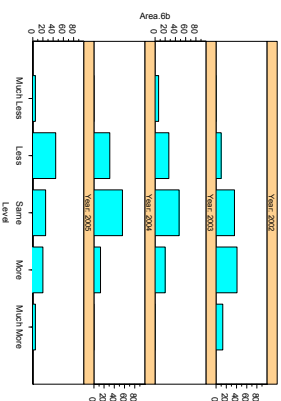
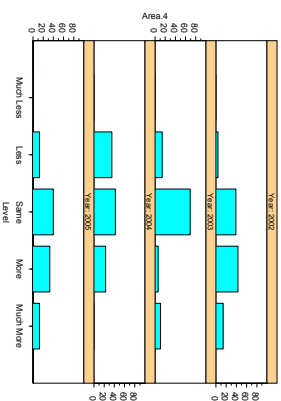
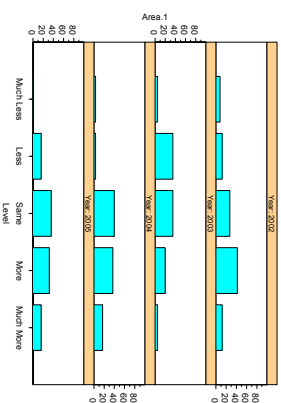


Monkfish Recruits 2005





North Sea Stock Survey Abundance Time Series 2005 Nephrops

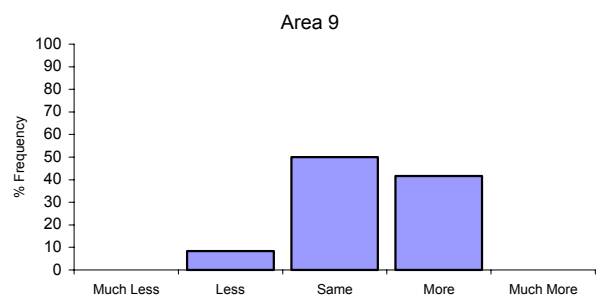
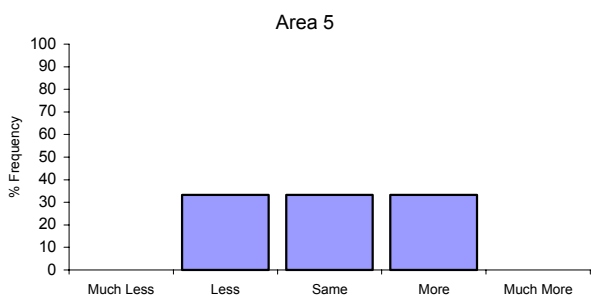
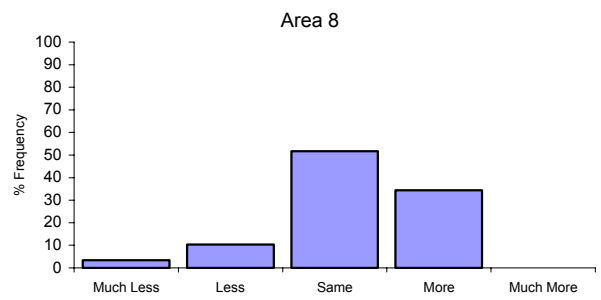
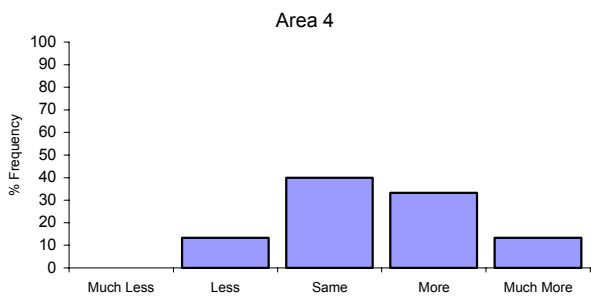
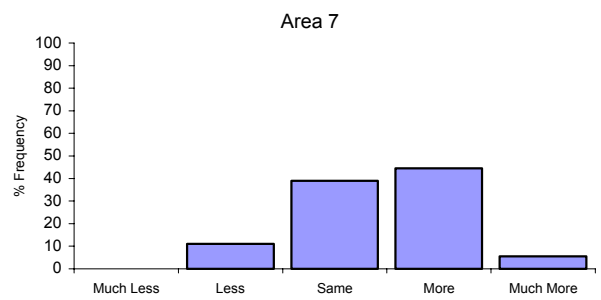
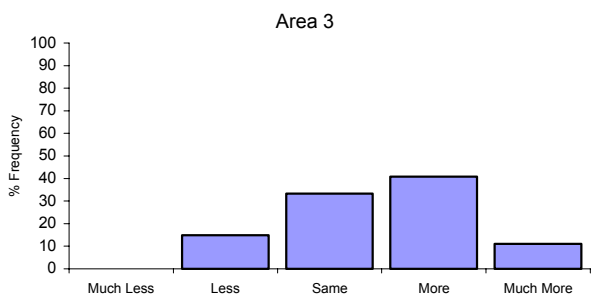
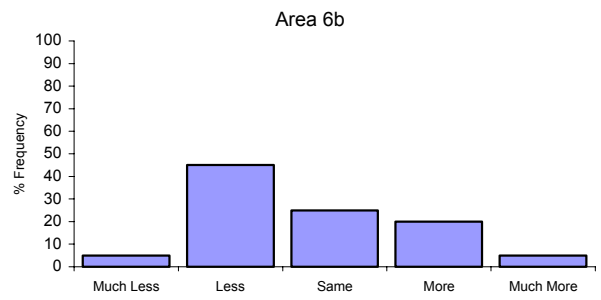
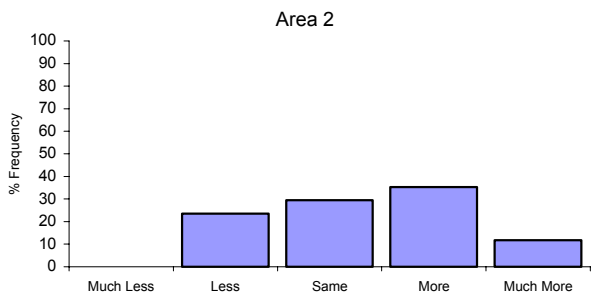
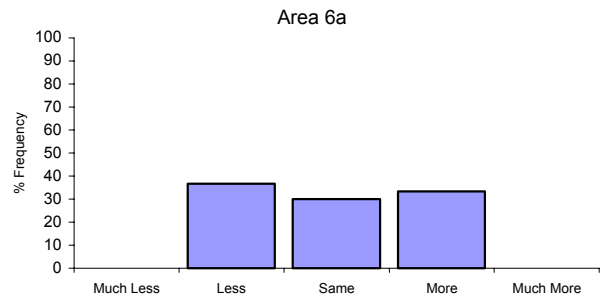
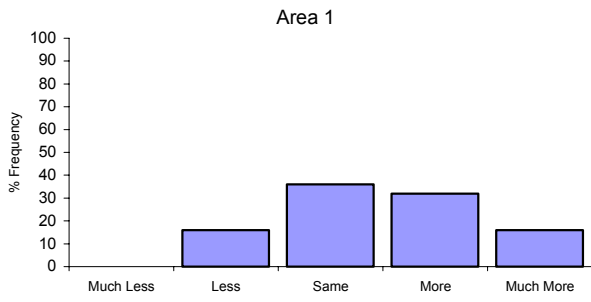


Number of observations

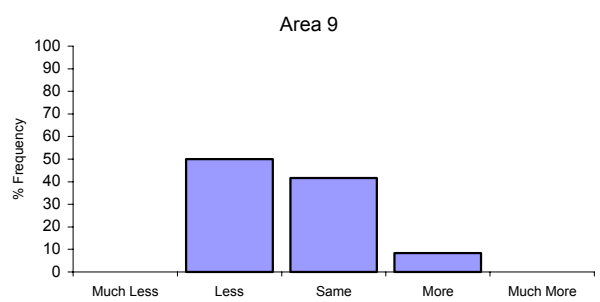
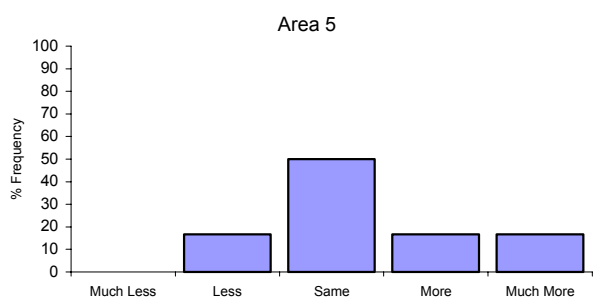
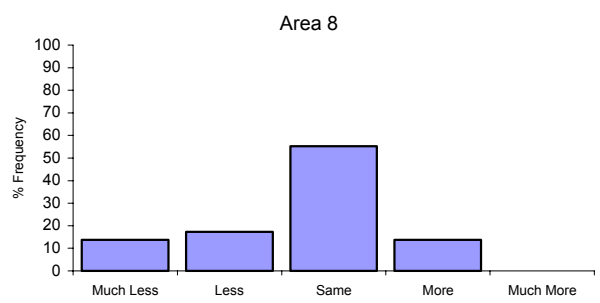
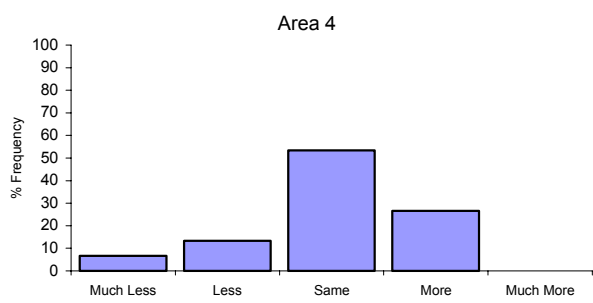
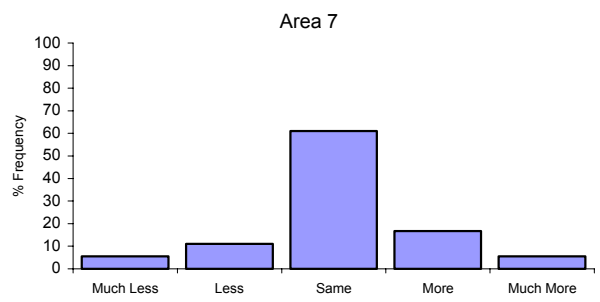
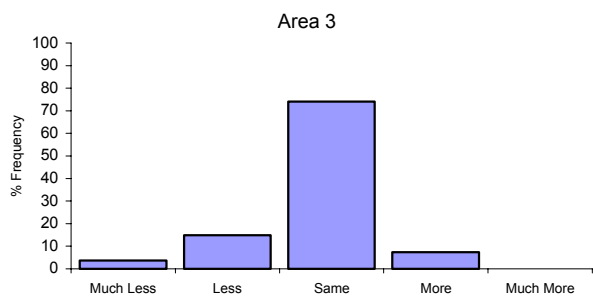
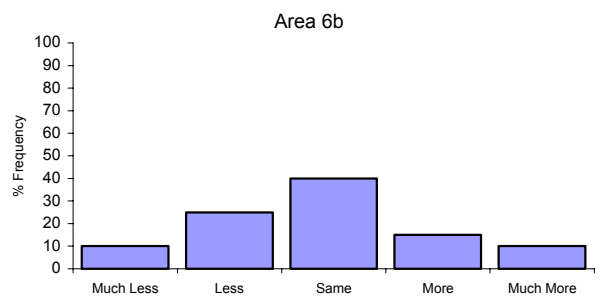
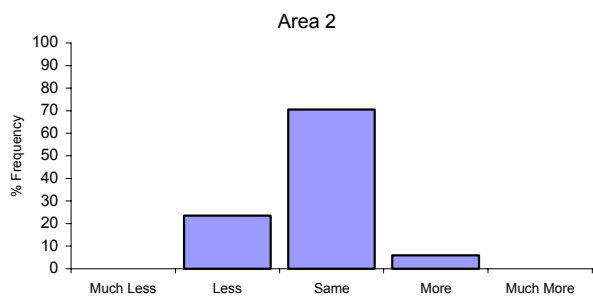
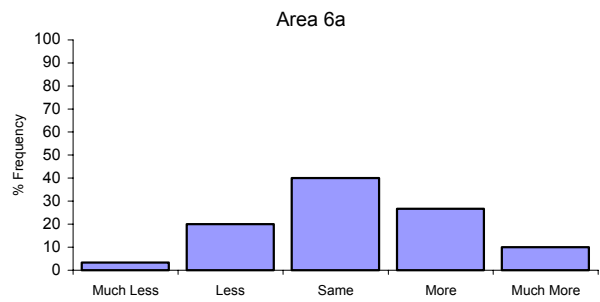
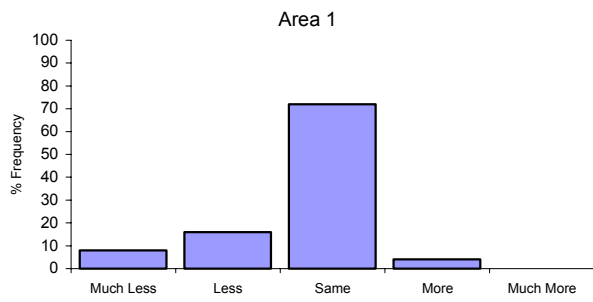
Area	2002	2003	2004	2005
1	26	22	30	25
2	10	7	15	17
3	20	19	33	27
4	28	38	26	15
5	18	3	7	6
6a	78	35	38	30
6b	78	31	16	20
7	23	16	20	18
8	6	20	17	18
9	0	20	8	2

Note in 2002 area 6 was not split into a & b, so the data have been presented twice.

