

Manta Rays



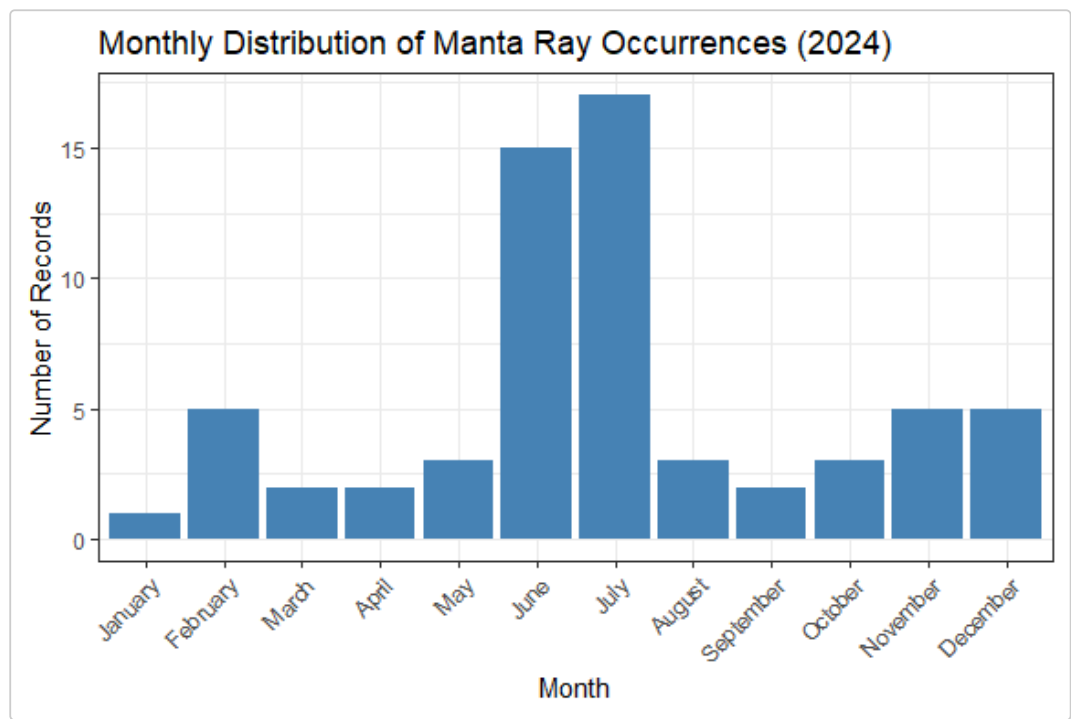
Manta Ray

We are investigating occurrence data of [Manta rays](#) in Australia from the **Atlas of Living Australia**, and make a map showing the spatial locations of sightings for 2024.

