University of Florida Sea Grant Lobster Tag-Recapture Program 1975-1976 Lower Florida Keys

2005 Lobster SEDAR Data Workshop, Marathon, Florida

UNIVERSITY OF FLORIDA
Institute of Food and Agricultural Sciences

Sea Grant
Florida

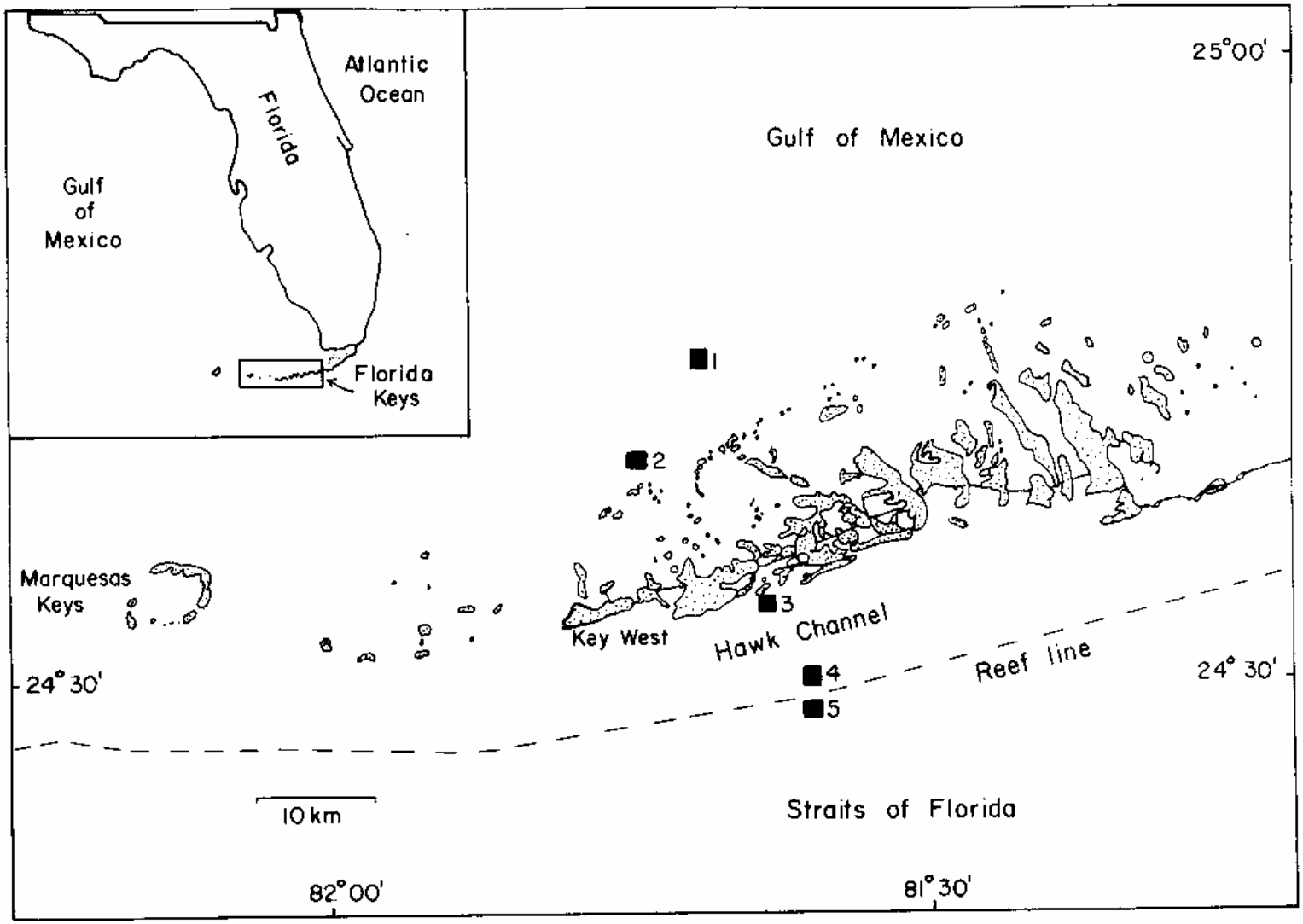


FIGURE 1.—*Location of 1-km² trapping sites for spiny lobsters in the lower Florida Keys, 1975–1976. Site 1 = Gulf middepth; site 2 = Gulf shallows; site 3 = Atlantic shallows; site 4 = Atlantic patch reef; site 5 = Atlantic deep reef.*

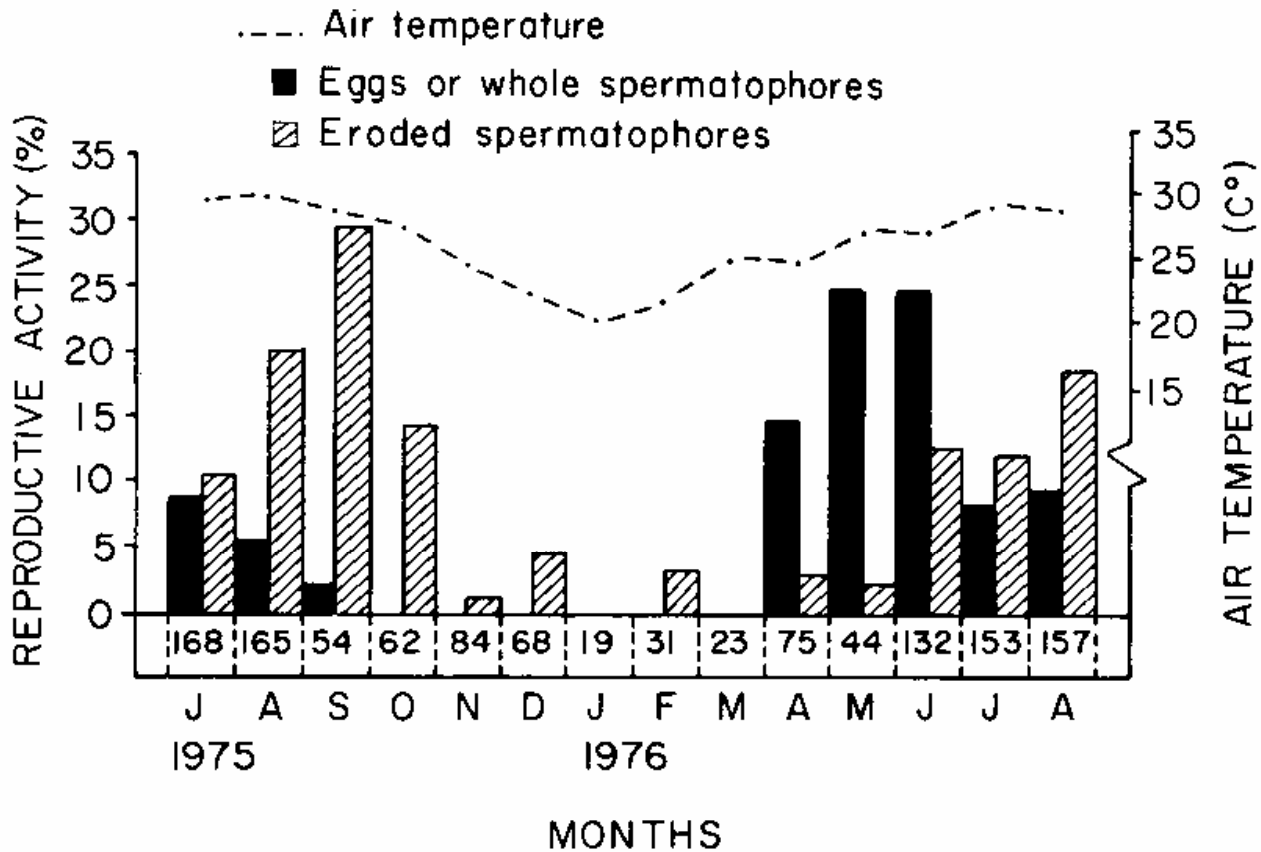


FIGURE 2.—*Seasonal incidence of reproductive activity among 1,235 female spiny lobsters (≥70-mm carapace length) from Atlantic habitats (sites 3–5) in lower Florida Keys, July 1975–August 1976. Site 5 (Atlantic deep reef) was sampled only from April to August 1976. The number of females examined monthly is presented at the bottom of the graph. Mean monthly air temperatures are for Key West, Florida, 1975–1976 (NCC 1975, 1976). Surface-water temperature records for Key West were unavailable for some months in 1975; monthly air and water temperatures in 1975 and 1976 were significantly correlated* ($r = 0.99$; *12 df*; $P < 0.05$).

TABLE 4.—*Fecundity schedule for female spiny lobsters from Atlantic habitats of the lower Florida Keys, April–August 1976.*

Carapace length (mm)	Number of females	Number of breeding females[a]	Number of eggs[b] (in thousands)	Fecundity[c] (in thousands)
<65	93	0	0	0
65–70	115	6	859	7.5
70–75	153	30	5,455	35.7
75–80	183	46	10,465	57.2
80–85	130	39	10,955	84.3
85–90	59	18	6,169	104.6
90–95	31	9	3,723	120.1
95–100	10	7	3,463	346.3
100–105	7	5	2,932	418.8
>105	1	1	690	690.0

[a] The criterion for designating reproductive effort was the presence of eggs or spermatophores.

