

Aleutian Island GKC

“Stock Assessment” based on average historical catch
(~6 million lbs): Tier 6 (lowest)

Triennial Survey, Fishery observer data

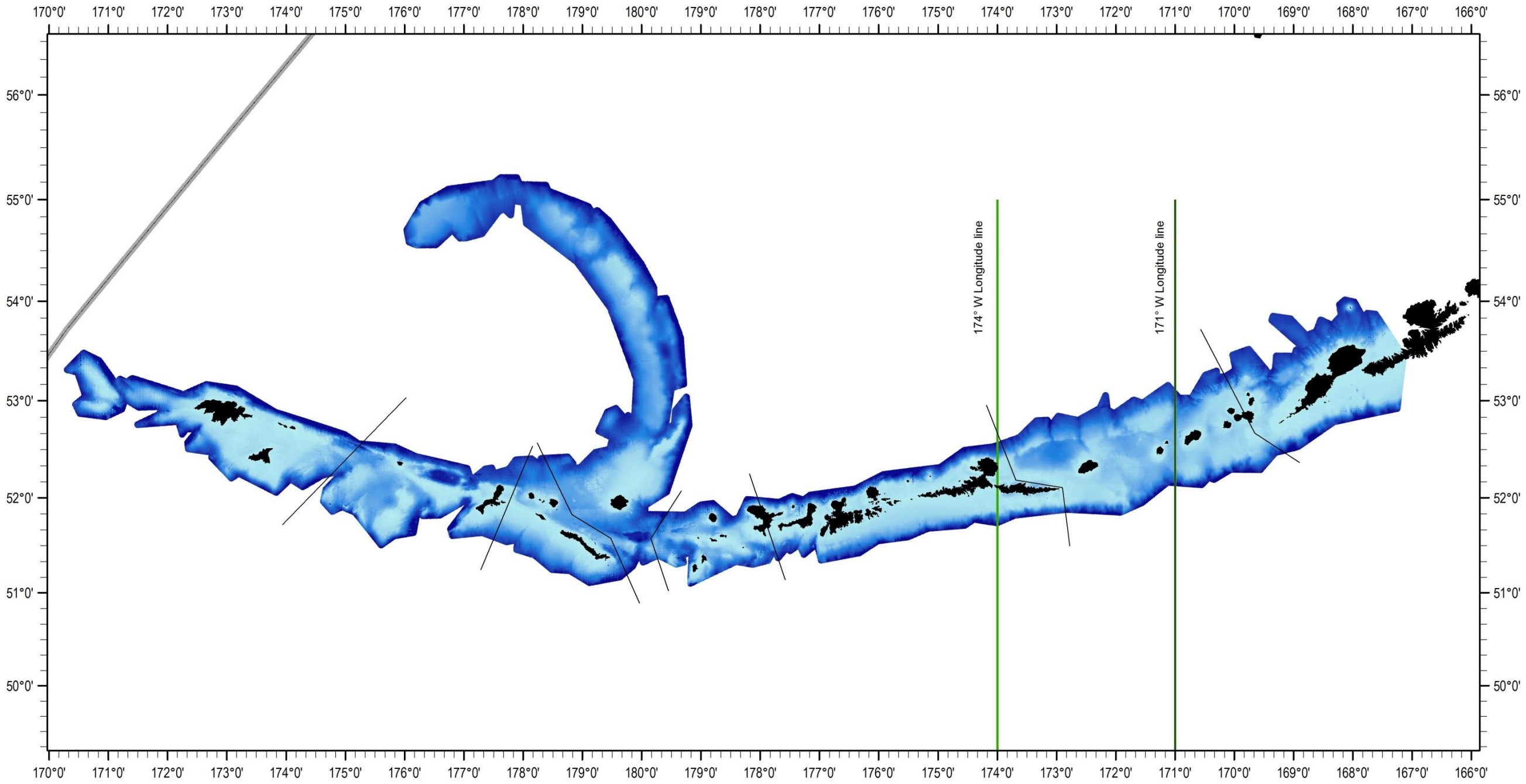
Not consistent, potentially biased

Population model using observer data

Potential bias due to observer data

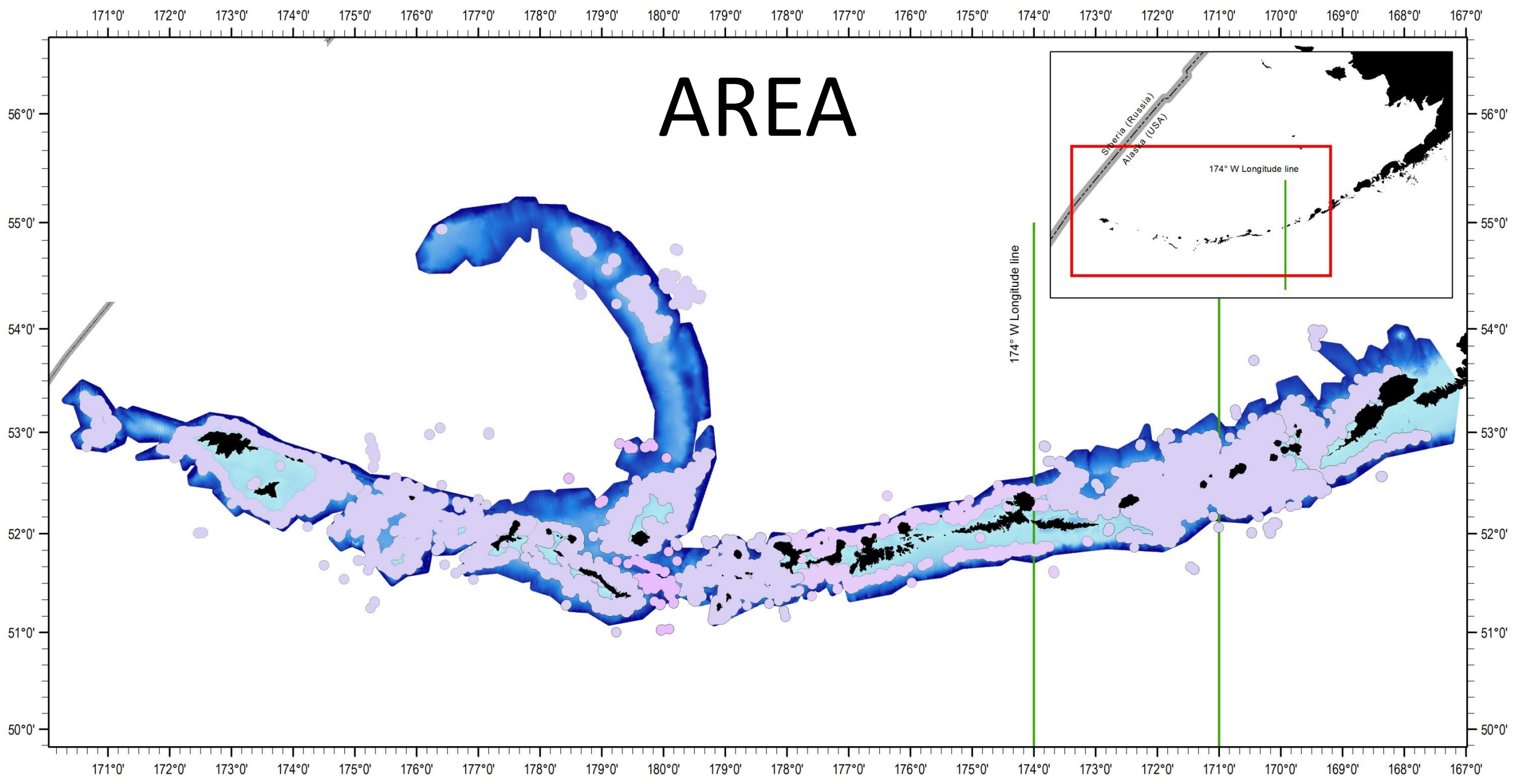
Can we do better?

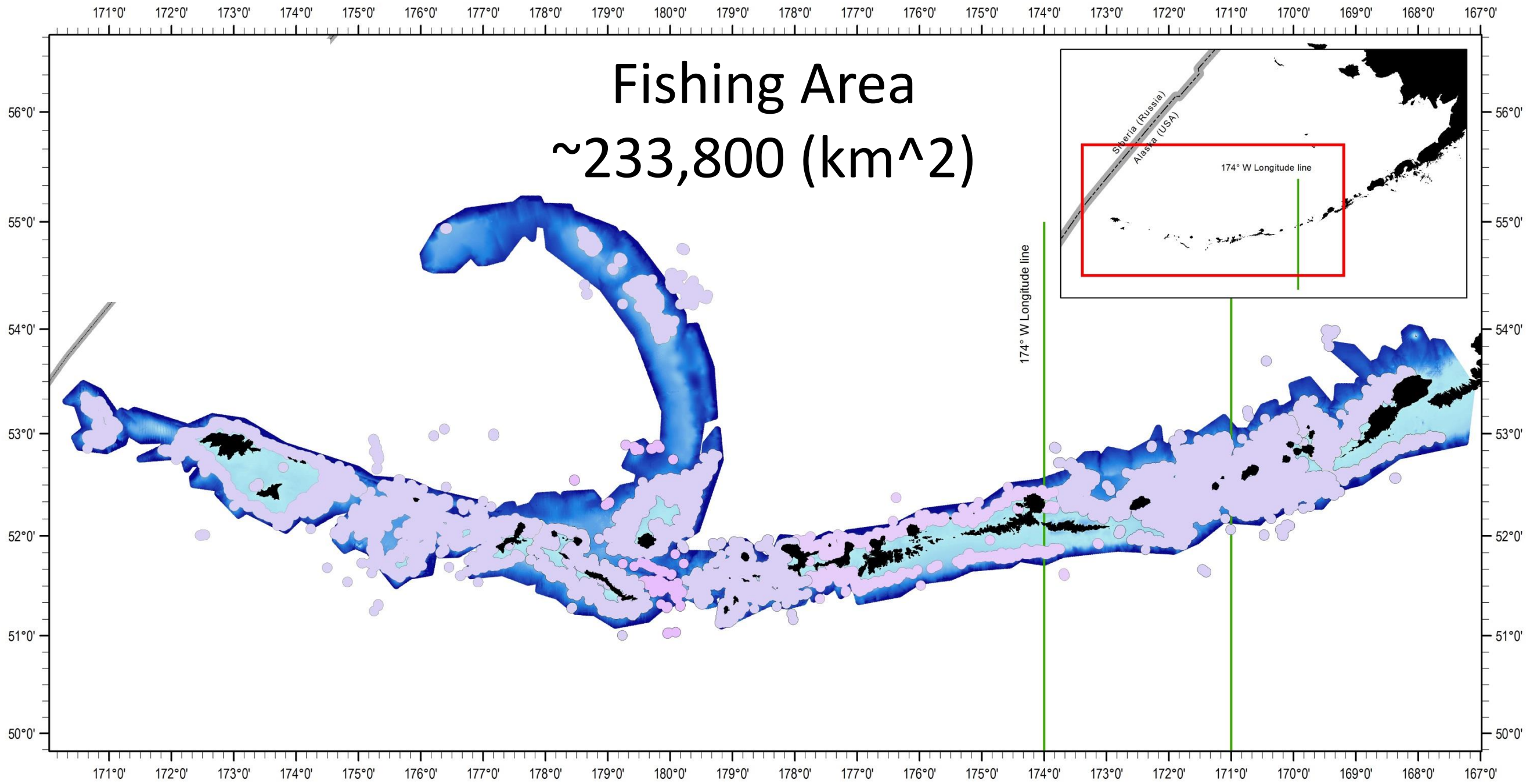
(Consistent and unbiased survey)



What's the problem?

