Brief SSC on clam survey redesign report

Marc 13, 2018

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Background

- Goal=improve precision and assessments
- Time is ripe: sensors in 1997, new vessel and better gear in 2012, climate effects, obvious opportunities for improvement, efficiency likely to become important NEFSC survey group receptive
- Surfclams and ocean quahogs-both managed as single stocks (GBK to SVA) with smaller regions of interest
- Surfclams ~ 30 y and < 60 m, quahog > 200 and > 60 m (partition habitat except in south)
- Biomass >1 million mt, F low globally, higher on fishing grounds)
- Logbook data, reliable catch
- Stratified random design (scores of NEFSC shellfish strata, also used for scallops, dates back to 1970s) – over stratified
- Survey both species at same time (compromise allocation)

Results-overview

- Recommendations evolutionary, not revolutionary, mainly aiming to increase precision and efficiency
  - Target one species at a time and avoid very poor habitat to increase sample density on good habitat
  - Optimal allocation
  - Species-specific stratification schemes based on current strata, avoid sampling areas with no/low density target species
  - Reduce number of new strata by combining old ones to improve allocation and variance estimates
  - Use historical catch (carefully), in addition to location and depth to identify strata
  - At sea every year, alternate GBK and south
  - Maintain current survey (every three years), reduce (one every six years for quahogs)
  - Stay off rocky ground to avoid gear damage

Preliminary decisions

- Design around stock assessment *areas* (GBK and South)
  - Secondary *regions* of historical importance
- Drop very low density, poorly sampled areas in south (SVA strata 1-4 & 80).
- Keep SVA stratum 5 but merge with DMV to form new DMVSVA region.
- New survey area 9-80 m (drop outermost strata > 80 m)
- Split large strata 5,9,13 and 17 at 32 m in south for quahogs
- Misc: move stratum 73 floater into 74, shift stratum boundaries between GBK/SNE and LI/NJ, new Nantucket Shoals strata