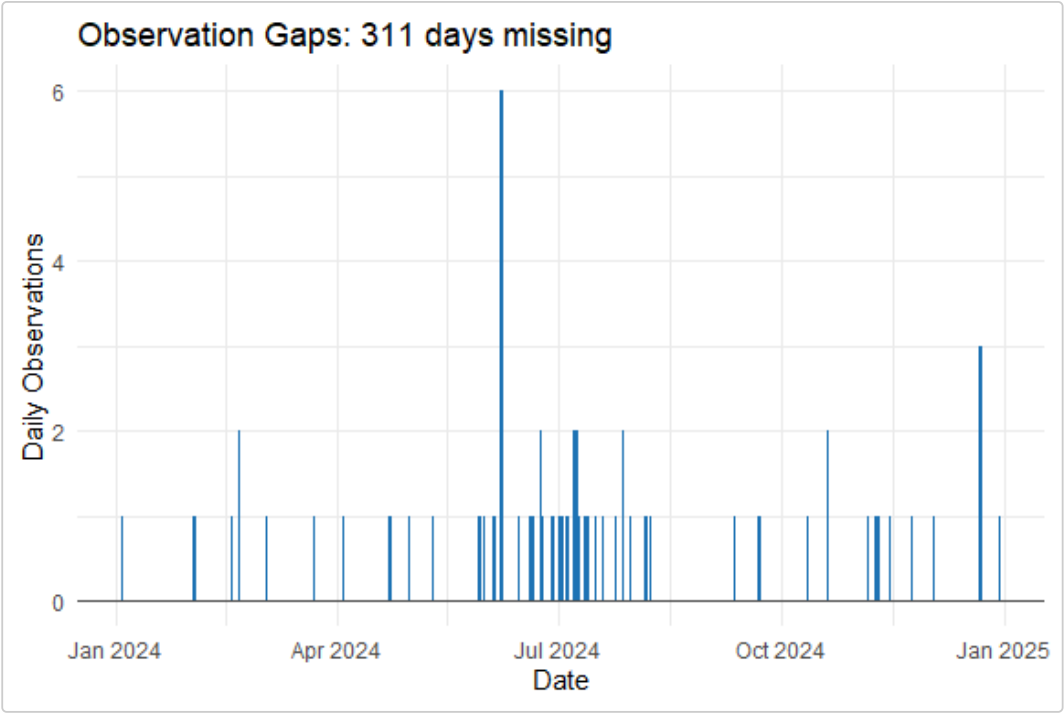
```
#> # A tibble: 6 × 5
#>   lat lon year eventDate      scientificName
#>   <dbl> <dbl> <dbl> <dtm>      <chr>
#> 1 -33.8 151. 2024 2024-12-22 11:44:00 Mobula alfredi
#> 2 -33.8 151. 2024 2024-12-22 12:50:25 Mobula alfredi
#> 3 -33.8 151. 2024 2024-12-22 08:19:48 Mobula alfredi
#> 4 -28.9 154. 2024 2024-11-06 11:52:00 Mobula
#> 5 -28.6 154. 2024 2024-02-03 08:59:11 Mobula alfredi
#> 6 -28.6 154. 2024 2024-04-04 12:35:00 Mobula alfredi
```

the length of the records is 63

Monthly Distribution of organism (2024)



