New England Fishery Management Council
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John Pappalardo, *Chairman* | Paul J. Howard, *Executive Director*

MEMORANDUM

DATE: May 23, 2011

TO: Groundfish Oversight Committee

FROM: Groundfish Plan Development Team (PDT)

SUBJECT: **PDT Conference Call, May 9, 2011**

1. The PDT held a conference call to discuss development of FW 47 to the Northeast Multispecies FMP and other issue. The PDT discussed changes to accountability measures (AMs), scallop fishery access area yellowtail flounder caps, setting of ACLs for 2012-2014, and the upcoming accumulation limits workshop. Participating in the call were Tom Nies, Anne Hawkins, and Deirdre Boelke (NEFMC), Tom Warren and Melissa Vasquez (NMFS NERO), Paul Nitschke (NMFS NEFSC), Kohl Kanwit (Maine DMR), and Rip Cunningham (Groundfish Committee chair).

Accountability Measures

2. The PDT discussed development of AMs for ocean pout, windowpane flounder, Atlantic halibut, Atlantic wolffish, and SNE/MA winter flounder. Preliminary catch information indicates that the groundfish ACL for at least one of these stocks may have been exceeded in FY 2010, but it is not yet known if the overall ACL was exceeded as well. At the January Committee meeting the Committee, while not providing specific guidance, appeared to prefer AMs that consisted of triggered measures that applied to the entire (common pool and sector) fishery. The Committee discussion is attached for reference (see attachment 1)

3. The PDT discussed whether the AM issue for SNE/MA winter flounder could be addressed by allocating this stock to sectors and managing it the same as other stocks. In FY 2010, the ACL for this stock was 2 to 8 times larger than that for other non-allocated stocks. The 2010 values were based on an estimate of “unavoidable bycatch”. It is not yet clear what the ACL will be that results from the upcoming assessment. Preliminary catch information was lower than this estimate, so it is possible future ACLs may not be as high. Unlike the other non-allocated stocks, for this stock there were landings in the past and PSCs can be calculated; the PDT plans to look

at the distribution of PSC. If the stock is allocated to sectors, the Committee may want to consider allowing sector vessels to land the fish. Allowing landing would improve control over catches (since landings are easier to estimate than discards), and would improve biological sampling of the stock. A summary of the advantages and disadvantages of this suggestion is provided in Table 1.

Table 1 – Advantages and disadvantages to allocating SNE/MA winter flounder to sectors

Advantages	Disadvantages
Clear accountability and control over most SNE/MA catches	Future ACL unknown; low ACL may constrain sector activity in large area
No need for complicated area/gear restrictions as an AM	If landing prohibited, catch estimate based on discards alone
Allow fishermen opportunity to modify behavior to control catches	
If landing allowed	
Improved information on catches (discard estimates are less certain than landings)	May increase targeting of a stock that is not rebuilding as planned
Improved biological sampling	May be viewed as inconsistent with goal of reducing mortality as much as possible
May facilitate catching more of other stocks	May be viewed as discriminatory if common pool fishermen not allowed to land the stock

4. For other stocks, the PDT has begun identifying areas where triggered measures (such as closure areas or restricted gear areas) might be effective at controlling catch. The PDT reviewed analyses based on the study fleet on an annual and seasonal basis (see attachments (2) and (3)). While most of the activity of the study fleet was on GB, the results hint at the challenges in this approach. For these data, there is not a clear relationship between the catch of non-allocated stocks and other stocks, which makes it difficult to determine the impacts of the measures. The distribution of the catches of these fish tends to overlay the catches of more valuable species, suggesting that any area-based measures may reduce these catches.

5. The PDT will expand these analyses using recent observer data. The PDT will attempt to identify areas of higher D/K ratios at smaller scales than the entire stock (such as statistical area or 30-minute square). Future analyses are listed below. Some of this work will not be completed until after the review of the winter flounder assessments.

- Examine observed catch per tow to identify areas that may be important of catches of these species
- Examine d/Kall ratios at finer spatial and temporal scales using NEFOP observer data

- Estimate catch of non-allocated stocks by statistical area, using an approach similar to what was used for haddock catches in the herring fishery

6. The PDT identified two general measures that could be implemented: triggered closures, either in-season or in the following season, or changes in gear/restricted gear areas.

(a) As an example of an in-season measure: When the Regional Administrator projects that 95% (or 85% or 100%, etc.) of the witch flounder groundfish sub-ACL has been caught by the common pool and sector (combined), a closure or gear restricted area would be implemented in a pre-designated portion of the stock area (the portion of the stock area where most of the catch has historically occurred); or

(b) As an example of a following season measure: If the Regional Administrator projects that at the end of the fishing year the witch flounder groundfish sub-ACL will be caught, then during the following fishing year, a closure or gear restricted area would be implemented.

7. The Committee may want to consider specifying that the AM is only implemented if the overall ACL is exceeded, as opposed to an AM that is implemented if the groundfish sub-ACL is exceeded. An example where this might be worth considering is for halibut. Much of the state waters catch comes from the Maine fishery that currently takes place in May and June; if the entire state waters catch is not harvested during that season, the excess might be used to reduce the likelihood of triggering AMs for other components of the fishery Such an approach might prevent the use of in-season measures for some stocks, but would only trigger an AM if total catches threaten to cause overfishing.

Scallop Fishery Access Area Cap

8. The scallop fishery is currently limited to catching 10 percent of the yellowtail flounder ACL in the CAI, CAII, and NLCA access areas. This measure was originally adopted prior to the current ACL system and at the time was the only control on scallop fishery catches of GB and SNE/MA yellowtail flounder. With the adoption of the scallop fisher sub-ACLs for these two stocks, the cap remained in place. It serves to limit catches within the closed area, but also serves as a minimum allocation to the scallop fishery in years that an access area is open. The Council agreed to consider modifying the cap in FW 47.

9. From a groundfish perspective, the primary issue the PDT will investigate is whether, if the cap were removed, the worst case scenario of catching the entire scallop fishery sub-ACL from a current closed area is a biological concern. It is possible there could be impacts on bycatch as well and perhaps economic impacts for the groundfish fishery. It would be helpful if the PDT could get a sense from the Committee what range of options members are interested in considering. The PDT sees three basic options:

- No action: keep the current 10 percent cap
- Adopt a cap at some different level
- Remove the cap

10. Changes to current cap provisions might also impact the scallop fishery. If an entire sub-ACL is caught in a closed area, it would have impacts on scallop fishing in future years. Presumably the Groundfish Committee will leave these issues to the Scallop Committee to address as it revisits yellowtail flounder AMS but some coordination may be necessary between the two Committees.

2012-2014 ACLs

11. The PDT has been augmented to develop ABC recommendations for 2012-2014. That work is ongoing. The principal issue the PDT is discussing is developing a method to determine whether ABC s developed using projections based on GARM III stock assessments are appropriate, or whether in certain cases, the ACLs should be adjusted because survey data suggests that stock size is not as projected. The PDT will also review FY 2010 catches when available, as well as the final SBRM three-year report, to determine whether changes are needed to ACLs (such as in the sub-components, management uncertainty adjustments, etc.).

Accumulation Limits Workshop

12. PDT members will be participating in the workshop on June 9. Since the PDT will be asked for analyses as this work continues, the chair cautioned members to take care to avoid the perception that PDT members are advocating for a particular measure.

Attachments:

(1) Extract from Groundfish Committee meeting summary, January 19, 2011

(2) Report on no retention species

(3) Report on seasonal catches of no retention species

Attachment 1: Accountability Measure Discussion from the January 19, 2011 Committee meeting summary

"Accountability Measures

Council staff updated the Committee on PDT conversations about stocks for which there are no effective accountability measures. The PDT examined SMAST study fleet data in order to determine whether catch ratios or other methods could be used to facilitate AMs.

One Committee member stated that he was uncomfortable with having AMs for these particular stocks, because it was difficult to be more specific than to require zero possession of them. He supported option B in the PDT document if one had to be chosen. Other members echoed concerns over allocating more stocks to sectors that could potentially become limiting stocks. Council staff stated that southern New England winter flounder may be treated differently because it does have a history of landings-based allocations, and PSCs could be calculated. Also, as the stock grows it is likely to have a much larger size than the other index-based stocks. Ms. Murphy agreed that option B made more sense for the PDT to focus on since the TACs are tiny and that option is more broad-based. Another member suggested having an area component to allocation since some stocks were not caught at all in certain areas."

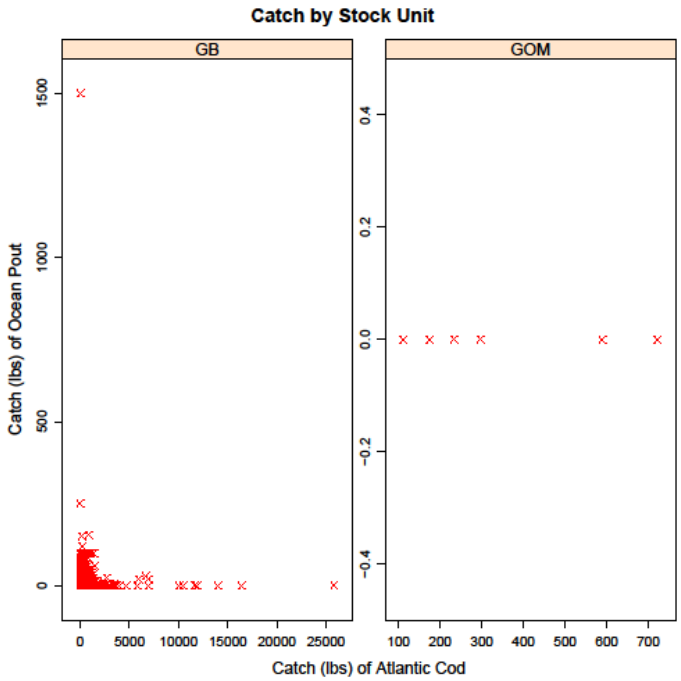
Examination of No-Retention Species or Stock Units from SMAST Study-fleet Data
Sally Roman

The catch of four species and one stock unit of winter flounder for which there is no-retention in the groundfish fishery were examined for relationships to catch of other allocated species and catch location. Ocean pout, Atlantic halibut, Atlantic wolffish, windowpane flounder (Southern and Northern stocks) and SNE winter flounder catch were compared to that of Atlantic cod, haddock, pollock, witch flounder, American plaice, redfish, winter flounder (GOM and GB), yellowtail flounder, and hake,nk by stock unit. Data were queried from the University of Massachusetts, Dartmouth School for Marine Science and Technology (SMAST) study-fleet project database. Stock unit was defined by the end location of effort events. When the stock unit is listed as "all" then there is one stock for the region. All species with the exception of hake,nk (a mix of white and red hake) were identified to the species level by the study-fleet vessels. For a review of the SMAST study-fleet please see the attached manuscript that has been peer-reviewed and is in the process of being published in the *North American Journal of Fisheries Management*.

