Whale Sharks
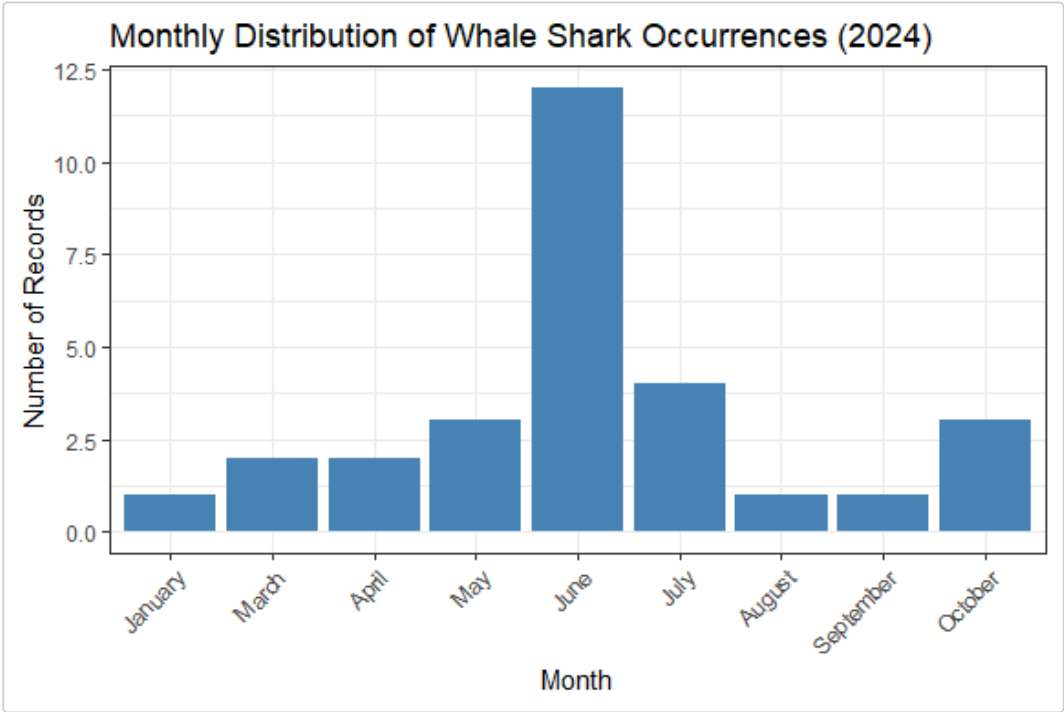

Whale Shark

We are investigating occurrence data of the **Whale Shark** (*Rhincodon typus*) in Australia from the **Atlas of Living Australia**, and make a map showing the spatial locations of sightings for 2024.

```
#> # A tibble: 6 × 5
#>     lat   lon  year eventDate           scientificName
#>   <dbl> <dbl> <dbl> <dttm>              <chr>
#> 1 -23.1  114.  2024 2024-06-08 12:50:00 Rhincodon typus
