

King Shag non-breeding season population census 2024



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Image: Aerial survey photo of Tawhitinui King Shag colony January 23rd, 2024.

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Introduction

An aerial survey of all known King Shag colonies and roosts was undertaken at first light on January 23rd, 2024, by Canterbury Aviation LTD using a fixed wing aircraft with fixed camera mounts. Methodology for both photography and counts followed that used for all aerial surveys since 2015 (see Bell 2022 for further details) and this report provides details on King Shag non-breeding population trends for seven censuses between 2015-2024. Noting that not all were consecutive years.

Results

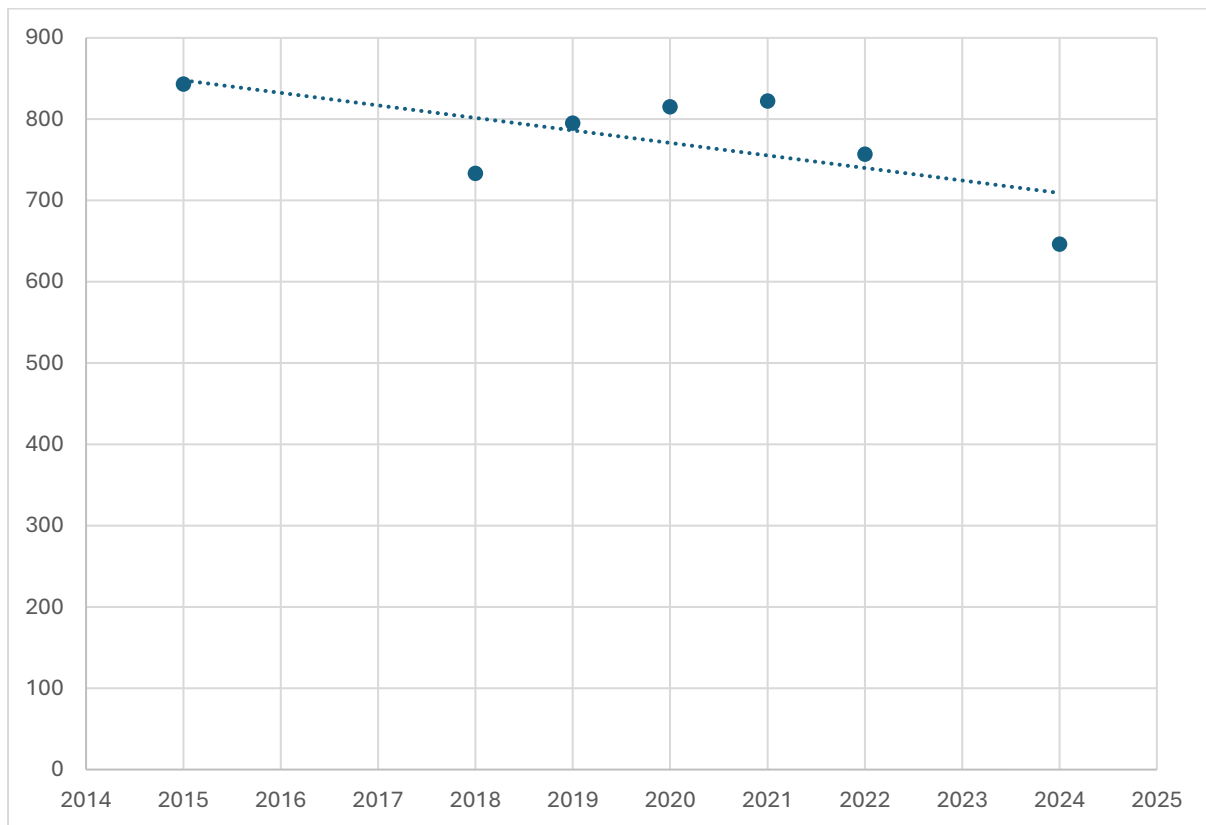
A total of 646 birds were recorded from 12 roost sites and breeding colonies in the Marlborough Sounds. This is the lowest number of King Shag recorded within the last decade (Table 1 and Figure 1).

