

# Humpback Data Analysis

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## Goals of this study

Investigate the co-occurrence of humpback whales and vessel noise.

## Data

Acoustic data was collected from drifting acoustic recorders during the 2018 California Current Ecosystem survey. See [Simonis et al 2020](#) for more details. Data analyzed here includes CCES Drifts 10, 12, 13, 14, 16, 20.

## Combine Logs

The presence of humpback whales and ships were logged by 3 Seatech analysts, including Virginia Pearson, Audrey Bahnke, and Sarah Bahnke.

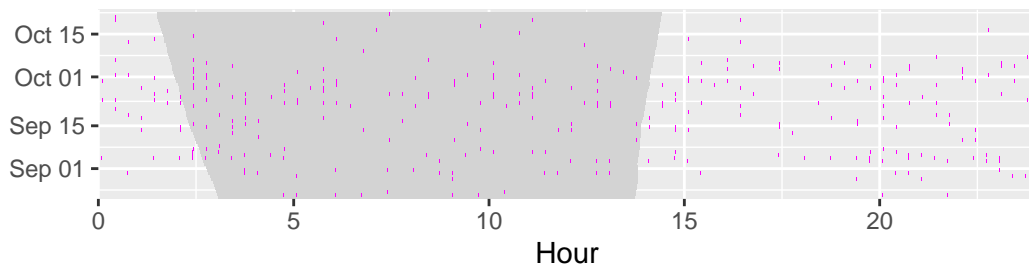
## Plots

### Diel Plot

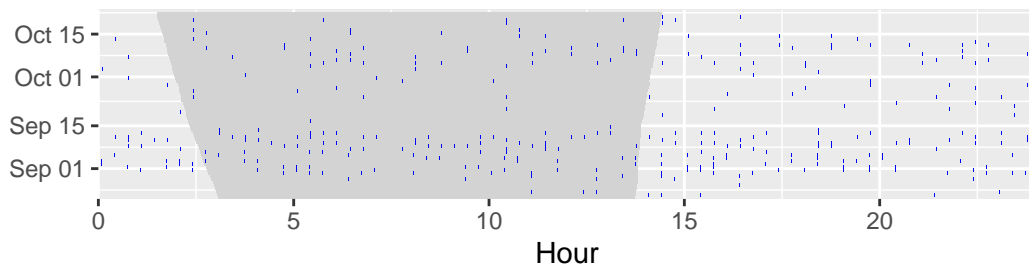
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#Define Figure Options
figtitle<-c('Drift-10','Drift-12','Drift-13','Drift-14','Drift-16','Drift-20')

MnColor = 'magenta'
ShipColor = 'blue'
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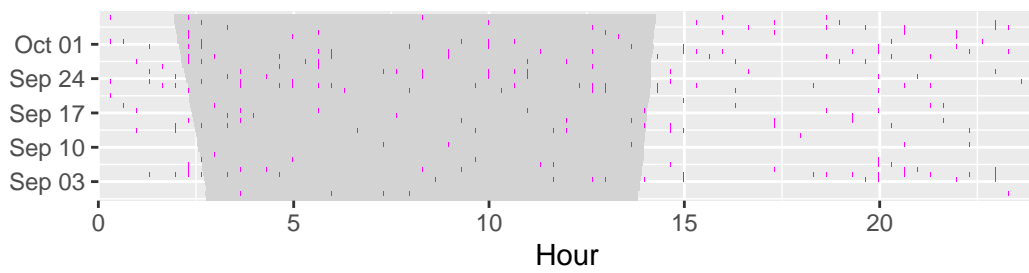
Drift-10: Humpback whales