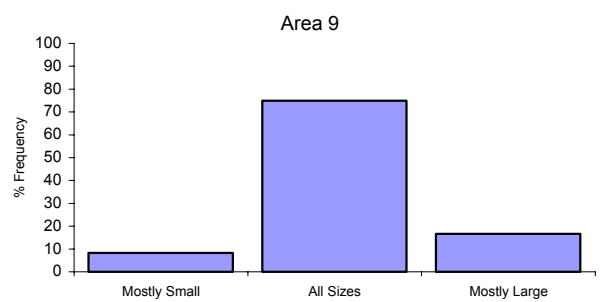
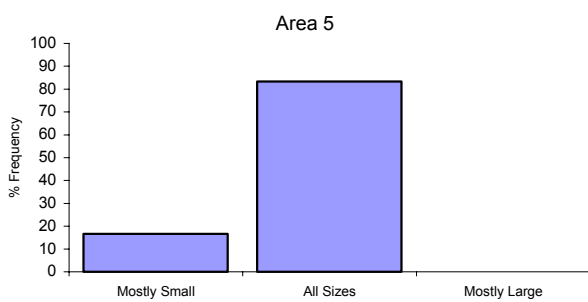
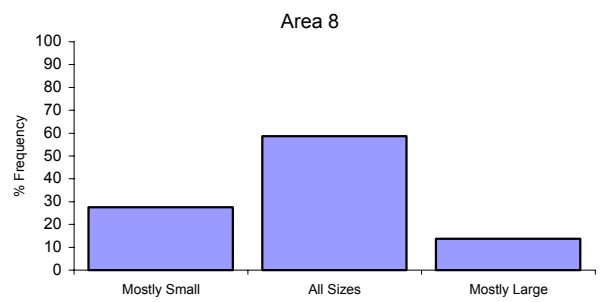
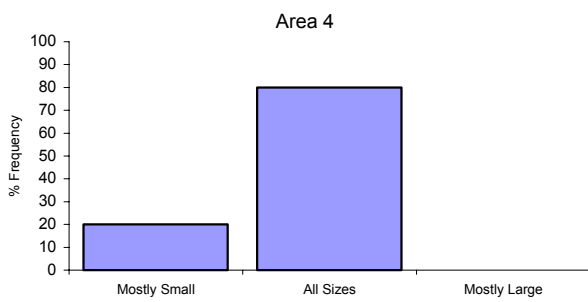
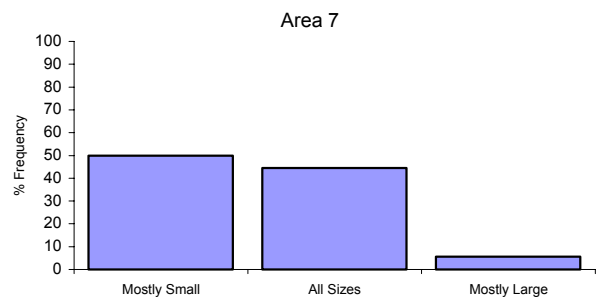
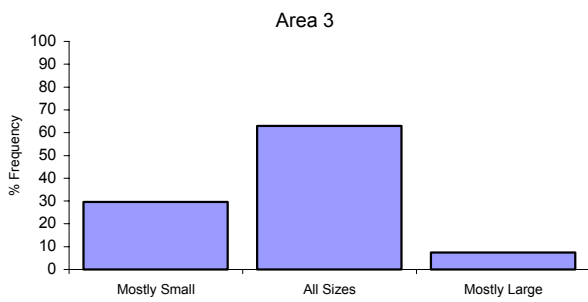
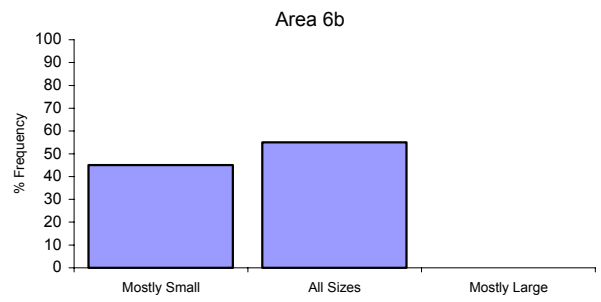
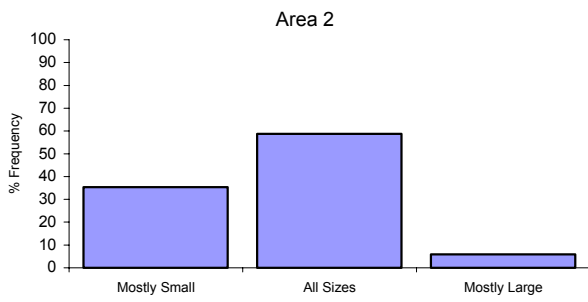
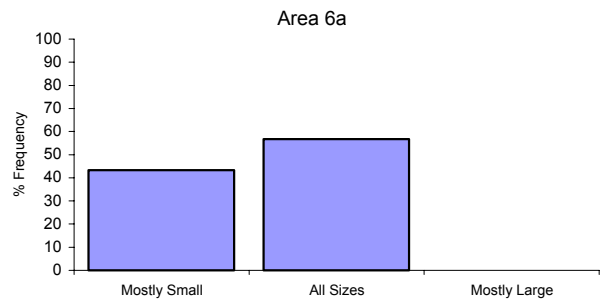
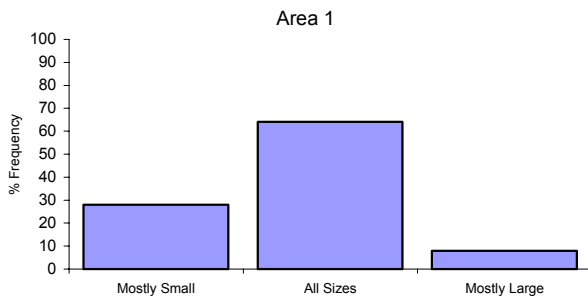
Abundance 2005 Nephrops



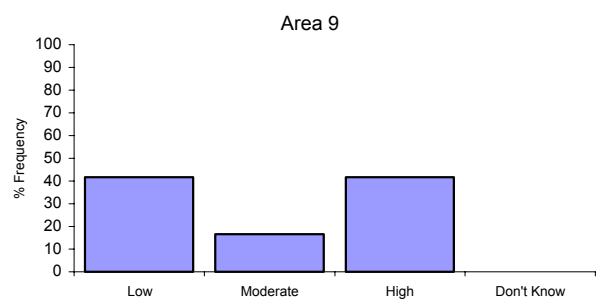
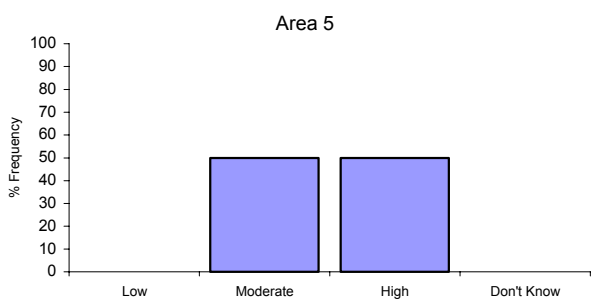
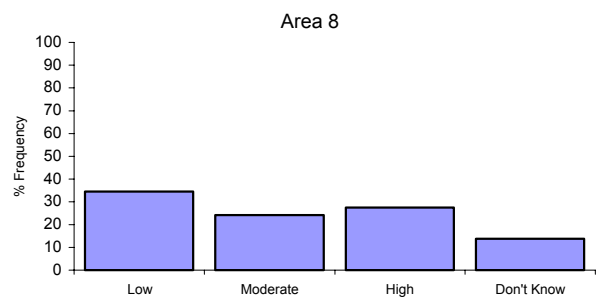
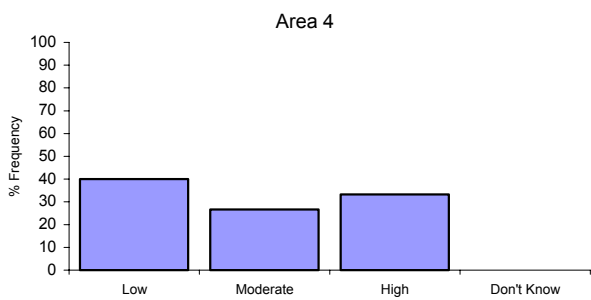
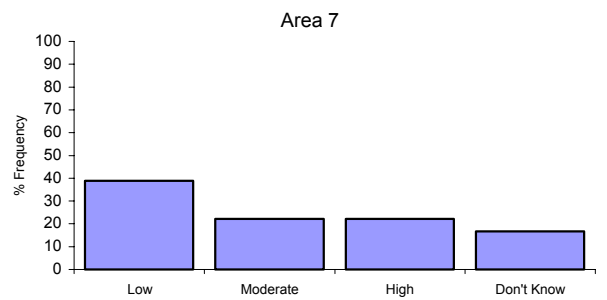
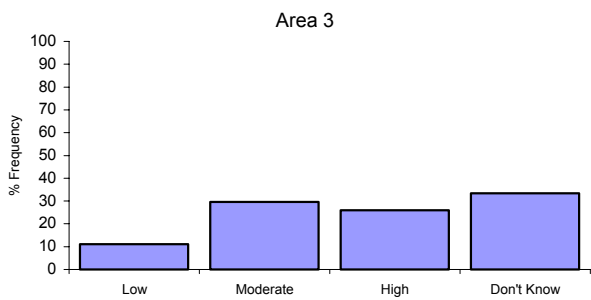
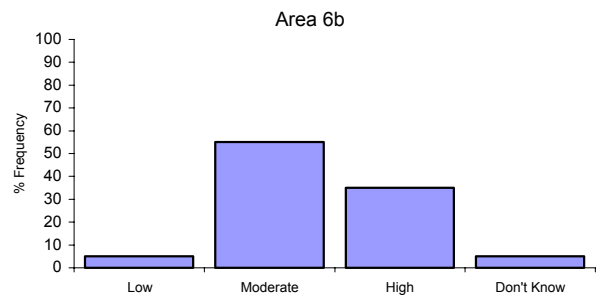
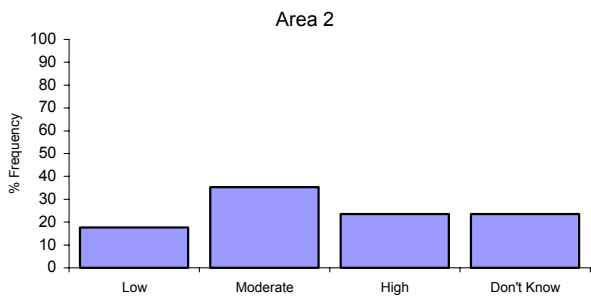
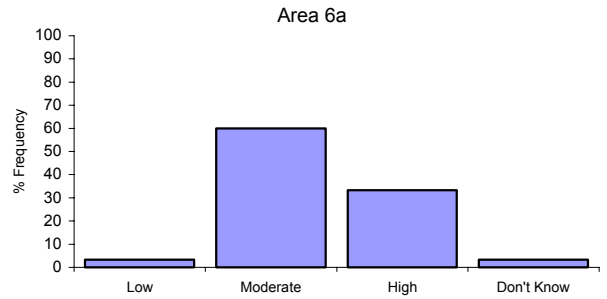
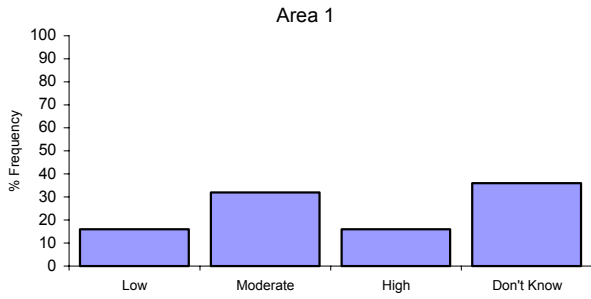
Discards 2005 Nephrops

