

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.

Remove times with missing data

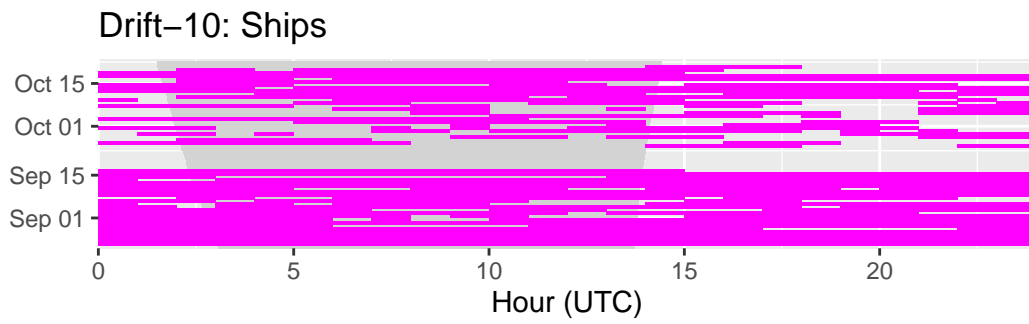
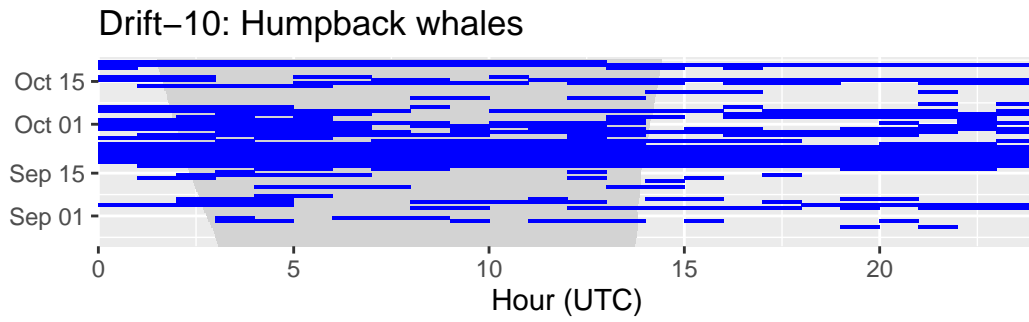
MEHS did not have audio data for the entire length of all drifts. Only show drift tracks and events from times where data was available

Plots

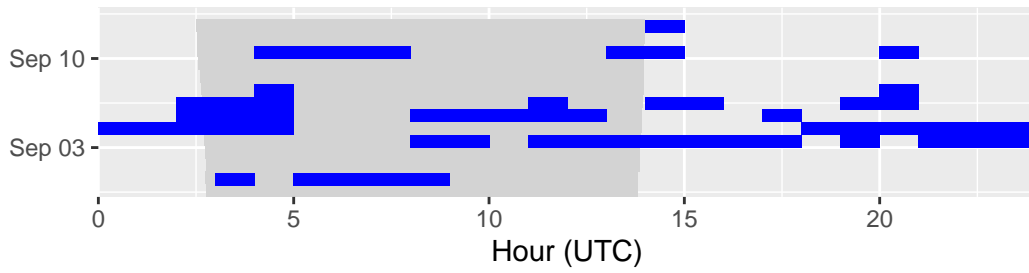
Diel Plot

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

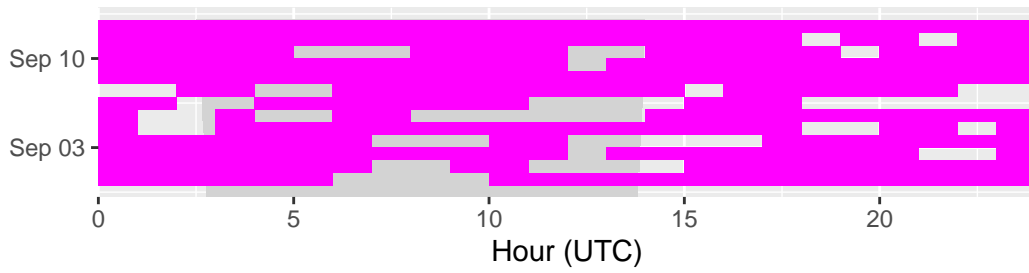
MnColor = 'blue'
ShipColor = 'magenta'
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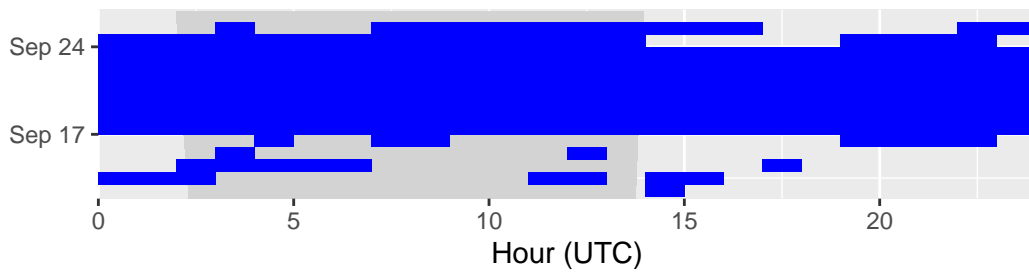
Drift-12: Humpback whales



