

Bird Incident Rate Report for October to December 2014

Bird incident rates are reported quarterly by aerodrome. This is achieved by querying the database for the number of incidents at aerodromes and summarising by quarter. The results of this query are then divided by the aircraft movements at each aerodrome for the same quarter and multiplied by 10,000 to achieve strikes per 10,000 aircraft movements. Aircraft movements at aerodromes are obtained from the ACNZ, and where available, from individual airport companies. Where no movement data are available, CAA estimates are used. Aerodrome operators are invited to supply more accurate movement data where appropriate.

Definition of 'On-Aerodrome'

Not all bird strike incidents occur within the wildlife management area that relates to the aerodrome stated in the incident report so this report breaks incidents down into 'On aerodrome', 'Off aerodrome' and 'Undefined'.

An "on airport" bird strike is defined within IBIS (ICAO Bird Strike Information System) as one which occurs between 0 to 200 ft inclusive on landing and 0 to 500 ft inclusive on take-off. This definition doesn't align well with the level of 50 ft that is widely used in NZ as the boundary between take-off and climb and between approach and landing. This misalignment makes it inappropriate to use the reported 'Phase of Flight' as the sole factor in determining whether a reported strike is on or off an aerodrome.

This report therefore makes the following assumptions:

1. If the distance from the airport is greater than 5 NM the strike is Off Aerodrome
2. If no altitude is reported the strike is Off Aerodrome if the flight phase is Cruise or Holding, On Aerodrome if the flight phase is Taxiing, Hover Taxi, Takeoff or Landing and Undefined in all other cases
3. If the altitude is reported as zero the strike is Undefined if the flight phase is Parked or Unknown otherwise it is On Aerodrome
4. If the altitude is reported as greater than zero but not greater than 200 feet the strike is Undefined if the flight phase is Parked, Unknown or Taxiing otherwise it is On Aerodrome
5. If the altitude is reported as greater than 200 ft but not greater than 500 ft the strike is On Aerodrome if the flight phase is Takeoff or Climb, Off Aerodrome if the flight phase is Approach, Descent or Landing and Undefined otherwise
6. If the altitude is reported as greater than 500 ft the strike is Undefined if the flight phase is Parked, Taxiing, Hover Taxi or Unknown and Off Aerodrome otherwise

These rules are applied in the above order with later rules having no effect if a strike meets the conditions of earlier rule.

On-Aerodrome 12-Month Moving Average Strike Rate per 10,000 Aircraft Movements

The following table shows the 12-month moving average on-aerodrome strike rates for identified aerodromes for the three years ending 31 December 2014.