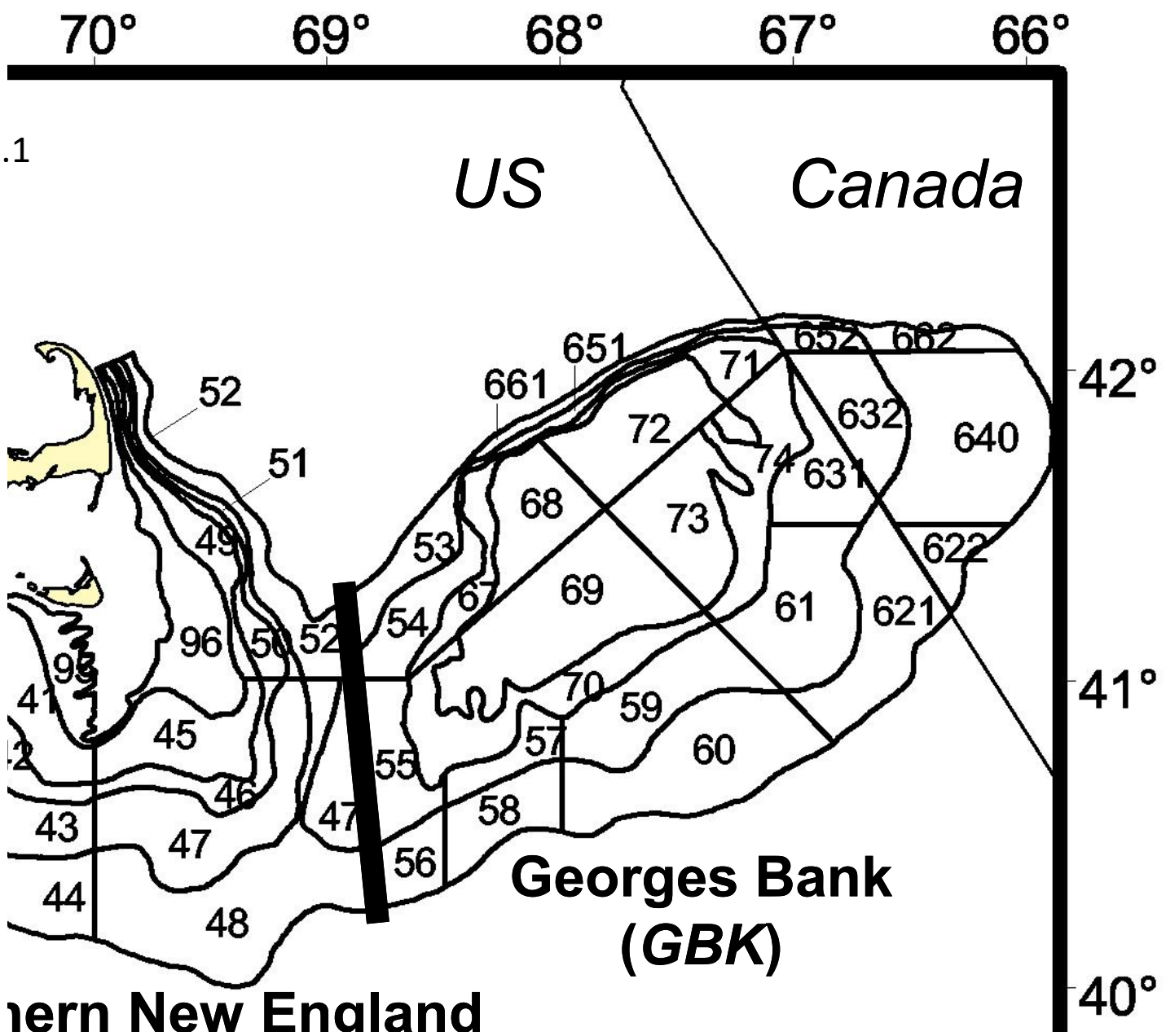
More decisions

- Data for 1997-2016 but omit 1997-1999 in DMVSVA
  - 40+ mm SH, N m^{-2} (same results with catch weight)
  - Adjust for change in catchability 2011-2012
  - Rescale to common annual mean and pool
- Assume 150 stations on GBK, 200 in south
- Consider FMSQ and current strata “building blocks”
  - Group building blocks to form potential new strata
- 1% rule retain building block if cumulative density or cumulative swept-area abundance >= 1%

Table 3.1. Total area of current survey strata at depths of 9-80 m, area retained based on the 1% rule and percent change.

Area (km^2)	GBK		South	
	Surfclam	Ocean quahog	Surfclam	Ocean quahog
Total	23,630	23,630	83,290	83,290
Included	17,514	13,652	46,499	54,051
% reduction	26%	42%	44%	35%