[b] Number of eggs = number of breeding females × $[4.8(0.98 + 0.2598CL)^{3.53}]$ (da Costa et al. 1968; Mota Alves and Bezerra 1968); in these computations, *CL* is the calculated midpoint of the carapace-length class.

[c] Fecundity = (number of eggs)/(number of females).

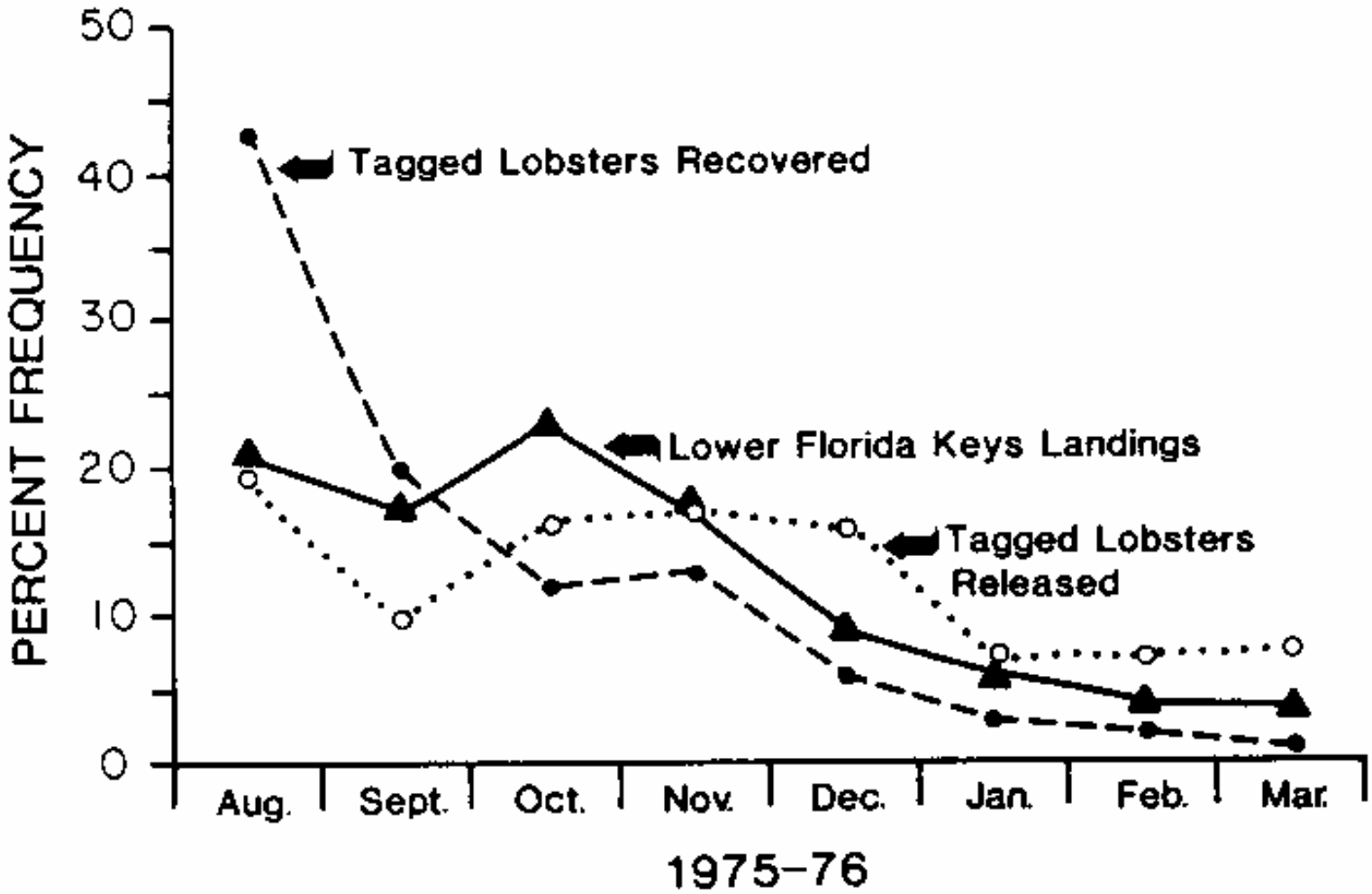


FIG. 2. Monthly percent frequency distribution of tagged lobsters released (N = 2689), tagged lobsters recovered (N = 543), and commercial landings (850 metric tons) in the lower Florida Keys, August 1975 – March 1976.

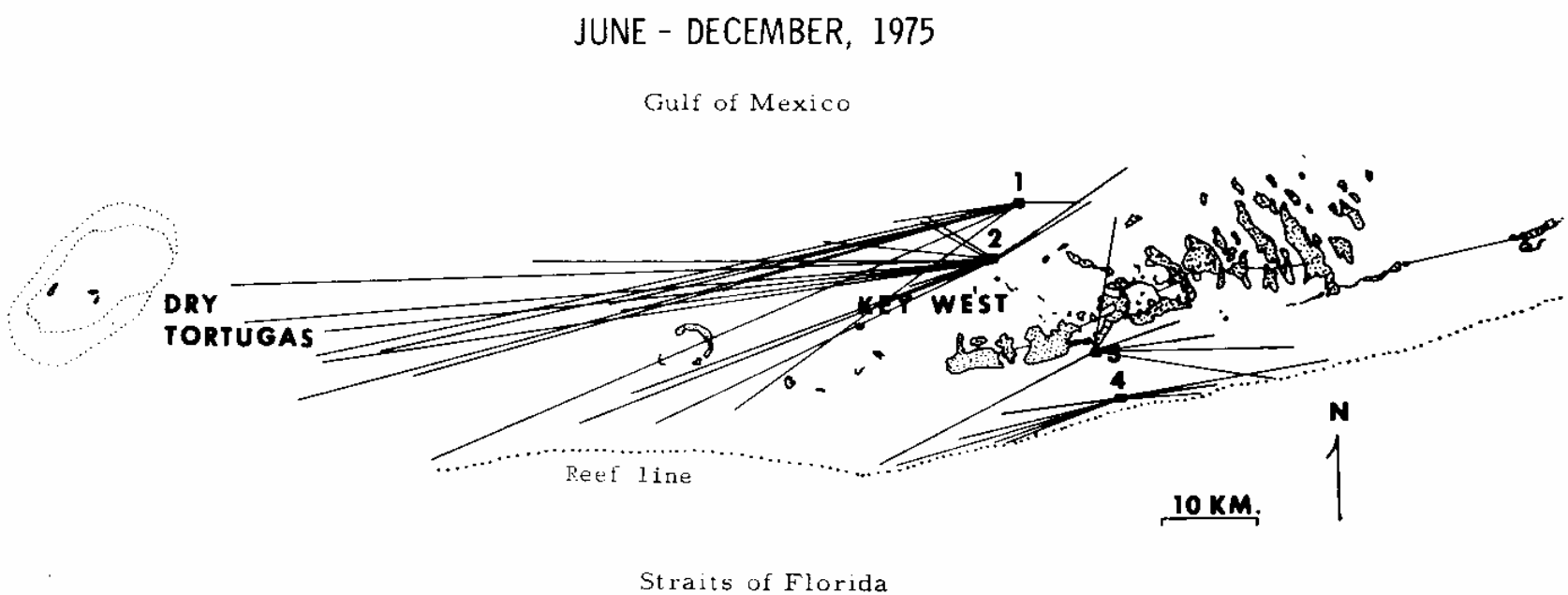


Fig. 2. Long distance movements of tagged lobsters, June-December 1975.

