

# Survey Simulation Example

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## Survey Parameters

Just so you can keep track in the document, we return the survey parameters that you set for this simulation.

### Survey Simulation

So now we can review the input data we have for our survey. First we will look at some figures. First off, lets take a look at our survey area, included in this figure are the North Atlantic Fishery Organization (NAFO) subareas that are the basis for the NAFO stratification, and the bathymetry of the region, which is used as the basis of the depth stratification (Figure 1).

Now we can also show the distribution of the biomass in the area. If 500 is greater than 1 then we'll show two or three realizations from the models depending on how many simulations we ran. First we show the biomass distribution with the random survey stations overlain (Figure 2).

Next we show the biomass distribution with the NAFO survey stations and NAFO strata overlain (Figure 2).

Finally, we show the biomass distribuiton with the Depth survey stations and Depth stratification overlain (Figure 4)

**Now we can compare the random survey estimates to the depth and NAFO stratified surveys.**

Table 1: A Table of your input values for the current run of your simulation

Parameter	Value
Number of Tows	20
Total Biomass	100000 tonnes
Catchability	0.3
Area swept by a tow	10000 m <sup>2</sup>
Number of Simulations	500
Biomass distribution	NAFO

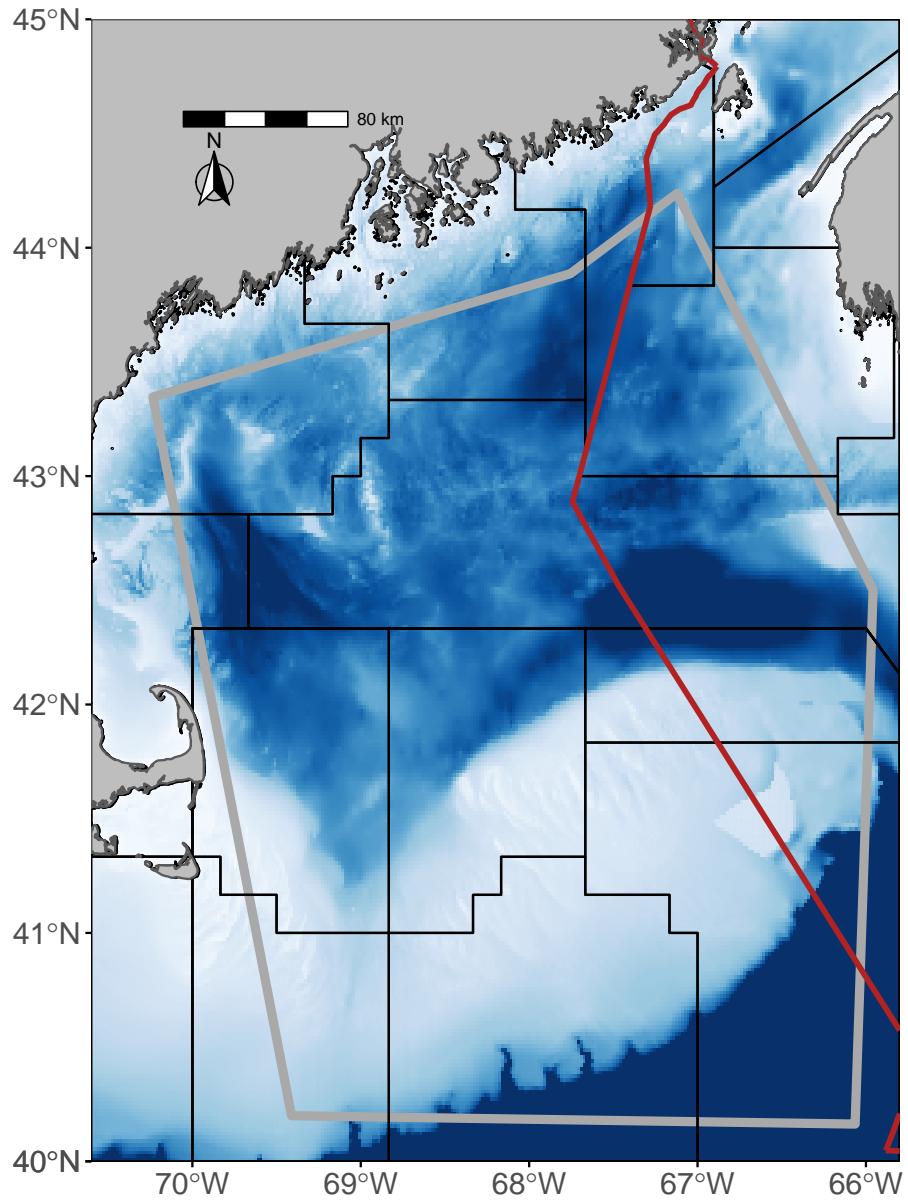


Figure 1: The assessment area for the Dusky Scalloped Shark (*Dustios maximus*) is outlined by the thick grey line. The thin black lines are the NAFO subareas in the region. The red line divides shows the division between the economic exclusive zone (EEZs) for Canada and the United States. The bathymetry in the region is also shown.