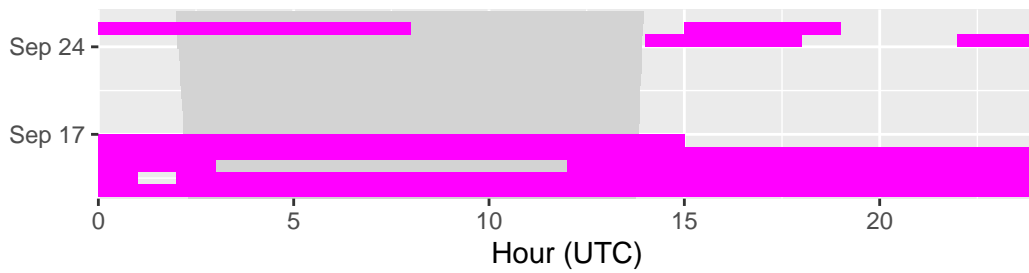
Drift-12: Ships



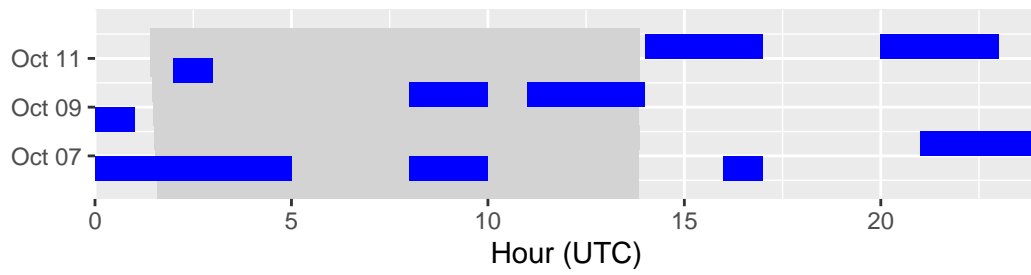
Drift-13: Humpback whales



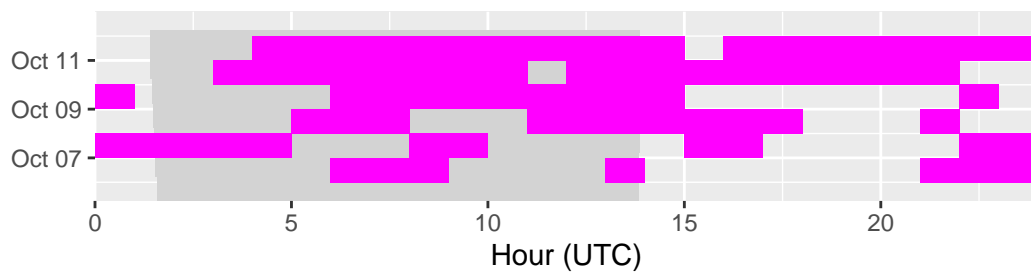
Drift-13: Ships



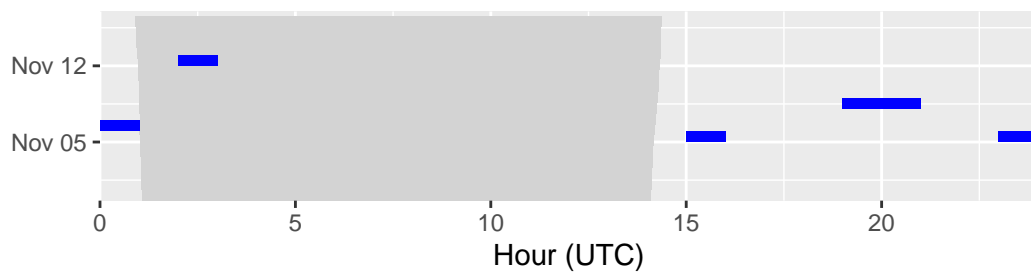
Drift-14: Humpback whales



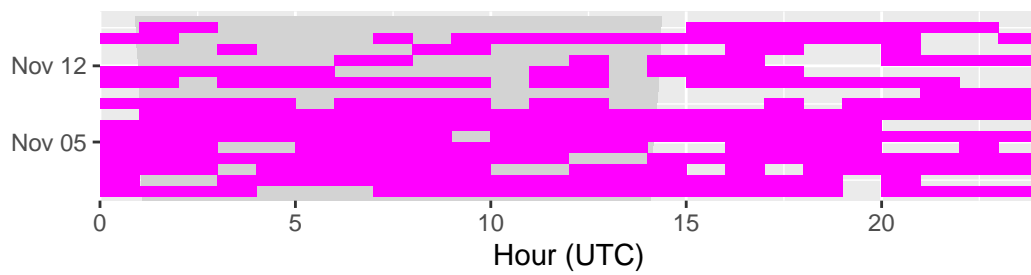
Drift-14: Ships



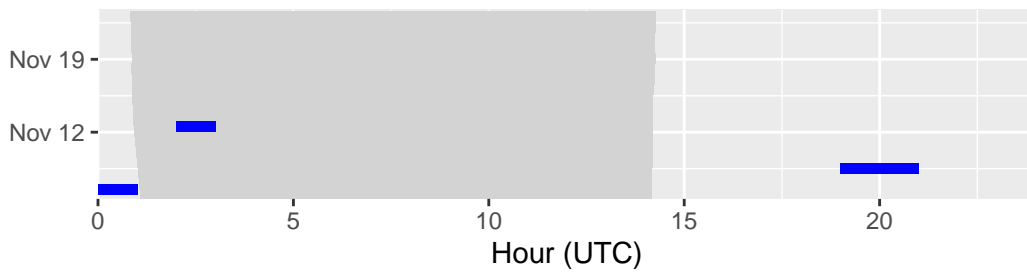
Drift-16: Humpback whales