Fig. 1.1


70°
69°
68°
67°
66°
US
Canada
42°
41°
40°
52
51
49
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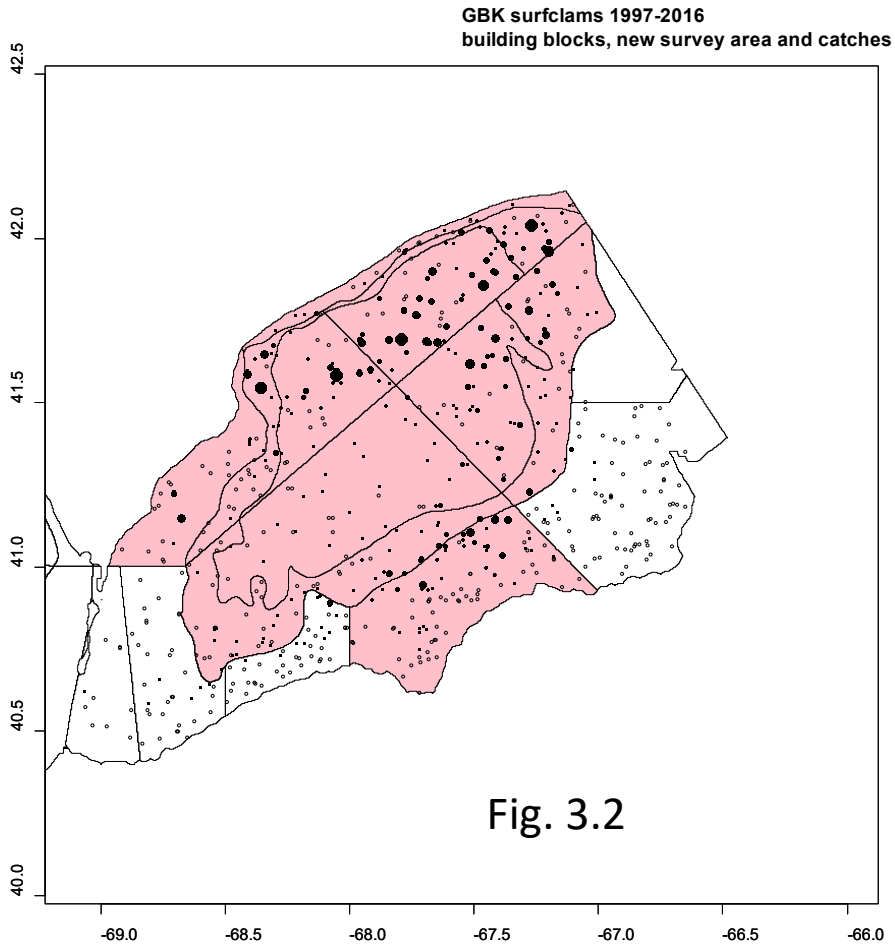
41
Georges Bank
(GBK)
hern New England


GBK surfclams 1997-2016
building blocks and new survey area
42.5
42.0
41.5
41.0
40.5
40.0
-69.0
-68.5