Data Regularity & Temporal Gaps



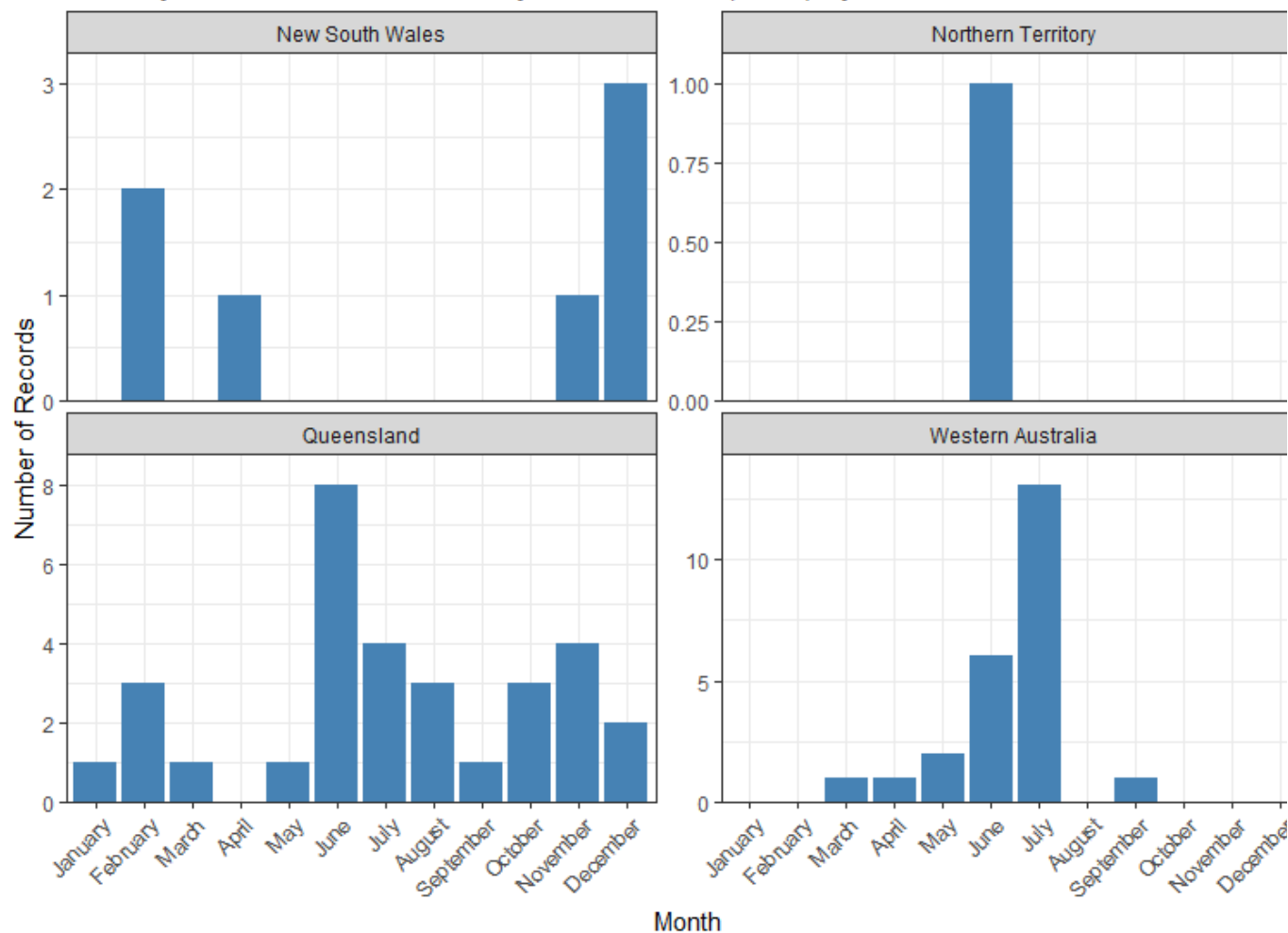
Nearest Weather Station Mapping

```
#> # A tibble: 3 × 12
#>   lat.x lon.x year eventDate      scientificName weather_station_id stname
#>   <dbl> <dbl> <dbl> <dtm>      <chr>          <chr>          <chr>
#> 1 -33.8  151.  2024 2024-12-22 11:44:00 Mobula alfredi 957680-99999 NORTH...
#> 2 -33.8  151.  2024 2024-12-22 12:50:25 Mobula alfredi 957680-99999 NORTH...
#> 3 -33.8  151.  2024 2024-12-22 08:19:48 Mobula alfredi 957680-99999 NORTH...
#> # i 5 more variables: lat.y <dbl>, lon.y <dbl>, address <chr>, city <chr>,
#> #   state <chr>
```