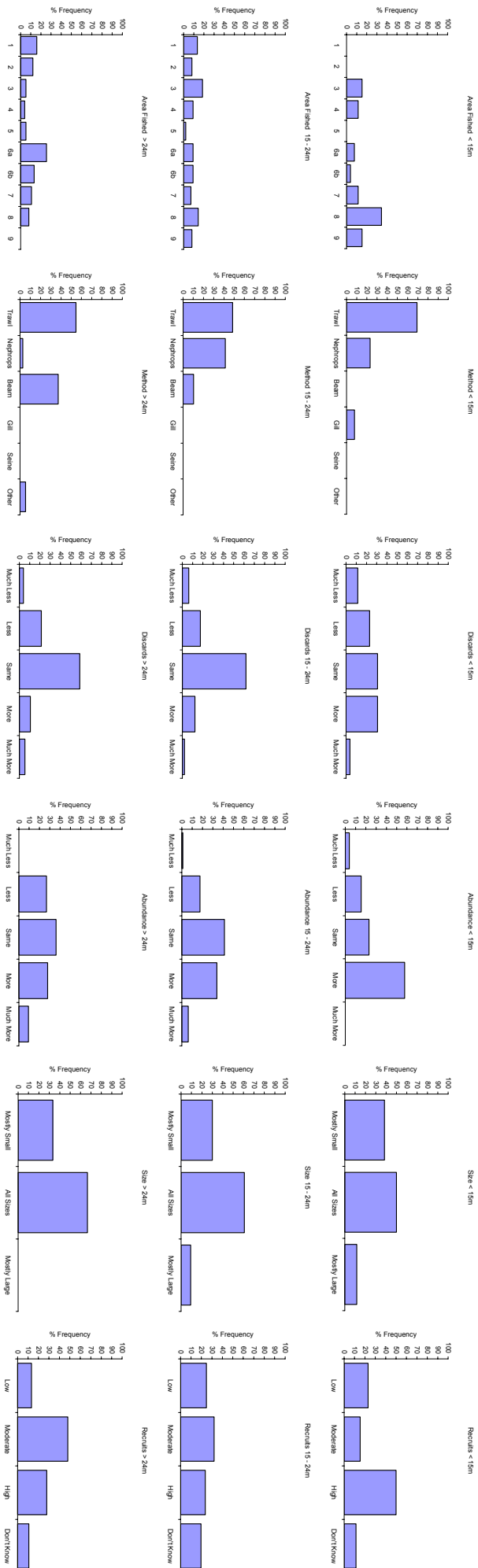


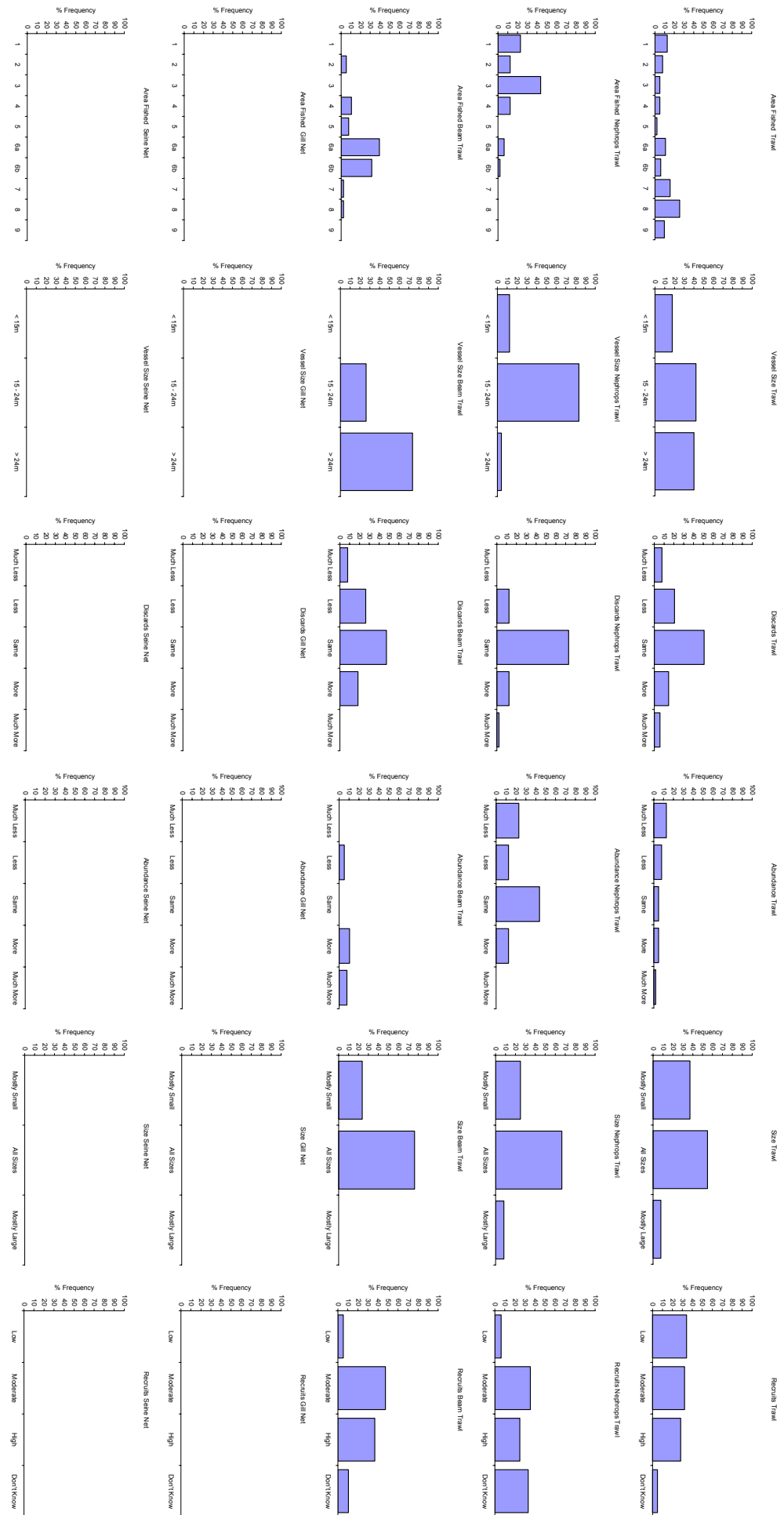
Size 2005 Nephrops



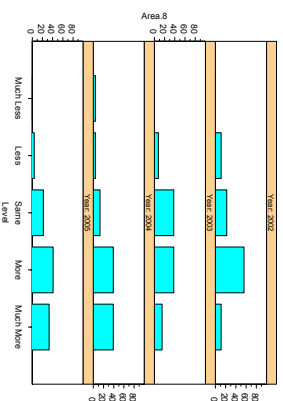
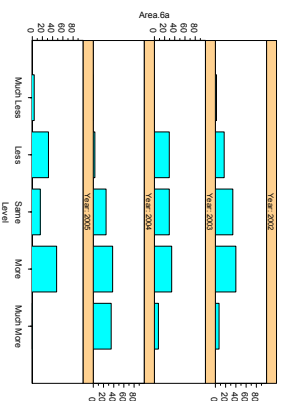
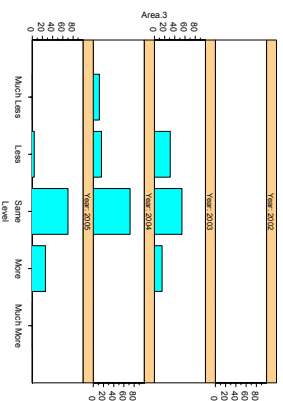
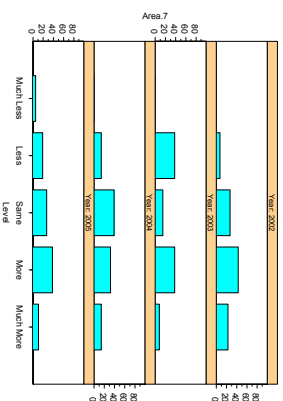
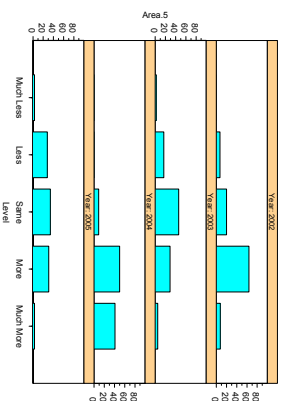
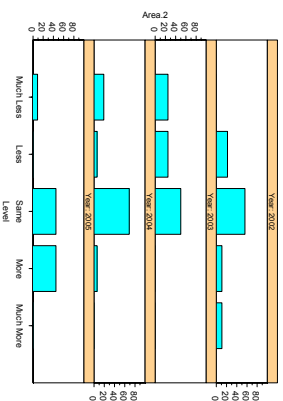
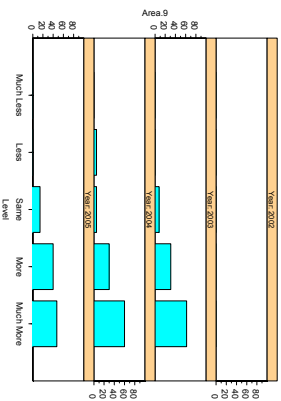
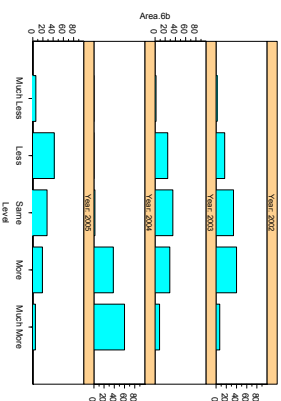
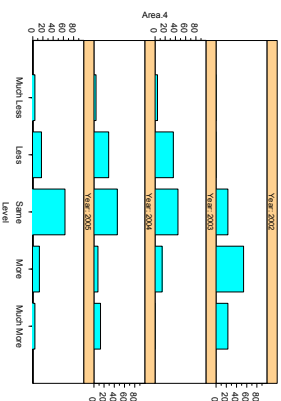
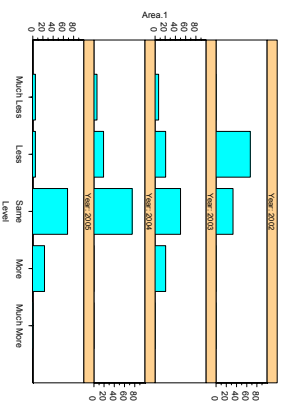
Recruits 2005 Nephrops







North Sea Stock Survey Abundance Time Series 2005 Sole

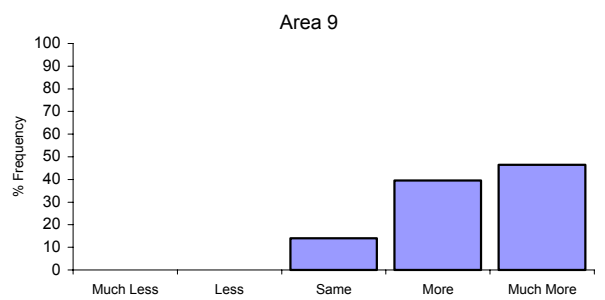
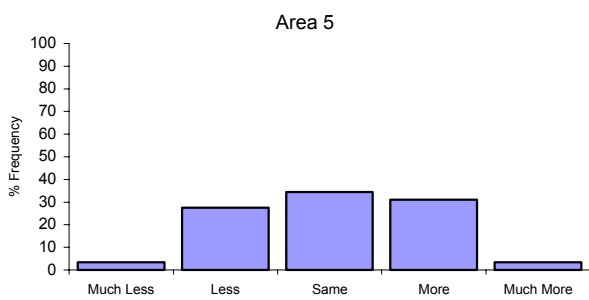
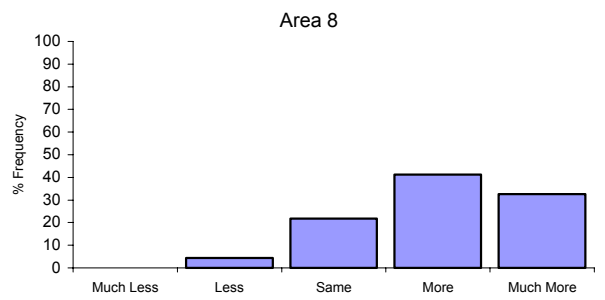
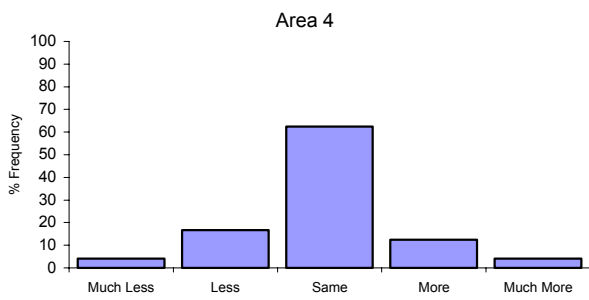
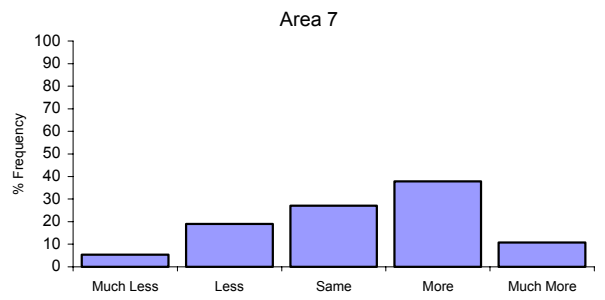
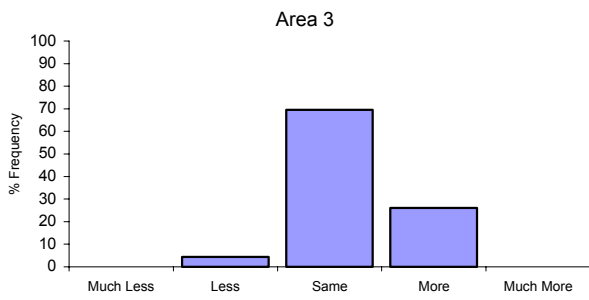
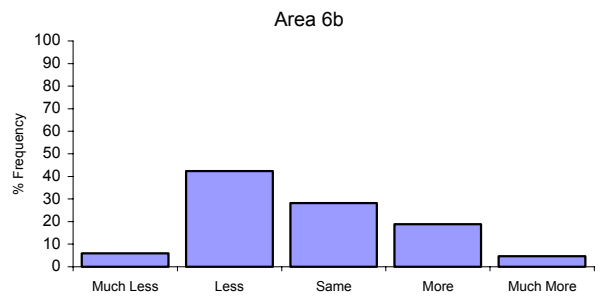
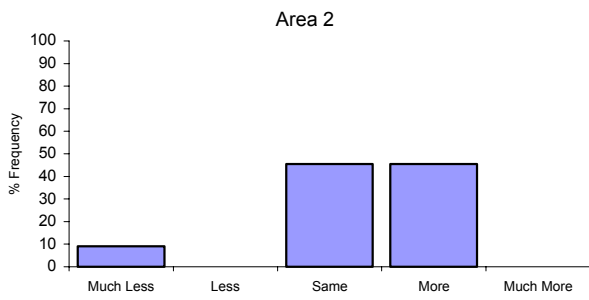
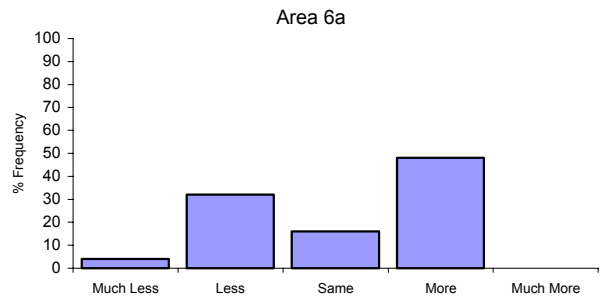
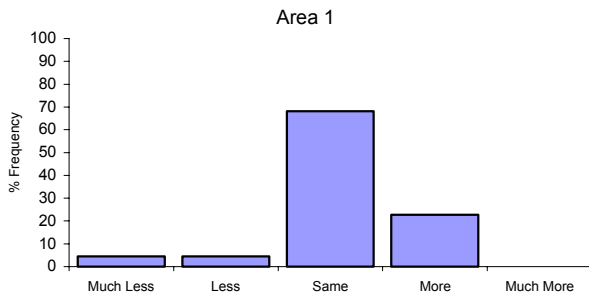