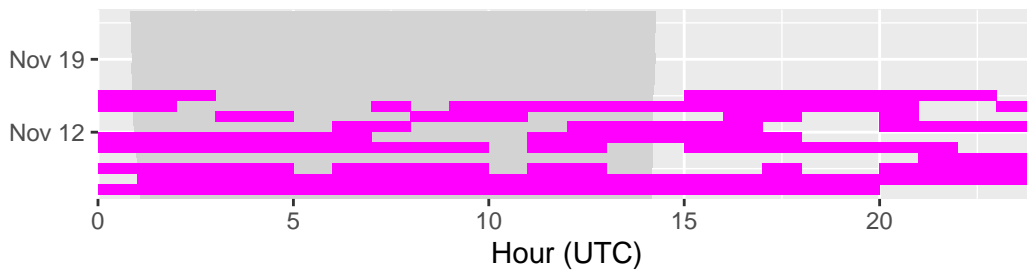
Drift-16: Ships



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]]

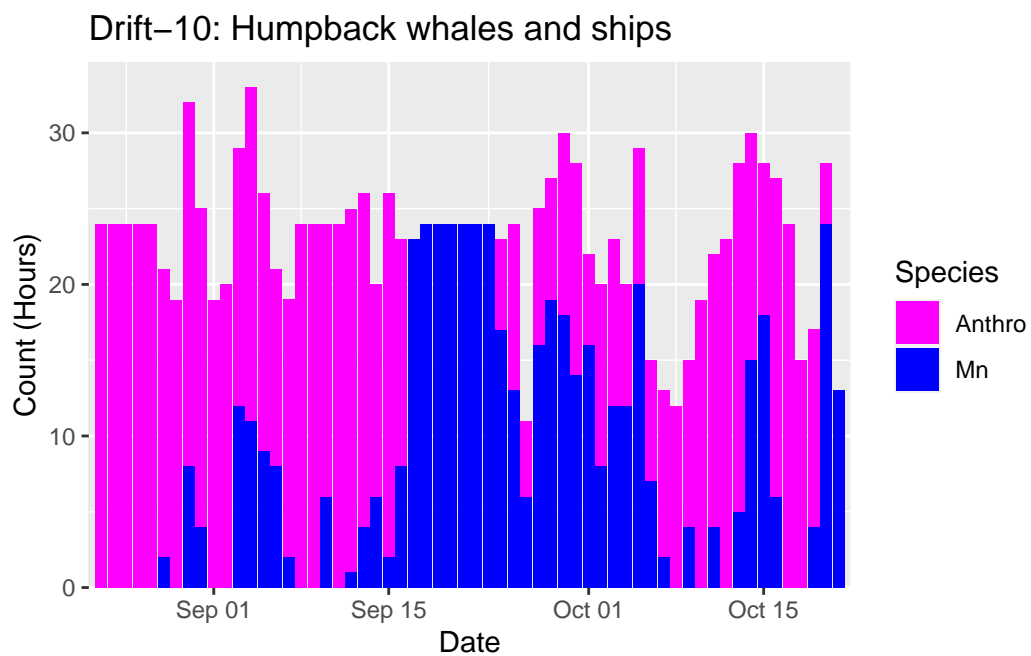
```
TableGrob (2 x 1) "arrange": 2 grobs
  z      cells      name      grob
1 1 (1-1,1-1) arrange gtable[layout]
2 2 (2-2,1-1) arrange gtable[layout]
```

```
[[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]
```