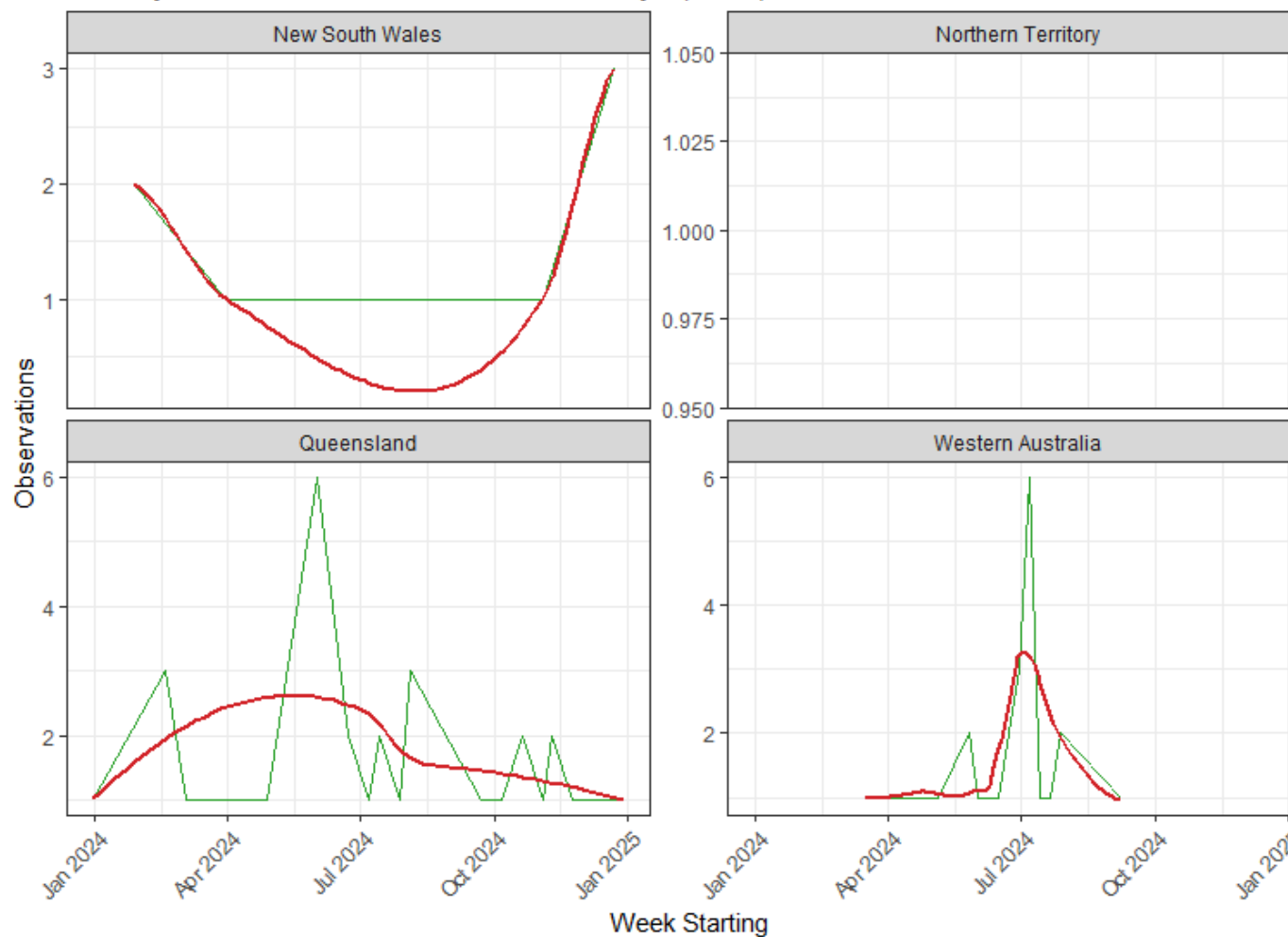
```
#>           State Frequency
#> 1      Queensland      31
#> 2 Western Australia      24
#> 3   New South Wales       7
#> 4 Northern Territory      1
```