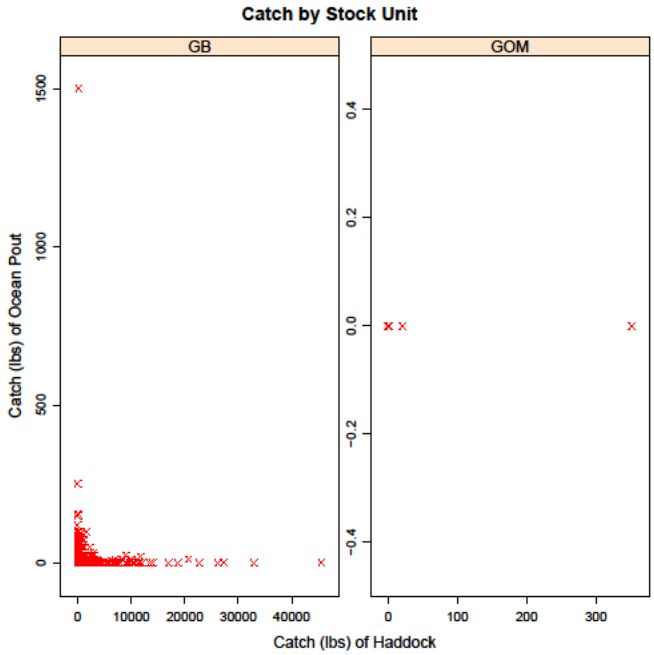
Catch Relationships

Ocean Pout

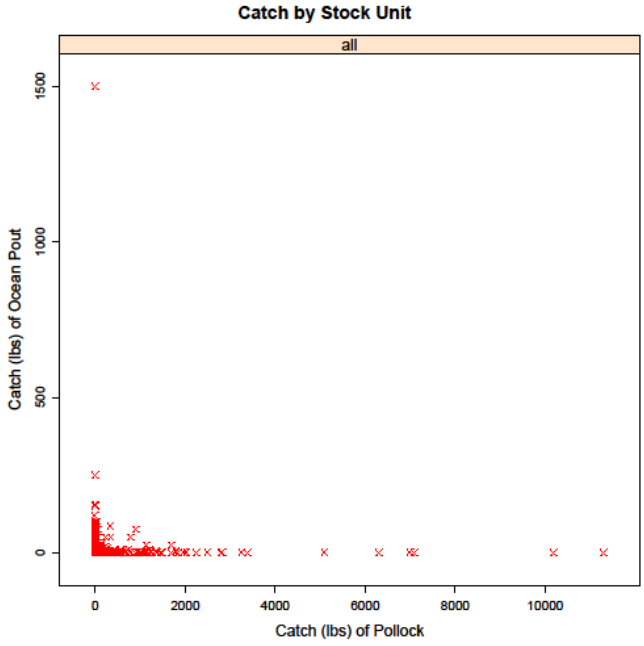
Ocean Pout and Atlantic Cod



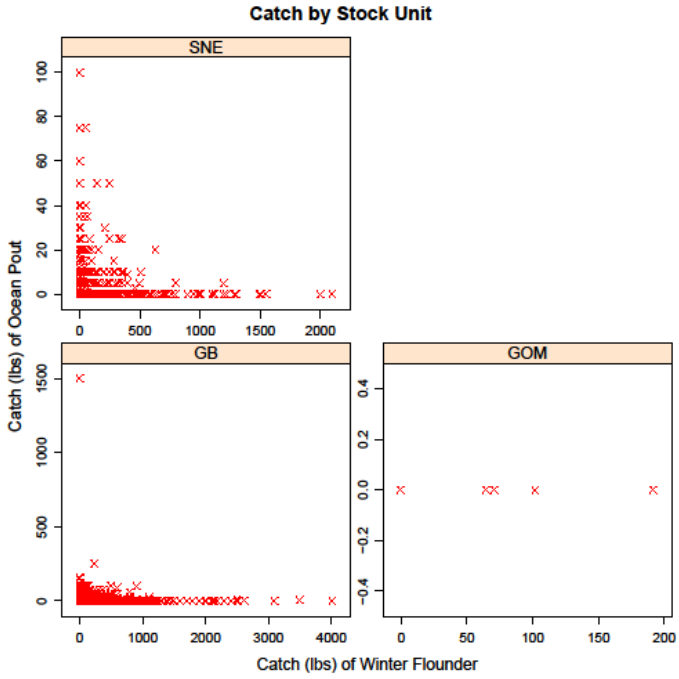
Ocean Pout and Haddock



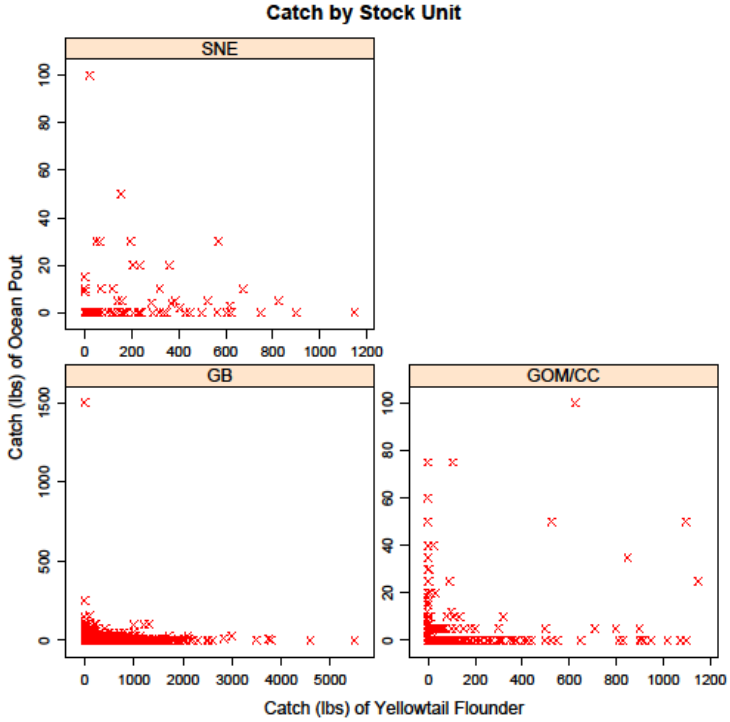
Ocean Pout and Pollock



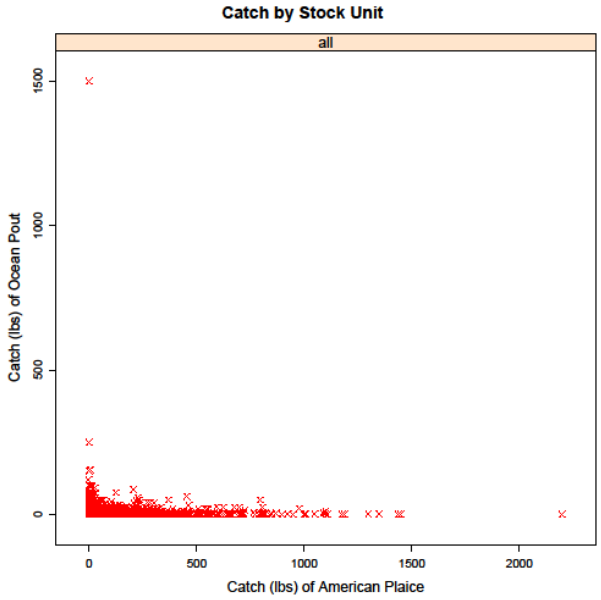
Ocean Pout and Winter Flounder



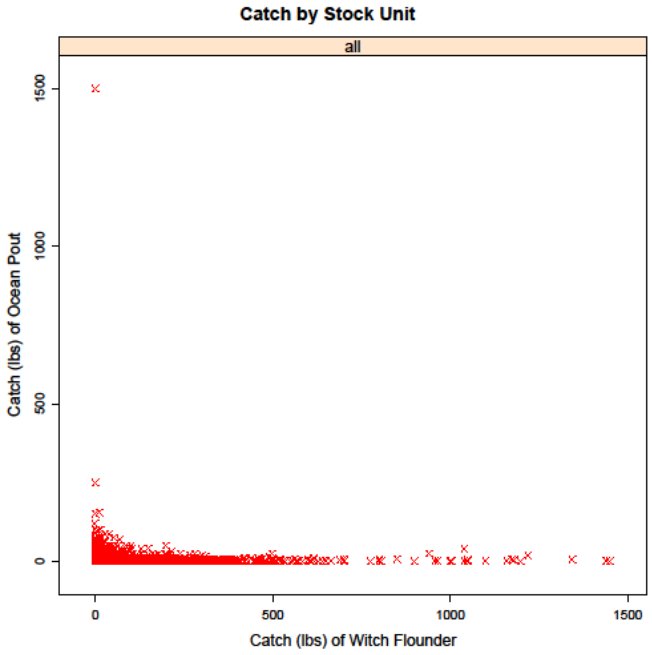
Ocean Pout and Yellowtail Flounder



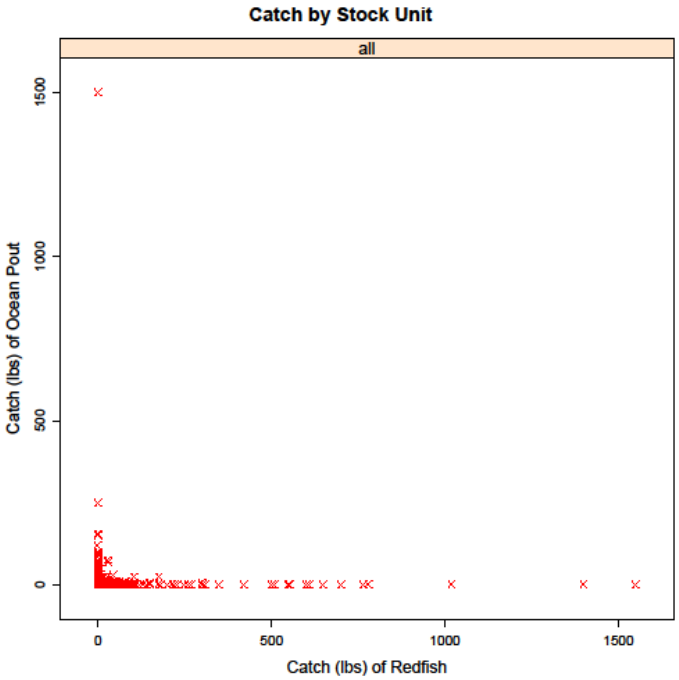
Ocean Pout and American Plaice



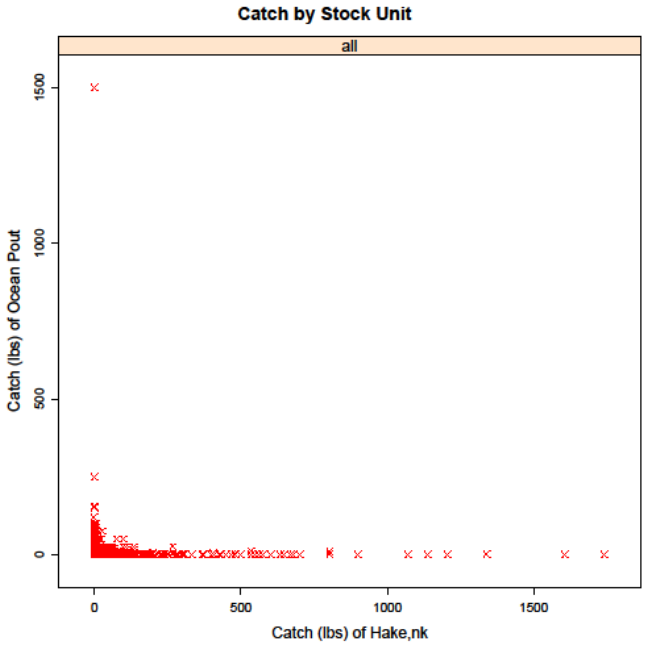
Ocean Pout and Witch Flounder



Ocean Pout and Redfish

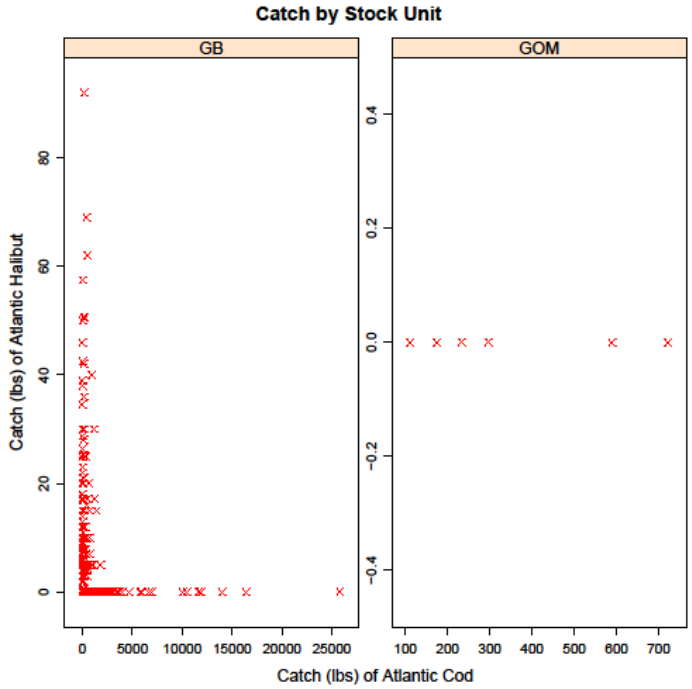


Ocean Pout and Hake,nk

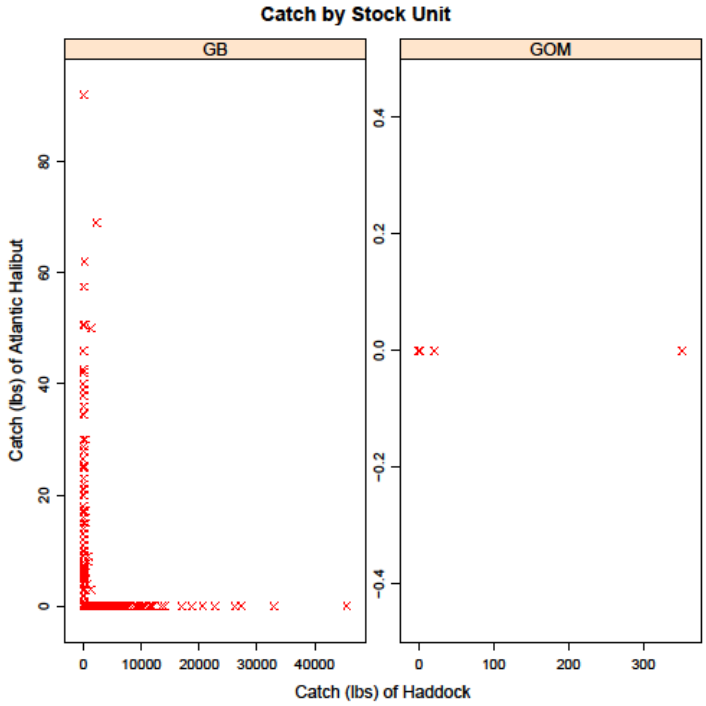


Atlantic Halibut

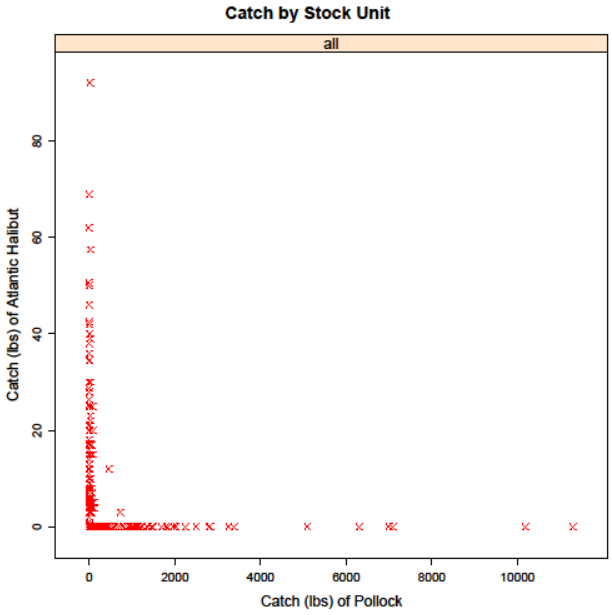
Halibut and Cod



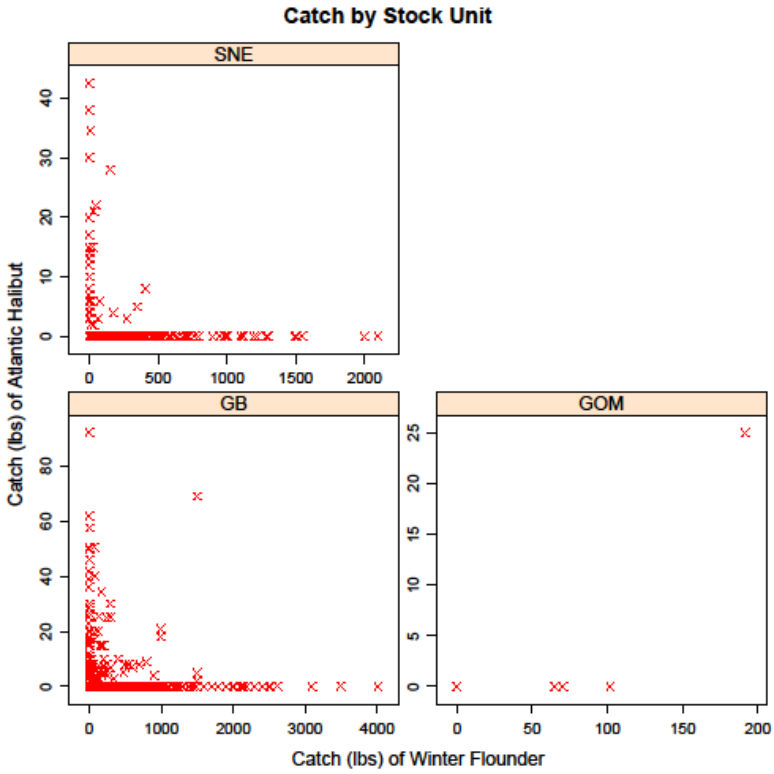
Halibut and Haddock



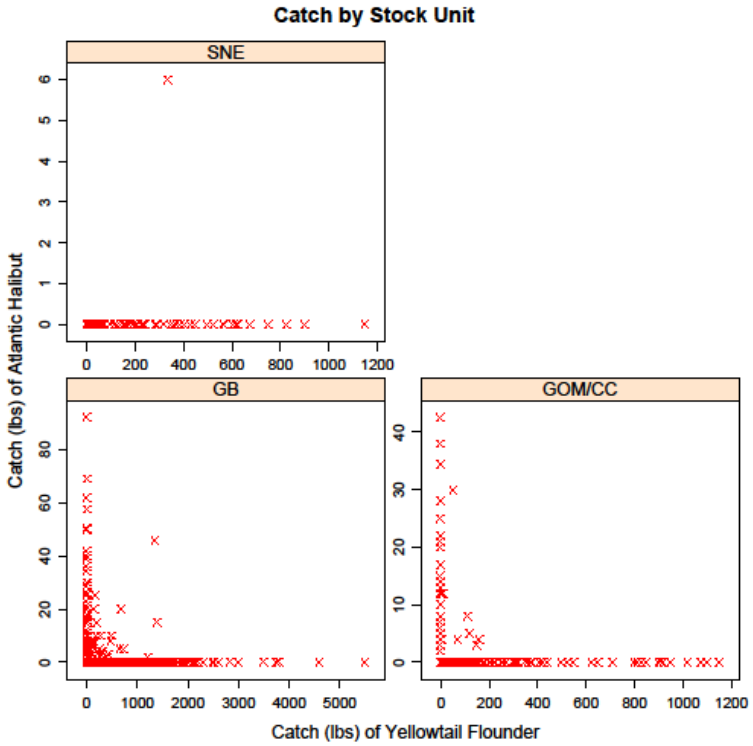
Halibut and Pollock



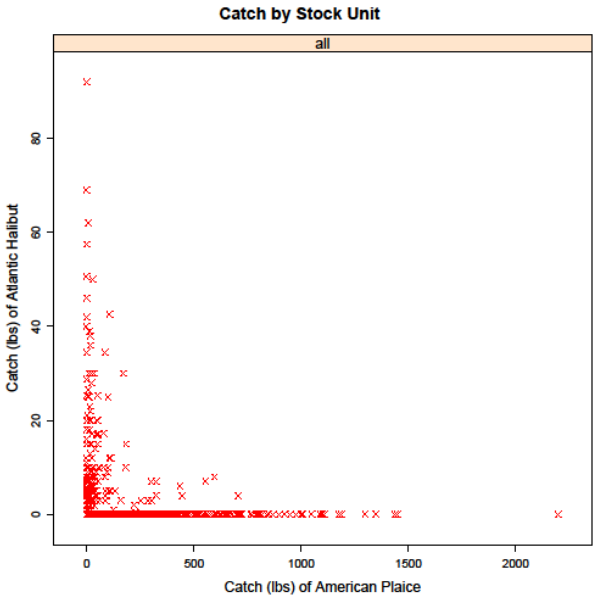
Halibut and Winter Flounder



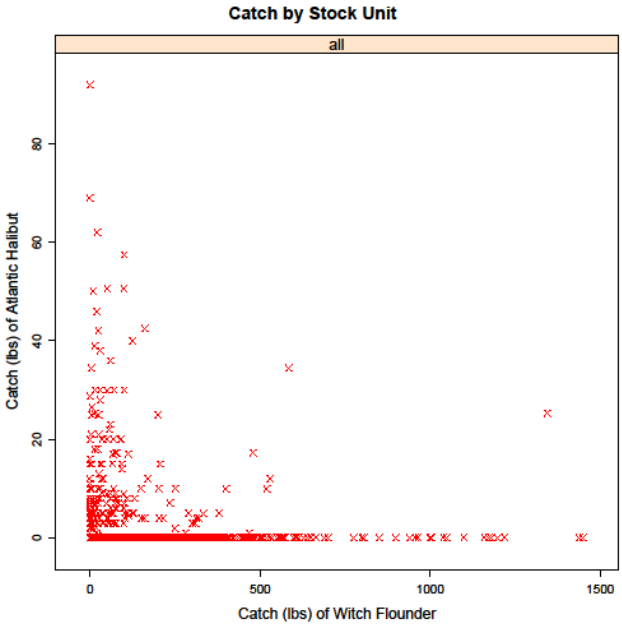
Halibut and Yellowtail Flounder



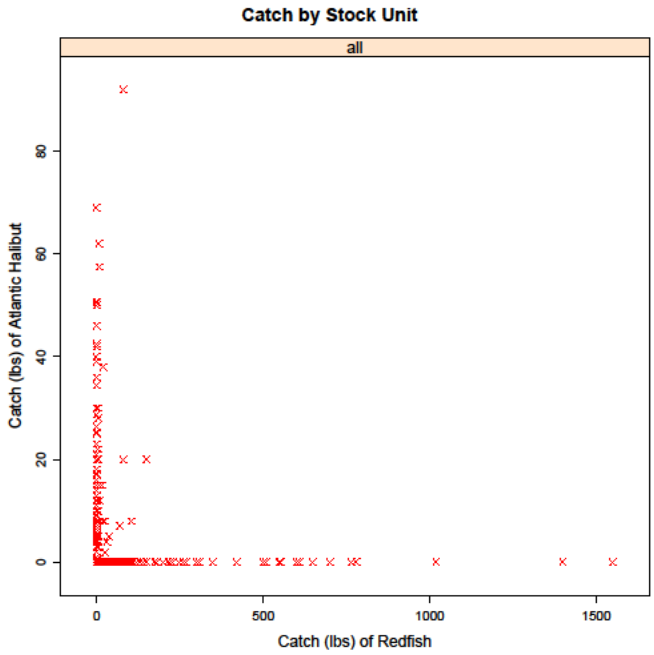
Halibut and American Plaice



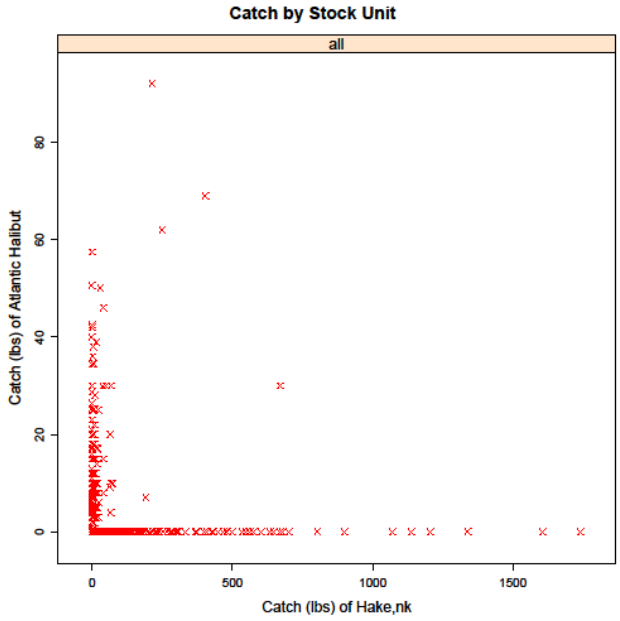
Halibut and Witch Flounder



Halibut and Redfish

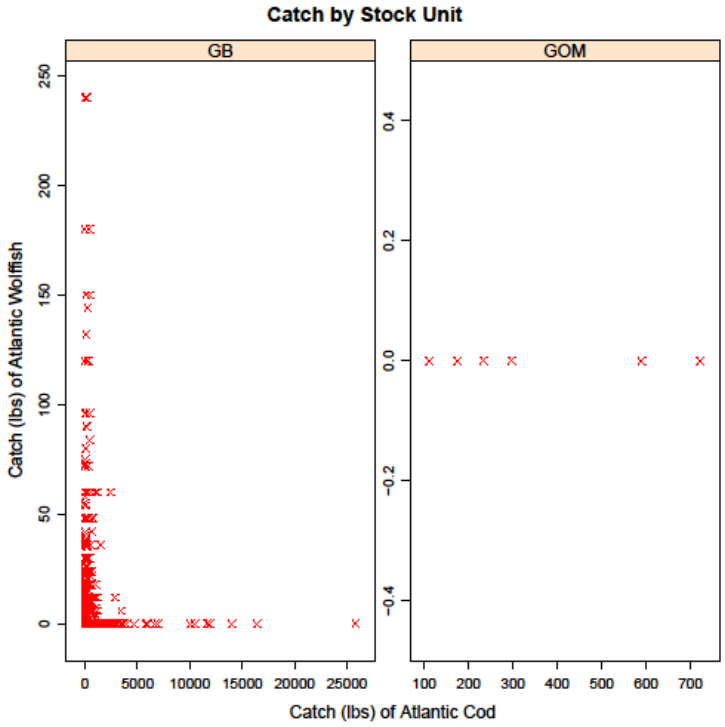


Halibut and Hake,nk

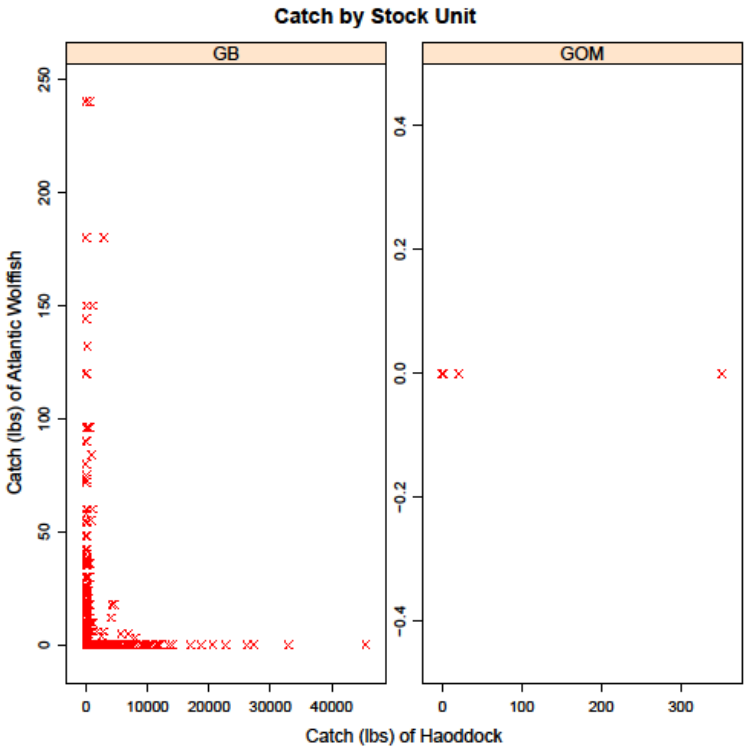


Atlantic Wolffish

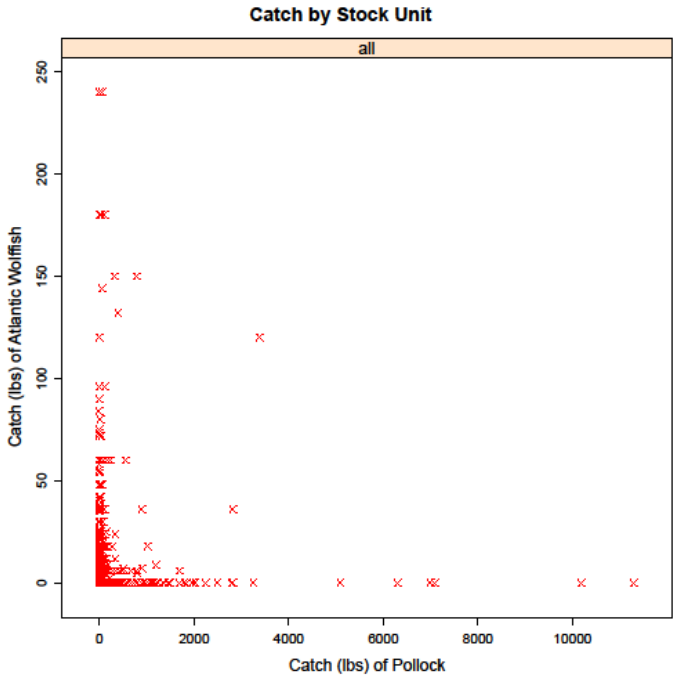
Wolffish and Cod



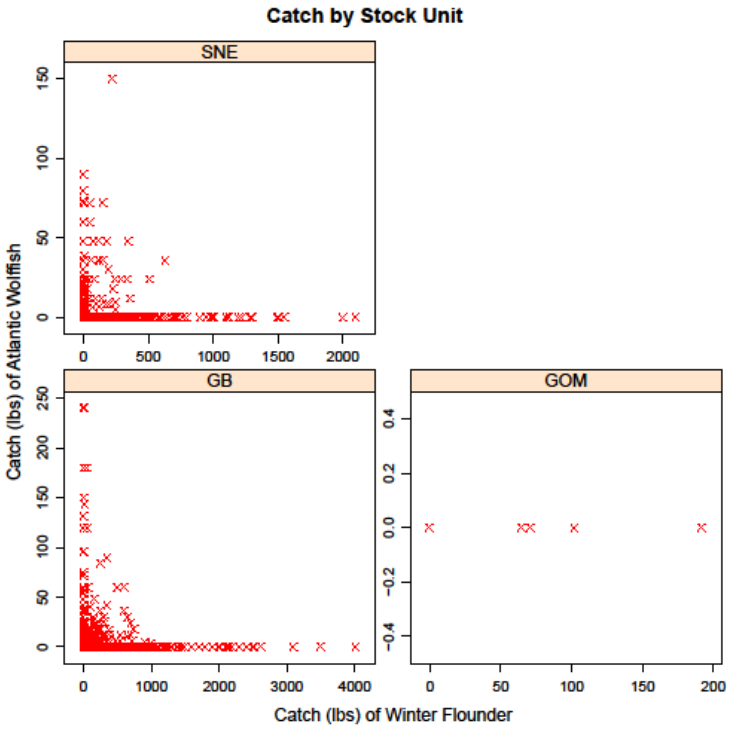
Wolffish and Haddock



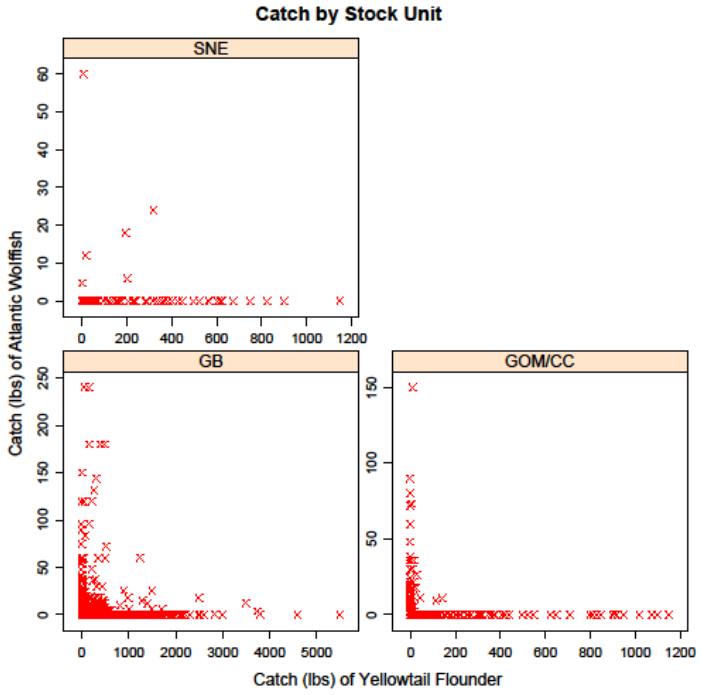
Wolffish and Pollock



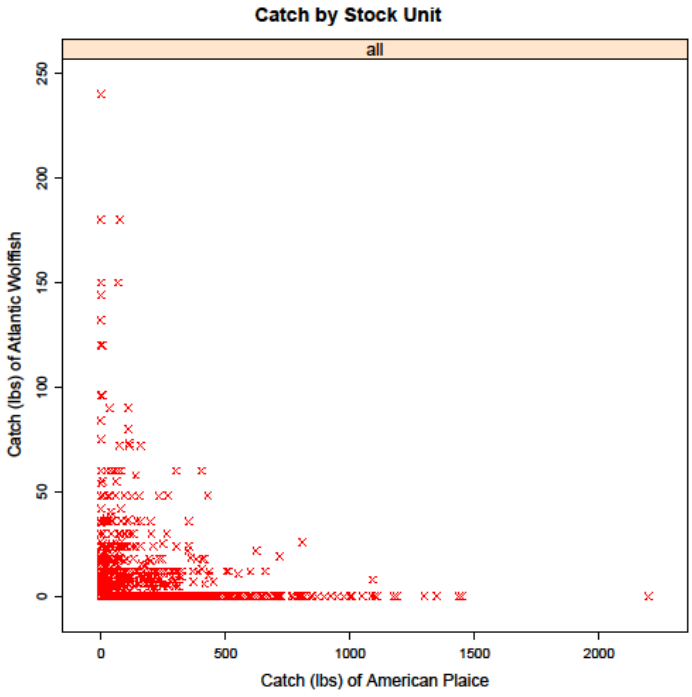
Wolffish and Winter Flounder



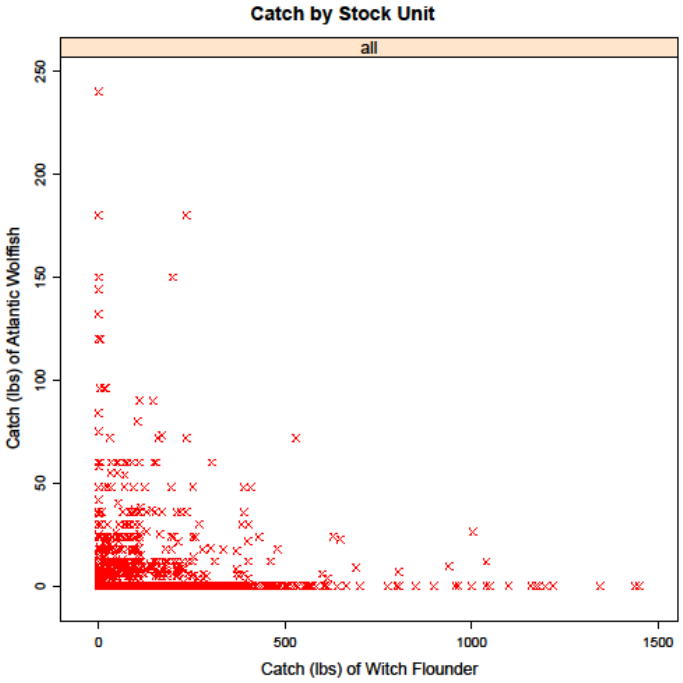
Wolffish and Yellowtail Flounder



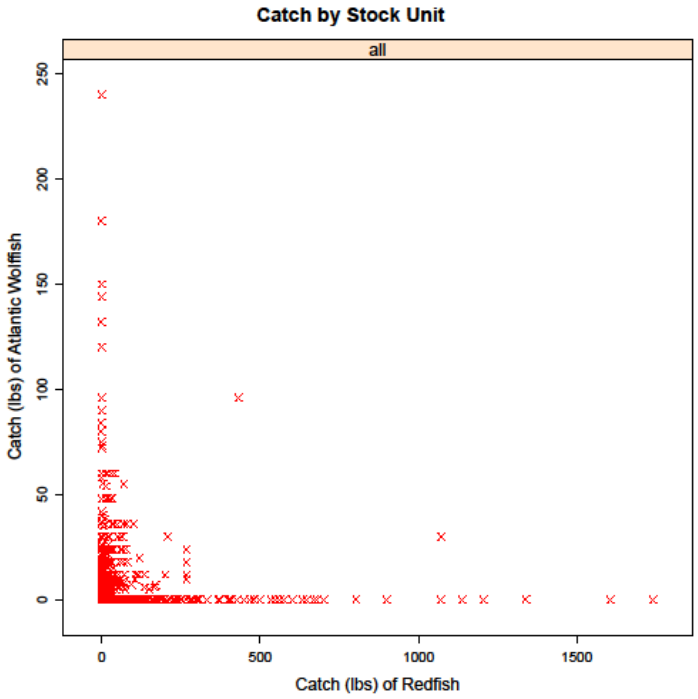
Wolffish and American Plaice



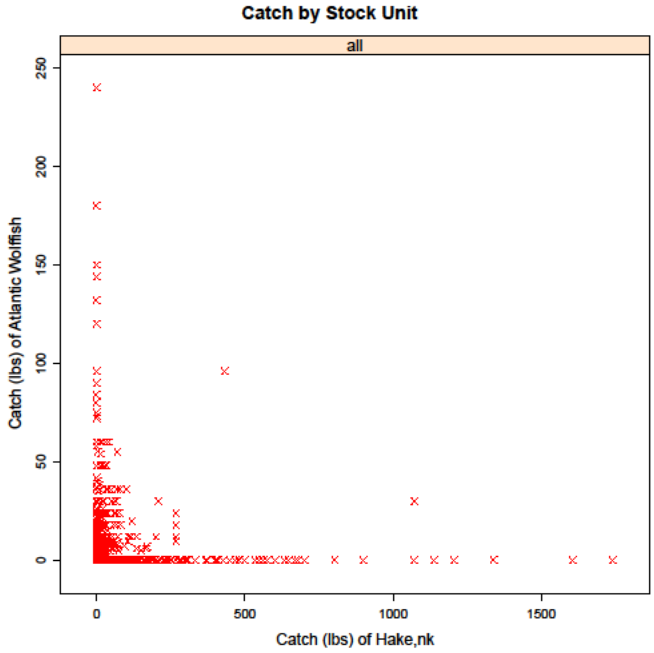
Wolffish and Witch Flounder



Wolffish and Redfish

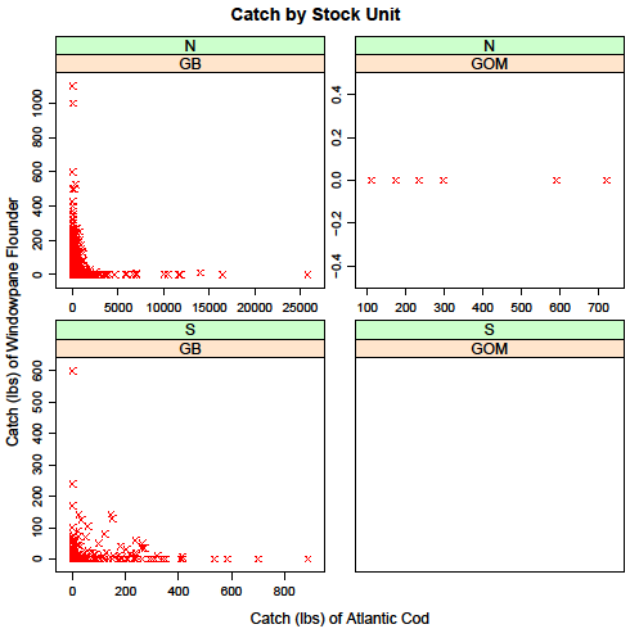


Wolffish and Hake,nk

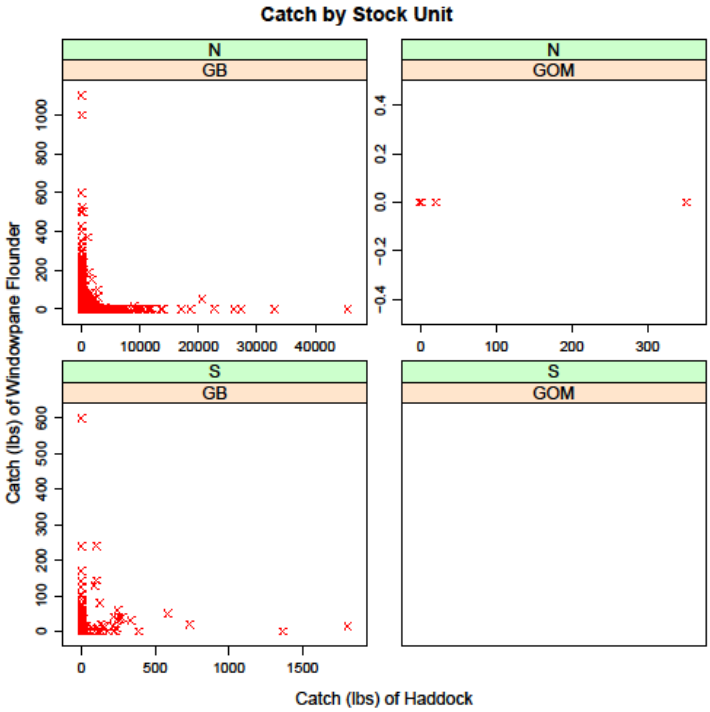


Windowpane Flounder

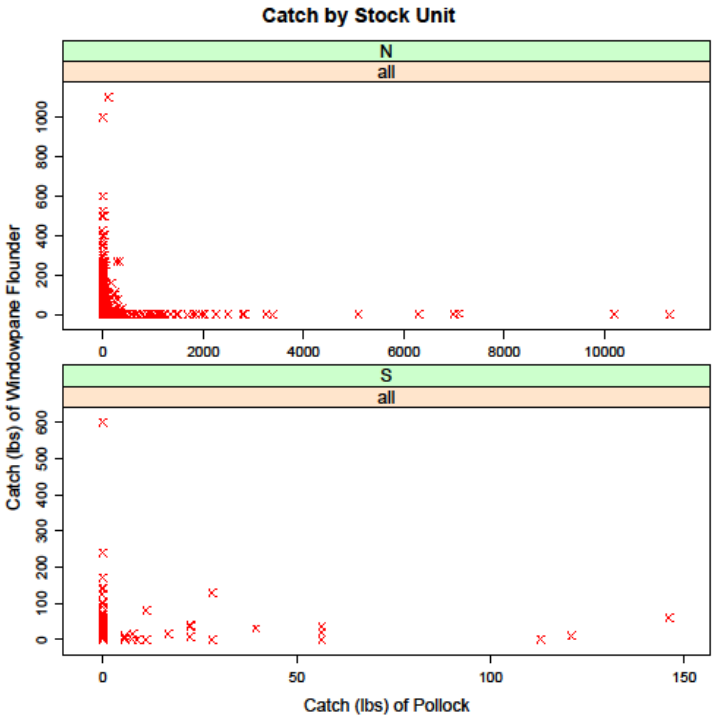
Windowpane and Cod



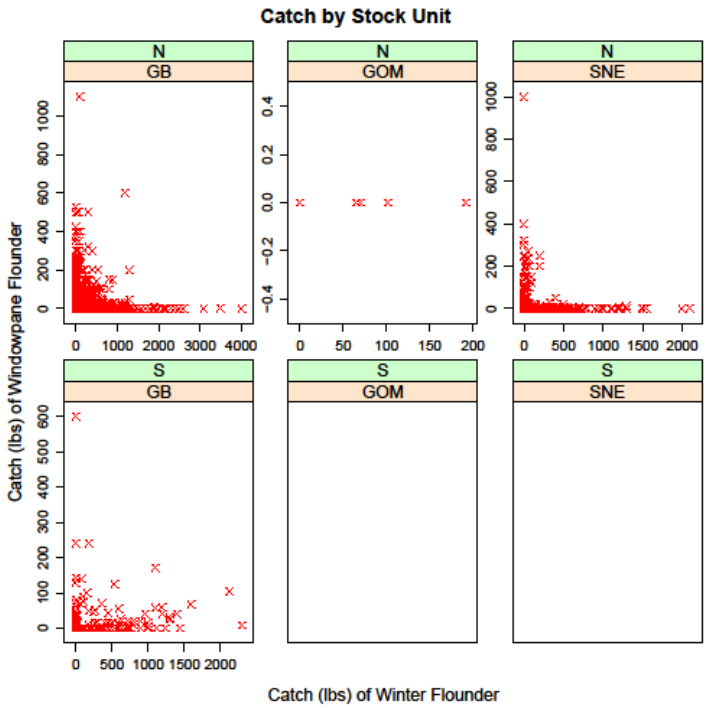
Windowpane and Haddock



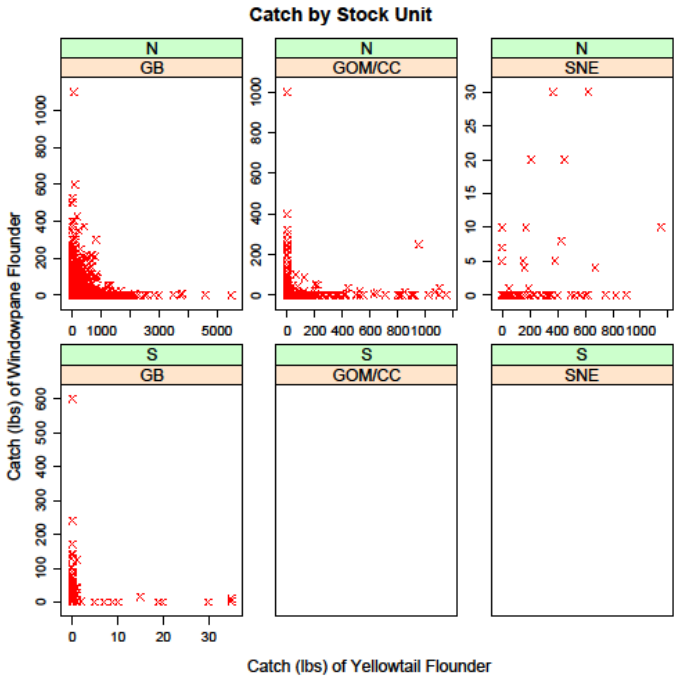
Windowpane and Pollock



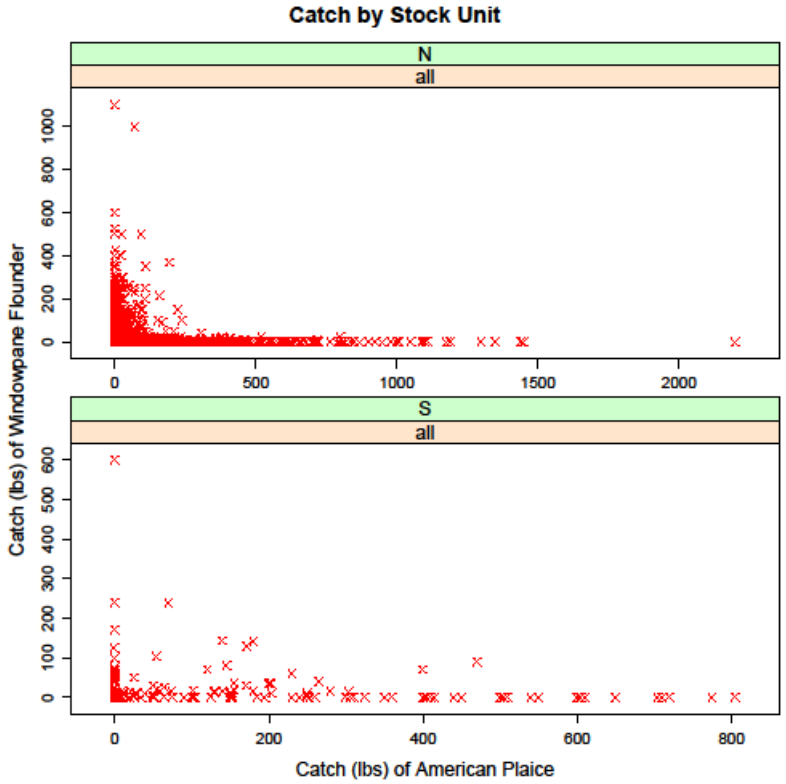
Windowpane and Winter Flounder



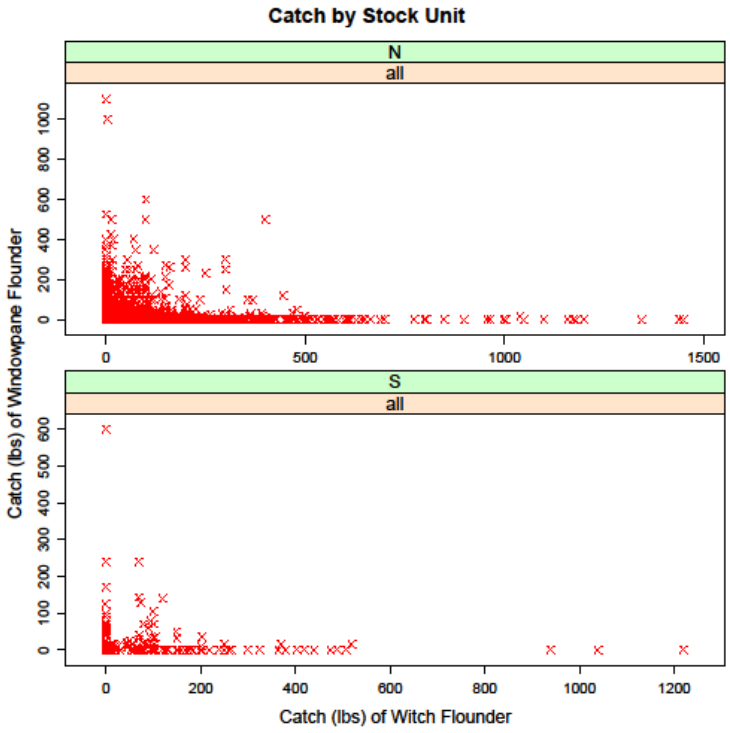
Windowpane and Yellowtail Flounder



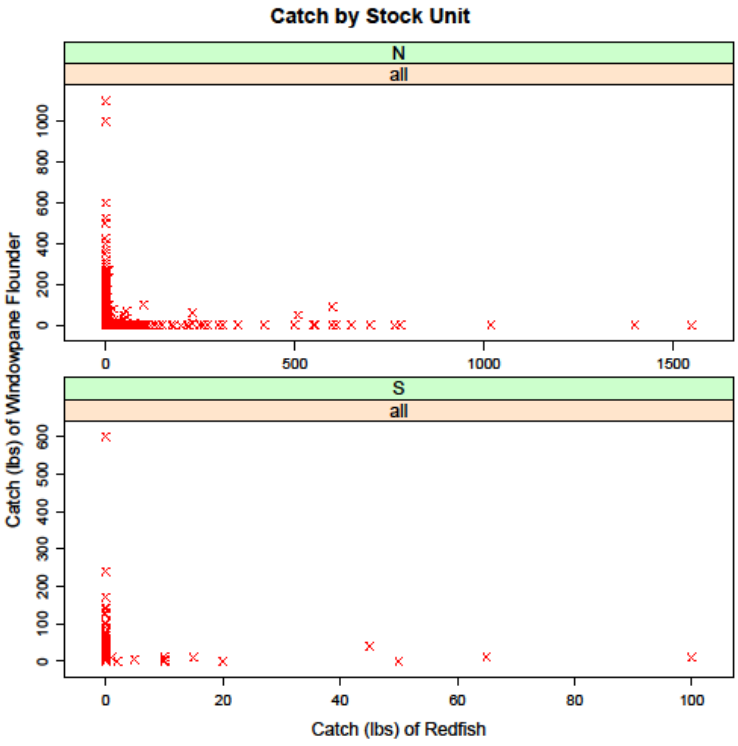
Windowpane and American Plaice



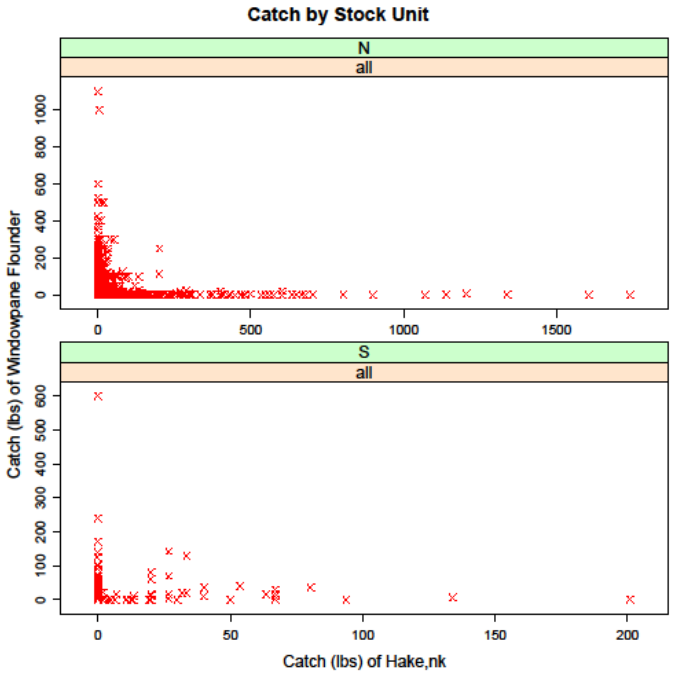
Windowpane and Witch Flounder



Windowpane and Redfish

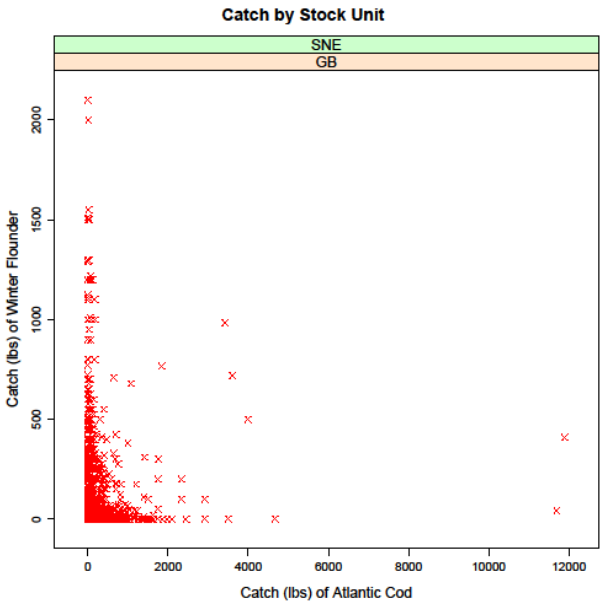


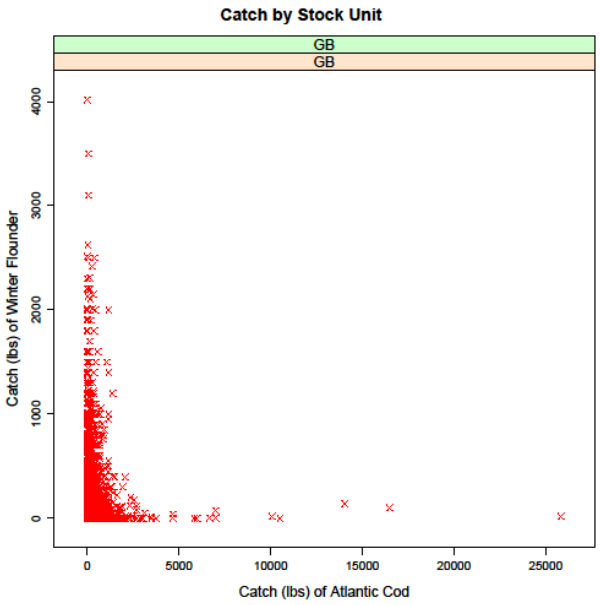
Windowpane and Hake,nk



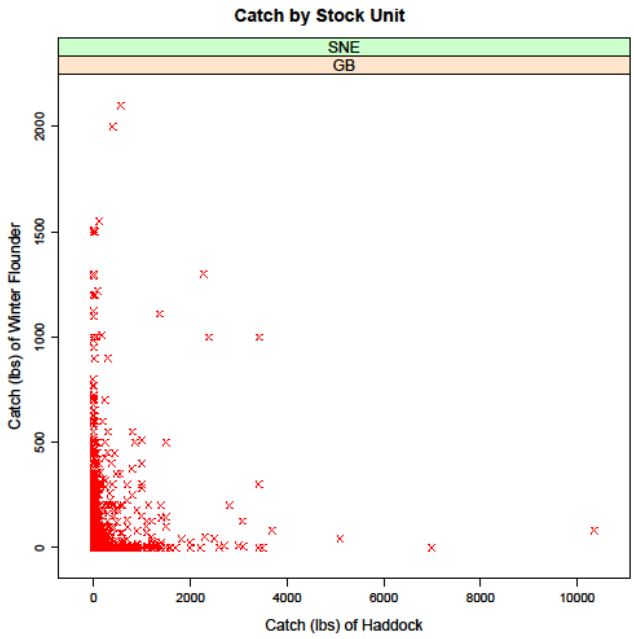
SNE Winter Flounder

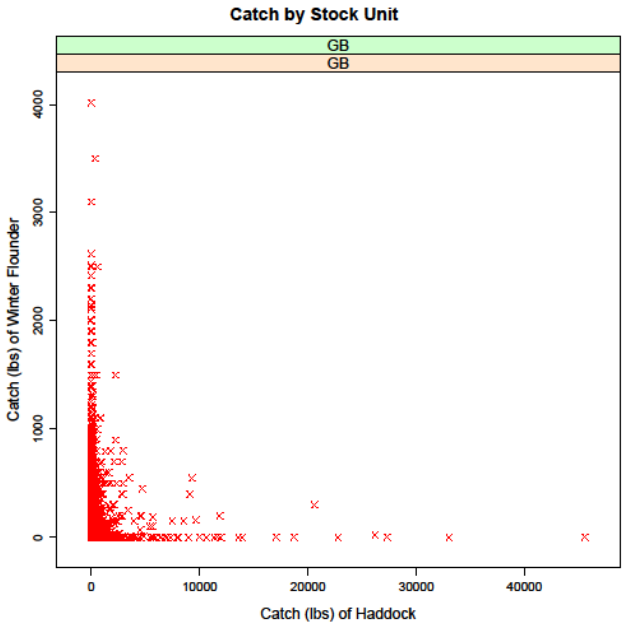
Winter Flounder and Cod



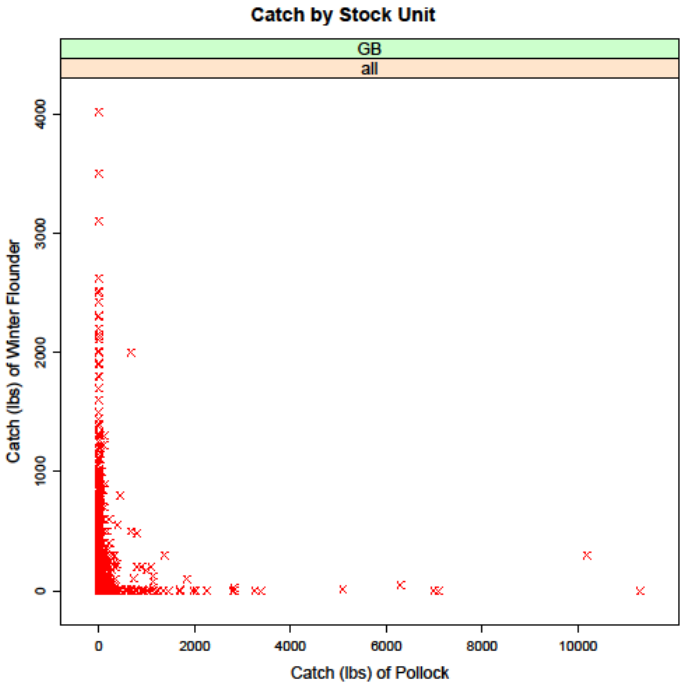


Winter Flounder and Haddock

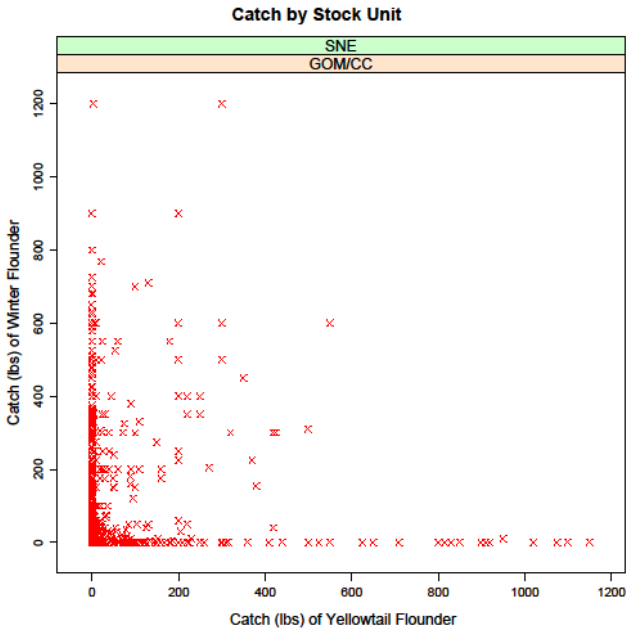


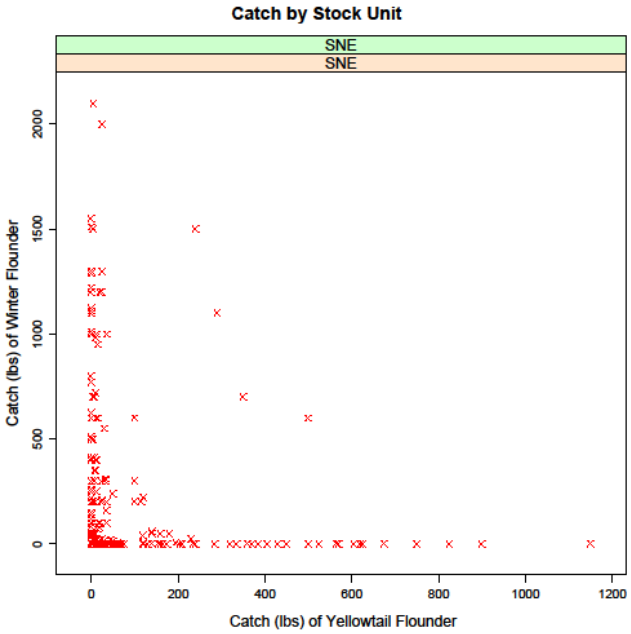


Winter Flounder and Pollock

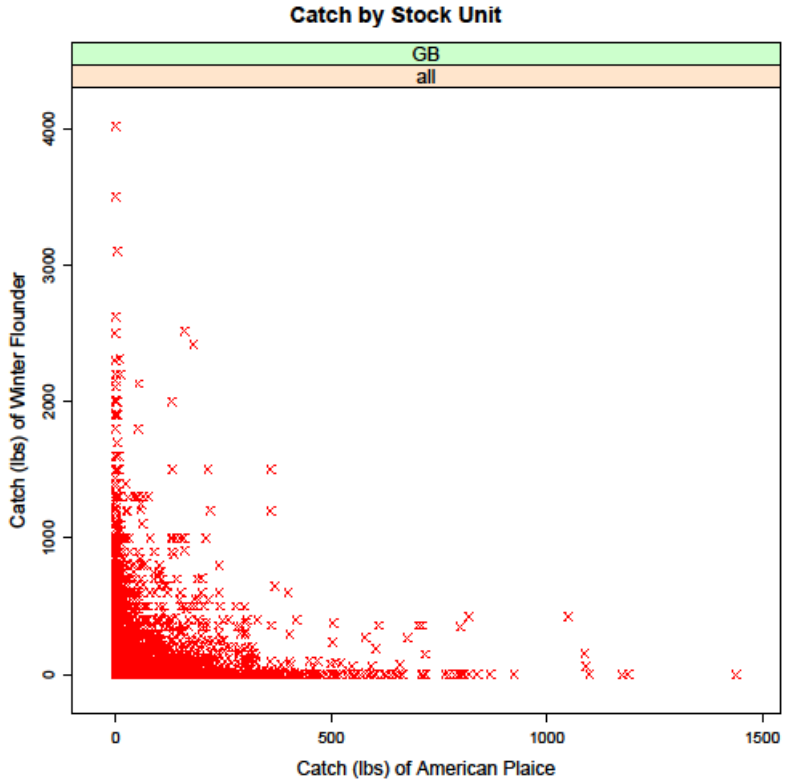


Winter Flounder and Yellowtail Flounder

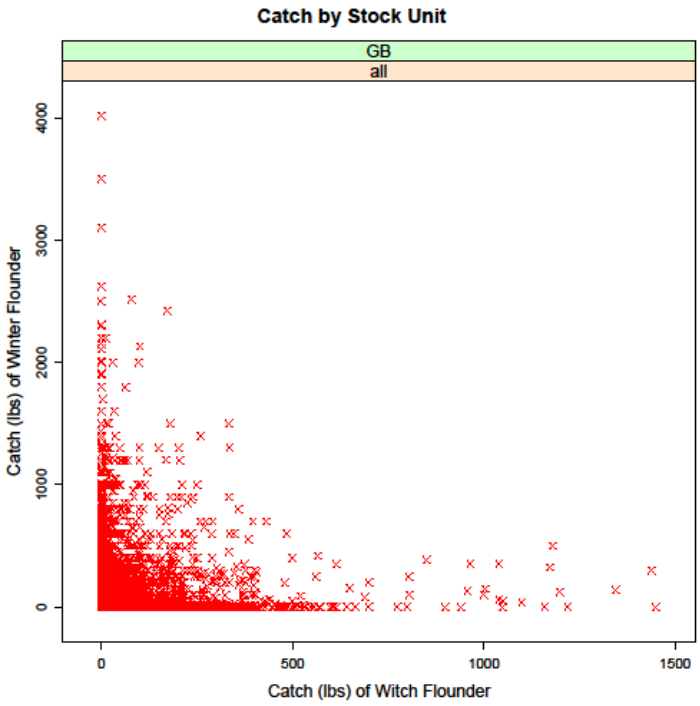




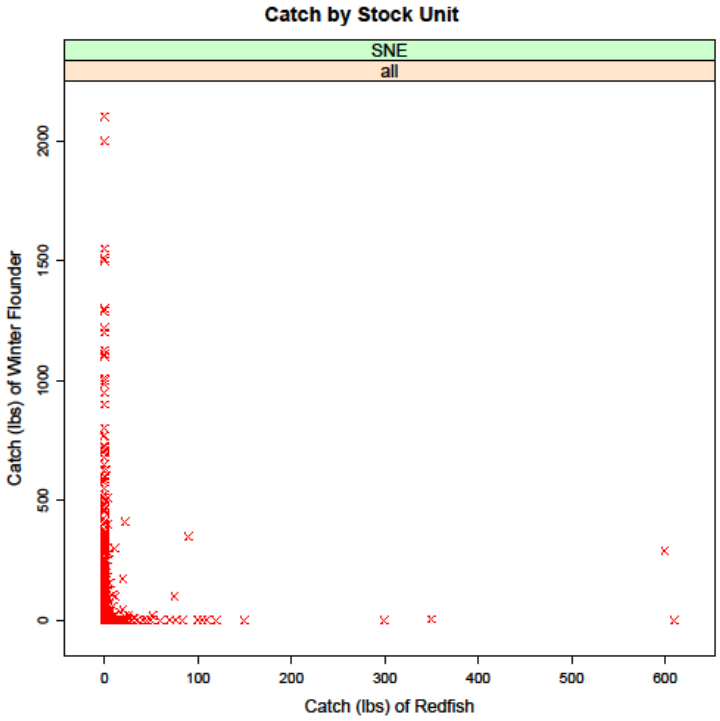
Winter Flounder and American Plaice



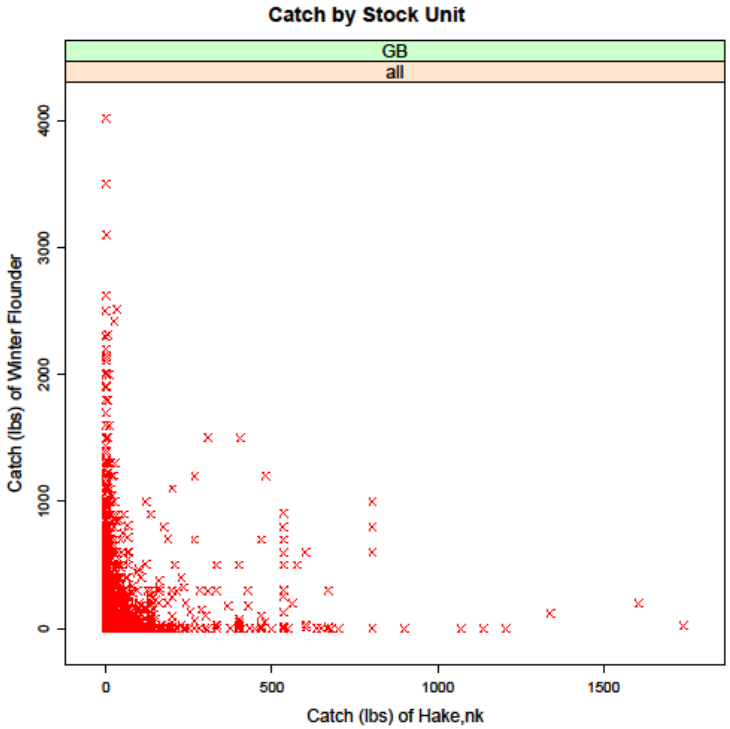
Winter Flounder and Witch Flounder



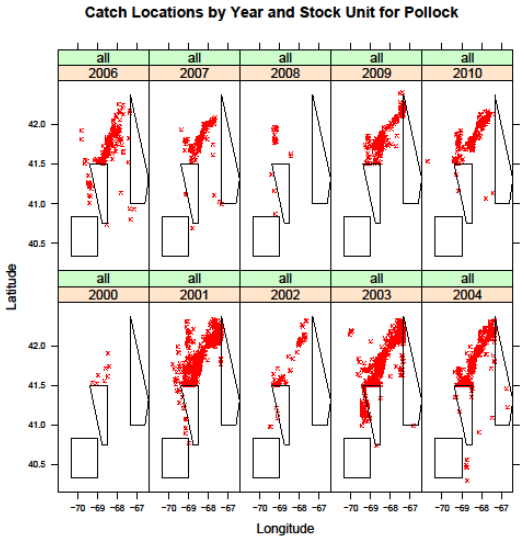
Winter Flounder and Redfish

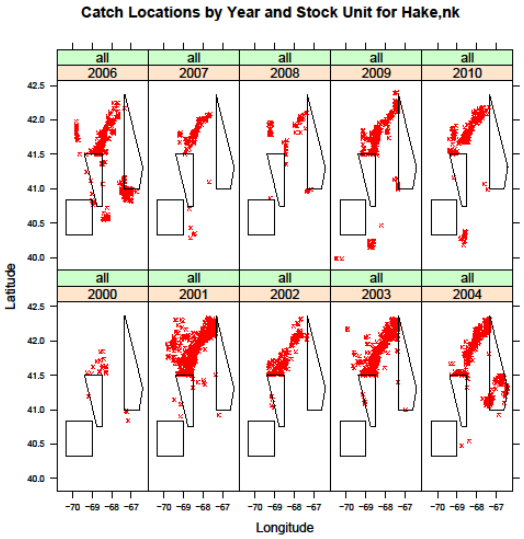


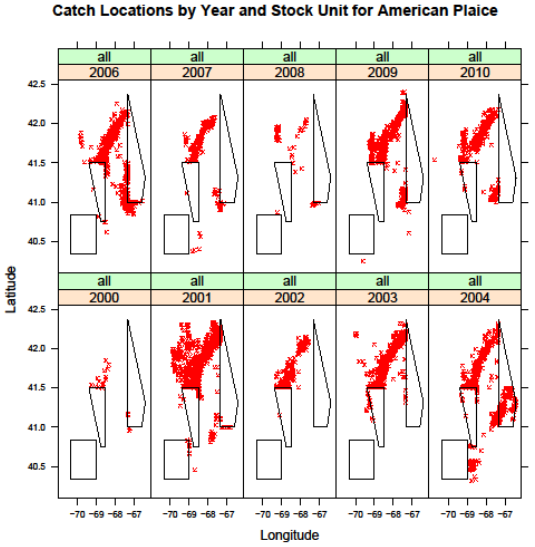
Winter Flounder and Hake,nk

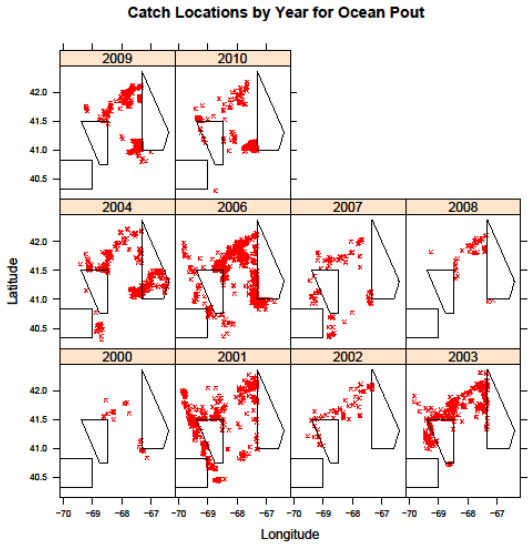


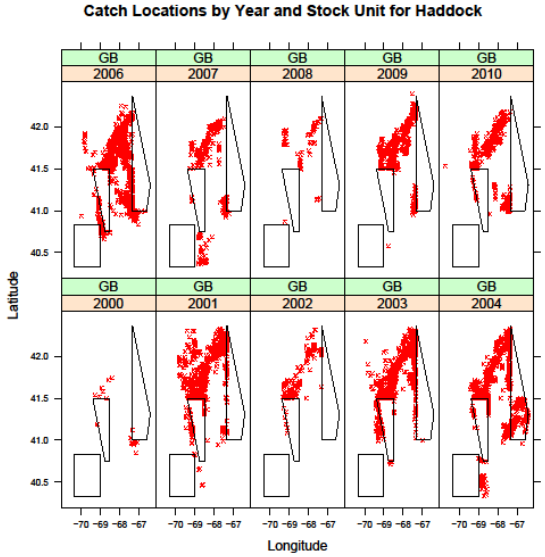
Catch Locations

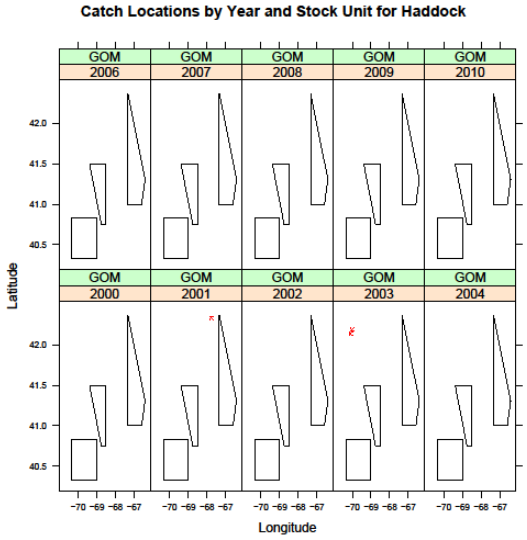




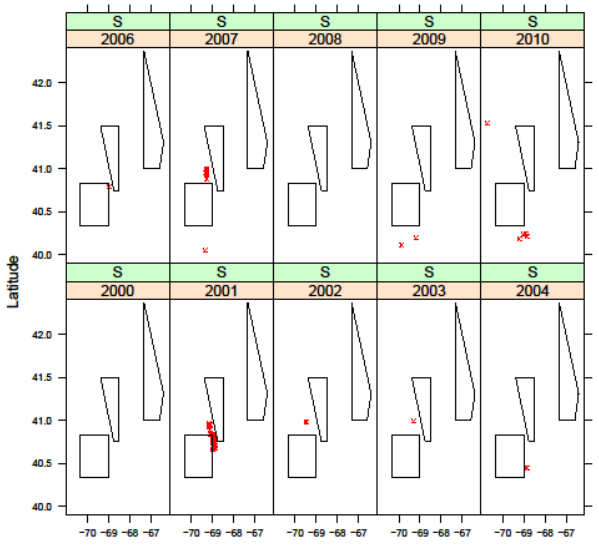




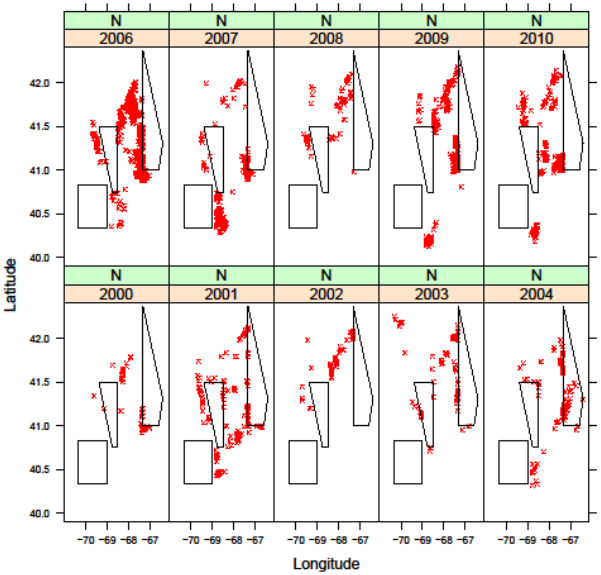




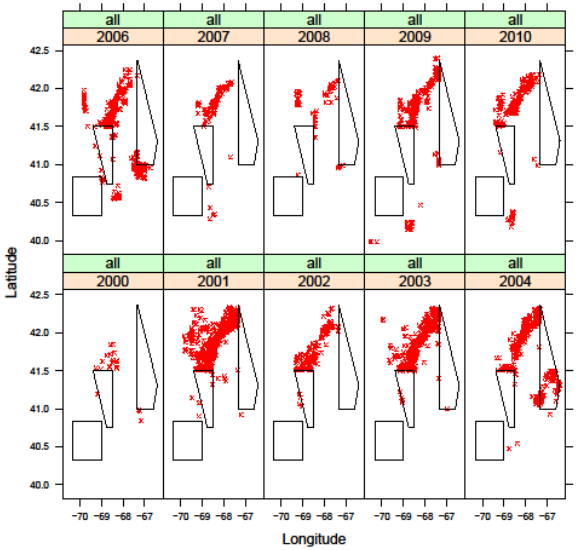
Catch Locations by Year and Stock Unit for Windowpane Flounder



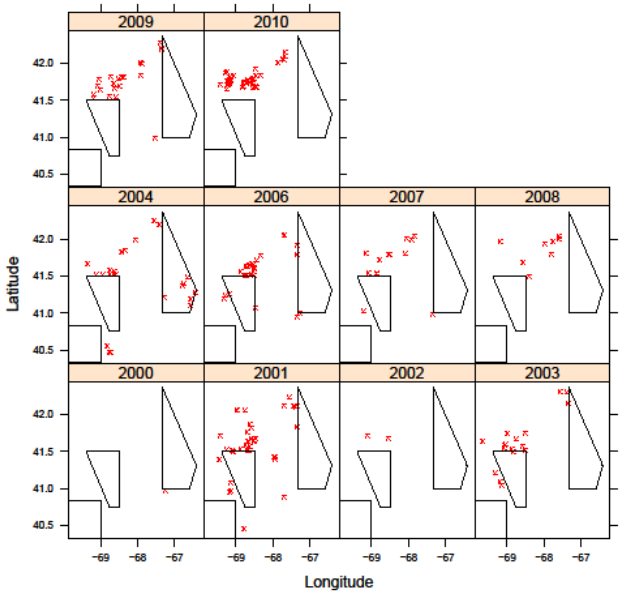
Catch Locations by Year and Stock Unit for Windowpane Flounder



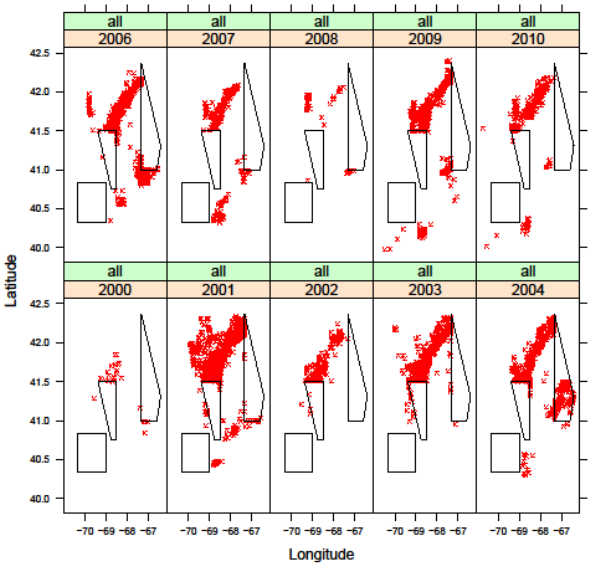
Catch Locations by Year and Stock Unit for Redfish



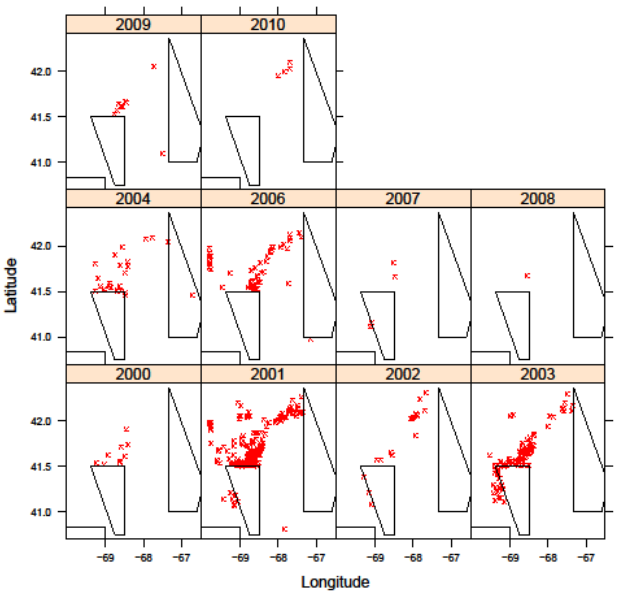
Catch Locations by Year for Atlantic Halibut

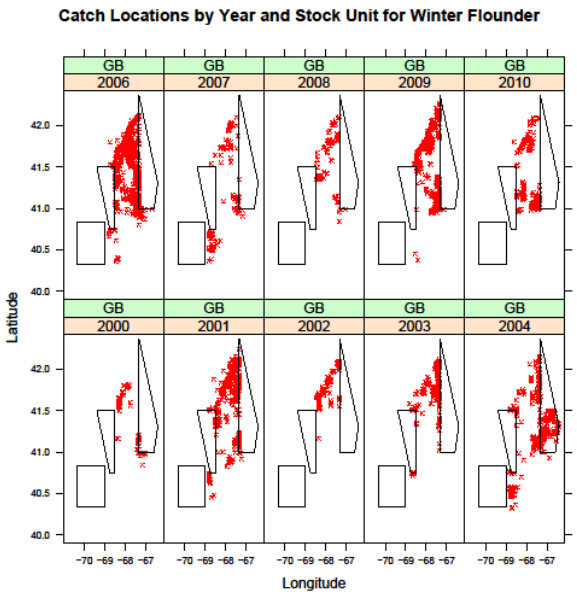


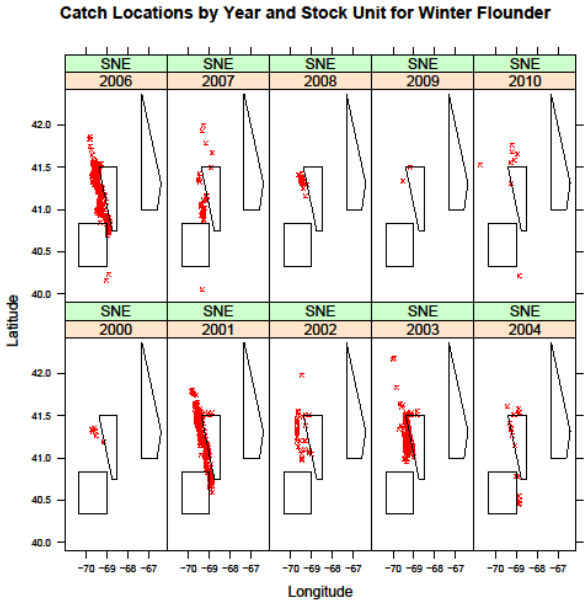
Catch Locations by Year and Stock Unit for Witch Flounder

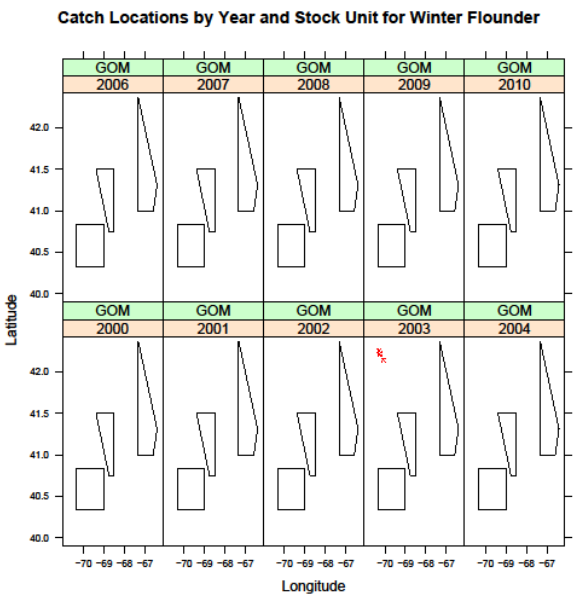


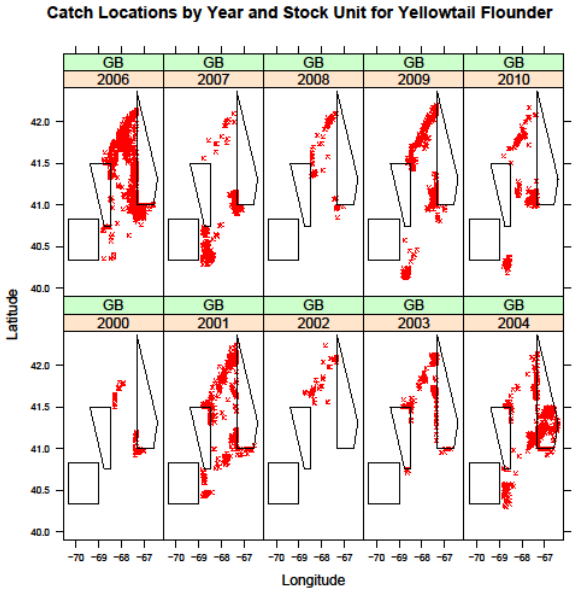
Catch Locations by Year for Atlantic Wolffish

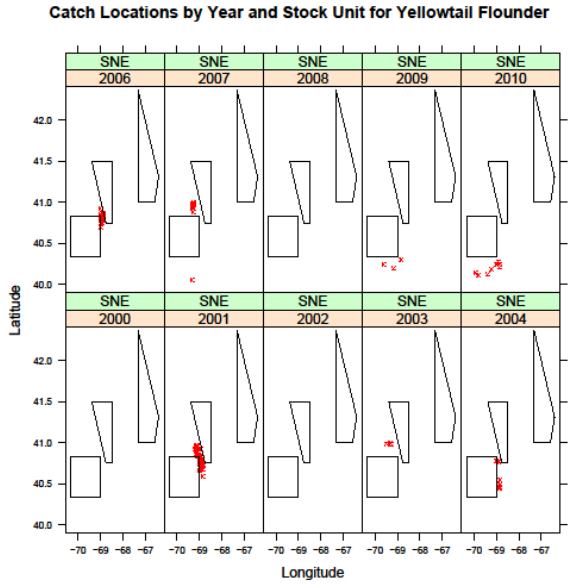


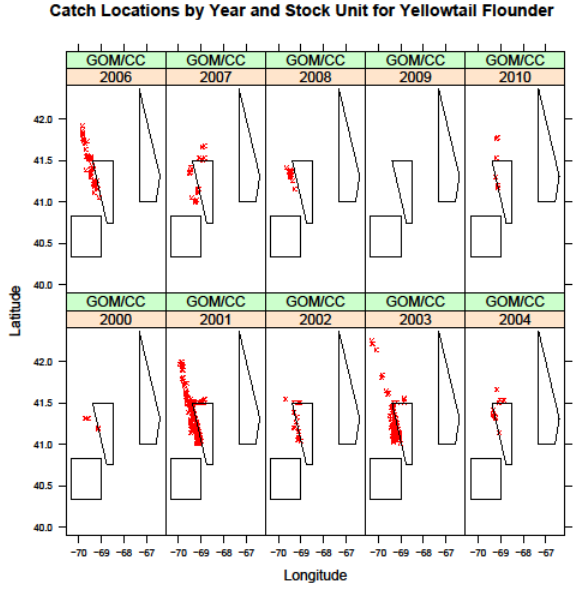

Catch Locations by Year and Stock Unit for Winter Flounder
GB
2006
2007
2008
2009
2010
2000
2001
2002
2003
2004
Latitude
Longitude

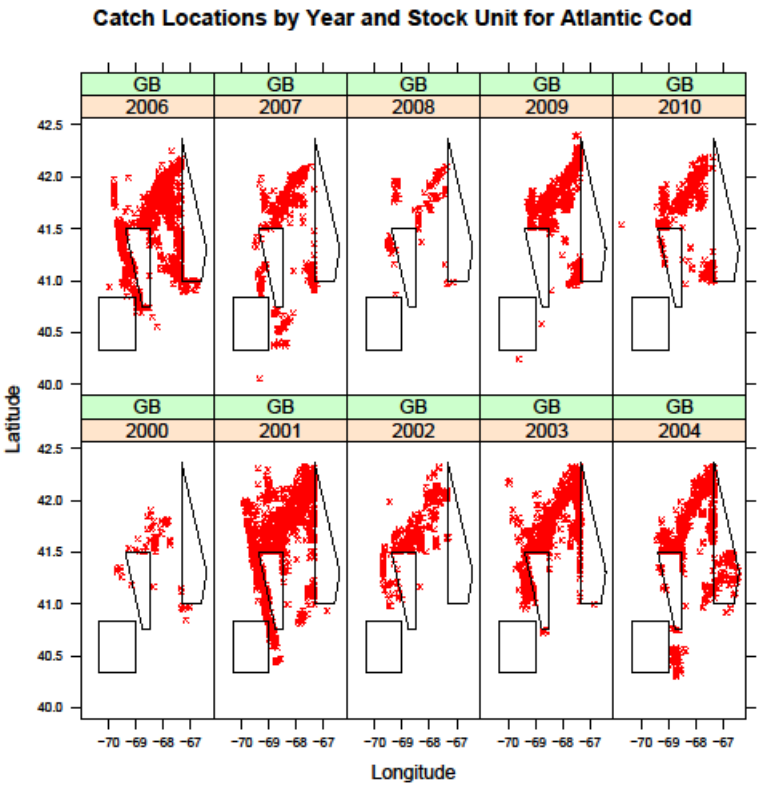