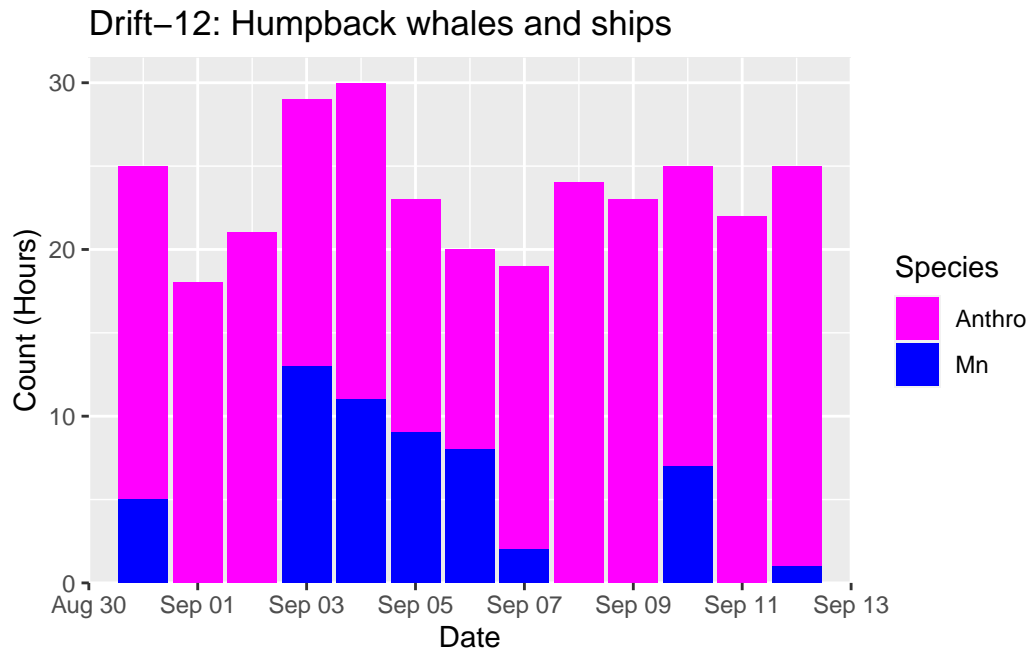
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[[6]]
TableGrob (2 x 1) "arrange": 2 grobs
  z      cells      name      grob
1 1 (1-1,1-1) arrange gtable[layout]