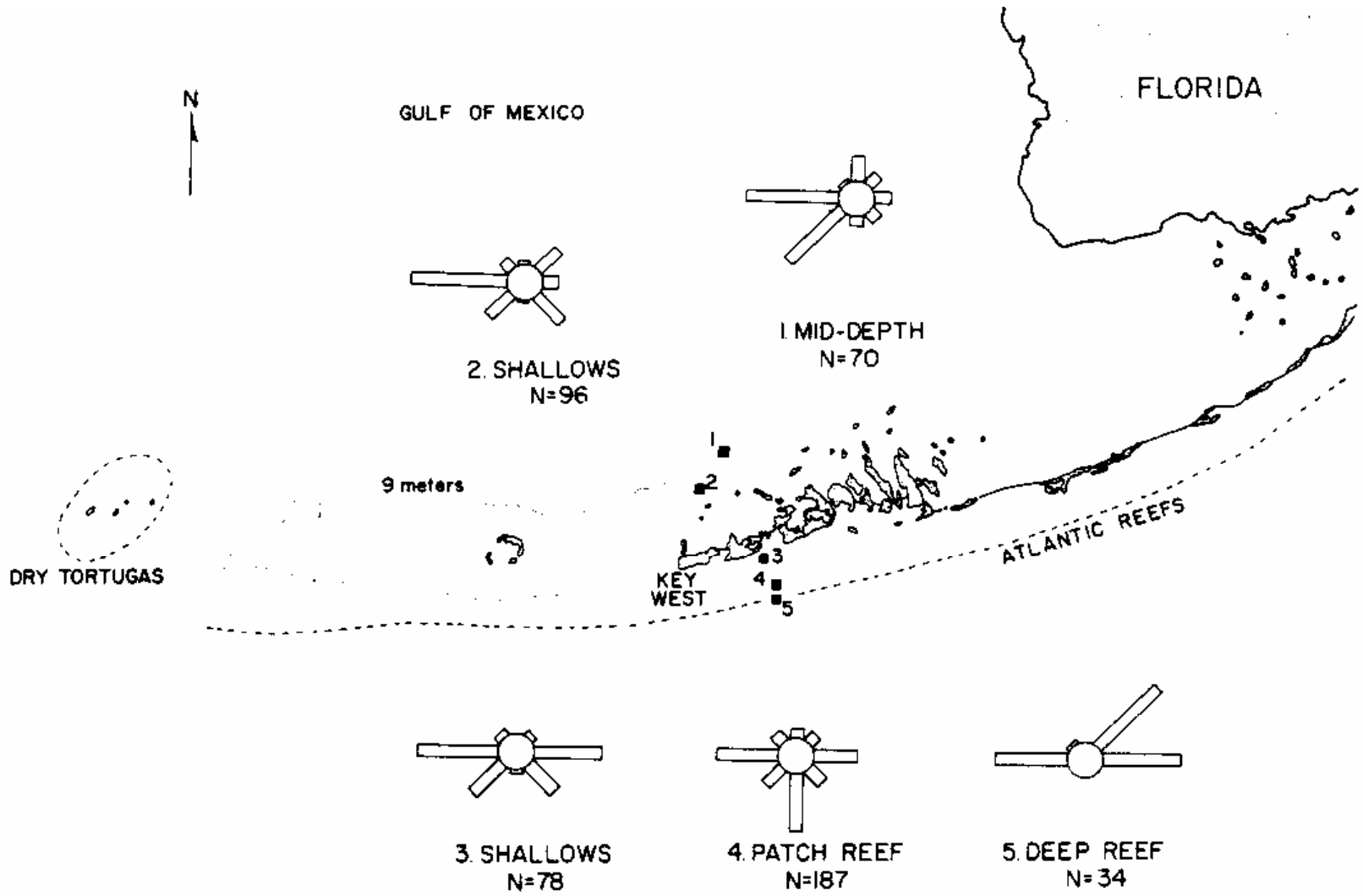


FIG. 1. Movement directions of 465 tagged spiny lobsters released from the five release sites (Gulf of Mexico: 1–2; Atlantic Ocean: 3–5) in the lower Florida Keys, July 1975 – August 1976. Movement directions per site are presented proportionately for the eight depicted compass directions. The study area was located at approximately 24°30′N, 81°30′W.

Number ofTraps Sampled by Year, Month, and Area

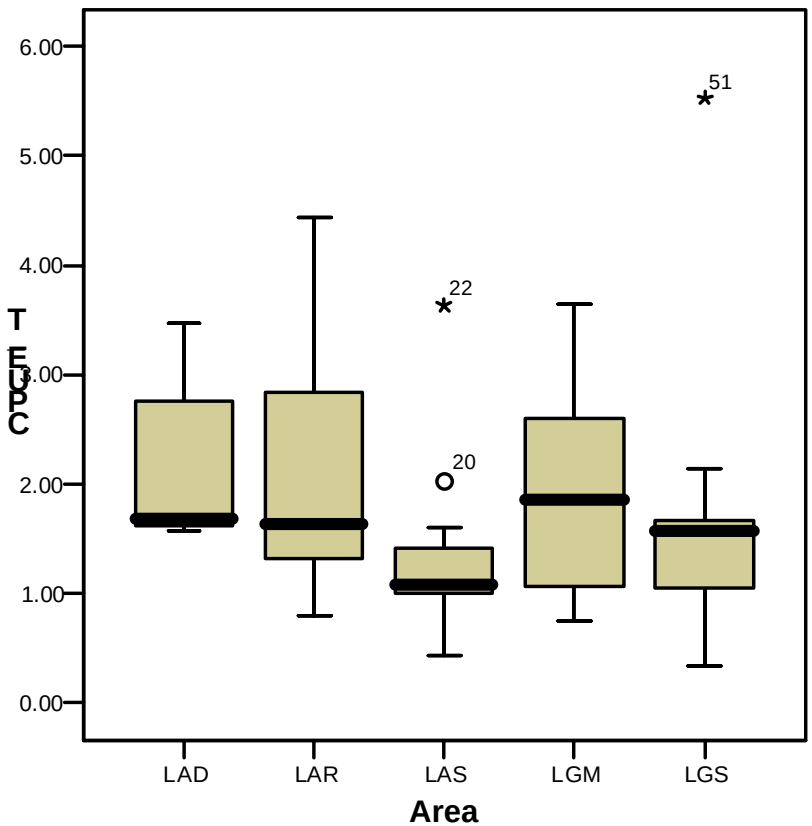
Year	Month	Area LAD	LAR	LAS	LGM	LGS	Total
1975	6			32	63	60	155
	7		115	120	108	59	402
	8		114	71	82	80	347
	9		98	82	123	147	450
	10		138	125	98	102	463
	11		49	50	73	78	250
	12		122	122	123	130	497
	Totals		636	602	670	656	2564
1976	1		97	100	50	51	298
	2		96	100	74	76	346
	3		50	75	99	100	324
	4	43	75	70	97	100	385
	5	41	64	50	76	69	300
	6	93	61	75	80	79	388
	7	45	97	97	97	100	436
	8	69	73	73	74	74	363
	Totals	291	613	640	647	649	2840

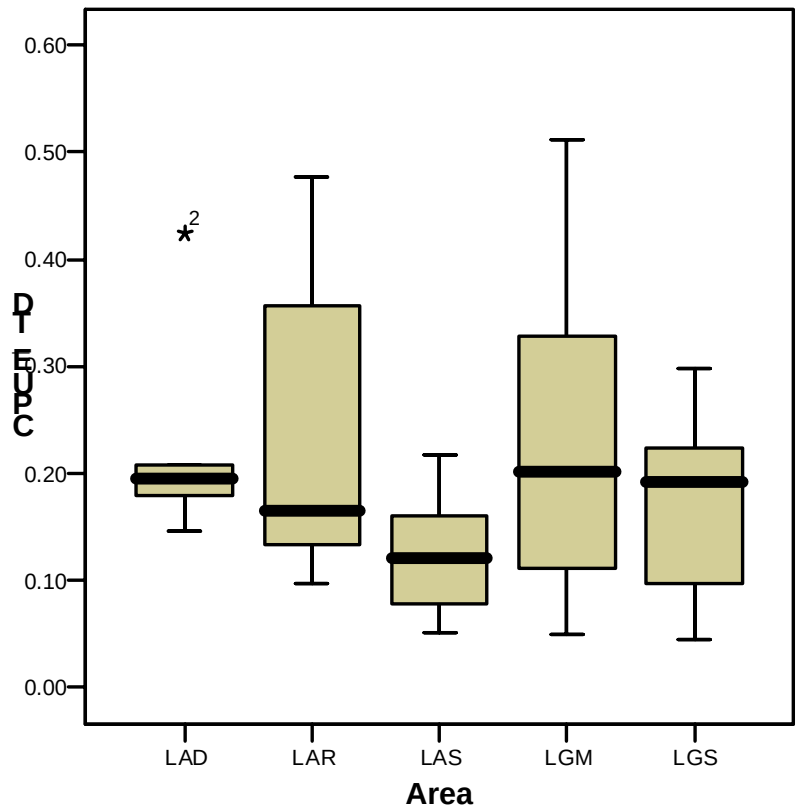
Number of Lobsters Observed by Year, Month, and Area

Year	Month	Area LAD	LAR	LAS	LGM	LGS	Totals
1975	6			65	175	96	336
	7		326	125	144	326	921
	8		208	258	62	125	653
	9		96	81	119	158	454
	10		200	61	267	219	747
	11		217	80	266	149	712
	12		218	138	305	213	874
	Totals		1265	808	1338	1286	4697
1976	1		82	160	54	86	382
	2		126	123	68	74	391
	3		74	32	105	165	376
	4	149	103	42	180	116	590
	5	113	51	52	179	70	465
	6	151	143	81	224	124	723
	7	71	326	115	232	34	778
	8	116	240	75	124	53	608
	Totals	600	1145	680	1166	722	4313

