

Paradise Shelduck Moul Survey

January/February 2017

Results of annual counts at West Coast moul sites.

Lee Crosswell, Fish & Game Officer, February 2017



Paradise Shelduck congregate on a pond in the Bell Hill area, February 2017.



Paradise Shelduck Moulting Surveys

Results of annual moulting counts at West Coast moulting sites, January/February 2017.

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Summary

*The endemic Paradise Shelduck (*Tadorna variegata*) remains the West Coast Region's most intensely managed game bird, high populations can cause conflict with landowners resulting in opportunities for hunters to harvest surplus birds. Aerial and land based counts are made of known moulting sites distributed throughout the region. The results are only an index of actual abundance and do not incorporate all West Coast moulting sites. 11,017 birds were observed moulting north of the Taramakau River in 2017. This value is 833 birds less than that from the 2016 counts. Longer term monitoring indicates that the northern population fluctuates but is relatively stable long term. 6,619 birds were observed moulting south of the Taramakau River in 2017. This value is approximately 3,029 birds more than during the 2016 counts, equating to a 46% increase in observed numbers. Longer term trends indicate the population south of the Taramakau has experienced significant population growth from 1998-2017 and a short term increase over the past 5 years. Despite large annual fluctuations, overall the southern population is relatively stable. 2017 counts for both areas remain within management levels. Staff recommendations are; where significant crop predation occurs out of the gazetted season, delegate hunting to authorised licence holder groups under DOC permit for special control hunts. Steer requests by 'out of region' hunters to areas where crop predation has occurred previously. Retain current bag limits and season duration.*

Introduction

The Paradise Shelduck (*Tadorna variegata*) is an endemic New Zealand species and is well distributed throughout the West Coast Fish & Game Region. The highest concentration of Paradise Shelduck for the West Coast Region are located within the Grey River catchment, with populations numbering in the thousands in the Buller and South Westland Areas also.

During the late 1990's, populations of Paradise Shelduck in the northern West Coast began to increase rapidly and numbers exceeded the management zone prescribed in the West Coast Region Fish & Game Management Plan. This rise in numbers was most likely in 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 is the basic information used to inform regulation settings including season length, bag limits and special seasons.

Method

Paradise 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, Paradise Shelduck populations can be monitored from year to year by counting birds present at each site. Counts are either undertaken by foot or from a fixed wing aircraft. Polarised glasses and binoculars are used to aid counting.

Moult sites do change occasionally, so an annual aerial flight is conducted by fixed wing to identify any new or changed sites. It is also possible to estimate larger flocks on open water bodies from the air.

Even though most of the major moult sites are known, results should not be regarded as a census of the population, rather an index of the actual population. Not all moult sites are counted in the survey, therefore the results will be an underestimate of the total birds on the West Coast.

Consistent with Fish & Game standard operating procedure for game bird monitoring, route regression analysis was performed on the data to determine both long and short term trends in population change. Route regression measures the changes between individual sites within each northern and southern population, therefore considers the southern and northern populations as a set of sites with an overall change depending on the amount of years analysed e.g. either short term change, 5 years or long term, 20 years.

Results

The majority of the 2017 moult site counts were undertaken on Thursday February 9th 2017, via the Wilderness Wings fixed wing aircraft. Ground counts were carried out during the first week of February, with a couple of sites recounted from the ground following the flights where accurate counts were difficult to obtain from the air. The Karamea Golf Course pond was counted in January while ranging in the area.

The numbers of birds observed moulting were separated into two groups, representing the two management areas established in former Fish & Game Management Plans. These are graphed in Figure 1 below. A list of the identified moult sites, with grid references and count data is contained within the Appendices.