## Simulations 1, 2, 3, and 500

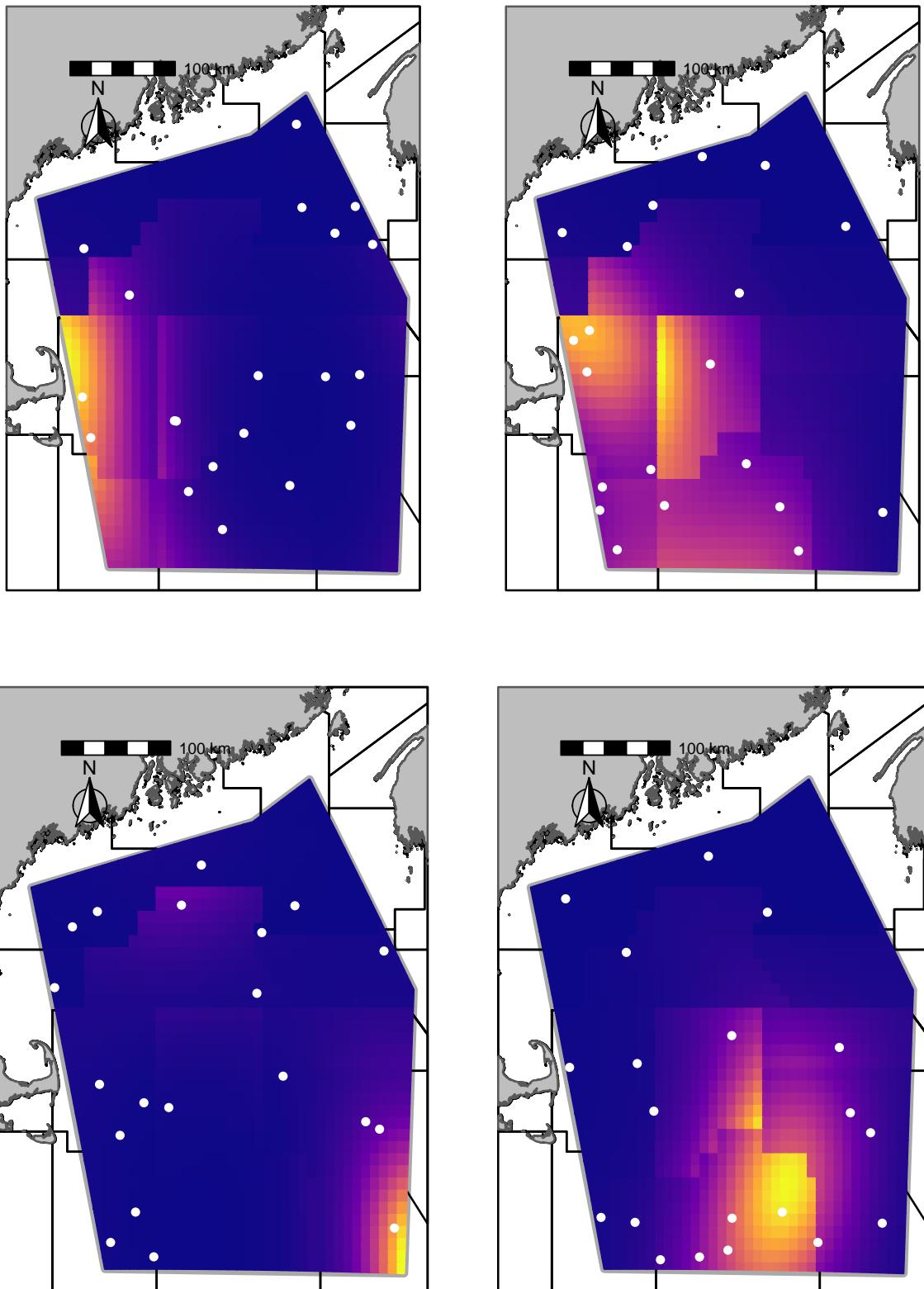


Figure 2: Biomass distribution with the random survey stations overlain  
3

