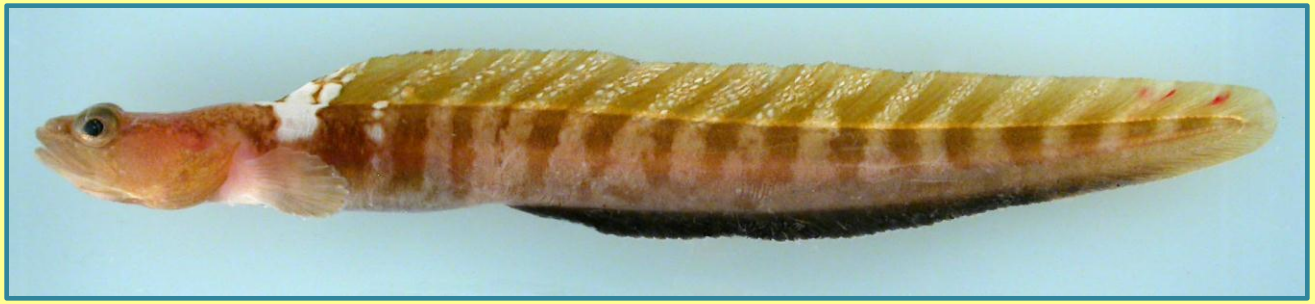
RUSALCA 2012
Precruise Workshop
Miami, Florida
11 March 2012



Focal Areas:

Fish Diversity and Otter Trawl

PI: C.W. Mecklenburg

PI: N.V. Chernova

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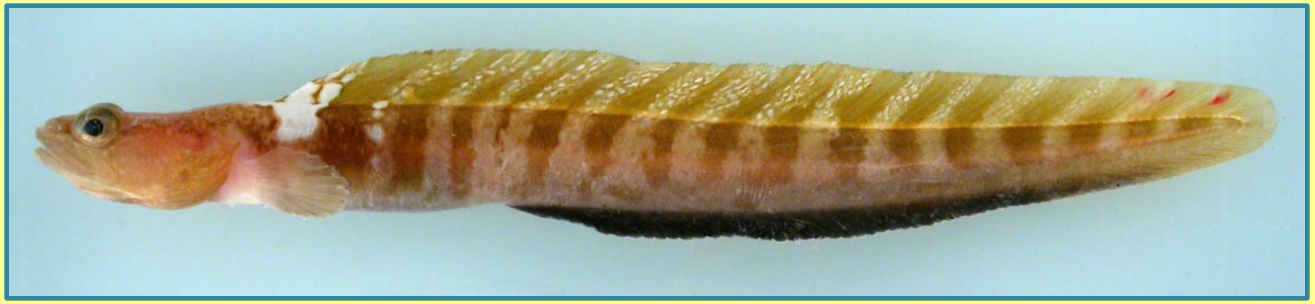

Focal Areas:

Fish Diversity and Otter Trawl

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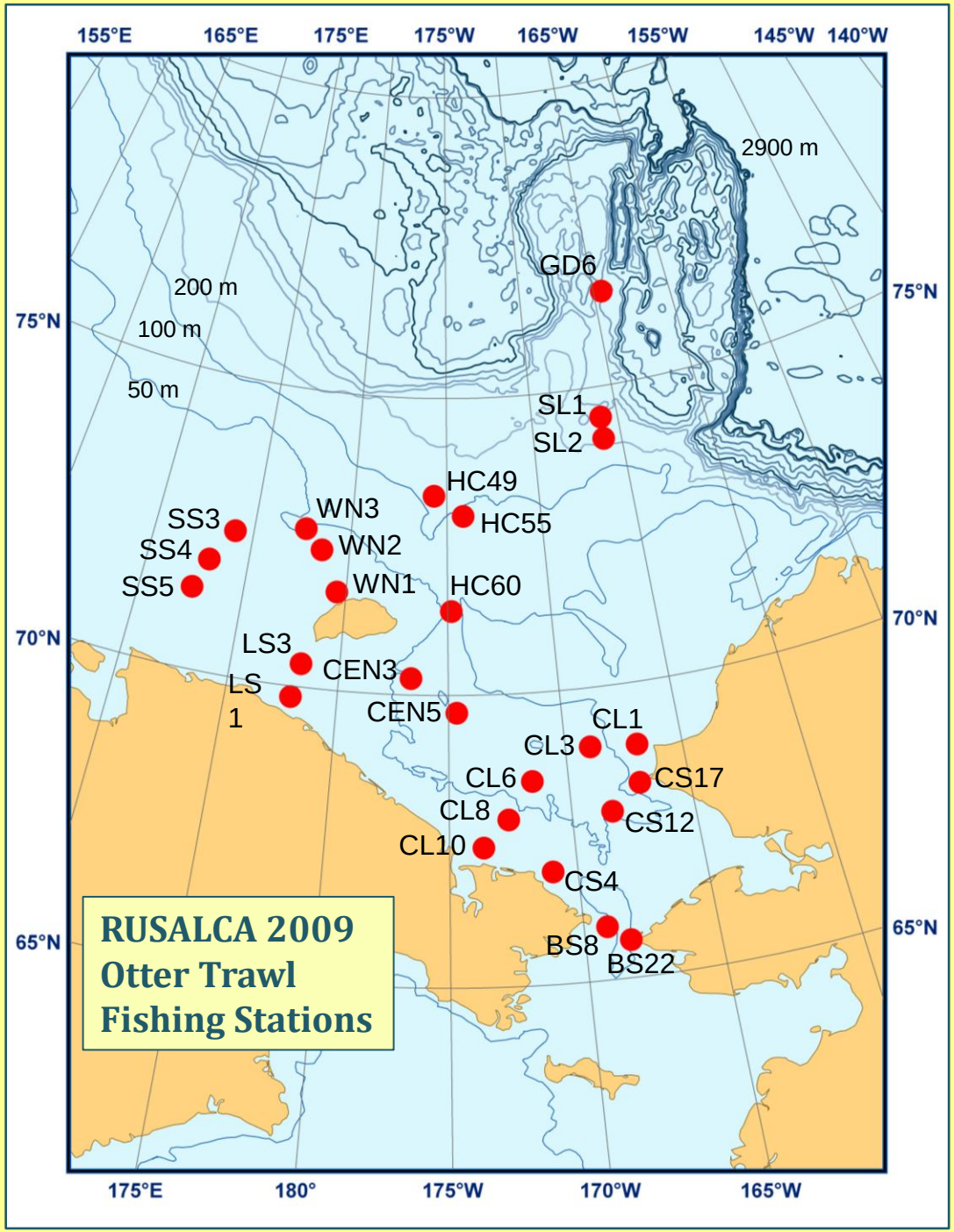
List of species and numbers of fish caught by RUSALCA 2009 otter trawl

Boreogadus saida	3859
Gymnocanthus tricuspis	2673
Myoxocephalus scorpius	1997
Lumpenus fabricii	1703
Hippoglossoides robustus	248
Lycodes polaris	197
Anisarchus medius	126
Ammodytes hexapterus	111
Icelus spatula	104
Triglops pingelii	98
Eleginus gracilis	96
Aspidophoroides olrikii	54
Liparis tunicatus	47
Mallotus villosus	40
Stichaeus punctatus	33
Liparis fabricii	28
Artediellus scaber	27
Gadus chalcogrammus	19
Hemilepidotus papilio	12
Podothecus veternus	12
Leptoclinus maculatus	10
Limanda sakhalinensis	8
Liparis bathyarcticus	8
Artediellus atlanticus	7
Lycodes palearis	7
Arctogadus glacialis	6
Liparis gibbus	5
Gymnelus hemifasciatus	4
Lycodes adolfi	4
Lycodes seminudus	4
Enophrys diceraus	3
Lycodes raridens	3
Pholis fasciata	3
Reinhardtius hippoglossoides	3
Trichocottus brashnikovi	3
Eumesogrammus praecisus	2
Gasterosteus aculeatus	2
Limanda aspera	2
Nautichthys pribilovius	2
Triglops nybelini	2
Careproctus reinhardti	1
Clupea pallasii	1
Cottunculus microps	1
Icelus sp.	1
Limanda proboscidea	1
Lycodes mucosus	1



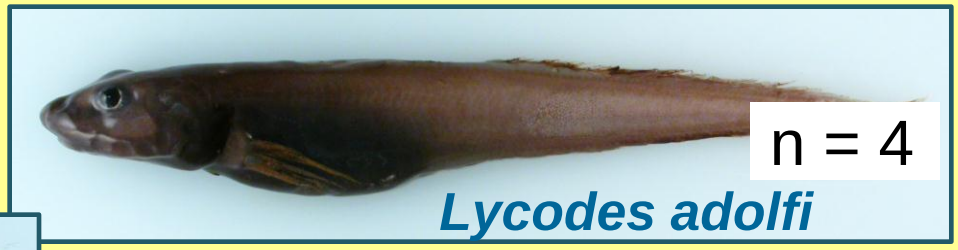
Recommendation: Make one tow with the otter trawl at each of the stations sampled in 2009, as time and other factors allow