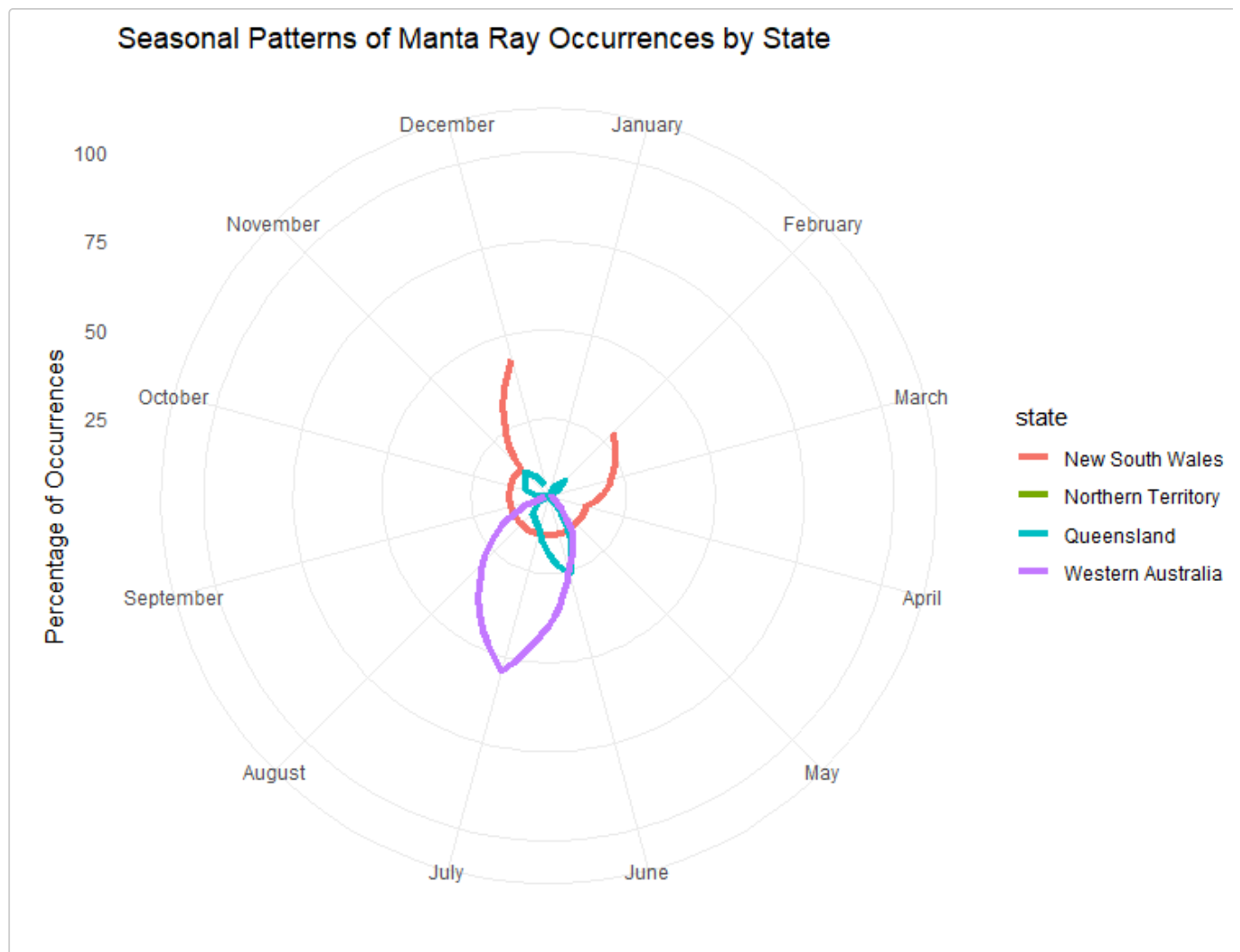
Pattern Analysis

Monthly Distribution of Manta Ray Occurrences (2024) by State



Weekly Occurrence Patterns of Manta Rays (2024) with Trend Lines





Datasets Overview

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

- `manta_rays_2024.rda`
Contains manta ray occurrence records across all states in Australia.
- `manta_rays_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 (sname)
--Geographic details (lat.y, lon.y, address, city, state)
```
- `manta_rays_top_weather.rda`
Focuses on weather data from the top 3 most frequently recorded stations associated with manta ray occurrences.
- `weather_stations.rda`
A standalone dataset of all unique weather stations in Australia, providing reference metadata for cross-referencing.