| Aerodrome | Quarter | | | | | | | | | | | |
|------------------|---------|------|------|------|------|------|------|------|------|------|------|------|
| | 12/1 | 12/2 | 12/3 | 12/4 | 13/1 | 13/2 | 13/3 | 13/4 | 14/1 | 14/2 | 14/3 | 14/4 |
| Auckland | 3.4 | 3.2 | 3.0 | 2.4 | 2.7 | 3.5 | 3.6 | 3.7 | 2.9 | 1.9 | 2.2 | 2.0 |
| Chatham Islands | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 10.0 | 10.0 | 10.0 | 20.0 | 20.0 | 30.0 |
| Christchurch | 3.2 | 3.9 | 4.1 | 3.7 | 3.7 | 3.4 | 2.9 | 3.2 | 3.7 | 3.4 | 3.3 | 3.2 |
| Dunedin | 5.1 | 5.3 | 4.4 | 5.1 | 4.1 | 6.0 | 7.5 | 6.2 | 8.1 | 6.3 | 5.3 | 4.8 |
| Gisborne | 7.1 | 7.4 | 7.4 | 7.1 | 7.5 | 7.2 | 7.7 | 6.8 | 5.8 | 7.0 | 9.1 | 11.3 |
| Hamilton | 1.3 | 1.2 | 1.2 | 1.4 | 1.4 | 1.2 | 1.0 | 1.3 | 1.3 | 1.7 | 1.6 | 1.1 |
| Hokitika | 3.6 | 3.6 | 3.6 | 3.6 | 0.0 | 0.0 | 3.6 | 3.6 | 3.7 | 4.0 | 0.0 | 0.0 |
| Invercargill | 5.9 | 3.8 | 1.9 | 2.5 | 3.8 | 3.6 | 3.4 | 2.2 | 2.3 | 6.5 | 10.4 | 12.5 |
| Kerikeri | 8.8 | 7.5 | 8.8 | 10.0 | 10.0 | 13.8 | 10.0 | 8.8 | 10.0 | 8.8 | 10.0 | 10.0 |
| Manapouri | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Napier | 7.5 | 9.3 | 11.9 | 8.7 | 11.8 | 11.7 | 9.0 | 9.4 | 6.2 | 6.7 | 7.7 | 10.1 |
| Nelson | 2.4 | 2.4 | 2.7 | 2.9 | 4.6 | 5.4 | 4.3 | 3.9 | 3.5 | 2.9 | 3.9 | 4.1 |
| New Plymouth | 4.4 | 3.2 | 3.3 | 3.9 | 5.0 | 6.8 | 6.9 | 6.4 | 3.8 | 1.7 | 3.0 | 4.6 |
| Ohakea | 3.3 | 2.9 | 2.5 | 2.6 | 3.7 | 2.2 | 4.0 | 3.8 | 3.9 | 6.1 | 5.3 | 5.8 |
| Palmerston North | 1.9 | 2.6 | 3.6 | 4.3 | 4.4 | 5.1 | 5.2 | 5.7 | 6.8 | 4.7 | 4.6 | 3.8 |
| Paraparaumu | 1.1 | 1.3 | 1.2 | 2.1 | 1.4 | 2.5 | 3.0 | 2.6 | 2.7 | 2.5 | 2.1 | 1.6 |
| Queenstown | 2.3 | 3.4 | 4.8 | 5.5 | 5.4 | 4.3 | 3.3 | 2.3 | 2.3 | 2.3 | 2.5 | 3.1 |
| Rotorua | 3.5 | 2.2 | 2.3 | 2.3 | 4.4 | 6.3 | 6.6 | 6.2 | 6.1 | 4.7 | 5.9 | 6.0 |
| Taupo | 2.7 | 2.3 | 2.3 | 2.7 | 1.2 | 1.7 | 2.1 | 1.3 | 1.3 | 1.7 | 0.9 | 0.9 |
| Tauranga | 1.4 | 1.9 | 2.2 | 2.5 | 2.3 | 2.0 | 2.3 | 2.8 | 3.1 | 3.1 | 2.9 | 2.4 |
| Timaru | 6.3 | 2.5 | 2.5 | 3.8 | 3.8 | 5.0 | 6.3 | 6.3 | 6.3 | 3.8 | 3.8 | 2.5 |
| Wanganui | 3.1 | 2.3 | 2.7 | 3.7 | 3.3 | 6.9 | 7.7 | 5.6 | 5.5 | 3.4 | 3.4 | 3.0 |
| Wellington | 2.5 | 3.0 | 3.7 | 3.3 | 3.2 | 3.0 | 2.7 | 2.6 | 2.9 | 2.4 | 2.2 | 3.4 |
| Westport | 14.5 | 14.5 | 14.5 | 14.5 | 4.8 | 4.8 | 4.8 | 4.8 | 4.8 | 9.7 | 4.8 | 9.7 |
| Whakatane | 3.3 | 3.3 | 2.5 | 2.5 | 4.2 | 3.3 | 5.0 | 5.0 | 4.2 | 5.8 | 4.2 | 5.8 |
| Whangarei | 8.3 | 6.8 | 5.3 | 4.5 | 2.3 | 3.8 | 6.8 | 7.5 | 7.5 | 5.3 | 1.5 | 1.5 |
| Whenuapai | 14.2 | 14.9 | 14.2 | 12.1 | 7.1 | 6.6 | 5.2 | 5.2 | 8.8 | 8.2 | 8.4 | 11.4 |
| Woodbourne | 3.8 | 4.3 | 4.4 | 5.3 | 7.2 | 10.4 | 9.5 | 8.7 | 7.4 | 4.7 | 5.2 | 5.9 |
| Overall | 3.4 | 3.5 | 3.6 | 3.6 | 3.7 | 4.1 | 4.0 | 3.9 | 3.8 | 3.5 | 3.5 | 3.8 |