Arctogadus glacialis
Polar Cod

Cottunculus microps
Polar Sculpin

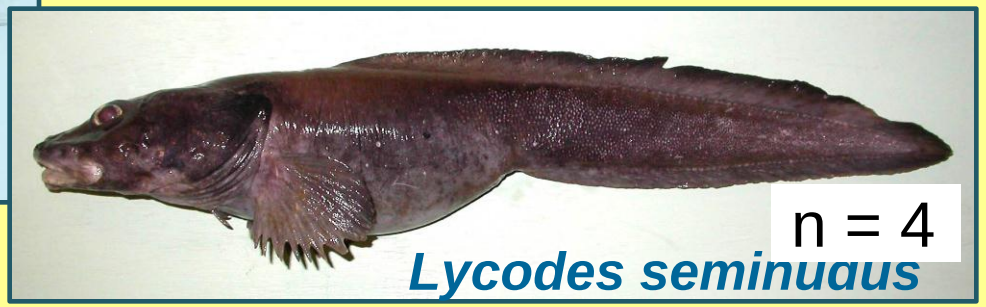
Careproctus reinhardti
Sea Tadpole

Artediellus atlanticus
Atlantic Hookear Sculpin



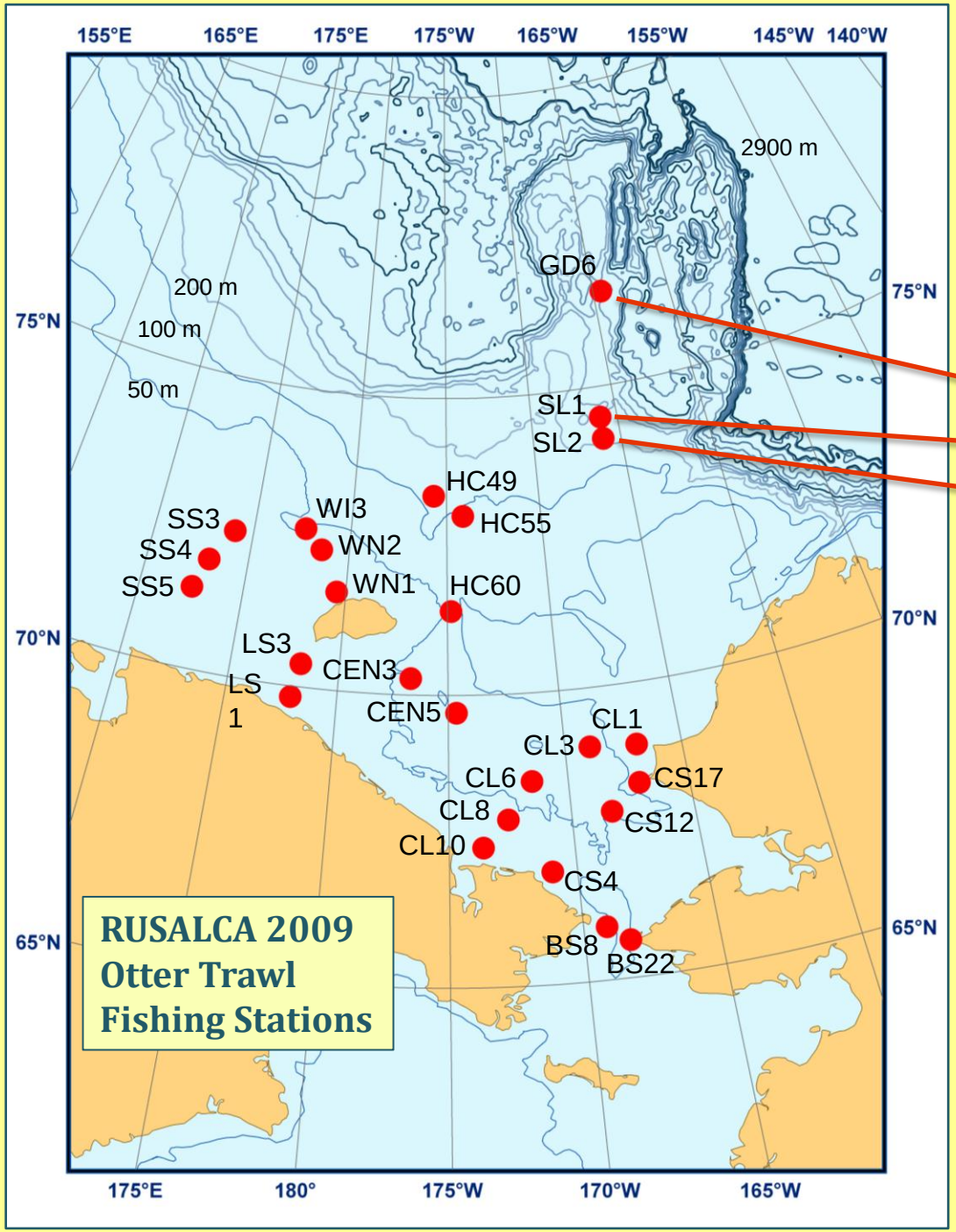
Lycodes adolfi
Adolf's eelpout

Triglops nybelini
Bigeye Sculpin



Lycodes seminudus
Longear Eelpout

7 Species Found Only in Chukchi



Recommendation:
Make additional tows with the otter trawl at the three northernmost, deep stations:

GD6

SL1

SL2

Aspidophoroides monopterygius

Leptoclinus maculatus
Daubed Shanny

Gymnelus viridis
Fish Doctor

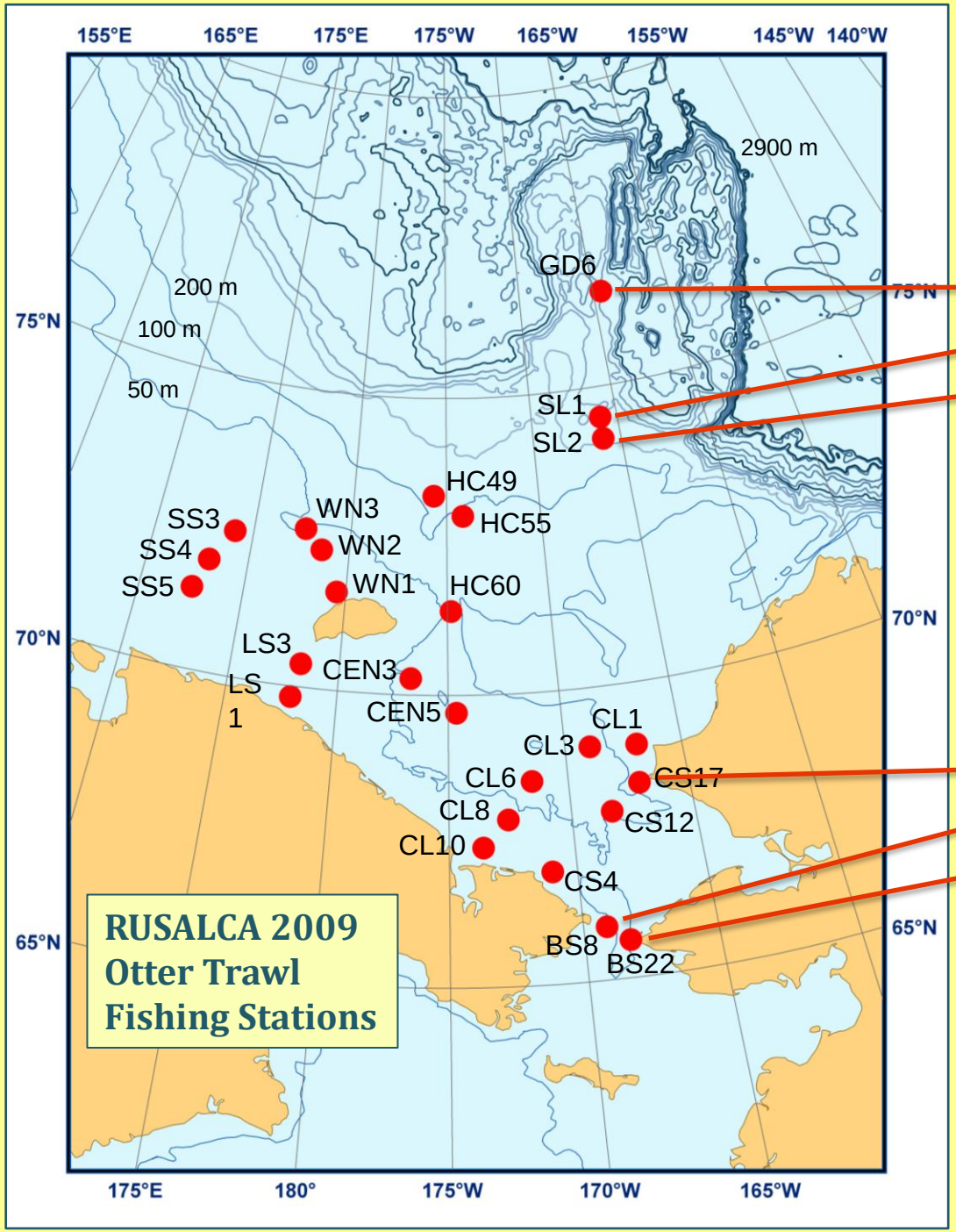
Blepsias bilobus

Lycodes turneri
Estuarine Eelpout

Limanda sakhalinensis
Sakhalin Sole

Trichocottus brashnikovi
Hairhead Sculpin

A few of the uncommon species in RUSALCA study area



GD6

SL1

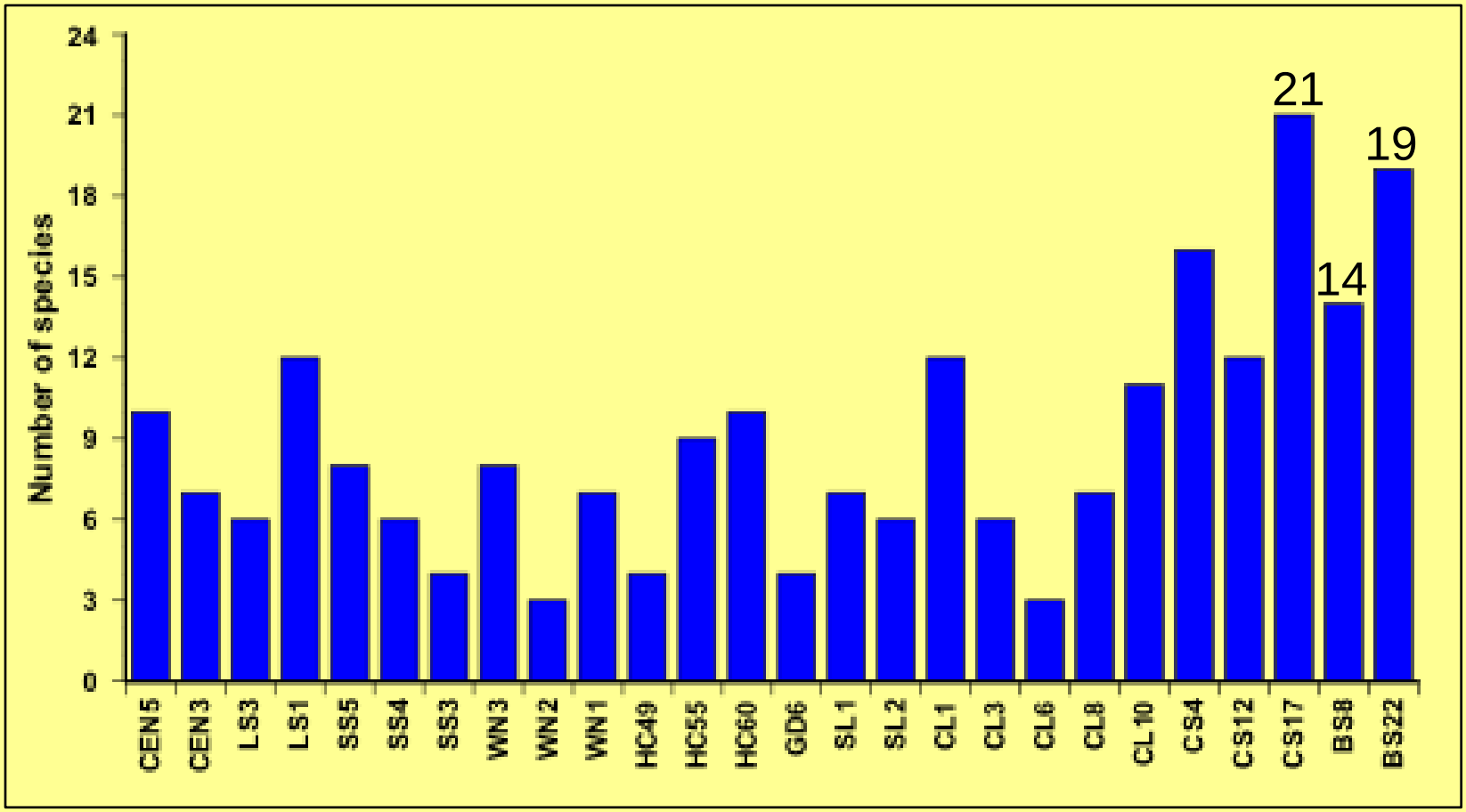
SL2

Recommendation:
Make additional tows with the otter trawl at three biodiversity hotspots :

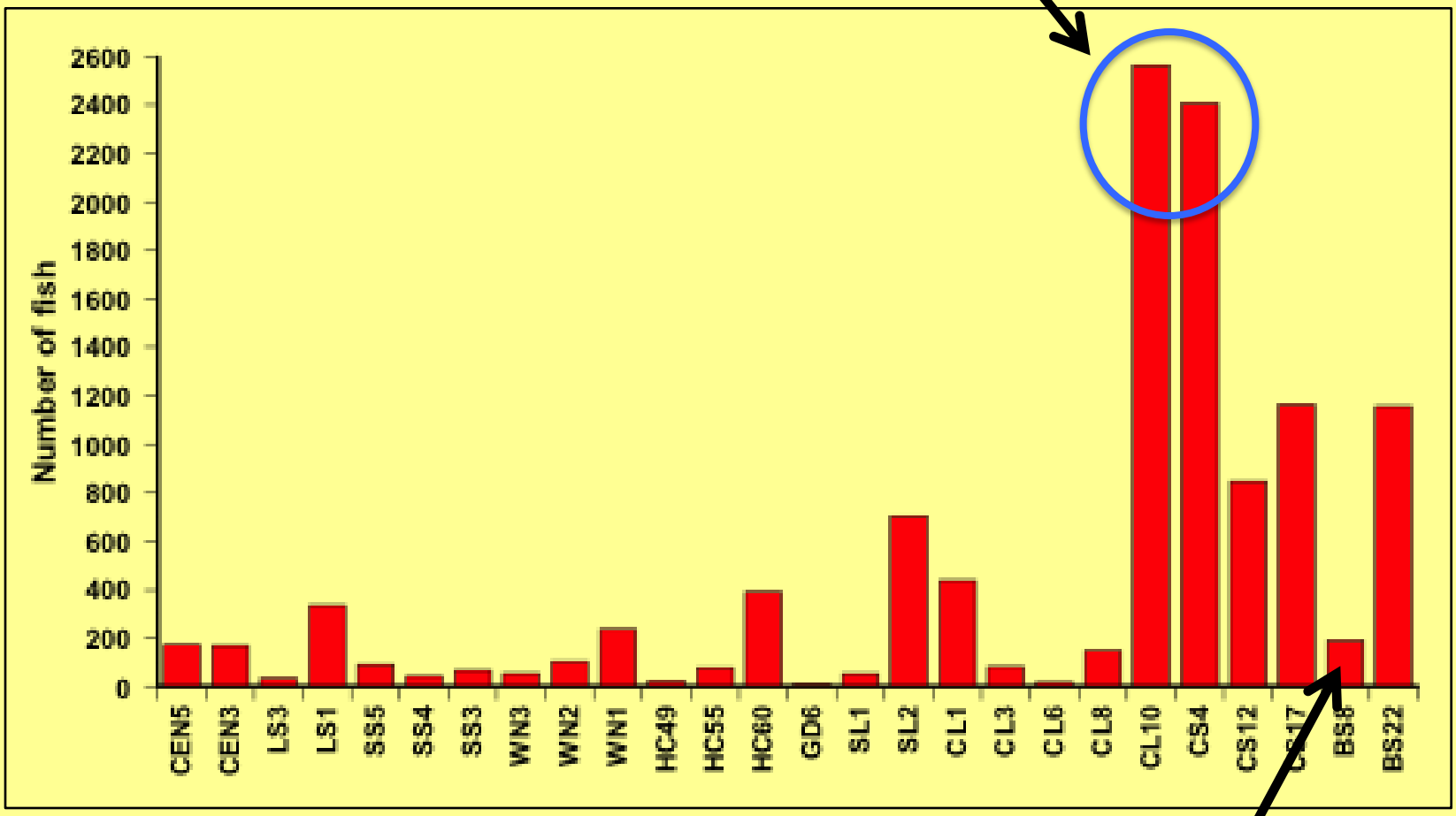
CS17

BS8

BS22


Number of species
0
3
6
9
12
15
18
21
24
CEN5
CEN3
LS3
LS1
SS5
SS4
SS3
WN3
WN2
WN1
HC49
HC55
HC60
GD6
SL1
SL2
CL1
CL3
CL6
CL8
CL10
CS4
CS12
CS17
BS8
BS22
21
14
19

Too many fish at CS4 & CL10 !