Number of observations

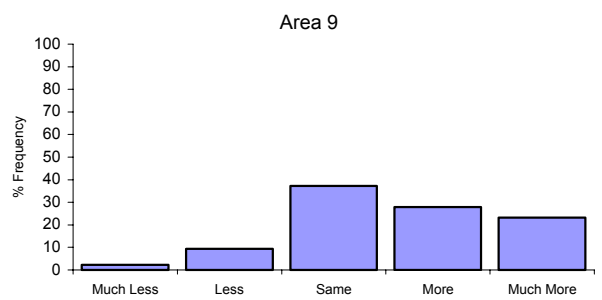
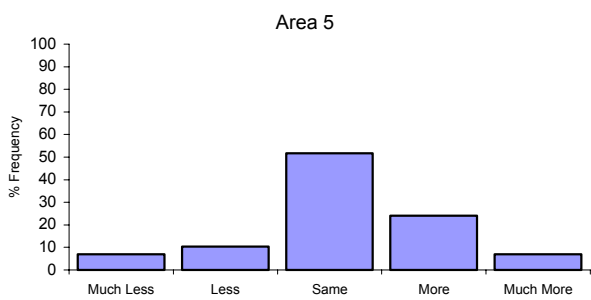
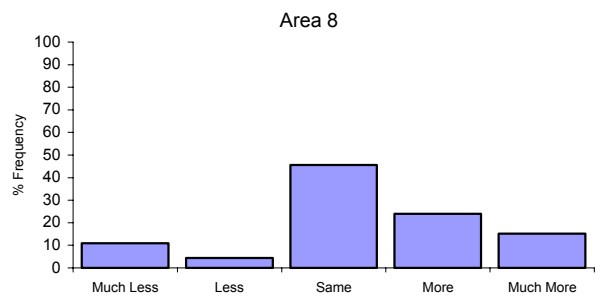
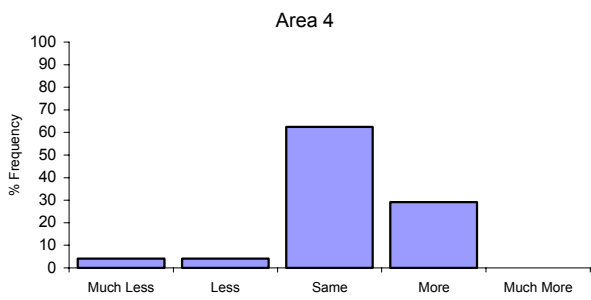
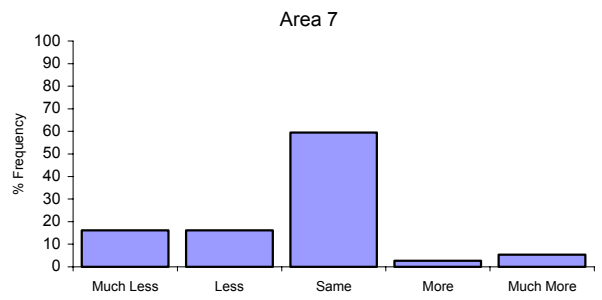
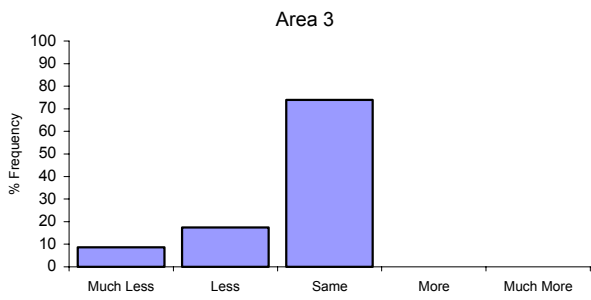
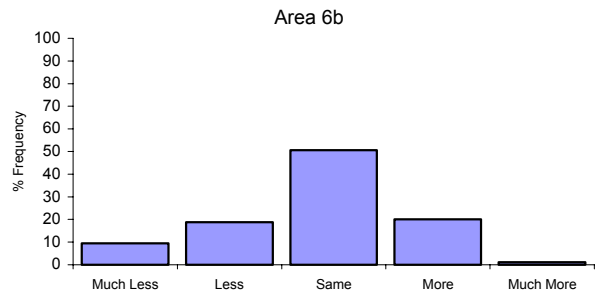
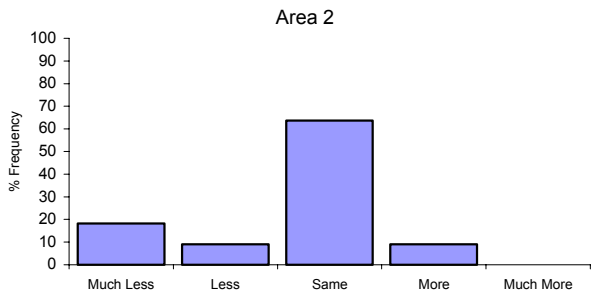
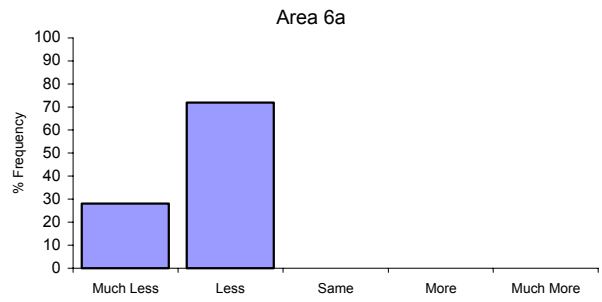
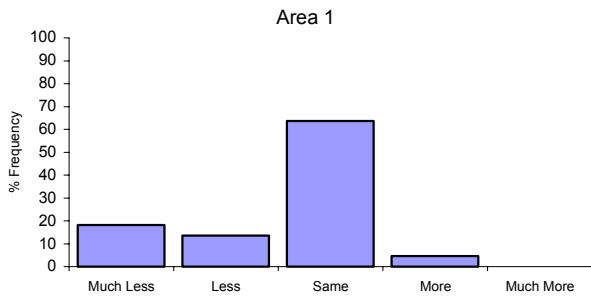
Area	2002	2003	2004	2005
1	3	15	16	22
2	9	9	16	11
3	0	14	25	23
4	13	44	24	24
5	84	41	34	29
6a	167	38	40	25
6b	167	97	85	85
7	30	13	28	37
8	9	15	23	46
9	2	13	20	43

Note in 2002 area 6 was not split into a & b, so the data have been presented twice.

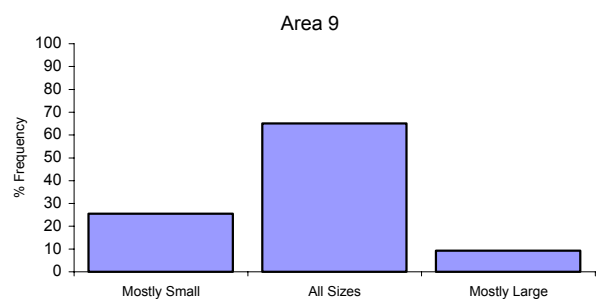
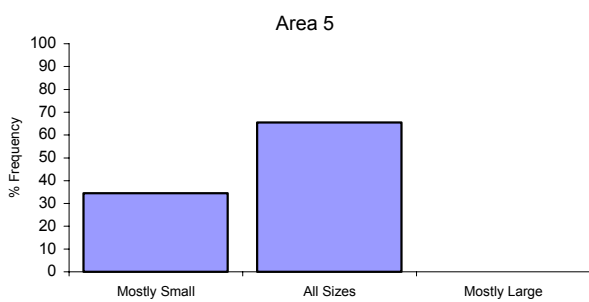
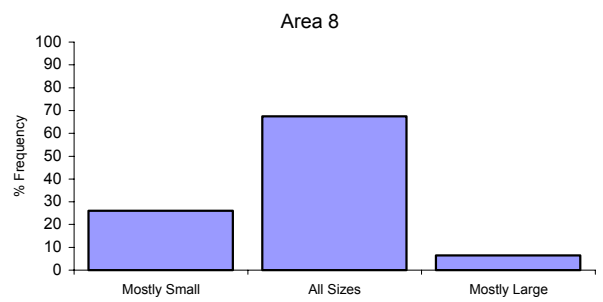
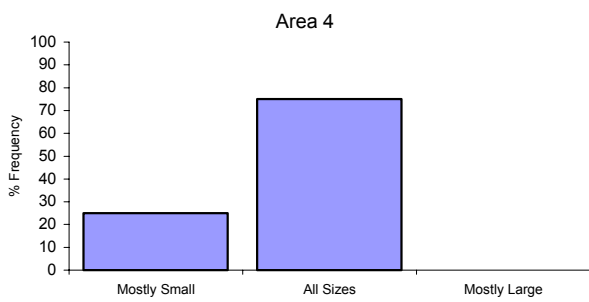
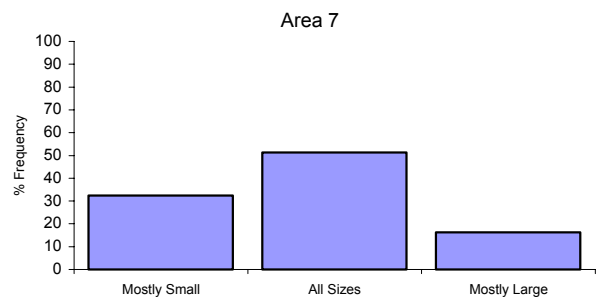
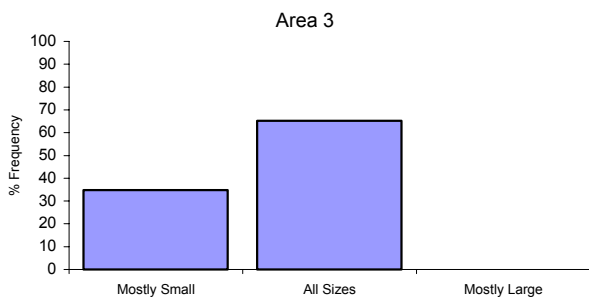
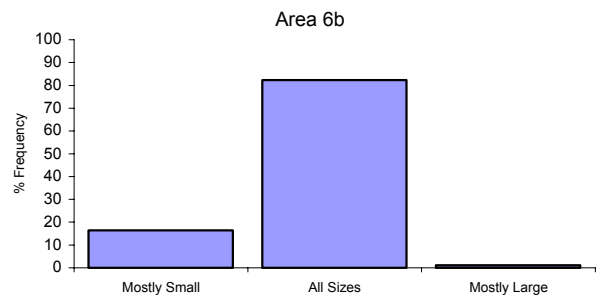
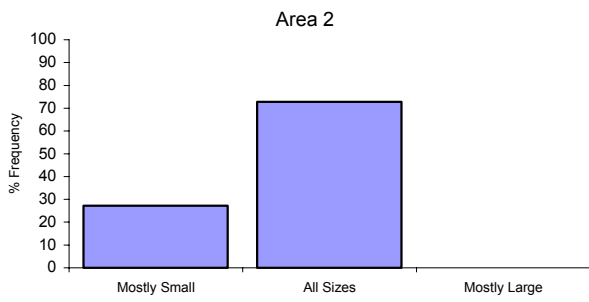
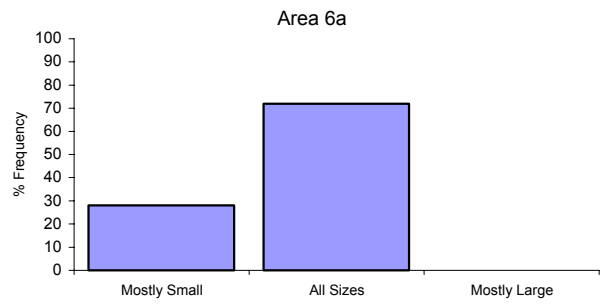
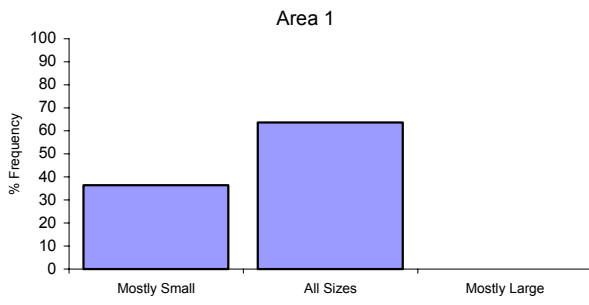
Abundance 2005 Sole