## Simulations 1, 2, 3, and 500

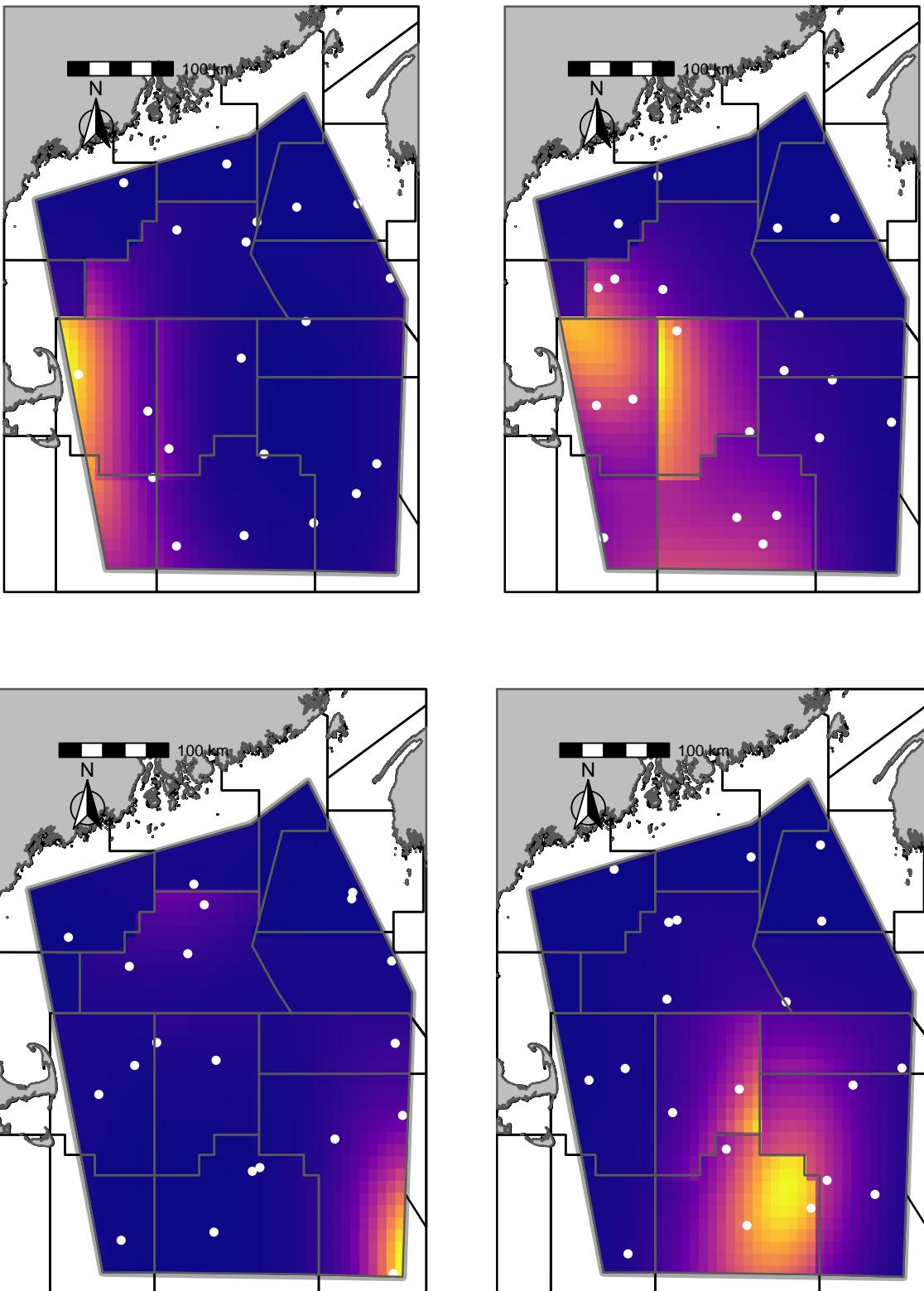


Figure 3: Biomass distribution with the NAFO survey stations and NAFO stratification polygons overlain  
4