Data with a pink background is based on CAA estimates of aircraft movements for the aerodrome because the CAA has either no data or incomplete data for that aerodrome.

Analysis

Each aerodrome is assigned a risk category based on the most recent 12 month average bird strike rate per 10,000 aircraft movements. These categories are:

- Low where the rate is less than 5 strikes per 10,000 movements
- Medium where the rate is not less than 5 strikes per 10,000 movements but less than 10 strikes per 10,000 movements
- High where the rate is not less than 10 strikes per 10,000 movements.

Each aerodrome is also assigned a trend category based on a straight line approximation to the 3 year history of bird strike rates. These categories are:

- Trending down where the trend graph has a slope of less than -0.059 strikes per 10,000 movements
- Constant where the trend graph has a slope of between -0.059 and +0.059 strikes per 10,000 movements
- Trending up where the trend graph has a slope of more than +0.059 strikes per 10,000 movements

The CAA then determines what if any actions are required based on the combination of the above categories

Current details for individual aerodromes are shown in the following table.

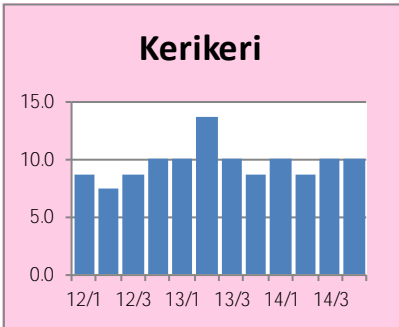
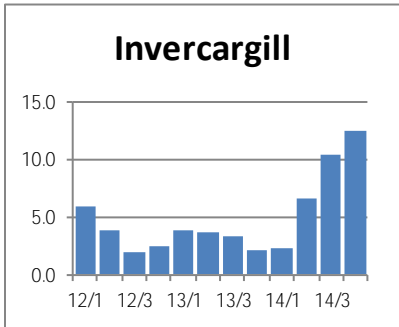
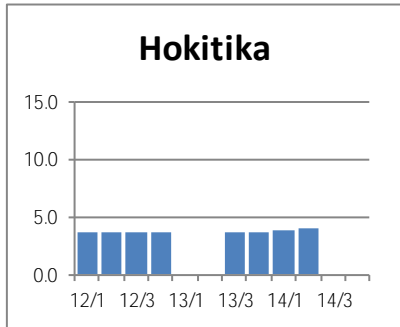
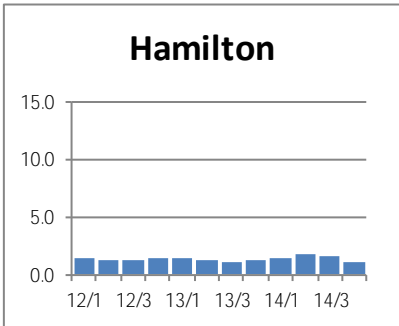
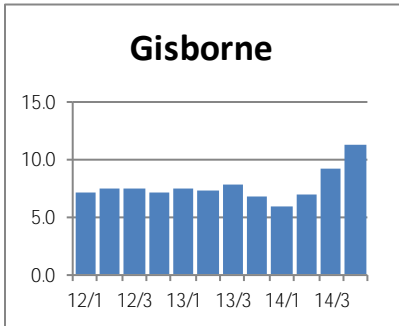
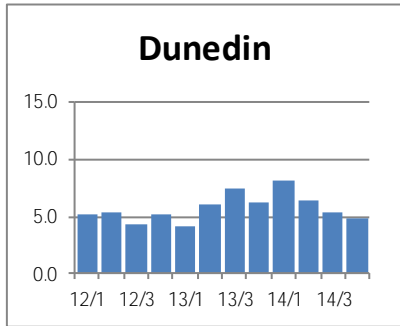
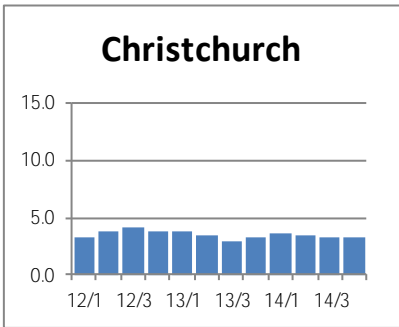
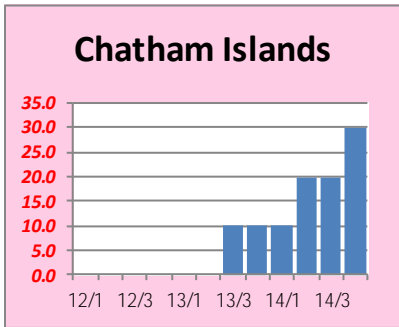
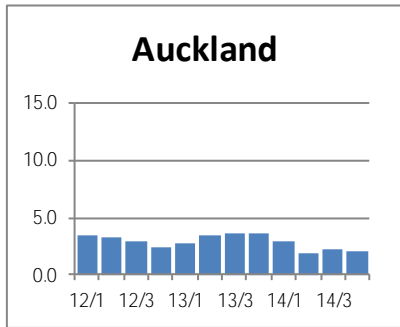
| Aerodrome | Risk Category | Trend |
|------------------|---------------|----------|
| Auckland | Low | Downward |
| Chatham Islands | High | Upward |
| Christchurch | Low | Constant |
| Dunedin | Low | Upward |
| Gisborne | High | Upward |
| Hamilton | Low | Constant |
| Hokitika | Low | Downward |
| Invercargill | High | Upward |
| Kerikeri | High | Upward |
| Manapouri | Low | Constant |
| Napier | High | Downward |
| Nelson | Low | Upward |
| New Plymouth | Low | Constant |
| Ohakea | Medium | Upward |
| Palmerston North | Low | Upward |
| Paraparaumu | Low | Upward |
| Queenstown | Low | Downward |
| Rotorua | Medium | Upward |
| Taupo | Low | Downward |
| Tauranga | Low | Upward |
| Timaru | Low | Constant |
| Wanganui | Low | Upward |
| Wellington | Low | Constant |
| Westport | Medium | Downward |
| Whakatane | Medium | Upward |
| Whangarei | Low | Downward |
| Whenuapai | High | Downward |
| Woodbourne | Medium | Upward |