AREA





What's the problem?

Area

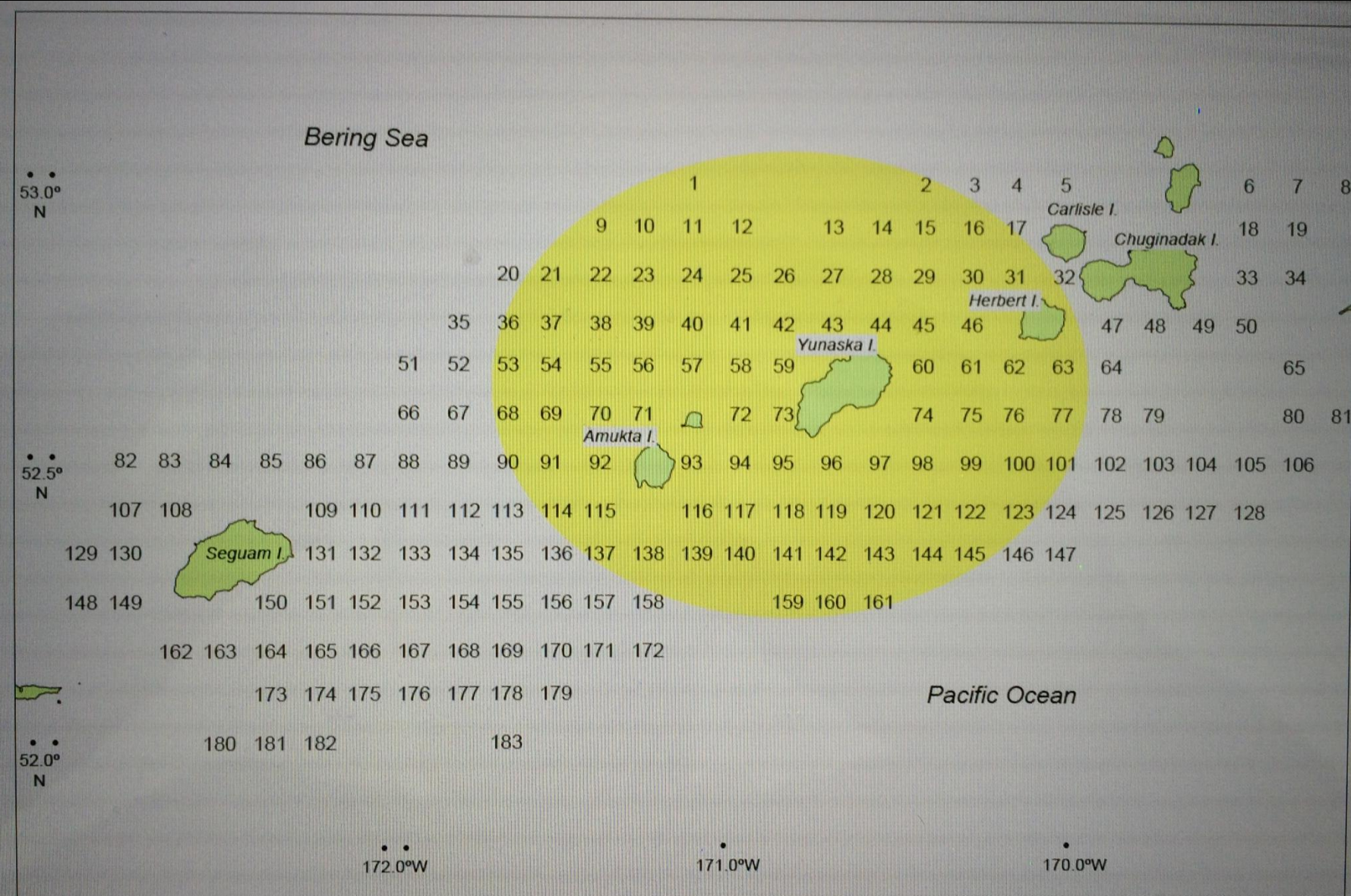
Sampling design

Spatial extent

Accuracy/Precision

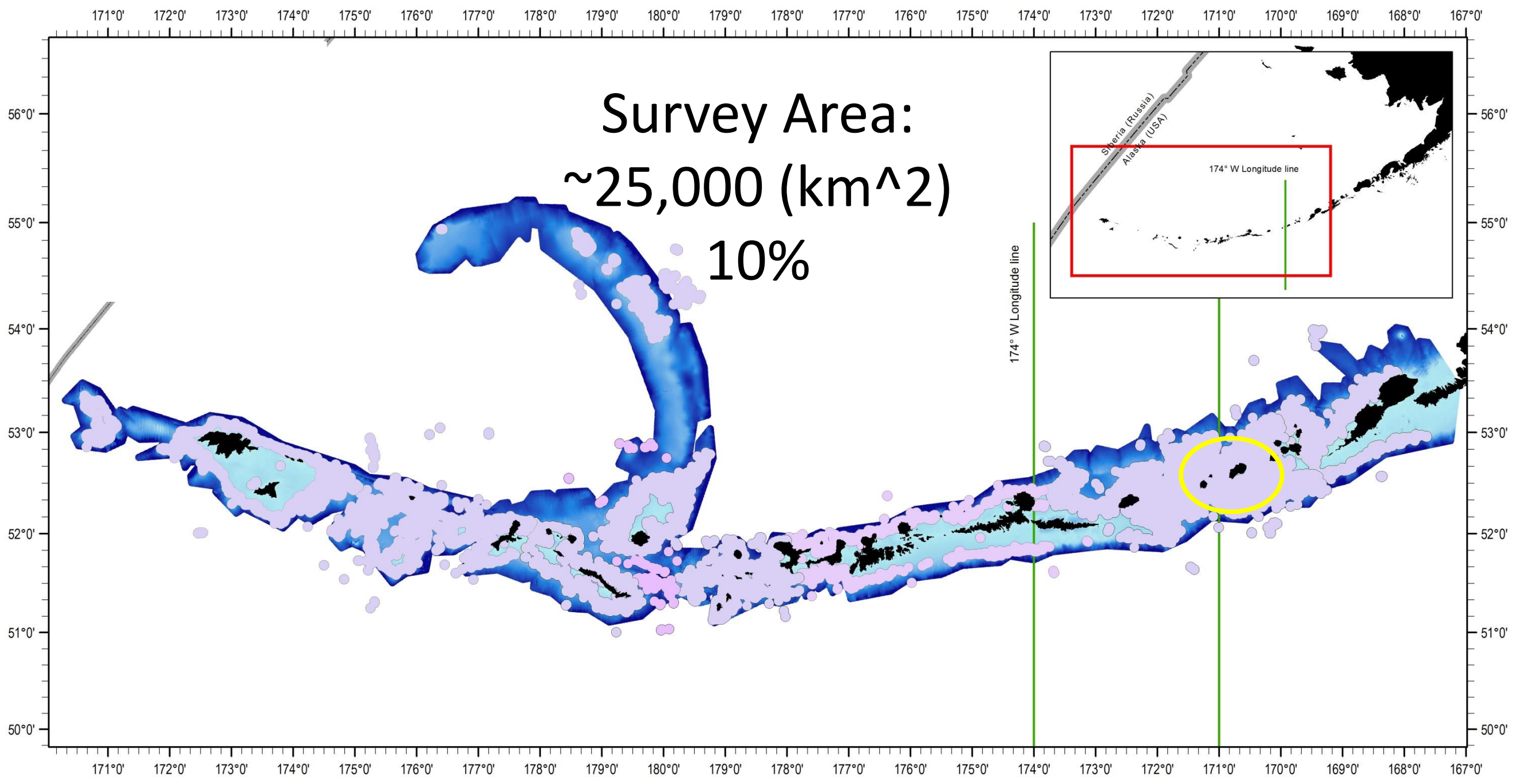
Cost Effective

ADF&G Triennial Survey



5nm apart
 10pot strings
 100fathoms apart
 String ~ 0.9nm
 Quantifying "all"
 n = 85 (850)
 Sampling area 85nm²

Relative Index of N
 Tagging (growth/mort)



ADF&G Triennial Survey

Cost:

5 FB II (salary/seaduty/benefits) for 28days

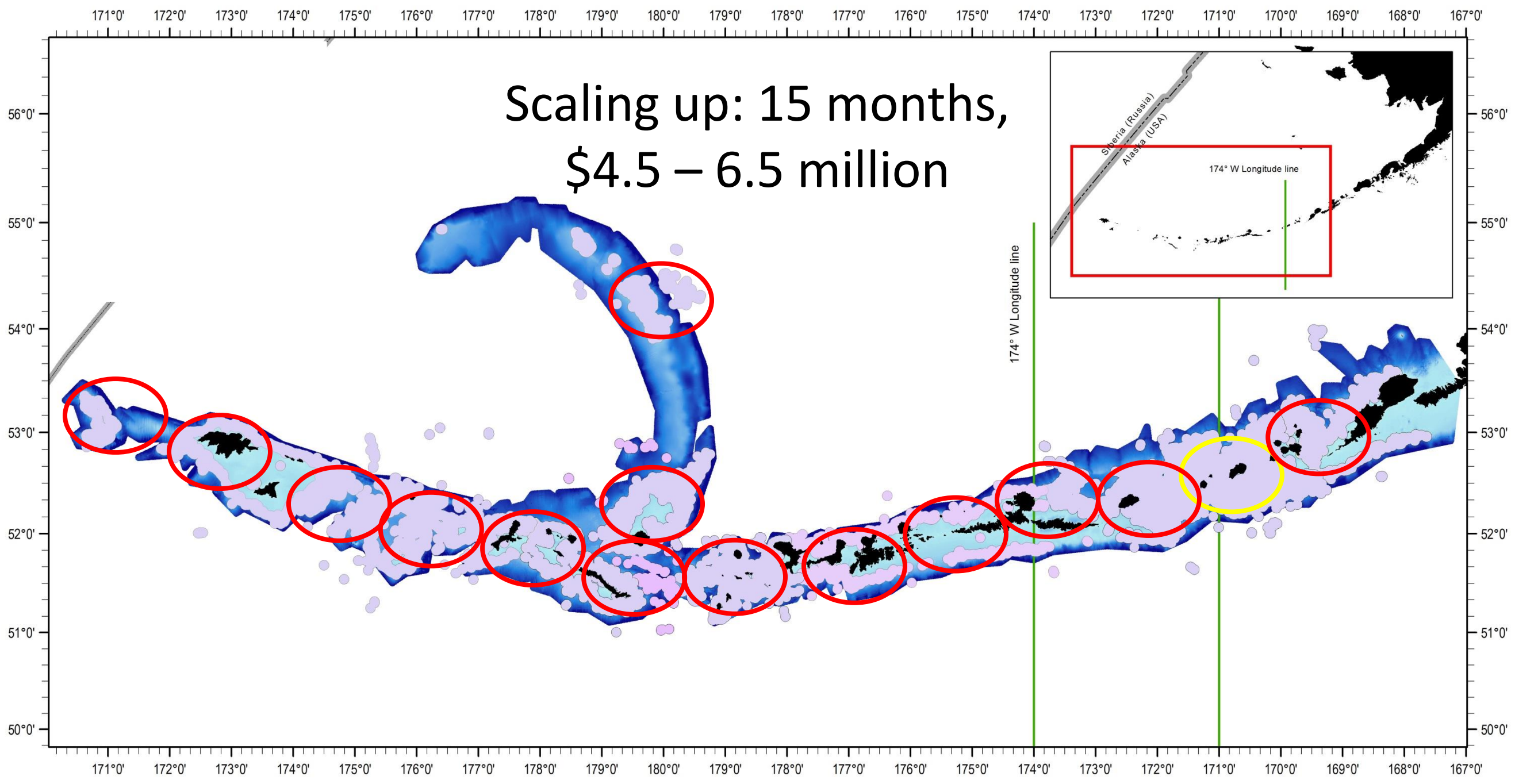
30K/person = 150K

(150 biologist days)