BS8: Few fish but many species

Lycodes raridens
Marbled Eelpout

2 stations in Long Strait
(LS1, LS3)

Leptoclinus maculatus
Daubed Shanny

1 station NW of Wrangel Island (WN1)
and 1 in Long Strait (LS1)

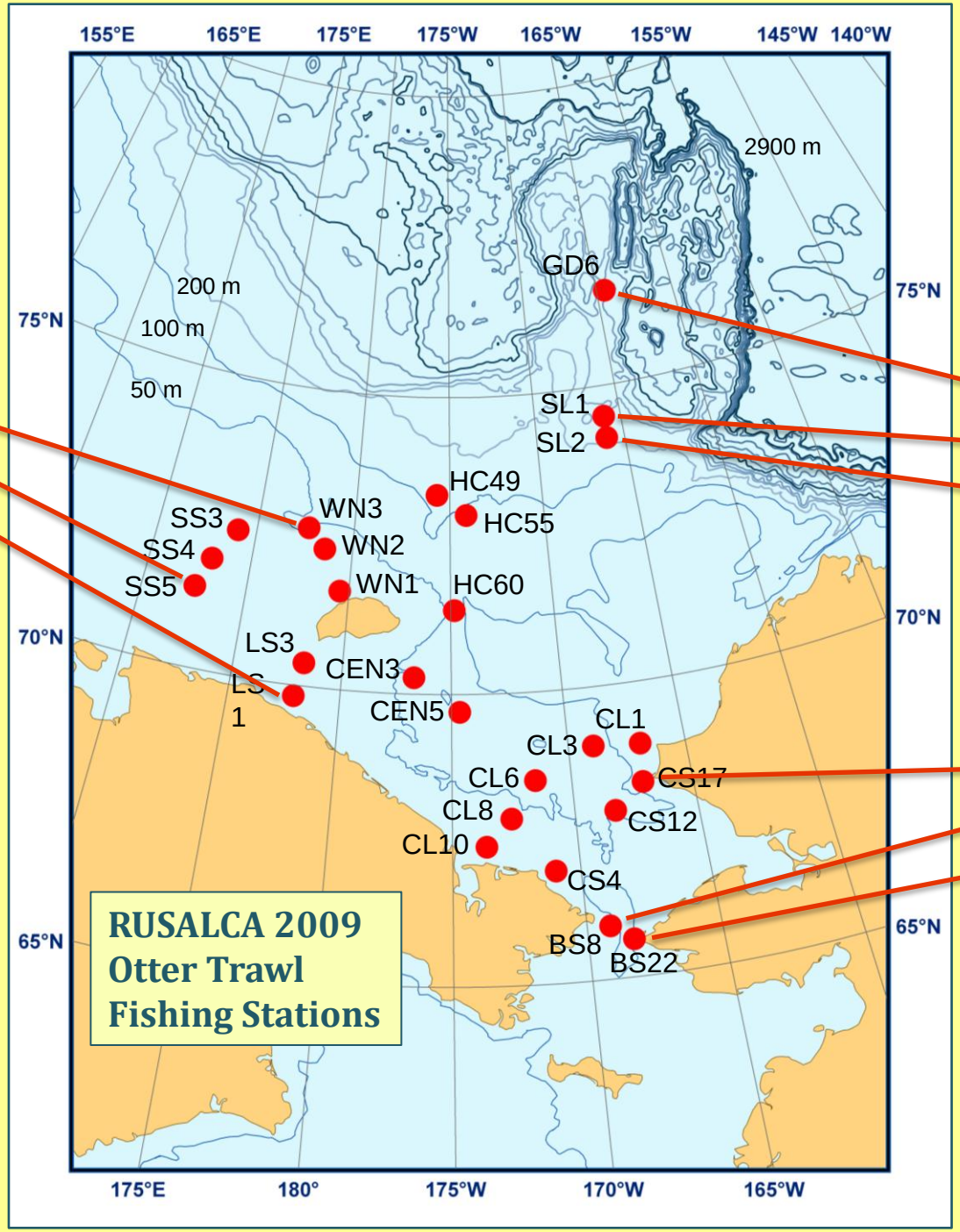
Hippoglossoides robustus
Bering Flounder

1 station in Long Strait (LS1) and 1 on
outer shelf W of Wrangel Island (SS5)

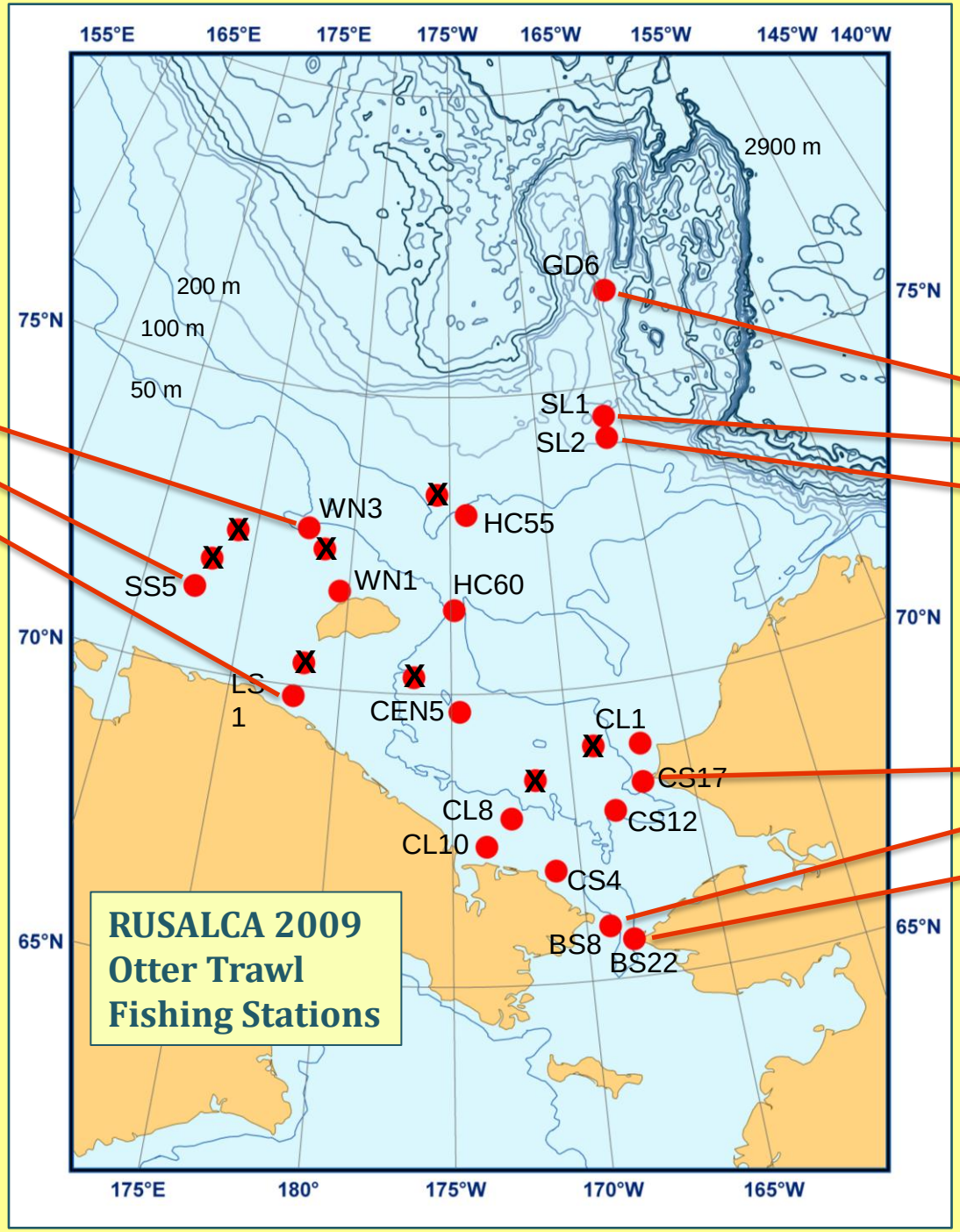
First records for East Siberian Sea

Recommendation:
Tow twice at three sites
in the East Siberian Sea:

WN3
SS5
LS1



GD6
SL1
SL2
CS17
BS8
BS22



WN3
SS5
LS1

If there will not be enough time, do not sample with otter trawl at 8 stations:

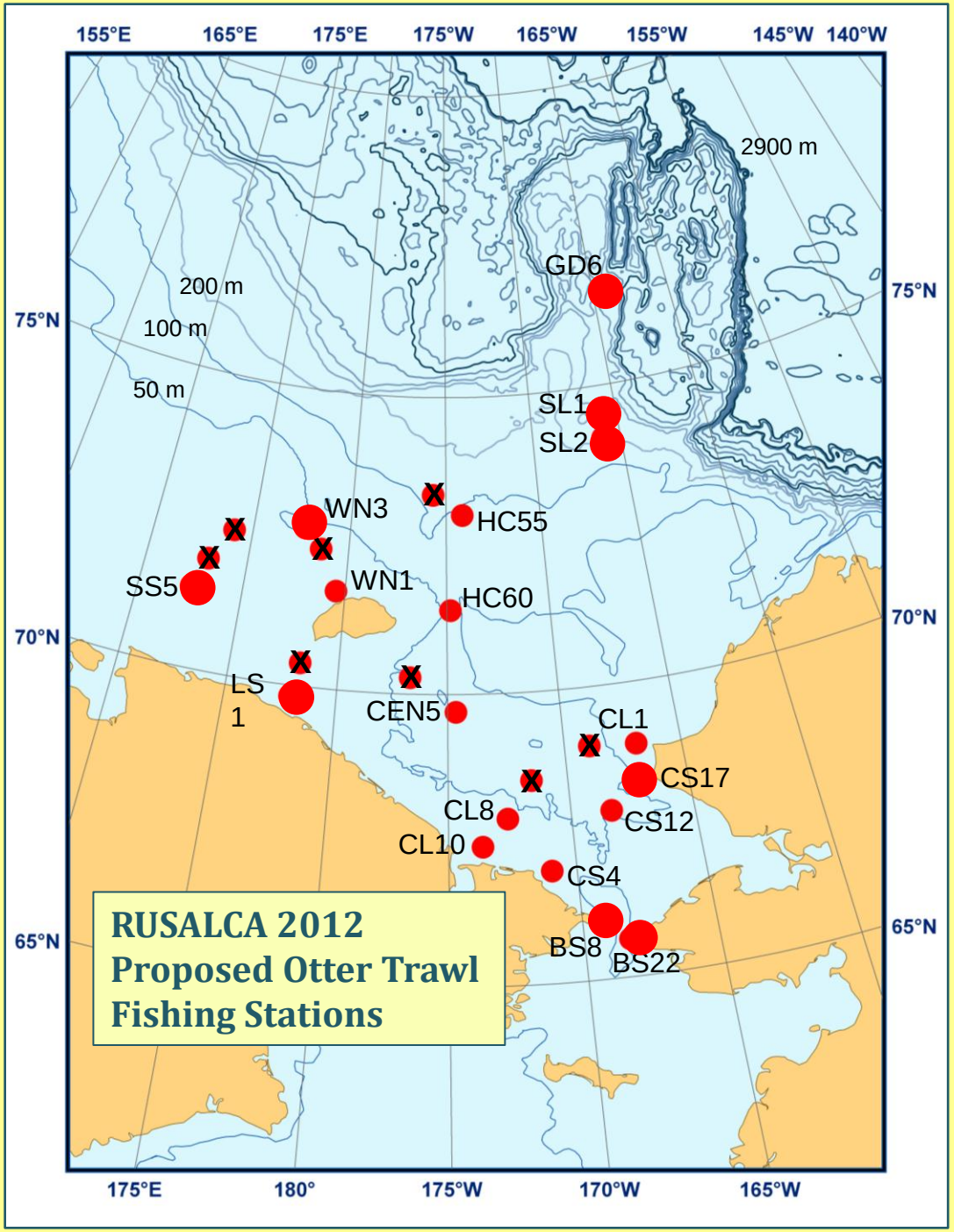
SS3
SS4
LS3
WN2
HC49
CEN3
CL3
CL6

GD6
SL1
SL2
CS17
BS8
BS22

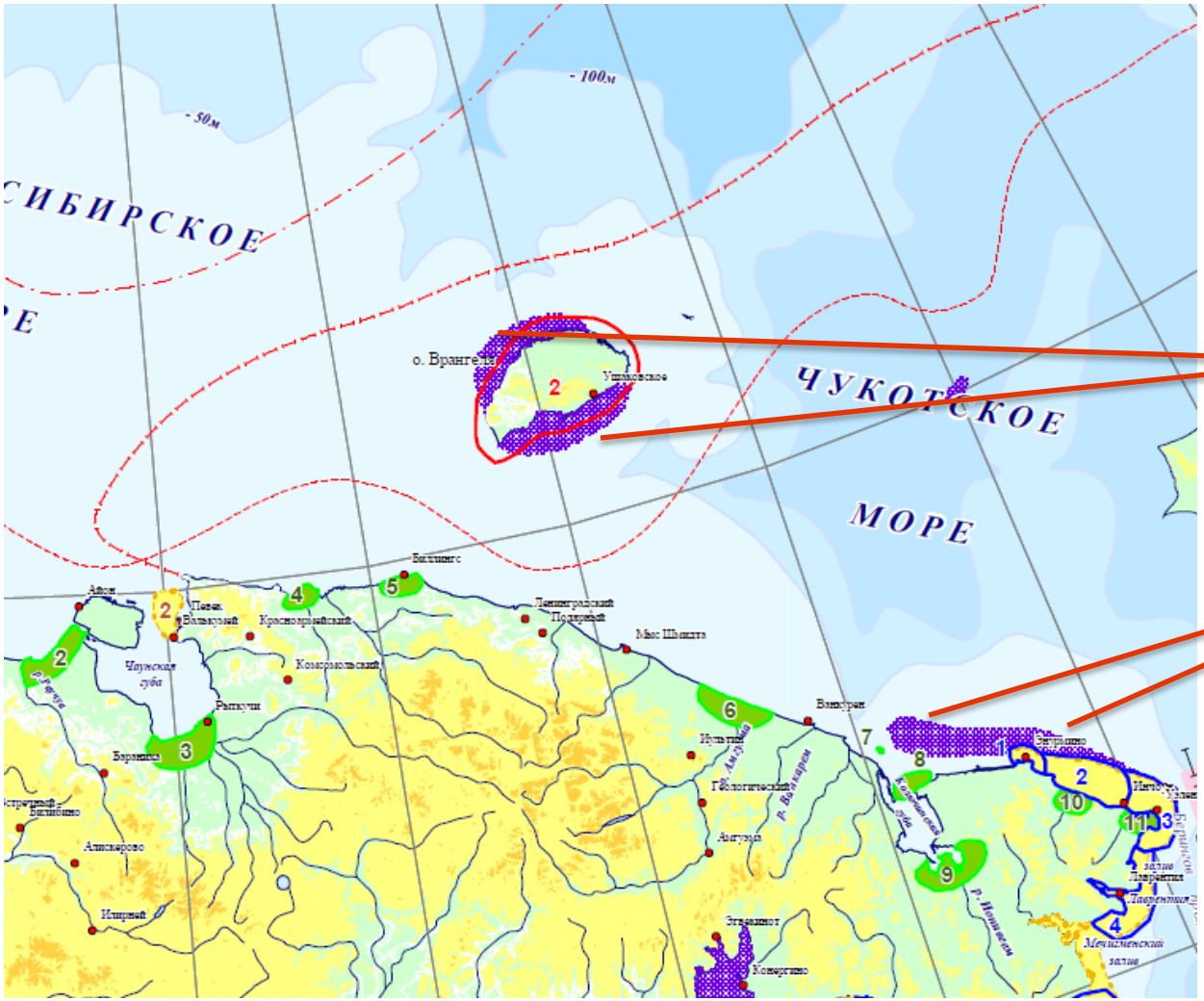
Summary so far:

Deploy otter trawl twice at 9 stations, once at 9 other stations.

To make time for the additional tows, do not deploy otter trawl at 8 other stations.