#> 2 -22.7  114.  2024 2024-04-01 10:19:29 Rhincodon typus
#> 3 -22.7  114.  2024 2024-05-30 12:37:46 Rhincodon typus
#> 4 -22.3  114.  2024 2024-06-25 13:01:20 Rhincodon typus
#> 5 -22.2  114.  2024 2024-03-27 11:17:00 Rhincodon typus
#> 6 -22.2  114.  2024 2024-03-27 10:54:00 Rhincodon typus
```
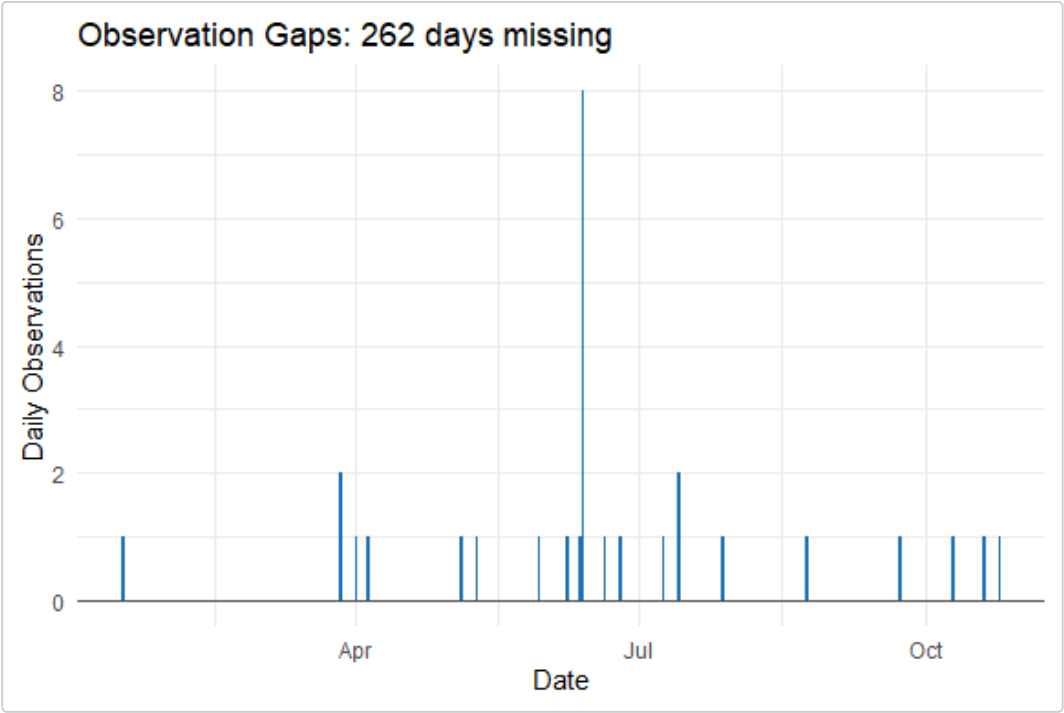
the length of the records is 29

Monthly Distribution of organism (2024)