Vessel charter: wanted 10K/day = 280K

Total Cost: ~430K

Scaling up: 15 months,
\$4.5 – 6.5 million



Cost due to area too great

So use next best (only) thing for index of abundance: **Fishery observer data**

Observer data

Fishery Dependent

Fishing “hotspots”

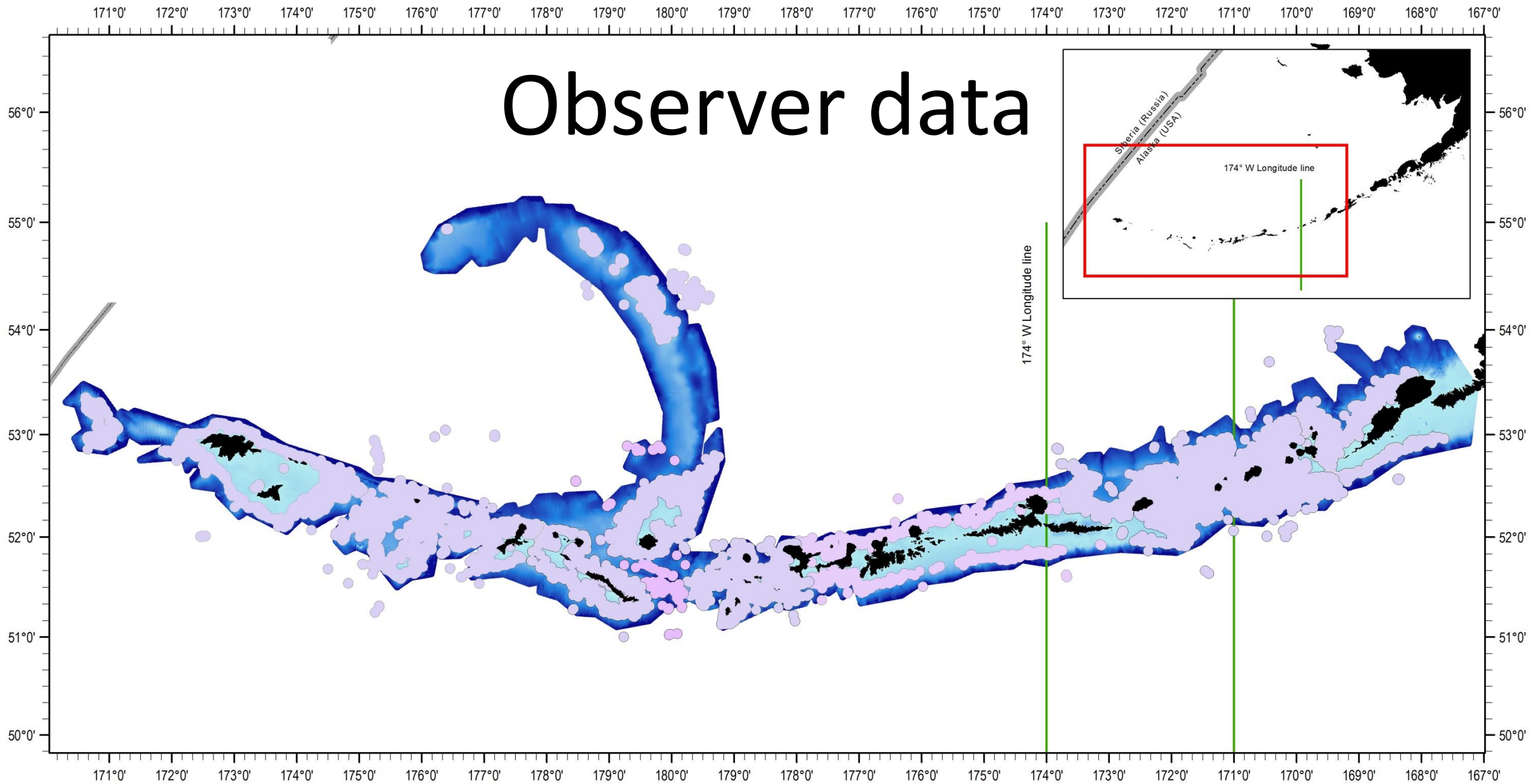
hyper-stability / independence

Variable gear, skipper, bait, etc

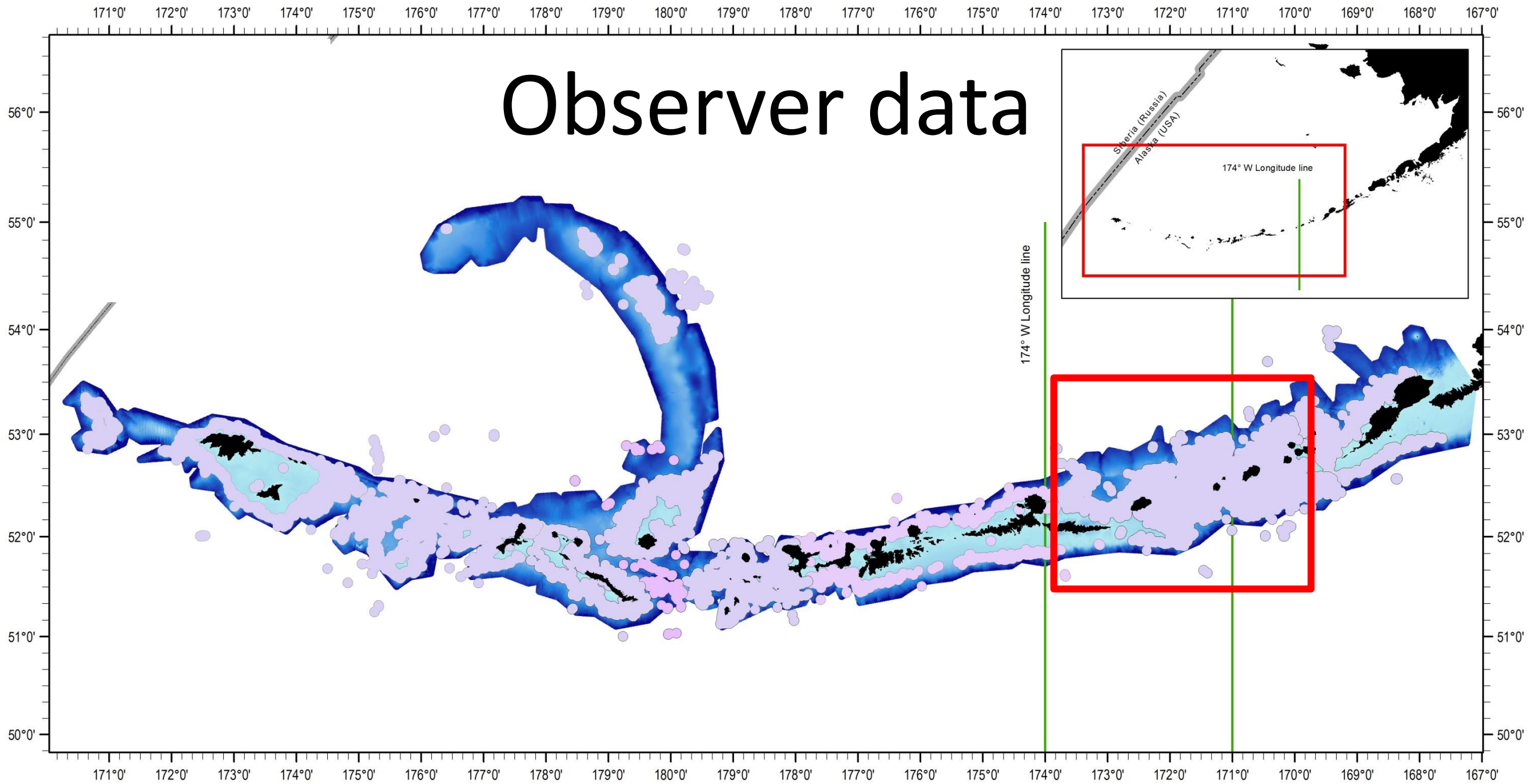
Standardized CPUE

Best with what we have

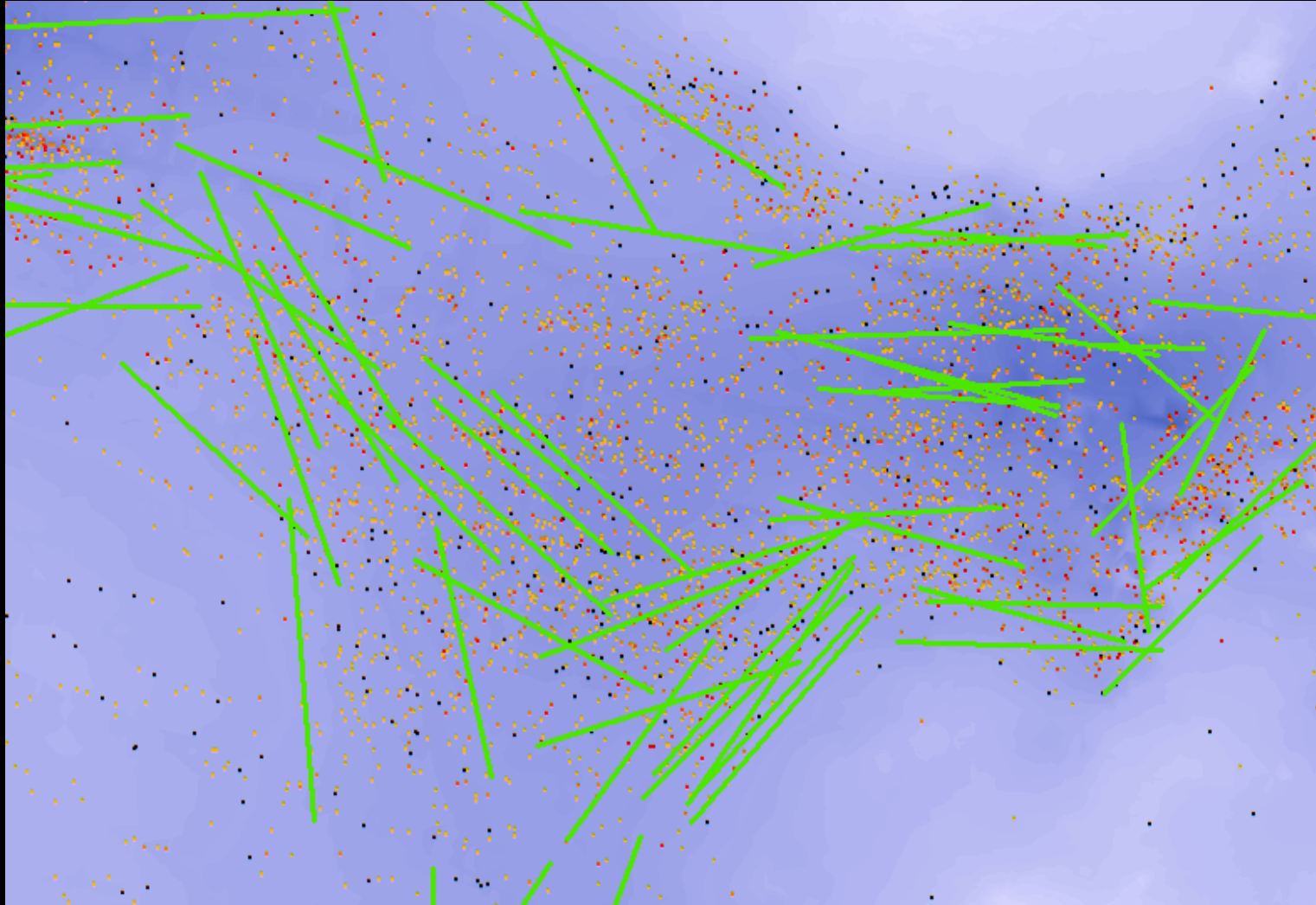
Observer data



Observer data



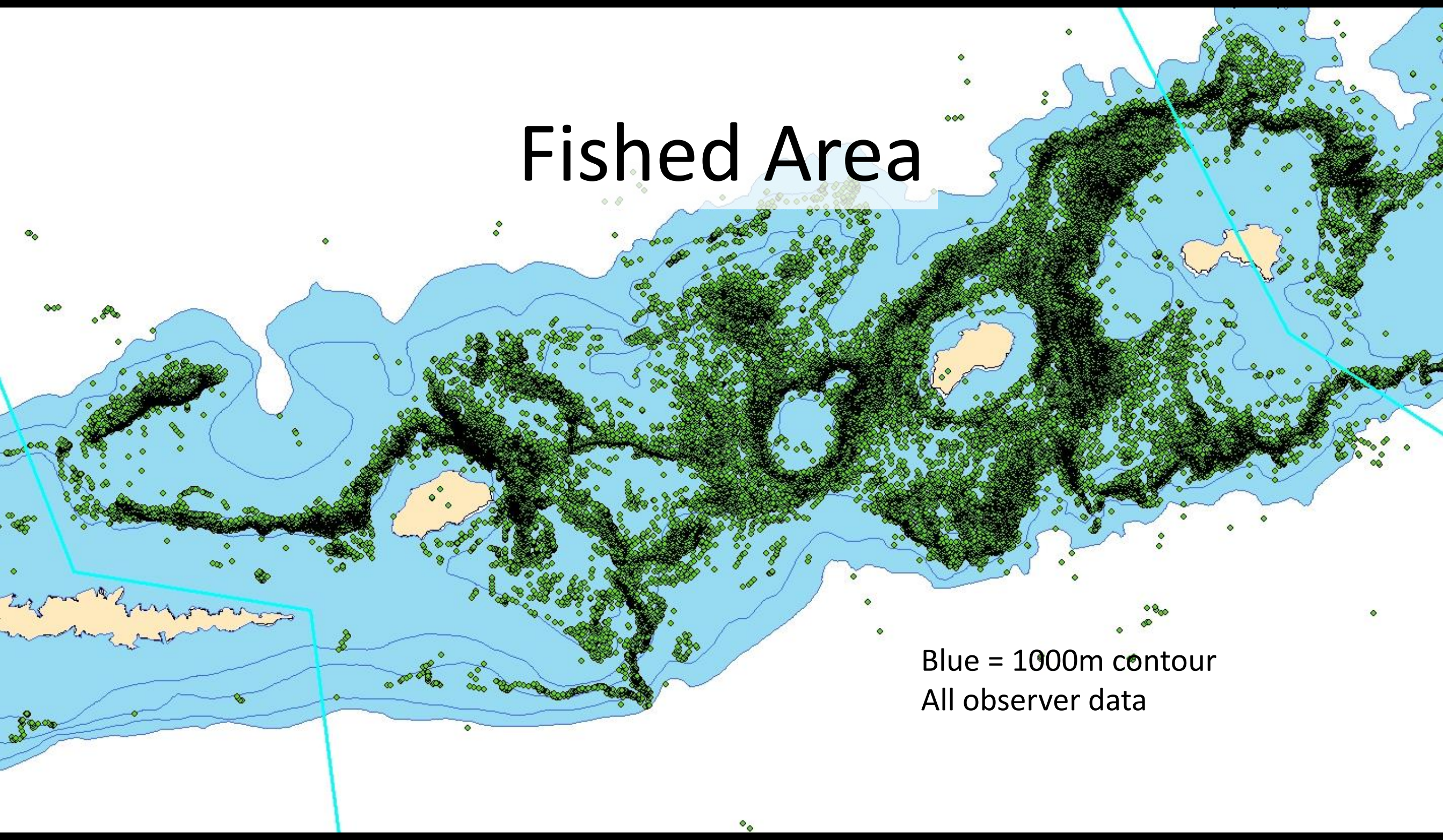
String locations



High overlap:
Confirms issue of
Non-independence

$n \neq 400$
CVs biased low

Fished Area



Blue = 1000m contour
All observer data

A map showing a large body of water with several islands. The water is light blue, and the islands are yellow. A large area of the water is covered with a dense pattern of small green dots, representing a fishing area. A semi-transparent grey box with the text 'Fished Area' is overlaid on the top part of this green area. A cyan line runs diagonally across the map from the top right to the bottom left. In the bottom right corner, the text '2008/09' is displayed in a large, black, sans-serif font.

Fished Area

2008/09

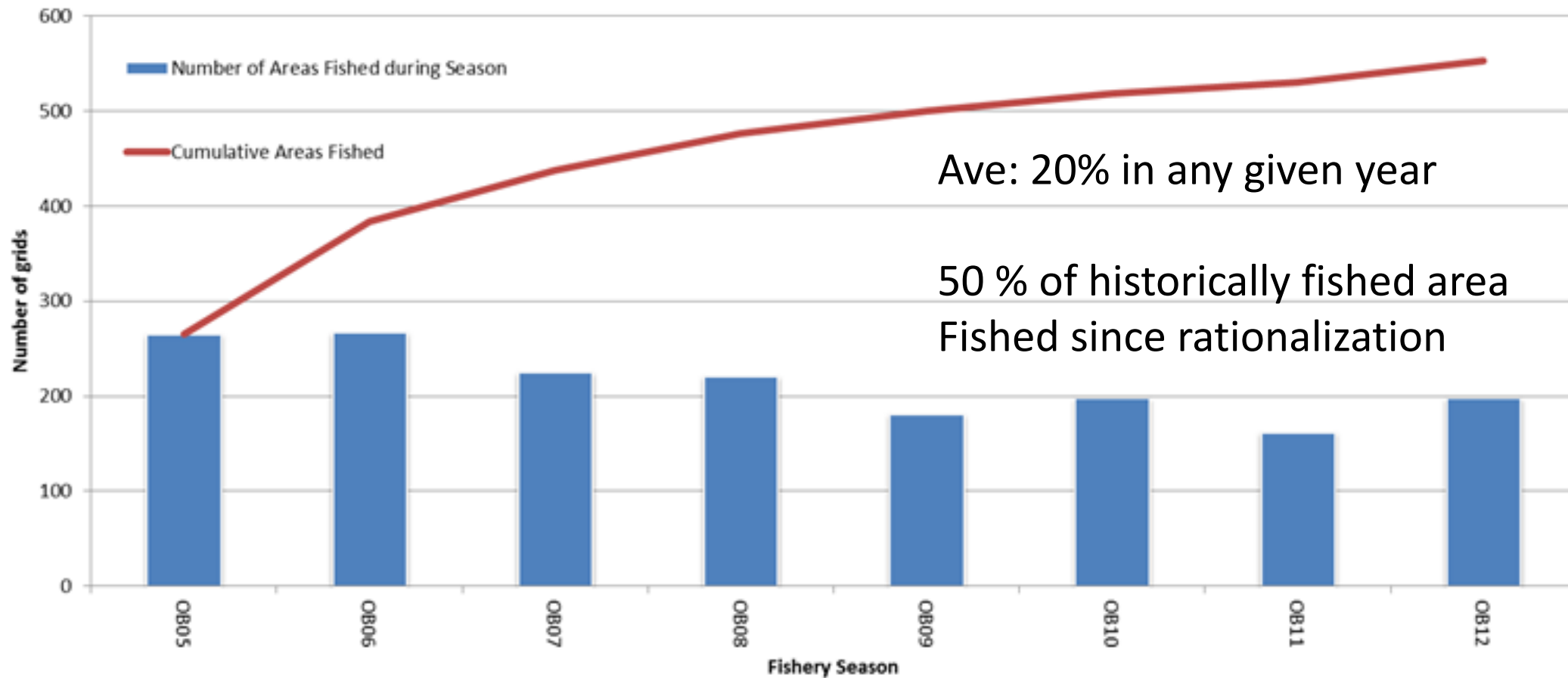
A map showing a fishing area. The area is outlined in light blue and contains numerous green and white markers. The text "Fished Area" is overlaid on the map. The map also shows several islands in yellow and a cyan line representing a boundary or coastline.

Fished Area

2008/09 –
2012/13

Fished Area

AIGKC Eastern Region (H), >0 pots, >0 crab FINAL Selection: n = 1100 (1990-2012)



Can we do better?