## Simulations 1, 2, 3, and 500

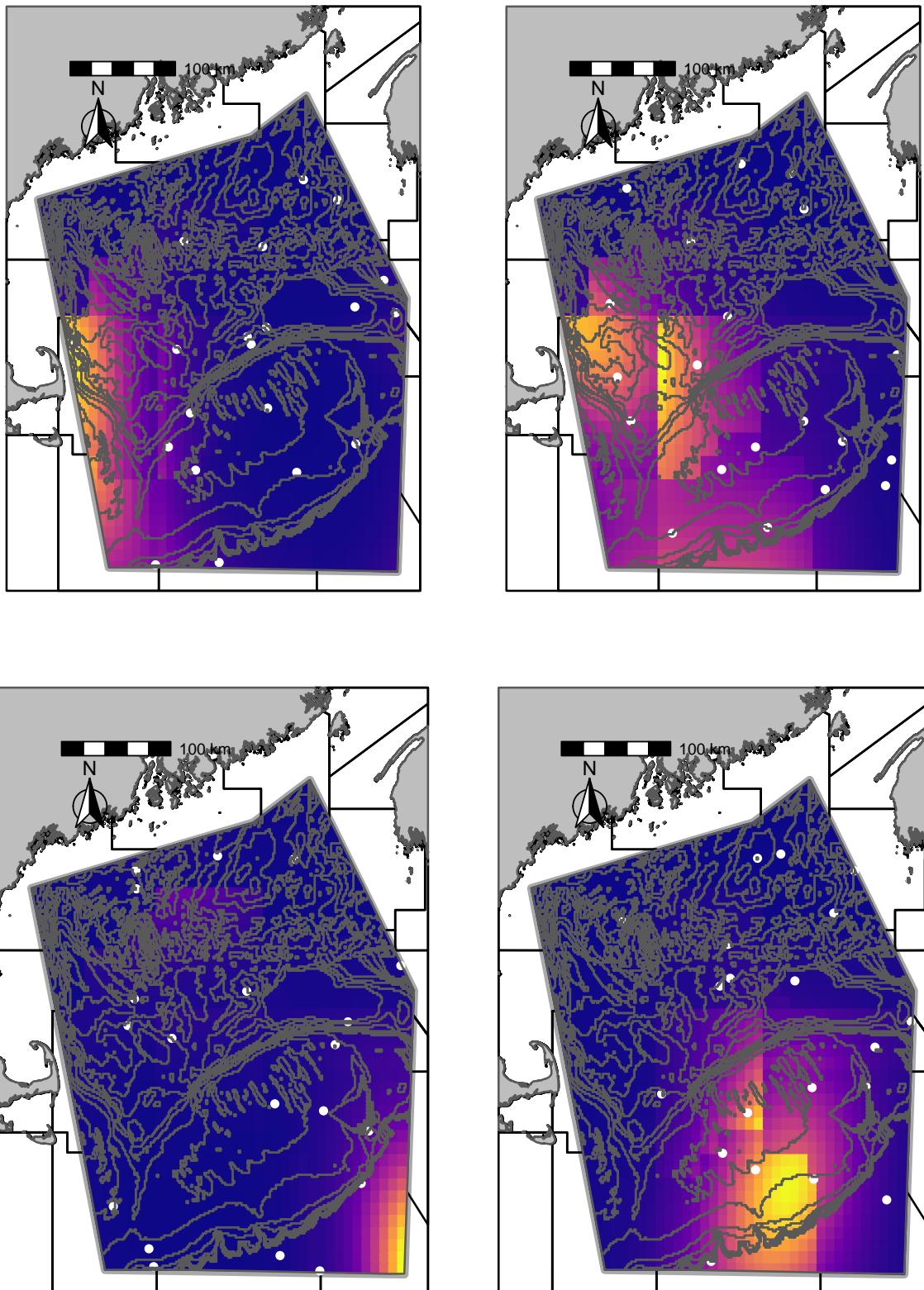


Figure 4: Biomass distribution with the Depth survey stations overlain and the Depth stratification polygons overlain.