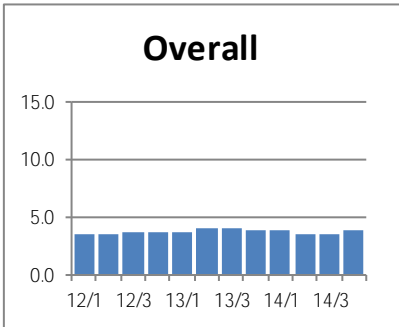
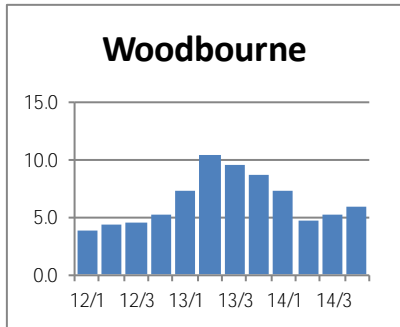
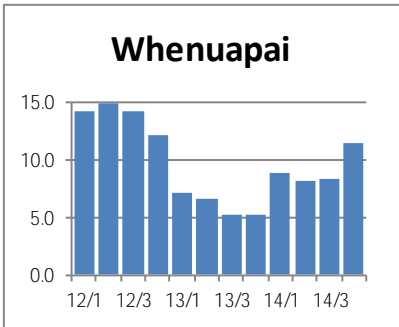
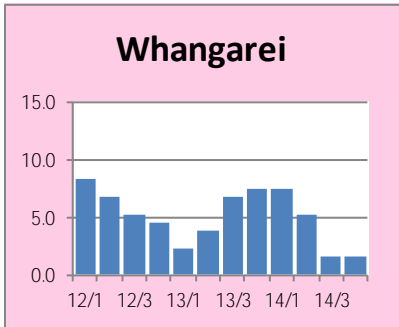
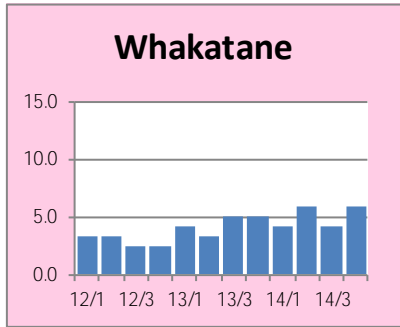
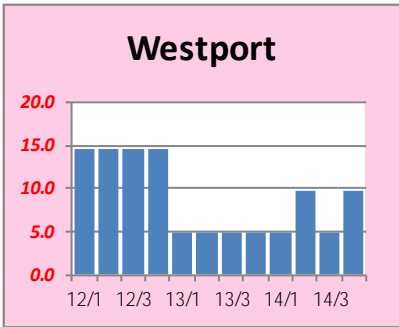
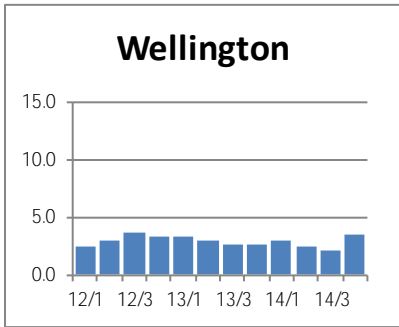
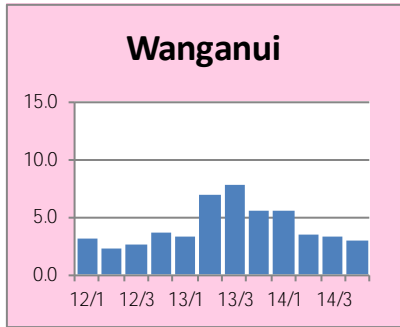
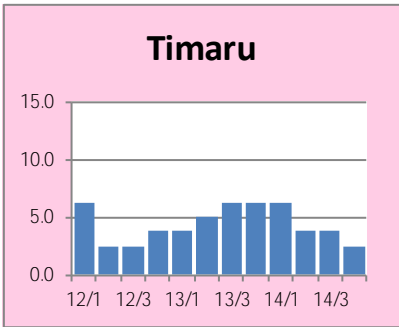
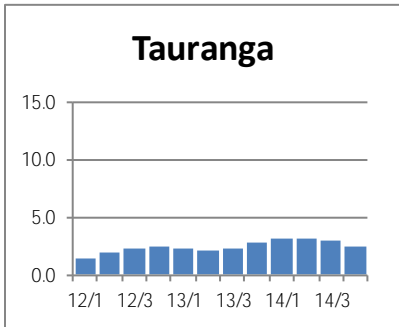
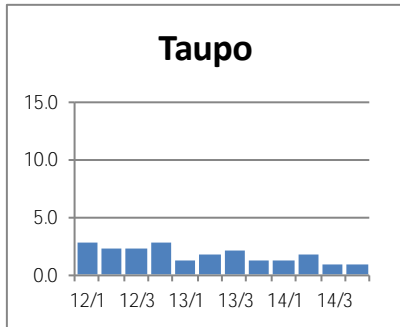
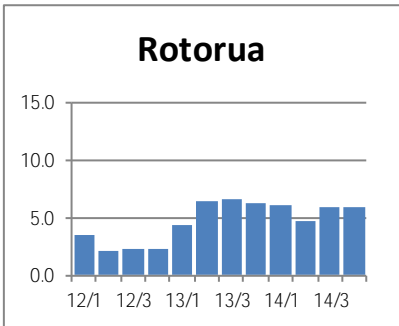
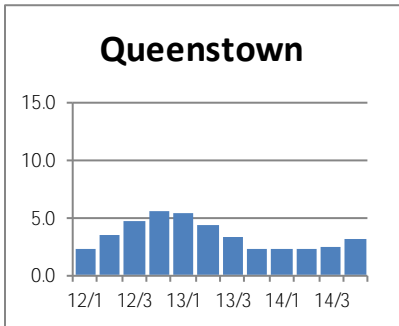
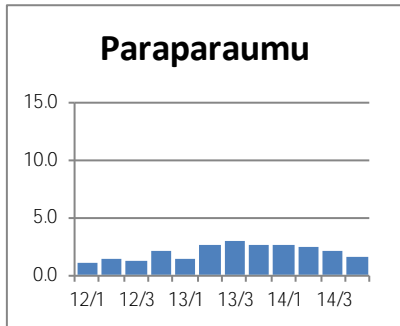
The following table summarises the numbers of aerodromes in each Risk/Trend Category.