Improve spatial extent

Reduce potential for hyperstability

Provide consistent data long-term

Cost effective

Inventory

Industry:

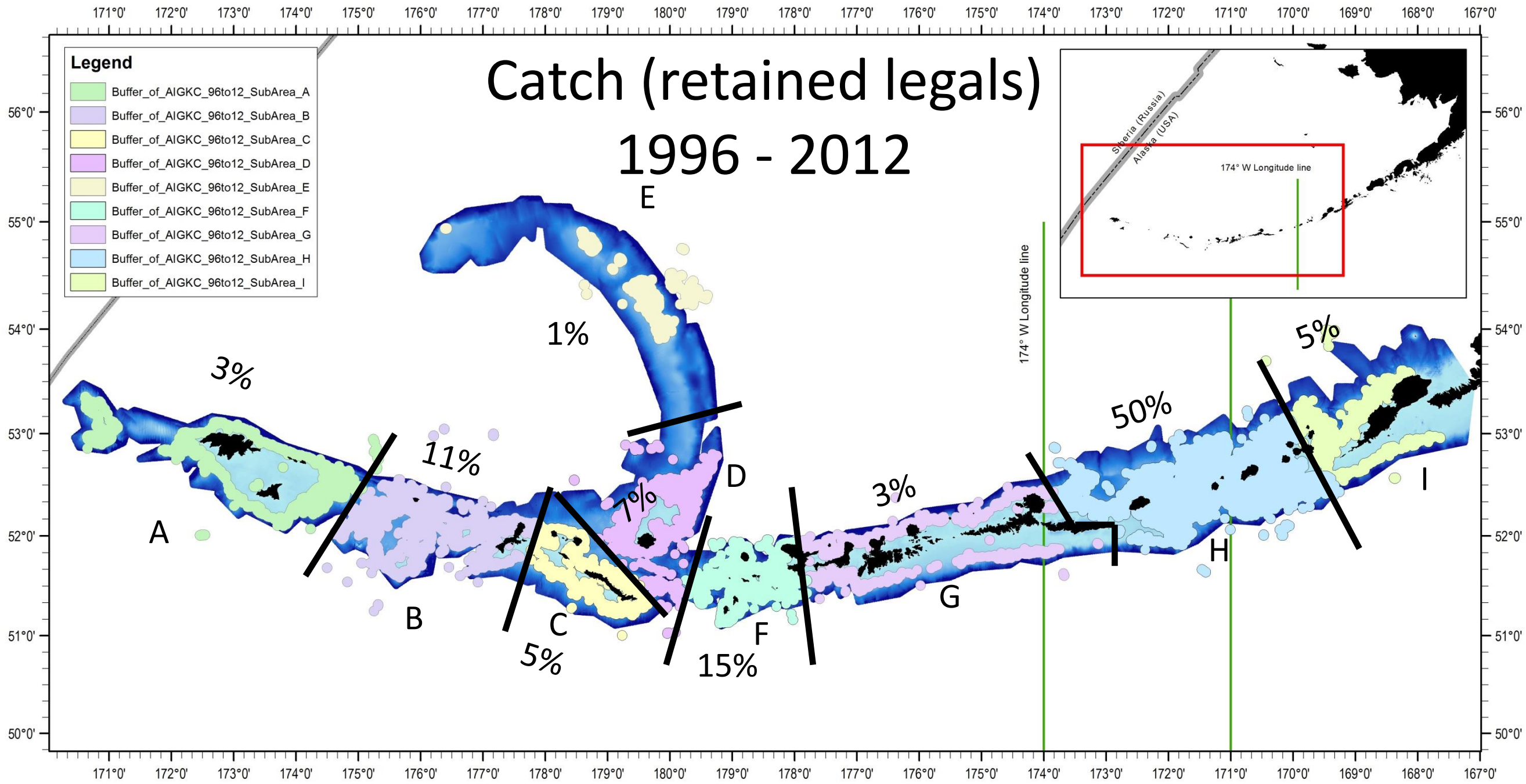
Vessels/crew/gear/on the water/willingness

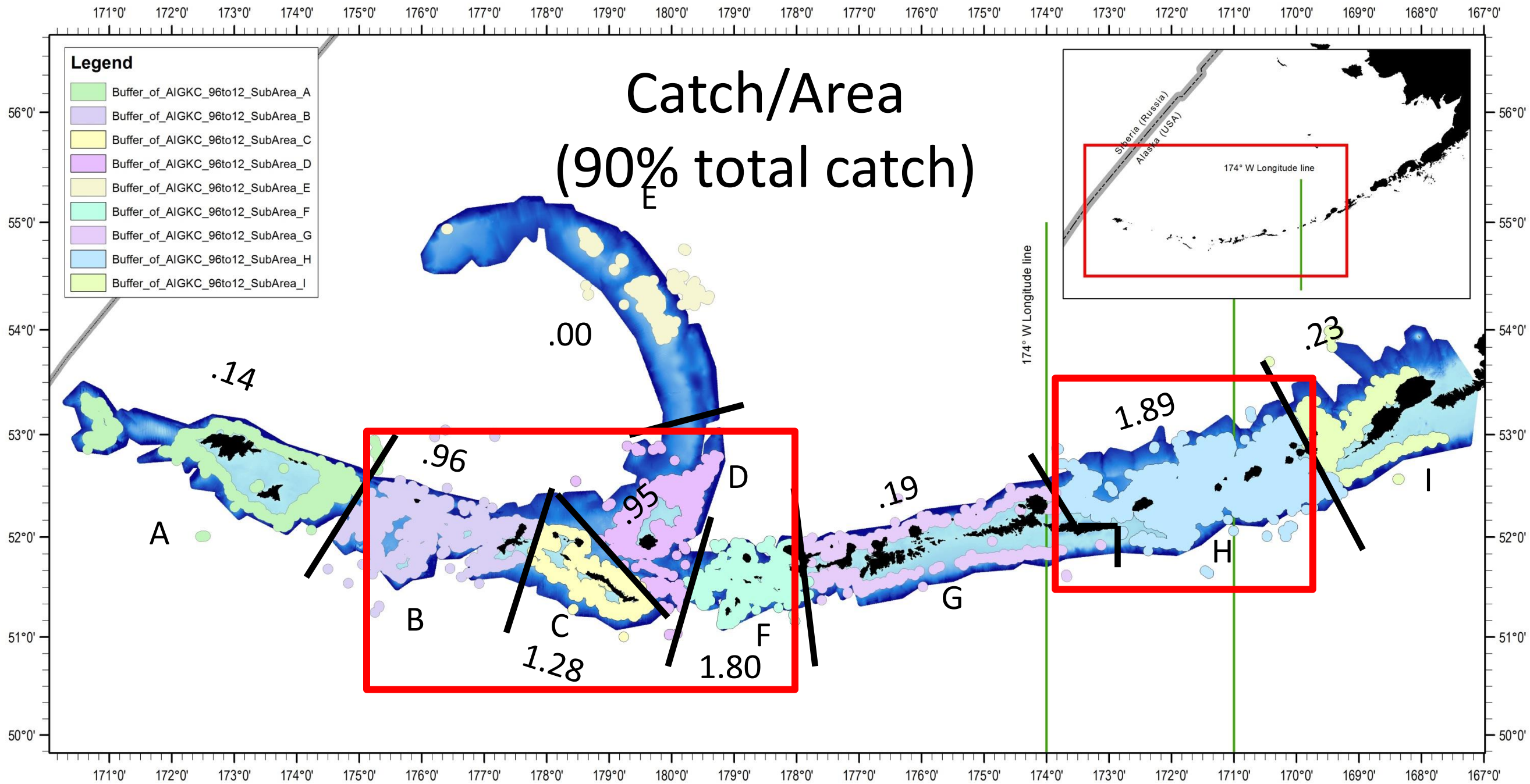
(recognize asking them to modify behavior)

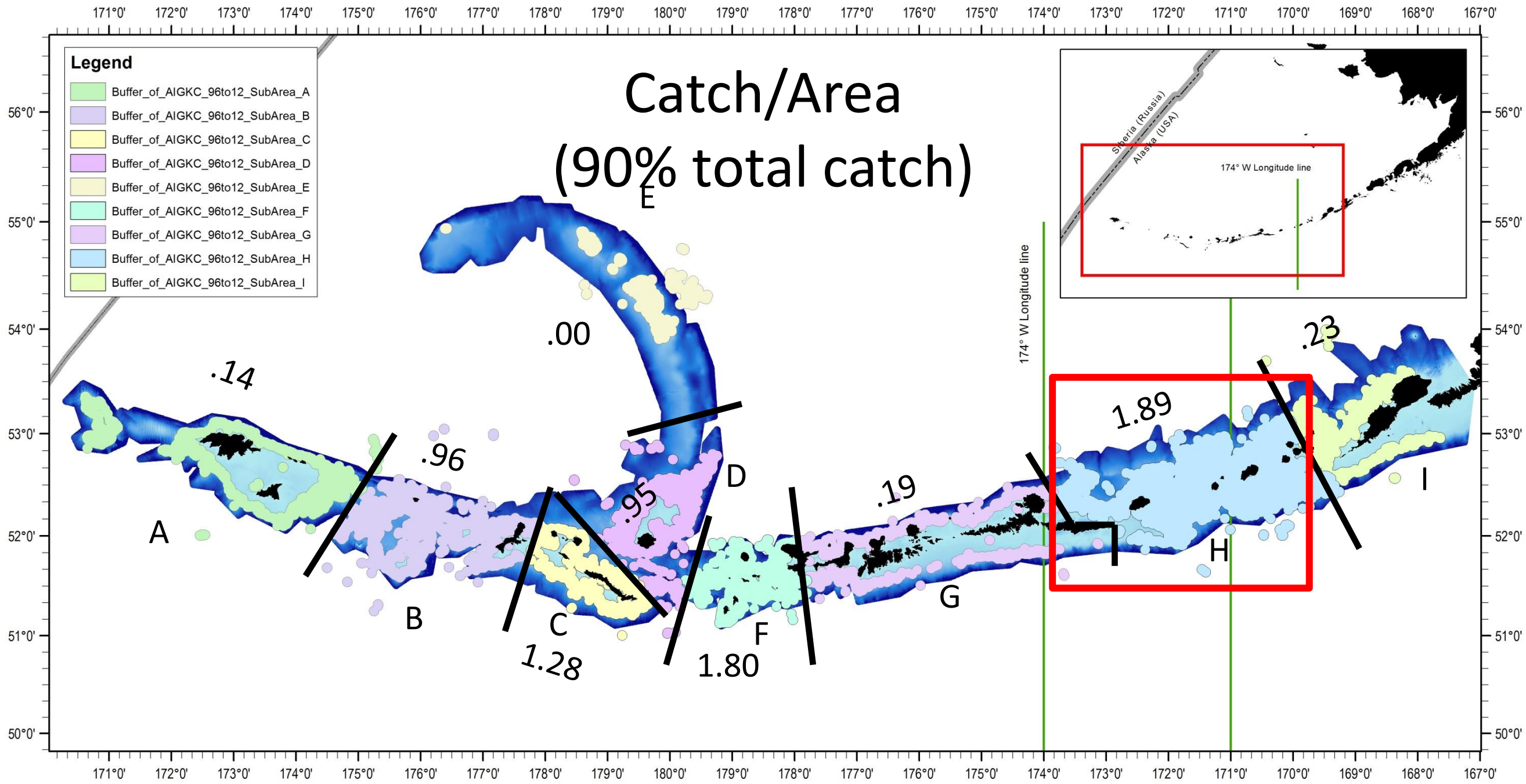
ADFG/NOAA/NRC:

Personnel/Sampling design/some gear

How do we utilize all resources most efficiently?