-68.0
-67.5
-67.0
-66.5
-66.0

Fig. 3.1


GBK surfclams 1997-2016
building blocks, new survey area and catches
42.5
42.0
41.5
41.0
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-68.0
-67.5
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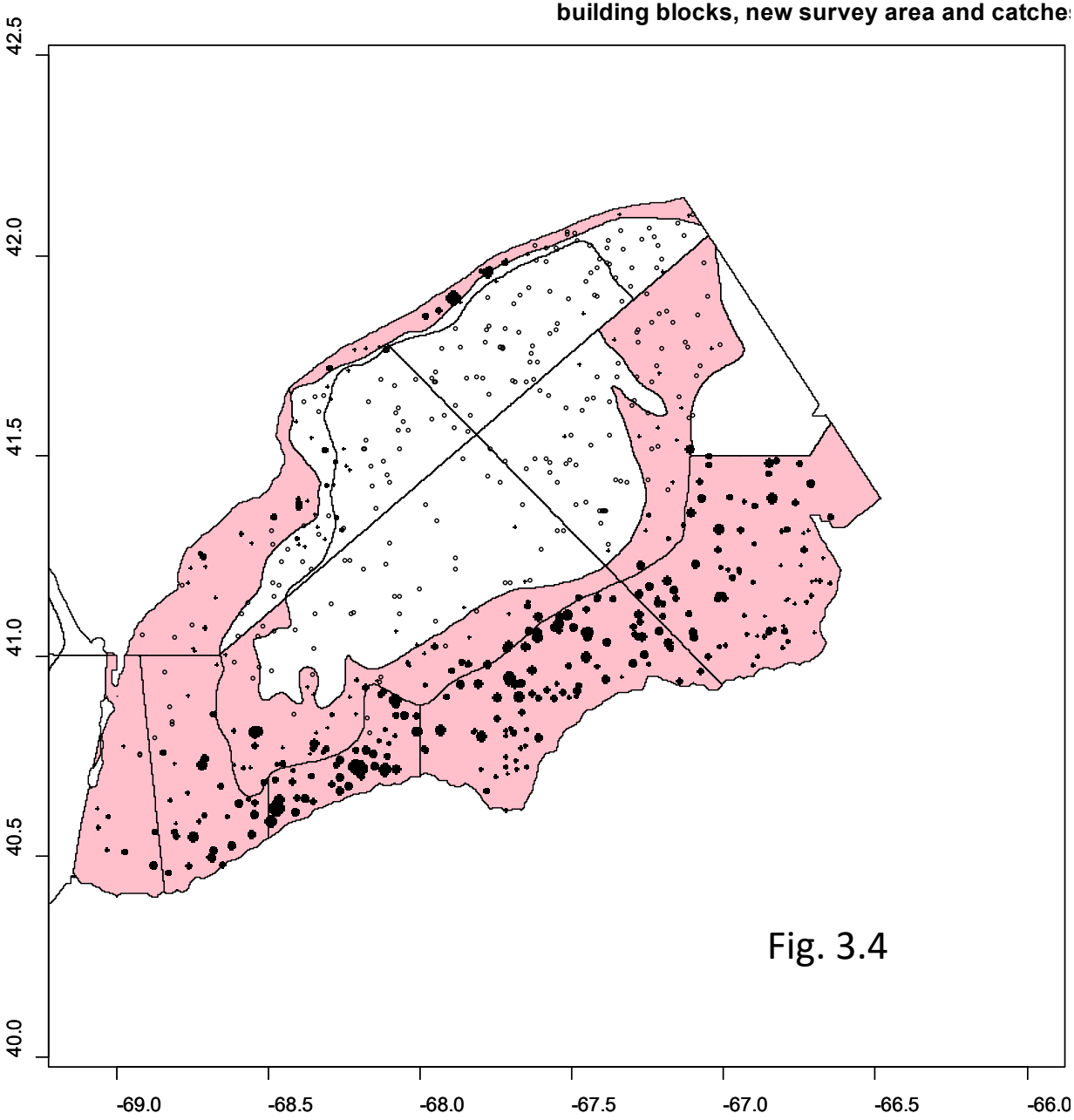
Fig. 3.2