| Risk Category | Trend | | | Total |
|---------------|----------|----------|--------|-------|
| | Downward | Constant | Upward | |
| Low | 5 | 6 | 6 | 17 |
| Medium | 1 | 0 | 4 | 5 |
| High | 2 | 0 | 4 | 6 |
| Total | 8 | 6 | 14 | 28 |

The graphs on the next two pages show the 12 month moving average on-aerodrome bird-strike rates per 10,000 movements for each monitored aerodrome for the three year period ending 31 December 2014.

Graphs with a pink background are based on CAA estimates of aircraft movements for the aerodrome because the CAA has either no data or incomplete data for that aerodrome. Operators of these aerodromes are invited to supply more complete movement data to improve the accuracy of this report.



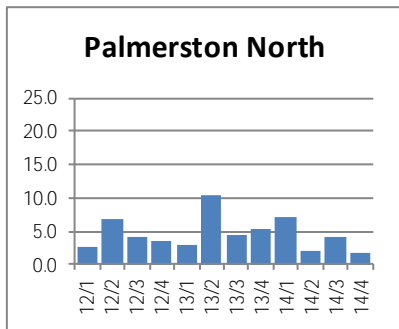
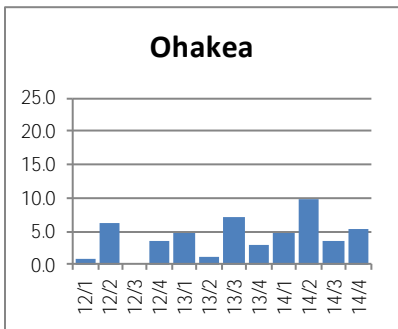
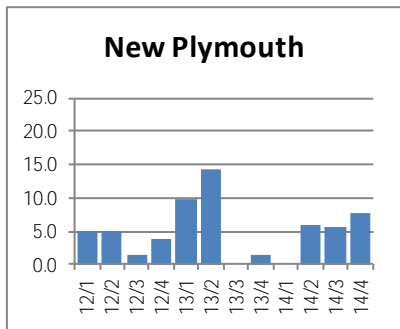
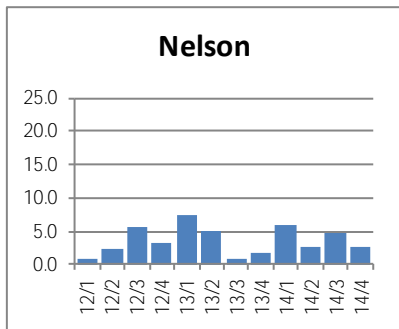
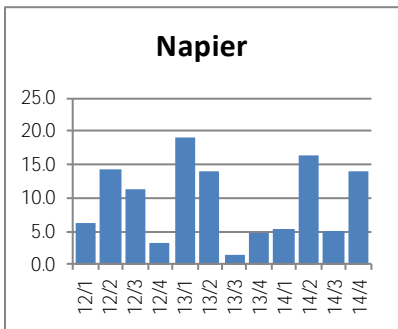
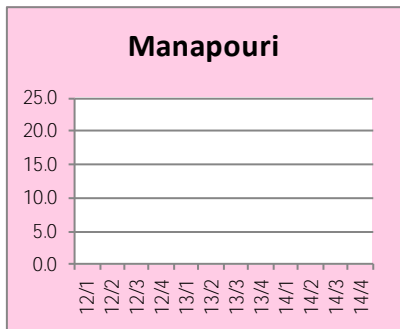
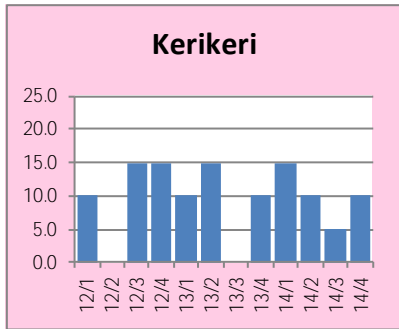
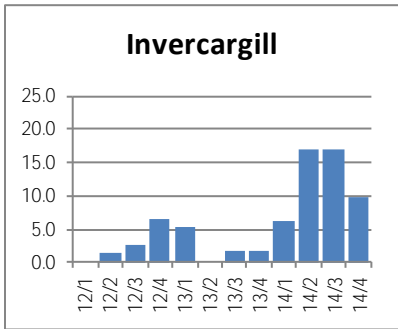
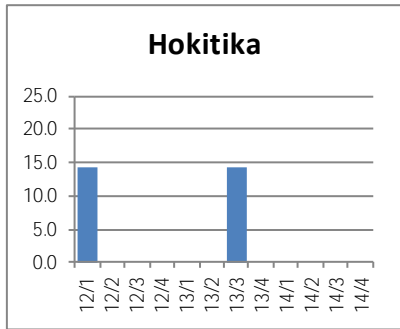
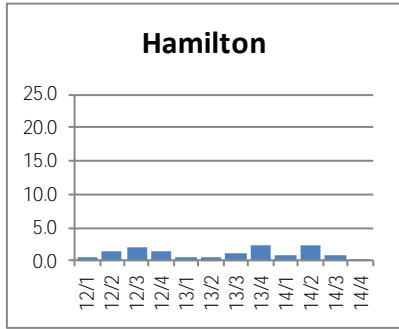
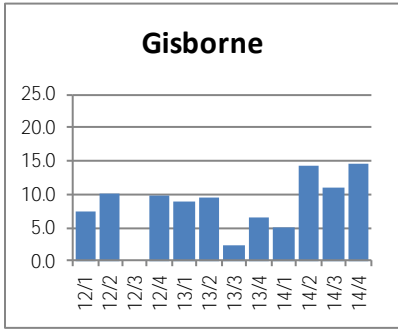
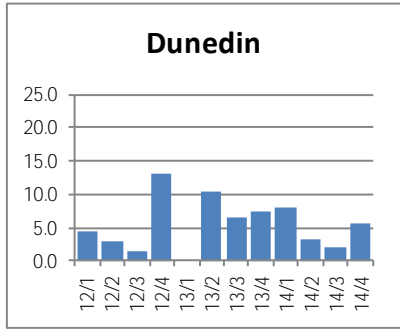
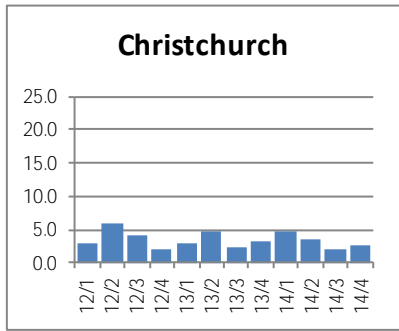
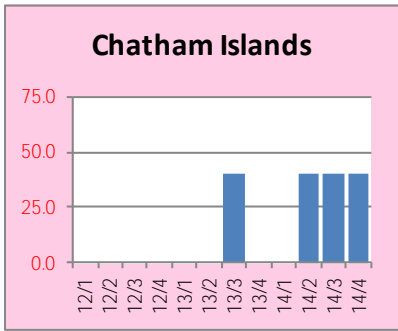
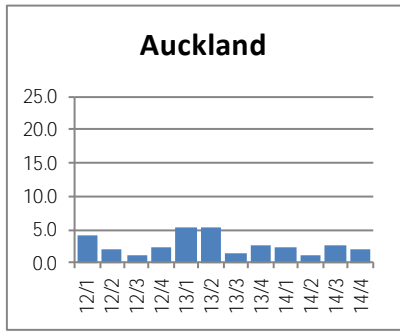