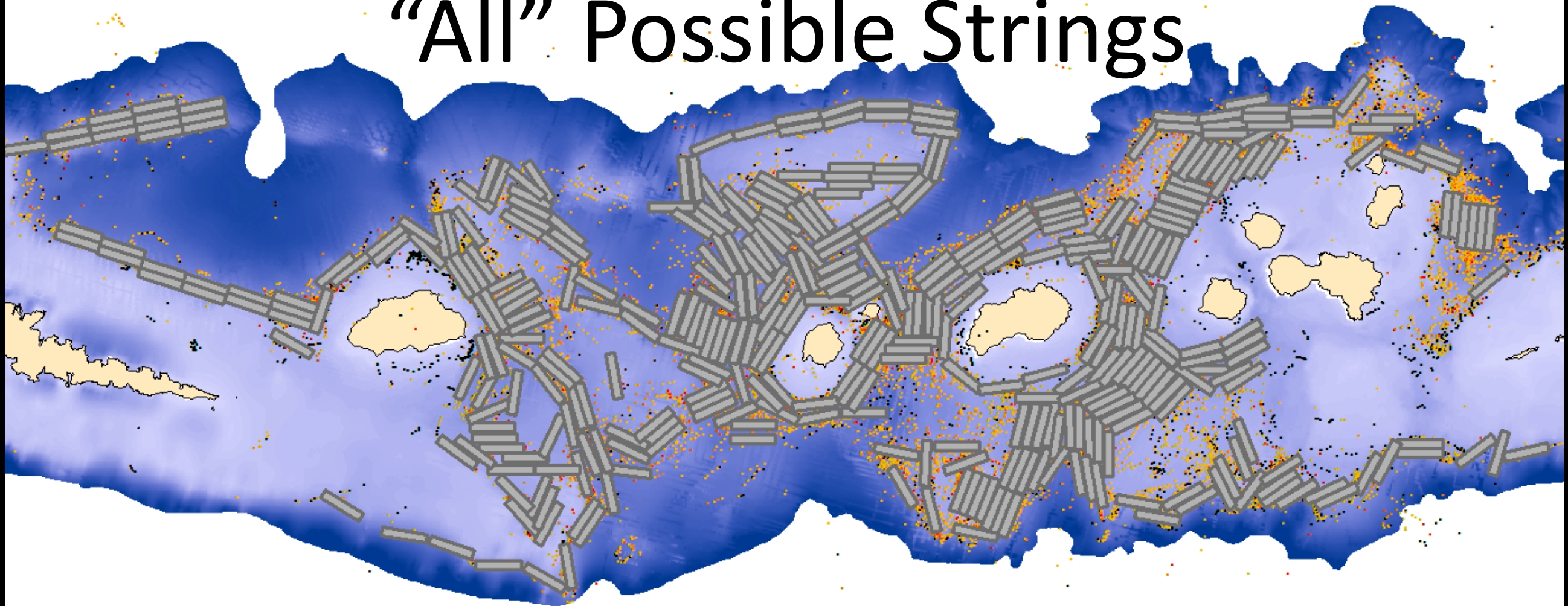
Version 1 (last year)

Commercial gear

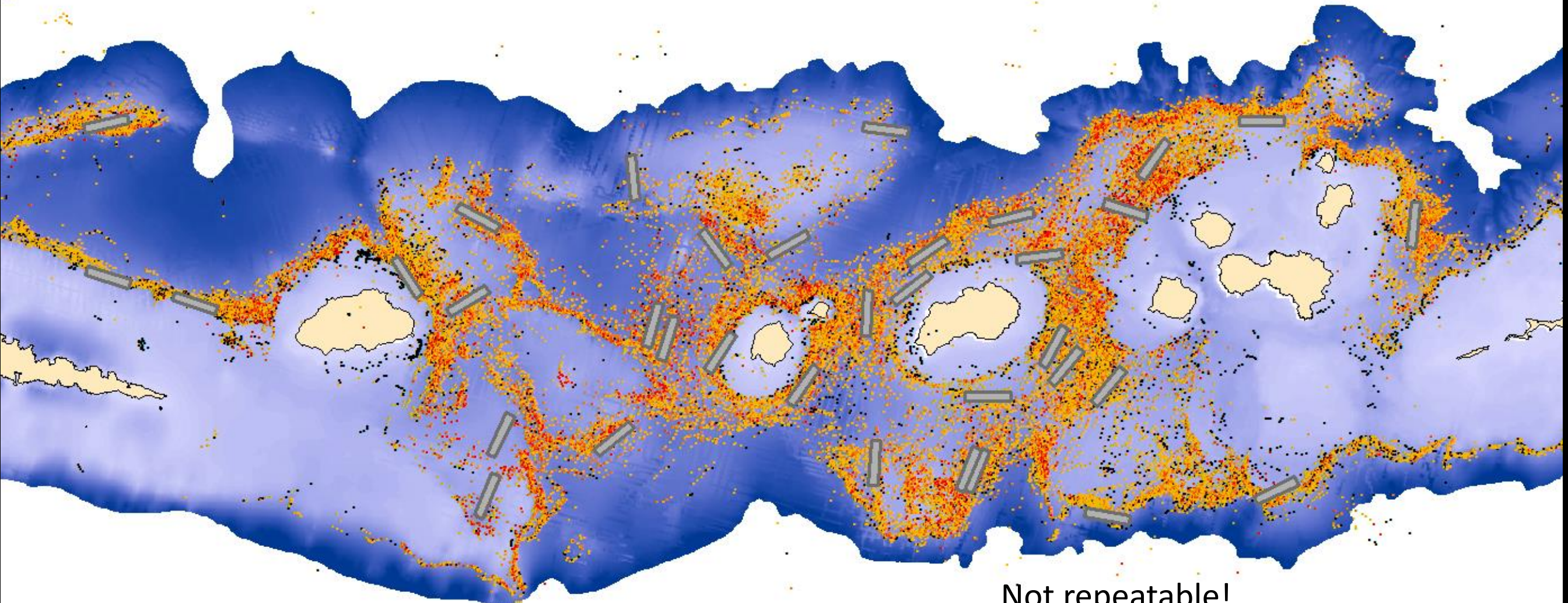
First trip during Commercial season

2 stage design (pots within strings / strings)

Version 1 (last year) “All” Possible Strings



Random sample But....



Not repeatable!
My best guess.

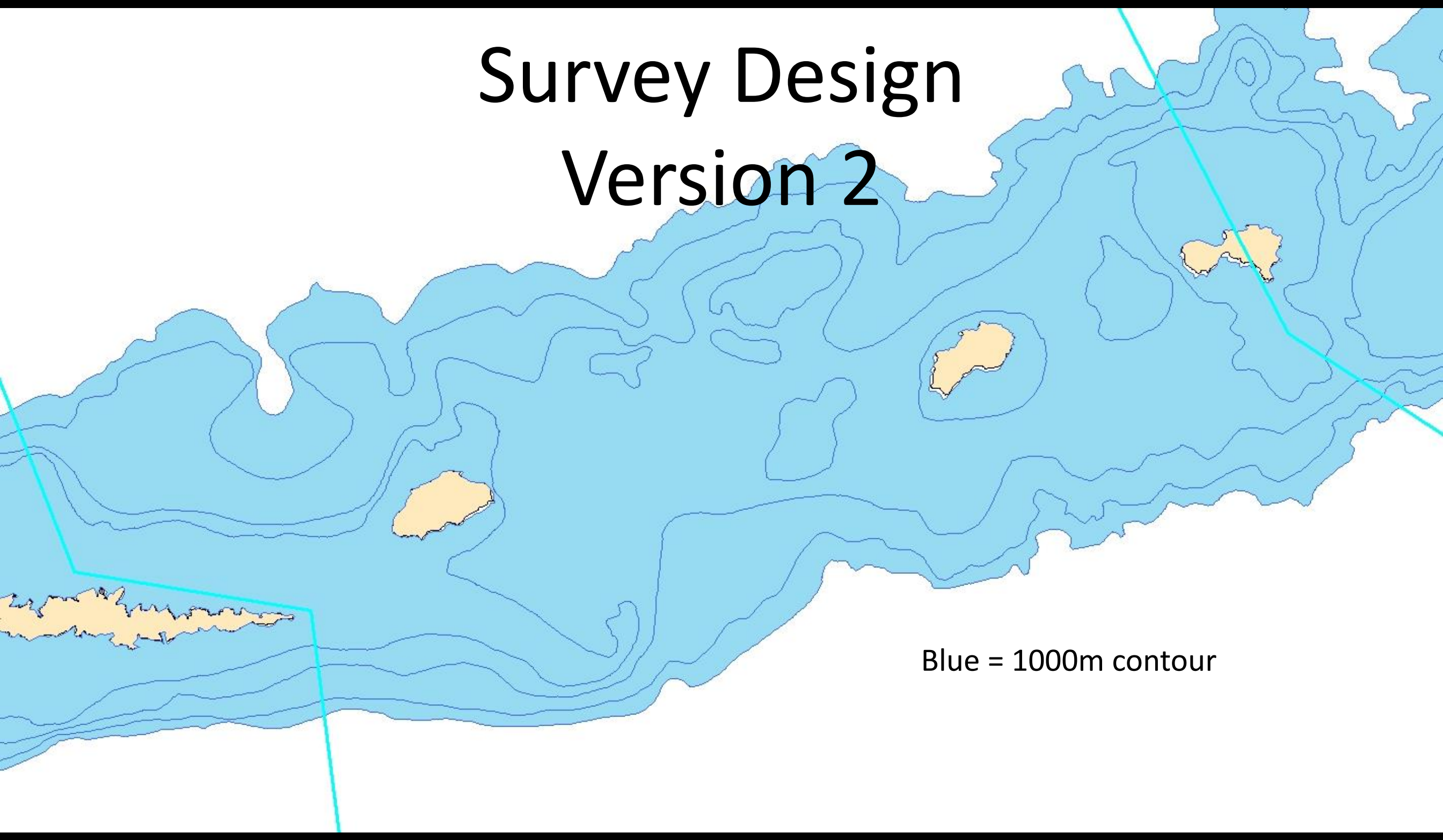
Aug. 2014

Set 12 strings in EAG

All went generally well from science
and skipper POV.