Catch per Trap (a) and Trap per Days Soak (b) by Sample Area

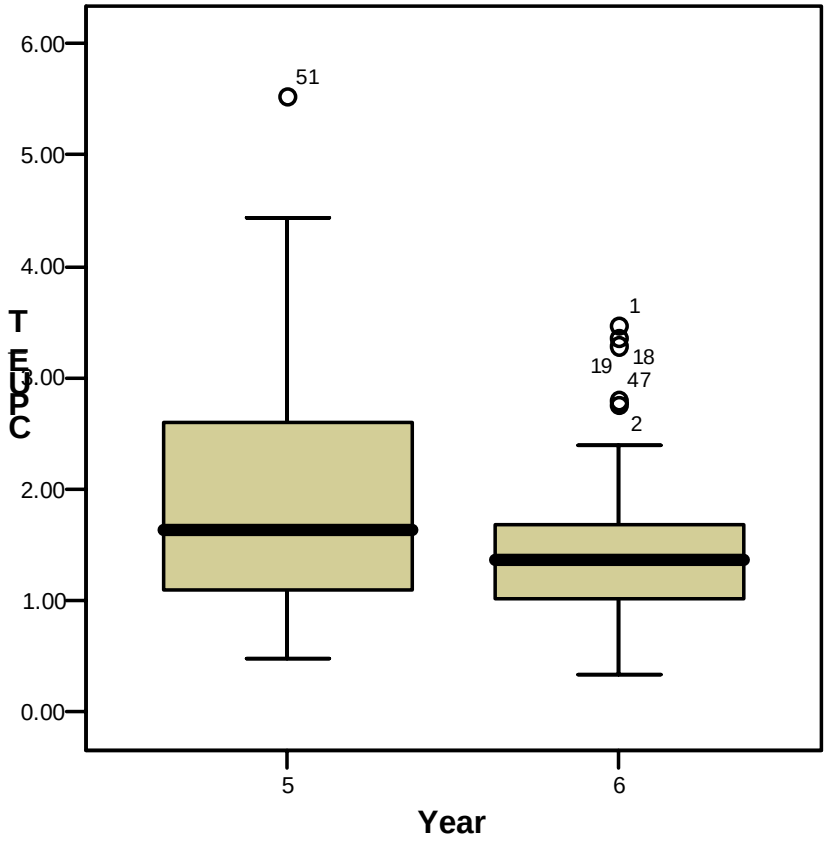
(LAD=Lower Keys Atlantic Deep Reef; LAR=Lower Keys Reef Patches; LAS=Lower Keys Atlantic Shallows; LGM=Lower Keys Gulf Mid-depth; LGS=Lower Keys Gulf Shallows)

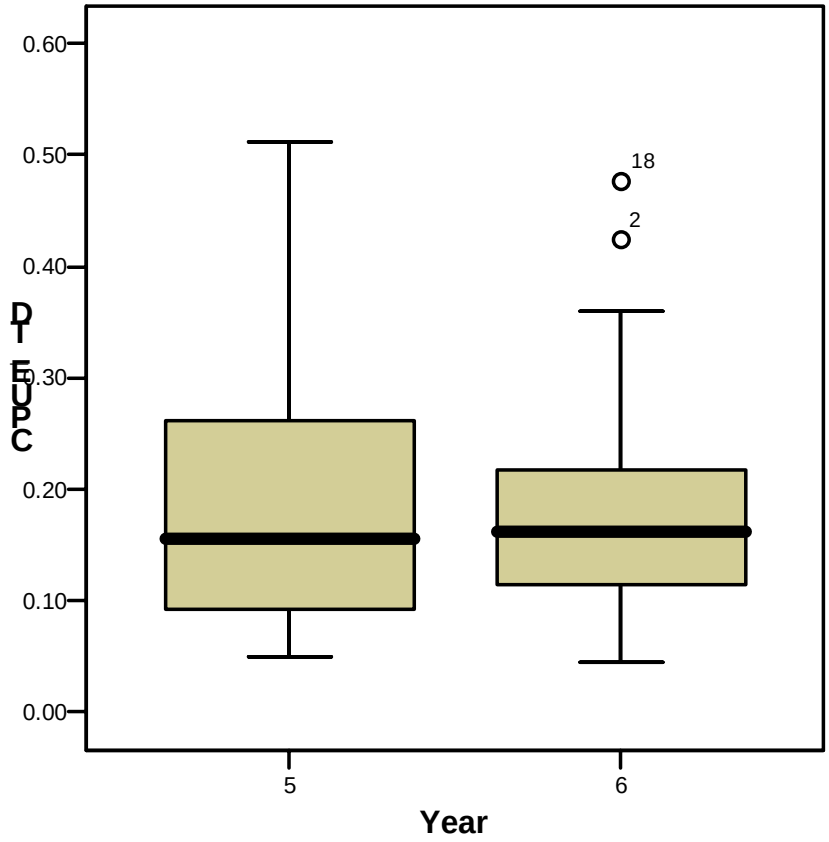




Catch per Trap (a) and Trap per Days Soak (b) by Year

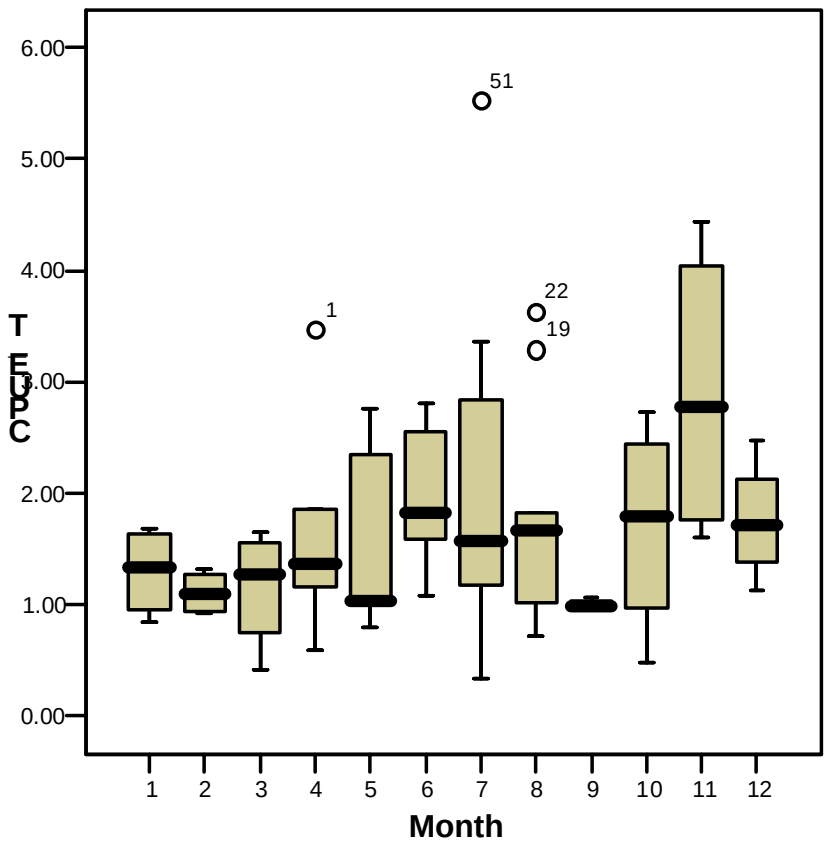
(1975=months Jun-Dec; 1976 = Jan-Aug)