Catch Locations by Year and Stock Unit for Winter Flounder
SNE
2006
2007
2008
2009
2010
2000
2001
2002
2003
2004
Latitude
Longitude

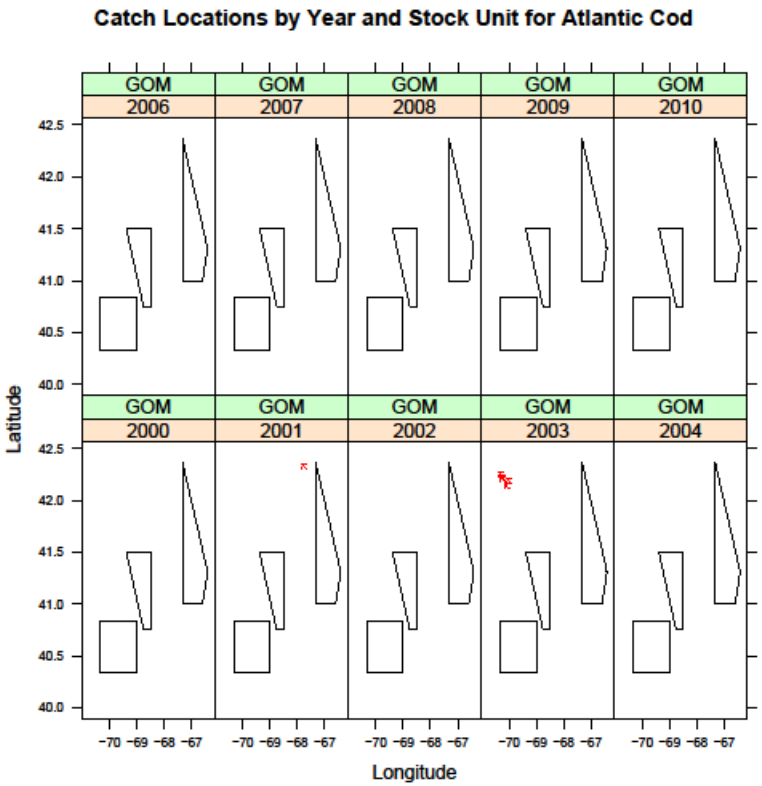

Catch Locations by Year and Stock Unit for Winter Flounder
GOM
2006
2007
2008
2009
2010
2000
2001
2002
2003
2004
Latitude
Longitude


Catch Locations by Year and Stock Unit for Yellowtail Flounder
GB
2006
2007
2008
2009
2010
2000
2001
2002
2003
2004
Latitude
Longitude


Catch Locations by Year and Stock Unit for Yellowtail Flounder
SNE
2006
2007
2008
2009
2010
2000
2001
2002
2003
2004
Latitude
Longitude


Catch Locations by Year and Stock Unit for Yellowtail Flounder
GOM/CC
2006
2007
2008
2009
2010
2000
2001
2002
2003
2004
Latitude
Longitude


Catch Locations by Year and Stock Unit for Atlantic Cod
GB
2006
2007
2008
2009
2010
2000
2001
2002
2003
2004
Latitude
Longitude
42.5
42.0
41.5
41.0
40.5
40.0
−70 −69 −68 −67


Catch Locations by Year and Stock Unit for Atlantic Cod
GOM
2006
2007
2008
2009
2010
2000
2001
2002
2003
2004
Latitude
Longitude
42.5
42.0
41.5
41.0
40.5
40.0
−70 −69 −68 −67

Species	Stock Unit													
	ALL		CC/GOM		GB		GOM		N		S		SNE	
	Number	Positive Hauls	Number	Positive Hauls	Number	Positive Hauls	Number	Positive Hauls	Number	Positive Hauls	Number	Positive Hauls	Number	Positive Hauls
Atlantic Cod		0		0	9618	66	6	0.04		0		0.00		0
Winter Flounder		0		0	4672	32	4	0.03		0		0.00	1053	7
Witch Flounder	6234	43		0		0		0.00		0		0.00		0
Yellowtail Flounder		0	469	3	4220	29		0.00		0		0.00	155	1
American Plaice	5908	40		0		0		0.00		0		0.00		0
Windowpane Flounder		0		0		0		0.00	2199	15	95	0.65		0
Haddock		0		0	7053	48	3	0.02		0		0.00		0
Hake,nk	3449	24		0		0		0.00		0		0.00		0
Atlantic Halibut	201	1		0		0		0.00		0		0.00		0
Redfish	771	5		0		0		0.00		0		0.00		0
Ocean Pout	2823	19		0		0		0.00		0		0.00		0
Pollock	2797	19		0		0		0.00		0		0.00		0
Atlantic Wolffish	497	3		0		0		0.00		0		0.00		0

Table 1. Number of positive tows (Number) and proportion of positive tows (Positive Hauls) by species and stock unit. ALL indicates one stock unit.

There were 438 trips and 14,647 tows reported by the study fleet.

Species	Stock Unit						
	ALL	CC/GOM	GB	GOM	N	S	SNE
Atlantic Cod			2096308	2132			
Winter Flounder			1041625	430			194281
Witch Flounder	524706						
Yellowtail Flounder		46522	1119918				21038
American Plaice	533568						
Windowpane Flounder					88944	4083	
Haddock			1881391	375			
Hake,nk	155017						
Atlantic Halibut	2467						
Redfsih	29104						
Ocean Pout	38571						
Pollock	239021						
Atlantic Wolffish	10585						

Table 2. Total pounds reported by species and stock unit. ALL indicates one stock unit. Empty cells indicate no catch.

Examination of No-Retention Stocks Catch from the SMAST Study-fleet Data by Season

Sally Roman
Groundfish PDT Analysis

The catch of four species and one stock unit of winter flounder for which there is no-retention in the groundfish fishery were examined for relationships to catch of other allocated stocks and catch location. Ocean pout, Atlantic halibut, Atlantic wolffish, windowpane flounder (Southern and Northern stocks) and SNE winter flounder catch were compared to that of Atlantic cod, haddock, pollock, witch flounder, American plaice, redfish, winter flounder (GOM and GB), yellowtail flounder, and hake,nk by stock unit. Data were queried from the University of Massachusetts, Dartmouth School for Marine Science and Technology (SMAST) study-fleet project database. There were 438 trips and 14,647 tows reported by the study fleet between November 2001 and August 2010, with no data in 2005.

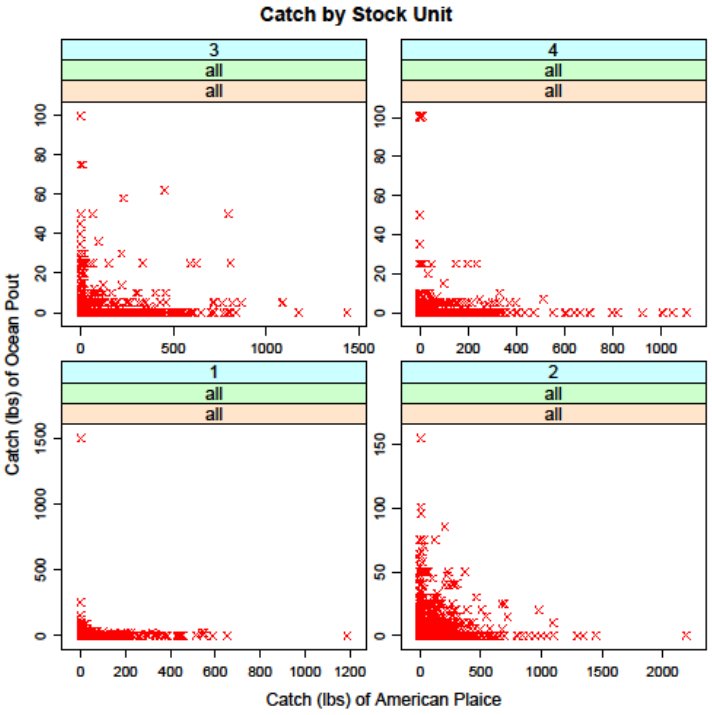
Stock unit was determined from the end location of effort events. In all figures, when the stock unit is listed as "all" then there is one stock for the region. Otherwise, stocks units are defined. Seasons are defined as follows, and are labeled in the figures as: 1 (January, February, March), 2 (April, May, June), 3 (July, August, September), 4 (October, November, December). All species with the exception of hake,nk (a mix of white and red hake) were identified to the species level by the study-fleet vessels. Catch relationships are shown first by no retention species, followed by catch locations for all stocks by season. Figures are total catch on the haul level.

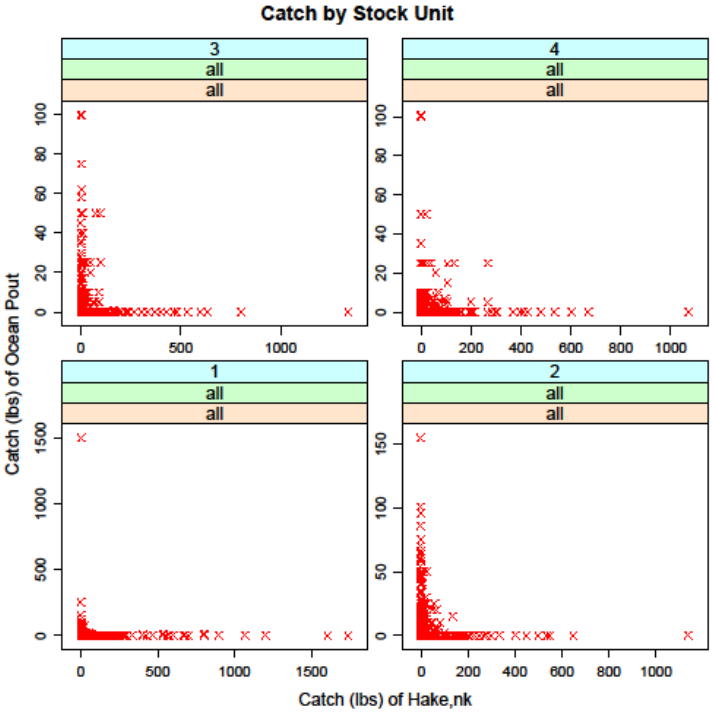
Results are similar to that of previous analysis completed on this data set to look for relationships between no retention stocks and other stocks in the FMP. Data were also examined by year and season with no relationships present (figures not included).

