

Paradise Shelduck Moulting Survey

January/February 2022

Results of annual counts at West Coast moulting sites.



Baylee Kersten, Fish & Game Officer, March 2022



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Summary

*The endemic Paradise Shelduck (*Tadorna variegata*) is the West Coast Regions most intensely managed game bird. Large concentrations of birds can cause conflict with landowners resulting in opportunities for hunters to harvest surplus birds. Each year repeat counts are made of known moulting sites to gain an index of relative abundance. This year 21,446 birds were observed in total, this is a 13% decrease from the previous year and about 3,000 birds above the 25-year average. Long-term monitoring (over 25 years) indicates that the northern moulting sites have slowly increased by 3% but in the short term (5 years) has increased by 12%. Long term monitoring (over 25 years) indicates that the southern moulting sites have increased by 18% on average but the rate of increase has slowed in the short term (5 years) to 11%. Staff recommendations are retain current bag limits and season duration. Continue to promote the West Coast shelduck population as an underutilised resource and rewarding hunting opportunity. Undertake organised hunts in areas with high shelduck populations and properties where significant crop predation occurs.*

Introduction

Paradise Shelduck (*Tadorna variegata*) ('shelduck') are an endemic New Zealand species and well distributed throughout much of the country. Highest concentrations of shelduck are typically found adjacent to areas of developed farmland. On the West Coast large concentrations of shelduck can be found in the Grey Valley and its catchments, the Buller, Karamea and South Westland.

Since monitoring began in the 1990s populations of shelduck on the West Coast have overall increased but the population has fluctuated during the monitoring period. This population increase is a response to improvement and expansion of their desired habitat – productive farmland (Kelly, 2010). Monitoring has now become critical, both in appeasing landowner concerns that the population is not escalating unchecked, and to allow and to promote opportunities for hunters to harvest surplus birds. This survey provides the baseline information to inform regulation setting, including season length, bag limits and special seasons.

Shelduck congregate during January to March at specific sites to moult. These areas are typically a small to medium sized water body with a nearby food supply. By identifying the location of these moulting sites, shelduck populations can be monitored from year to year by counting birds present at each site.

The aim of the current survey was to:

- 1) Repeat the annual counts of known shelduck moulting sites to gain an index of relative abundance of shelduck on the West Coast.
- 2) Identify any new sites holding shelduck for repeat counting in 2023.
- 3) Use route regression analysis to assess population trends in the northern and southern management units.

- 4) Provide recommendations for management of the shelduck population in context of the goals and objectives of the West Coast Region ‘Sports Fish & Game Bird Management Plan’.

Method

Most of the 2022 moult site counts were undertaken in late January and early to mid-February using a DJI Mavic Pro or DJI Mavic Air 2 drone. Sites were flown around first to identify what birds were present. Moulting shelduck tend to swim out onto open water when they hear the drone. Video and/or photos were then taken, and the footage reviewed in the office. The remaining sites were counted aerially, using a Piper Super Cub aircraft operated by Knights Point Air from Haast Airstrip on February 21st, or from the ground/boat using binoculars. During the aerial flight the location any new or changed sites were identified and counts undertaken (Appendix 1).

The number of birds and the percentage change from the previous year was calculated for all sites and then for the northern and southern management units. Fish & Game best practice ‘route regression analysis’ was then used to analyse the count data. The annual change in counts at individual sites was calculated and summarised into the northern and southern management units. Finally, the data within the northern and southern management units was summarised for population change over time.

Results

Overall numbers

A total of 21,446 shelduck were observed moulting across all sites in 2022. This value was down 3,302 shelduck from the 2021 count of 24,748 this equates to an approximate 13% decrease in overall numbers counted from the previous year.