GBK quahogs 1997-2016
building blocks, new survey area and catches
42.5
42.0
41.5
41.0
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-67.5
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-66.0

Fig. 3.4

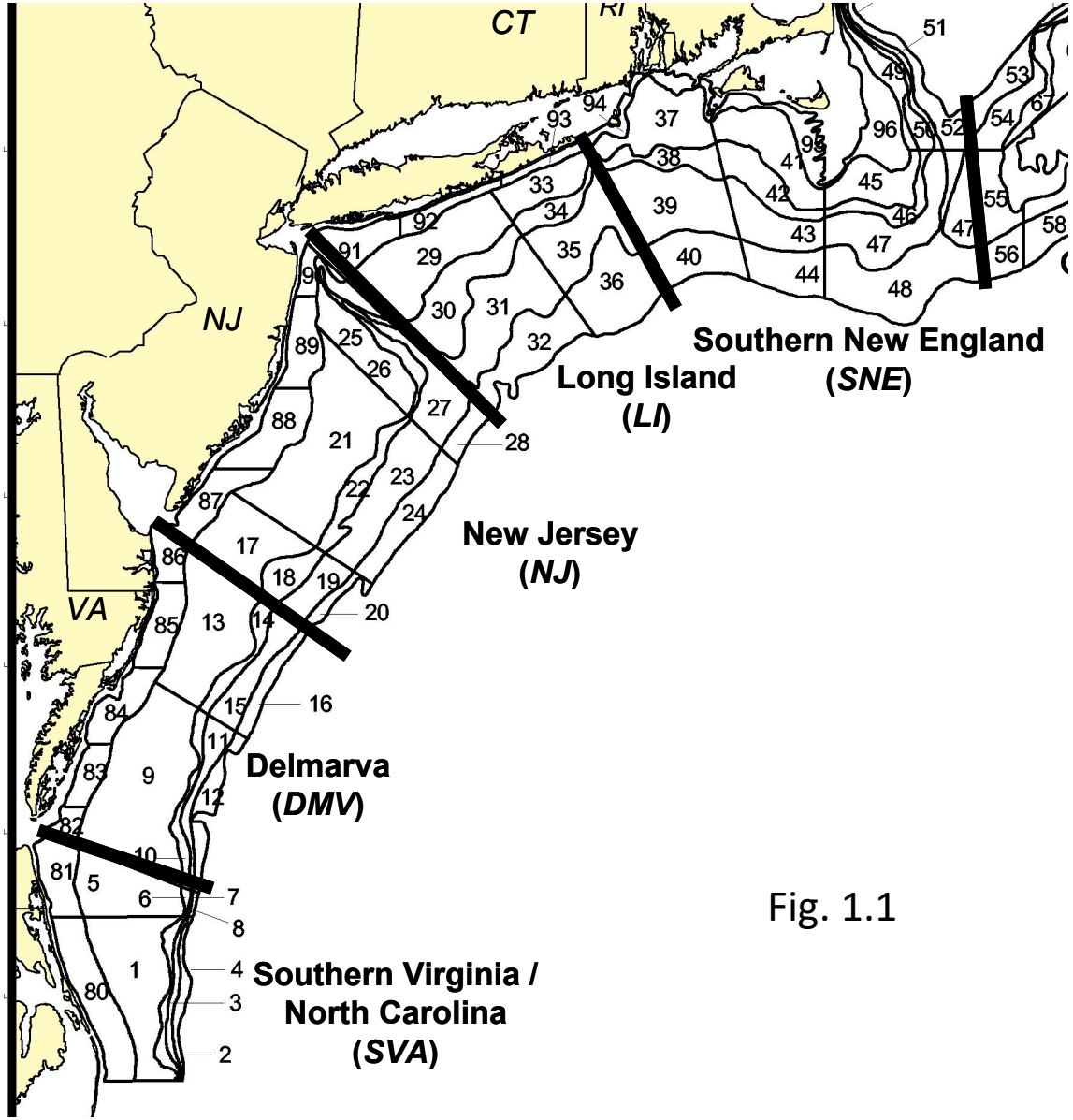
CT
RI
NJ