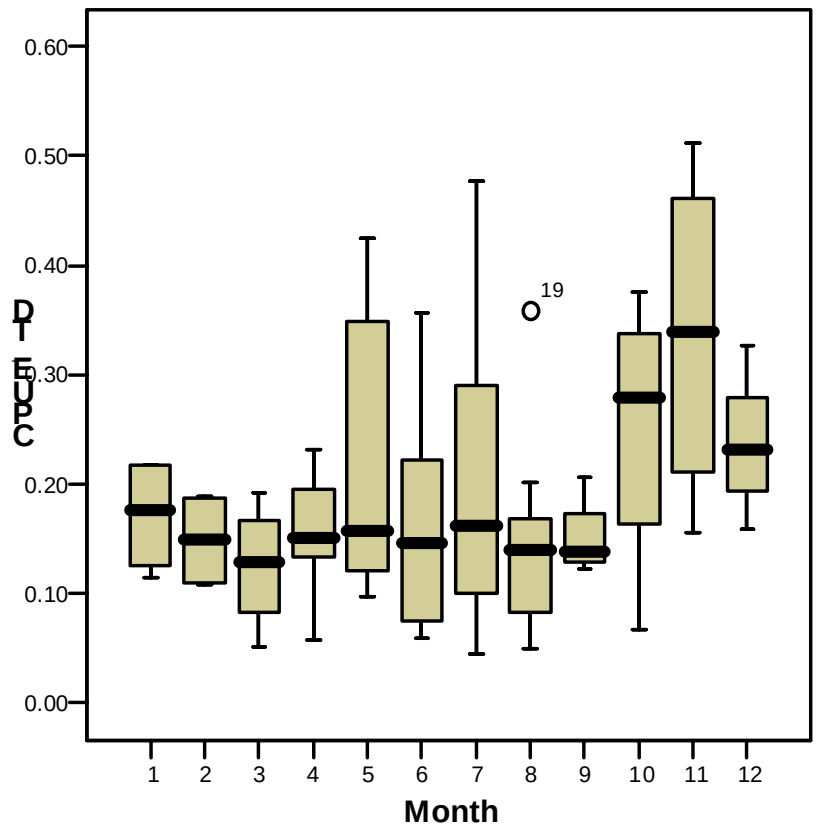


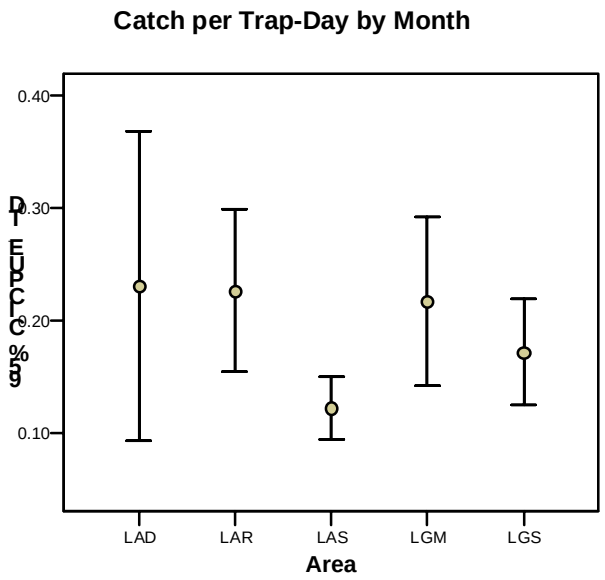


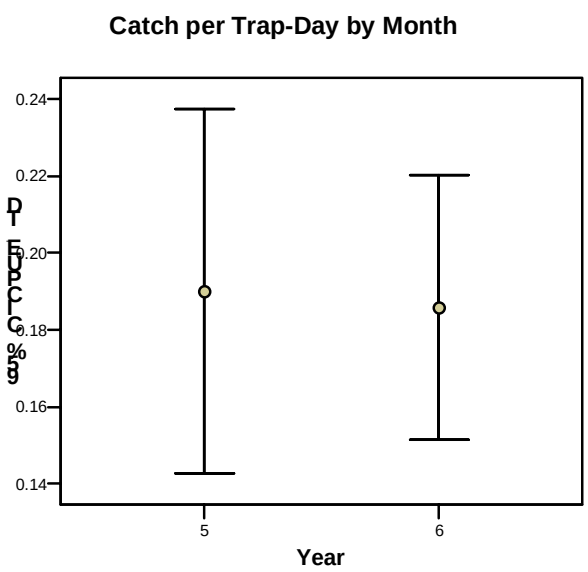
Catch per Trap (a) and Trap per Days Soak (b) by Calendar Month

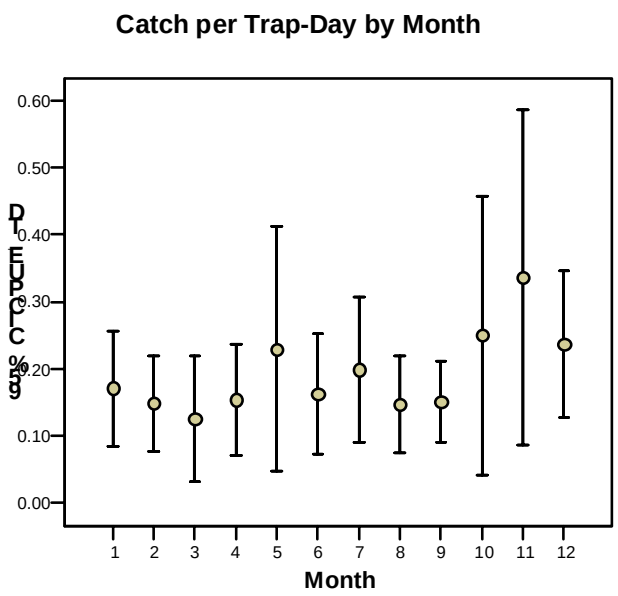
(Months 1-5—1976, Months 6-8 75 & 76, Months 9-12 1975)






Catch per Trap-Day by Month
0.40
0.30
0.20
0.10
LAD
LAR
LAS
LGM
LGS
Area


Catch per Trap-Day by Month
0.24
0.22
0.20
0.18
0.16
0.14
5
6
Year


Catch per Trap-Day by Month
0.60
0.50
0.40
0.30
0.20
0.10
0.00
1
2
3
4
5
6
7
8
9
10
11
12
Month

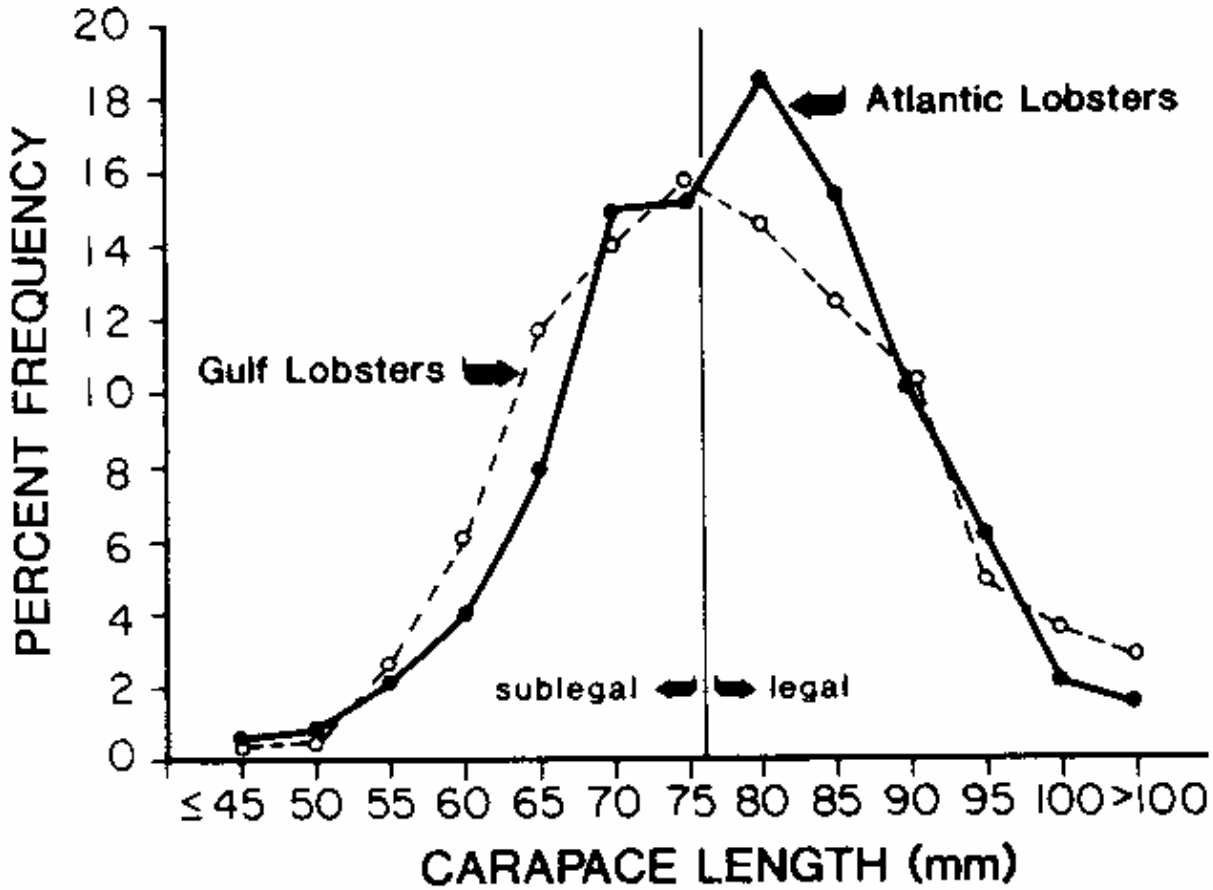
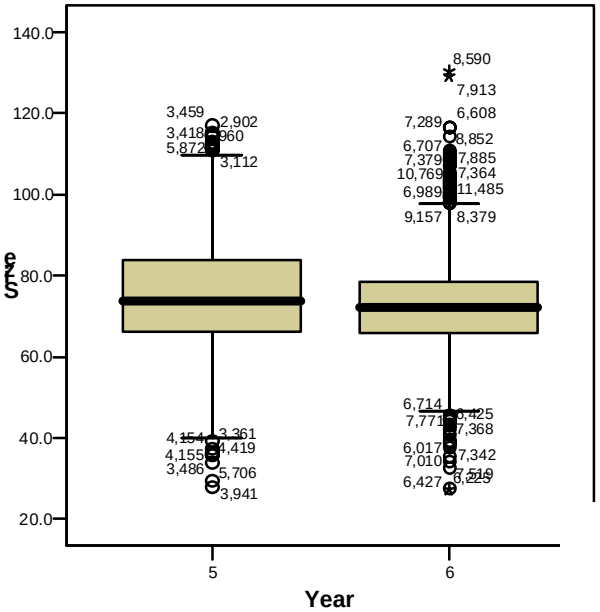
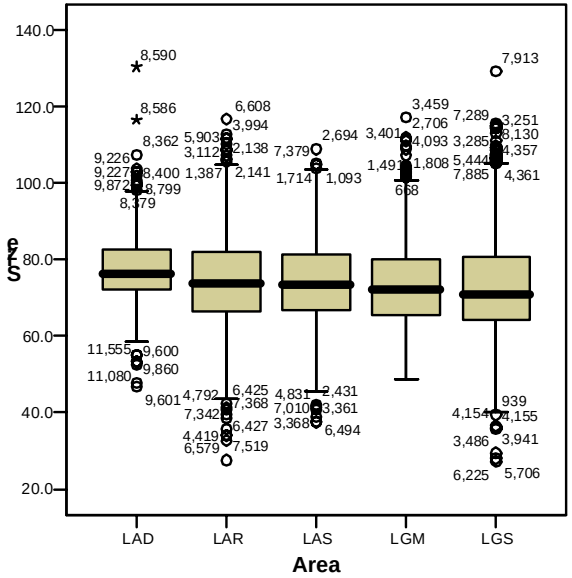
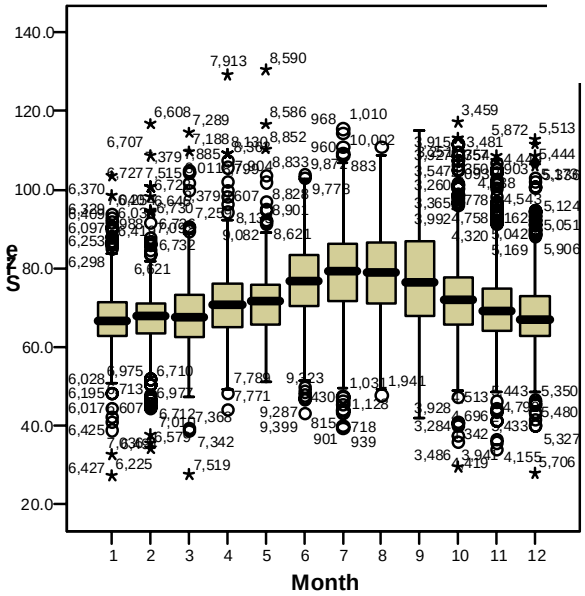