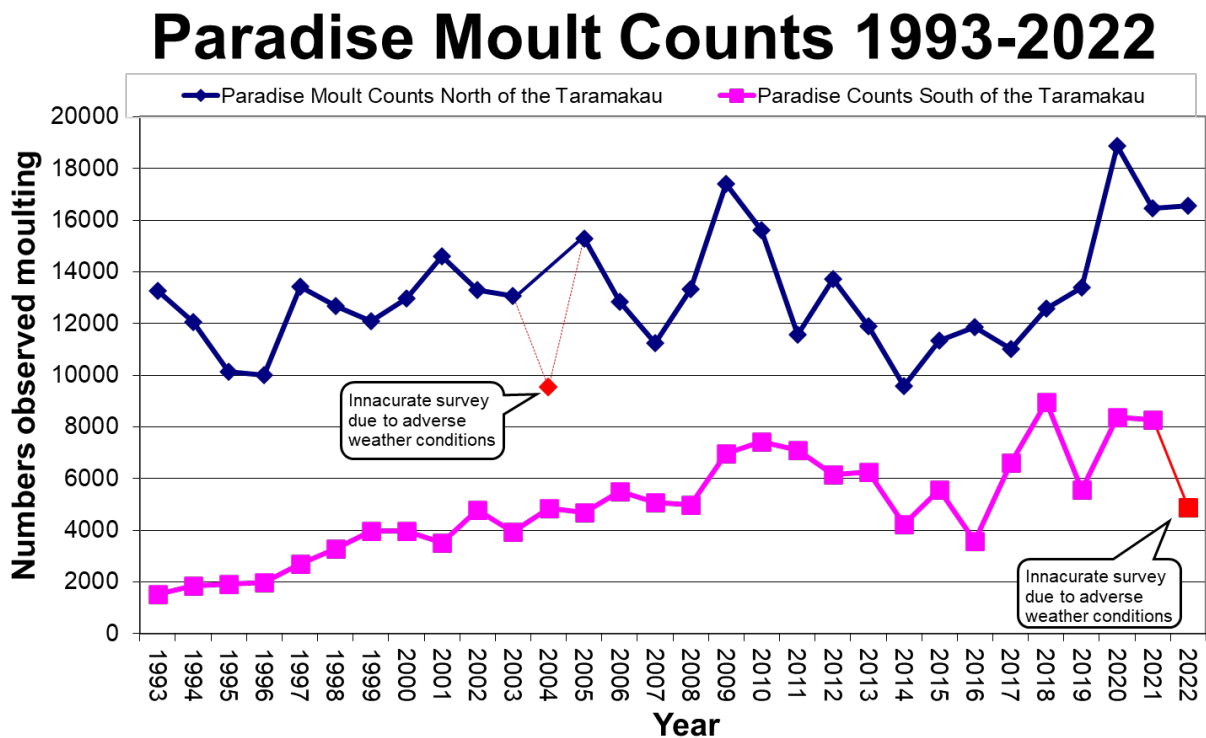


Figure 1: Number of Paradise Shelduck observed moulting in each of the separate management areas since 1993.

Northern Management Unit (north of Taramakau River).

A total of 16,567 shelduck were observed moulting at sites north of the Taramakau River in 2022. This value was up 101 birds from the 2021 count of 16,466, this equates to an approximate 0.6% increase in overall numbers counted from the previous year (see Figure 1). Over the past 30 years (1993-2022) shelduck across all monitored sites north of the Taramakau have increased by 3% on average. However, over the past five years (2018-2022) numbers of shelduck across all sites north of the Taramakau have increased by 12% on average (Figure 2).