VA
Southern New England
(SNE)
Long Island
(LI)
New Jersey
(NJ)
Delmarva
(DMV)
Southern Virginia /
North Carolina
(SVA)

Fig. 1.1

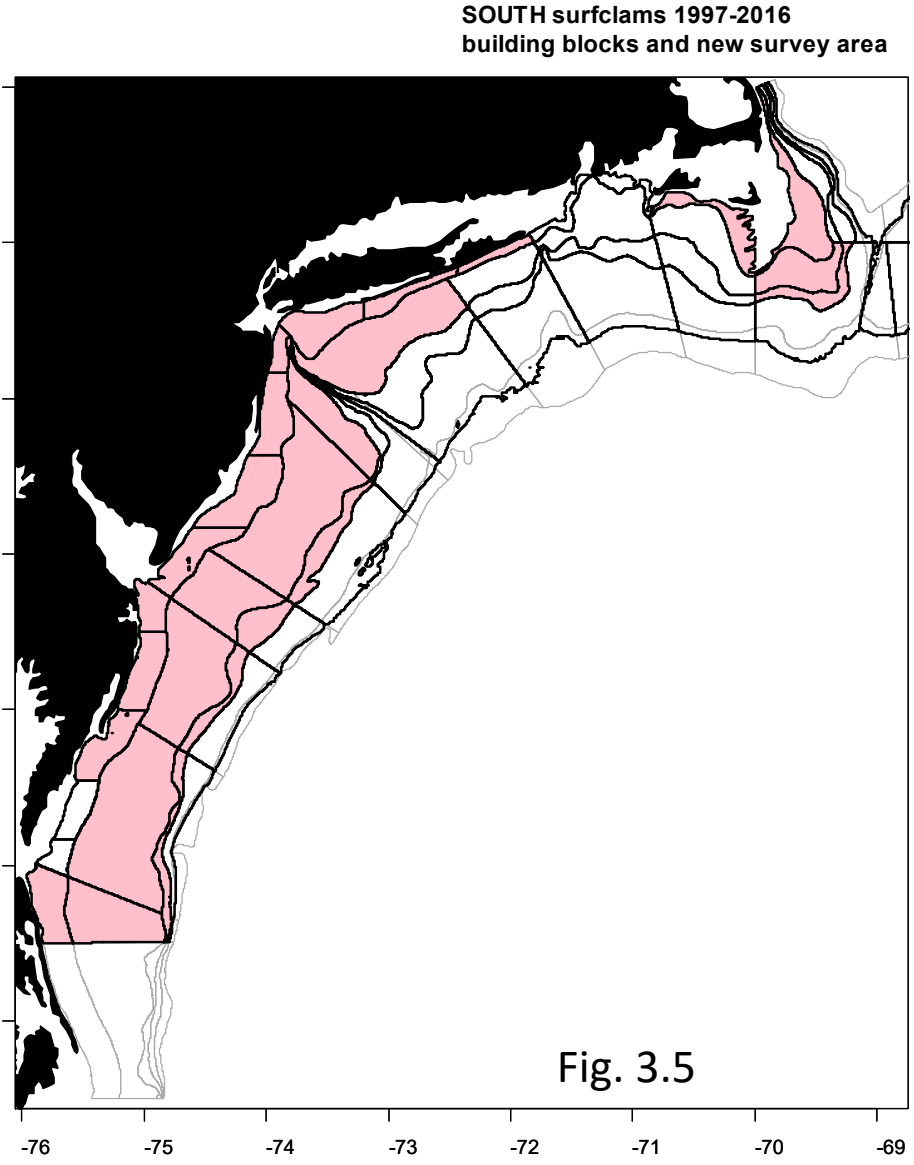
SOUTH surfclams 1997-2016
building blocks and new survey area
-76
-75
-74
-73
-72
-71
-70
-69