Table 1. *Numbers of King Shag counted at roosting sites during the non-breeding season and estimate population correcting for roost sites missed during aerial surveys; 2015-2024.*

Colony	Area	2015	2018	2019	2020	2021	2022	2024
Tekuru Kuru/ Stewart Island	Admiralty Bay	26	16	0	9	16	30	9
Kuru Pongi/ North Trios	Admiralty Bay	173	129	76	119	106	196	158
Kuru Pongi/ South Trios	Admiralty Bay		45*	96	85	80	0	0
Duffers Reef	Pelorus	297	212	214	207	198	159	117
Moturaka/ The Haystack	Pelorus		55*	47	16	35	55	0
Sentinel Rock	Pelorus	64	0	0	0	0	0	53
Treble Tree Point	Pelorus							18
Tawhitinui	Pelorus	43	65	79	78	98	76	55
Hunia	Port Gore	53	31	45	44	46	37	0
Cape Lambert	Port Gore							37
Oruawairua/ Blumine	Queen Charlotte	9	4	37	55	29	32	27
Kumutoto Point	Queen Charlotte						12	
Rauakaka	Queen Charlotte		5	0	2	0	0	0
The Twins	Queen Charlotte	0	51	54	43	66	0	15
White Rocks	Queen Charlotte	103	69	69	46	37	46	81
Bottle Rock Point	Queen Charlotte			6*	8	2	6	0
Rahuinui	Tasman Bay	75	51	70	103	97	98	75
Squadron Rocks	Tasman Bay	0	0	2	0	11	10	1
Total		843	733	795	815	822	757	646

* Estimated count for colony missed during aerial survey

Figure 1. Numbers of King Shag counted during the non-breeding season 2015-2024 (Filled circles count results, dashed line linear trend line).