2 2 (2-2,1-1) arrange gtable[layout]
```

Weekly Plot

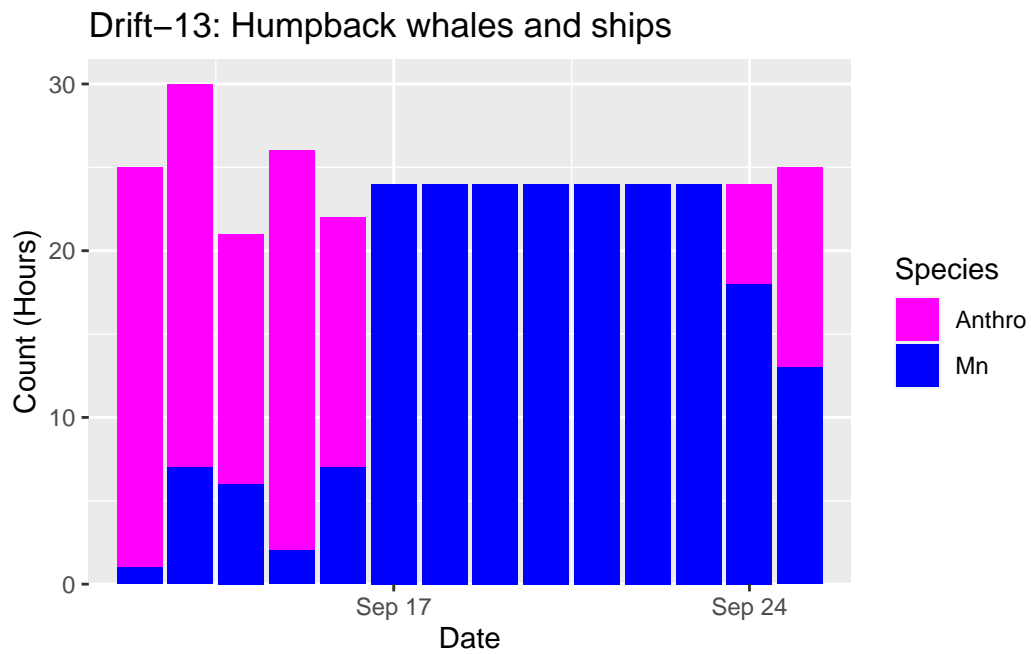
```
[[1]]
```



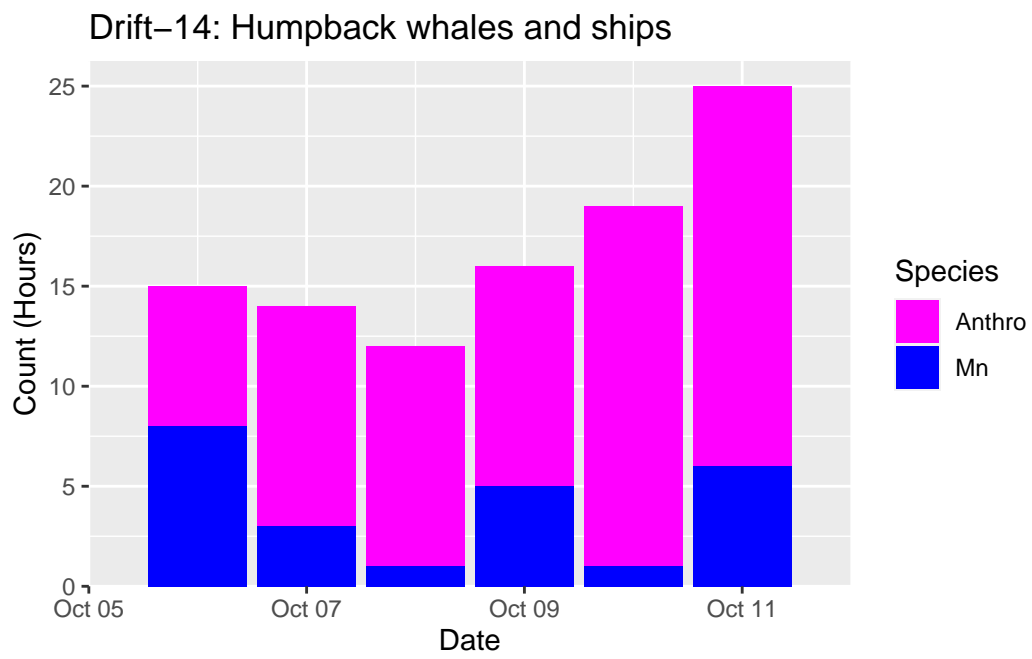
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[[2]]