Fig. 3.5

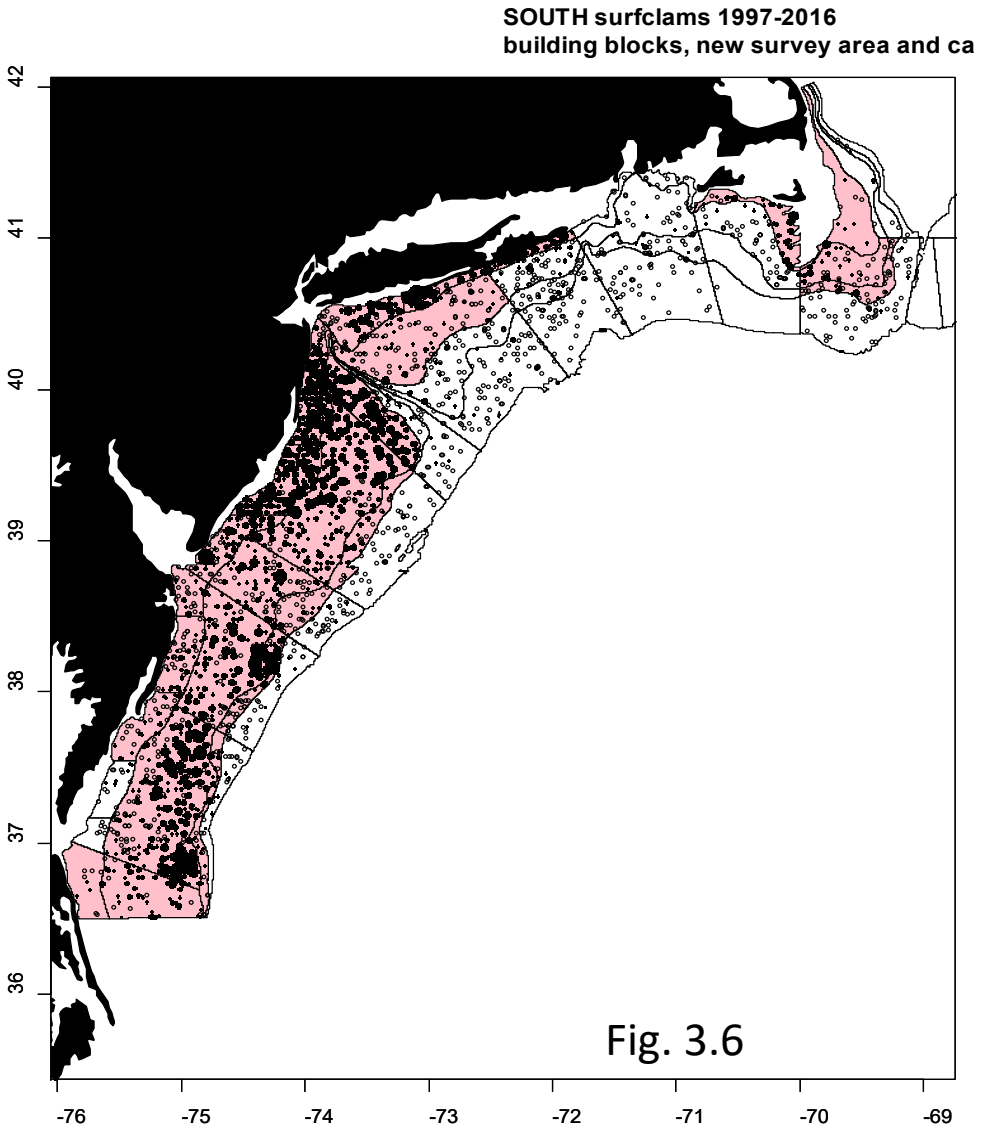
SOUTH surfclams 1997-2016
building blocks, new survey area and ca
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Fig. 3.6