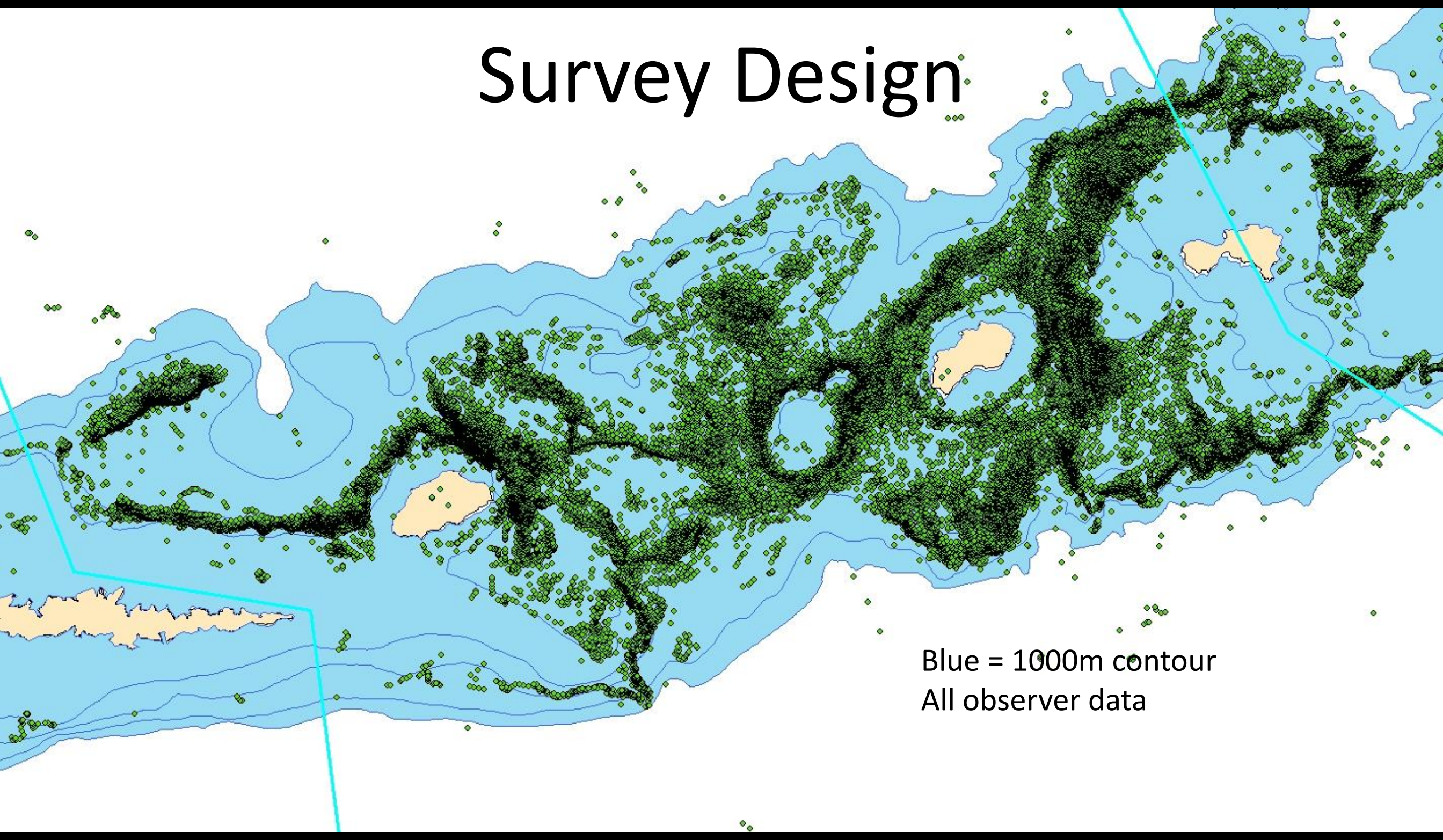
Used this prelim data to revise survey design....