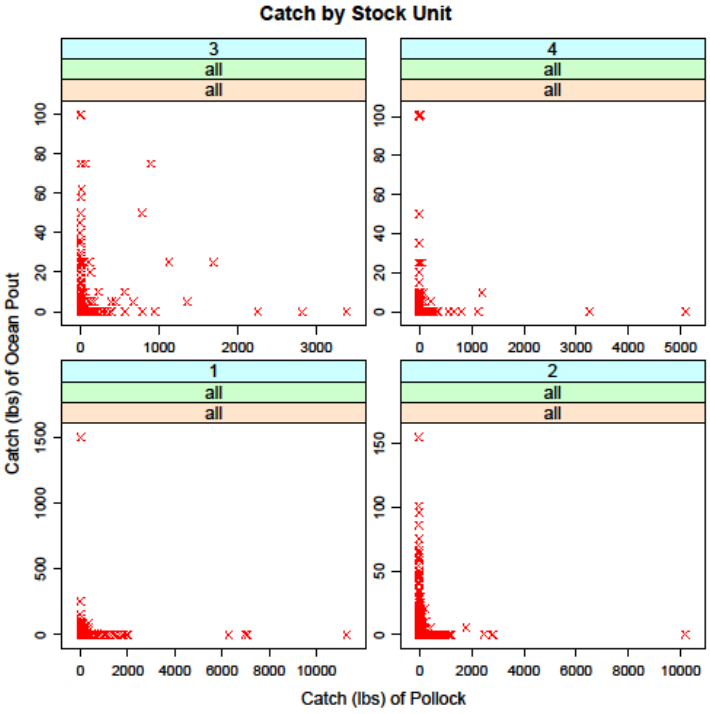
Total catch varied by season for the no retention species over all years (Table 1). The northern stock of windowpane flounder had the greatest catch in season 4 while season 1 had the most catch for the southern stock. Ocean pout and Atlantic wolffish stocks had the most catch in season 2. Atlantic halibut catch was greatest in season 1. SNE winter flounder catch was greatest in season 3. There no were trends over the years by season for any no retention stock. SNE winter flounder had catches reported in seasons 2, 3, and 4. The catch of the northern stock of windowpane flounder varied by season over the years, and the southern stock had little catch reported over the years. Ocean pout catch was reported in most seasons over all years. Atlantic wolffish had high catches in season 3 for some years. Atlantic halibut had catches reported in seasons 1, 2, and 3 in all years.

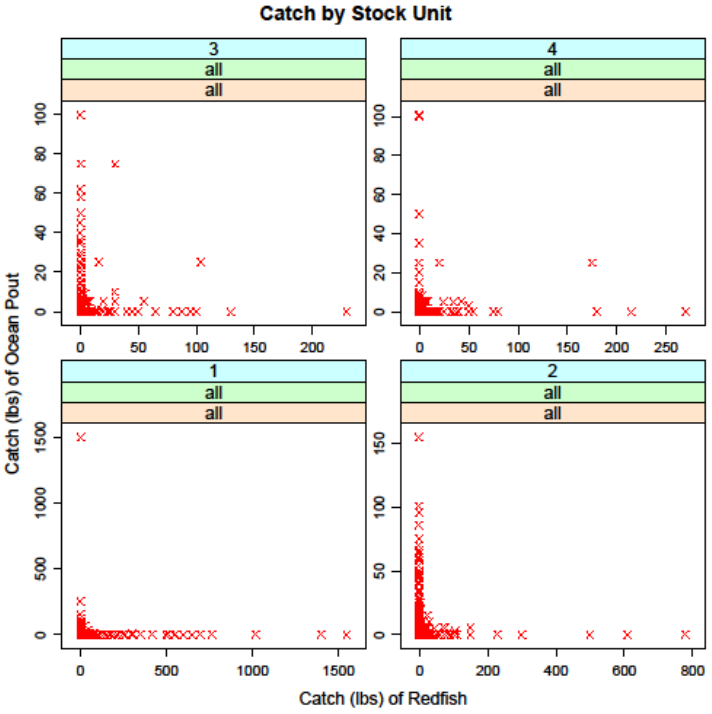
Catch Relationships

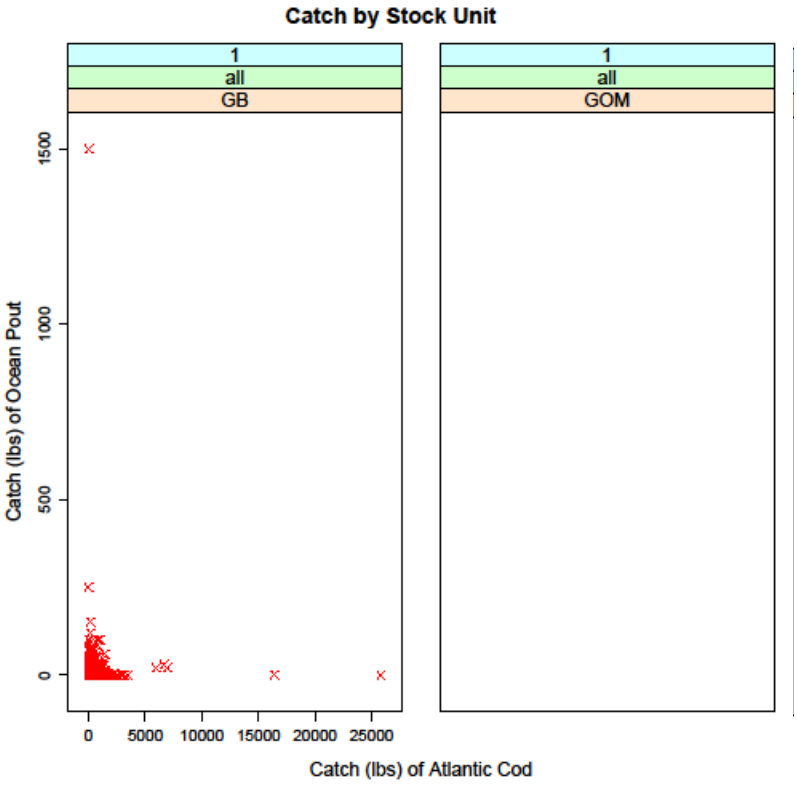
Ocean Pout

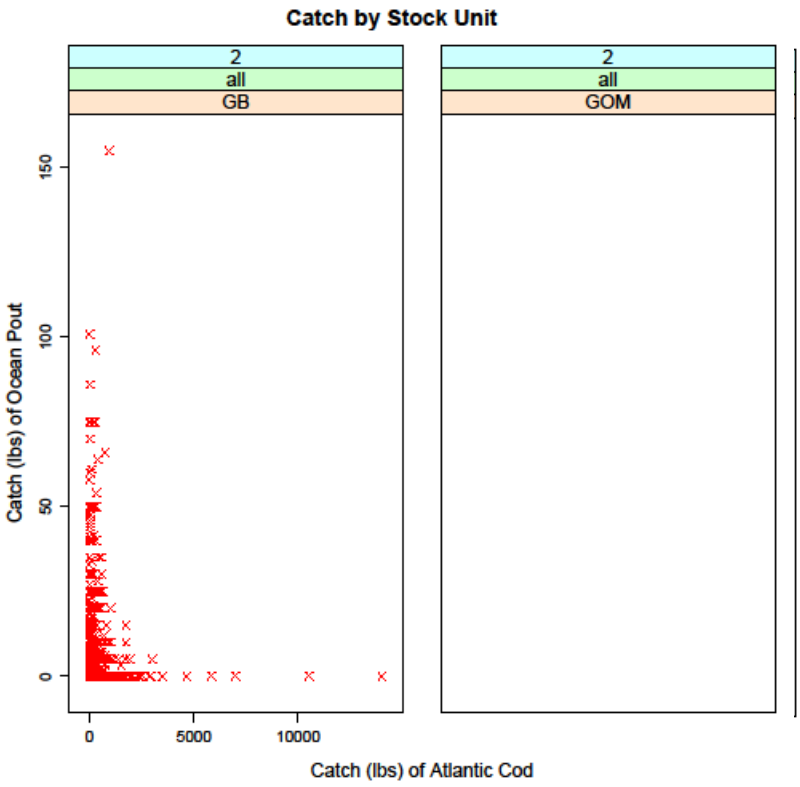


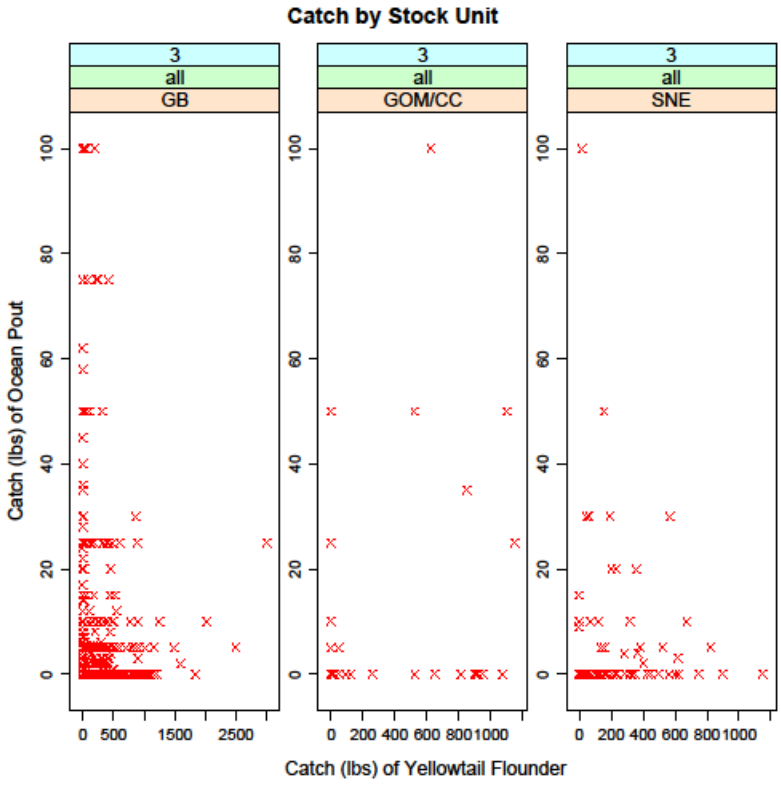


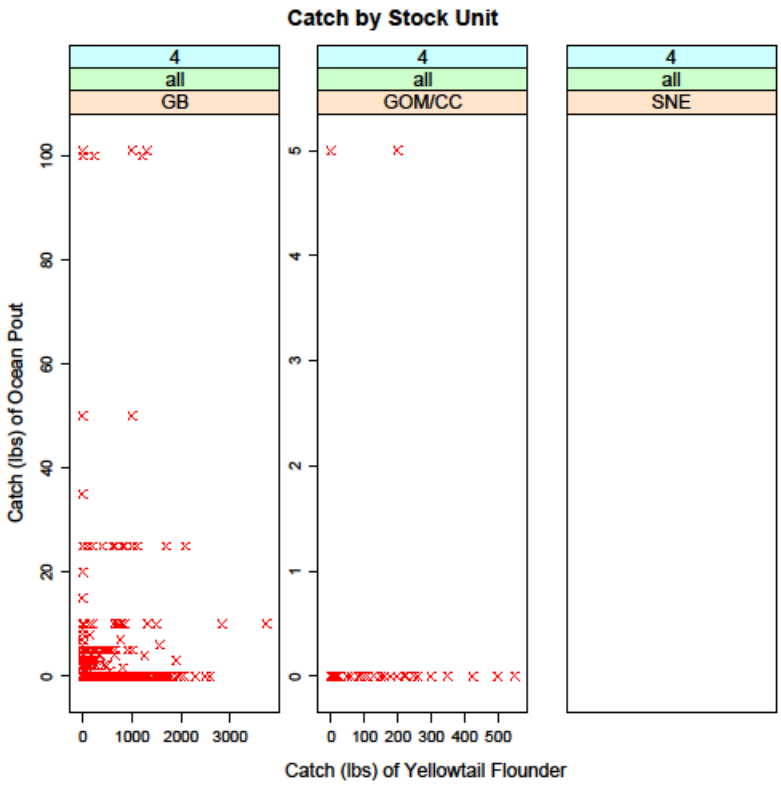


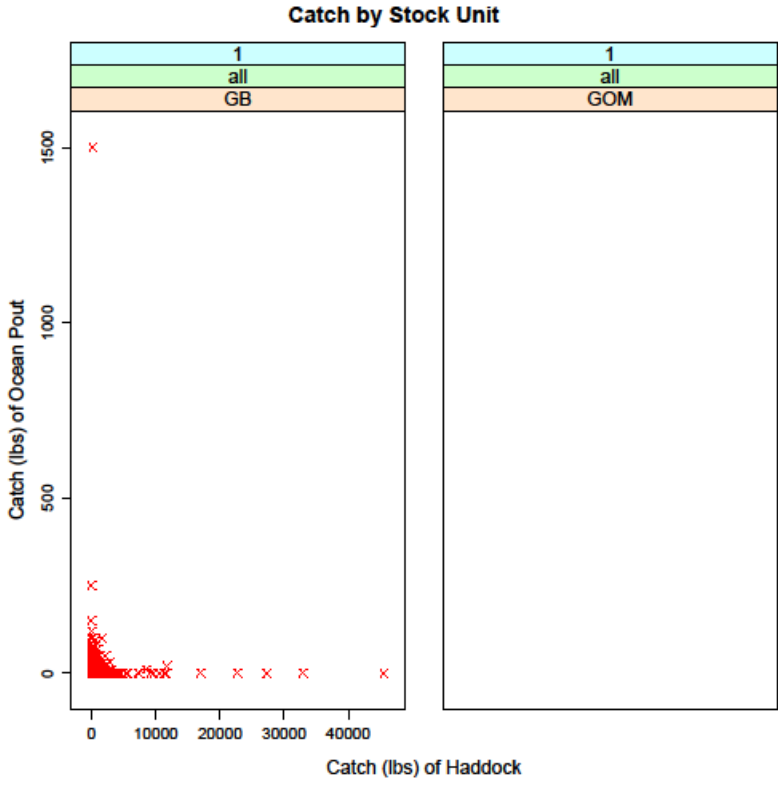


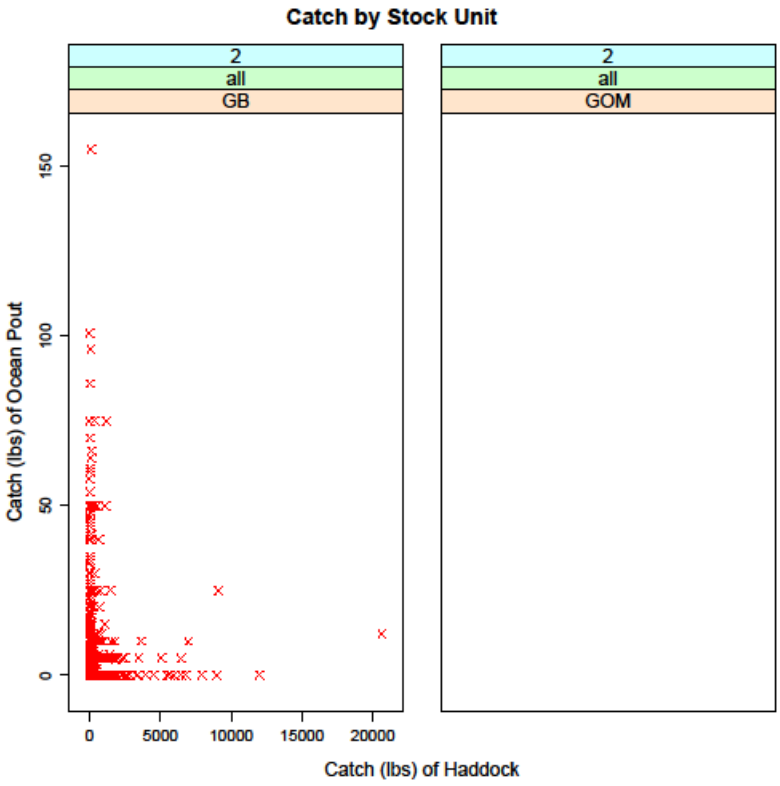

Catch by Stock Unit
1
all
GB
1
all
GOM
Catch (lbs) of Ocean Pout
0
500
1000
1500
0
5000
10000
15000
20000
25000
Catch (lbs) of Atlantic Cod

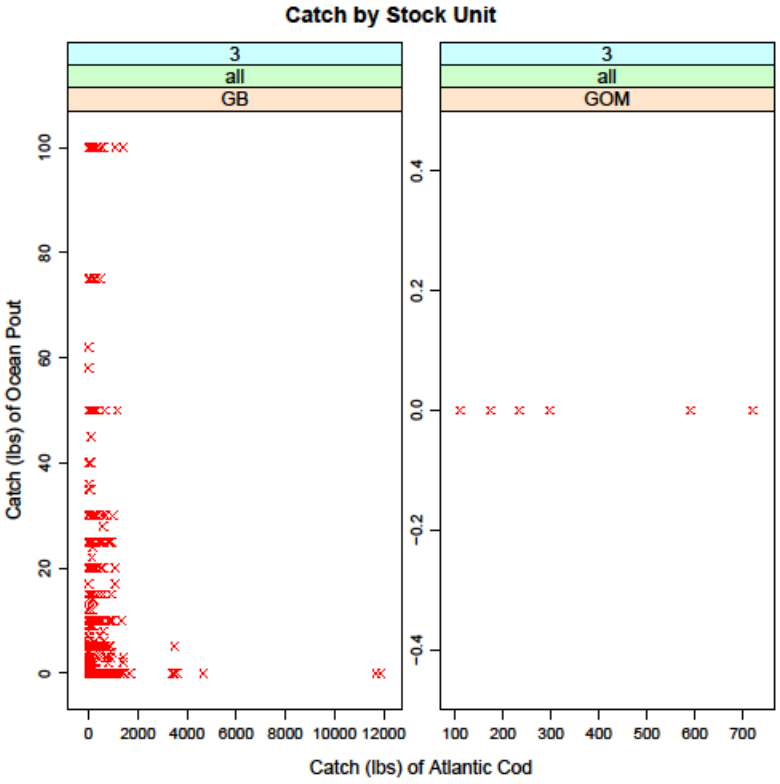

Catch by Stock Unit
2
all
GB
2
all
GOM
Catch (lbs) of Ocean Pout
0
50
100
150
0
5000
10000
Catch (lbs) of Atlantic Cod

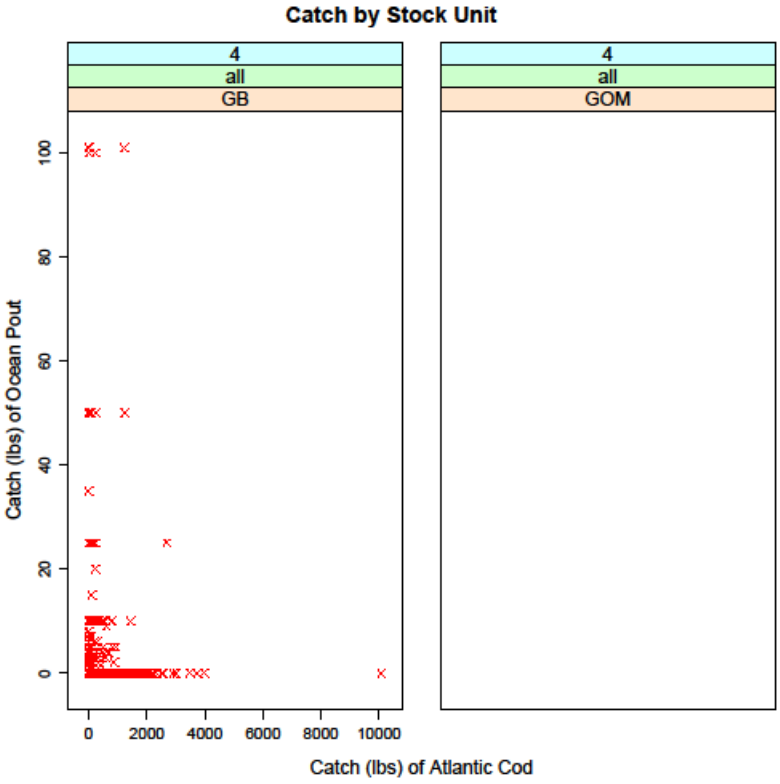

Catch by Stock Unit
3
all
GB
3
all
GOM/CC
3
all
SNE
Catch (lbs) of Ocean Pout
0
20
40
60
80
100
0
500
1500
2500
0
200
400
600
800
1000
Catch (lbs) of Yellowtail Flounder

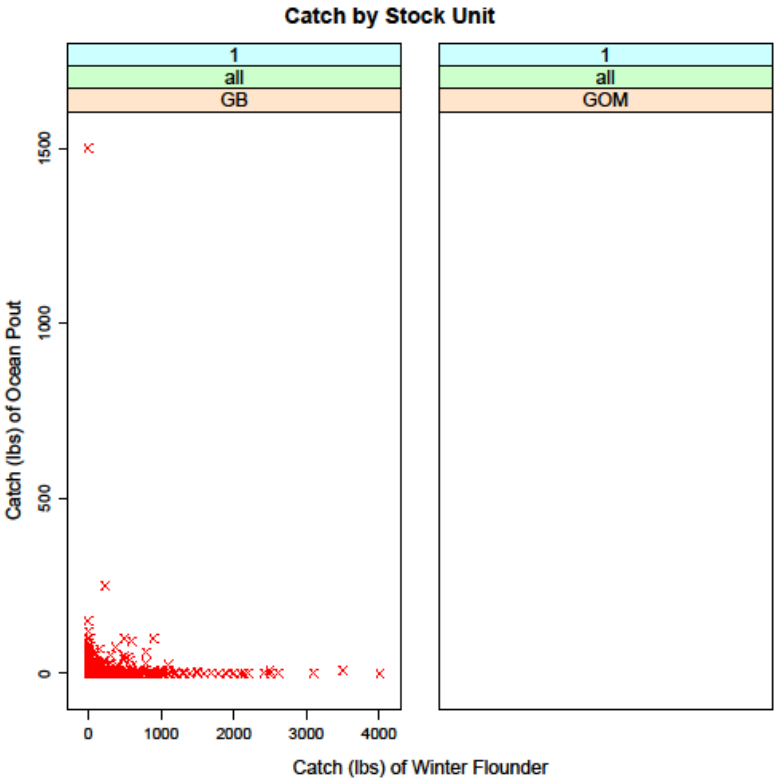

Catch by Stock Unit
4
all
GB
4
all
GOM/CC
4
all
SNE
Catch (lbs) of Ocean Pout
0
20
40
60
80
100
0
1
2
3
4
5
0
1000
2000
3000
0
100
200
300
400
500
Catch (lbs) of Yellowtail Flounder

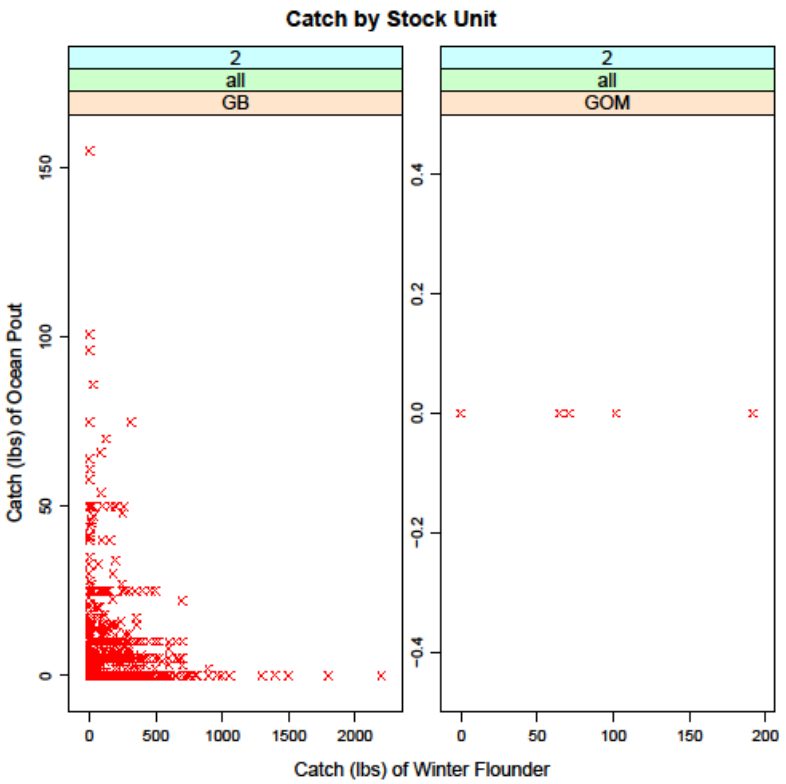

Catch by Stock Unit
1
all
GB
1
all
GOM
Catch (lbs) of Ocean Pout
0
500
1000
1500
0
10000
20000
30000
40000
Catch (lbs) of Haddock

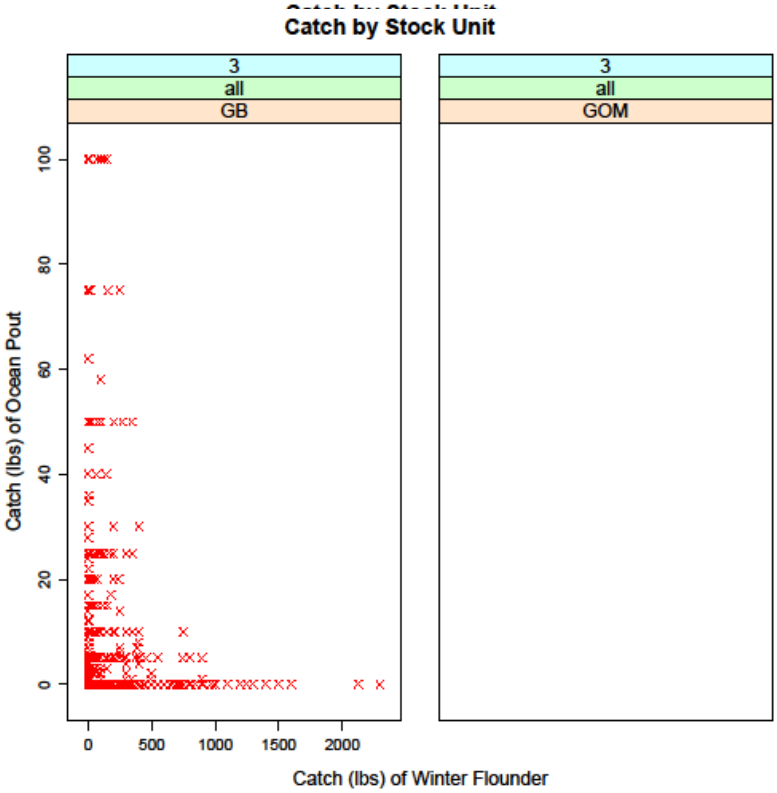

Catch by Stock Unit
2
all
GB
2
all
GOM
Catch (lbs) of Ocean Pout
0
50
100
150
0
5000
10000
15000
20000
Catch (lbs) of Haddock

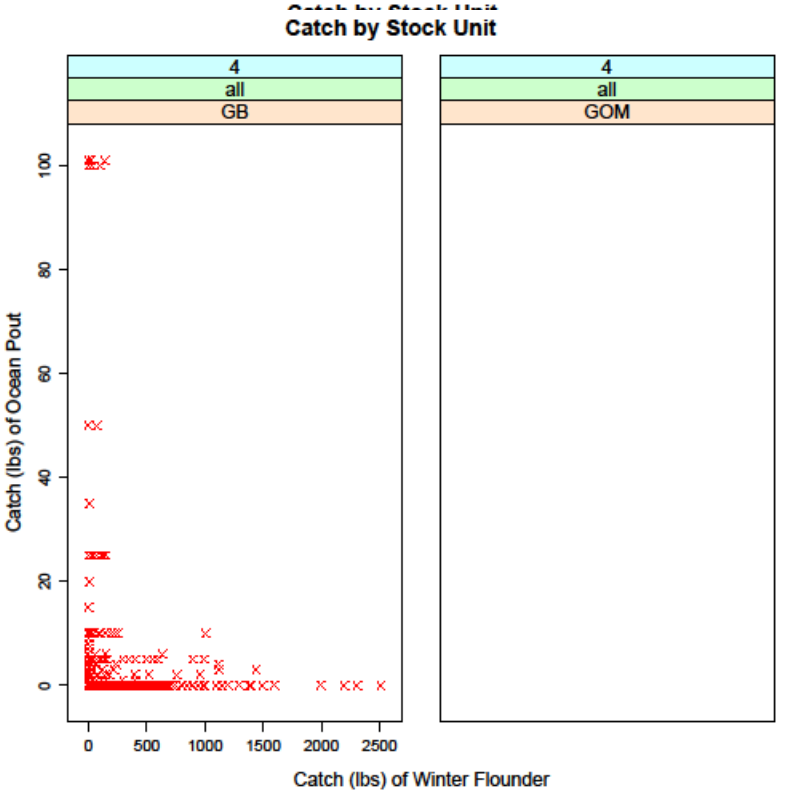

Catch by Stock Unit
3
all
GB
3
all
GOM
Catch (lbs) of Ocean Pout
0
20
40
60
80
100
0
2000
4000
6000
8000
10000
12000
−0.4
−0.2
0.0
0.2
0.4
100
200
300
400
500
600
700
Catch (lbs) of Atlantic Cod

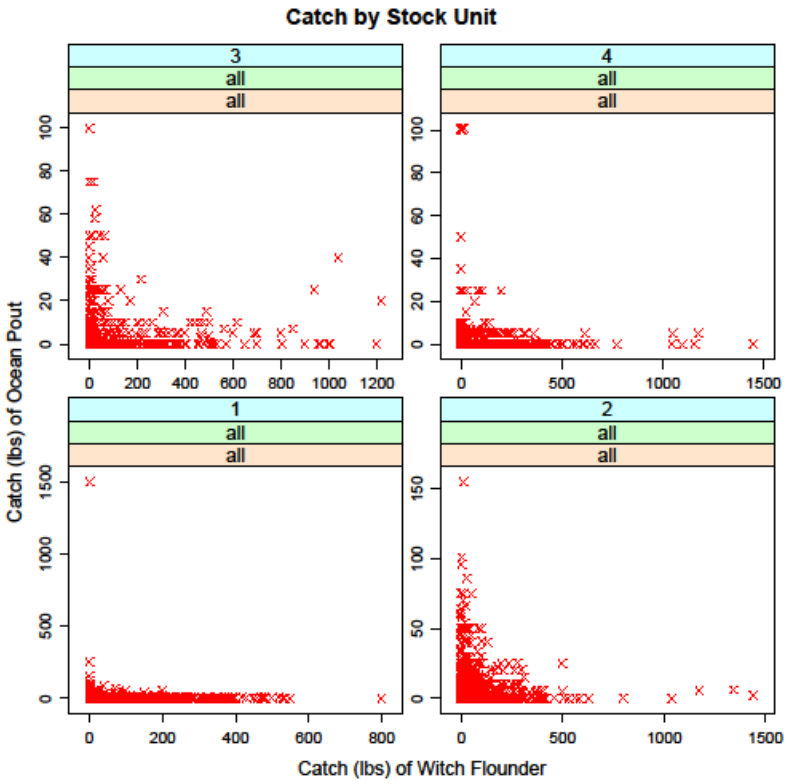

Catch by Stock Unit
4
all
GB
4
all
GOM
Catch (lbs) of Ocean Pout
0
20
40
60
80
100
0
2000
4000
6000
8000
10000
Catch (lbs) of Atlantic Cod


Catch by Stock Unit
1
all
GB
1
all
GOM
Catch (lbs) of Ocean Pout
Catch (lbs) of Winter Flounder

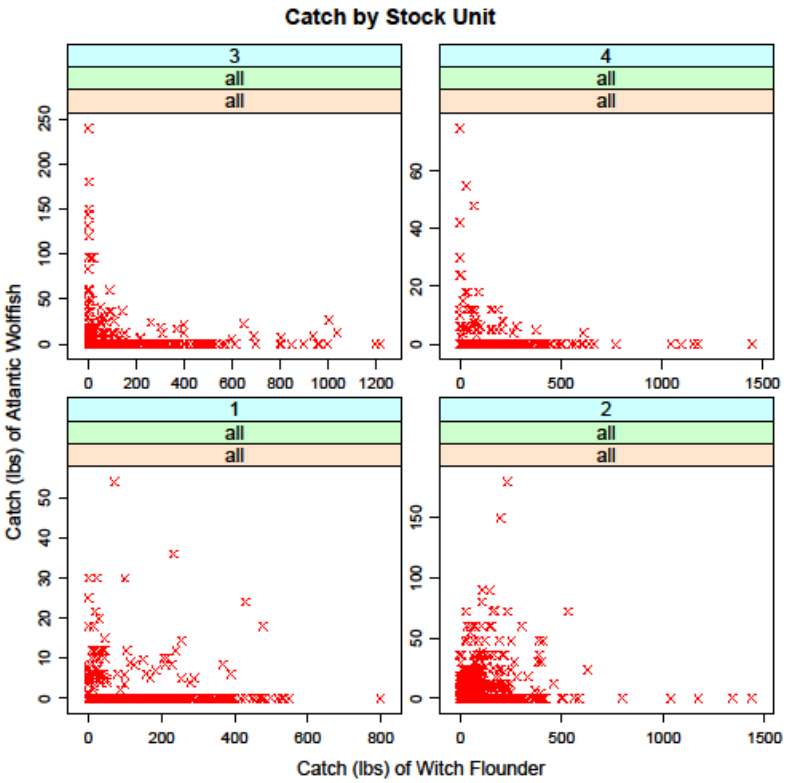

Catch by Stock Unit
2
all
GB
2
all
GOM
Catch (lbs) of Ocean Pout
Catch (lbs) of Winter Flounder

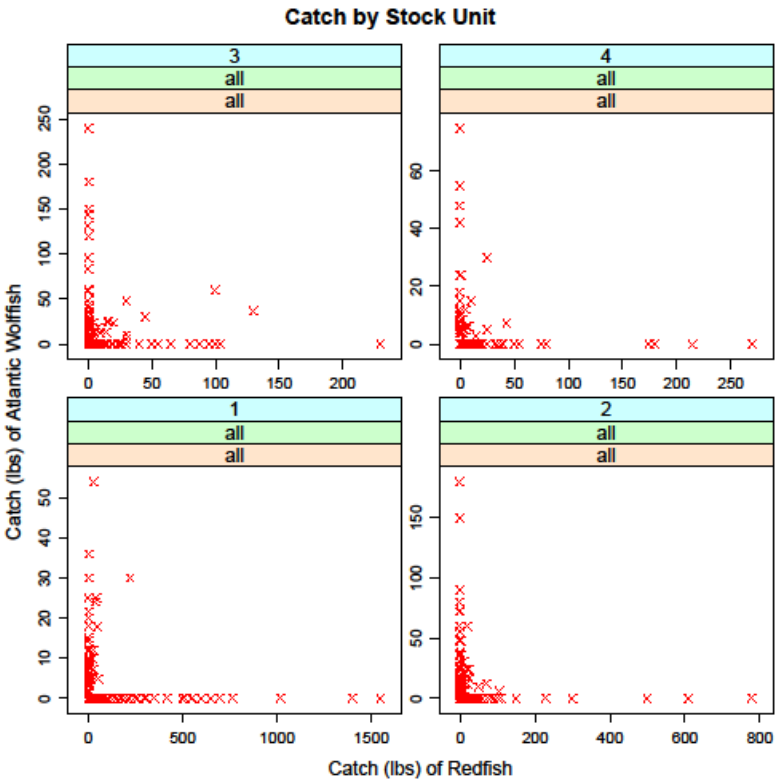

Catch by Stock Unit
3
all
GB
3
all
GOM
Catch (lbs) of Ocean Pout
Catch (lbs) of Winter Flounder

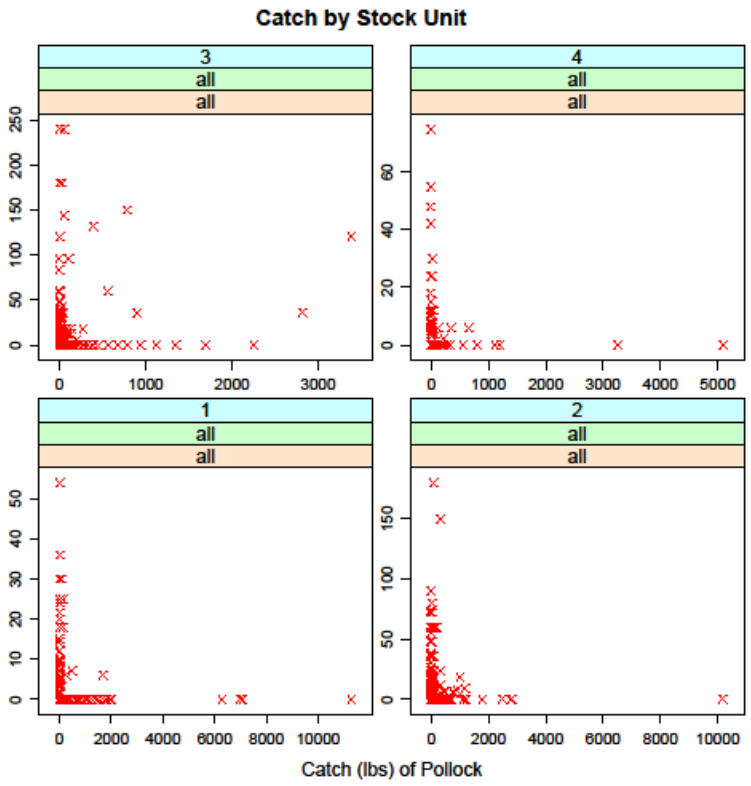

Catch by Stock Unit
4
all
GB
4
all
GOM
Catch (lbs) of Ocean Pout
Catch (lbs) of Winter Flounder