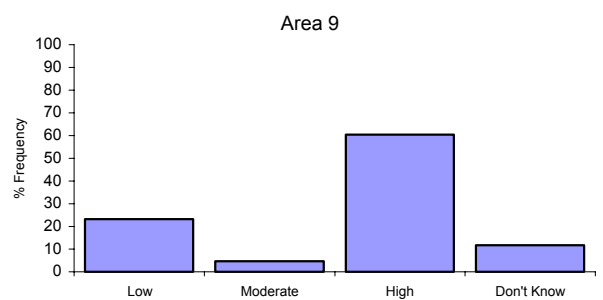
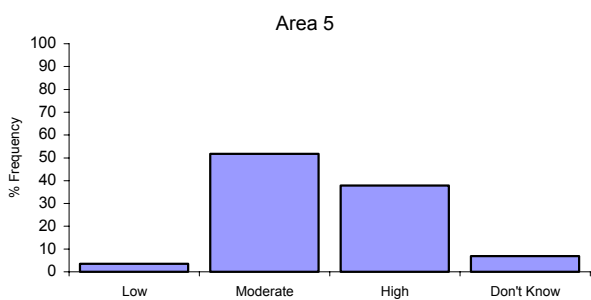
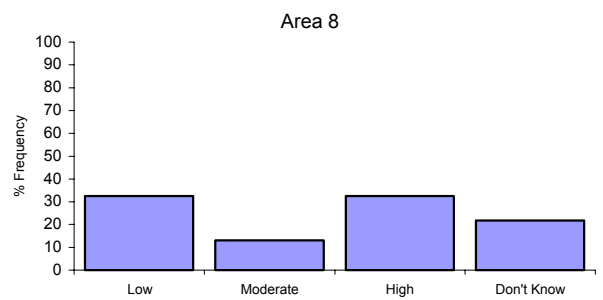
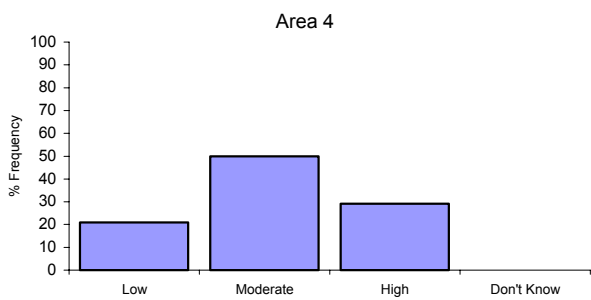
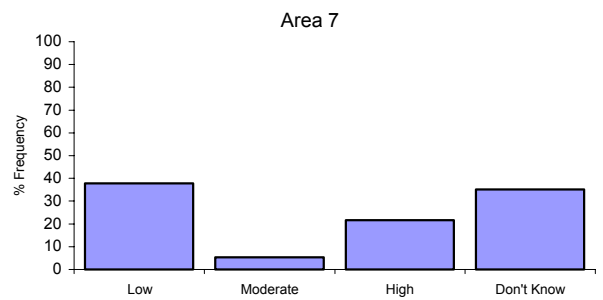
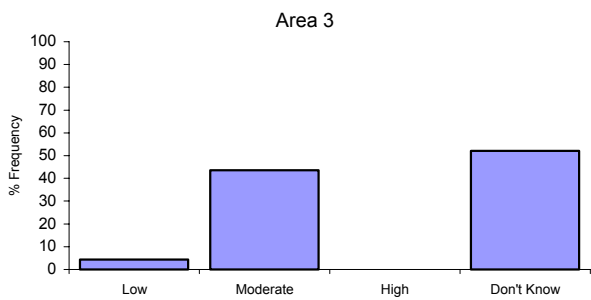
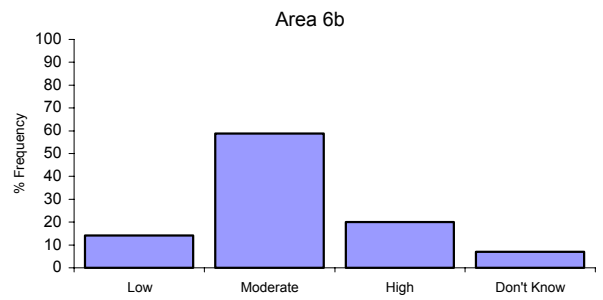
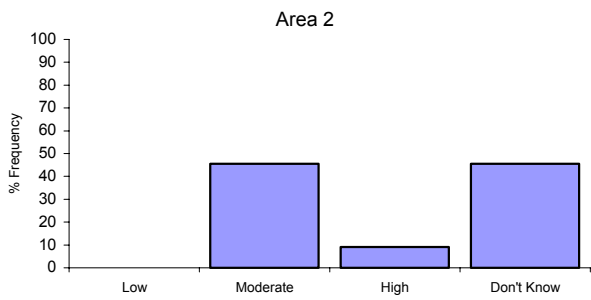
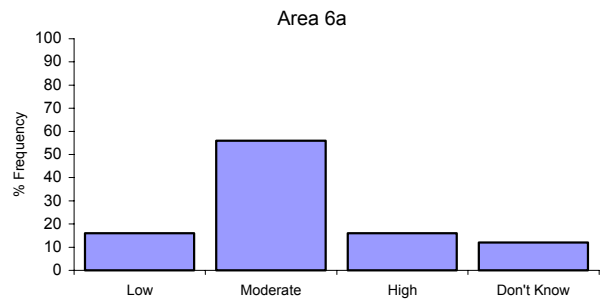
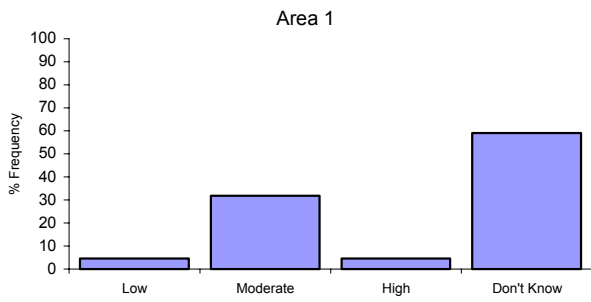
Discards 2005 Sole