Suggestions to the sample grid, the Chukchi Sea

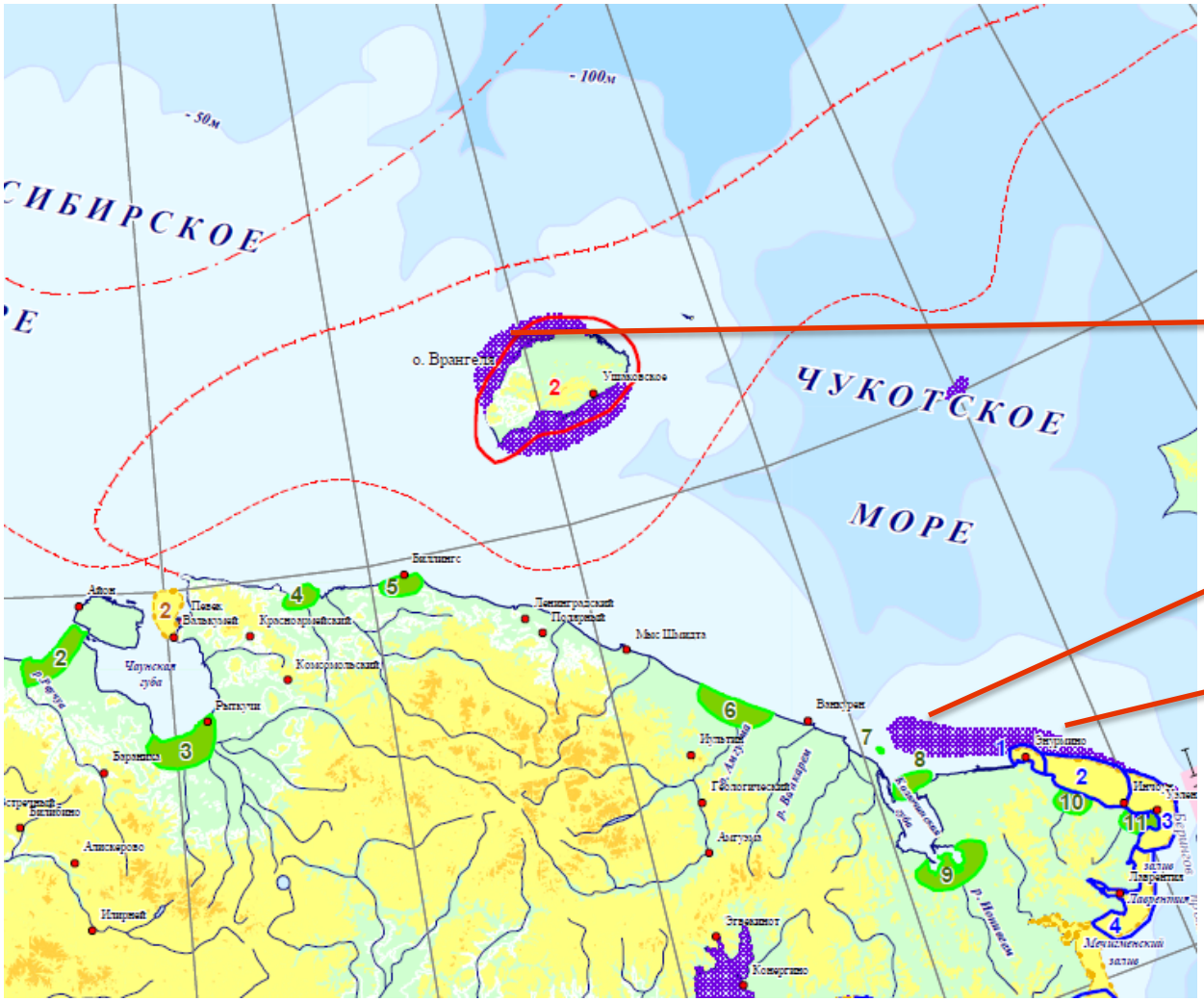


polynia areas

Off north and south coasts of Wrangel Island

Chukotsk coast off Kolyuchinskaya Bay and eastwards

Suggestions to the sample grid, the Chukchi Sea



polynia areas

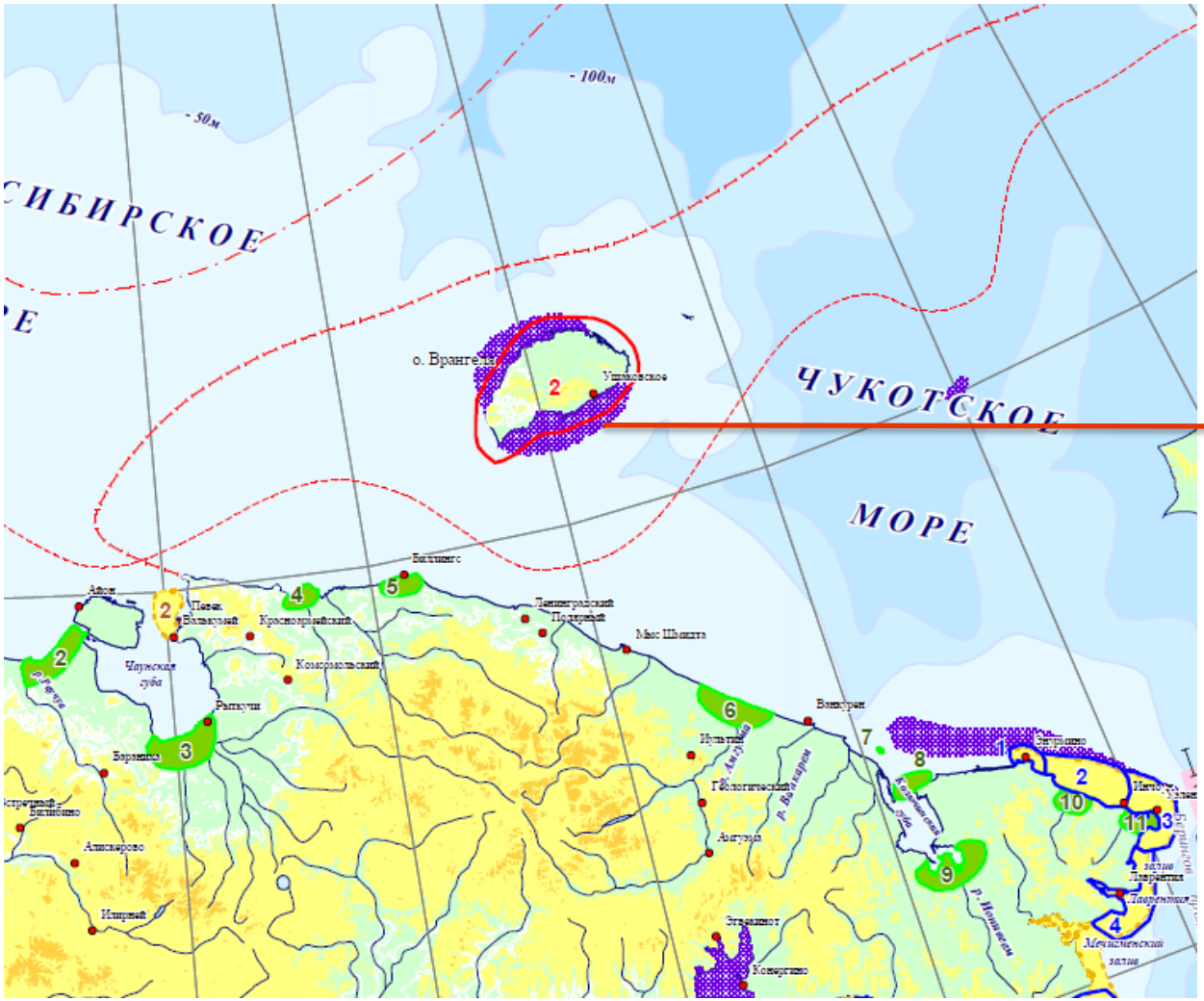
In 2009, three of our stations were in the polynia areas:

WN1

CL10

CS4

Suggestions to the sample grid, the Chukchi Sea



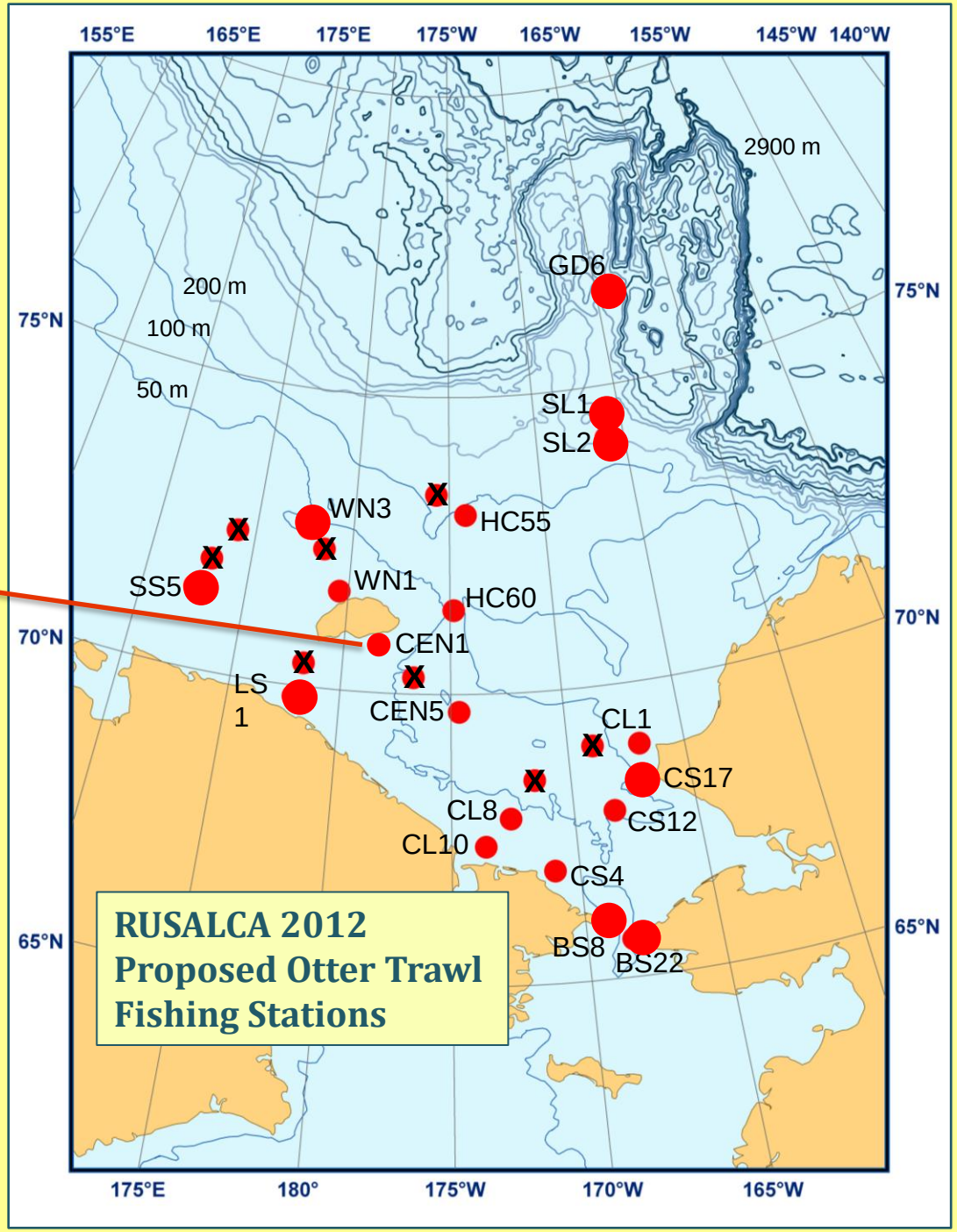
polynia areas

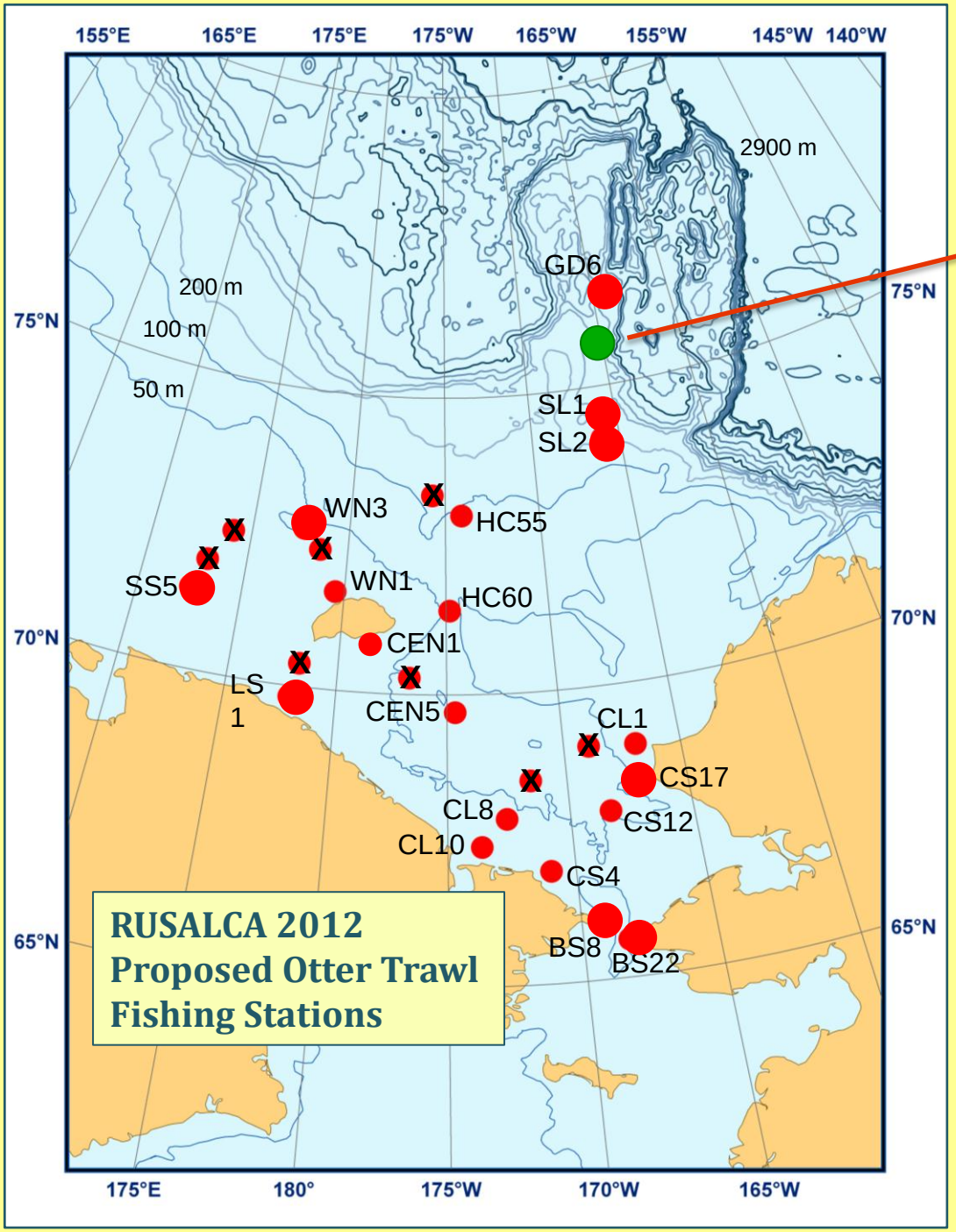
We have a station off the south coast of Wrangel Island which we did not sample in 2009:

CEN1

Recommendation:
Deploy the otter trawl once to sample the Wrangel Island south coast polynya area:

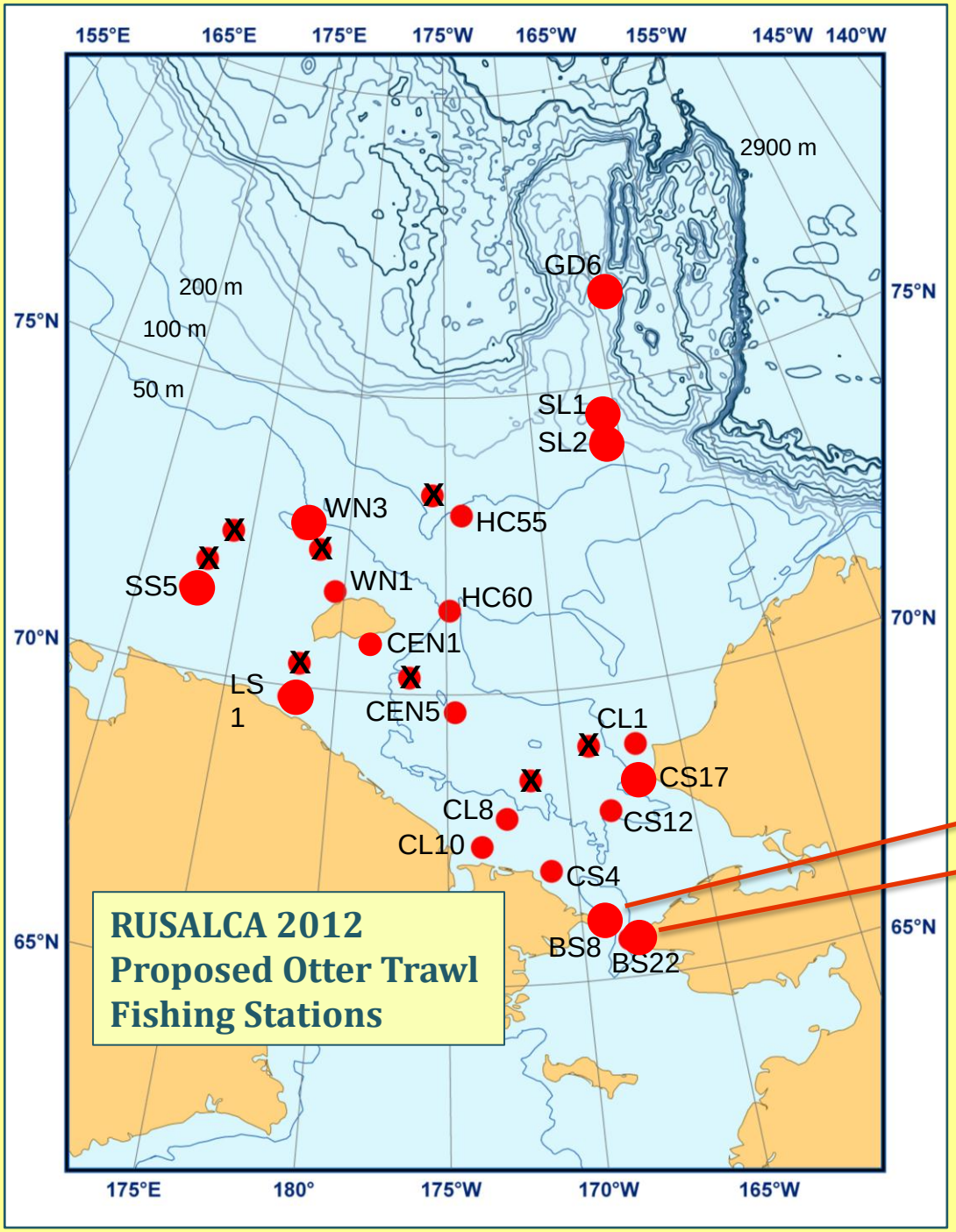
CEN1





Tow twice at new station ~400–500 m

Summary:
Trawl twice at 10 stations.
Trawl once at 10 stations.
Total deployments = 30
Deployments in 2009 = 28



Final recommendation: Fish at the Bering Strait stations first, on the way north, rather than waiting until the end.

BS8

BS22

From Natalia's presentation:

- **. . . include the biomass measurements of the otter trawl catch (total and individual for each fish species) into the program**
- **It should allow to calculate not only abundance but also biomass for the otter trawl fish to compare different stations / areas / bioindicator species to make the base for future comparisons**

The ecology team weighs specimens and makes those assessments using the beam trawl catch. Biomass is not part of the original or current RUSALCA fish diversity proposal or objectives and trying to incorporate the necessary protocol for biomass into the already overfilled agenda for the diversity work with the otter trawl catch would be counterproductive for the diversity program.

Suggestions to ichthyologic program

- **As the number of ichthyologists on board increases twice, it is reasonable to make two otters trawls on each station**

There seems to be a misunderstanding, because there is no increased demand for utilization of the catch. Ichthyologists from the same institutions will be there to collect fish as we saved specimens for in 2004 and 2009. The only difference is that the curator of the UAMN fish collection, Andres Lopez, will be there to collect for the UAMN, whereas I preserved specimens and took tissue samples for the UAMN in 2004 and 2009.

Suggestions to ichthyologic program

- **The double trawling is usual practice in the ecological assessment monitoring programs**

This would be a consideration for the ecology team and beam trawl.

- **It allows to increase the level of significance and accuracy of the data estimation**

(Same comment.)

- **One trawl catch can be used to collect molecular samples, which needs immediate processing. Another trawl catch can be used to measure weight and fish quantity**

This too goes against the objectives of the fish diversity proposals. Wherever two otter trawls are done, the catches need to be combined. The nets do not catch large enough samples of the uncommon species that each tow is guaranteed to catch the same range of species and variations present. As well, species identifications for both tows should be made with both the Russian and the U.S. diversity teams' PIs collaborating.

Suggestions to ichthyologic program

- **The number of fish to collect for 4 museums will increase ca. twice, and concurrence will decline**

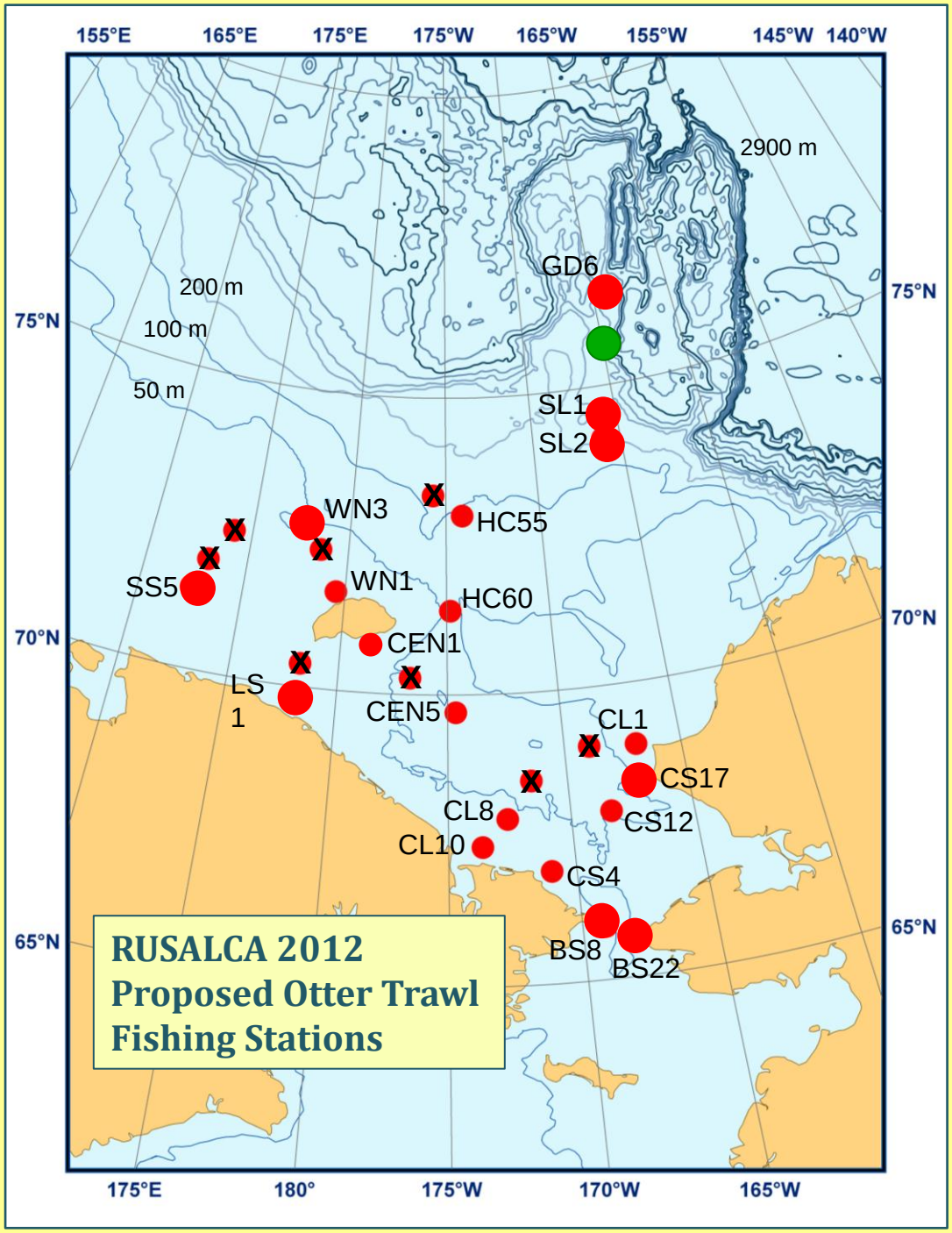
The number of fish needing to be saved and archived from the otter trawl will not double. Only 3 museums are involved, same as in 2009.

- **Time for the second fish trawling is only ca. 40 minutes more on each station**

Cleaning, arranging, deploying, fishing, and retrieving the net usually takes more than 40 minutes. There is also deck sorting time and lab time to consider.

- **Afterwards we may combine results for two trawls in any aspects**

Afterwards? My recommendation is to combine the catch from both tows and process them on board. Species identifications should be determined by both Natalia and I collaborating, as in 2009. We indicate any differences of opinion in the catch record.


155°E
165°E
175°E
175°W
165°W
155°W
145°W
140°W
75°N
70°N
65°N
2900 m
200 m
100 m
50 m
GD6
SL1
SL2
WN3
HC55
SS5
WN1
HC60
CEN1
LS
1
CEN5
CL1
CS17
CL8
CS12
CL10
CS4
BS8
BS22
175°E
180°
175°W
170°W
165°W
RUSALCA 2012
Proposed Otter Trawl
Fishing Stations