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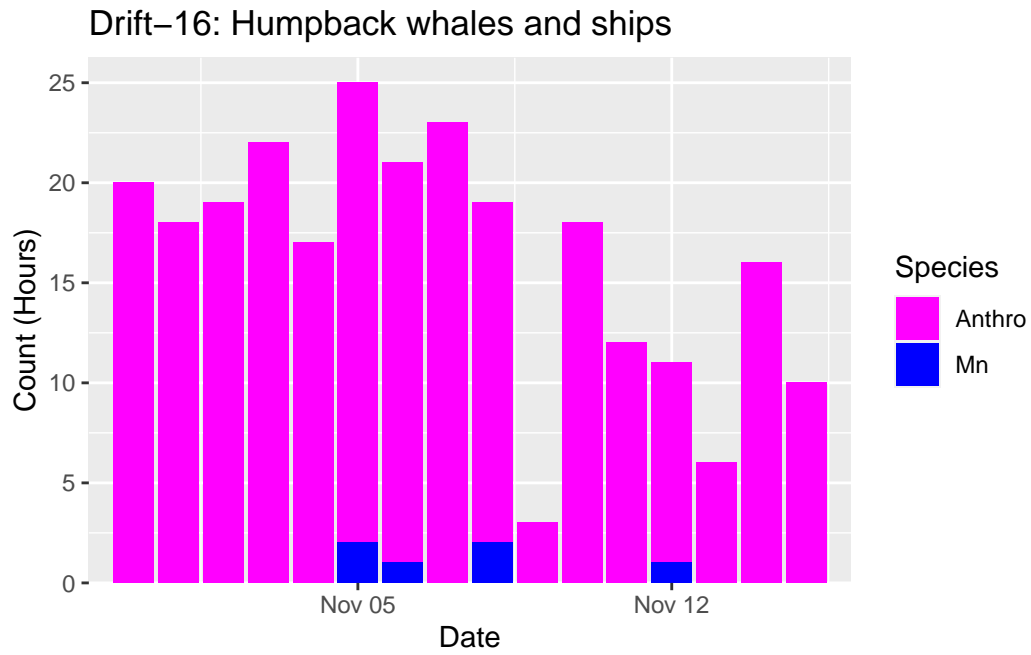
[[3]]



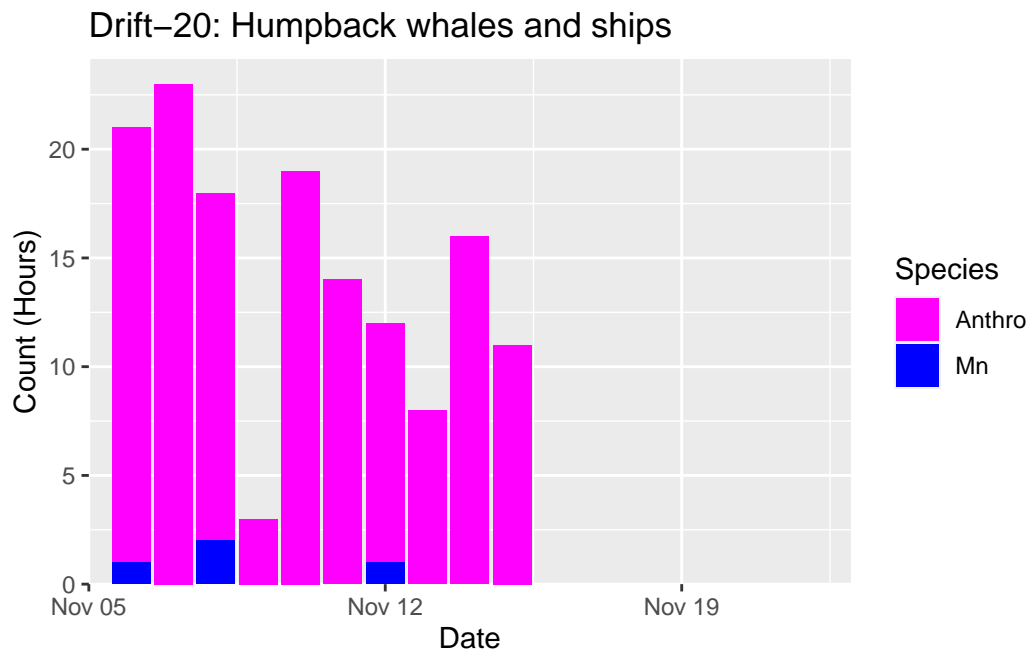
[[4]]



[[5]]

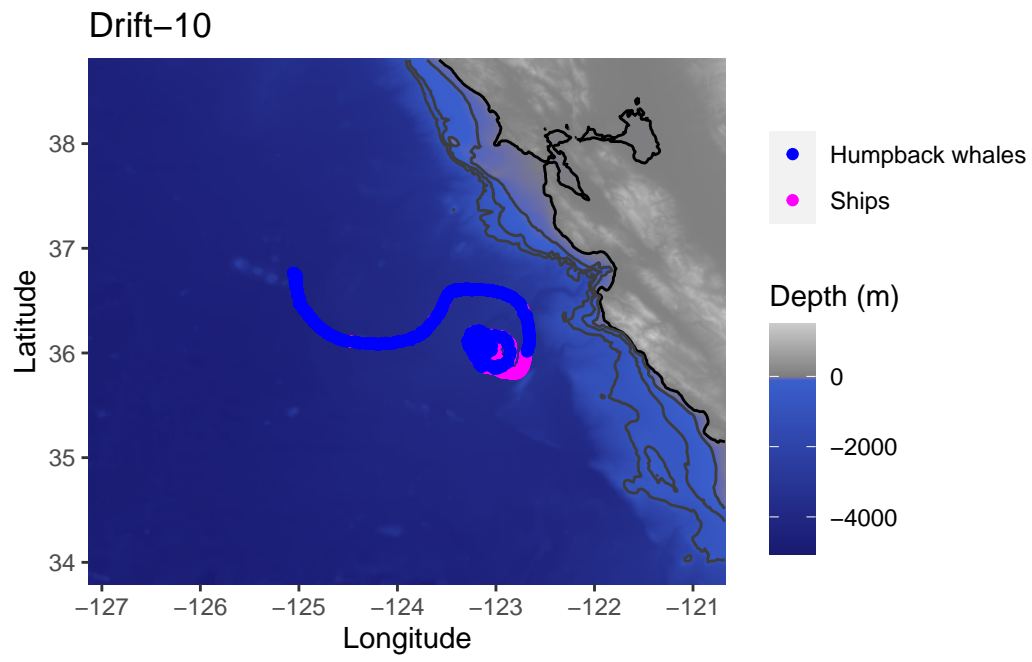


[[6]]