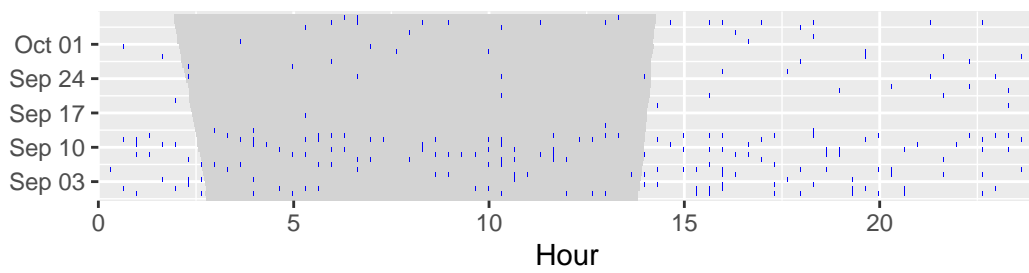
Drift-10: Ships



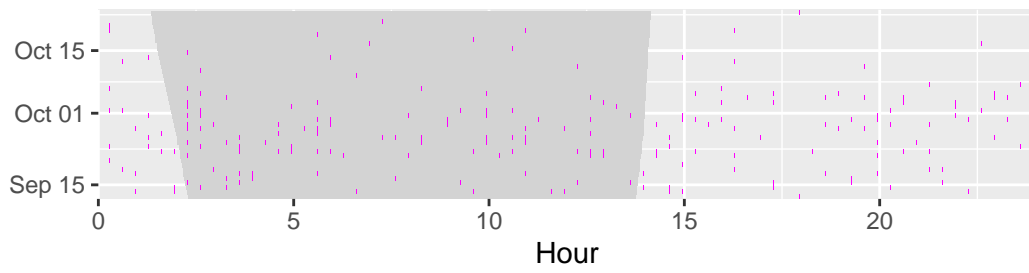
Drift-12: Humpback whales



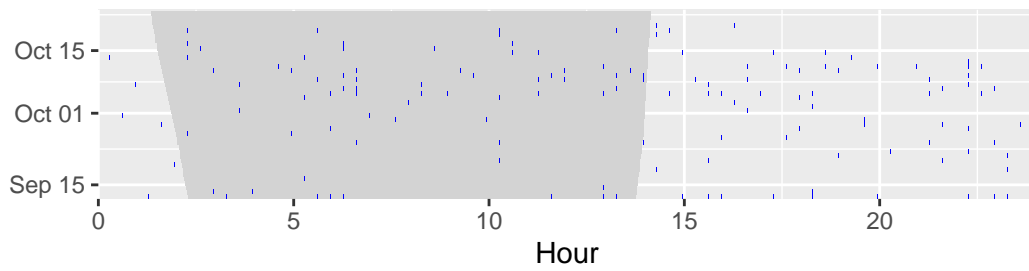
Drift-12: Ships



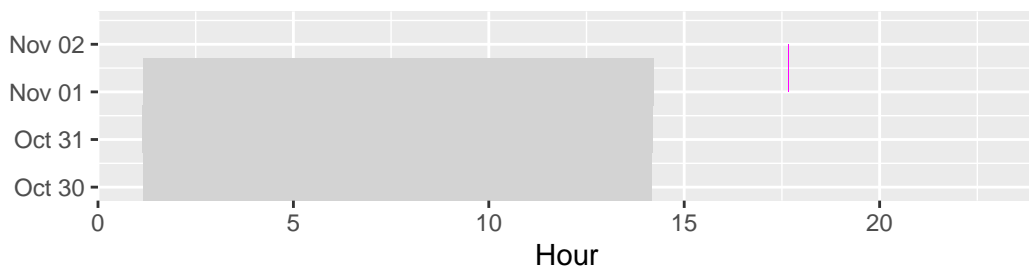
Drift-13: Humpback whales



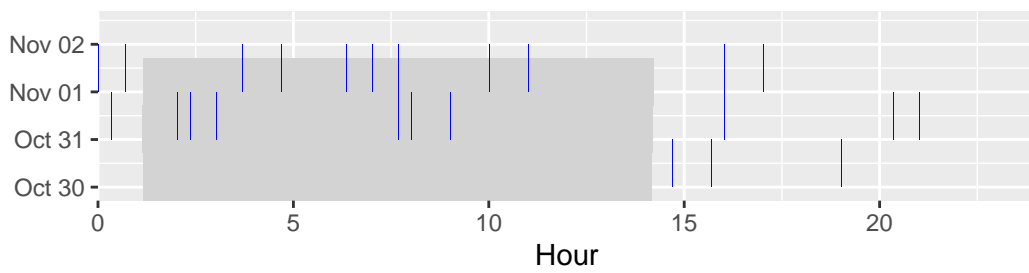
Drift-13: Ships



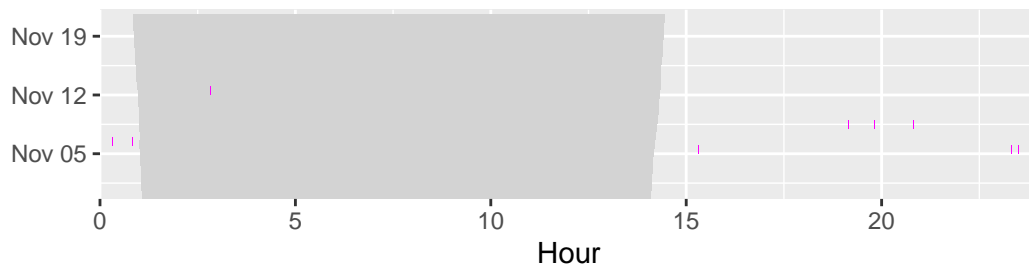
Drift-14: Humpback whales



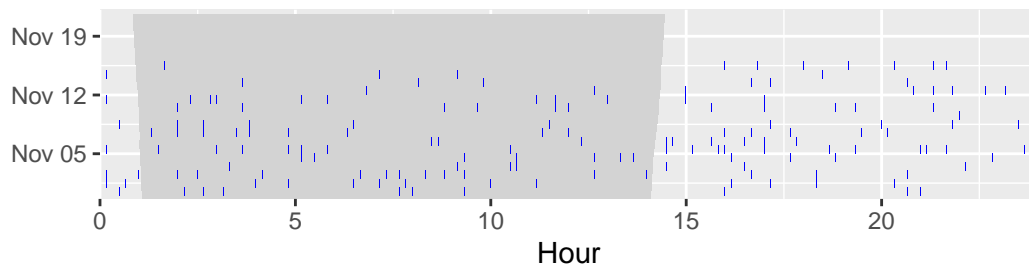
Drift-14: Ships



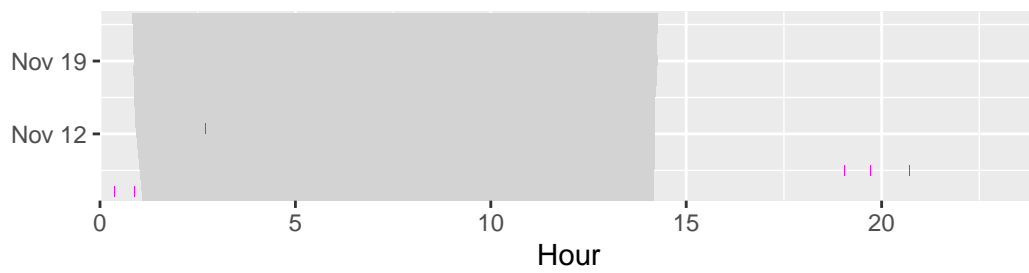
Drift-16: Humpback whales



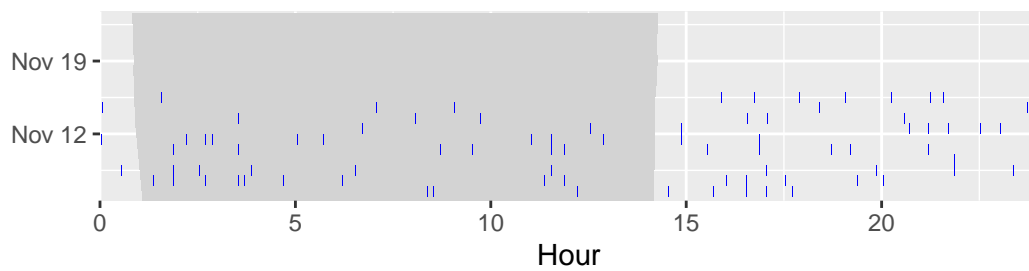
Drift-16: Ships



Drift-20: Humpback whales



Drift-20: Ships



```
[[1]]
TableGrob (2 x 1) "arrange": 2 grobs
  z      cells  name      grob
```

```
1 1 (1-1,1-1) arrange gtable[layout]