Survey Design Version 2



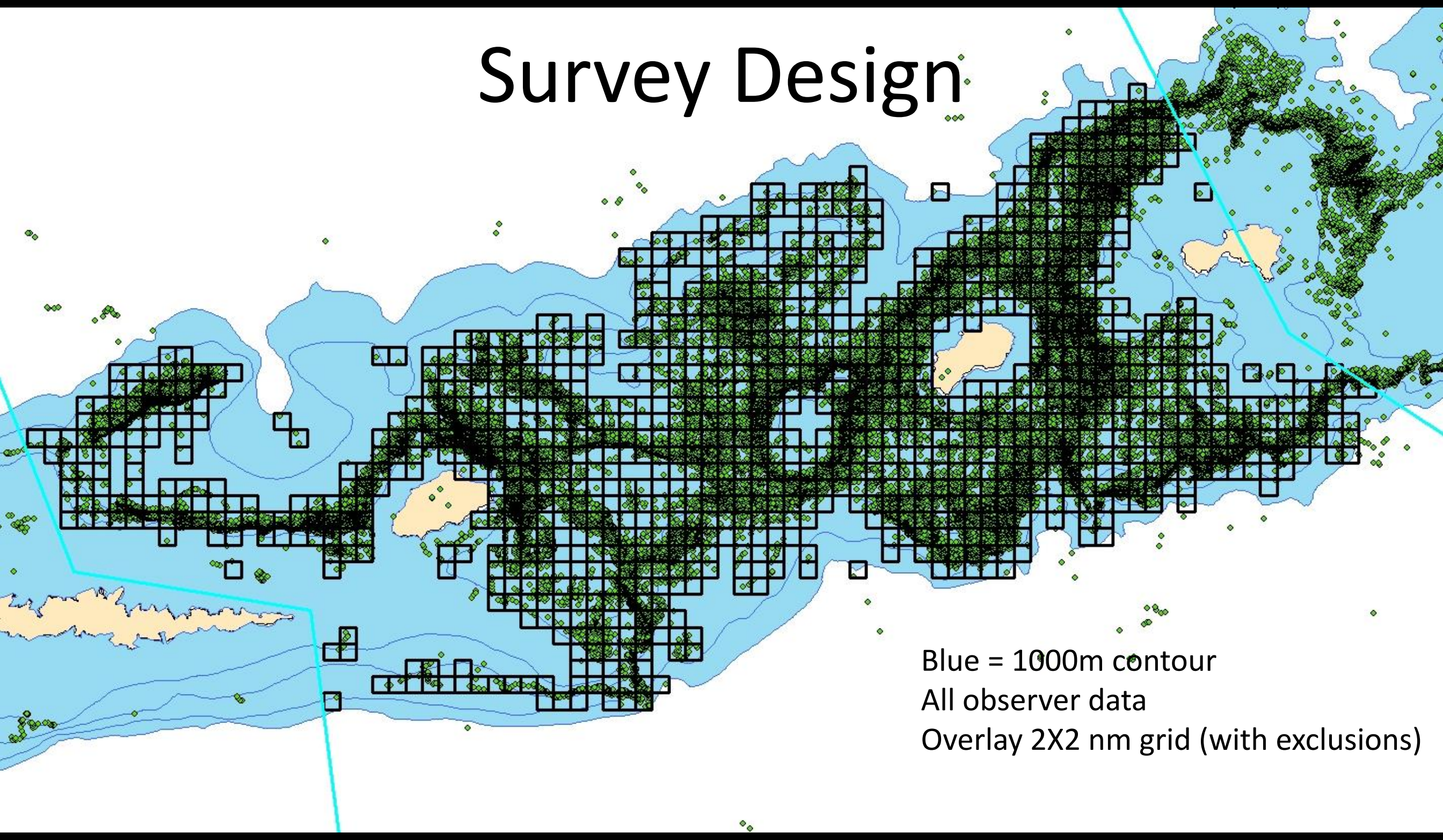
Blue = 1000m contour

Survey Design

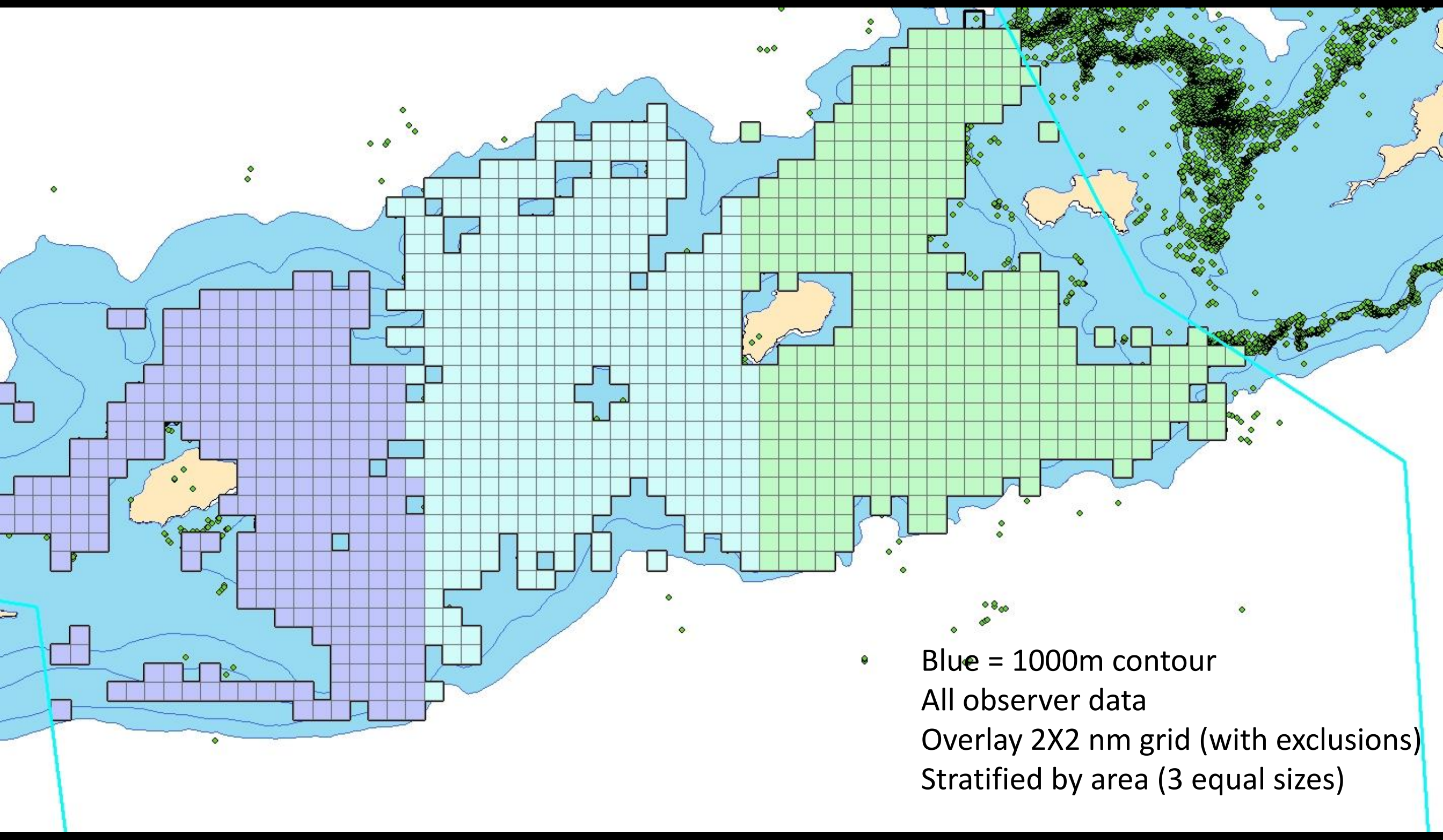


Blue = 1000m contour
All observer data

Survey Design

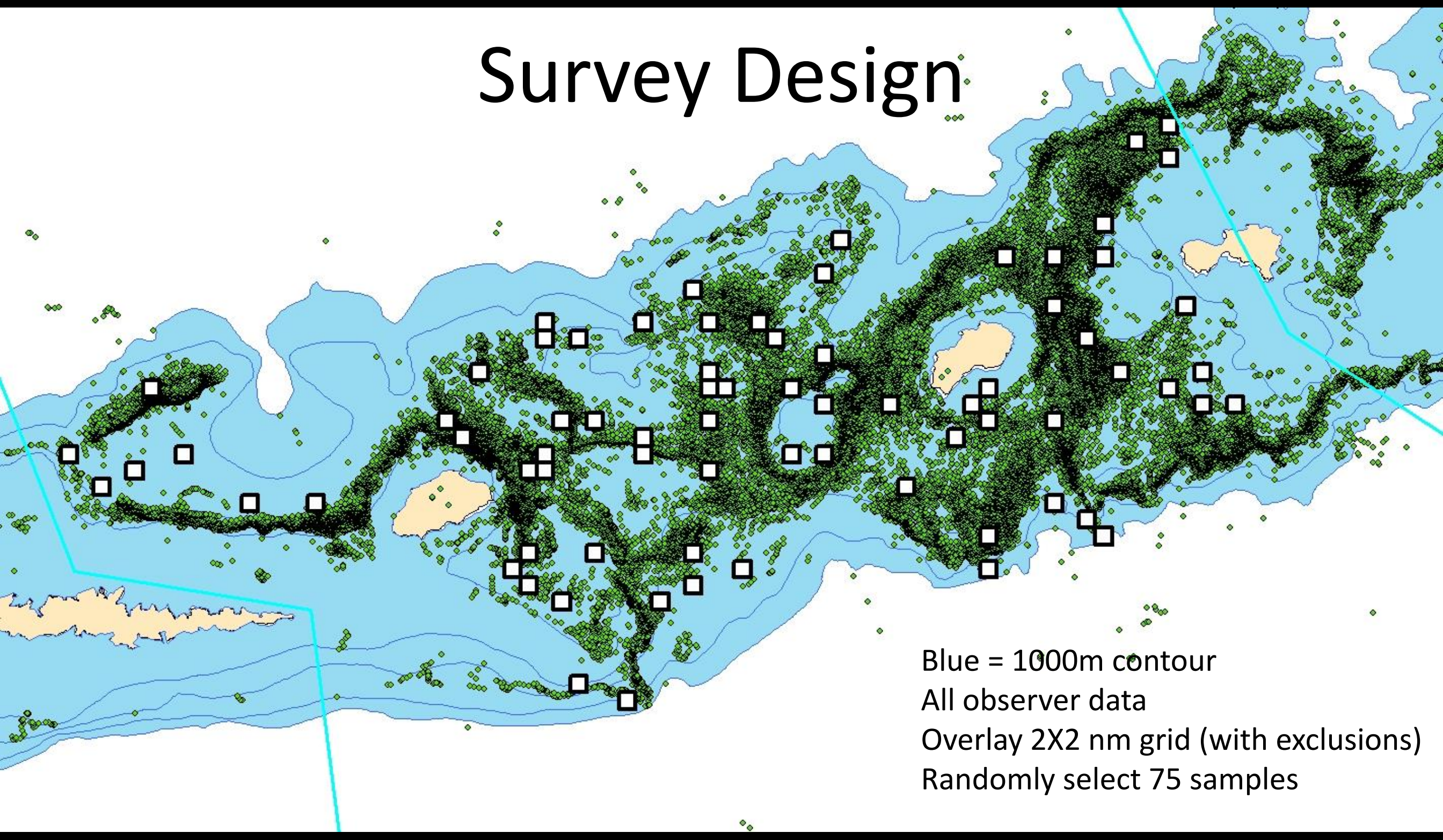


Blue = 1000m contour
All observer data
Overlay 2X2 nm grid (with exclusions)



Blue = 1000m contour
All observer data
Overlay 2X2 nm grid (with exclusions)
Stratified by area (3 equal sizes)

Survey Design



Blue = 1000m contour
All observer data
Overlay 2X2 nm grid (with exclusions)
Randomly select 75 samples

What are the Issues?

What are the Issues?