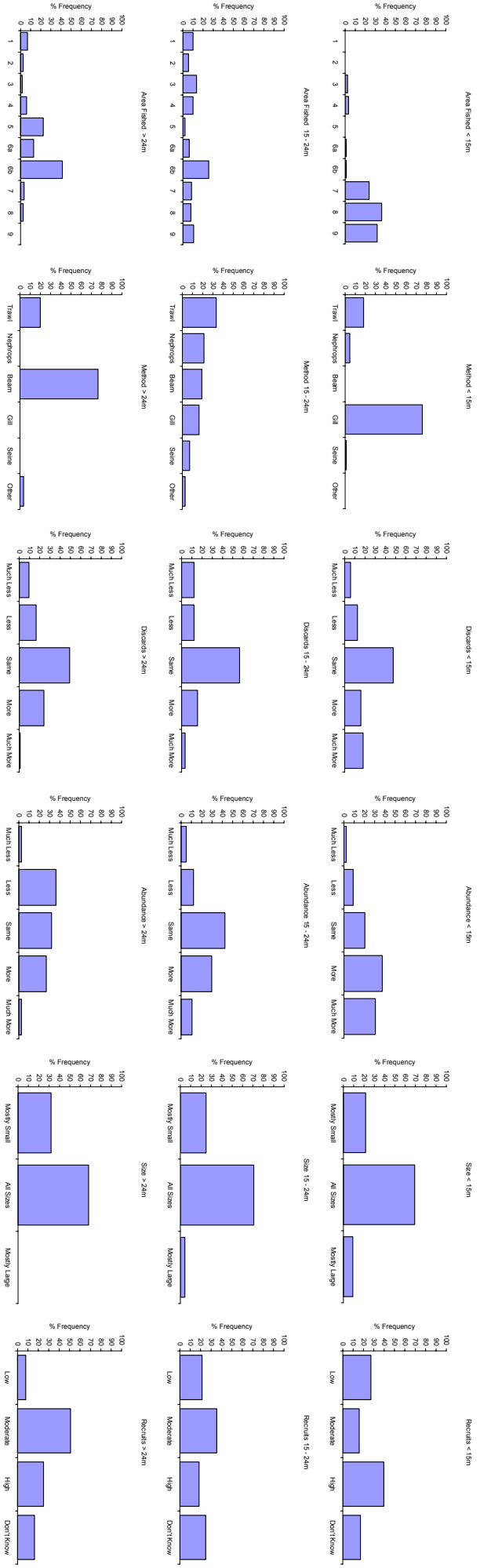


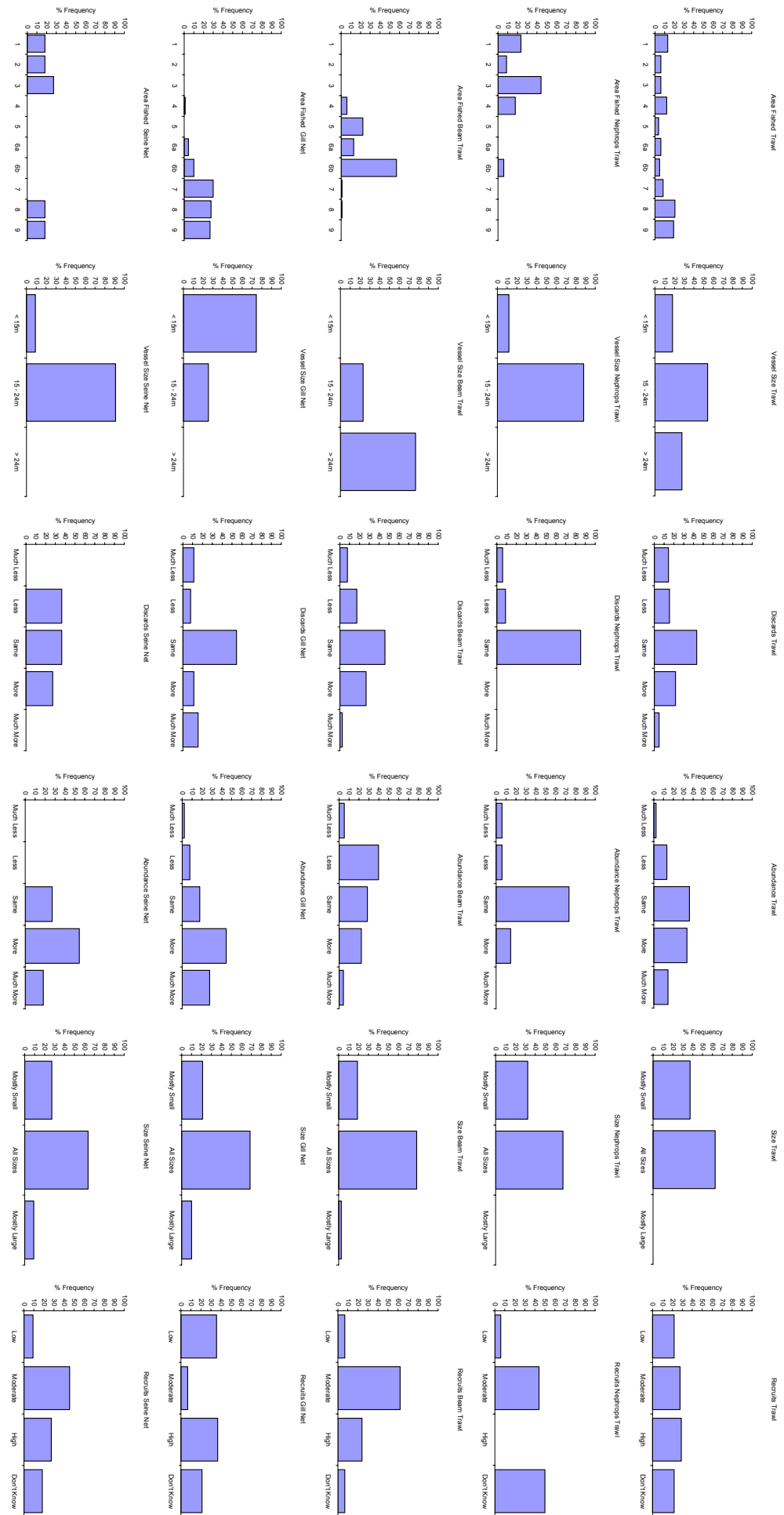
Size 2005 Sole



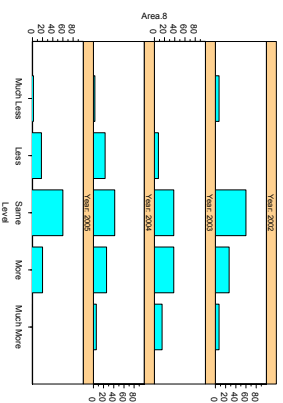
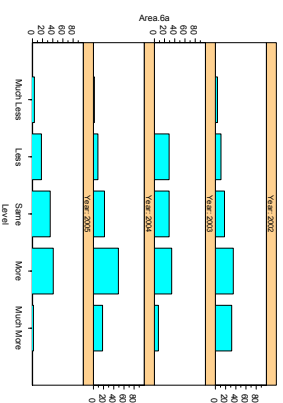
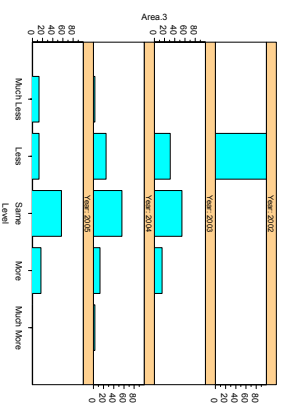
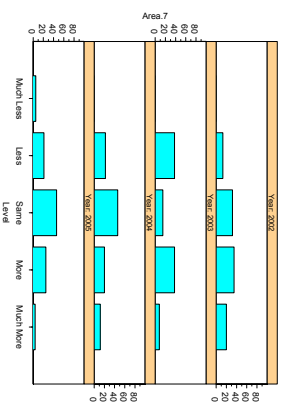
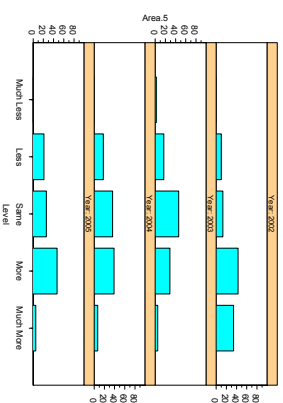
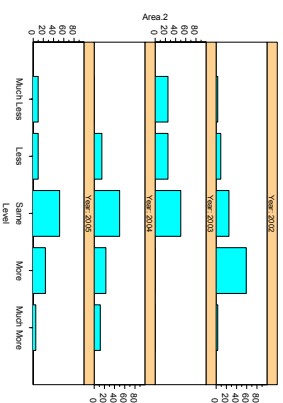
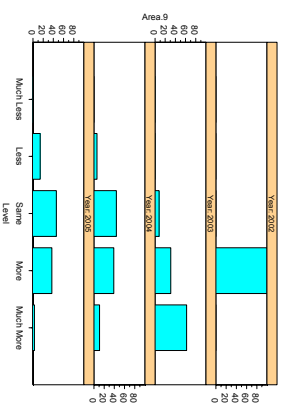
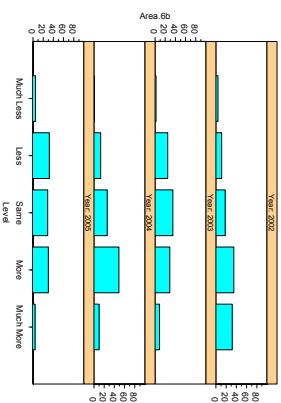
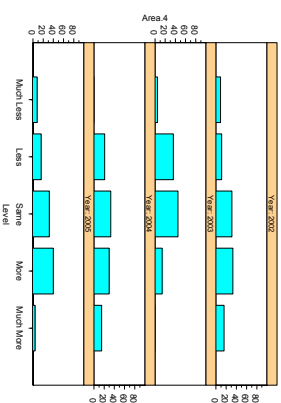
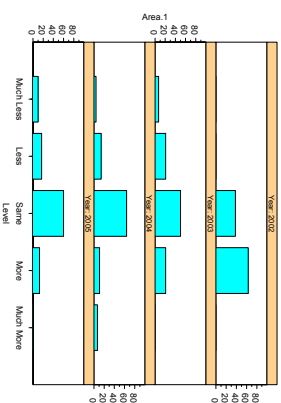
Recruits 2005 Sole







North Sea Stock Survey Abundance Time Series 2005 Plaice

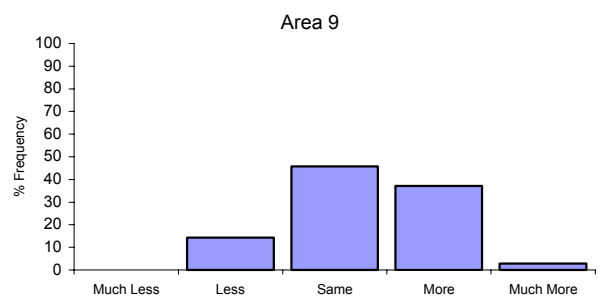
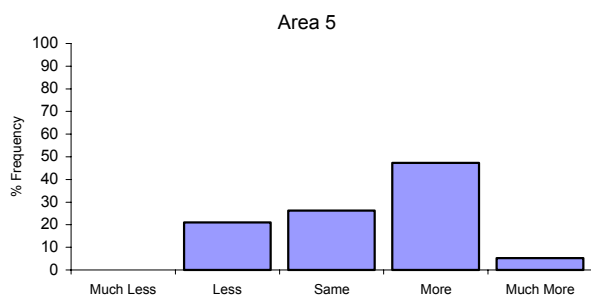
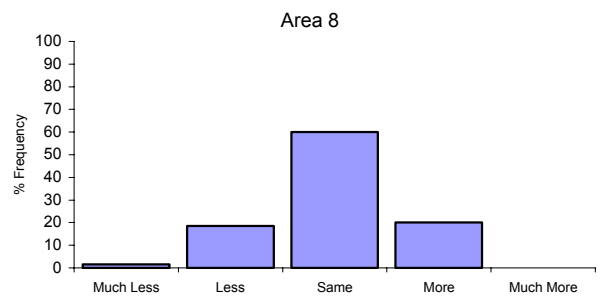
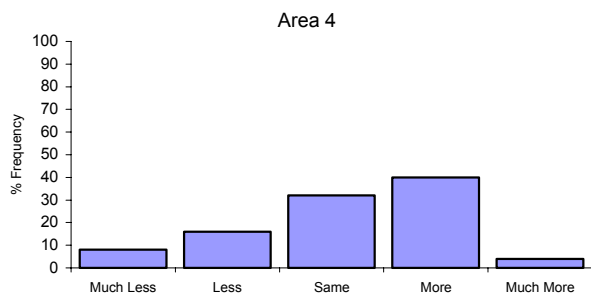
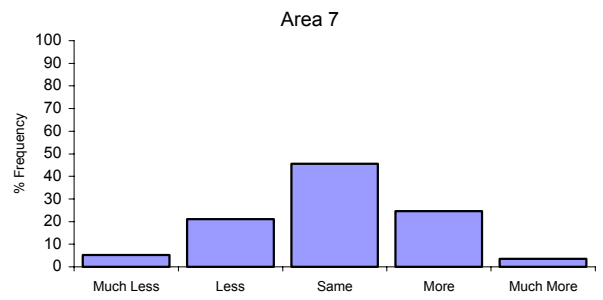
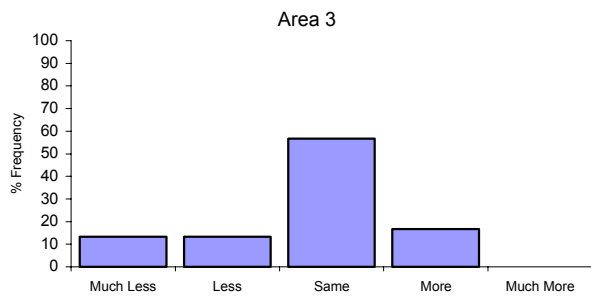
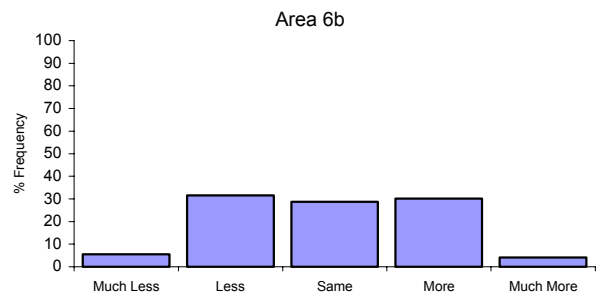
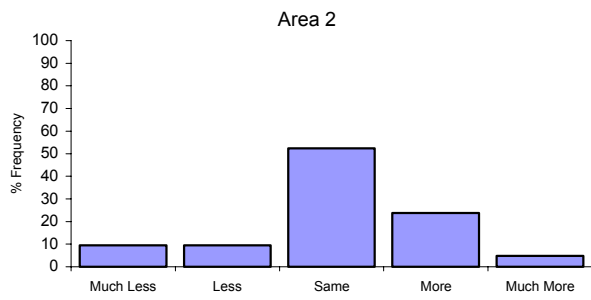
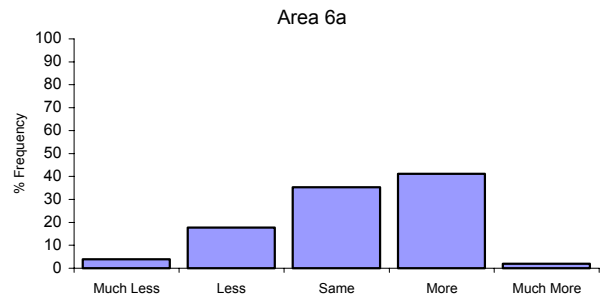
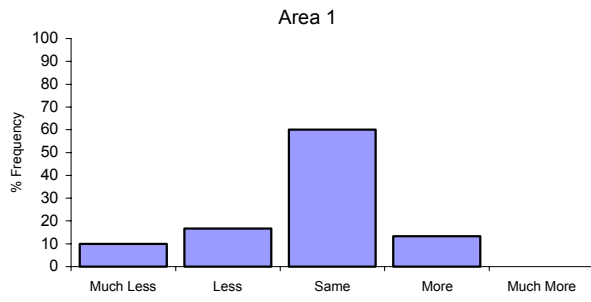


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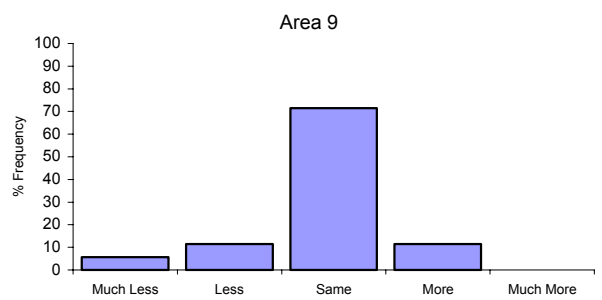
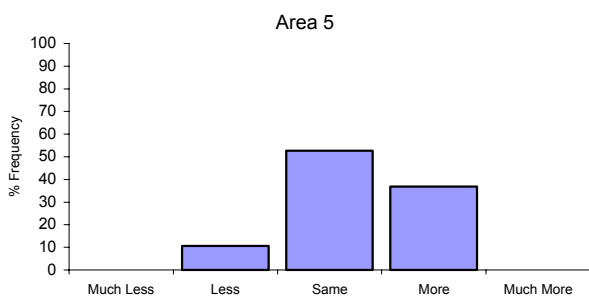
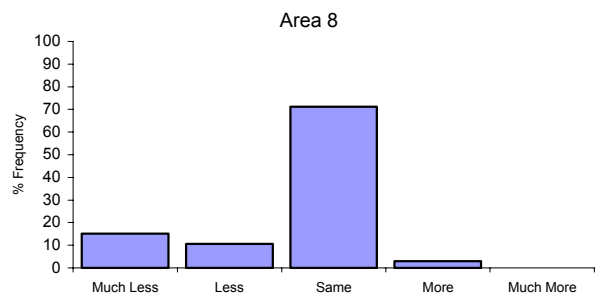
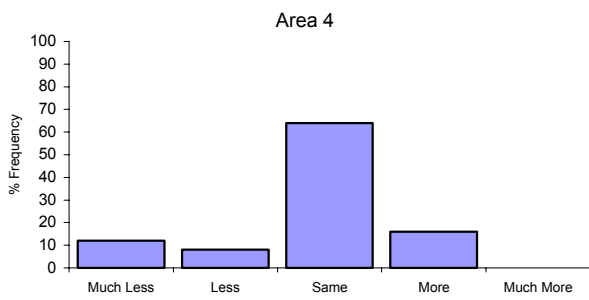
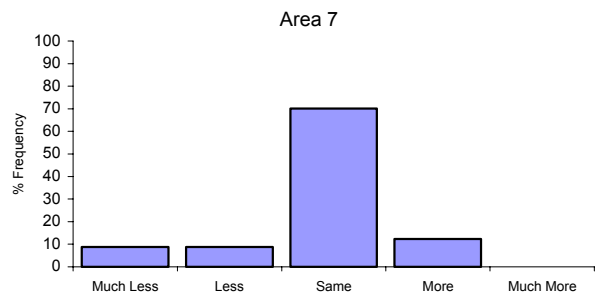
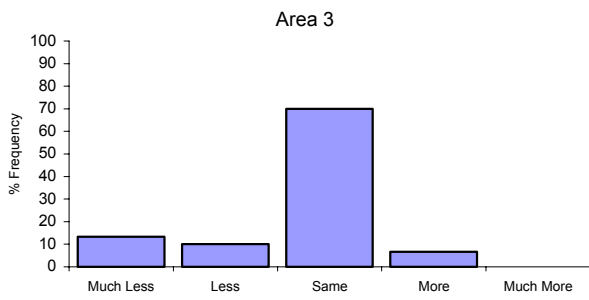
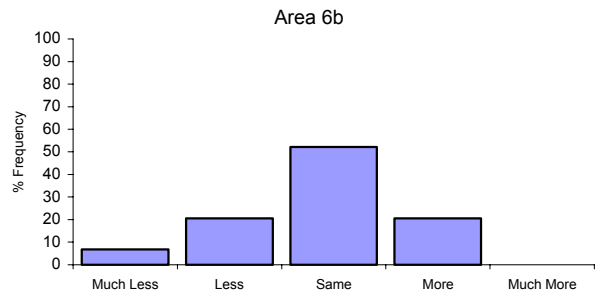
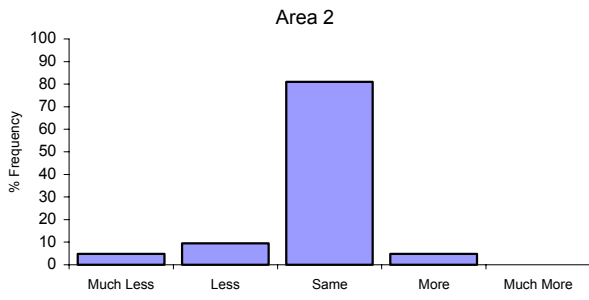
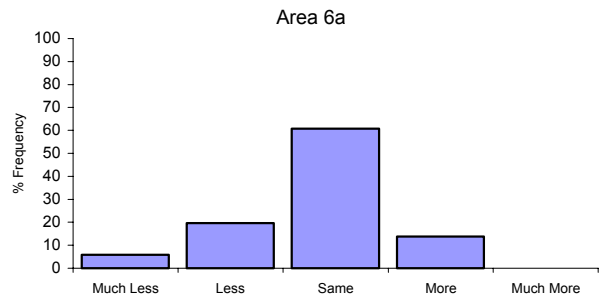
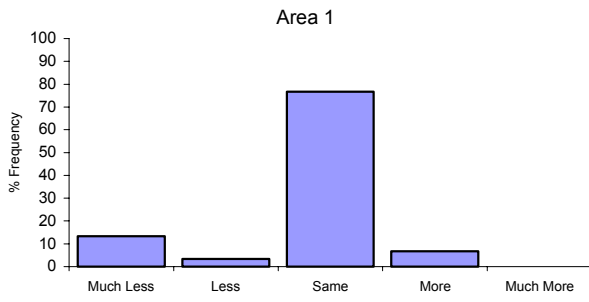
Area	2002	2003	2004	2005
1	8	21	28	30
2	32	19	26	21
3	1	18	32	30
4	45	46	33	25
5	83	38	28	19
6a	187	50	65	51
6b	187	88	77	73
7	60	31	50	57
8	15	22	31	65
9	1	15	18	35