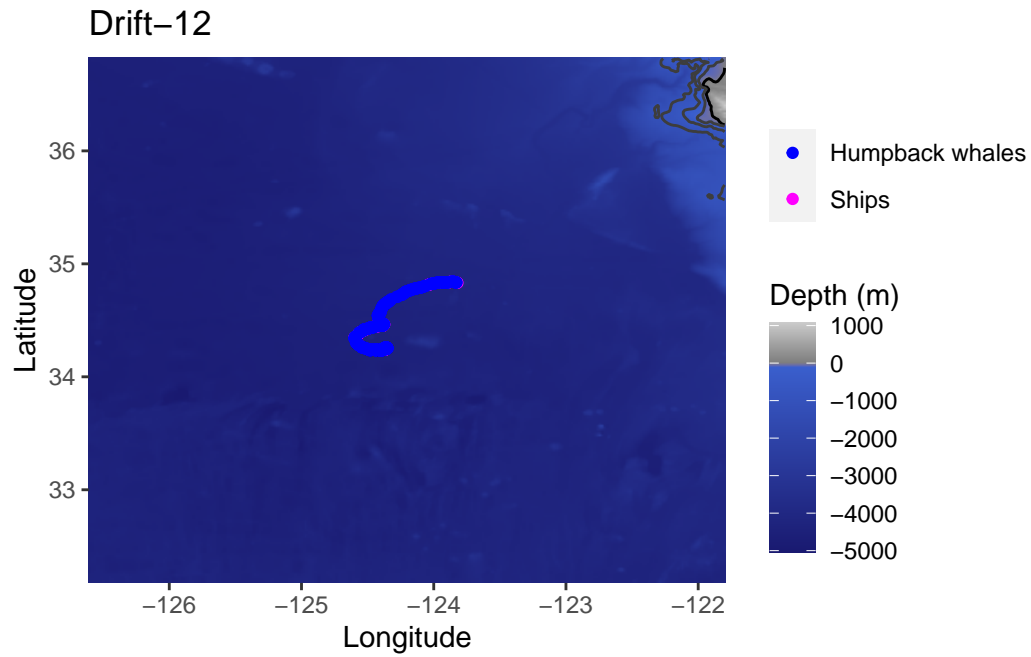


Map

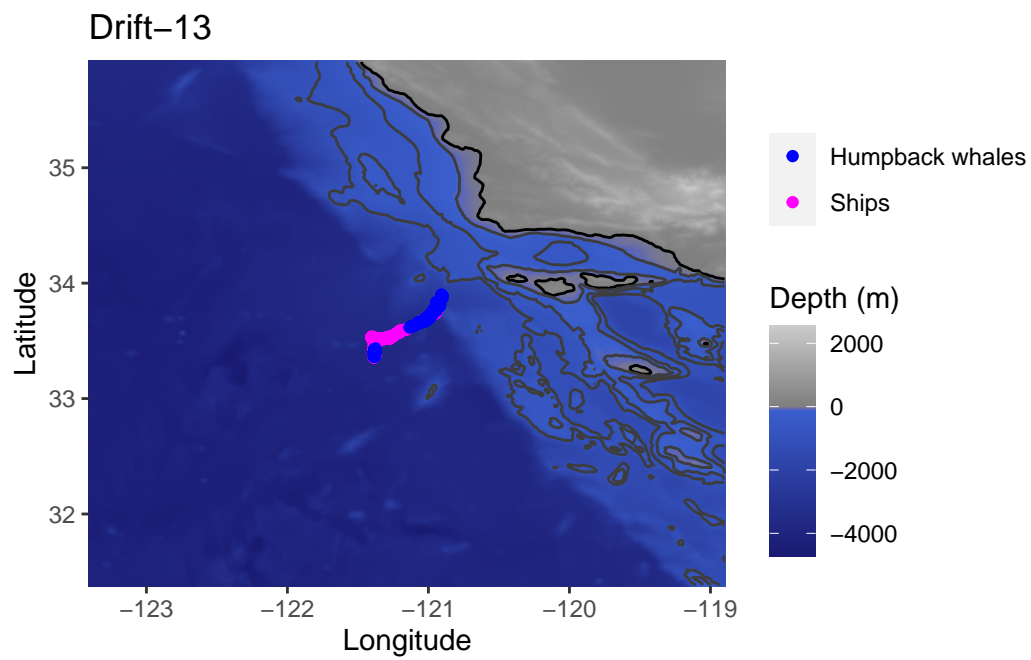
[[1]]



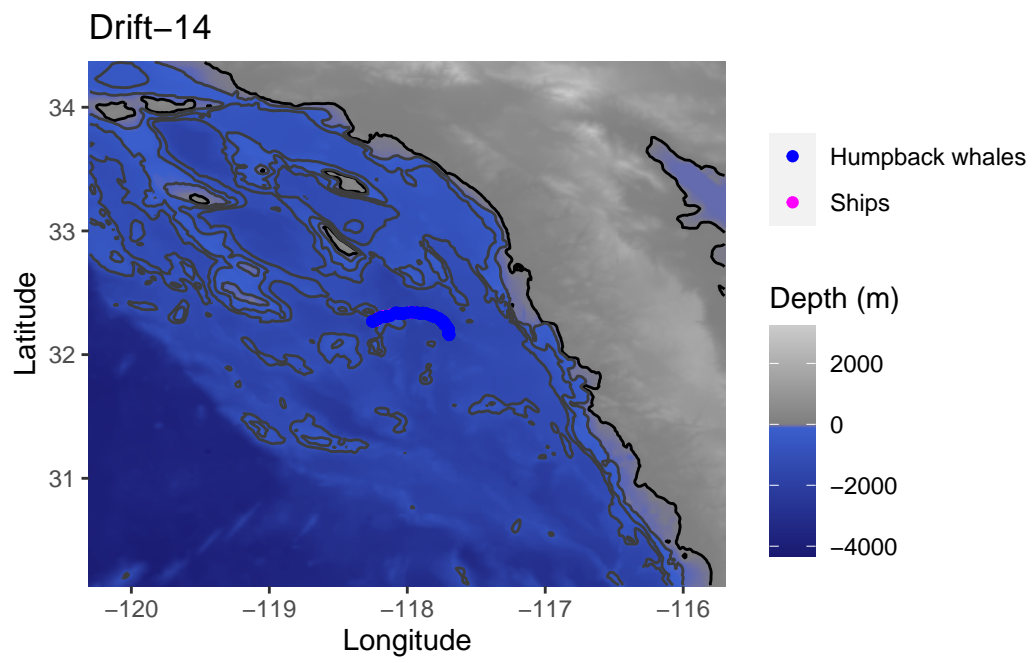
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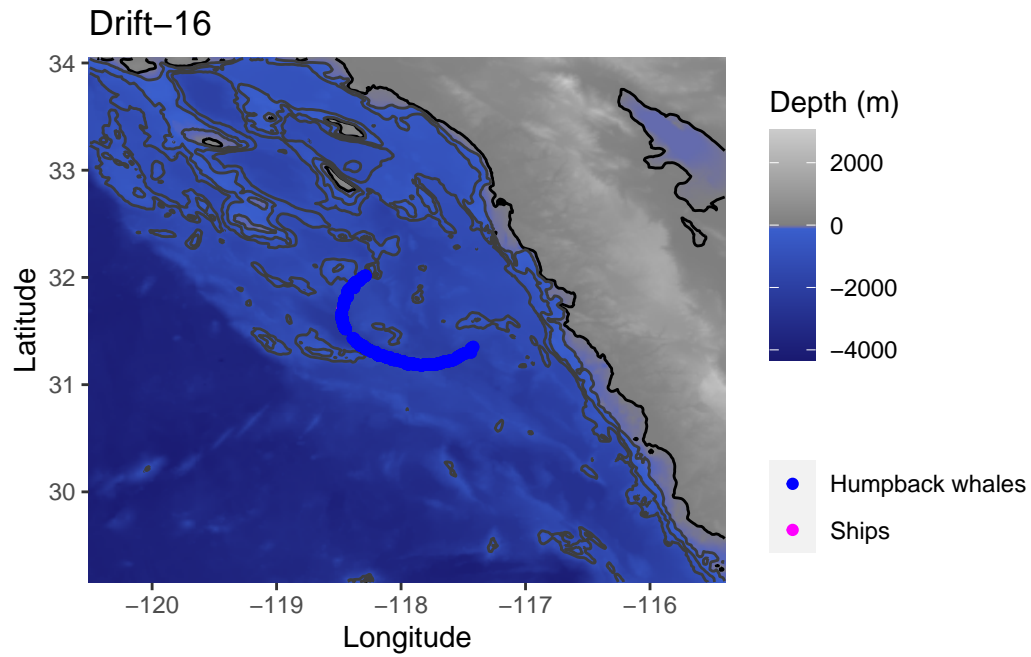