2 2 (2-2,1-1) arrange gtable[layout]
```

```
[[2]]
TableGrob (2 x 1) "arrange": 2 grobs
  z      cells      name      grob
1 1 (1-1,1-1) arrange gtable[layout]
2 2 (2-2,1-1) arrange gtable[layout]
```

```
[[3]]
TableGrob (2 x 1) "arrange": 2 grobs
  z      cells      name      grob
1 1 (1-1,1-1) arrange gtable[layout]
2 2 (2-2,1-1) arrange gtable[layout]
```

```
[[4]]
TableGrob (2 x 1) "arrange": 2 grobs
  z      cells      name      grob
1 1 (1-1,1-1) arrange gtable[layout]
2 2 (2-2,1-1) arrange gtable[layout]
```

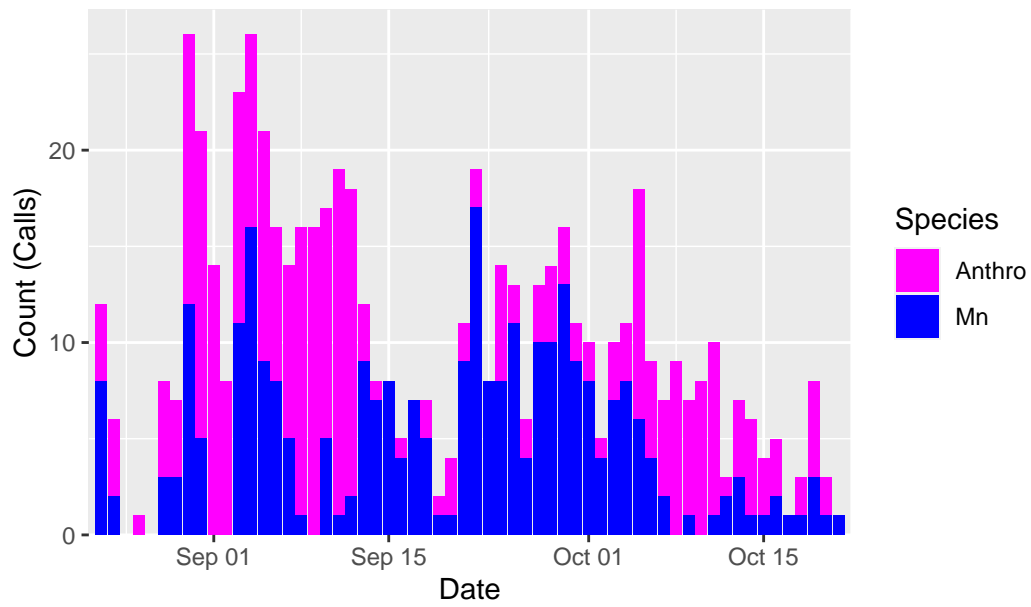
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[[5]]
TableGrob (2 x 1) "arrange": 2 grobs
  z      cells      name      grob
1 1 (1-1,1-1) arrange gtable[layout]
2 2 (2-2,1-1) arrange gtable[layout]
```