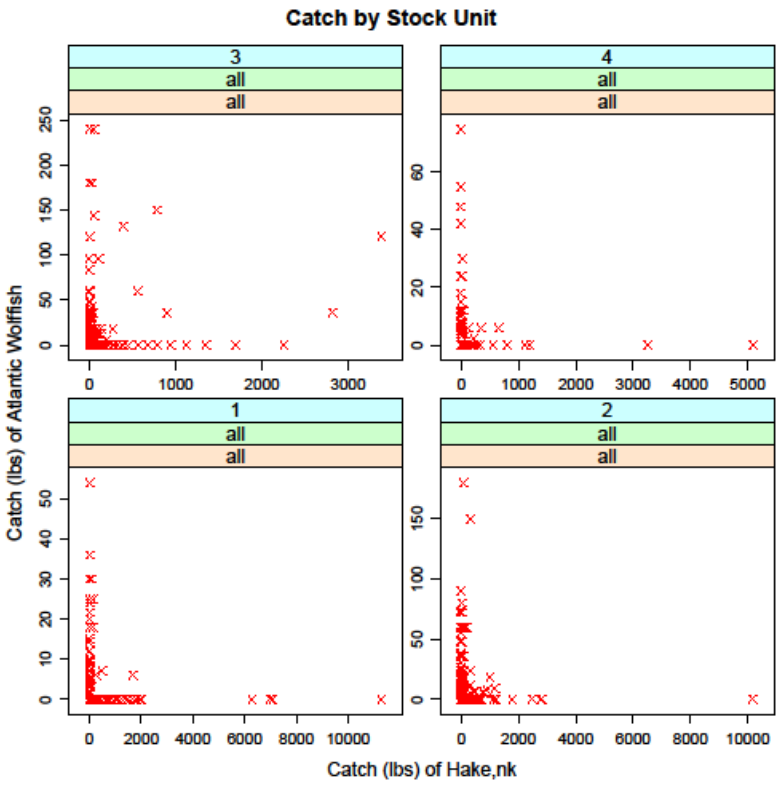


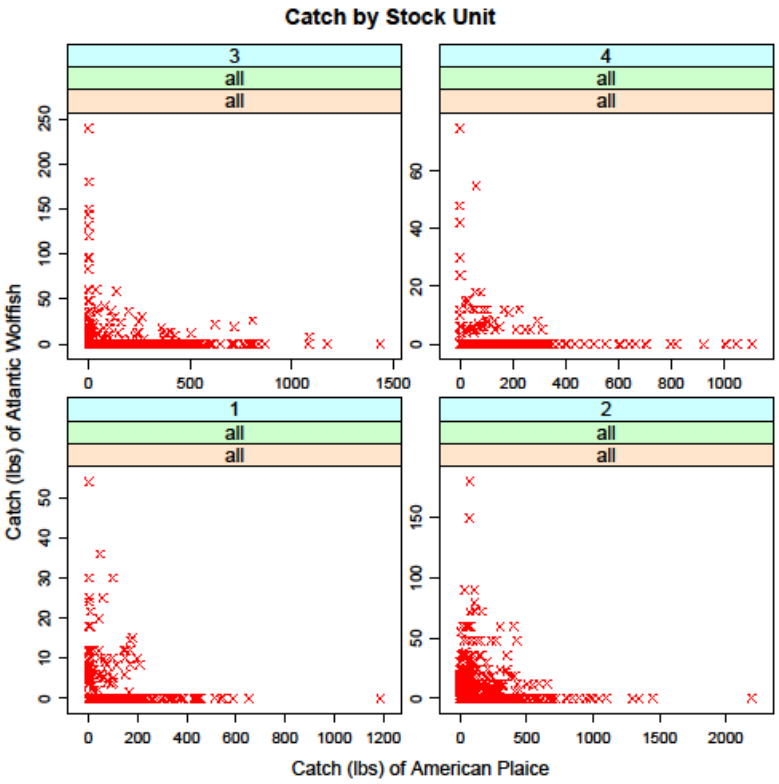
Atlantic Wolffish

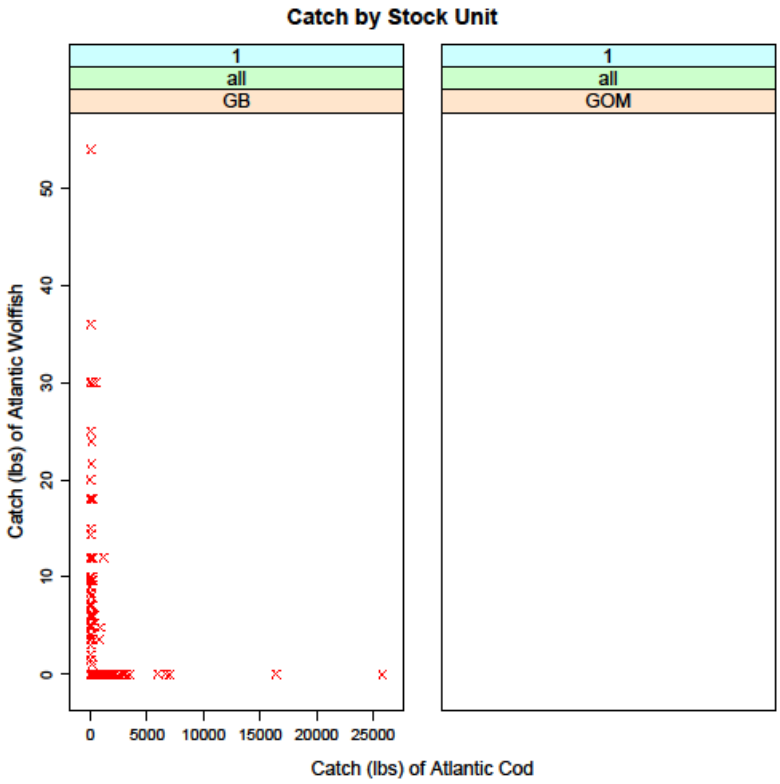


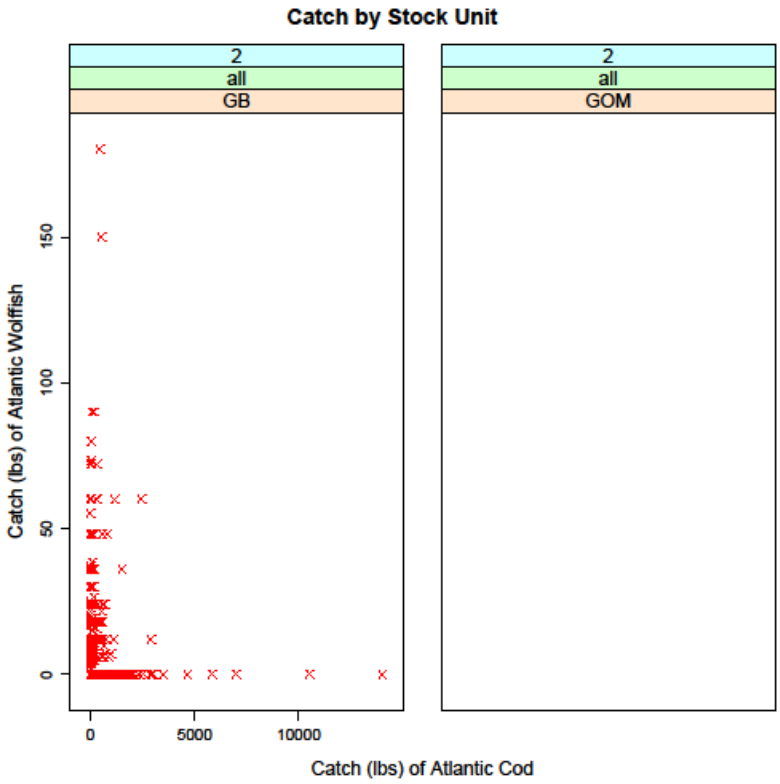


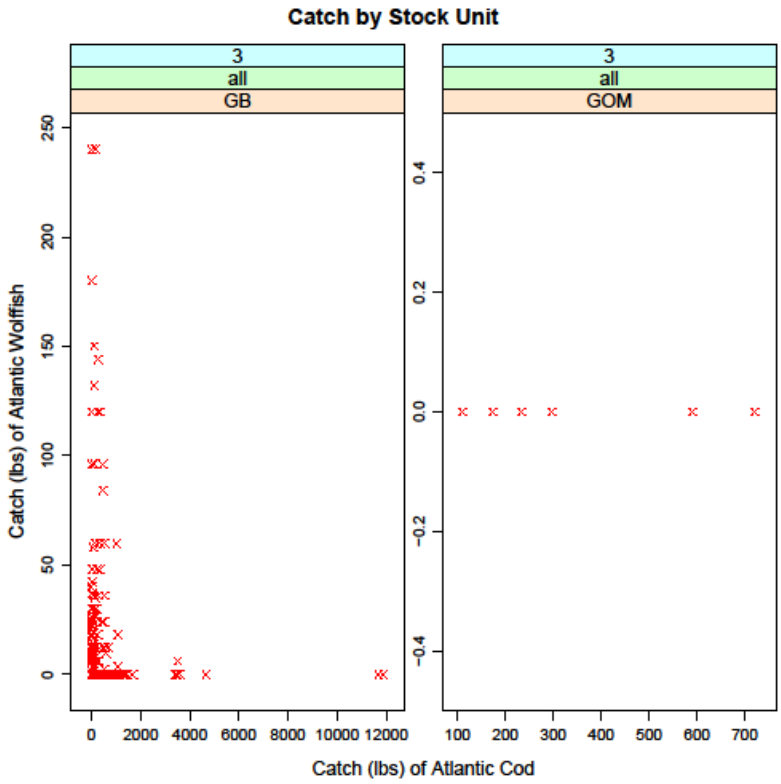

Catch by Stock Unit
3
all
all
4
all
all
1
all
all
2
all
all
Catch (lbs) of Pollock

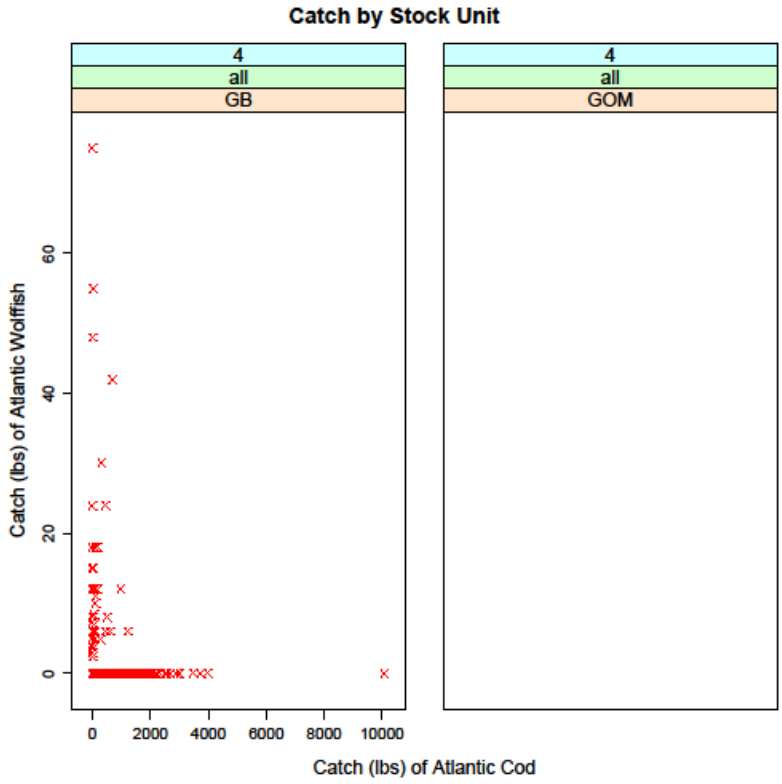

Catch by Stock Unit
3
all
all
4
all
all
1
all
all
2
all
all
Catch (lbs) of Atlantic Wolffish
Catch (lbs) of Hake,nk

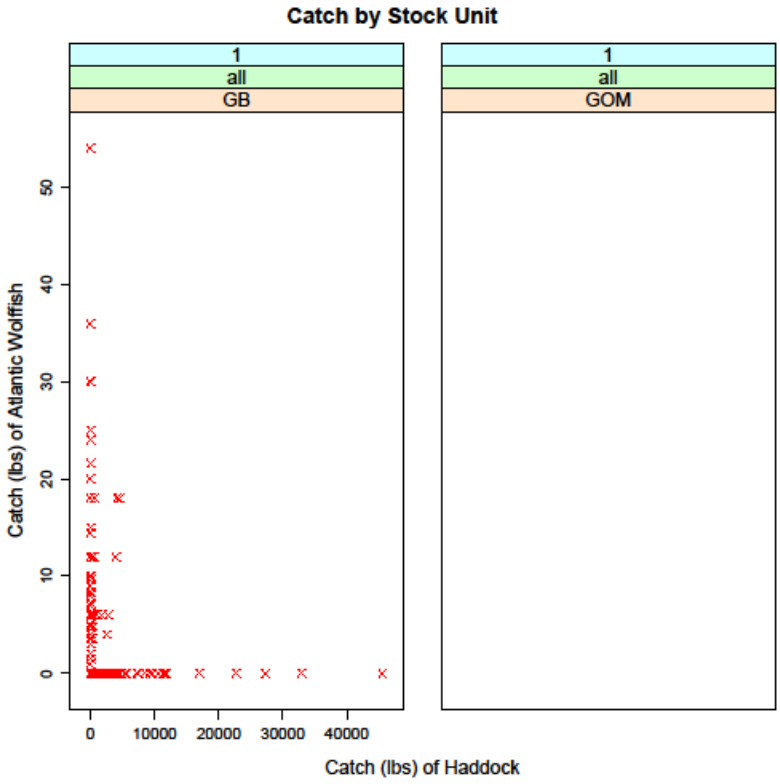

Catch by Stock Unit
3
all
all
4
all
all
1
all
all
2
all
all
Catch (lbs) of Atlantic Wolffish
Catch (lbs) of American Plaice

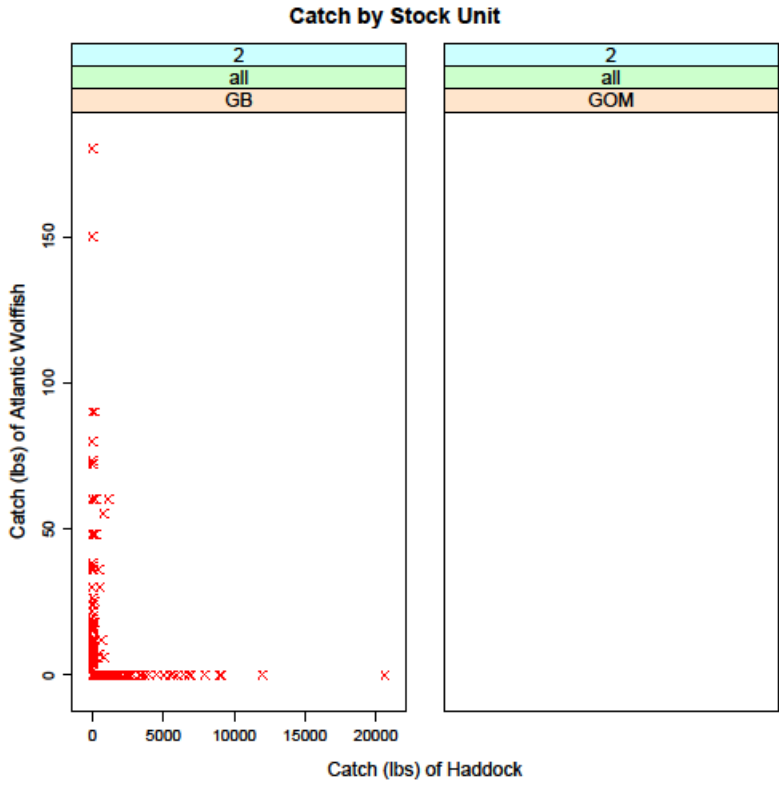

Catch by Stock Unit
1
all
GB
1
all
GOM
Catch (lbs) of Atlantic Wolffish
Catch (lbs) of Atlantic Cod

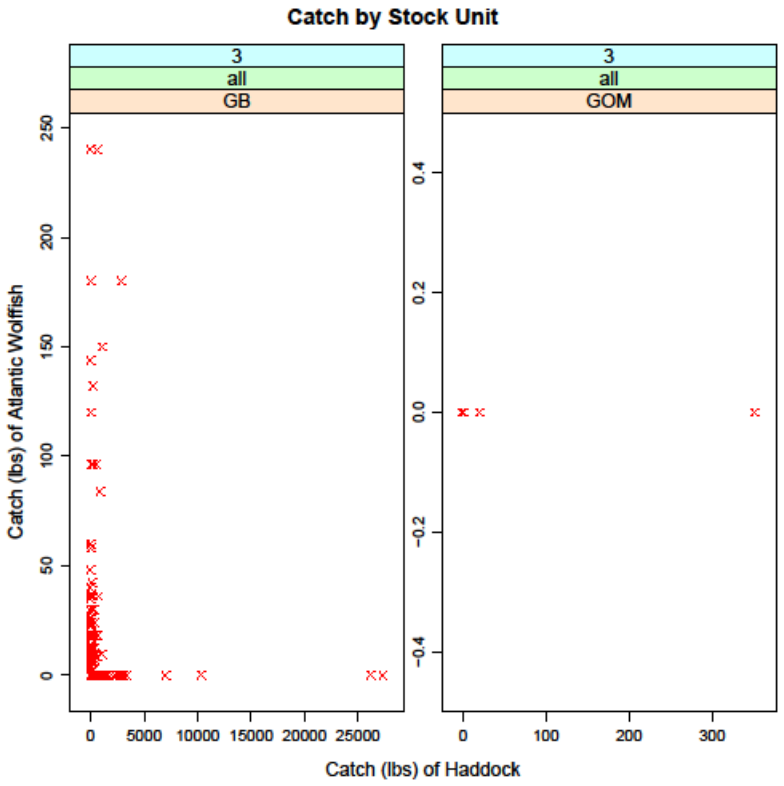

Catch by Stock Unit
2
all
GB
2
all
GOM
Catch (lbs) of Atlantic Wolffish
0
50
100
150
0
5000
10000
Catch (lbs) of Atlantic Cod

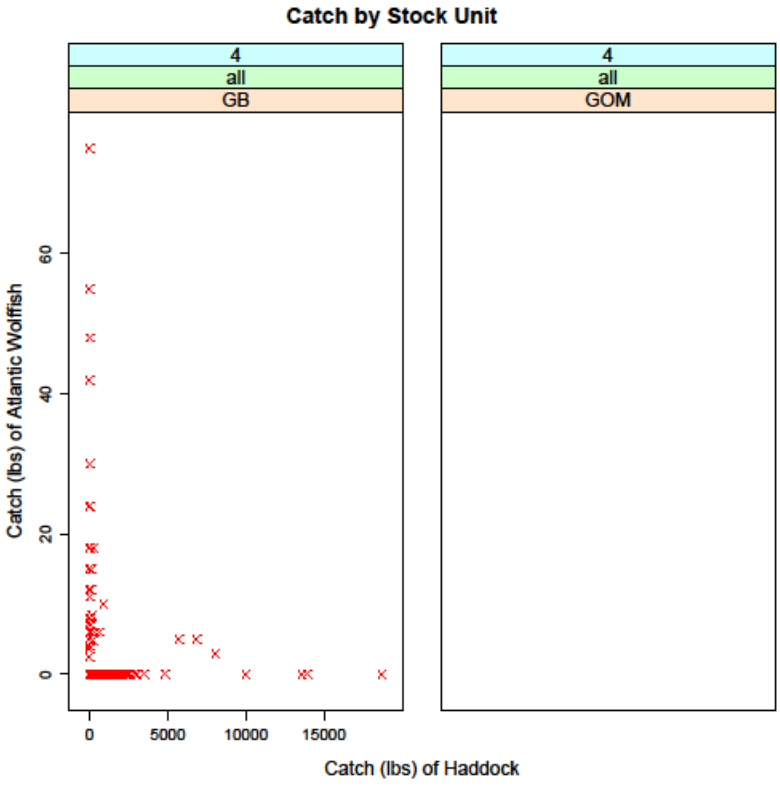

Catch by Stock Unit
3
all
GB
3
all
GOM
Catch (lbs) of Atlantic Wolffish
0
50
100
150
200
250
0
2000
4000
6000
8000
10000
12000
−0.4
−0.2
0.0
0.2
0.4
100
200
300
400
500
600
700
Catch (lbs) of Atlantic Cod

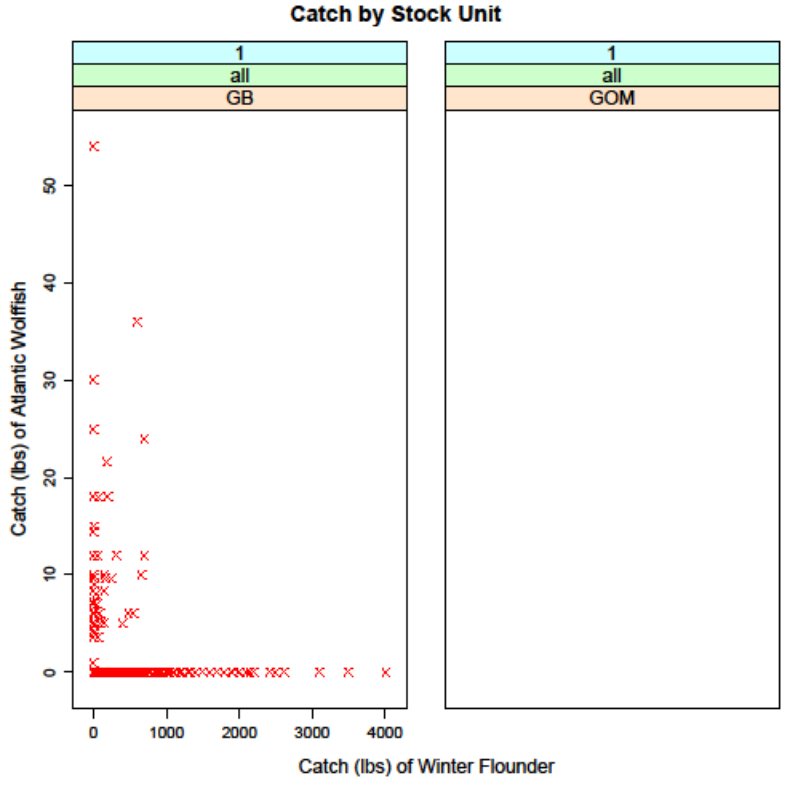

Catch by Stock Unit
4
all
GB
4
all
GOM
Catch (lbs) of Atlantic Wolffish
0
20
40
60
0
2000
4000
6000
8000
10000
Catch (lbs) of Atlantic Cod

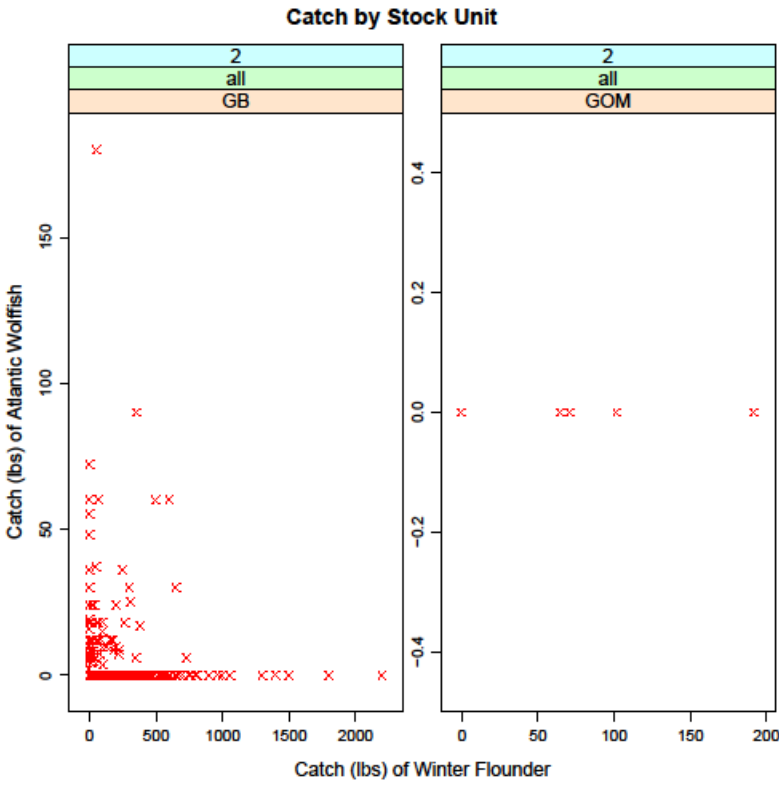

Catch by Stock Unit
1
all
GB
1
all
GOM
Catch (lbs) of Atlantic Wolffish
0
10
20
30
40
50
0
10000
20000
30000
40000
Catch (lbs) of Haddock

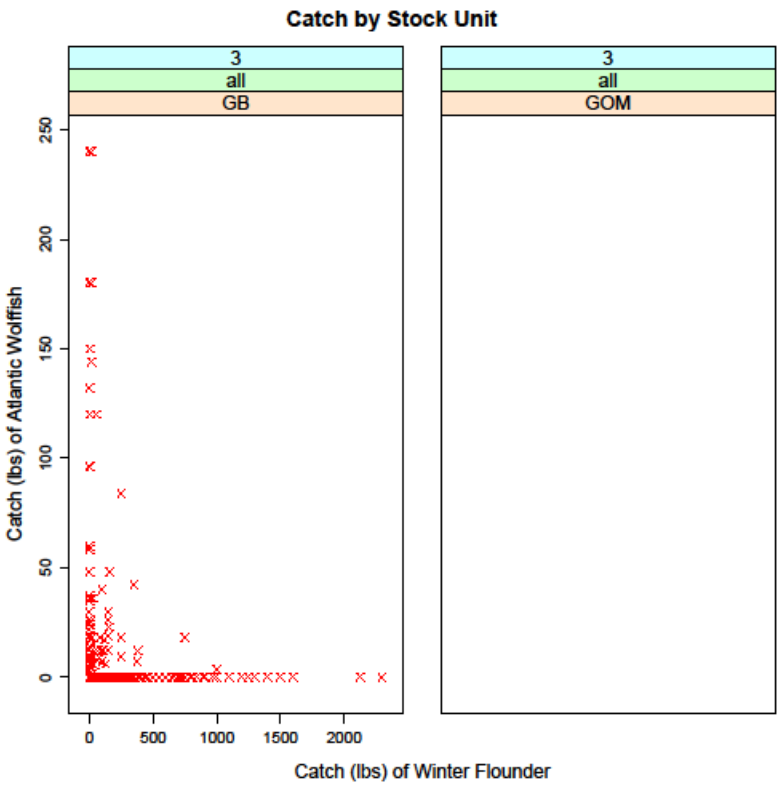

Catch by Stock Unit
2
all
GB
2
all
GOM
Catch (lbs) of Atlantic Wolffish
0
50
100
150
0
5000
10000
15000
20000
Catch (lbs) of Haddock

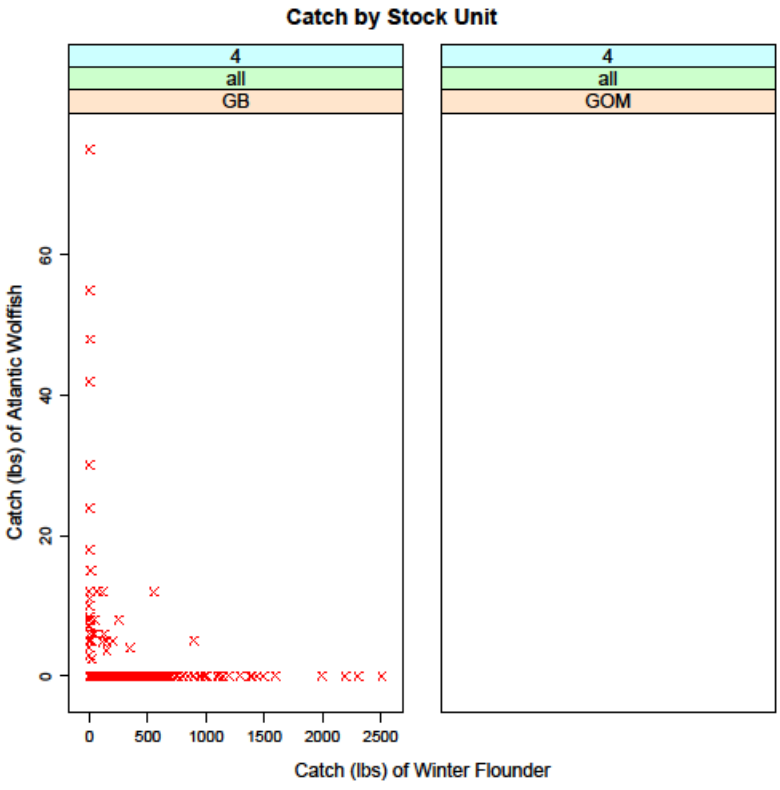

Catch by Stock Unit
3
all
GB
3
all
GOM
Catch (lbs) of Atlantic Wolffish
0
50
100
150
200
250
0
5000
10000
15000
20000
25000
−0.4
−0.2
0.0
0.2
0.4
0
100
200
300
Catch (lbs) of Haddock

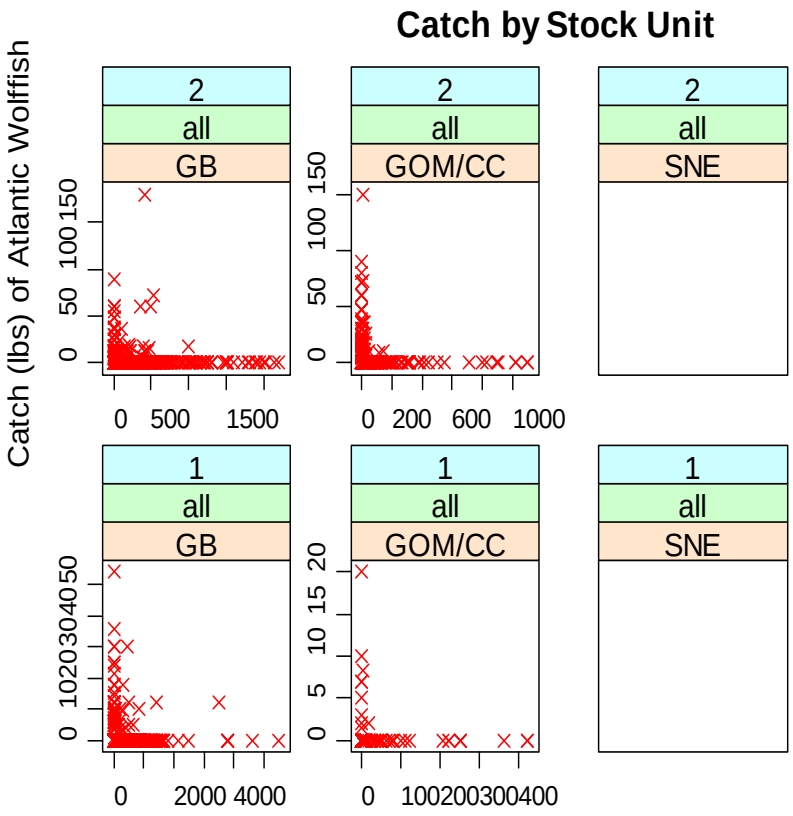

Catch by Stock Unit
4
all
GB
4
all
GOM
Catch (lbs) of Atlantic Wolffish
0
20
40
60
0
5000
10000
15000
Catch (lbs) of Haddock

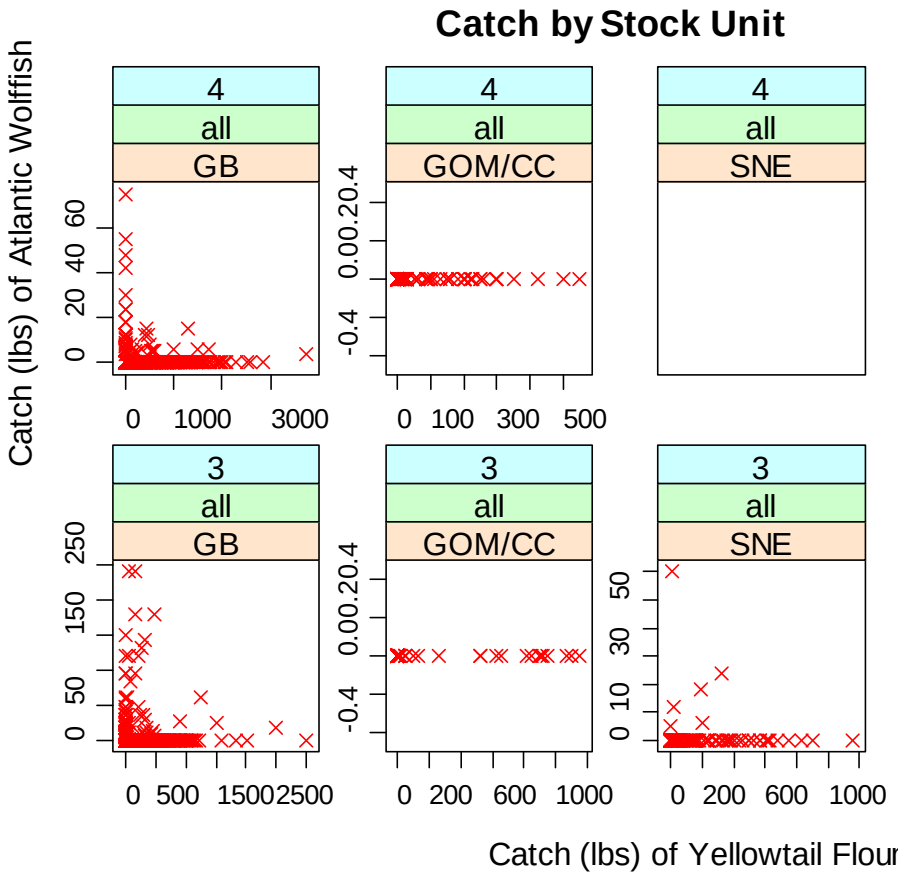

Catch by Stock Unit
1
all
GB
1
all
GOM
Catch (lbs) of Atlantic Wolffish
0
10
20
30
40
50
0
1000
2000
3000
4000
Catch (lbs) of Winter Flounder


Catch by Stock Unit
2
all
GB
2
all
GOM
Catch (lbs) of Atlantic Wolffish
Catch (lbs) of Winter Flounder

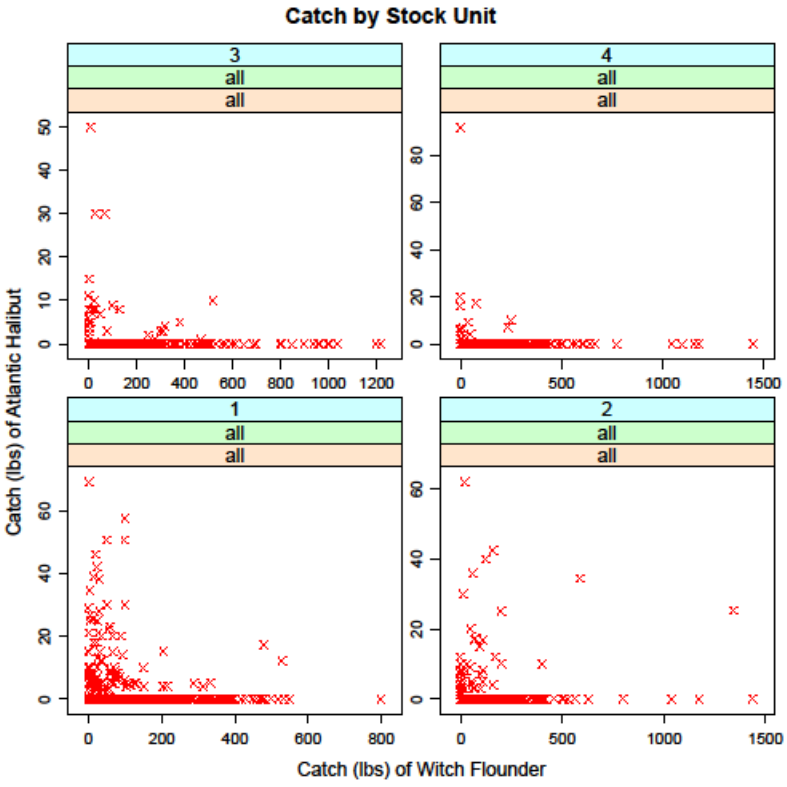

Catch by Stock Unit
3
all
GB
3
all
GOM
Catch (lbs) of Atlantic Wolffish
Catch (lbs) of Winter Flounder