[[3]]



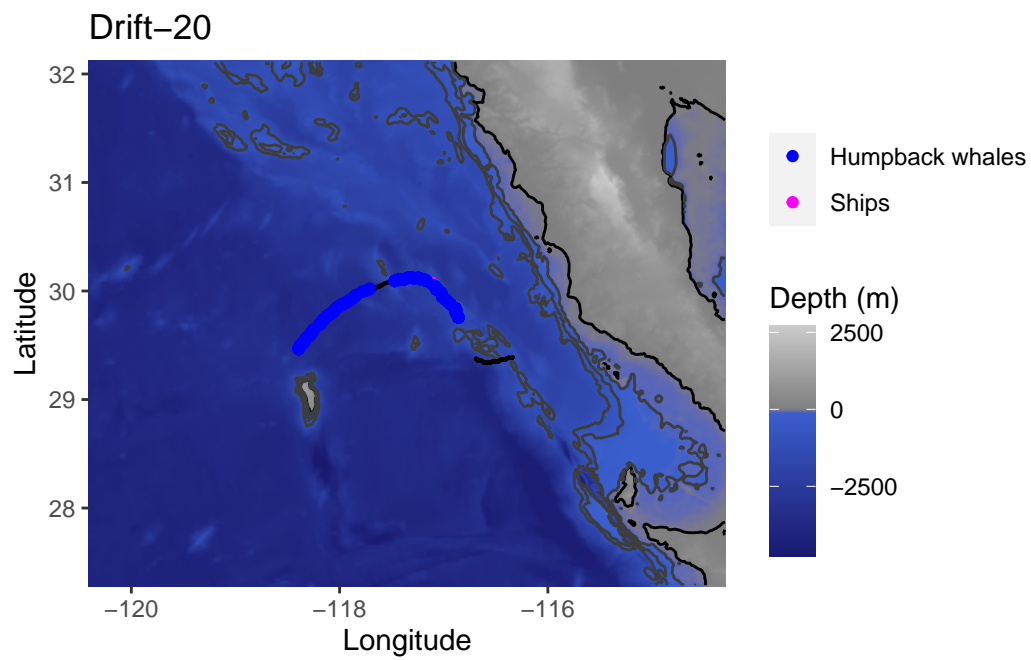
[[4]]



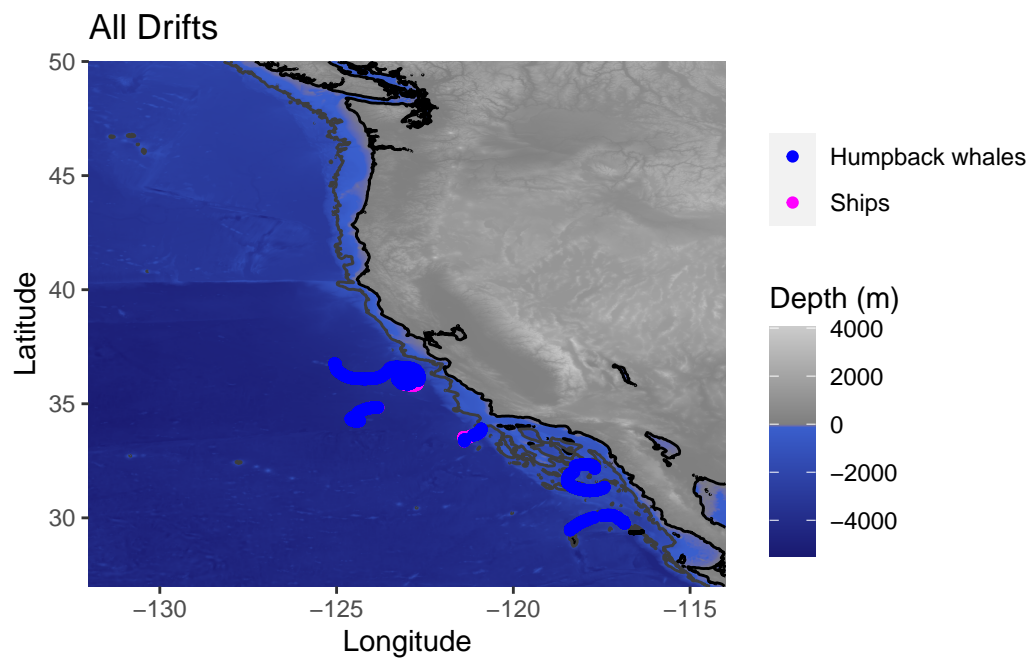
[[5]]



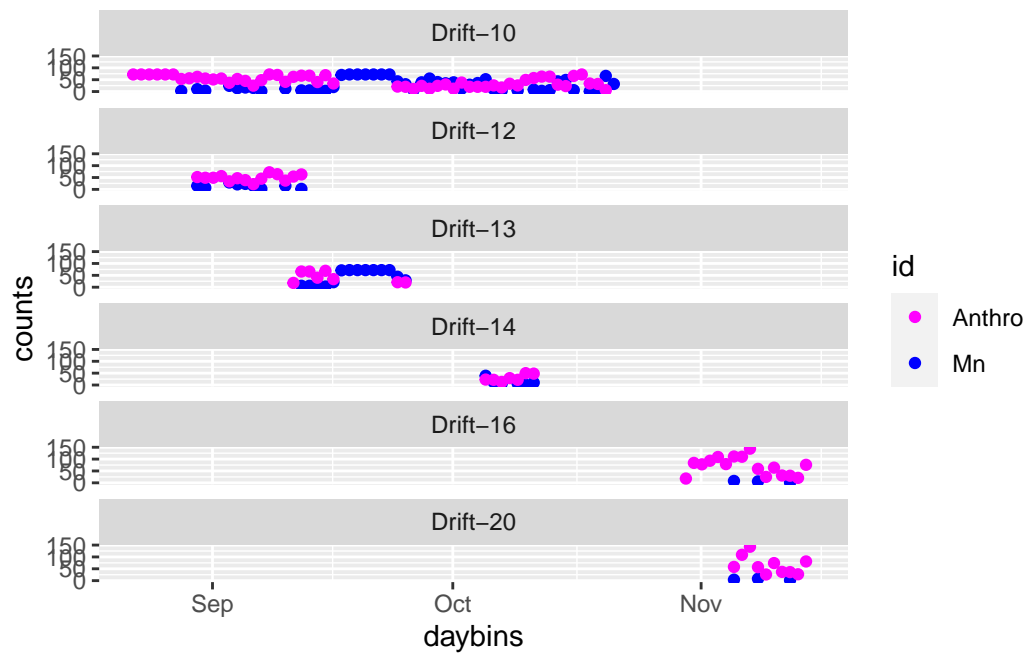
[[6]]



Map of all drifts



All-drift Timeseries



the end!