```
[[6]]
TableGrob (2 x 1) "arrange": 2 grobs
  z      cells      name      grob
1 1 (1-1,1-1) arrange gtable[layout]
2 2 (2-2,1-1) arrange gtable[layout]
```

## Weekly Plot

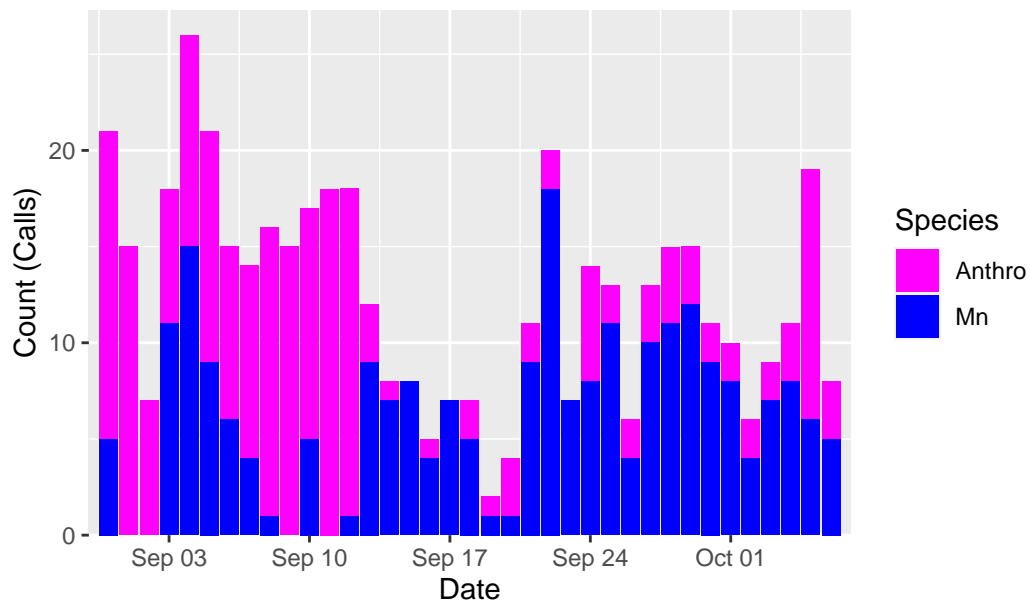