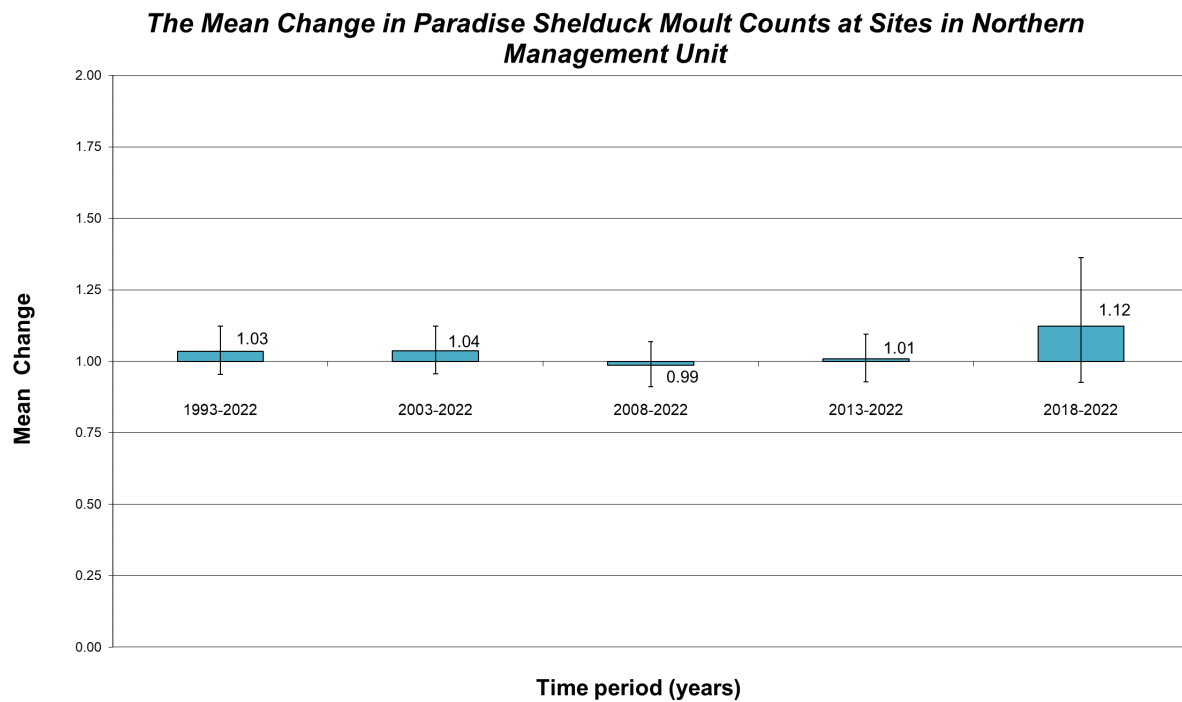


Figure 2: The mean change (\pm standard error) in Paradise Shelduck moult counts at sites north of the Taramakau River over specified time periods. Values above or below 1.0 represent an increase or decrease in population over that period.

Southern Management Unit (south of the Taramakau River)

A total of 4,879 birds were observed moulting south of the Taramakau River in 2021. This value is a decrease of 3,403 birds from the 2021 count of 8,282 and equates to a 41% decrease in overall numbers from the previous year (see Figure 1). Over the past 30 years (1993-2022) shelduck across all monitored sites south of the Taramakau have increased by 18%. However, over the past five years (2018-2022) distribution and numbers of shelduck across many sites south of the Taramakau have increased 11% on average (Figure 3).

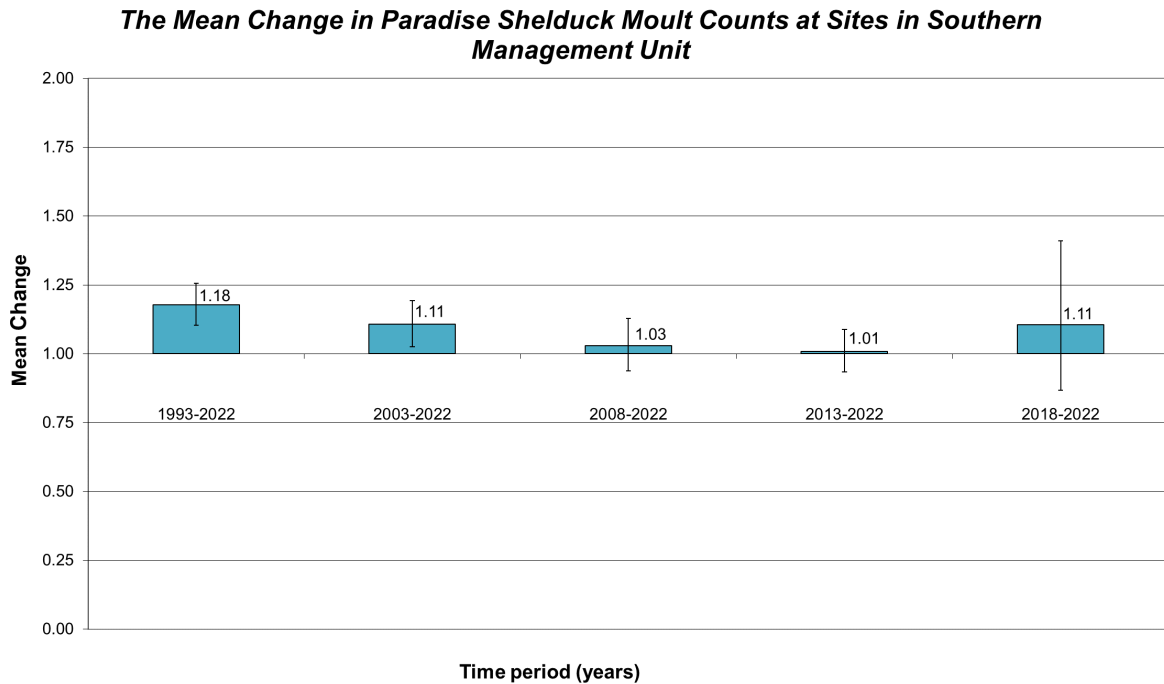


Figure 3: The mean change (\pm standard error) in Paradise Shelduck moulting counts at sites south of the Taramakau River over specified time periods. Values above or below 1.0 represent an increase or decrease in population over that period.