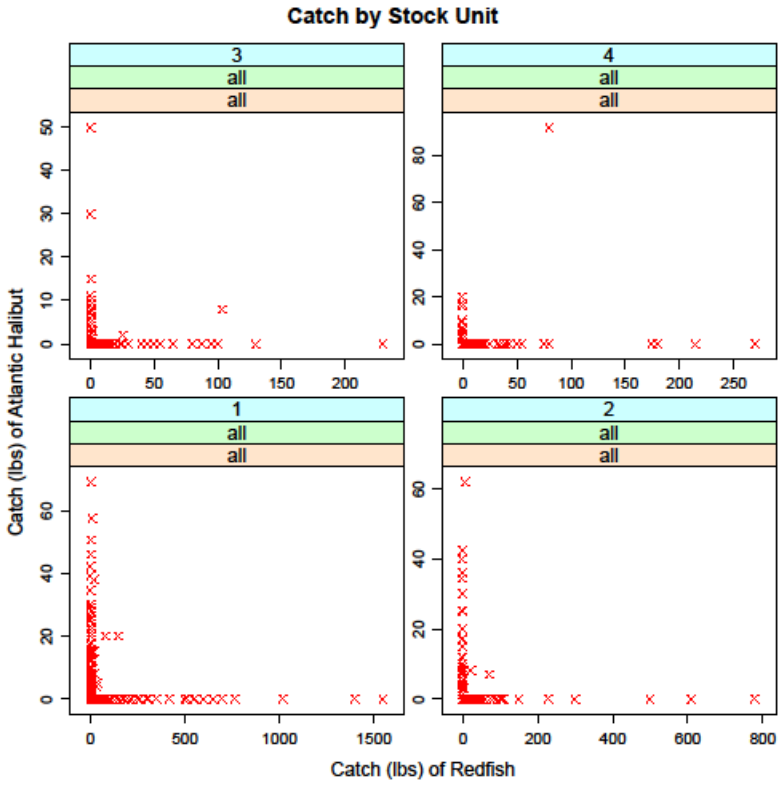

Catch by Stock Unit
4
all
GB
4
all
GOM
Catch (lbs) of Atlantic Wolffish
Catch (lbs) of Winter Flounder

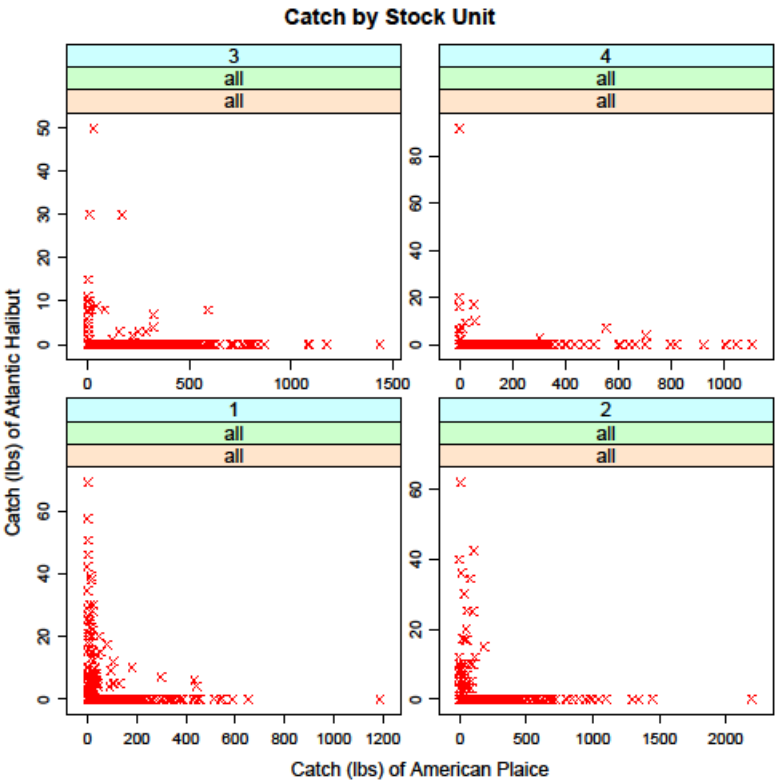

Catch by Stock Unit
2
all
GB
2
all
GOM/CC
2
all
SNE
1
all
GB
1
all
GOM/CC
1
all
SNE
Catch (lbs) of Atlantic Wolffish
Catch (lbs) of Yellowtail Flou

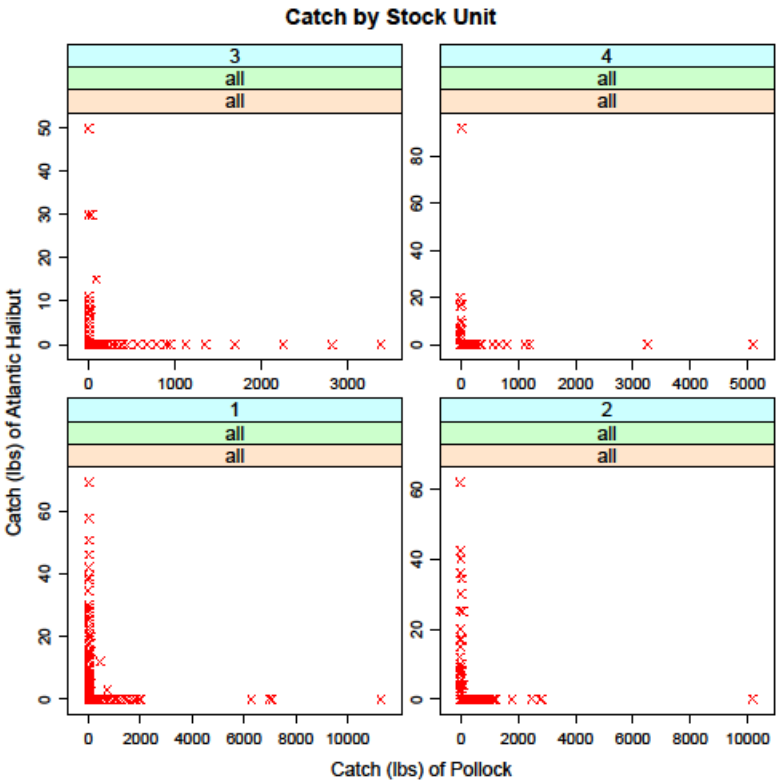


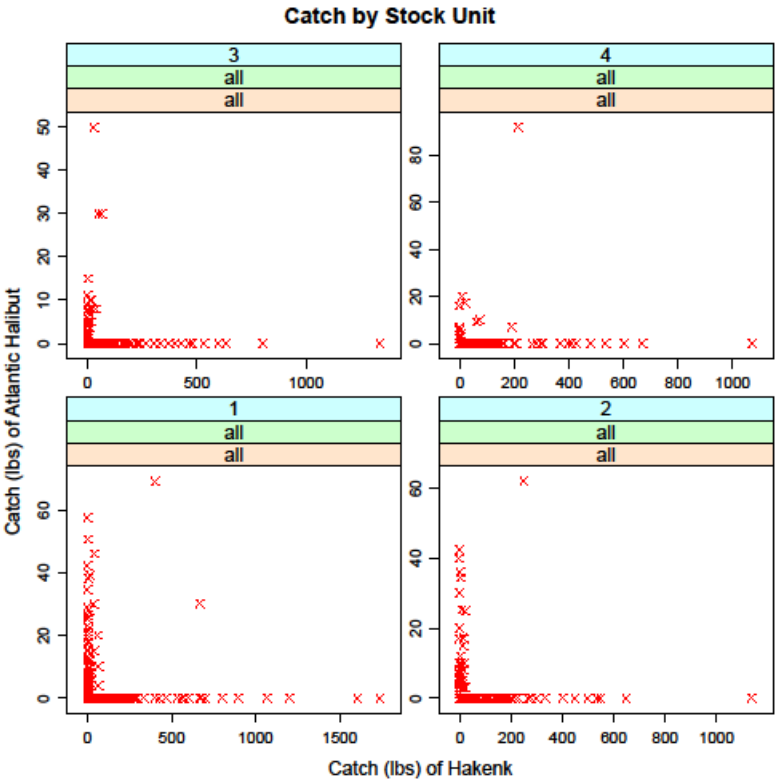
Atlantic Halibut

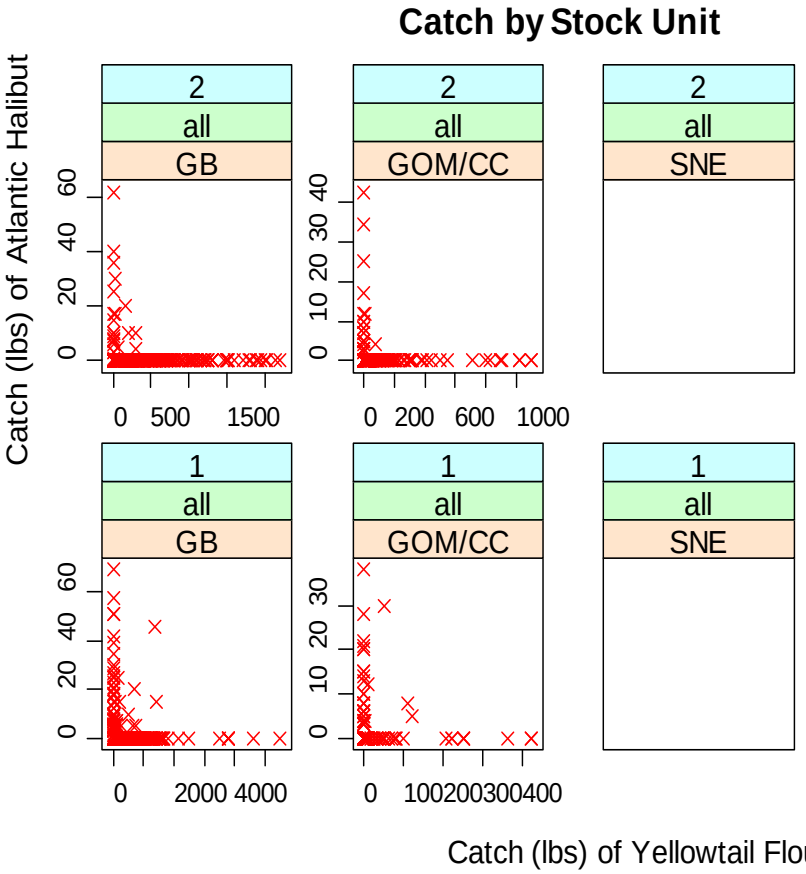


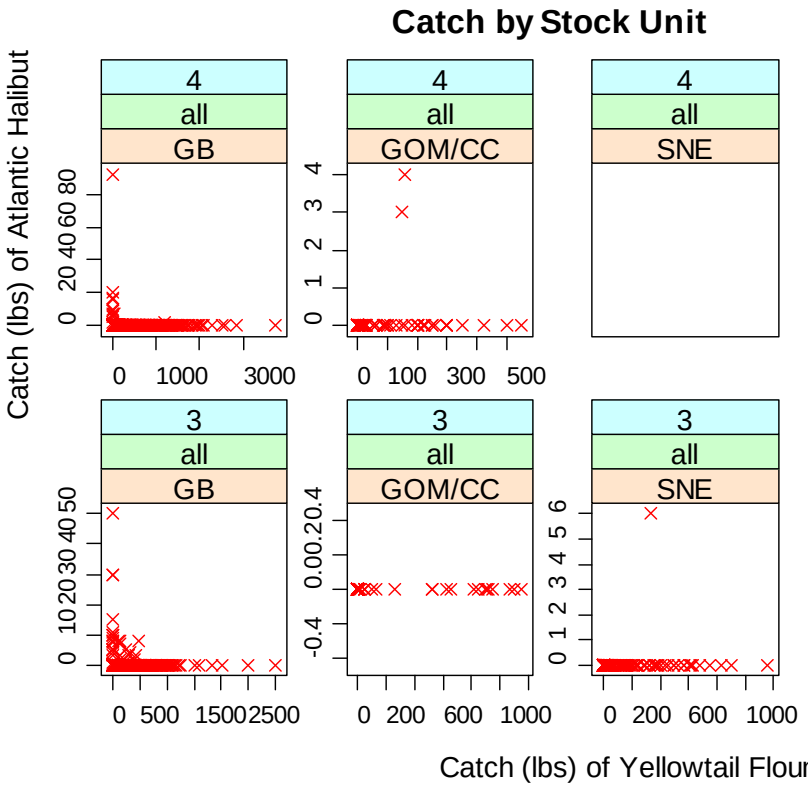


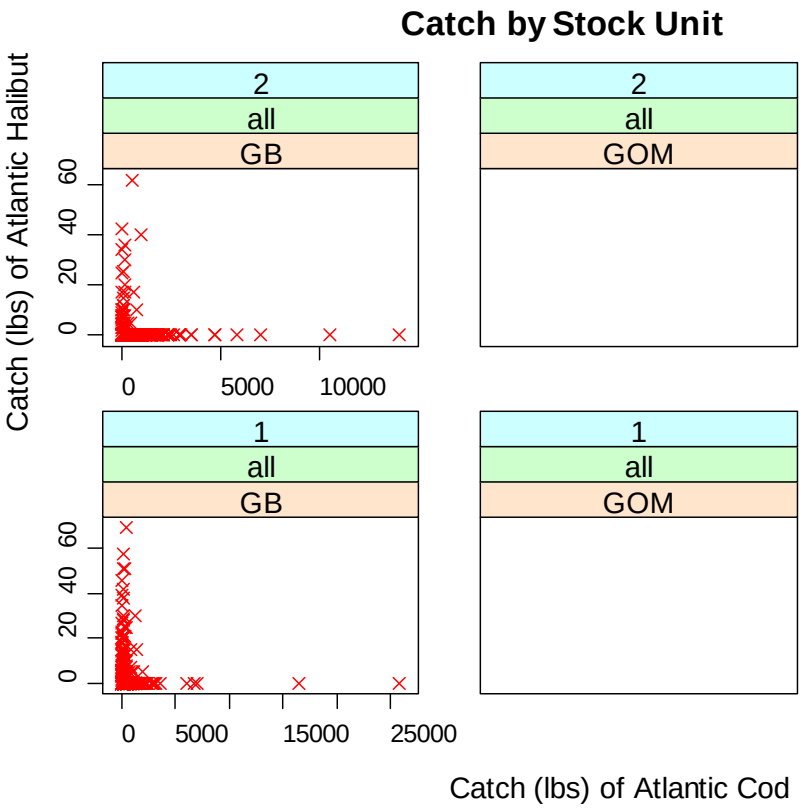

Catch by Stock Unit
3
all
all
4
all
all
1
all
all
2
all
all
Catch (lbs) of Atlantic Halibut
Catch (lbs) of American Plaice

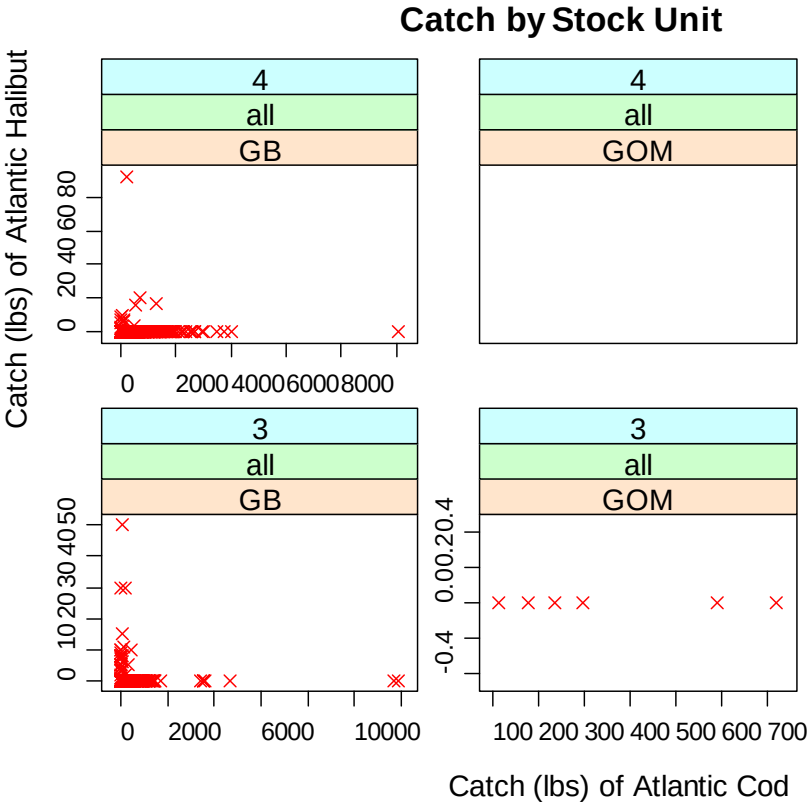

Catch by Stock Unit
3
all
all
4
all
all
1
all
all
2
all
all
Catch (lbs) of Atlantic Halibut
Catch (lbs) of Pollock

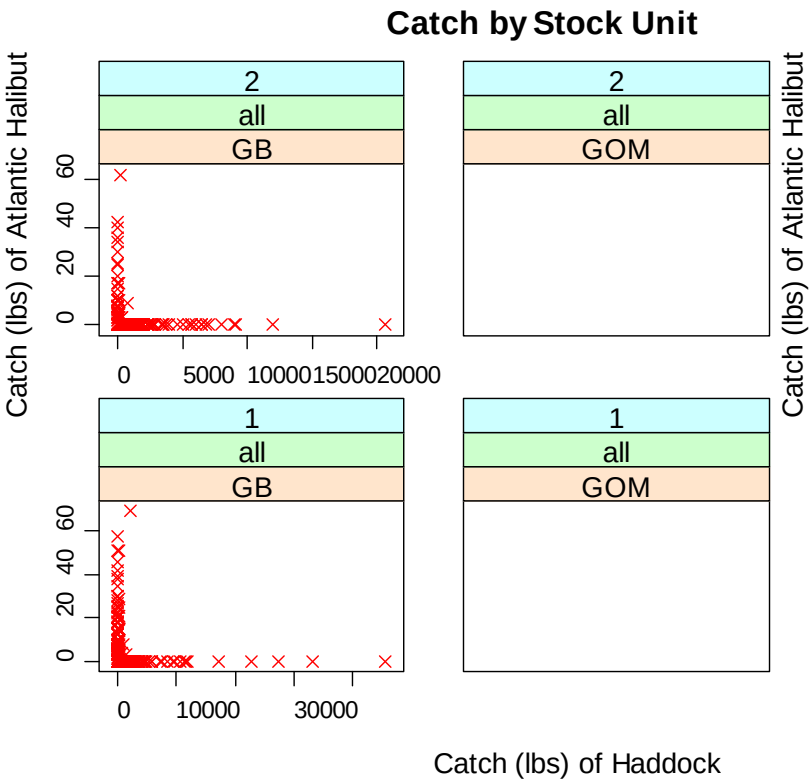

Catch by Stock Unit
3
all
all
4
all
all
1
all
all
2
all
all
Catch (lbs) of Atlantic Halibut
Catch (lbs) of Hakenk

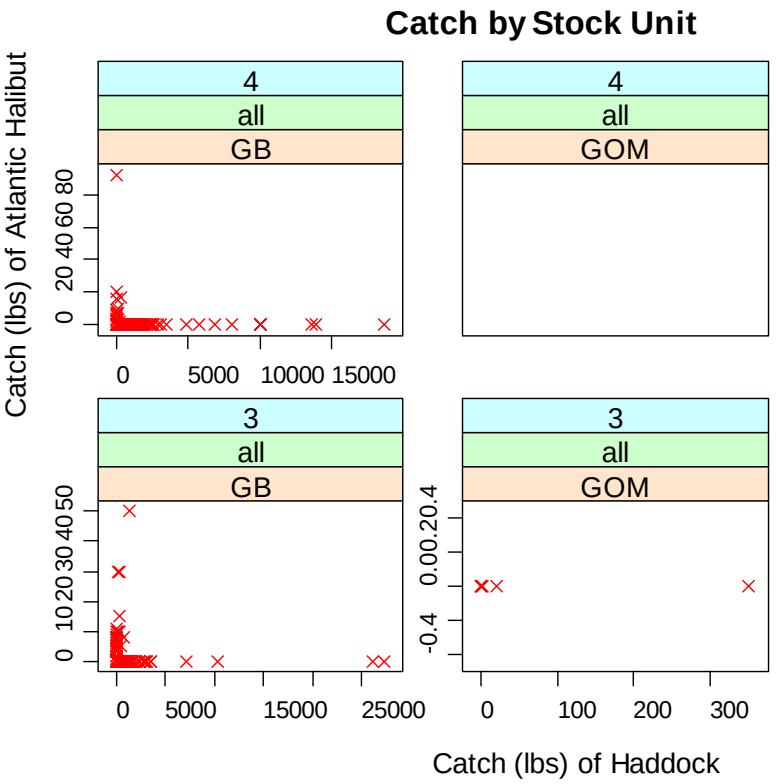

Catch by Stock Unit
2
all
GB
2
all
GOM/CC
2
all
SNE
1
all
GB
1
all
GOM/CC
1
all
SNE
Catch (lbs) of Atlantic Halibut
Catch (lbs) of Yellowtail Flou


Catch by Stock Unit
4
all
GB
4
all
GOM/CC
4
all
SNE
3
all
GB
3
all
GOM/CC
3
all
SNE
Catch (lbs) of Atlantic Halibut
Catch (lbs) of Yellowtail Flour

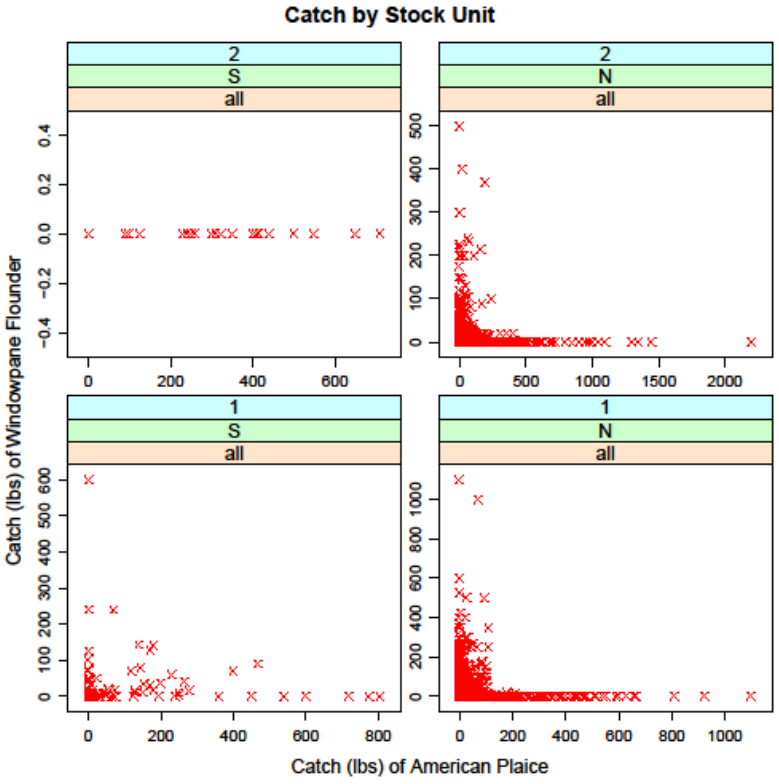

Catch by Stock Unit
2
all
GB
2
all
GOM
1
all
GB
1
all
GOM
Catch (lbs) of Atlantic Halibut
Catch (lbs) of Atlantic Cod

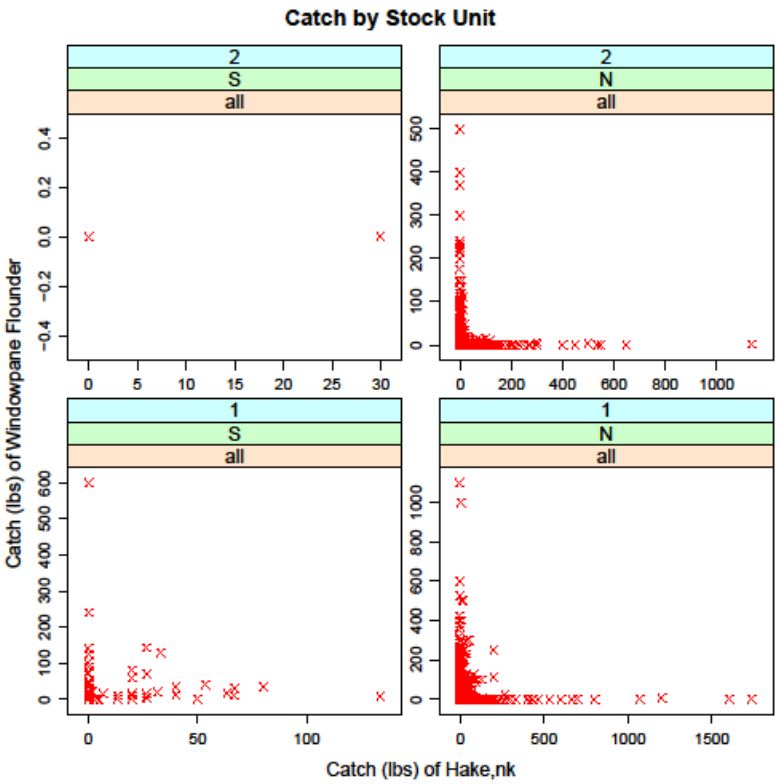

Catch by Stock Unit
4
all
GB
4
all
GOM
3
all
GB
3
all
GOM
Catch (lbs) of Atlantic Halibut
Catch (lbs) of Atlantic Cod

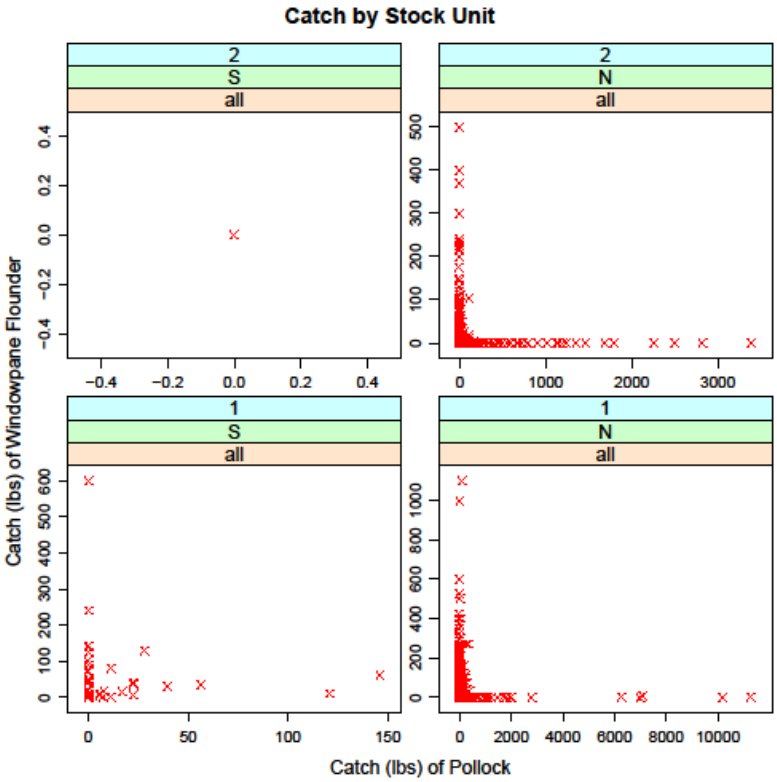


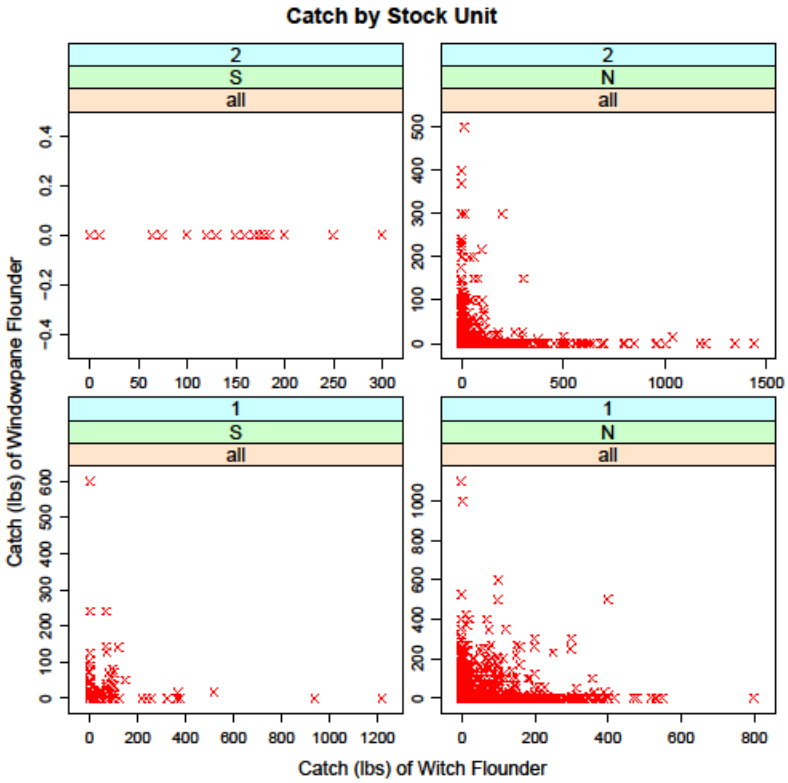


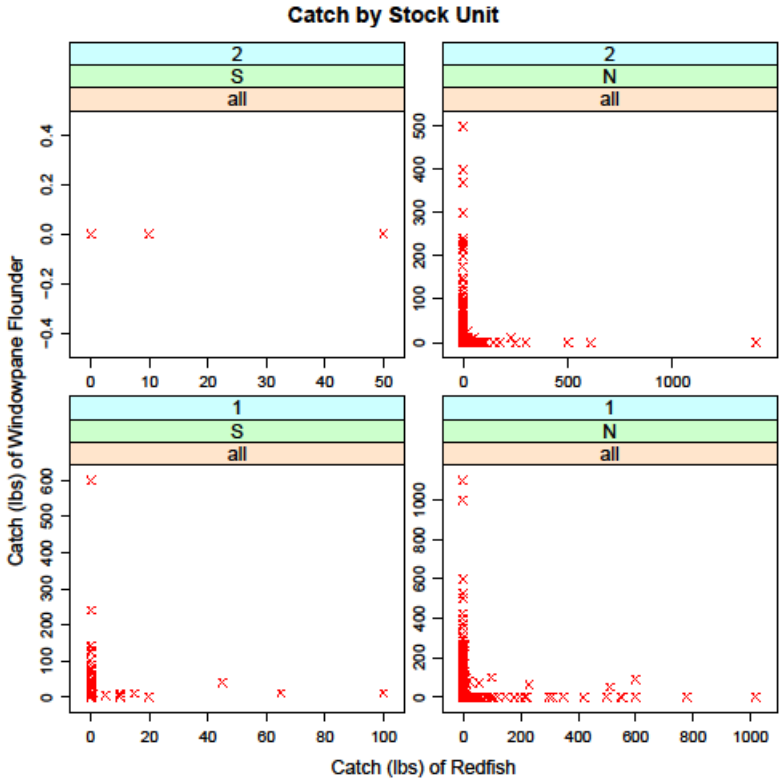
Windowpane Flounder

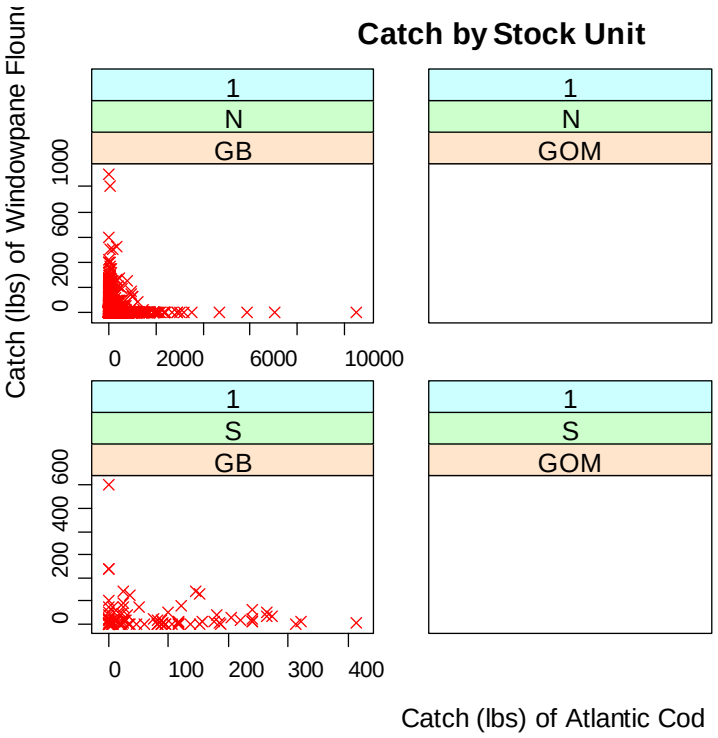


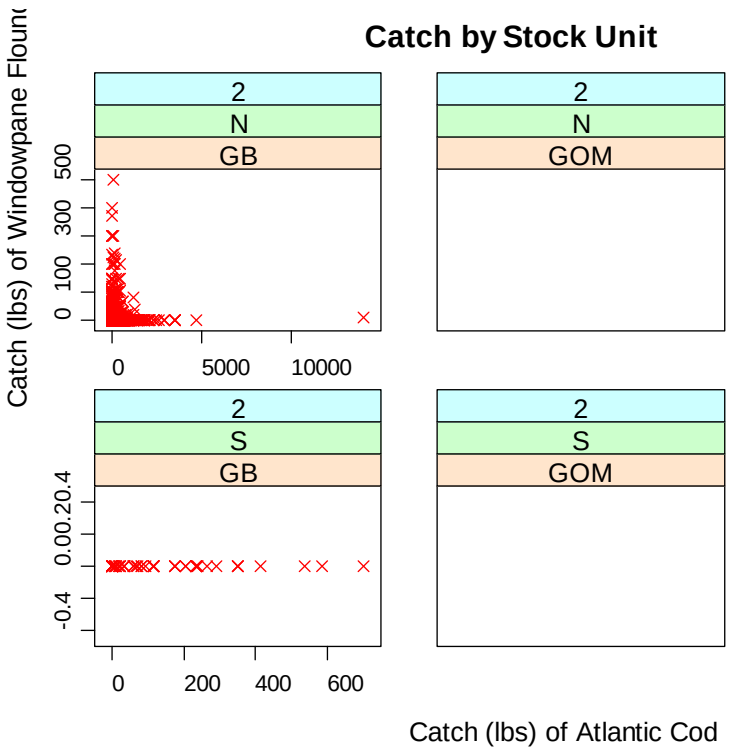


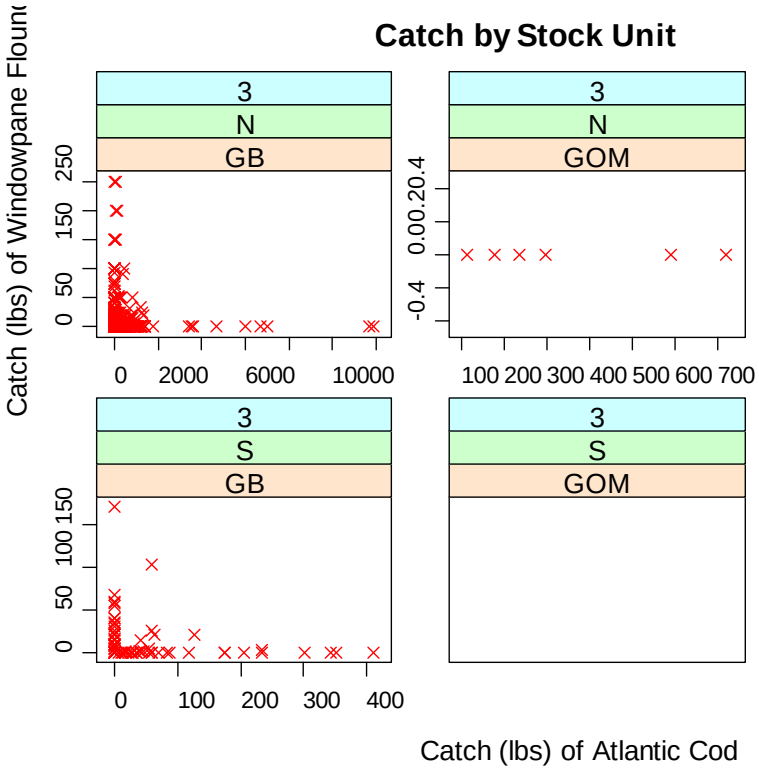

Catch by Stock Unit
2
S
all
2
N
all
1
S
all
1
N
all
Catch (lbs) of Windowpane Flounder
Catch (lbs) of Pollock

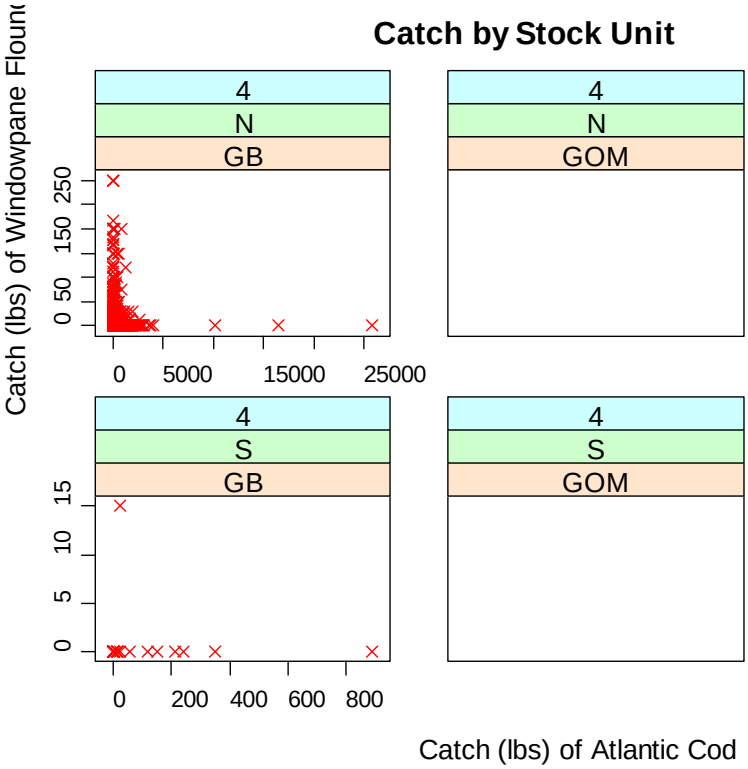

Catch by Stock Unit
2
S
all
2
N
all
1
S
all
1
N
all
Catch (lbs) of Windowpane Flounder
Catch (lbs) of Witch Flounder