Convince commercial fleet it's in their better interest!

Asking them to set gear where they don't

Organize multiple organizations

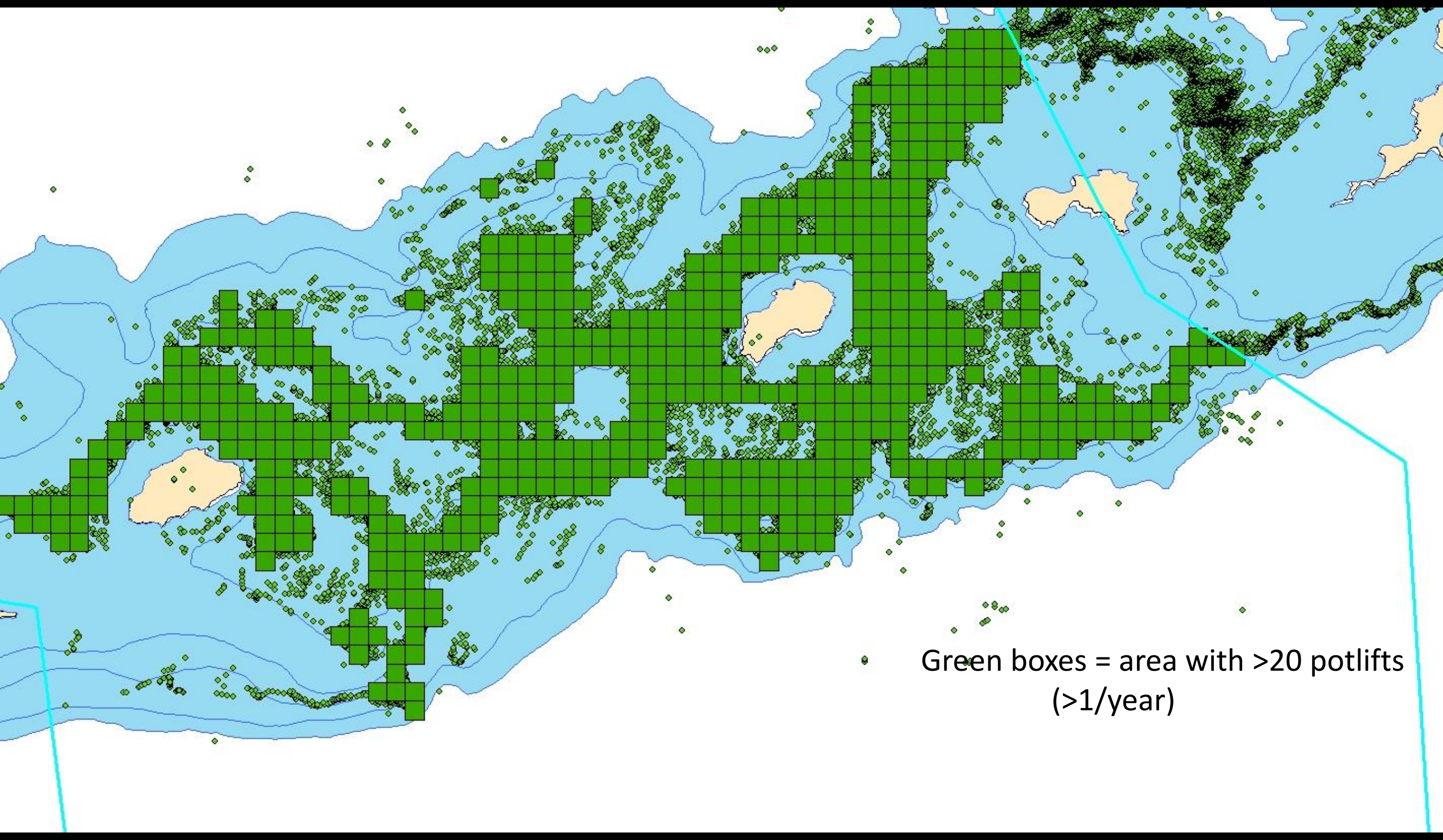
Maintain cooperation over time

Better Stratification?

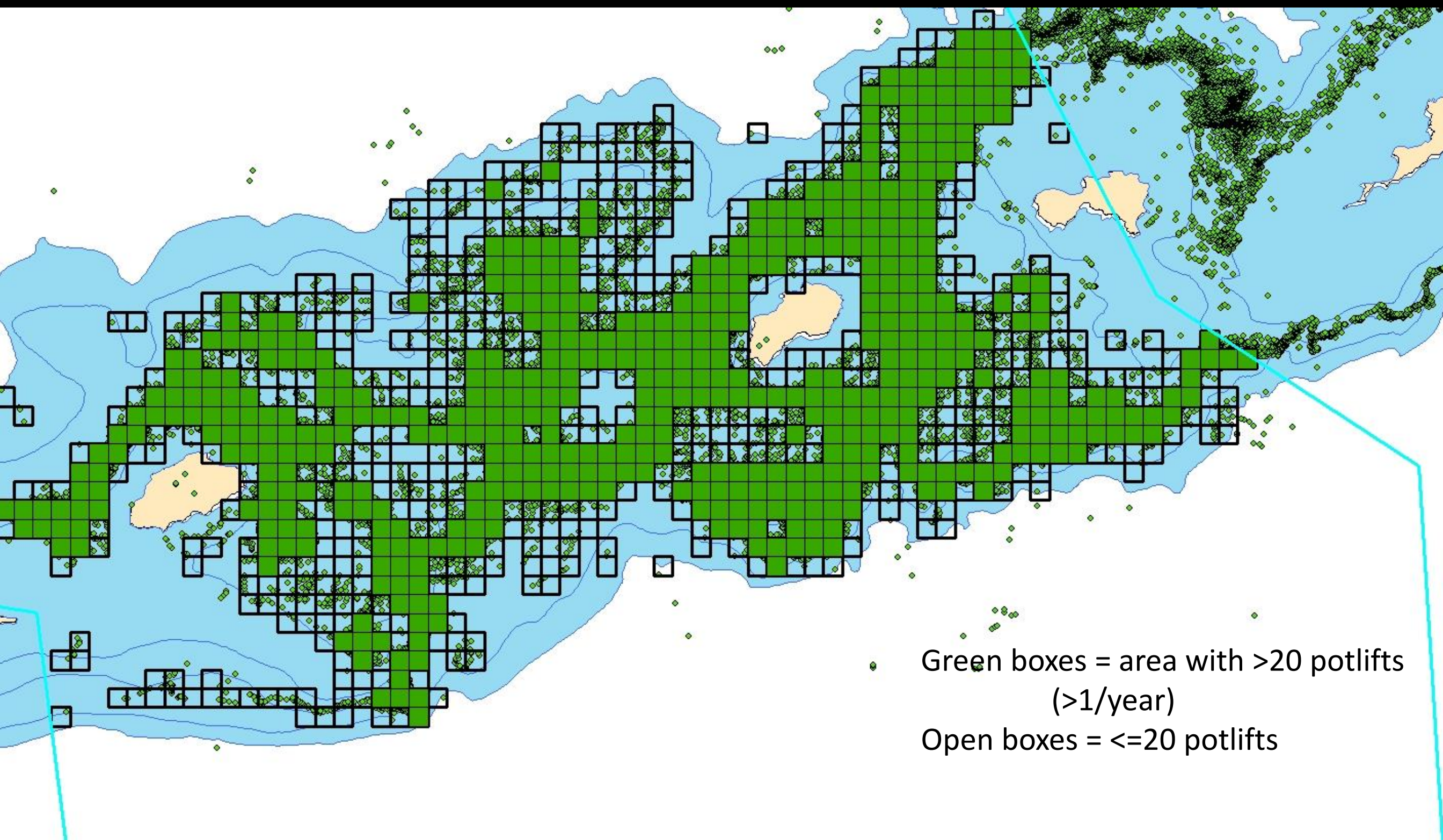
Area: Spreads effort out, reduces clumping

Habitat: Ideal, but lots of issues (same as S. CPUE)

Effort: Typically not good to use (part) of response variable; proxy for habitat? But fished area reduced.



Green boxes = area with >20 potlifts (>1/year)



Green boxes = area with >20 potlifts
(>1/year)
Open boxes = <=20 potlifts