Discussion

Despite the southern management area's count coming in significantly lower than last year, the overall count for the region is still approximately 3,000 birds above than the long-term average. This is due to another year of the northern management area having a high count. The southern management area count this year is believed to be a poor representation of the current shelduck population trend. Due to significant flooding in early February counts were delayed beyond the peak count period. In addition to a delayed count, the flooding greatly disturbed moulting sites such as Lake Rotokino and Groves Swamp. This disturbance likely caused early dispersal, further reducing the shelducks present during counts. Lastly, a dry hot January likely encouraged early moulting, which was likely further detrimental to delayed southern counts.

Northern counts were completed in late January and therefore should be an accurate count. The plane was only flown over the southern management area and therefore the risk of missing new moulting sites is present in the North. Although, in previous years the plane has contributed very few additional birds to the count with the use of drones and communicating with landowners resulting in changes detected.

With very low confidence in the southern count and the northern count being similar to the previous year, in addition to changes to the regulation in recent years, no changes should be made to the regulations until a higher confidence count is completed and the influence from the February/March season return is fully observed.

Staff Recommendations

- Retain current bag limits and season duration.
- Continue to promote the West Coast shelduck population as an underutilised resource and rewarding hunting opportunity.

- Undertake organised hunts in areas with high shelduck populations and properties where significant crop predation occurs.

References

Fish & Game West Coast Region (2011). *Sports Fish and Game Management Plan for the West Coast Fish & Game Region.* Fish & Game West Coast, internal report.

Kelly, D (2010). *Paradise Shelduck Moulting Survey 2010.* Fish & Game West Coast internal report.

SMU

Area	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
L. Arthur	100	68	150	239	200	120	170	135	50	60	58	20	30	20	0	0	20	4	40	50	86	135	175	80	190	50	92	80	240	200
L. Rotokino	1196	840	1430	1307	1960	1992	2470	2825	2350	3120	3050	2300	2000	2000	1500	1900	2800	1000	700	1490	2070	430	1530	570	1210	4000	1440	2350	1800	750
Lake Wahapo	0	0	0	0	0	0	0	0	0	0	0	0	0	200	20	0	0	25	70	30	40	98	0	60	150	100	150	30	220	150
Saltwater Lagoon	0	940	0	0	0	0	250	50	0	0	0	0	30	0	50	0	10	0	60	100	90	61	45	50	31	50	90	0	0	30
Five Mile Lagoon	0	0	0	0	0	0	0	0	0	0	0	0	0	280	260	80	70	50	130	100	103	104	110	160	94	70	34	0	30	35
Totara Lagoon	239	0	320	420	210	370	165	170	160	165	80	0	100	100	70	135	0	120	140	170	295	81	38	235	295	20	225	122	300	257
Lake Pratt	0	0	0	0	0	0	0	0	0	0	0	0	0	200	350	200	400	250	150	160	200	280	120	200	250	200	140	450	280	300
Cook Lagoon	0	0	0	0	0	0	0	0	0	0	0	0	0	300	350	300	300	350	1200	300	300	0	120	50	150	50	72	0	150	80
Cook River	0	0	0	0	0	0	0	0	0	0	0	170	350	400	350	370	250	360	240	140	300	230	150	5	30	10	4	165	54	32
Waitaha Lagoon	0	0	0	0	0	0	0	200	390	780	88	230	280	940	500	900	1500	600	1200	920	500	665	450	184	422	450	384	710	800	600
Arahura	0	0	0	0	0	0	0	200	390	780	88	230	280	940	500	900	1500	600	1200	920	500	665	450	184	422	450	384	710	800	600
Kapitea Reservoir	0	0	0	0	320	810	610	450	510	650	520	136	390	100	30	110	120	20	5	65	5	29	54	20	2	20	40	30	45	30
Grove Swamp	0	0	0	0	0	0	300	140	40	0	150	2000	1500	700	550	700	1500	4000	2000	1100	1650	1300	1550	380	745	2000	1400	1250	1850	850
Hokitika River	0	0	0	0	0	0	0	0	0	0	0	0	0	300	500	180	0	100	50	240	64	56	53	208	205	50	137	170	160	0
Whataroa River	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50	0	110	0	66	170	0	10	14	0	60	160
Lake lanthe	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	180	300	50	200	160	200	338	200	330	400	444	20	0
Okarito Lagoon	0	0	0	0	0	0	0	0	0	0	0	0	0	500	0	0	550	900	780	70	484	530	565	1854	1600	600	2150	1300	1020	0
Wanganui Lagoon	0	0	0	0	0	0	0	0	0	0	0	0	0	60	110	0	0	0	0	0	0	0	0	5	0	10	3	2	0	0
Poerua River pond	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	70	18	0	65	60	140	0	70	30	75	45	
Hari Hari farms	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	150	20	6	0	185	68	0	55	4	15	45	
Lake Kaniere	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	150	17	70	0	147	70	140	44	129	30
Waiho River	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	120	0	0	0	0	0	0	55
Taramakau	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	40	50	0
Total	1535	1848	1900	1966	2690	3292	3965	3970	3500	4775	3946	4856	4680	5540	5090	4985	6970	7429	7115	6165	6251	4235	5570	3577	6617	8960	5560	8427	8282	4879
Change		313	52	66	724	602	673	5	-470	1275	-829	910	-176	860	-450	-105	1985	459	-314	-950	86	-2016	1335	-1993	3040	2343	-3400	2867	-145	-3403
% Change		20	3	3	37	22	20	0	-12	36	-17	23	-4	18	-8	-2	40	7	-4	-13	1	-32	32	-36	85	35	-38	52	-2	-41