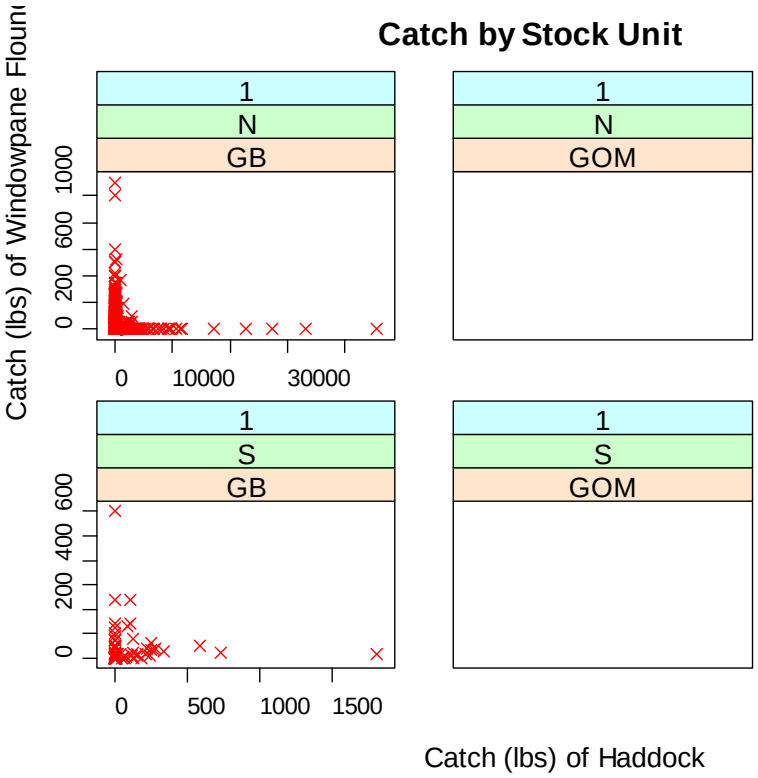

Catch by Stock Unit
2
S
all
2
N
all
1
S
all
1
N
all
Catch (lbs) of Windowpane Flounder
Catch (lbs) of Redfish

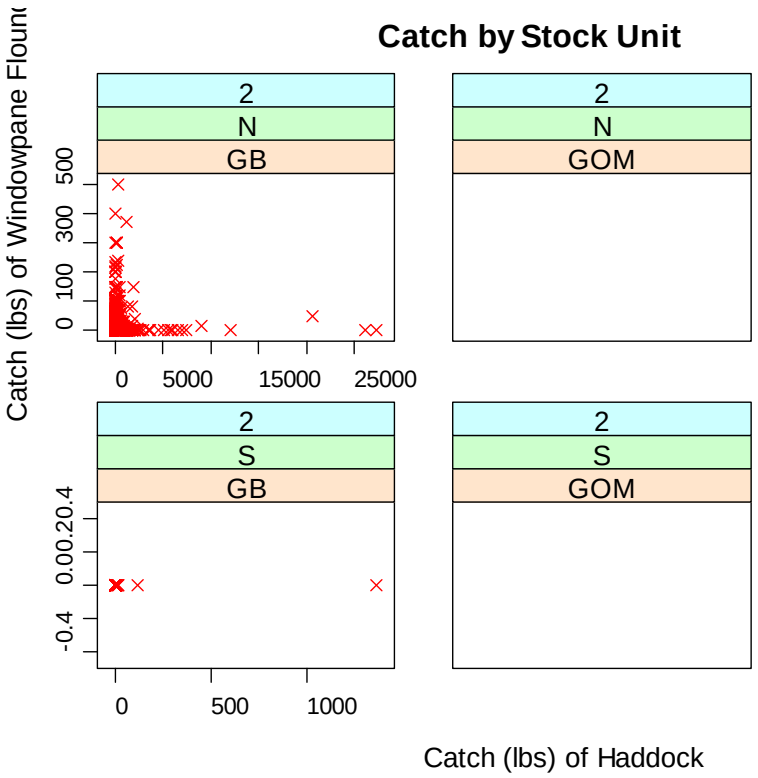

Catch by Stock Unit
1
N
GB
1
N
GOM
1
S
GB
1
S
GOM
Catch (lbs) of Windowpane Flounc
Catch (lbs) of Atlantic Cod

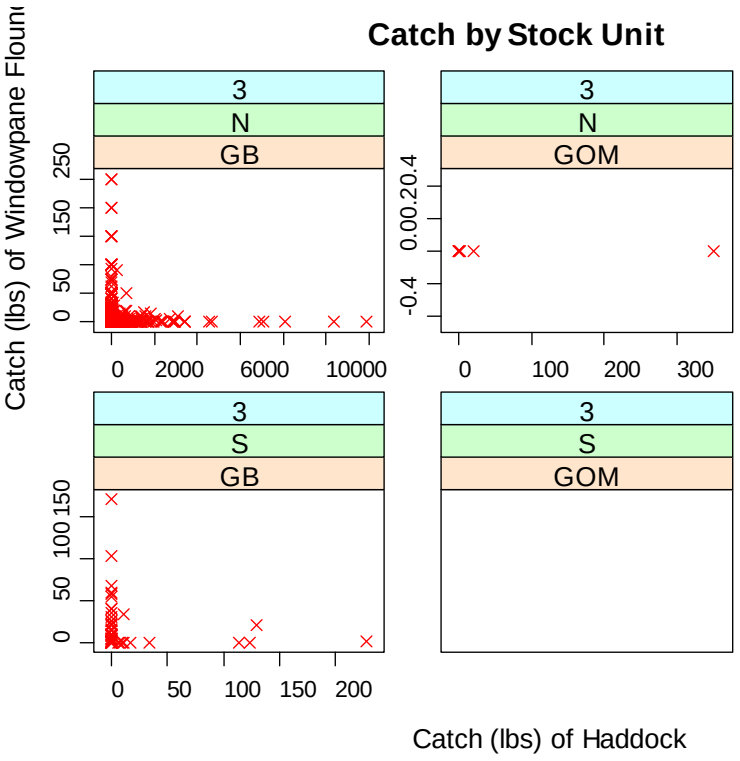

Catch by Stock Unit
2
N
GB
2
N
GOM
2
S
GB
2
S
GOM
Catch (lbs) of Windowpane Flounc
Catch (lbs) of Atlantic Cod

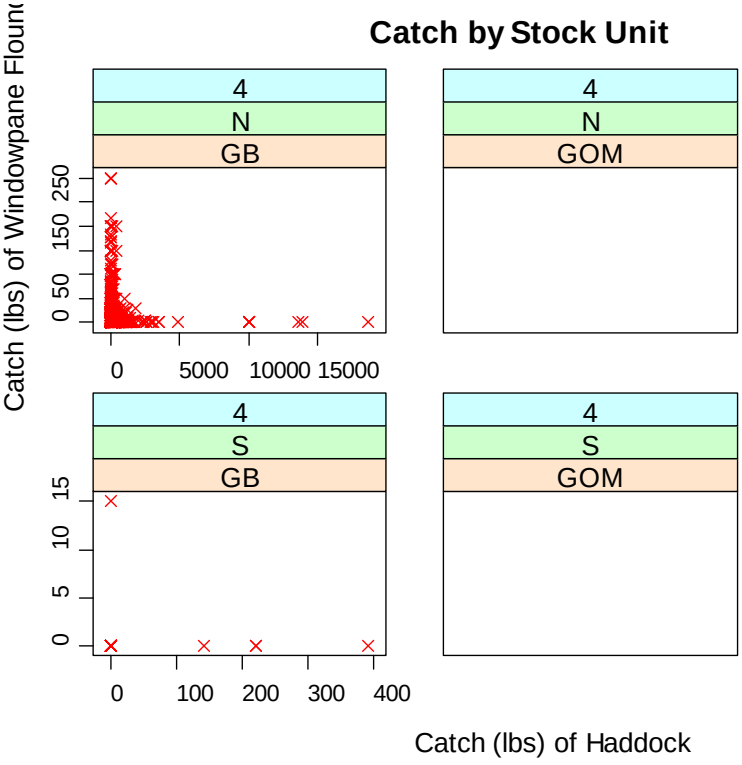

Catch by Stock Unit
3
N
GB
3
N
GOM
3
S
GB
3
S
GOM
Catch (lbs) of Windowpane Flounc
Catch (lbs) of Atlantic Cod

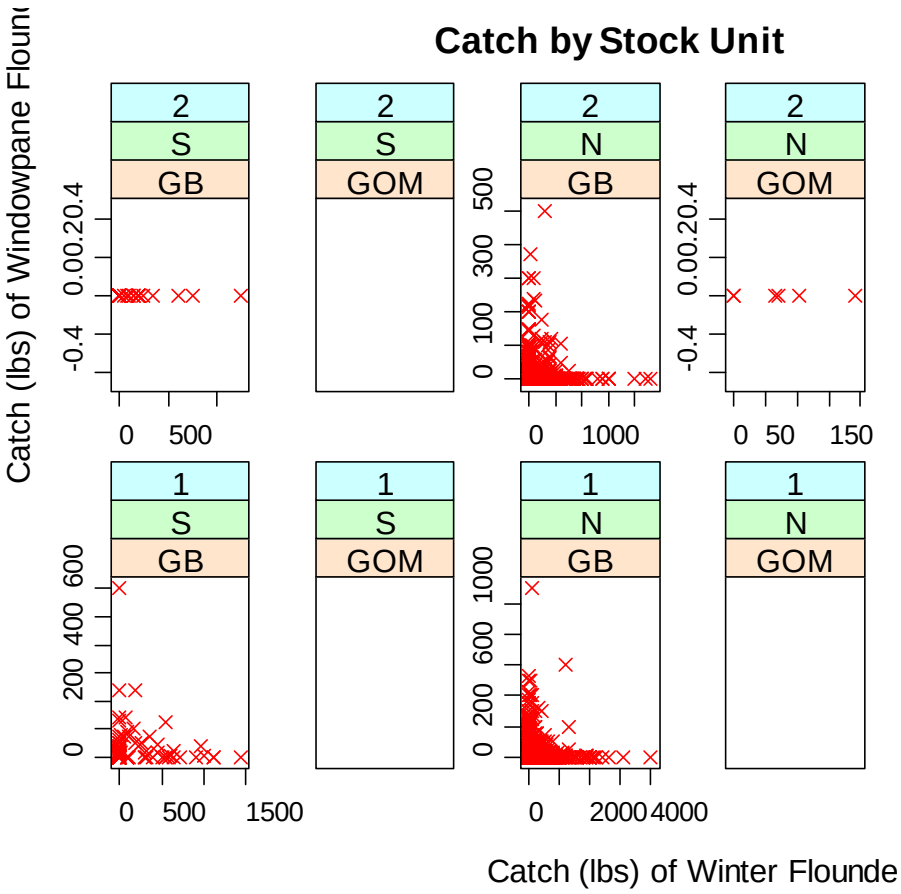

Catch by Stock Unit
4
N
GB
4
N
GOM
4
S
GB
4
S
GOM
Catch (lbs) of Windowpane Flounc
Catch (lbs) of Atlantic Cod

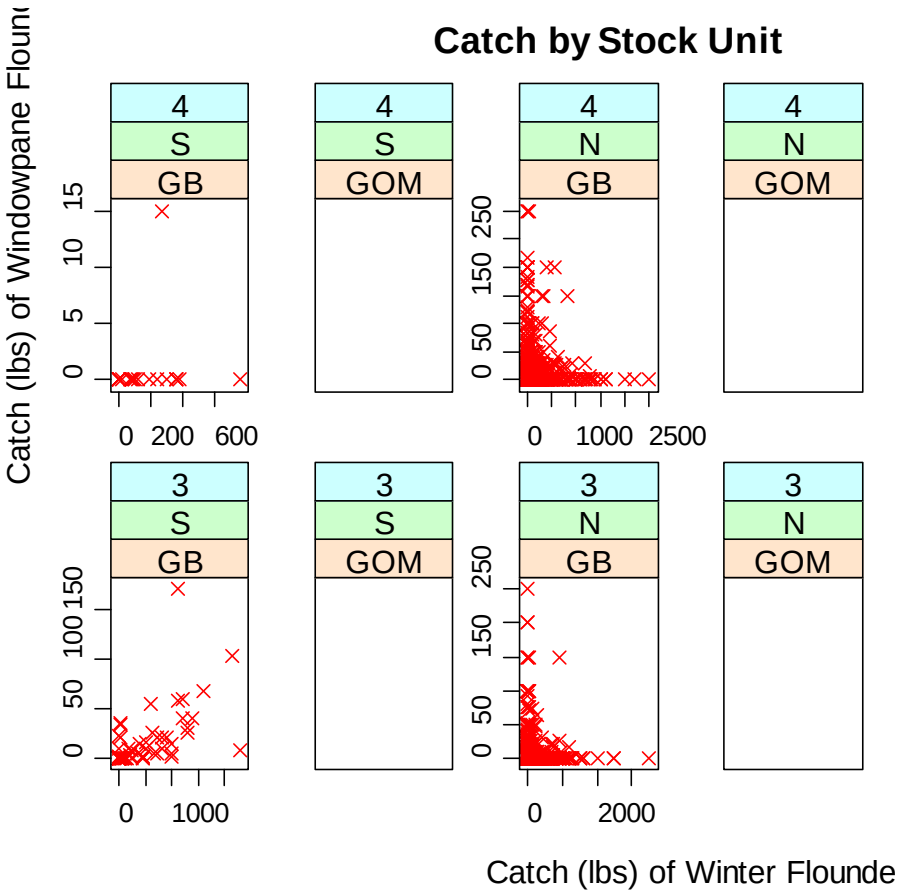

Catch by Stock Unit
1
N
GB
1
N
GOM
1
S
GB
1
S
GOM
Catch (lbs) of Windowpane Flounde
Catch (lbs) of Haddock

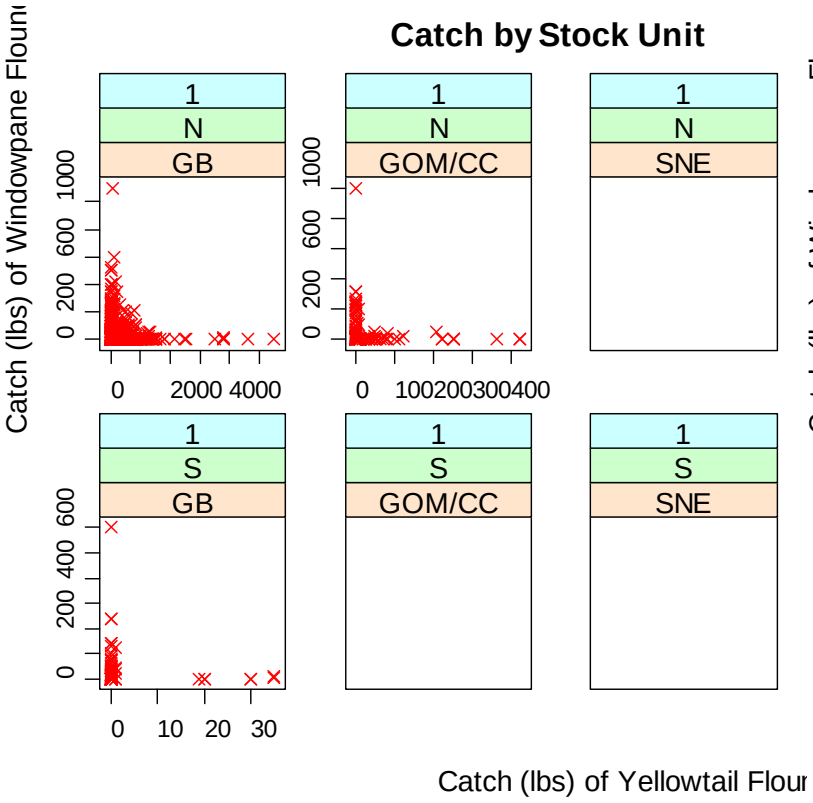

Catch by Stock Unit
2
N
GB
2
N
GOM
2
S
GB
2
S
GOM
Catch (lbs) of Windowpane Flounde
Catch (lbs) of Haddock

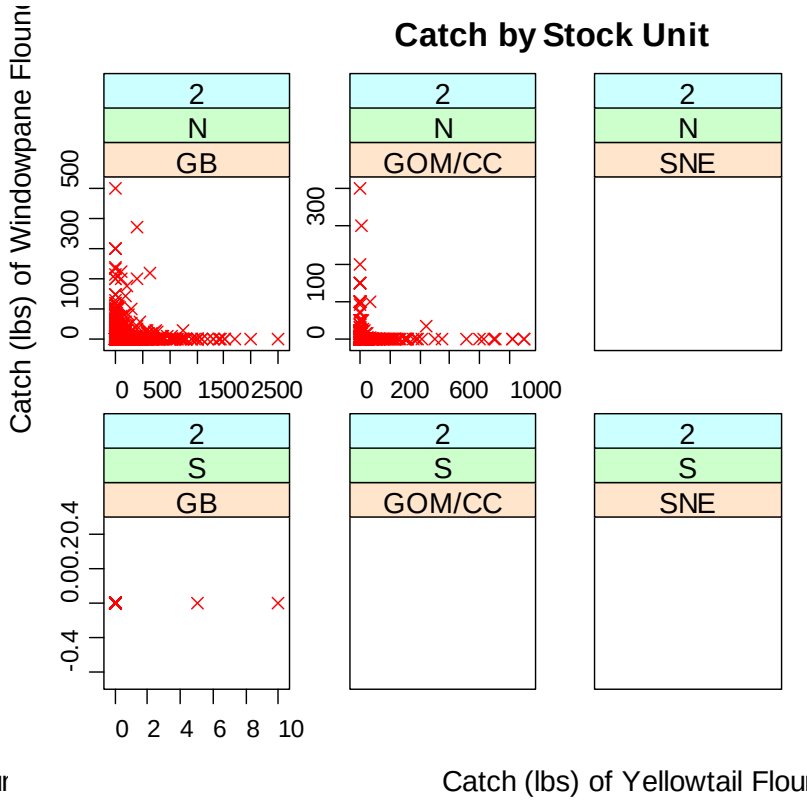

Catch by Stock Unit
3
N
GB
3
N
GOM
3
S
GB
3
S
GOM
Catch (lbs) of Windowpane Flounde
Catch (lbs) of Haddock

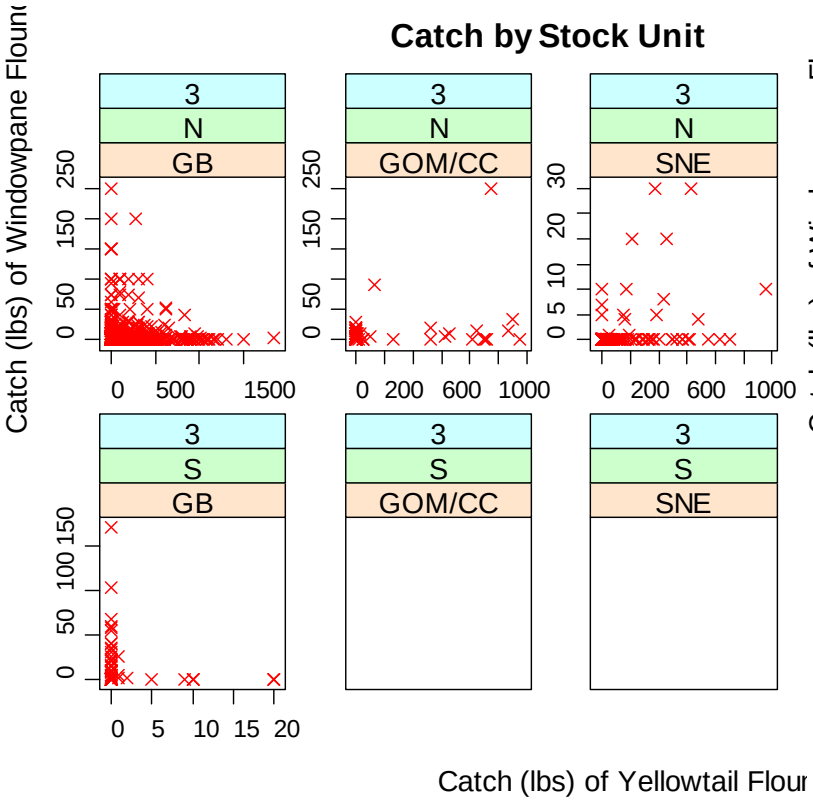

Catch by Stock Unit
4
N
GB
4
N
GOM
4
S
GB
4
S
GOM
Catch (lbs) of Windowpane Flounde
Catch (lbs) of Haddock

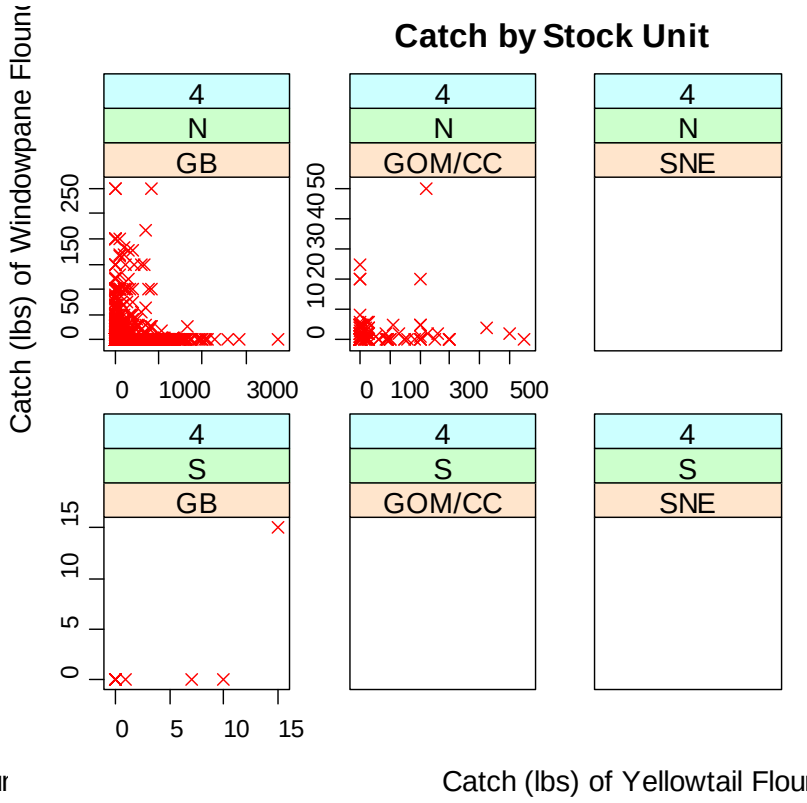

Catch by Stock Unit
Catch (lbs) of Windowpane Flounde
Catch (lbs) of Winter Flounde
2 S GB
2 S GOM
2 N GB
2 N GOM
1 S GB
1 S GOM
1 N GB
1 N GOM


Catch by Stock Unit
Catch (lbs) of Windowpane Flounde
Catch (lbs) of Winter Flounde
4 S GB
4 S GOM
4 N GB
4 N GOM
3 S GB
3 S GOM
3 N GB
3 N GOM

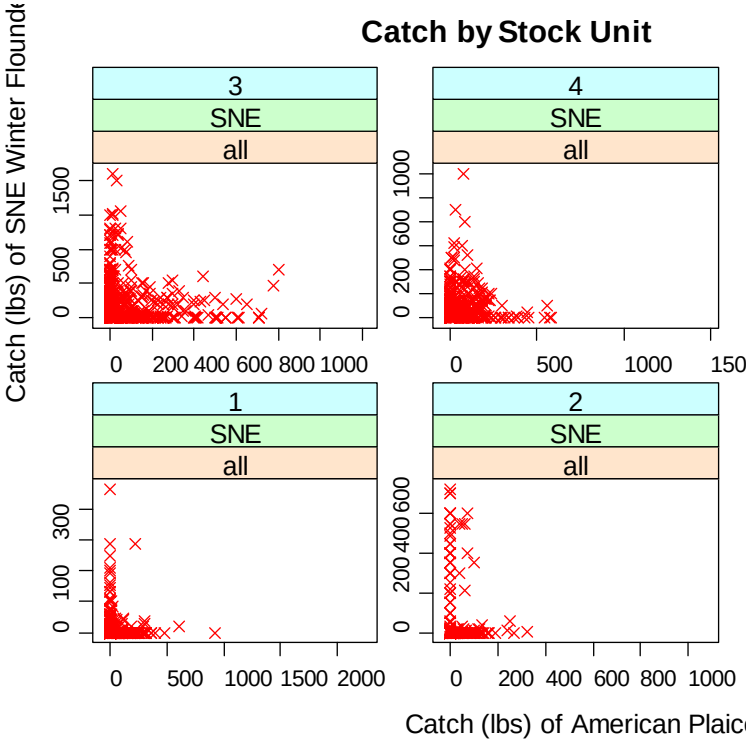

Catch by Stock Unit
Catch (lbs) of Windowpane Flounc
1
N
GB
GOM/CC
SNE
S
Catch (lbs) of Yellowtail Flour

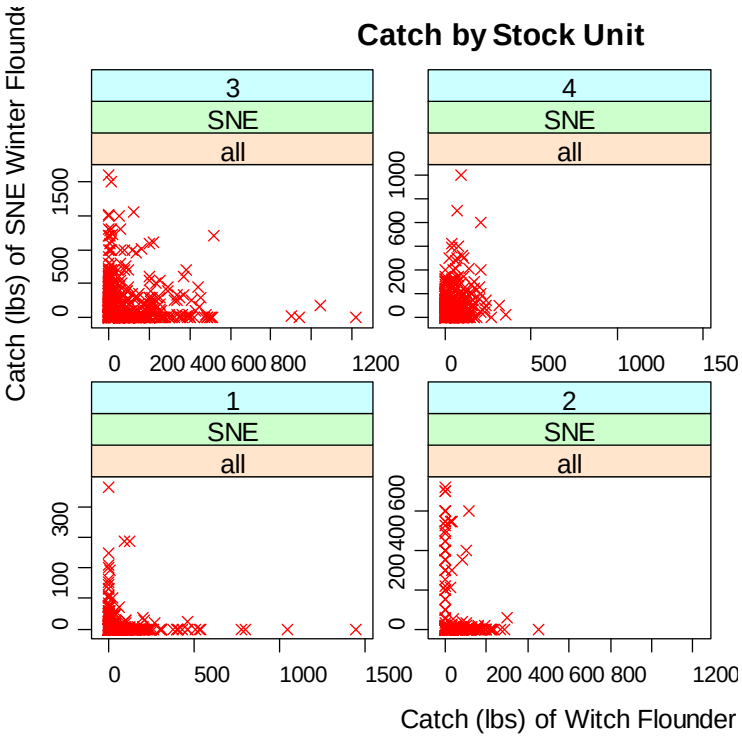

Catch by Stock Unit
Catch (lbs) of Windowpane Flounc
2
N
GB
GOM/CC
SNE
S
Catch (lbs) of Yellowtail Flou

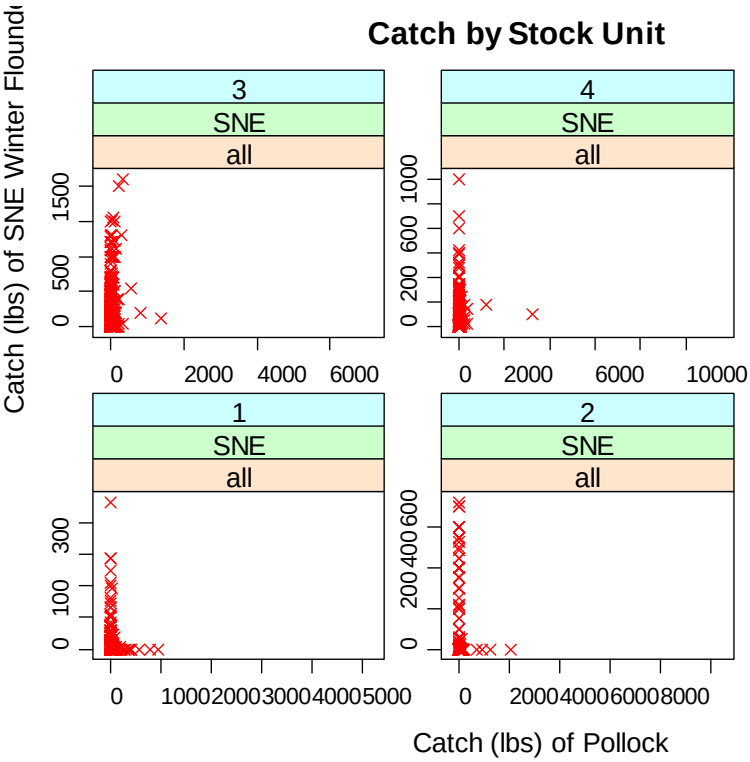

Catch by Stock Unit
Catch (lbs) of Windowpane Flounc
3
N
GB
GOM/CC
SNE
S
Catch (lbs) of Yellowtail Flour

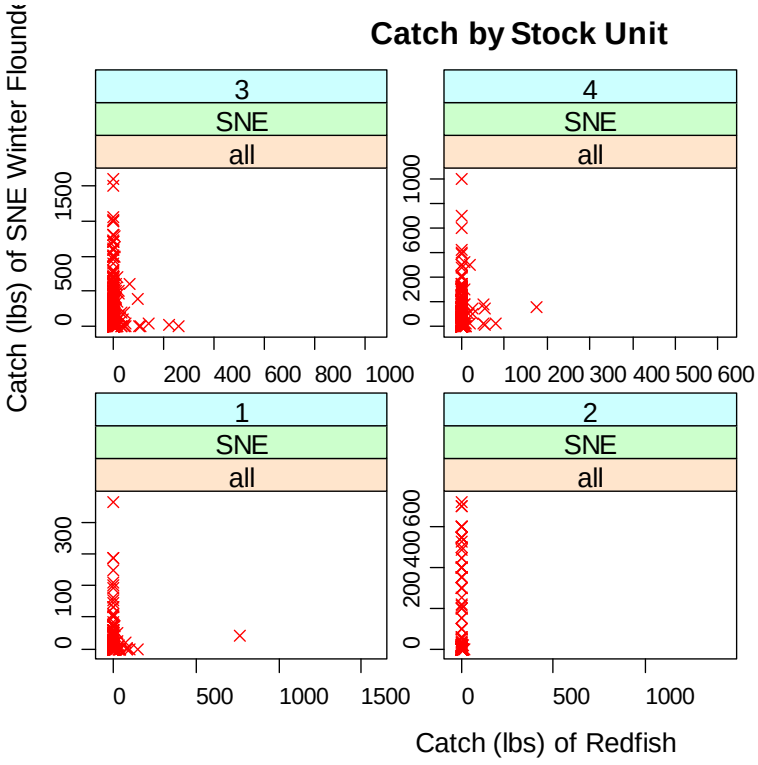

Catch by Stock Unit
Catch (lbs) of Windowpane Flounc
4
N
GB
GOM/CC
SNE
S
Catch (lbs) of Yellowtail Flou

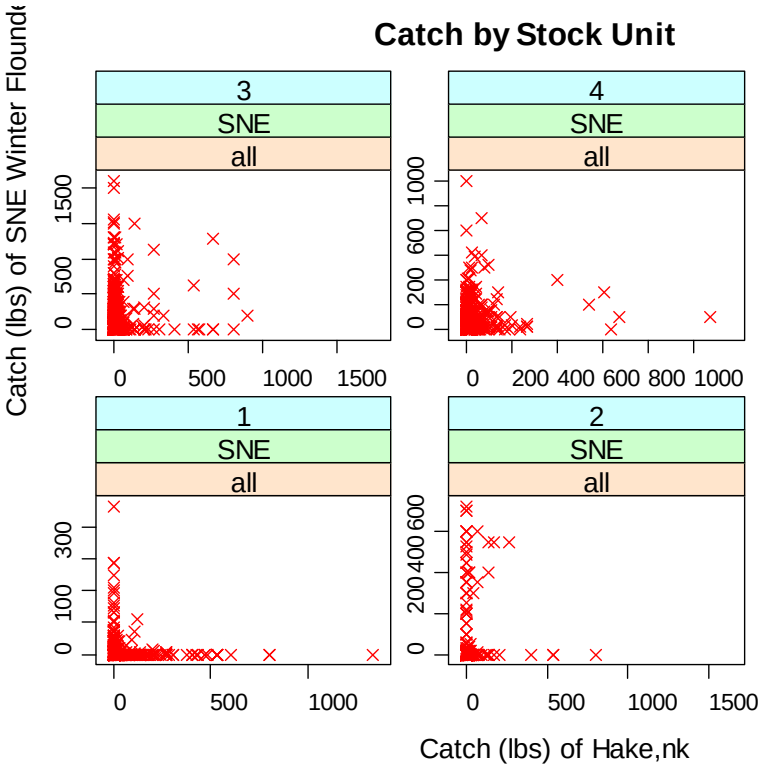
SNE Winter Flounder

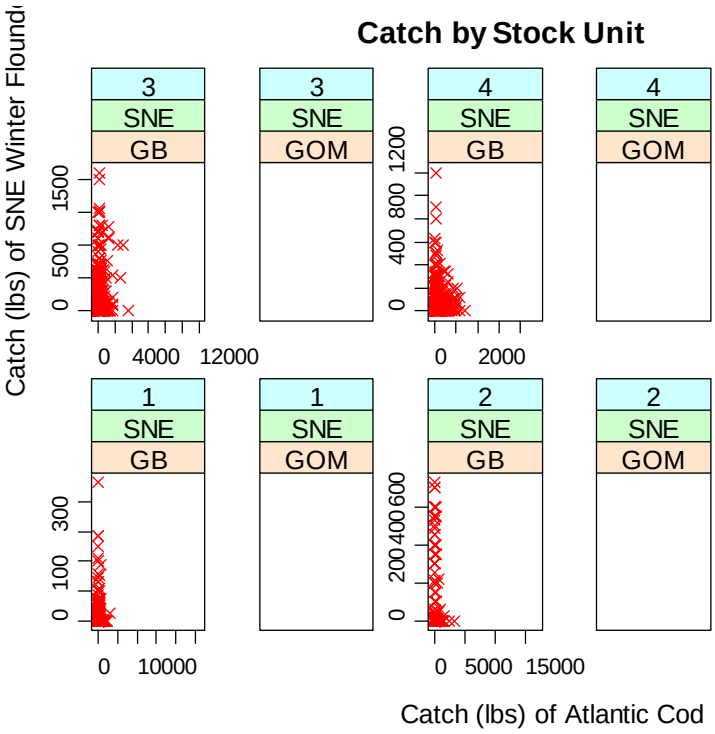


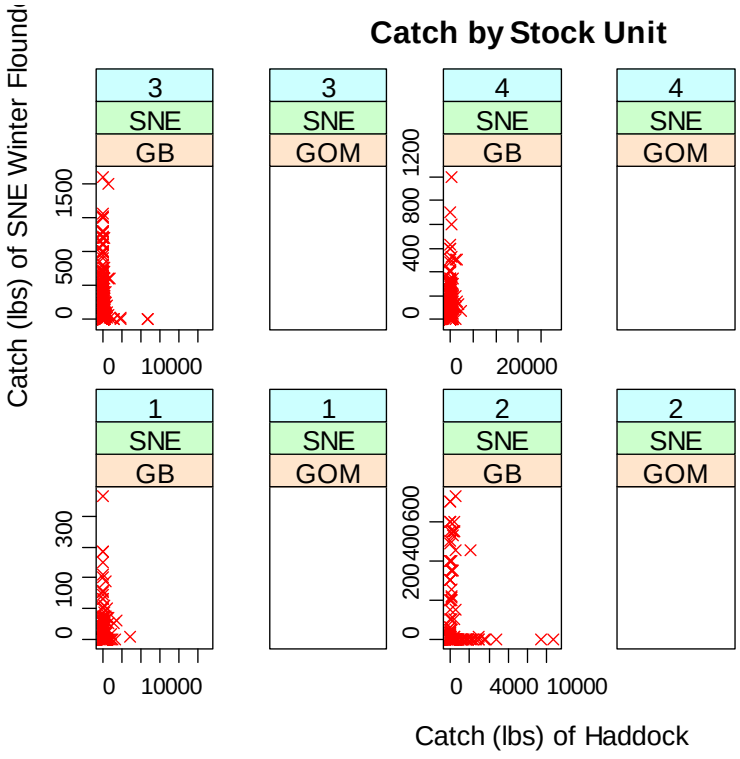


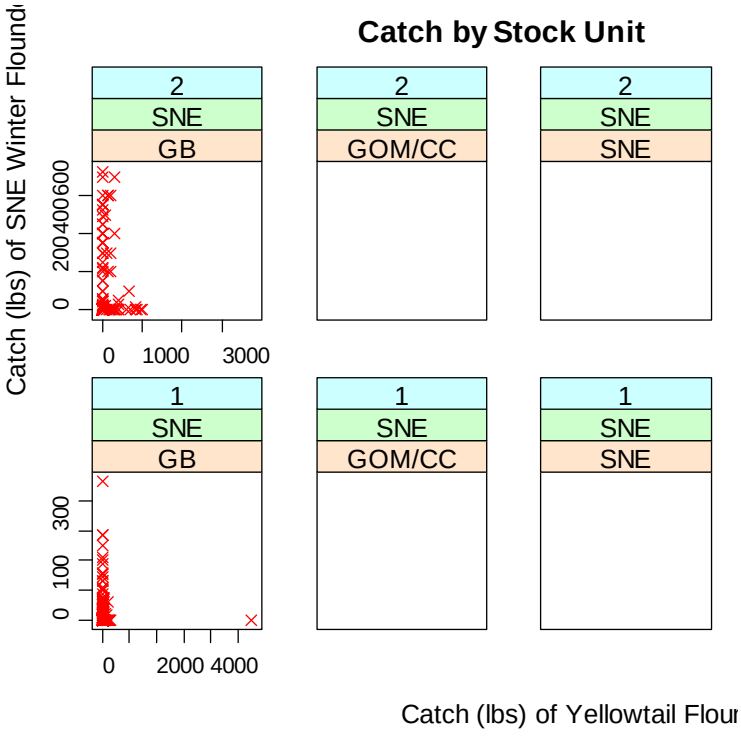


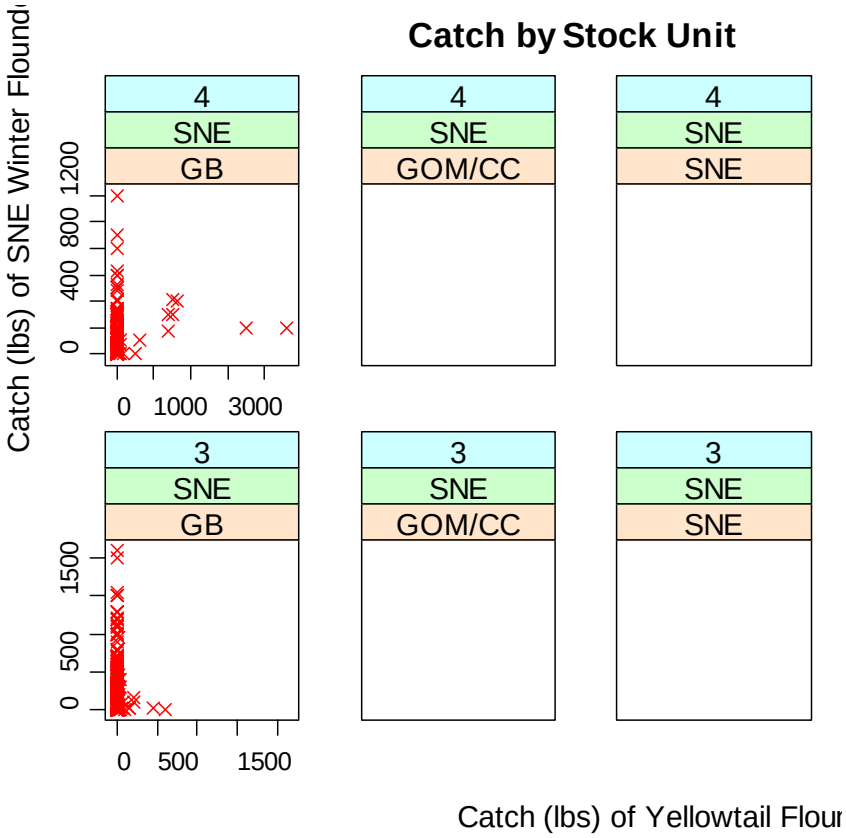



Catch by Stock Unit
Catch (lbs) of SNE Winter Flounde
3
SNE
all
4
SNE
all
1
SNE
all
2
SNE
all
Catch (lbs) of Hake,nk