Note in 2002 area 6 was not split into a & b, so the data have been presented twice.

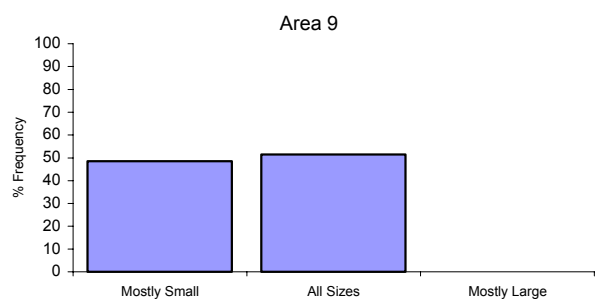
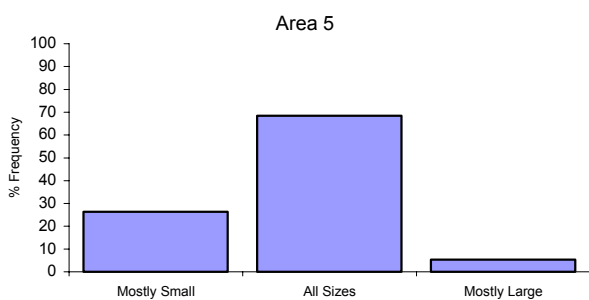
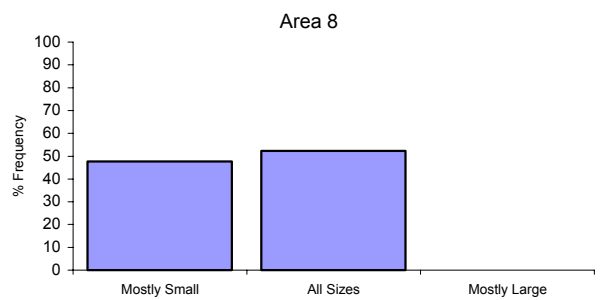
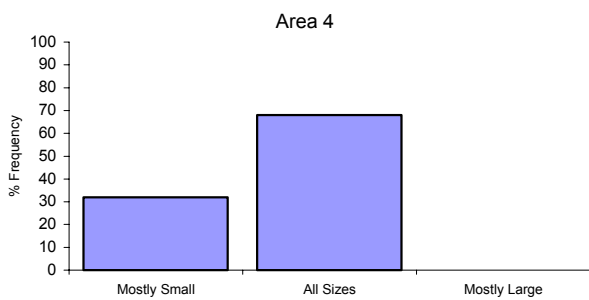
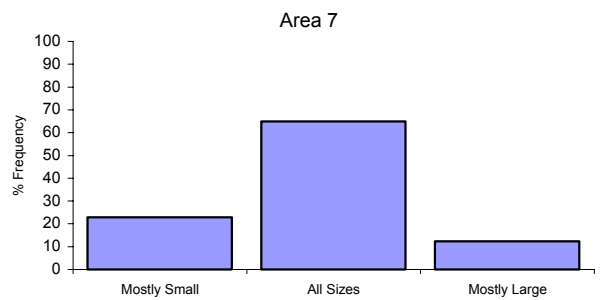
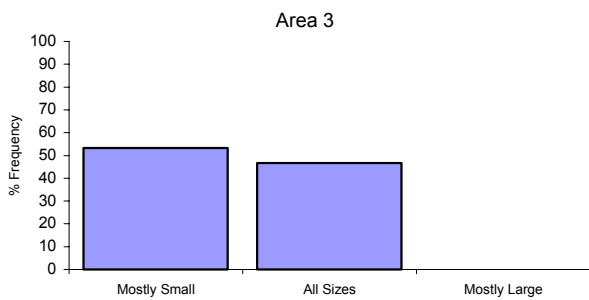
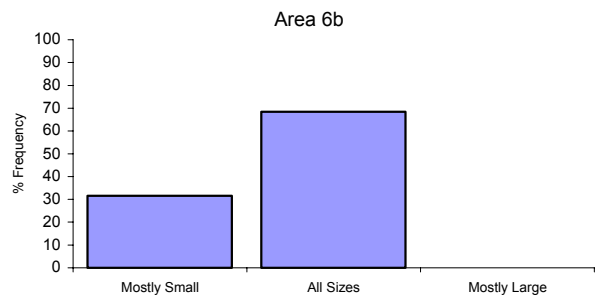
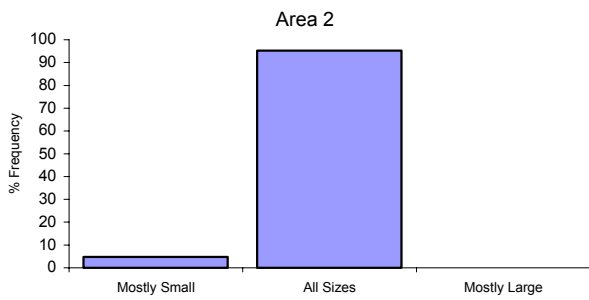
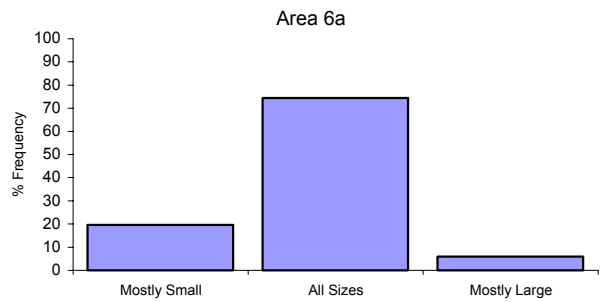
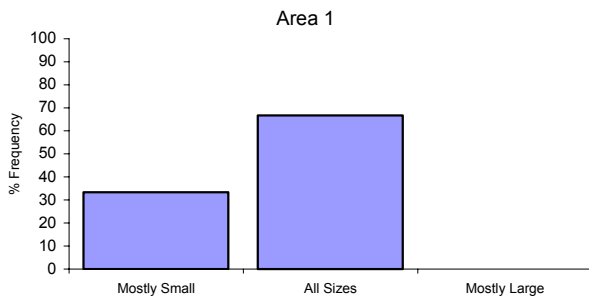
Abundance 2005 Plaice