FIG. 3. Percent frequency distribution of carapace length sizes of 6062 spiny lobsters tagged and released at Gulf of Mexico (N = 2951; Sites 1–2) and Atlantic Ocean (N = 3111; Sites 3–5) release sites, lower Florida Keys, July 1975 – August 1976. The separation of sublegal and legal lobsters (76.2 mm carapace length) is denoted by a vertical line.

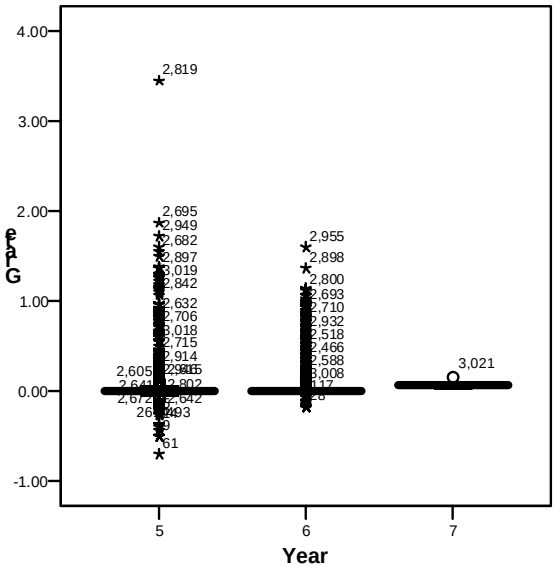
Summary of length frequencies by Year, Month and Area

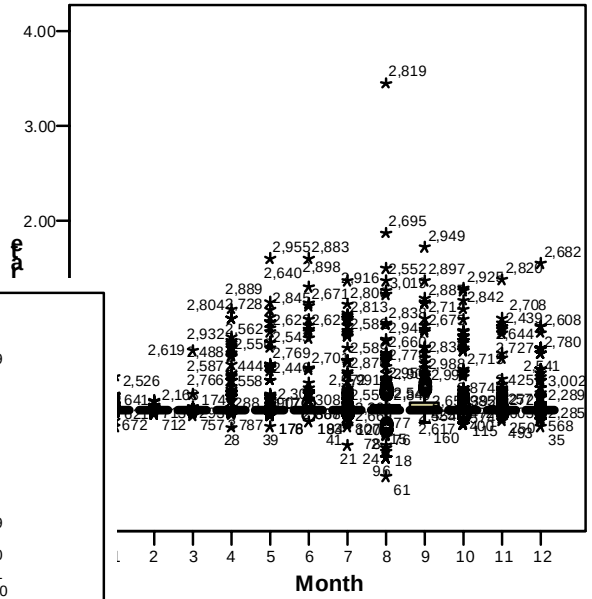


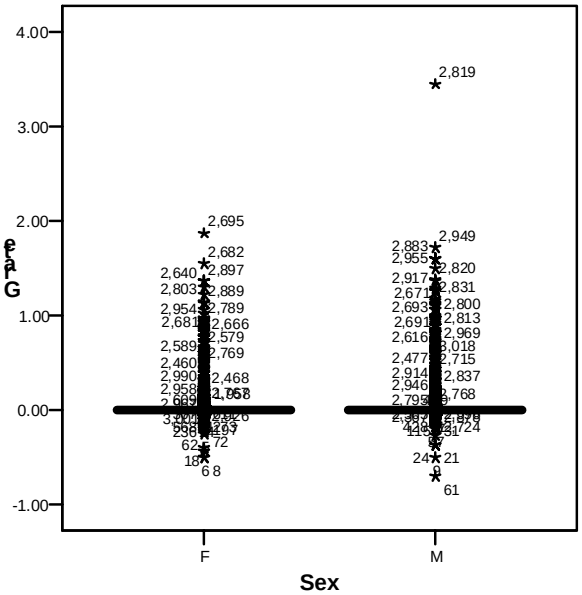


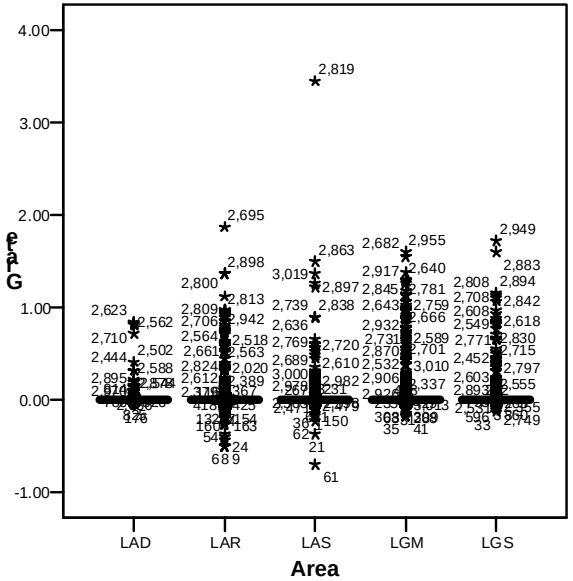


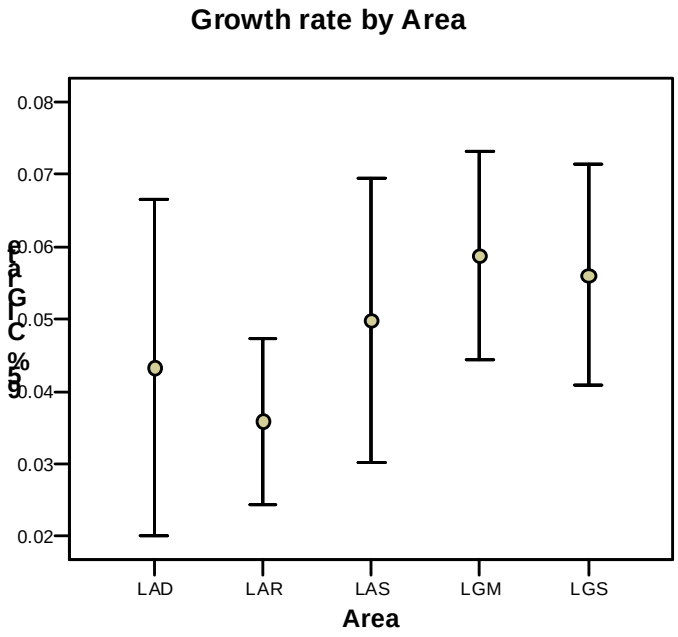
Growth Rate (growth per day) Data by year, month, area, and sex.