```
[[1]]
```

Drift-10: Humpback whales and ships

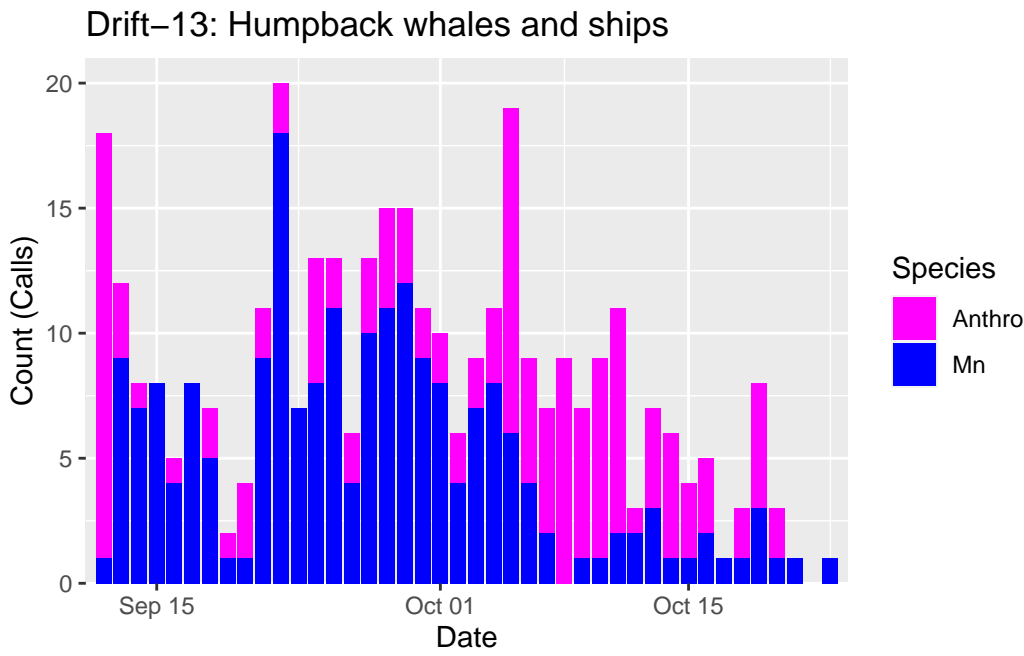


[[2]]

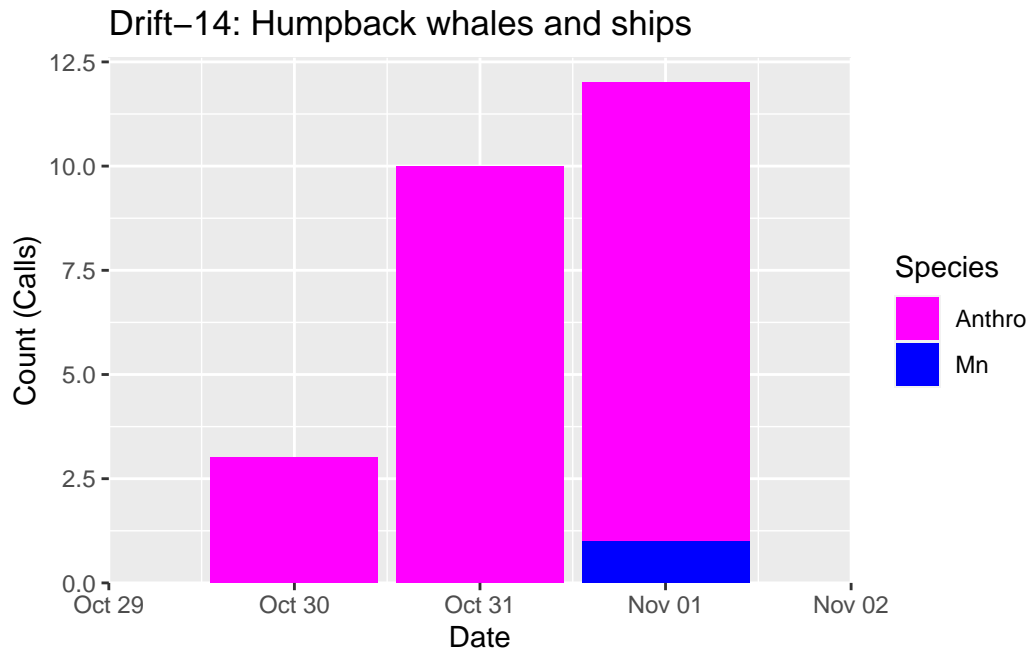
Drift-12: Humpback whales and ships