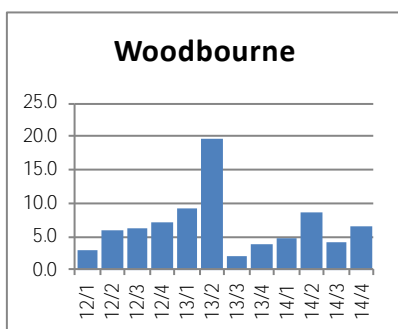
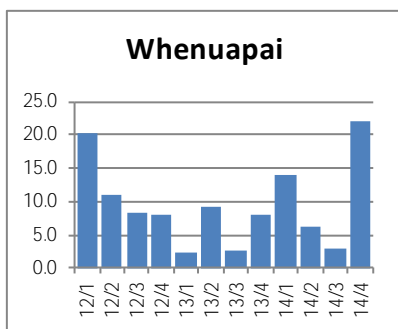
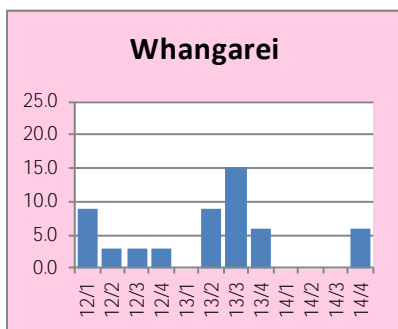
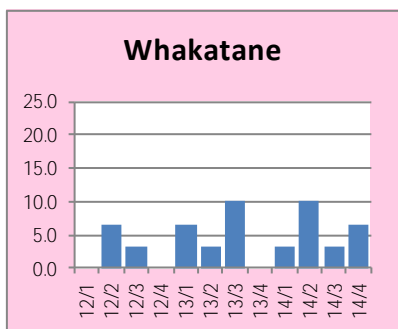
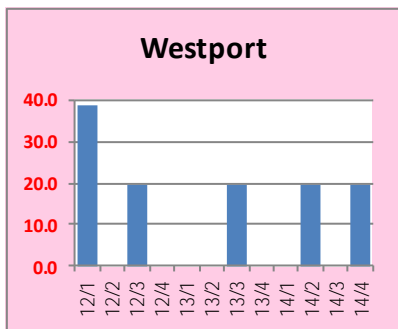
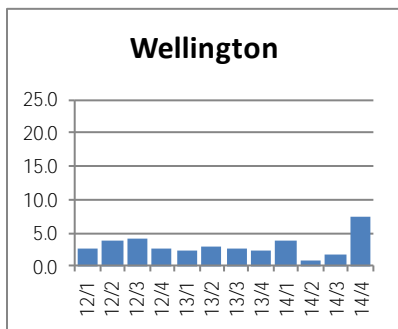
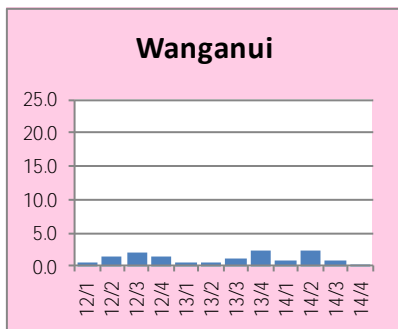
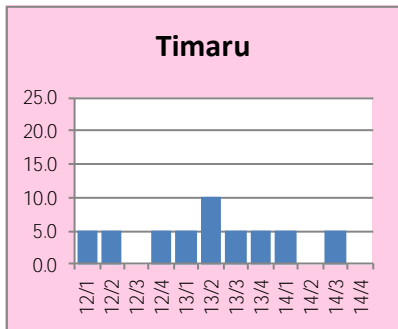
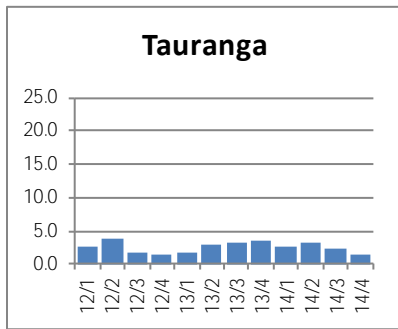
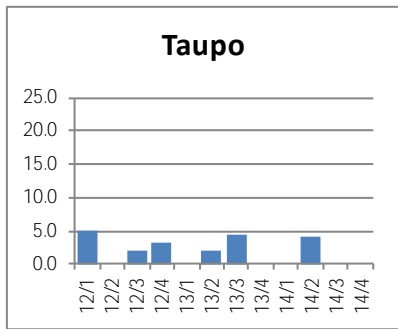
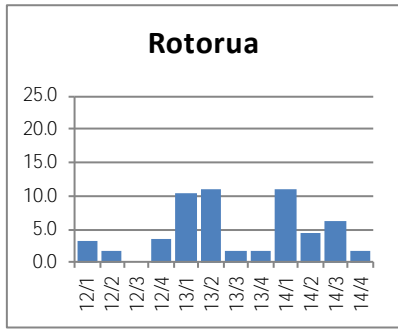
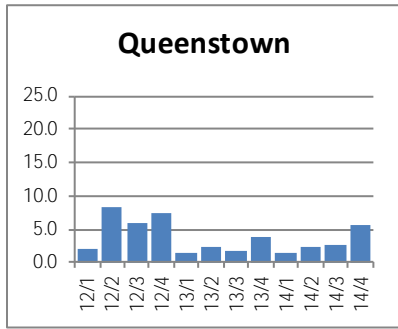
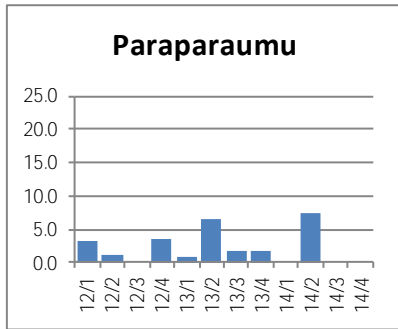
On-Aerodrome Quarterly Strike Rate per 10,000 Aircraft Movements

The following table and graphs show the quarterly on-aerodrome strike rates for identified aerodromes for the three year period ending 31 December 2014.

