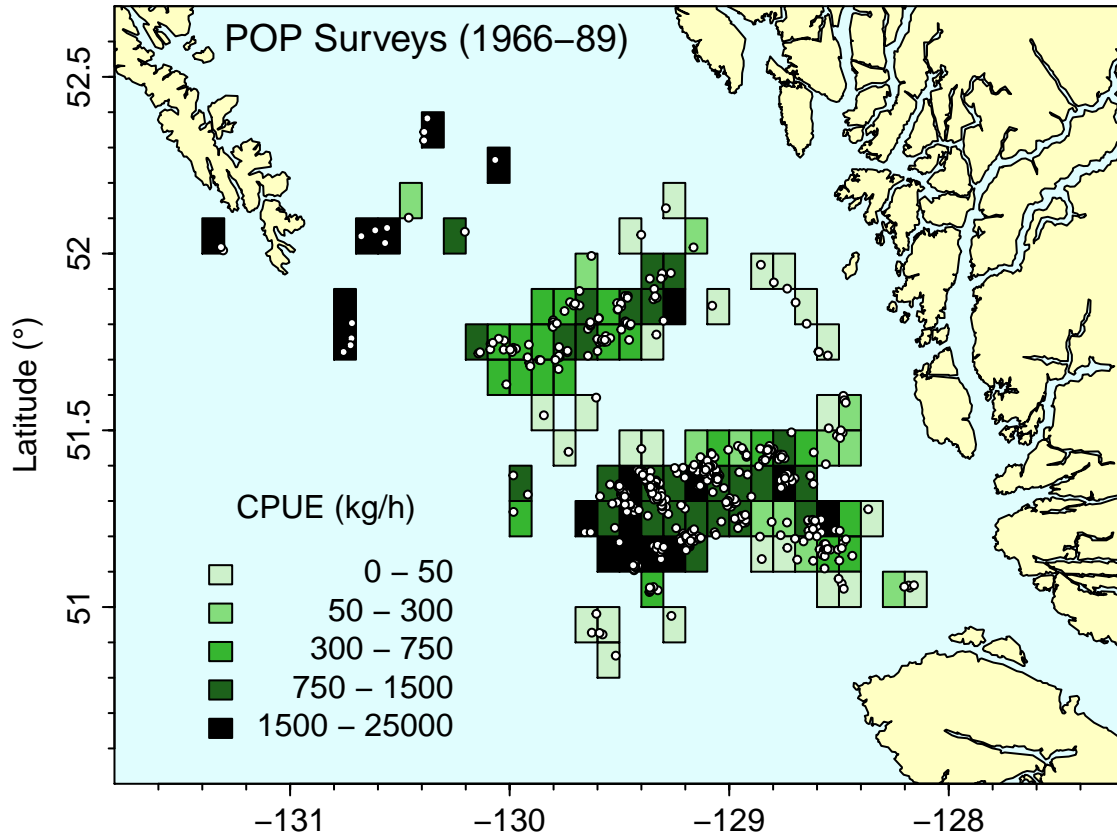**PBS Mapping Figure 9**

```
.PBSfig09()
```


Data Import

```
setup_catch <- read_csv("data/data2/Shelf_Flatfish_Haul_Catch.csv", guess_max = 10000)
setup_catch <- setup_catch %>%
  filter(CRUISE>= 199999 & CRUISE<201900,
         REGION=="BS",
         START_LATITUDE<65) %>%
  mutate(YEAR=floor((CRUISE/100)))
setup_catch <- setup_catch %>% mutate(EID = seq(1:nrow(setup_catch)))
colnames(setup_catch)[14] <- "Y"
colnames(setup_catch)[16] <- "X"
#colnames(setup_catch)[1] <- "EID" doesn't work to change
```