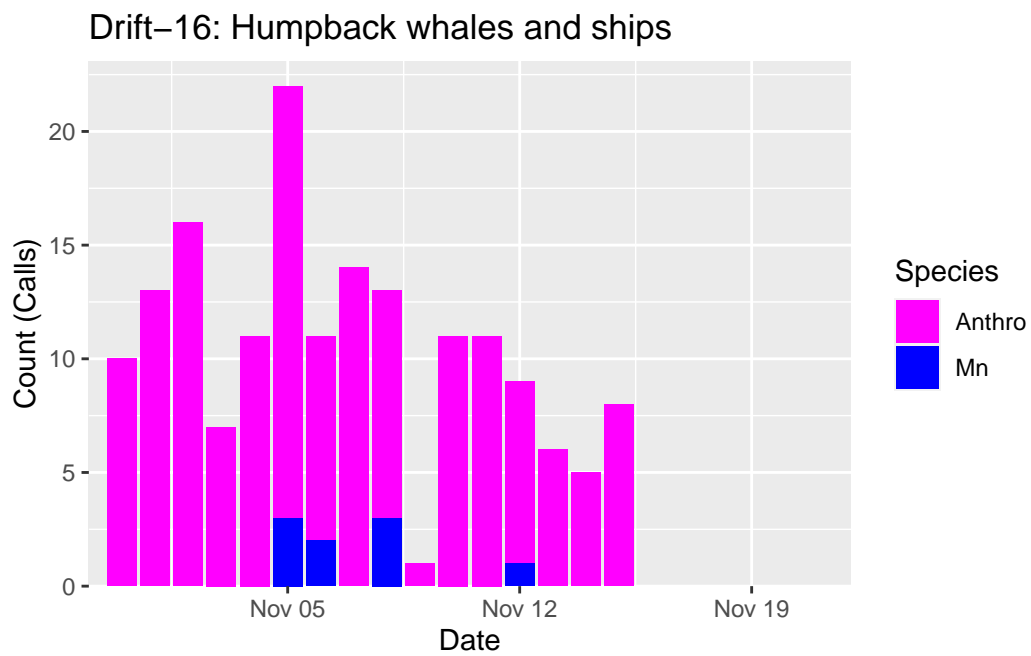
[[3]]



[[4]]

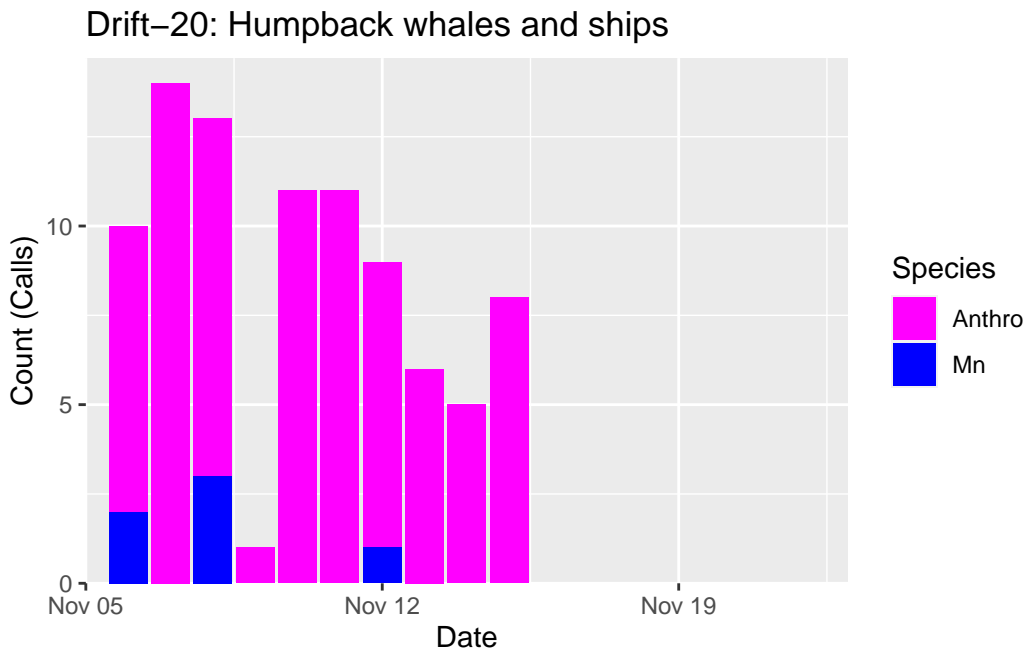


[[5]]



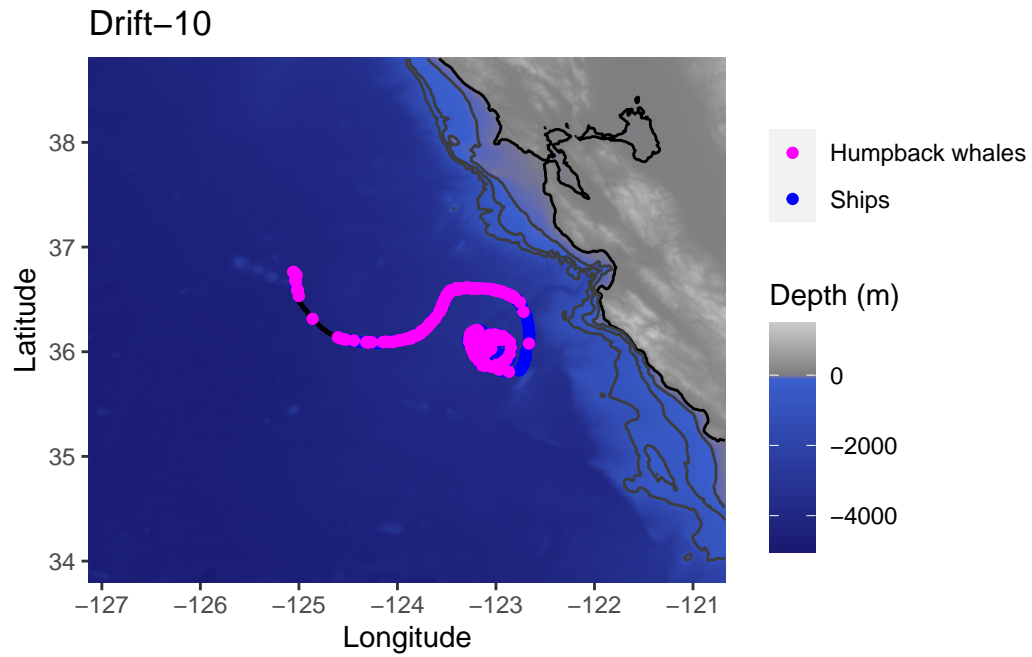


[[6]]

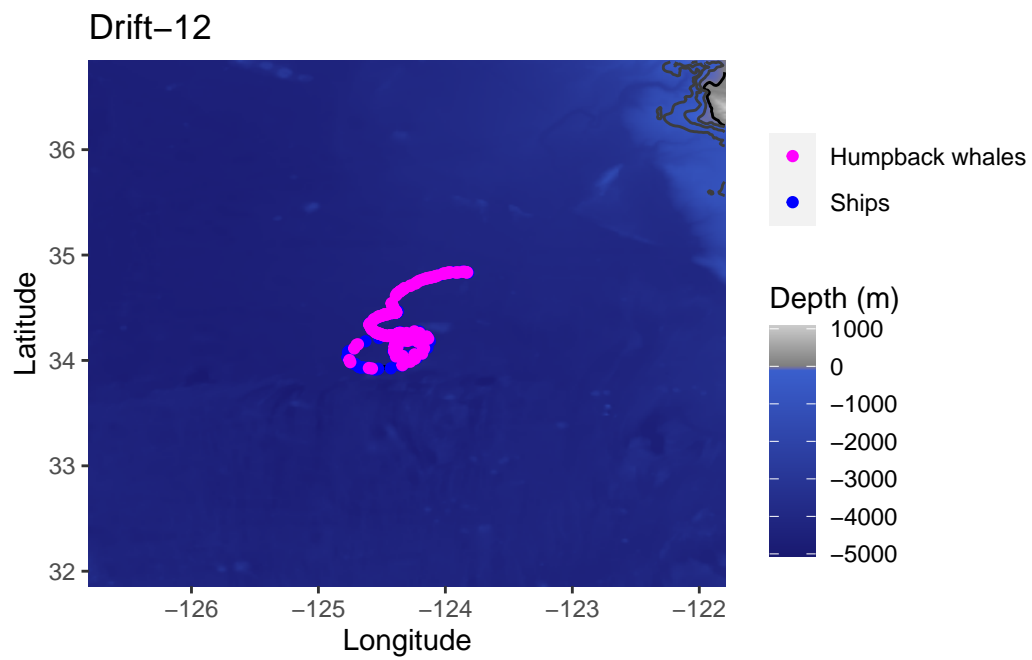


Map