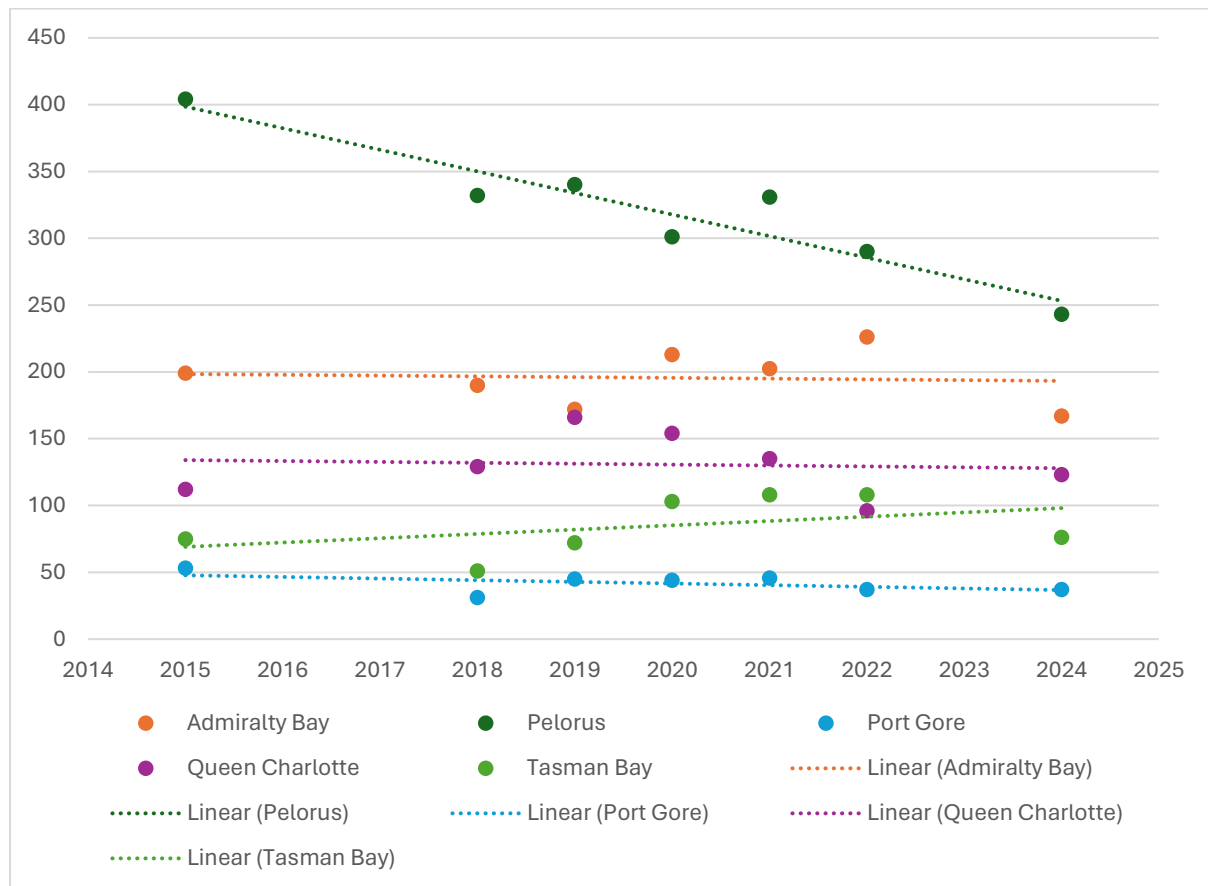
Discussion

The population is at the lowest ever recorded for the past decade. The population looked stable between 2019-2021 (mean 811 birds) however, it has declined by 165 birds (around 20%) to 646, in 2024.

Breeding success, and hence productivity during the 2021, 2022 and 2023 breeding season has been very poor at most colonies – except at the Trios, where birds have breed later (M Bell pers. Obs.). This has been largely impacted by adverse weather during the breeding season. Declines in the population observed in the current census are likely to be a result of a significant reduction in juvenile, and pre-breeding aged birds (1–4-year-old birds). This will likely have flow on effects to recruitment rates of these sub-adult birds into the breeding population.

Since the 2022 census, most roosting sites and colonies in the Marlborough Sounds have seen a decline, except Sentinel Rock, Treble Tree Point, Cape Lambert, The Twins and White Rock. However, Pelorus Sound appears to show a longer-term decline, whilst other areas appear to have a more recent drop off. There have been significant reductions of birds at both Duffer’s Reef and Tawhitinui. Both of these colonies are very low lying (most nests <5m above sea level (Schuckard et al. 2015), and both areas have had exceptionally poor breeding in 2021, 2022 and 2023 breeding seasons. The new roost at Treble Tree Point has formed with both Duffer’s and Tawhitinui birds shifting to this site (Pers. Obs. from band re-sighting data).

Figure 2. Numbers of King Shag counted in the non-breeding season at different areas of the Marlborough Sounds 2015-2024 (Filled circles count results, dashed line linear trend line).



The slightly hopeful news is that the birds have been able to recover from previous population declines. For example, the 2018 low was followed a period of good breeding (at least for 2019 and 2020 where we have data) which saw the population increase. Potentially with El Nino conditions we will see more settled winter weather over coming years reducing the prevalence of storm events destroying nests at breeding colonies. This will hopefully result in an increase in King Shag productivity in 2024 and coming seasons, noting that food sources and other factors also influence breeding success.

However, longer term the predictions of climate change producing more severe weather events are concerning for King Shag which are classified as a nationally critical species. Poor productivity has driven the current population decline, and now with a reduced pool of pre-breeding aged birds over the past 3-breeding seasons in particular, it is likely this bottleneck will result in continued population declines with fewer young birds to replace adults as they die.

Recommendations

Considering the observed population declines of King Shag, annual breeding and non-breeding population surveys of King Shag should be re-instated. Breeding surveys should use methodology that can determine annual productivity (i.e. boat-based based surveys and using drones to capture images). Non-breeding surveys should continue to use aerial surveys as has

been done since 2015, but these need to be done annually to accurately assess population trends.

Longer term attempts to attract King Shag to breed at sites that are less impacted by weather events (e.g., higher above sea level; deeper more stable soil) is considered a key conservation management measure that should be instigated in order to improve productivity and attempt to stabilise or increase the population (see Bell 2022 for further discussion). This is currently being investigated with DOC along with other initiatives for management of this species.

Acknowledgements

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References

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