My Function

```
makin_plots <- function() {
  clr <- .PBSclr(); # load color scheme
```

```r
data(nepacLL, envir=sys.frame(sys.nframe())); # load map data
events <- as.EventData(setup_catch, projection = "LL", zone=3)  #make catch data event data
# make bounding box
xl <- c(-179, -157.9);
yl <- c(54.1, 65.1)
# create grid
grid_pbs   <- makeGrid(x=seq(-179, -157.9,.5), y=seq(54.1, 65.1,.5),
                     projection="LL", zone=3)    # UTM Zones, Bering Sea is 1-4
# find Event Data (hauls) in grid and calculate means
locData<- findCells(events, grid_pbs)
events$Z <- events$GEAR_TEMPERATURE # gear_temp is simple to start with
pdata  <- combineEvents(events, locData, FUN=mean) # summarise step
 # set breakpoints in temps and assign colors
brks   <- c(-1.7,1.4,4.5,7.5,10.7,13.8);
lbrks <- length(brks)
cols   <- c(clr$lettuce, clr$moss, clr$irish, clr$forest, clr$black) #assign colors to groups
pdata  <- makeProps(pdata, brks, "col", cols) # append colors column
par(mfrow=c(1,1),omi=c(0,0,0,0))
#------Plot-the-figure------
plotMap(nepacLL,
        col=clr$land,
        bg=clr$sea,
        xlim=xl,
        ylim=yl,
        tck=-0.015,
        mgp=c(2,.5,0),
        cex=1.2,
        plt=c(.08,.98,.08,.98))
addPolys(grid_pbs, polyProps=pdata)
for (i in 1:nrow(events)) {
  # plot one point at a time for clarity (seems slow?)
  points(events$X[i],
         events$Y[i],
         pch=16,
         cex=0.50,
         col=clr$white)
  points(events$X[i],
         events$Y[i],
         pch=1,
         cex=0.55,
         col=clr$black)
}
# title
yrtxt  <- paste("(",min(events$YEAR),"-",
                substring(max(events$YEAR),3),")",sep="")
text(xl[1]+0.1,
     yl[2]-1,
     c("Eastern Bering Sea Hauls\n\n\n", yrtxt),
     cex=1.2,
     adj=0)
# add a legend; right-justify the legend labels
temp <- legend(x=xl[1]+1,
               y=yl[1]+2,
```

```
                legend = rep(" ", 5),
                text.width=strwidth("-1.7 to 13.8 degrees C"),
                bty="n",
                fill=cols)
  text(temp$rect$left + temp$rect$w,
       temp$text$y,
       pos=2,
       paste(brks[1:(lbrks-1)],
             brks[2:lbrks],
             sep=" - "))
  text(temp$rect$left+temp$rect$w/2,
       temp$rect$top,pos=3,
       "Gear Temperatures",
       cex=1);
}
```
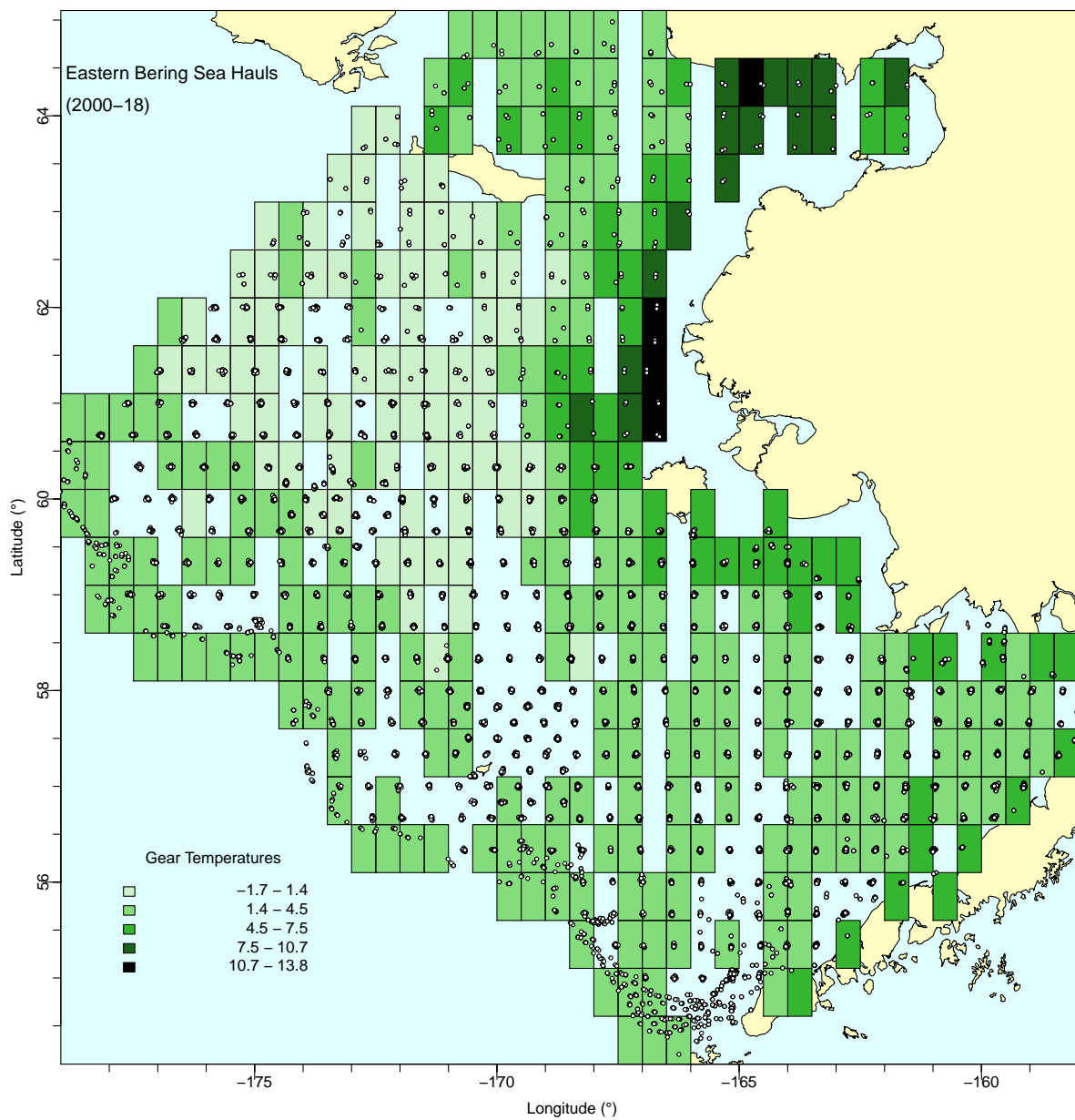
EBS Data Figure 9

```
makin_plots()
```

Eastern Bering Sea Hauls
(2000–18)

Gear Temperatures

- −1.7 – 1.4
- 1.4 – 4.5
- 4.5 – 7.5
- 7.5 – 10.7
- 10.7 – 13.8

Latitude (°)

Longitude (°)

(Something's wrong with the boxes, they should all have points)

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