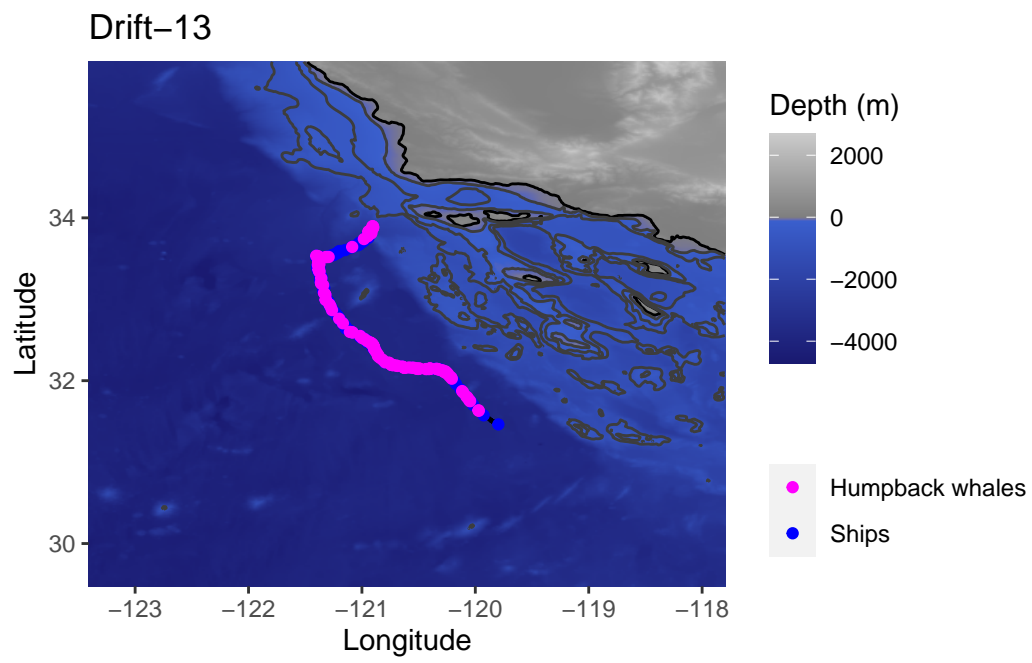
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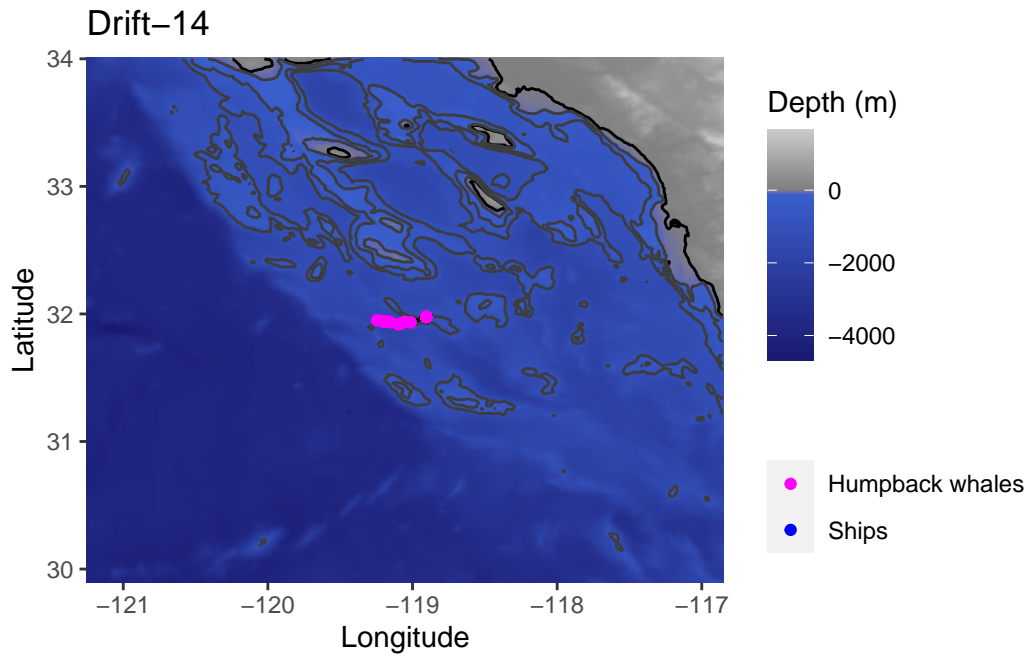
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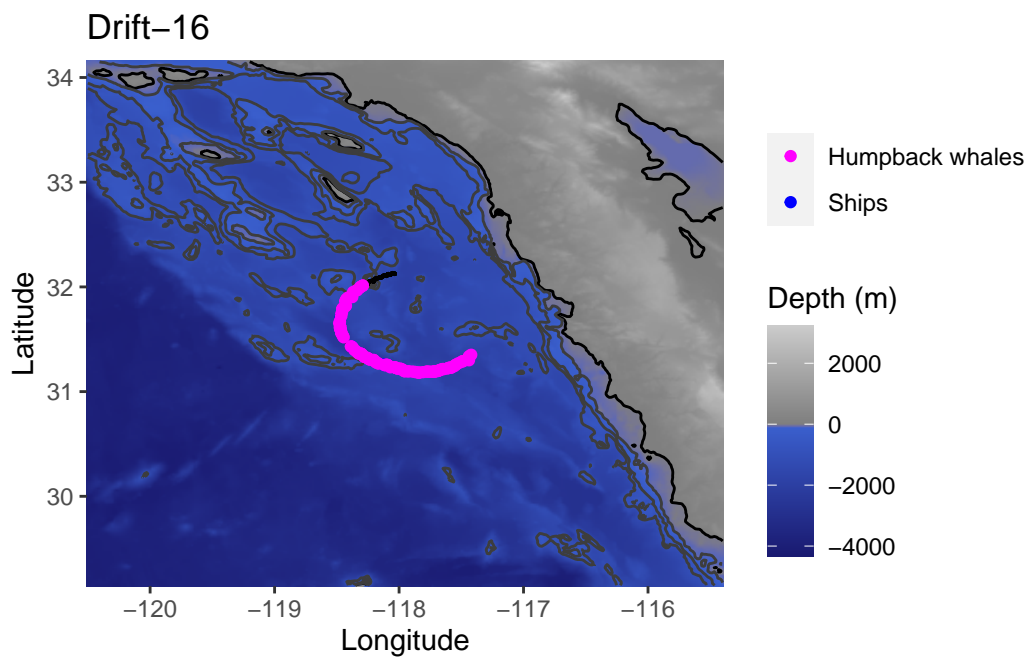