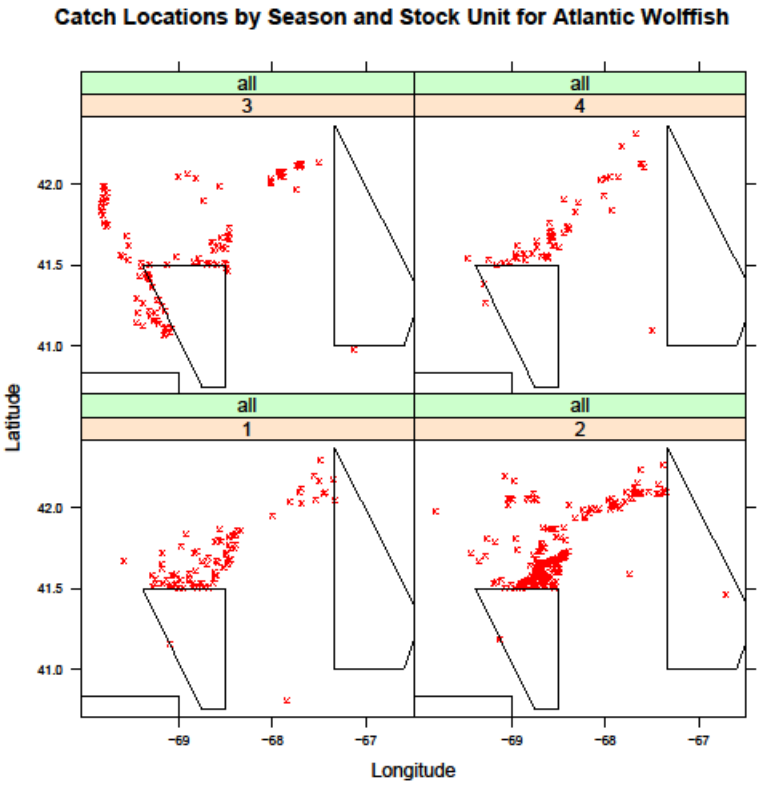

Catch by Stock Unit
Catch (lbs) of SNE Winter Flounde
3
SNE
GB
3
SNE
GOM
4
SNE
GB
4
SNE
GOM
1
SNE
GB
1
SNE
GOM
2
SNE
GB
2
SNE
GOM
Catch (lbs) of Atlantic Cod

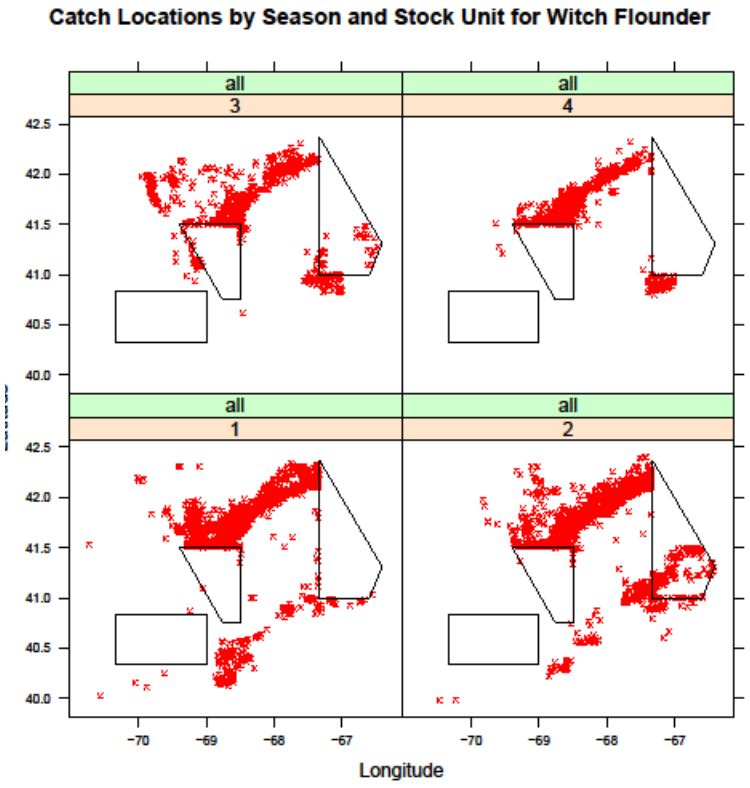

Catch by Stock Unit
Catch (lbs) of SNE Winter Flounde
3
SNE
GB
3
SNE
GOM
4
SNE
GB
4
SNE
GOM
1
SNE
GB
1
SNE
GOM
2
SNE
GB
2
SNE
GOM
Catch (lbs) of Haddock

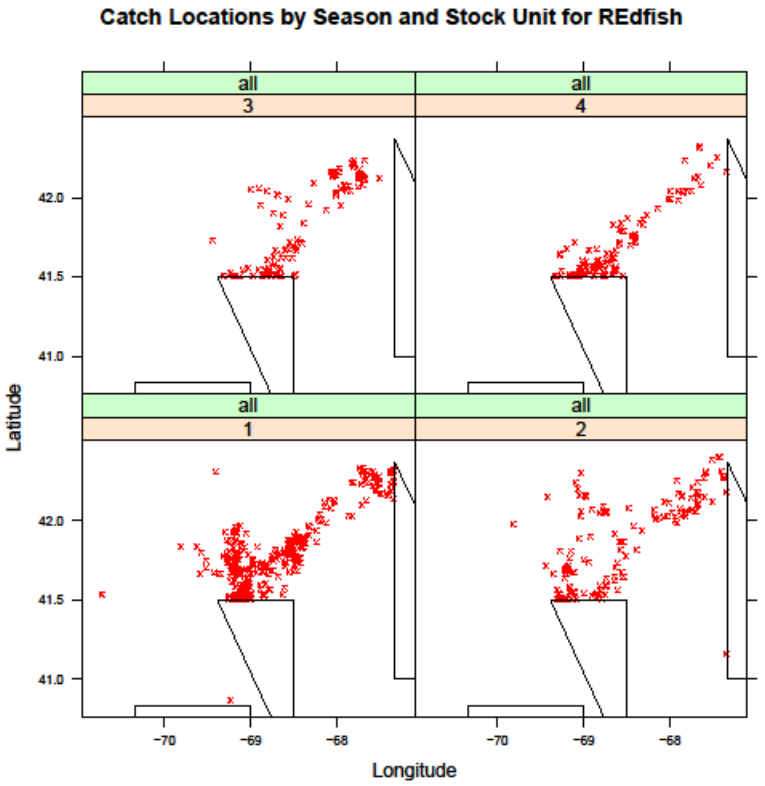

Catch by Stock Unit
Catch (lbs) of SNE Winter Flounde
2
SNE
GB
2
SNE
GOM/CC
2
SNE
SNE
1
SNE
GB
1
SNE
GOM/CC
1
SNE
SNE
Catch (lbs) of Yellowtail Flour

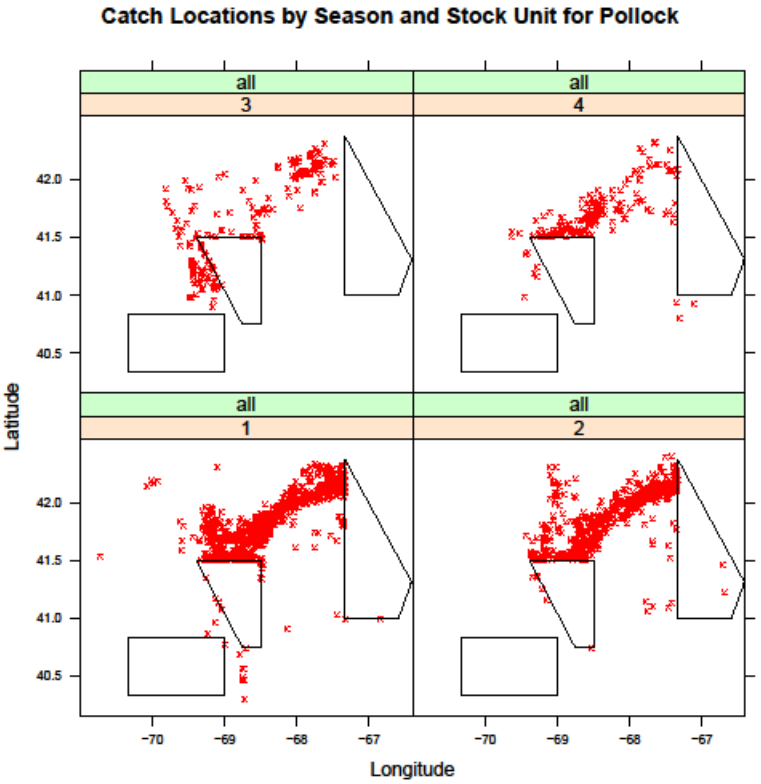


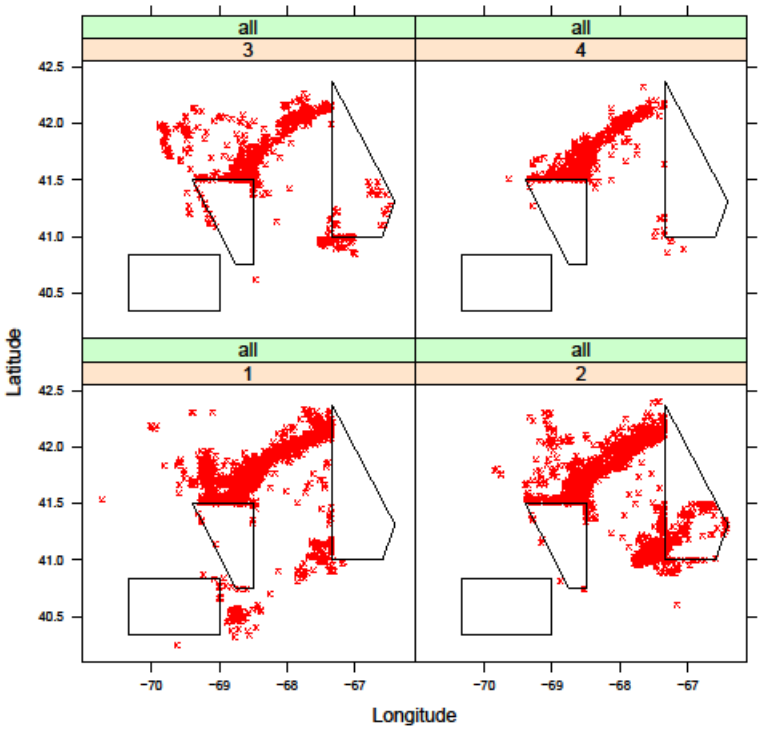
Catch Locations

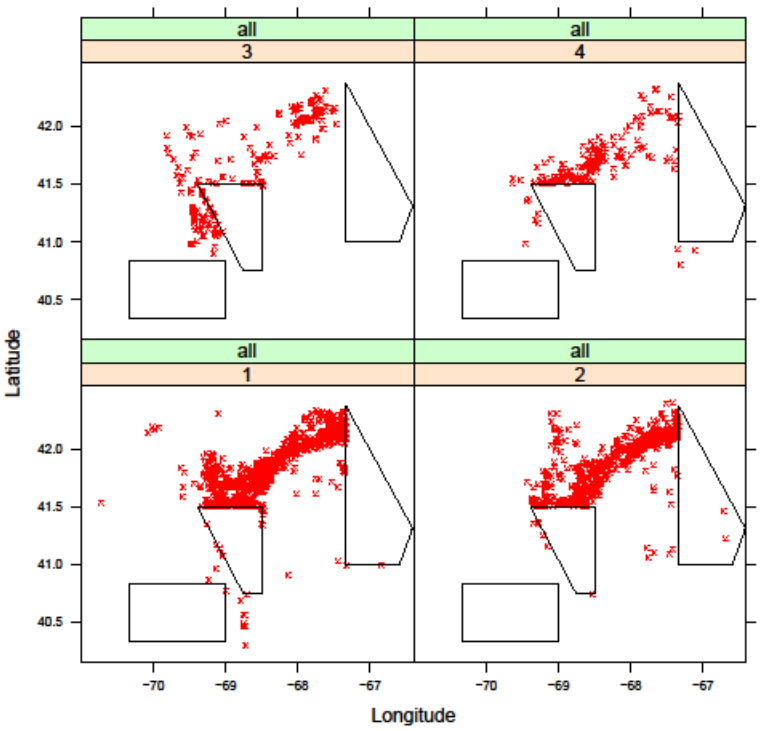


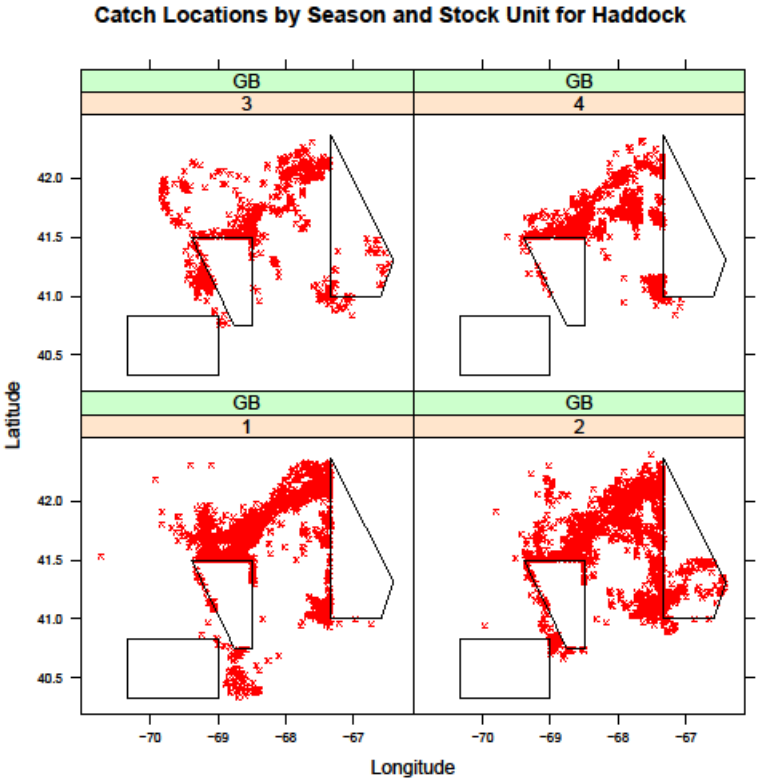


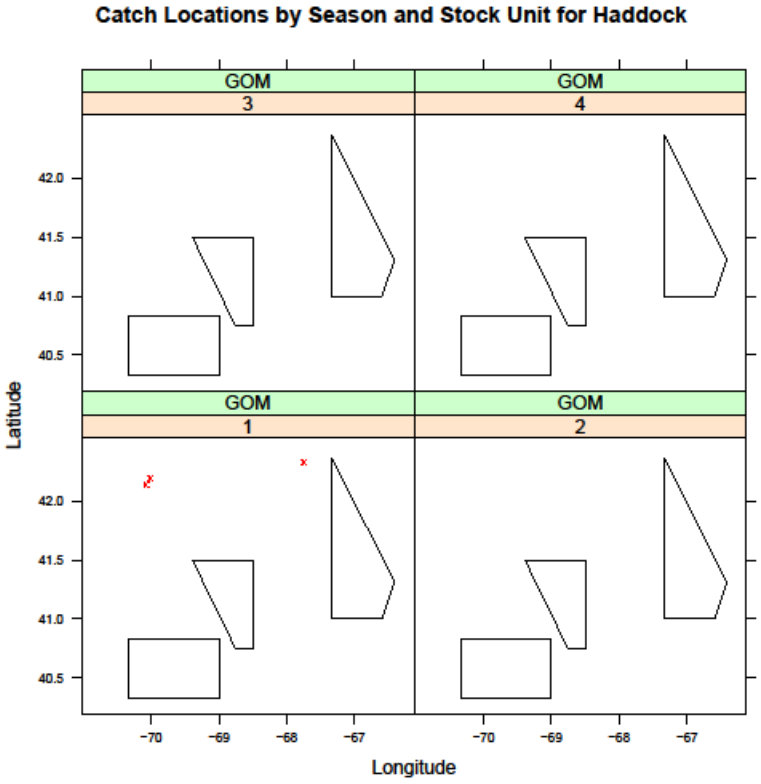

Catch Locations by Season and Stock Unit for REdfish
all
3
all
4
all
1
all
2
Latitude
Longitude

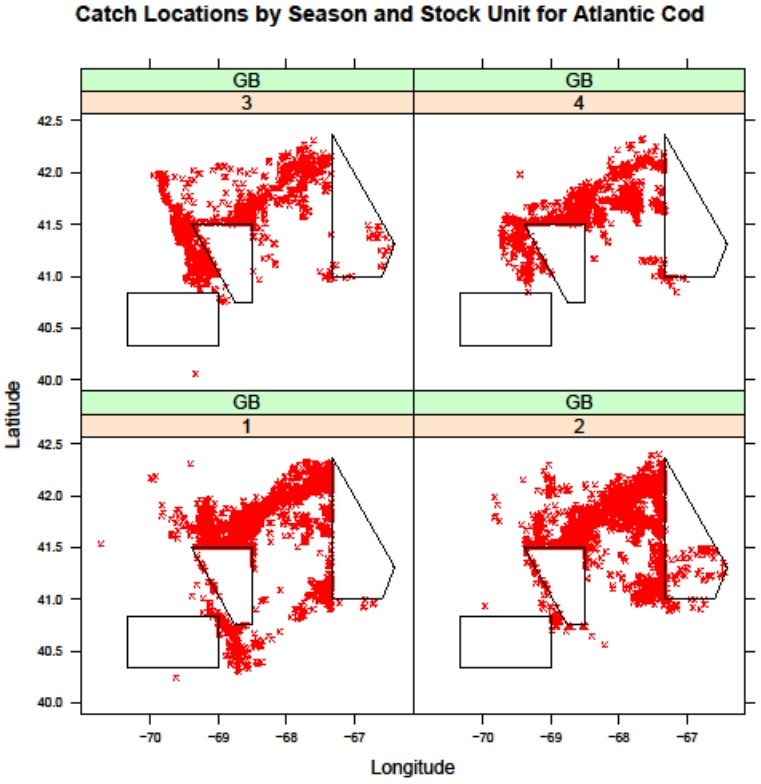

Catch Locations by Season and Stock Unit for Pollock
all
3
all
4
all
1
all
2
Latitude
Longitude

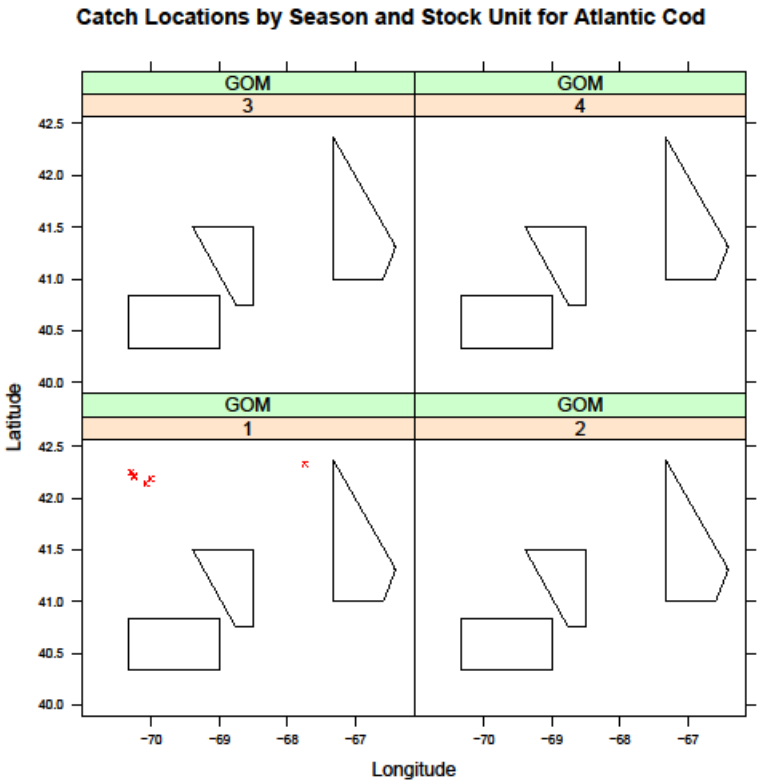

Catch Locations by Season and Stock Unit for American Plaice
all
3
all
4
all
1
all
2
Latitude
Longitude


Catch Locations by Season and Stock Unit for Hake,nk
all
3
all
4
all
1
all
2
Latitude
Longitude

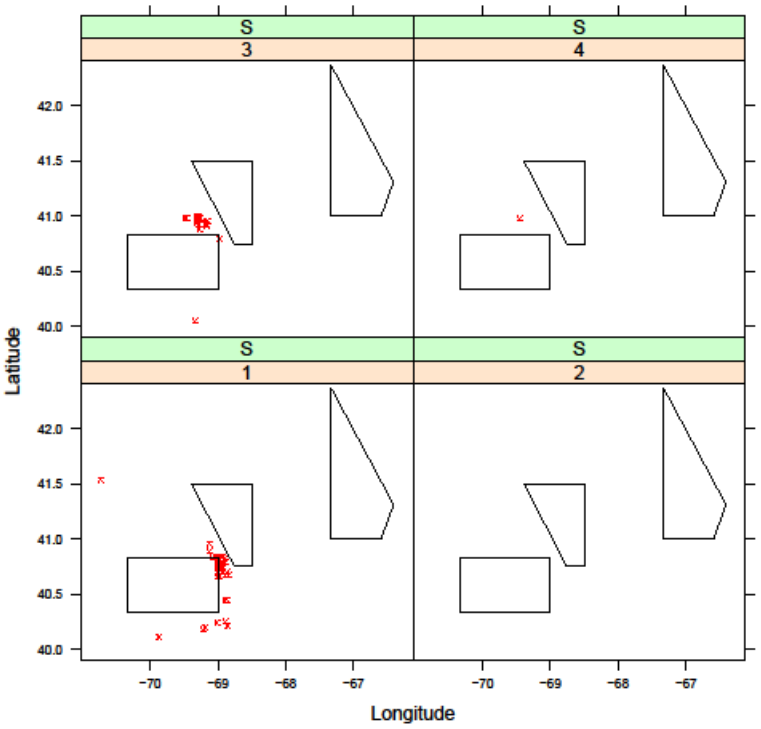

Catch Locations by Season and Stock Unit for Haddock
GB
3
GB
4
GB
1
GB
2
Latitude
Longitude


Catch Locations by Season and Stock Unit for Haddock
GOM
3
GOM
4
GOM
1
GOM
2
Latitude
Longitude

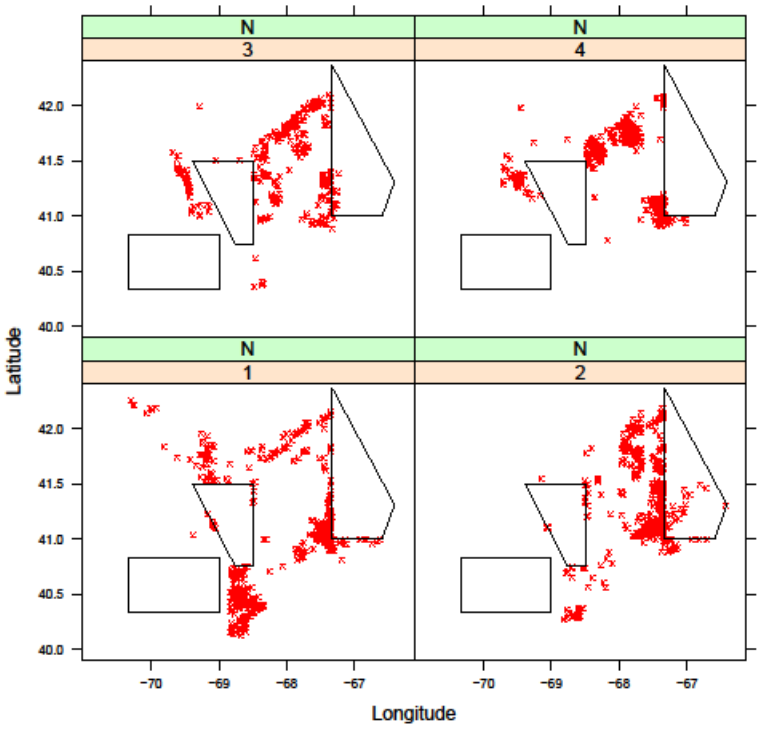

Catch Locations by Season and Stock Unit for Atlantic Cod
GB
3
GB
4
GB
1
GB
2
Latitude
Longitude


Catch Locations by Season and Stock Unit for Atlantic Cod
GOM
3
GOM
4
GOM
1
GOM
2
Latitude
Longitude

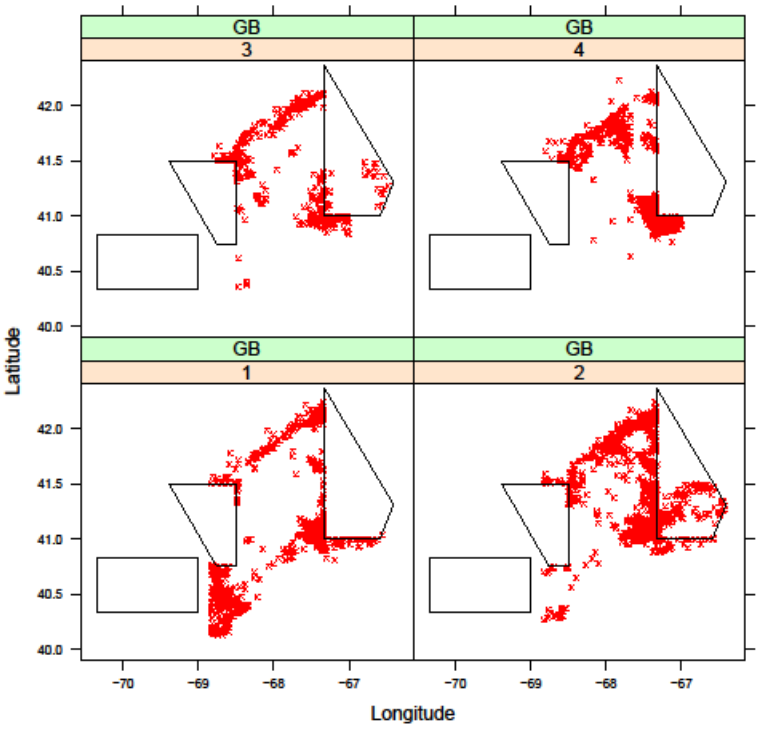
Catch Locations by Season and Stock Unit for Windowpane Flounder



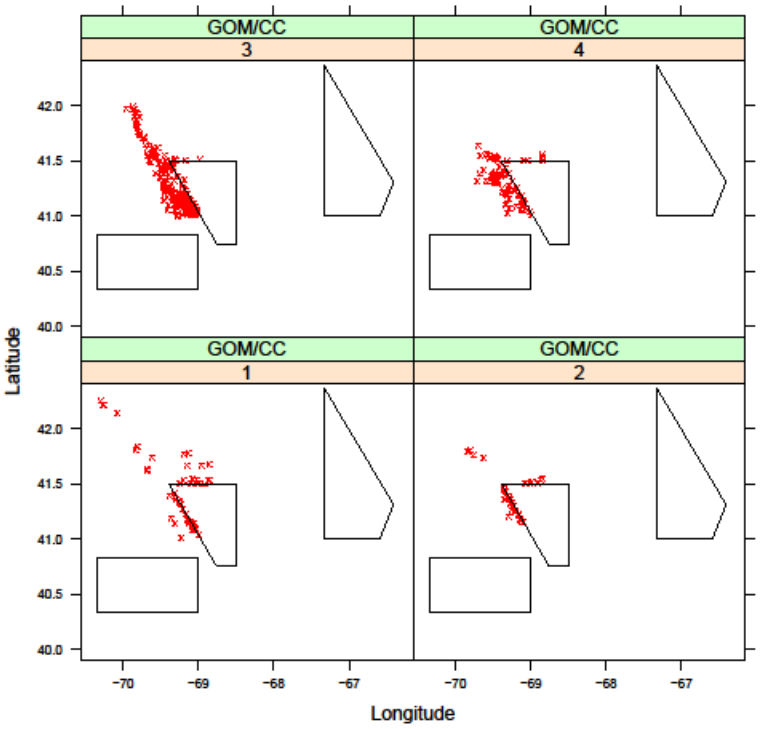
Catch Locations by Season and Stock Unit for Windowpane Flounder



Catch Locations by Season and Stock Unit for Yellowtail Flounder



Catch Locations by Season and Stock Unit for Yellowtail Flounder



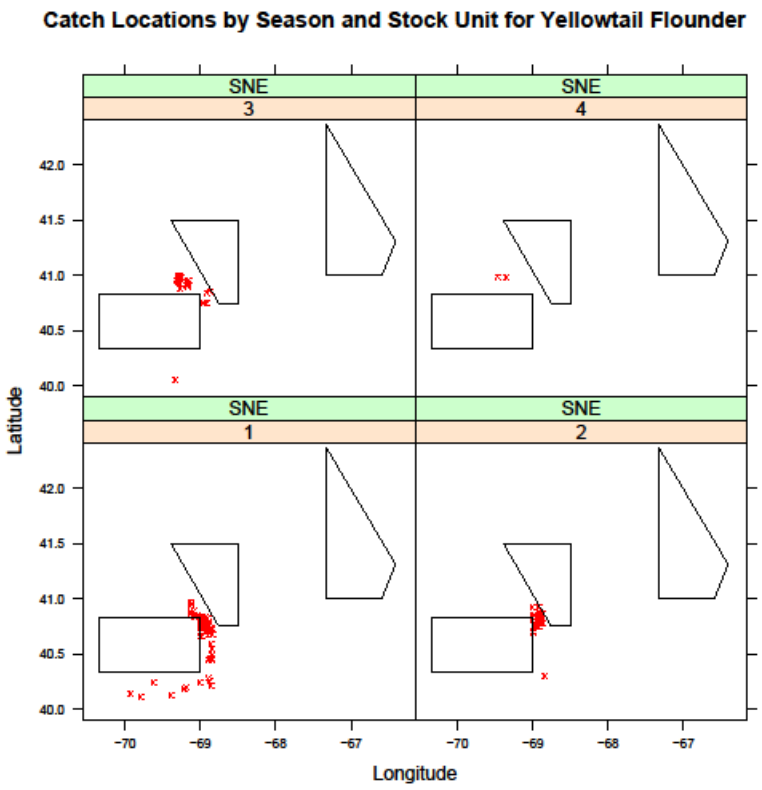

Catch Locations by Season and Stock Unit for Yellowtail Flounder
SNE
3
SNE
4
SNE
1
SNE
2
Latitude
Longitude
42.0
41.5
41.0
40.5
40.0
−70
−69
−68
−67

Table 1. Total catch (livepounds) by season, species and stock unit.

Season	Species	GB	GOM	SNE	GOM/CC	ALL	S	N
1	Atlantic Cod	728947.1	2131.5	0	0	0	0	0
	Winter Flounder	55455.5	430	6430.5	0	0	0	0
	Witch Flounder	0	0	0	0	179812.5	0	0
	Yellowtail Flounder	277346.5	0	18820	2066	0	0	0
	American Plaice	0	0	0	0	89550	0	0
	Windowpane Flounder	0	0	0	0	0	3094	44002
	Haddock	912702.7	375	0	0	0	0	0
	Hake,nk	0	0	0	0	69893.12	0	0
	Atlantic Halibut	0	0	0	0	1387.45	0	0
	Redfish	0	0	0	0	19009	0	0
	Ocean Pout	0	0	0	0	11506.5	0	0
	Pollock	0	0	0	0	119313.9	0	0
	Atlantic Wolffish	0	0	0	0	908.5	0	0
2	Atlantic Cod	706792.7	0	0	0	0	0	0
	Winter Flounder	382341.8	0	16813	0	0	0	0
	Witch Flounder	0	0	0	0	152558	0	0
	Yellowtail Flounder	544005	0	386	1411	0	0	0
	American Plaice	0	0	0	0	218153.5	0	0
	Windowpane Flounder	0	0	0	0	0	0	18303
	Haddock	527307.9	0	0	0	0	0	0
	Hake,nk	0	0	0	0	27085.36	0	0
	Atlantic Halibut	0	0	0	0	597.1	0	0
	Redfish	0	0	0	0	5430.8	0	0
	Ocean Pout	0	0	0	0	14414.8	0	0
	Pollock	0	0	0	0	69994.35	0	0
	Atlantic Wolffish	0	0	0	0	5069.84	0	0
3	Atlantic Cod	250354.6	0	0	0	0	0	0
	Winter Flounder	308511.7	0	126783.4	0	0	0	0
	Witch Flounder	0	0	0	0	94579.5	0	0
	Yellowtail Flounder	91862.7	0	962.5	37343	0	0	0
	American Plaice	0	0	0	0	127140	0	0
	Windowpane Flounder	0	0	0	0	0	978	7671
	Haddock	202578.2	0	0	0	0	0	0
	Hake,nk	0	0	0	0	29330.34	0	0
	Atlantic Halibut	0	0	0	0	287	0	0
	Redfish	0	0	0	0	2349.25	0	0
	Ocean Pout	0	0	0	0	9074.5	0	0
	Pollock	0	0	0	0	29687.13	0	0
	Atlantic Wolffish	0	0	0	0	3916	0	0
4	Atlantic Cod	406985	0	0	0	0	0	0
	Winter Flounder	298536	0	44266	0	0	0	0
	Witch Flounder	0	0	0	0	97912	0	0
	Yellowtail Flounder	215049	0	7	6563.5	0	0	0
	American Plaice	0	0	0	0	98957.5	0	0
	Windowpane Flounder	0	0	0	0	0	15	18968.5
	Haddock	269704.8	0	0	0	0	0	0
	Hake,nk	0	0	0	0	28751.51	0	0
	Atlantic Halibut	0	0	0	0	201.45	0	0
	Redfish	0	0	0	0	2319	0	0
	Ocean Pout	0	0	0	0	3570	0	0
	Pollock	0	0	0	0	20087.07	0	0
	Atlantic Wolffish	0	0	0	0	690.4	0	0