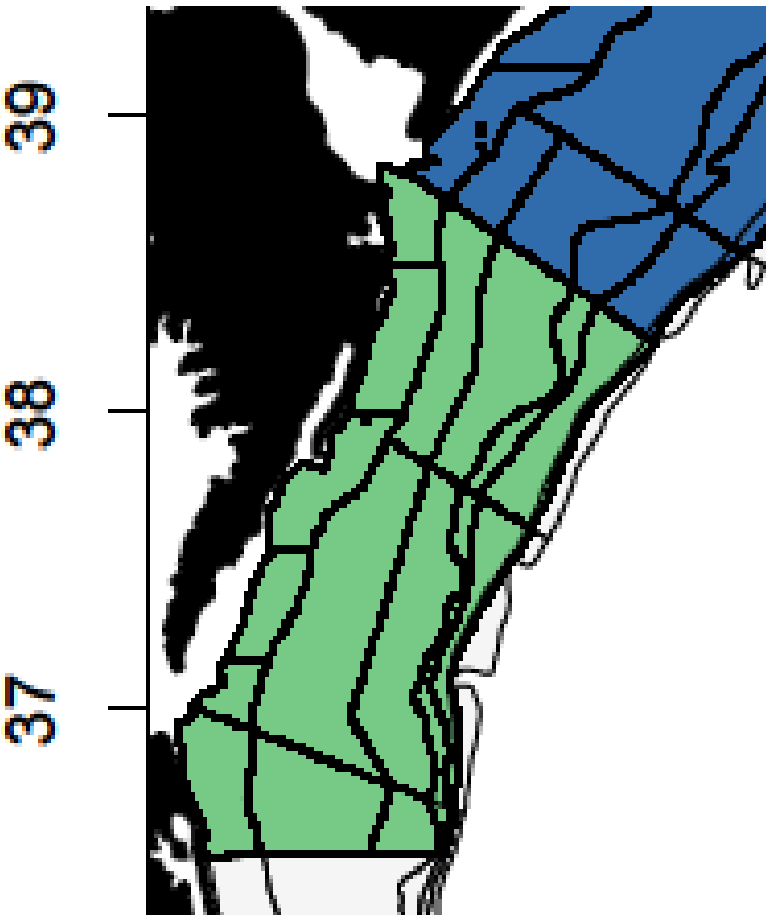
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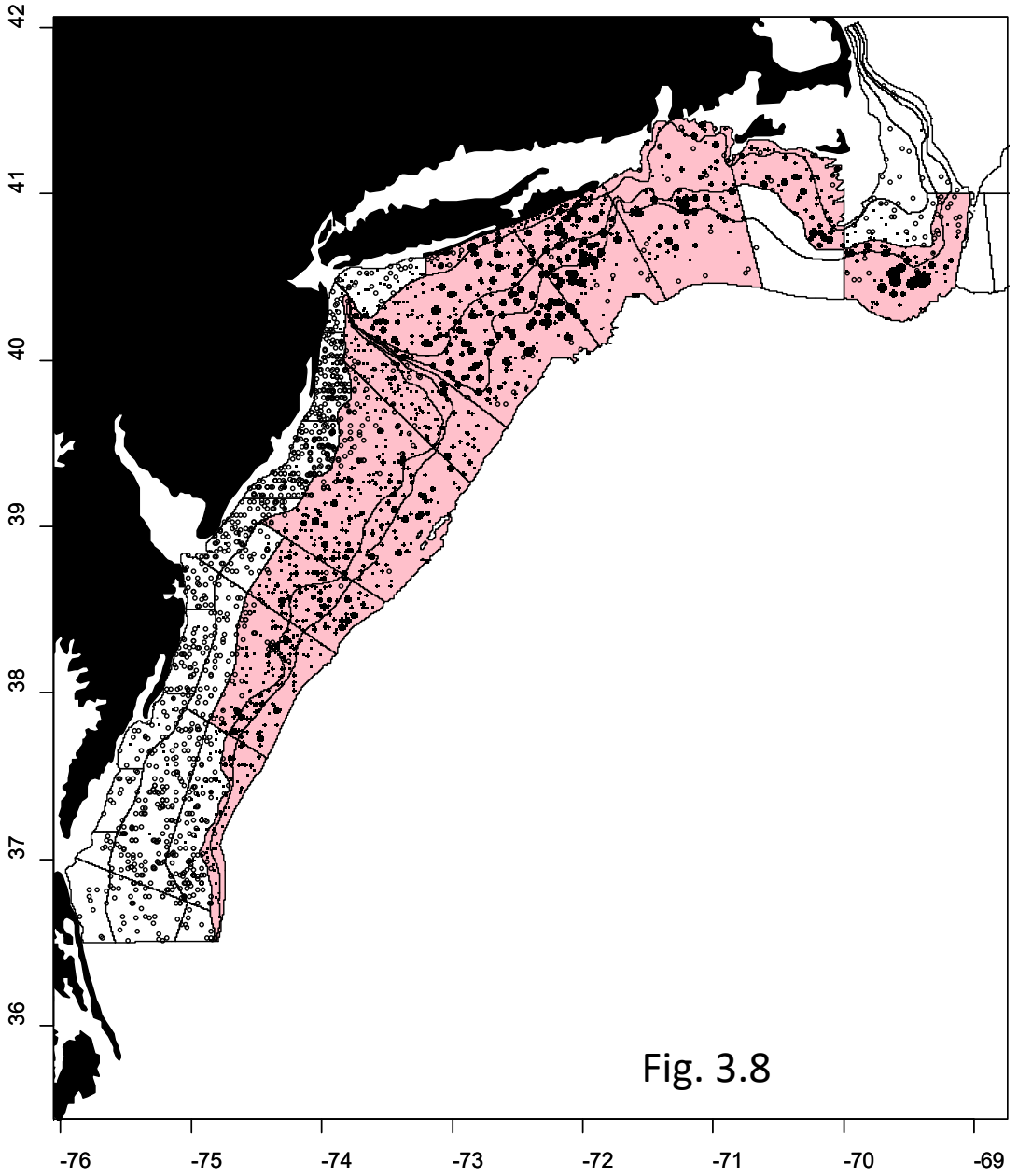
Fig. 2.2


SOUTH quahogs 1997-2016
building blocks, new survey area and catch
42
41
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-76
-75
-74
-73
-72
-71
-70
-69

Fig. 3.8

End of part 1