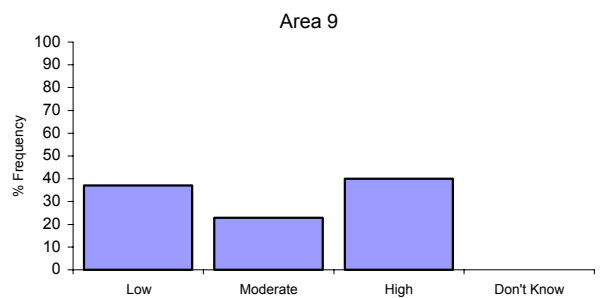
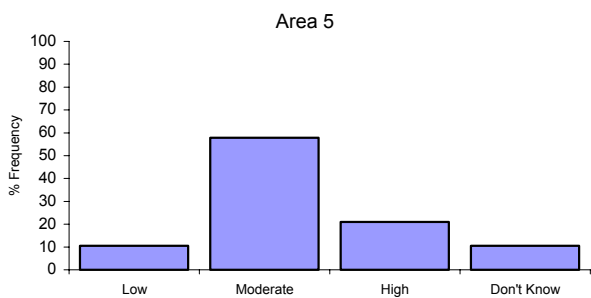
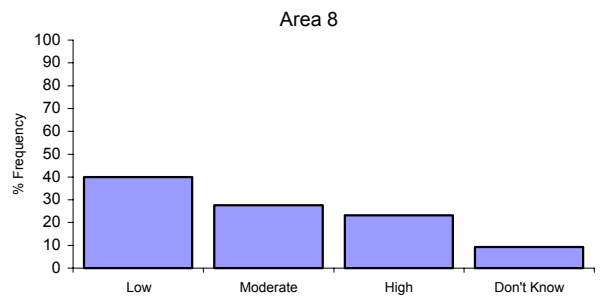
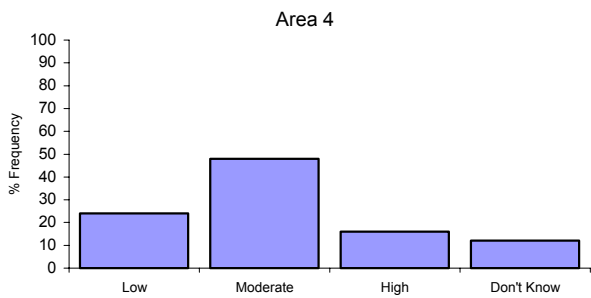
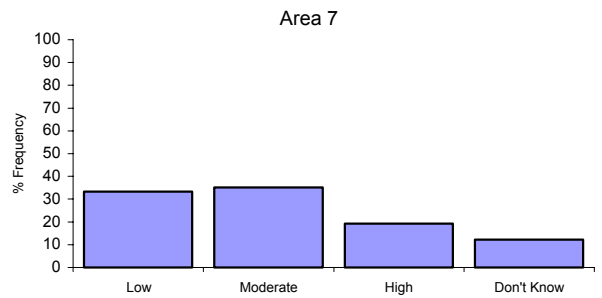
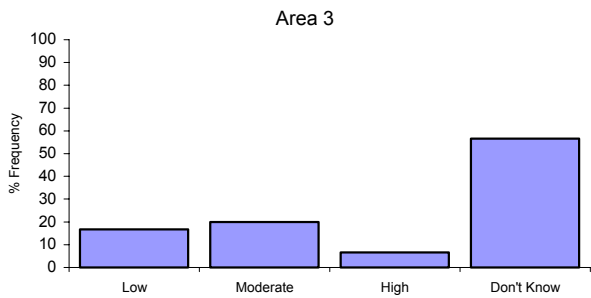
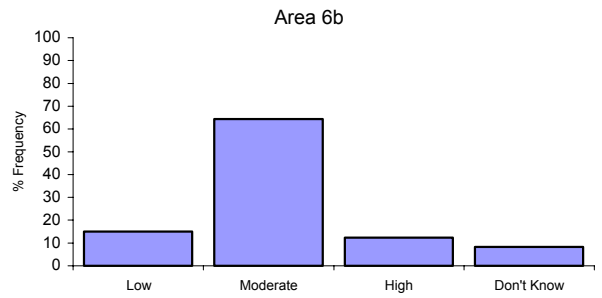
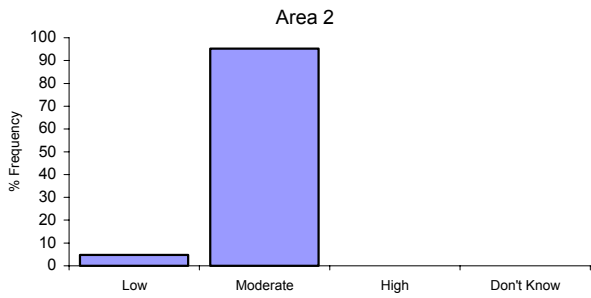
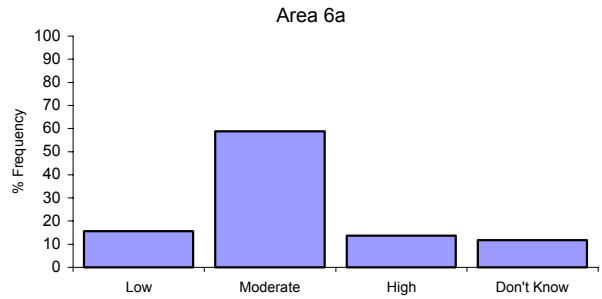
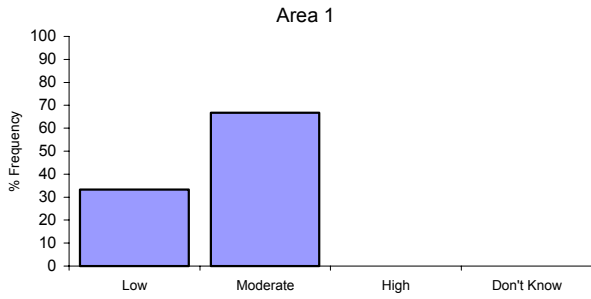
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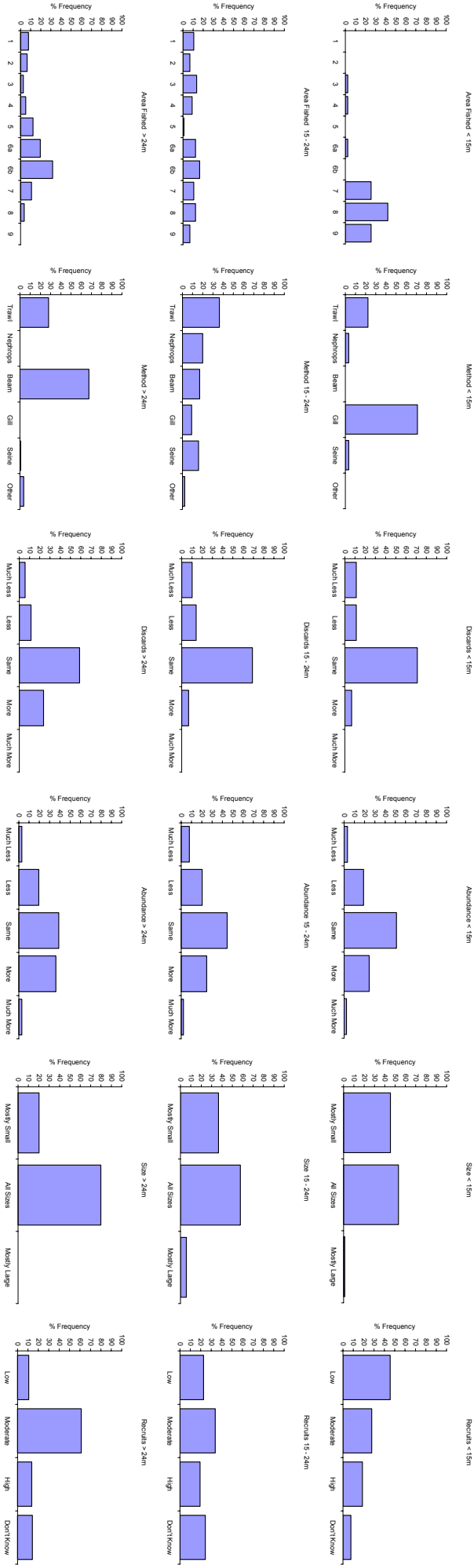


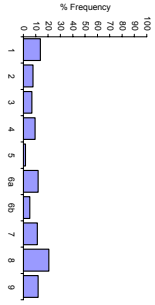
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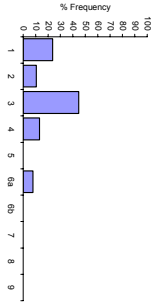
Recruits 2005 Plaiice



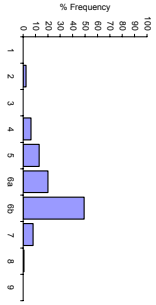




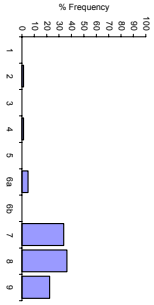
Area Fished Netrops Trawl



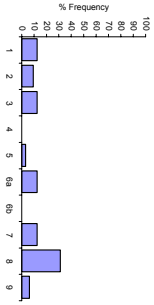
Area Fished Beam Trawl



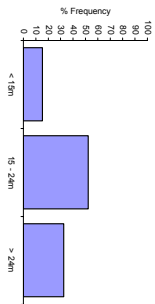
Area Fished GRINet



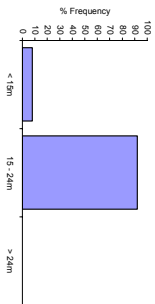
Area Fished Stern Net



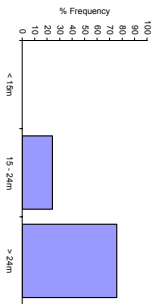
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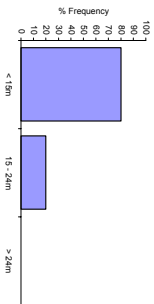
Vessel Size Trawl



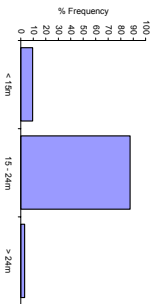
Vessel Size Netrops Trawl



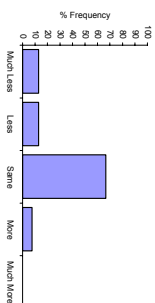
Vessel Size Beam Trawl



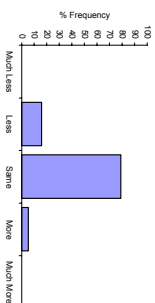
Vessel Size GRINet



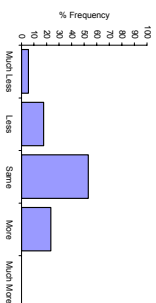
Vessel Size Stern Net



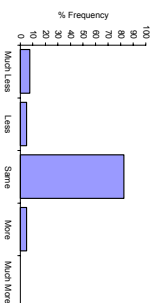
Discards Trawl



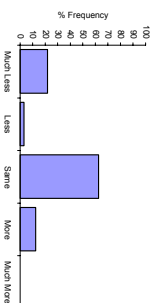
Discards Netrops Trawl



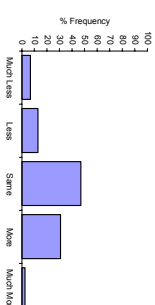
Discards Beam Trawl



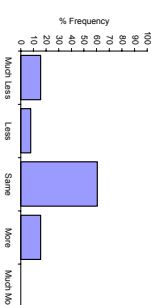
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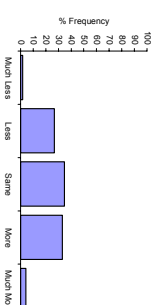
Discards Stern Net



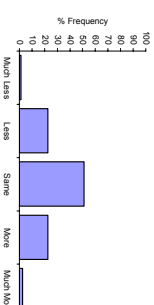
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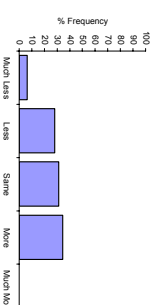
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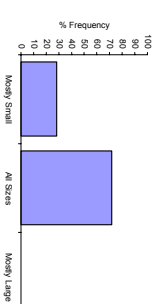
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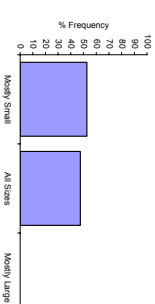
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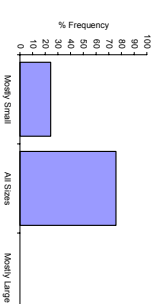
Abundance Stern Net



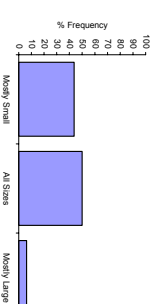
Size Trawl



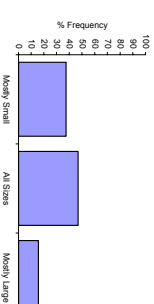
Size Netrops Trawl



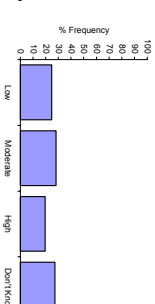
Size Beam Trawl



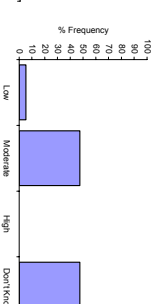
Size GRINet



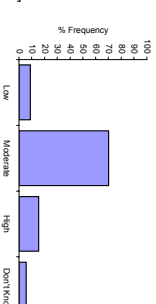
Size Stern Net



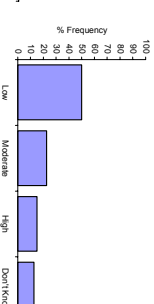
Recruits Trawl



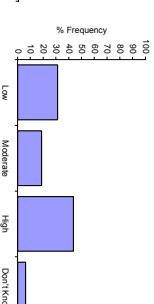
Recruits Netrops Trawl



Recruits Beam Trawl



Recruits GRINet



Recruits Stern Net

TimeSeriesCod2005



TimeSeriesHaddock2005



TimeSeriesWhiting2005



TimeSeriesSaithe2005



TimeSeriesMonkfish2005



TimeSeriesNephrops2005



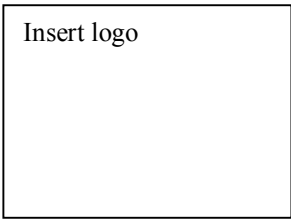
TimeSeriesSole2005



TimeSeriesPlaice2005



Appendix 2



2005 Survey of North Sea Stocks

The purpose of this questionnaire is to ensure that fishermen's knowledge of the state of fish stocks is considered during the development of TACs.

The questionnaire should be completed by **comparing conditions in January - June this year with conditions in January - June last year.**

All information will remain strictly confidential. Data will be pooled before presentation to the Advisory Committee on Fisheries Management. To ensure complete confidentiality please *do not* write your name, or the name of your vessel, on this questionnaire.

Instructions

1. The questionnaire refers to the **North Sea only**.
2. The questionnaire is in four sections that will help us use the data
 1. Vessel size and gear type
 2. Information on the eight main species
 3. Your financial status compared to last year
 4. Any other information you may wish us to know
3. Questions should be answered by putting a tick in the appropriate box (see example below).

EXAMPLE				
Question 1	Answer 1	<input checked="" type="checkbox"/>	Answer 2	<input type="checkbox"/>
			Answer 3	<input type="checkbox"/>

4. **Please return your completed questionnaire to *****address***** by *****date*******

SECTION 1

VESSEL & GEAR									
Size	Under 15m			15-24m			Over 24m		
Main fishing method last year	Trawl		Nephrops Trawl		Beam Trawl		Gill Net		Seine
	Other (please specify)								
Main fishing method this year	Trawl		Nephrops Trawl		Beam Trawl		Gill Net		Seine
	Other (please specify)								

SECTION 2

When completing the question on fishing area in this section, reference should be made to the numbered boxes on the map below (Figure 1 in main text).

Information on abundance should be provided on the basis of **catch** not landings

COD									
Area of fishing (refer to map)	1		2		3		4		5
	6a		6b		7		8		9

Has the abundance of cod changed since last year? No Yes

If yes:

Change in Abundance	Much less		Less		More		Much more	
---------------------	-----------	--	------	--	------	--	-----------	--

Has your level of cod discarding changed since last year? No Yes

If yes:

Change in Discards	Much less		Less		More		Much more	
--------------------	-----------	--	------	--	------	--	-----------	--

For this year:

Size range	Mostly small			All sizes			Mostly large	
Abundance of young fish about to enter fishery	Low		Moderate		High		Don't know	

SECTION 3

ECONOMIC CIRCUMSTANCES

Have your economic circumstances changed since last year?

<i>Difficulties in obtaining or retaining crew</i>	Much less		Less		Same		More		Much more	
--	-----------	--	------	--	------	--	------	--	-----------	--

<i>Operating costs</i>	Much less		Less		Same		More		Much more	
------------------------	-----------	--	------	--	------	--	------	--	-----------	--

<i>Profits</i>	Much less		Less		Same		More		Much more	
----------------	-----------	--	------	--	------	--	------	--	-----------	--

<i>Are you more or less optimistic about the future?</i>	Much less		Less		Same		More		Much more	
--	-----------	--	------	--	------	--	------	--	-----------	--

SECTION 4

Have you any additional information on the fisheries?

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Thank you for your contribution.