| Aerodrome | Quarter | | | | | | | | | | | |
|------------------|---------|------|------|------|------|------|------|------|------|------|------|------|
| | 12/1 | 12/2 | 12/3 | 12/4 | 13/1 | 13/2 | 13/3 | 13/4 | 14/1 | 14/2 | 14/3 | 14/4 |
| Auckland | 4.0 | 2.1 | 1.0 | 2.2 | 5.3 | 5.2 | 1.5 | 2.7 | 2.3 | 1.1 | 2.6 | 2.0 |
| Chatham Islands | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 40.0 | 0.0 | 0.0 | 40.0 | 40.0 | 40.0 |
| Christchurch | 2.9 | 6.0 | 4.2 | 2.1 | 2.9 | 4.7 | 2.2 | 3.2 | 4.6 | 3.5 | 2.1 | 2.6 |
| Dunedin | 4.5 | 3.0 | 1.5 | 13.2 | 0.0 | 10.4 | 6.6 | 7.4 | 8.1 | 3.3 | 2.0 | 5.5 |
| Gisborne | 7.5 | 10.2 | 0.0 | 9.8 | 9.0 | 9.5 | 2.3 | 6.5 | 5.0 | 14.4 | 11.0 | 14.6 |
| Hamilton | 0.6 | 1.3 | 2.1 | 1.6 | 0.6 | 0.7 | 1.2 | 2.5 | 0.9 | 2.2 | 0.8 | 0.4 |
| Hokitika | 14.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 14.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Invercargill | 0.0 | 1.4 | 2.7 | 6.6 | 5.2 | 0.0 | 1.7 | 1.9 | 6.3 | 16.9 | 17.0 | 9.7 |
| Kerikeri | 10.0 | 0.0 | 15.0 | 15.0 | 10.0 | 15.0 | 0.0 | 10.0 | 15.0 | 10.0 | 5.0 | 10.0 |
| Manapouri | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Napier | 6.2 | 14.4 | 11.4 | 3.1 | 19.2 | 14.0 | 1.5 | 4.7 | 5.3 | 16.5 | 5.0 | 14.1 |
| Nelson | 0.8 | 2.3 | 5.6 | 3.3 | 7.5 | 5.1 | 0.9 | 1.9 | 5.9 | 2.6 | 4.9 | 2.7 |
| New Plymouth | 5.0 | 5.1 | 1.4 | 4.0 | 9.7 | 14.2 | 0.0 | 1.6 | 0.0 | 5.8 | 5.7 | 7.7 |
| Ohakea | 1.0 | 6.2 | 0.0 | 3.5 | 4.8 | 1.2 | 7.0 | 2.9 | 4.6 | 9.9 | 3.4 | 5.2 |
| Palmerston North | 2.6 | 6.8 | 4.2 | 3.4 | 2.8 | 10.4 | 4.3 | 5.2 | 7.2 | 2.1 | 4.0 | 1.8 |
| Paraparaumu | 3.2 | 1.2 | 0.0 | 3.6 | 0.9 | 6.4 | 1.7 | 1.6 | 0.0 | 7.4 | 0.0 | 0.0 |
| Queenstown | 2.0 | 8.4 | 6.0 | 7.4 | 1.5 | 2.5 | 1.8 | 3.7 | 1.5 | 2.4 | 2.7 | 5.6 |
| Rotorua | 3.4 | 1.9 | 0.0 | 3.4 | 10.4 | 11.0 | 1.8 | 1.8 | 11.1 | 4.4 | 6.3 | 1.9 |
| Taupo | 5.1 | 0.0 | 1.9 | 3.3 | 0.0 | 2.0 | 4.5 | 0.0 | 0.0 | 4.1 | 0.0 | 0.0 |
| Tauranga | 2.6 | 3.9 | 1.8 | 1.6 | 1.9 | 3.1 | 3.2 | 3.6 | 2.5 | 3.2 | 2.3 | 1.5 |
| Timaru | 5.0 | 5.0 | 0.0 | 5.0 | 5.0 | 10.0 | 5.0 | 5.0 | 5.0 | 0.0 | 5.0 | 0.0 |
| Wanganui | 0.6 | 1.3 | 2.1 | 1.6 | 0.6 | 0.7 | 1.2 | 2.5 | 0.9 | 2.2 | 0.8 | 0.4 |
| Wellington | 2.7 | 4.0 | 4.0 | 2.7 | 2.3 | 2.9 | 2.8 | 2.3 | 3.7 | 0.9 | 1.7 | 7.3 |
| Westport | 38.8 | 0.0 | 19.4 | 0.0 | 0.0 | 0.0 | 19.4 | 0.0 | 0.0 | 19.4 | 0.0 | 19.4 |
| Whakatane | 0.0 | 6.7 | 3.3 | 0.0 | 6.7 | 3.3 | 10.0 | 0.0 | 3.3 | 10.0 | 3.3 | 6.7 |
| Whangarei | 9.0 | 3.0 | 3.0 | 3.0 | 0.0 | 9.0 | 15.1 | 6.0 | 0.0 | 0.0 | 0.0 | 6.0 |
| Whenuapai | 20.4 | 11.1 | 8.4 | 7.9 | 2.2 | 9.2 | 2.5 | 8.1 | 13.9 | 6.2 | 2.8 | 22.1 |
| Woodbourne | 2.8 | 5.9 | 6.2 | 7.1 | 9.2 | 19.7 | 2.1 | 3.7 | 4.6 | 8.7 | 4.2 | 6.4 |

Data with a pink background is based on CAA estimates of aircraft movements for the aerodrome because the CAA has either no data or incomplete data for that aerodrome.





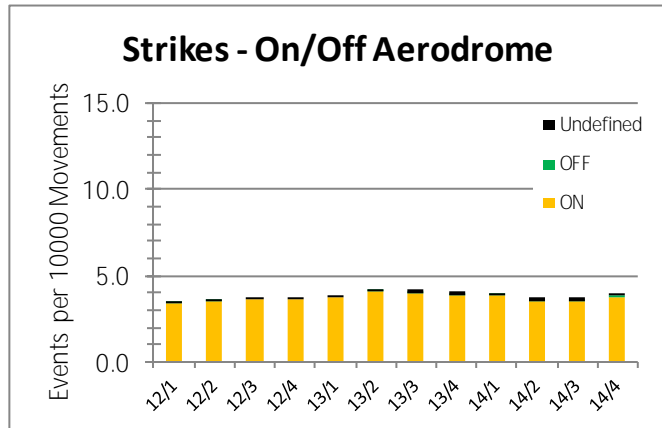
The remainder of this report records the results of analysis of individual aerodromes' reported bird strikes and near strikes broken down by on/off-aerodrome and separately by bird size. One page is also included to cover the same information averaged across all monitored aerodromes.

The version of the report distributed internally within the CAA includes a separate page for each monitored aerodrome but the version delivered to each aerodrome operator will only contain the pages relevant to that operator. The version delivered to the NZAFSC and DOC will carry none of these individual pages.