Appendix B: West Coast Region Paradise Shelduck moult count sites.

Moult Area	NZTM Map grid reference			
	Northing	Easting	Northing	Easting
L. Haupiri	5286391.6	1492479.8		
L. Poerua	5270574.8	1476089		
Lake Brunner	5283205.2	1475503.2		
Ikamatua	5320364.6	1491629.2		
Ikamatua	5321226.3	1491977.2		
Barrytown Lagoon	5327157.7	1460956.3		
Karamea	5434333.2	1524774.8		
Virgin flat	5366728.3	1476234.5		
Collins and Gillows	5374297.5	1480421.9		
Kokiri pond	5295944.1	1466377.7		
Ahaura River	5290399.1	1501656	5299918.4	1496530
Grey River	5317371.8	1490202	5305236.3	1469544.9
Grey River Ngahere	5303381	1468471.8		
Runanga Oxidation Ponds	5305572.1	1456214.1		
Inangahua/Buller	5363806.6	1510086.6		
Bell Hill Airstrip	5288284.4	1479090.3		
Bell Hill House	5286461.7	1485843.4		
Waipuna Farm pond	5219923.9	1496637.4		
Waipuna Farm	5309914.6	1496662.7		
Kangaroo Lake	5280914.9	1480401.7		
Lady Lake	5282324.1	1483041.4		
Lake Swan	5276598	1479592.2		
Mawheraiti	5335951.8	1497432.6		
Greenstone Pond	5277640	1454678.5		
Reddale Pond	5339256.4	1508720.5		
Reefton Ponds	5337230	1504823.3		
L. Arthur	5248056	1444683		
L. Rotokino	5218444.3	1391019.8		
L. Wahapo	5207542.5	1378773.9		
Saltwater Lagoon	5218445.1	1384909.2		
Five Mile Lagoon	5205162.7	1364472		
Totara Lagoon	5255928.5	1425496.2		
Lake Pratt	5196286.2	1370685.3		
Cook Lagoon	5184874.4	1339758.6		
Waitaha Lagoon	5239832.6	1407604		
Arahura	5270233.6	1442185.1		
Kapitea Reservoir	5272033.4	1452226.9		
Grove Swamp	5255748.5	1430778.7		
Hokitika River	5265407.4	1436224		
Whataroa River	5217600.8	1386907.3	5254807.1	1433662.3
Lake Ianthe	5230228.7	1406335.3		
Lake Mapourika	5199140.6	1372443.9		
Okarito Lagoon	5213936.1	1373735		
Wanganui Lagoon	5231805.4	1390435.9		
Poerua River pond	5222394.3	1393511.6		
Hari Hari farms	5224603	1403356.4		
Lake Kaniere	5252602.6	1449532.2		
Gillespies beach creek	5188677.5	1343434.5		
Camerons pond	5287587.5	1447367.5		