Data Regularity & Temporal Gaps

Observation Gaps: 262 days missing

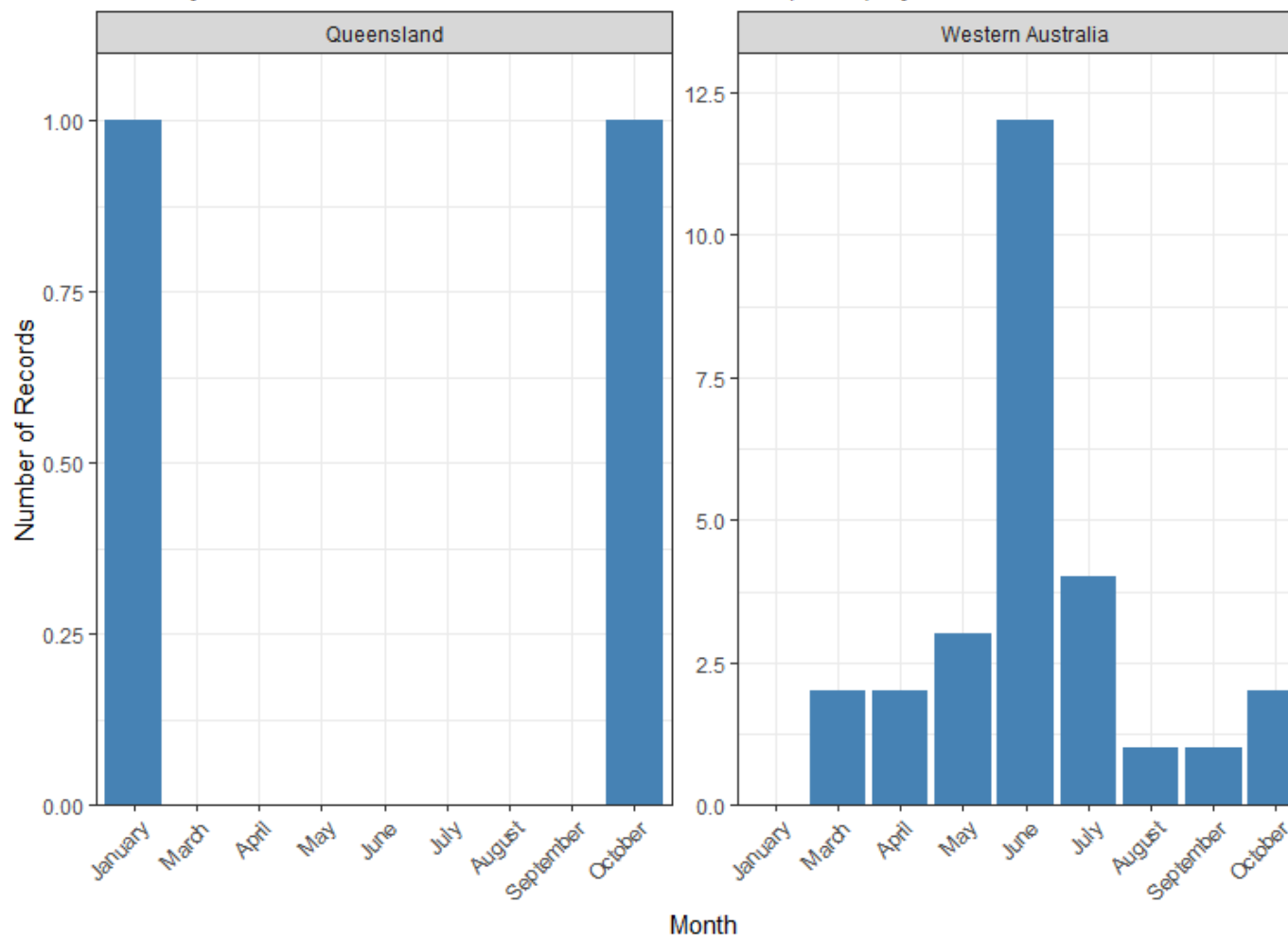## Nearest Weather Station Mapping

```
#> # A tibble: 3 × 12
#>   lat.x lon.x  year eventDate           scientificName weather_station_id stname
#>   <dbl> <dbl> <dbl> <dttm>              <chr>          <chr>              <chr>
#> 1 -23.1  114.  2024 2024-06-08 12:50:00 Rhincodon typ… 943020-99999       LEARM…
#> 2 -22.7  114.  2024 2024-04-01 10:19:29 Rhincodon typ… 943020-99999       LEARM…
#> 3 -22.7  114.  2024 2024-05-30 12:37:46 Rhincodon typ… 943020-99999       LEARM…
#> # ℹ 5 more variables: lat.y <dbl>, lon.y <dbl>, address <chr>, city <chr>,