Strike and Near Strike Rates per 10000 Movements - All Monitored Aerodromes (12 month moving averages)

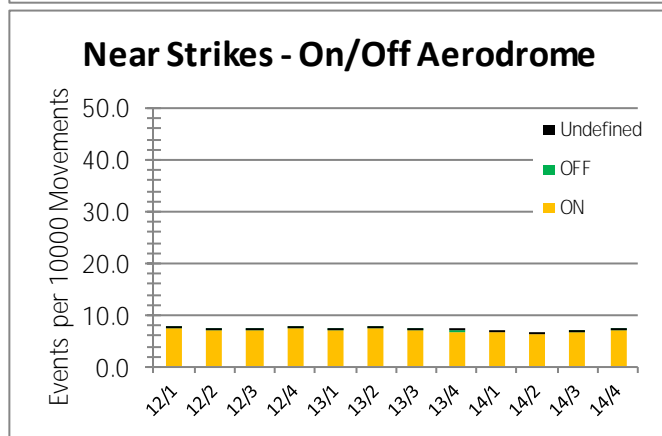
ON/OFF Aerodrome - STRIKE

| Quarter | ON | OFF | Undefined | Total |
|---------|-----|-----|-----------|-------|
| 12/1 | 3.4 | 0.0 | 0.1 | 3.5 |
| 12/2 | 3.5 | 0.0 | 0.1 | 3.6 |
| 12/3 | 3.6 | 0.0 | 0.1 | 3.7 |
| 12/4 | 3.6 | 0.0 | 0.1 | 3.7 |
| 13/1 | 3.7 | 0.0 | 0.1 | 3.9 |
| 13/2 | 4.1 | 0.0 | 0.1 | 4.2 |
| 13/3 | 4.0 | 0.0 | 0.1 | 4.2 |
| 13/4 | 3.9 | 0.0 | 0.2 | 4.1 |
| 14/1 | 3.8 | 0.0 | 0.2 | 4.0 |
| 14/2 | 3.5 | 0.0 | 0.2 | 3.7 |
| 14/3 | 3.5 | 0.0 | 0.2 | 3.8 |
| 14/4 | 3.8 | 0.0 | 0.2 | 4.0 |



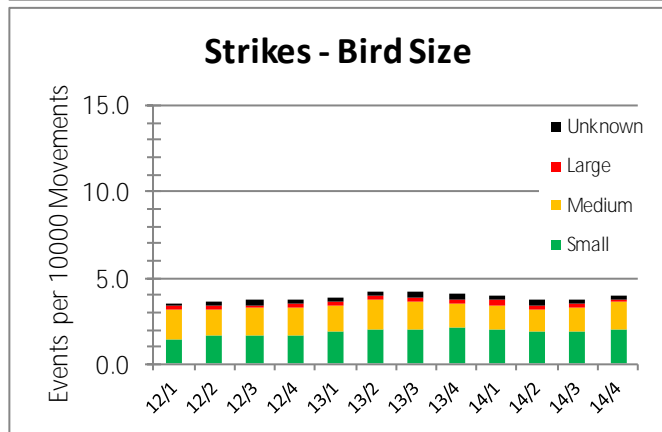
ON/OFF Aerodrome - NEAR STRIKE

| Quarter | ON | OFF | Undefined | Total |
|---------|-----|-----|-----------|-------|
| 12/1 | 7.6 | 0.0 | 0.1 | 7.8 |
| 12/2 | 7.2 | 0.0 | 0.1 | 7.4 |
| 12/3 | 7.2 | 0.0 | 0.2 | 7.4 |
| 12/4 | 7.3 | 0.0 | 0.2 | 7.6 |
| 13/1 | 7.1 | 0.0 | 0.2 | 7.3 |
| 13/2 | 7.5 | 0.0 | 0.2 | 7.8 |
| 13/3 | 7.2 | 0.0 | 0.1 | 7.4 |
| 13/4 | 6.9 | 0.0 | 0.1 | 7.0 |
| 14/1 | 6.9 | 0.0 | 0.1 | 6.9 |
| 14/2 | 6.4 | 0.0 | 0.2 | 6.7 |
| 14/3 | 6.6 | 0.0 | 0.2 | 6.9 |
| 14/4 | 7.2 | 0.0 | 0.3 | 7.4 |



Bird_Size - STRIKE

| Quarter | Small | Medium | Large | Unknown | Total |
|---------|-------|--------|-------|---------|-------|
| 12/1 | 1.5 | 1.7 | 0.2 | 0.2 | 3.5 |
| 12/2 | 1.6 | 1.5 | 0.2 | 0.2 | 3.6 |
| 12/3 | 1.7 | 1.6 | 0.2 | 0.2 | 3.7 |
| 12/4 | 1.6 | 1.7 | 0.2 | 0.2 | 3.7 |
| 13/1 | 1.9 | 1.5 | 0.2 | 0.2 | 3.9 |
| 13/2 | 2.0 | 1.7 | 0.2 | 0.3 | 4.2 |
| 13/3 | 2.0 | 1.7 | 0.2 | 0.3 | 4.2 |
| 13/4 | 2.1 | 1.4 | 0.3 | 0.3 | 4.1 |
| 14/1 | 2.0 | 1.4 | 0.3 | 0.3 | 4.0 |
| 14/2 | 1.9 | 1.3 | 0.3 | 0.3 | 3.7 |
| 14/3 | 1.9 | 1.4 | 0.2 | 0.3 | 3.8 |
| 14/4 | 2.0 | 1.7 | 0.2 | 0.2 | 4.0 |



Bird_Size - NEAR STRIKE

| Quarter | Small | Medium | Large | Unknown | Total |
|---------|-------|--------|-------|---------|-------|
| 12/1 | 2.2 | 4.4 | 1.0 | 0.2 | 7.8 |
| 12/2 | 2.1 | 3.9 | 1.0 | 0.3 | 7.4 |
| 12/3 | 2.1 | 3.9 | 1.1 | 0.4 | 7.4 |
| 12/4 | 2.3 | 3.9 | 1.0 | 0.5 | 7.6 |
| 13/1 | 2.4 | 3.5 | 0.9 | 0.5 | 7.3 |
| 13/2 | 2.8 | 3.7 | 0.8 | 0.5 | 7.8 |
| 13/3 | 2.5 | 3.6 | 0.8 | 0.5 | 7.4 |
| 13/4 | 2.4 | 3.3 | 0.8 | 0.5 | 7.0 |
| 14/1 | 2.3 | 3.2 | 0.9 | 0.4 | 6.9 |
| 14/2 | 2.2 | 3.3 | 0.8 | 0.4 | 6.7 |
| 14/3 | 2.3 | 3.4 | 0.8 | 0.4 | 6.9 |
| 14/4 | 2.5 | 3.8 | 0.7 | 0.5 | 7.4 |