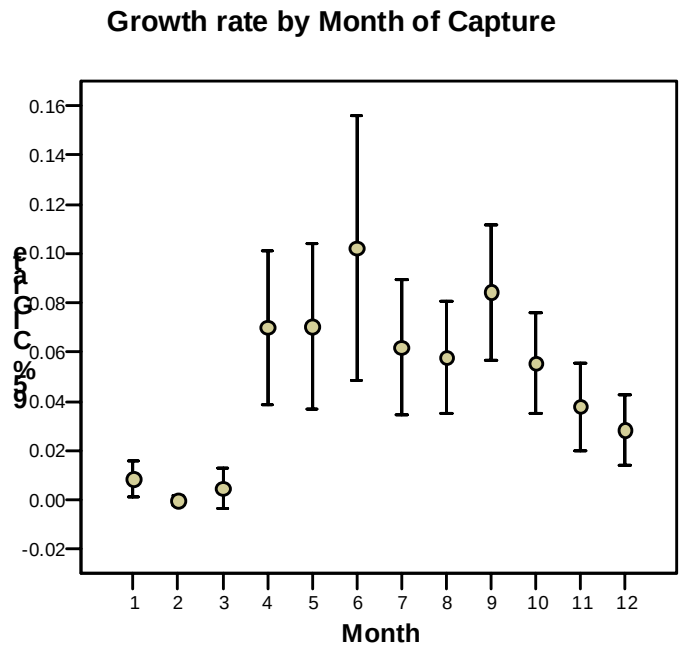


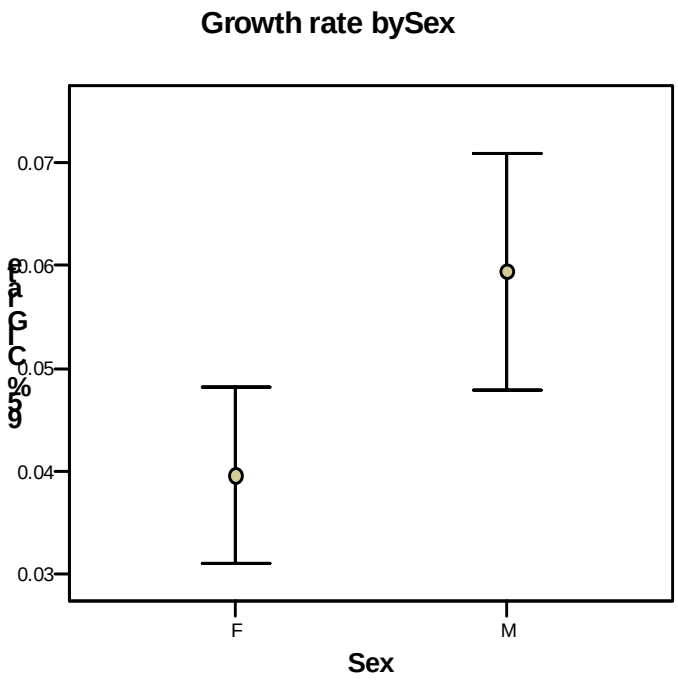


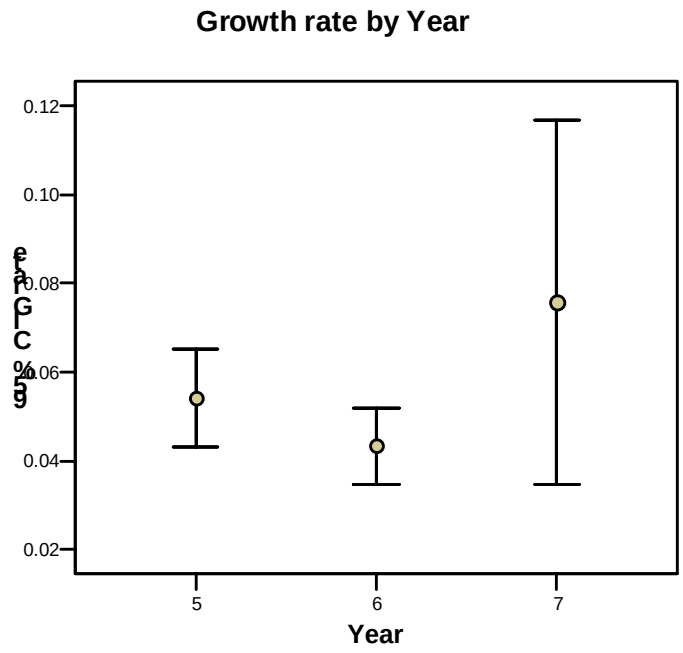


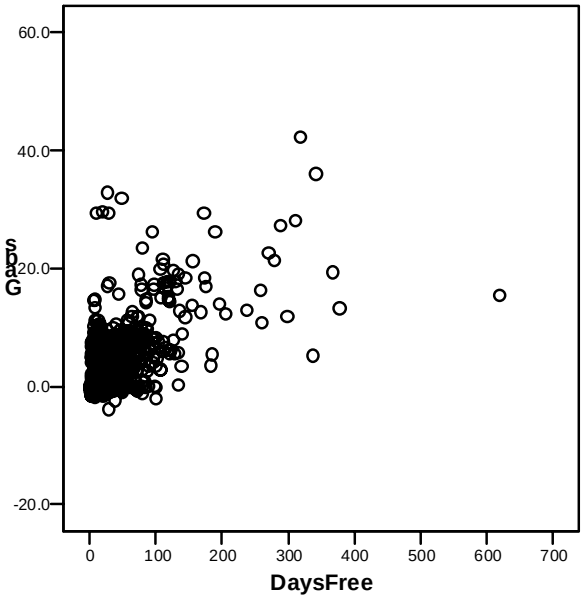


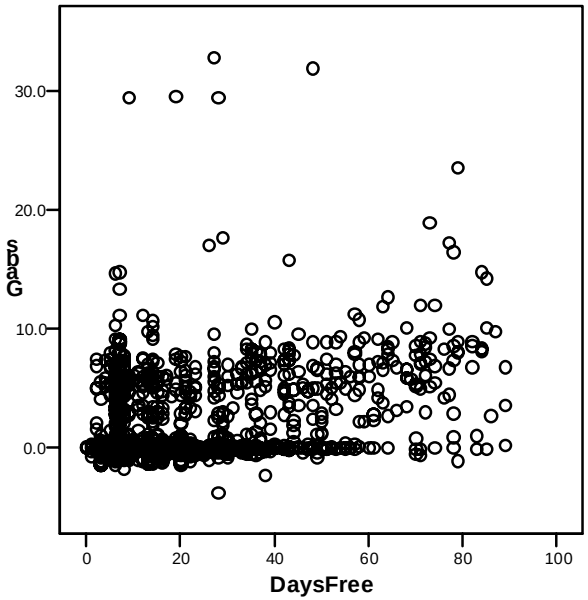

Growth rate by Area
0.08
0.07
0.06
0.05
0.04
0.03
0.02
LAD
LAR
LAS
LGM
LGS
Area


Growth rate by Month of Capture
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
-0.02
1
2
3
4
5
6
7
8
9
10
11
12
Month


Growth rate bySex
0.07
0.06
0.05
0.04
0.03
F
M
Sex


Growth rate by Year
0.12
0.10
0.08
0.06
0.04
0.02
5
6
7
Year


60.0
40.0
20.0
0.0
-20.0
sbaG
0
100
200
300
400
500
600
700
DaysFree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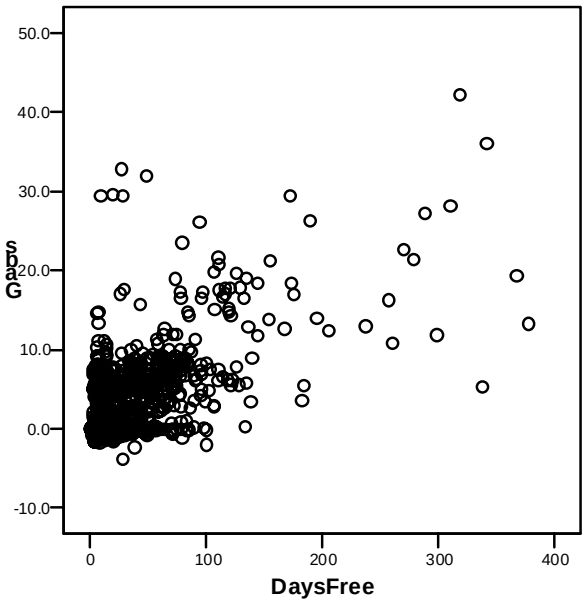
10.0
0.0
sbaG
0
20
40
60
80
100
DaysFree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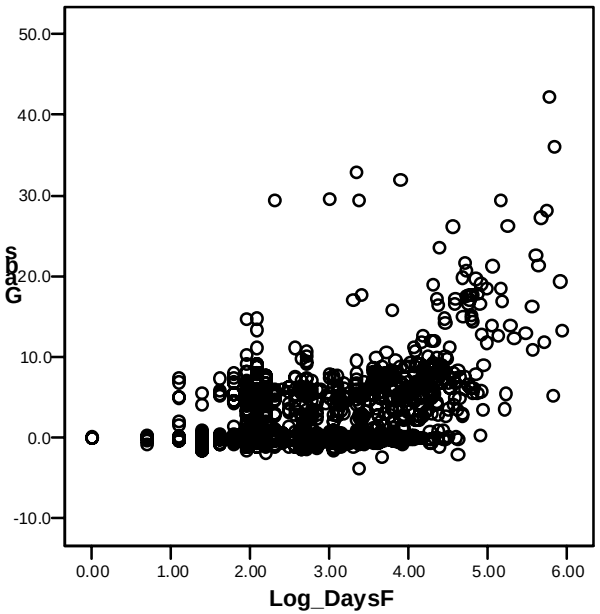
20.0
10.0
0.0
-10.0
sbaG
0
100
200
300
400
DaysFree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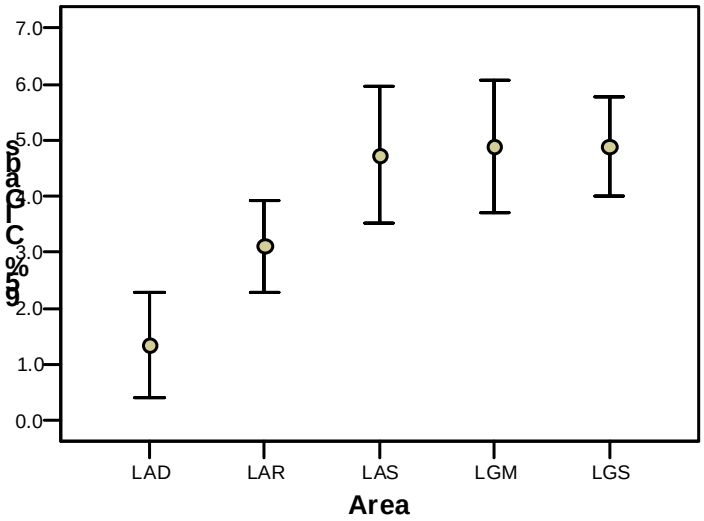
30.0
20.0
10.0
0.0
-10.0
sbaG
0.00
1.00
2.00
3.00
4.00
5.00
6.00
Log_DaysF