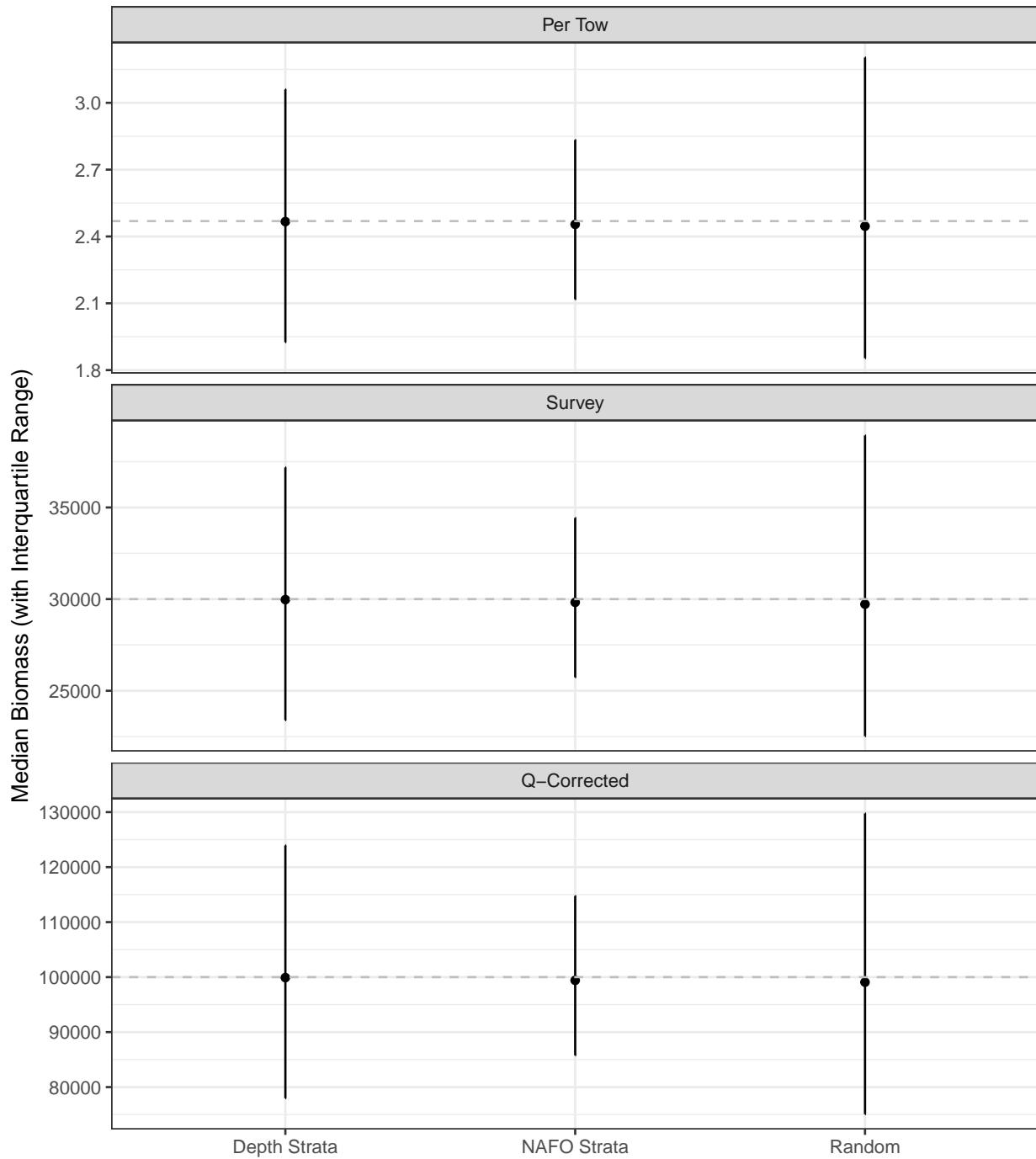


Figure 5: Biomass estimates from the 3 different survey sampling schemes. When the number of simulations run = 1 this provides the mean and 95% CI from that simulation. When the number of simulations is >1 and < 10 the mean biomass for each simulation is shown. When the number of simulations is  $\geq 10$  we show the median biomass of the simulations along with the interquartile range of the biomass from the simulations