[[3]]



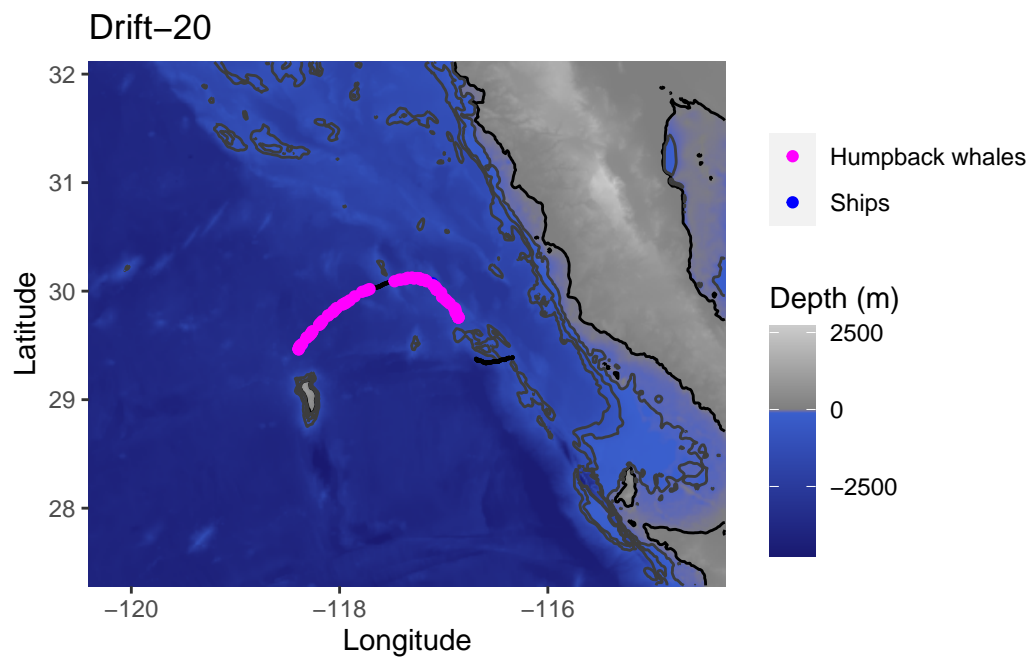
[[4]]



[[5]]



[[6]]



Map of all drifts

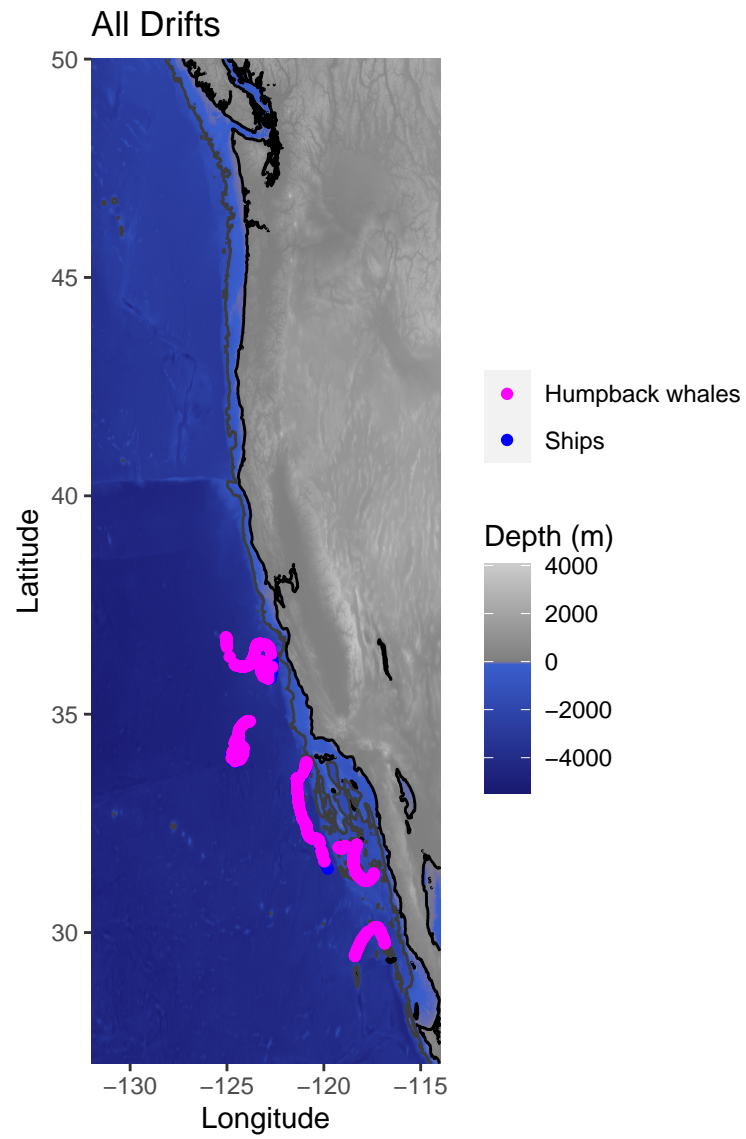


Figure 1: Map of all drifts analyzed