#> #   state <chr>
```
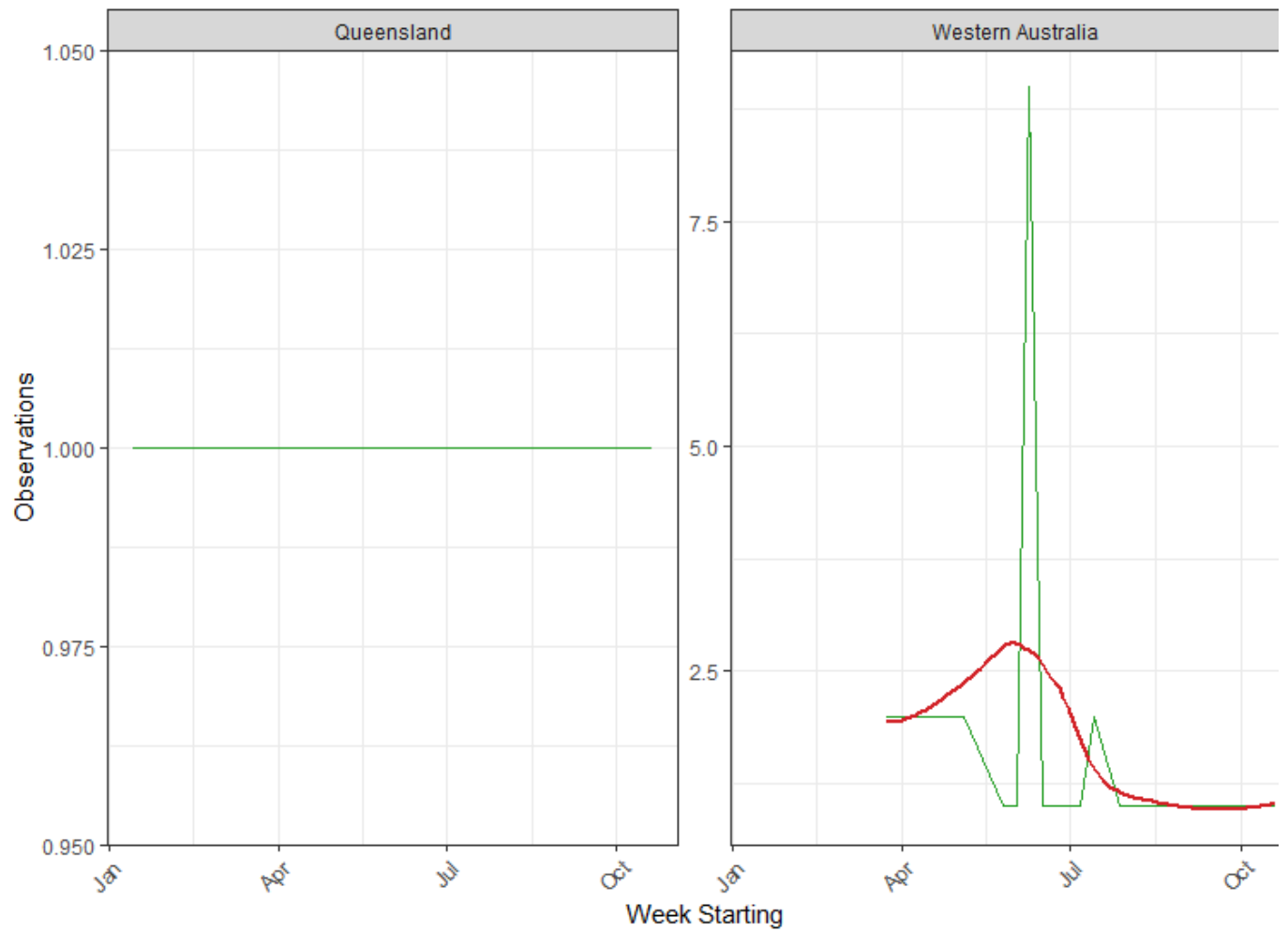
```
#>              State Frequency
#> 1 Western Australia        27
#> 2        Queensland         2
```
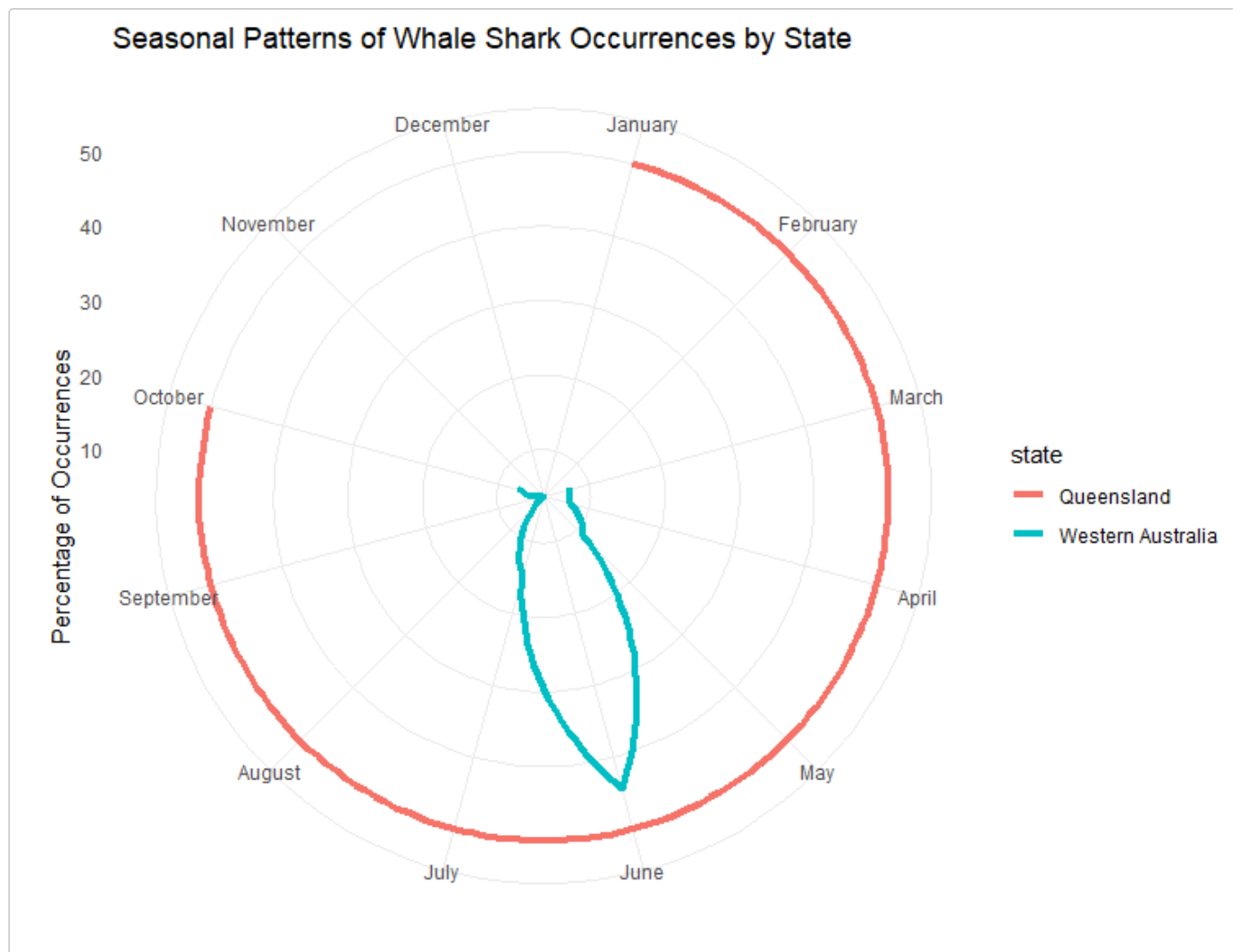
Pattern Analysis

Monthly Distribution of Whale Shark Occurrences (2024) by State

Weekly Occurrence Patterns of Whale Sharks (2024) with Trend Lines

Seasonal Patterns of Whale Shark Occurrences by State

Datasets Overview

We have organized the whale shark occurrence and weather station data into the following structured datasets, stored in the `data/` directory:

- `whale_sharks_2024.rda`
  Contains whale shark occurrence records across all states in Australia.

- `whale_sharks_2024_ws.rda`
  An enhanced version of the occurrence data, merged with the nearest weather station information, including:

  ```
  --Station ID (weather_station_id)
  --Station name (stname)
  --Geographic details (lat.y, lon.y, address, city, state)
  ```

- `whale_sharks_top_weather.rda`
  Focuses on weather data from the top 3 most frequently recorded stations associated with whale shark occurrences.

- `weather_stations.rda`
  A standalone dataset of all unique weather stations in Australia, providing reference metadata for cross-referencing.