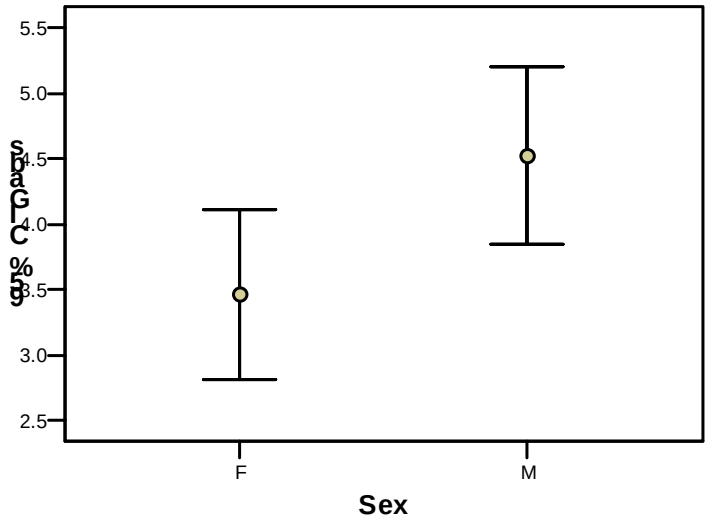
Absolute Growth by Area

Days Free > 30 and < 90



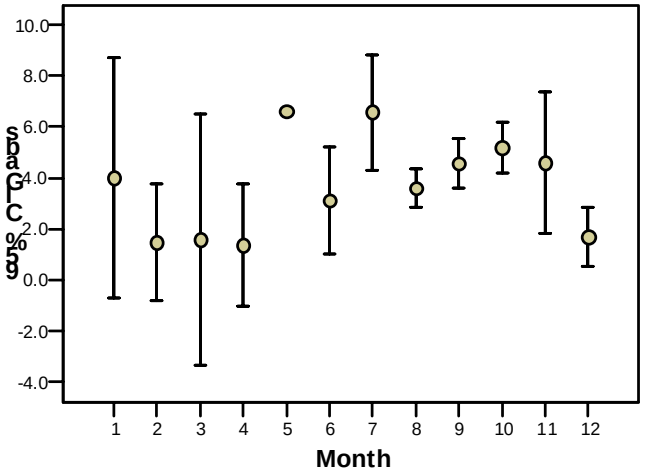
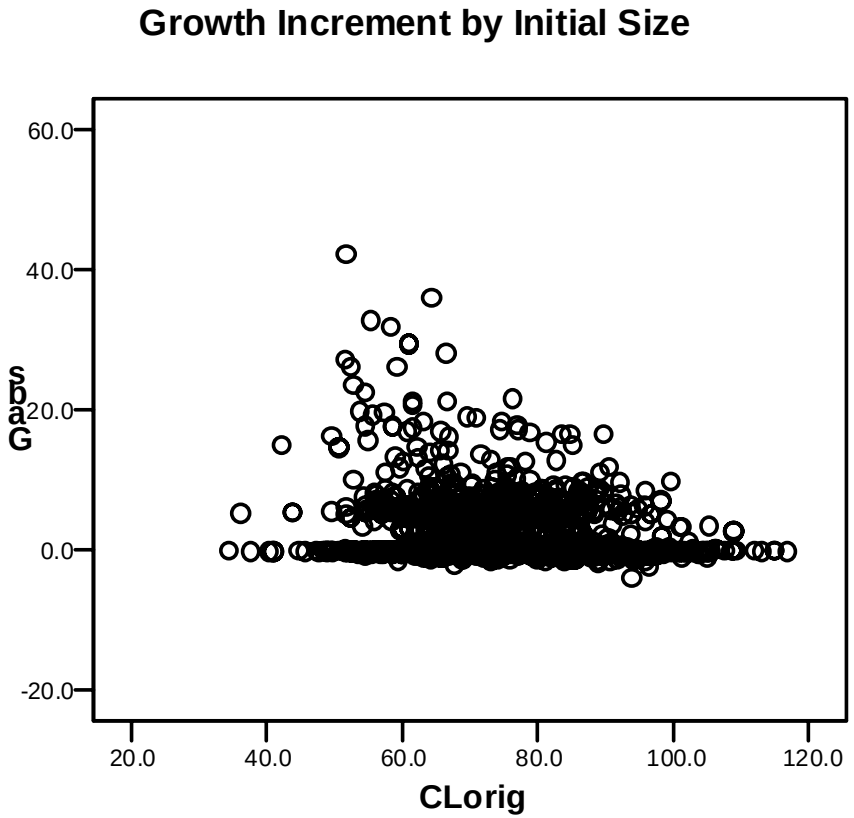
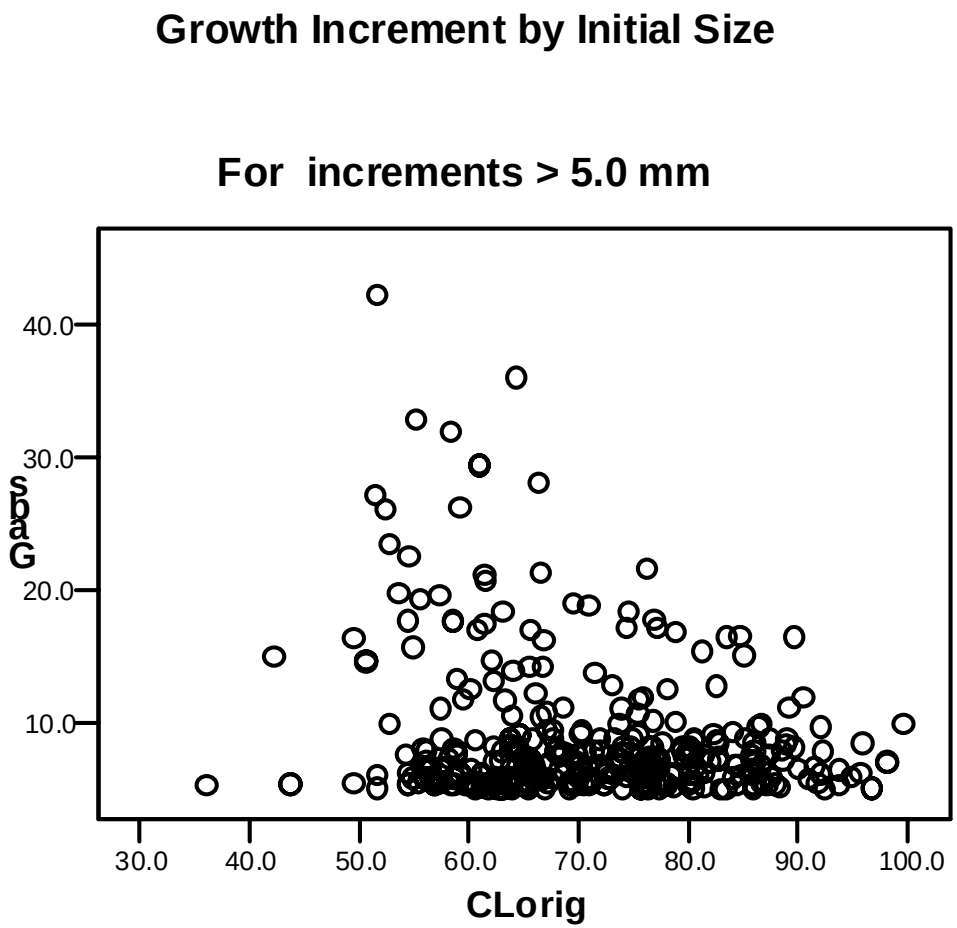
Absolute Growth by Sex

Days Free > 30 and < 90



Absolute Growth by Month

Days Free > 30 and < 90



Growth increment (Gabs) of recaptures by size of initial capture