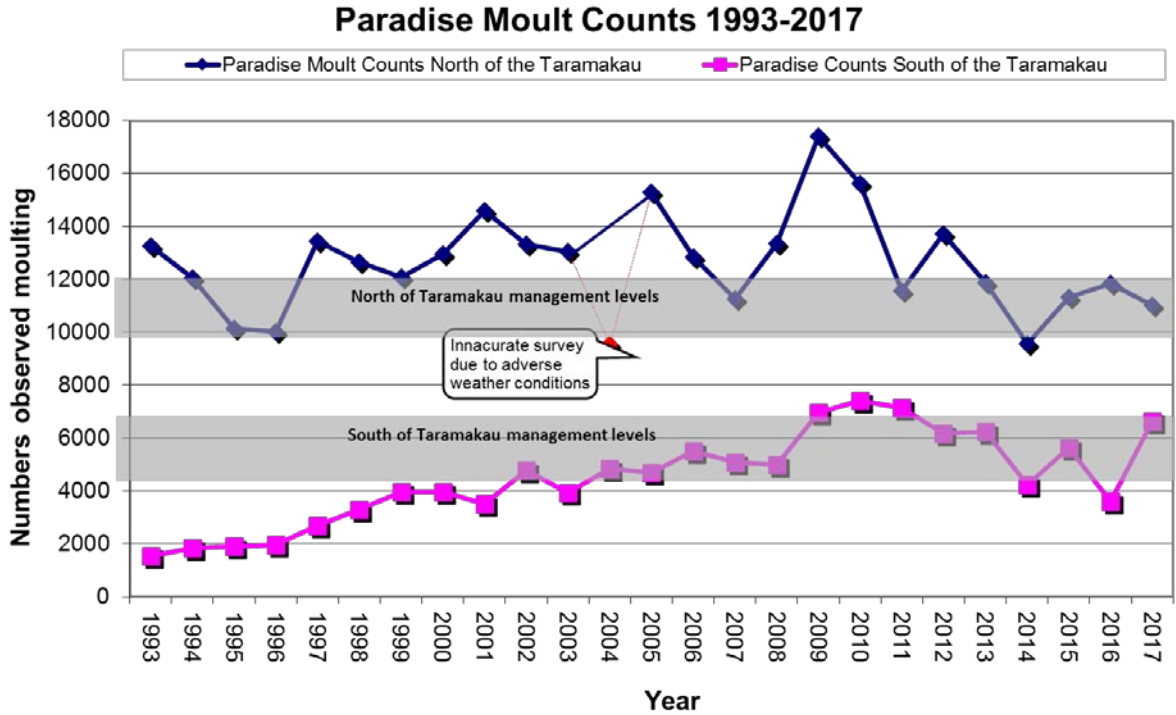


Figure 1: Number of Paradise Shelduck observed moulting in each of the separate management areas since 1993.

North of Taramakau River.

11,017 birds were observed moulting north of the Taramakau River. This value is 833 birds less than the 2016 count of 11,850 equating to an approximate 7% decrease in observed numbers (see Figure:1). 2017 counts remain within prescribed management levels. The northern population count was relatively consistent with counts from the previous year two years.

Route regression analysis shows that for the sites that have been counted long term north of the Taramakau, populations have increased by 3% over the last 20 years. For sites that have been counted in the short term (2013-2017), Route Regression shows that short term site specific populations have increased by 3% over the last 5 years. Route regression analysis indicates that northern site specific populations are relatively stable in the short and long term, despite large annual variation recorded during some of the previous counts.

South of the Taramakau River

6,619 birds were observed moulting south of the Taramakau River. This count is 3029 birds more than the 2016 count of 3590, equating to a 46% increase in observed numbers over the annual period (see Figure 1). Since counts began, the southern population has significantly increased with large annual fluctuations observed (see appendices).

Route regression analysis shows that for sites that have been counted long term, populations south of the Taramakau have increased by 20% over the past 20 years. Route regression shows that for sites counted over the last 5 years, site counts have increased by 11%. Route regression analysis indicates that southern site specific populations are relatively stable in the short and long term, despite large annual variation in observed counts.

Discussion

The objectives presented in the Fish & Game New Zealand West Coast Region 'Sports fish & Game Bird Management Plan' have been developed around two goals that reflect the general mission of the West Coast Council.

1. Manage, maintain and enhance the sports fish and game resource
2. Maximise recreational angling and hunting opportunities

The above goals are achieved through the operational work plan. For Paradise Shelduck management, the objective is to maintain sustainable populations of harvestable birds.

Achievement of this objective requires:

1. *Assessing and monitoring populations of sports fish and game bird species*
2. *Assessing and monitoring harvest levels*
3. *Setting regulations for sustainable harvests*
4. *Mitigating any adverse impacts on sports fish and game bird species*
5. *Mitigating the impact of sports fish and game bird species on other users and uses of the habitat*

The annual Paradise Shelduck moult count fulfils the requirement to assess and monitor the West Coast population of Paradise Shelduck and provides information for the setting of regulations for sustainable harvest. The 2017 counts have indicated that the population continues to fluctuate significantly between years; the long term trend however shows a stable or slightly increasing population in the northern area and an increasing population in the southern area.

While the Northern Population has shown little change from the previous year's count totals, the distribution of these moulting birds has shown a fair amount of variation from previous years. The preference for moulting sites are most likely influenced by the availability of food nearby and seasonal conditions such as rainfall. These were reflected in this year's counts. High bird numbers were found again in new areas such as the Moonlight Creek confluence with the Grey River. Here approximately 2000 birds were located in a couple of backwater locations in amongst willow trees. This particular area was visited by ground to more accurately count the birds as many were tucked away beneath the willow trees when flying over the previous day.

The Southern Population has increased noticeably over the last year. With a particularly high number of birds moulting in the Okarito Lagoon Area. Also positive was the return of higher numbers back into Lake Rotokino and Grove Swamp. For these later two, we trialled ground counting by boat to look at its effectiveness for potential cost savings in reducing flights. Ground counts were effective, however it was very easy to miss birds in areas branching off the main waterbodies within the larger wetlands, particularly within Grove Swamp.

Results from these moult counts combined with harvest survey results give a basis on which management tools can be administered to maintain sustainable populations while providing maximum hunting opportunities for hunters. These tools where appropriate are:

- Reduced/Increased bag limits.
- Reduced/Increased season duration.
- Special open season.
- Coordinated hunting activity e.g. events or organised hunts.
- Control measures by permit.
- Closed areas.

The current arrangement of a three month season is considered relatively liberal in a national context, as is the 15 bird daily bag limit. These regulations should provide suitable hunting and harvest opportunities for licence holders while keeping populations of Paradise Shelduck within prescribed management levels.

Staff Recommendations

- Where significant crop predation occurs out of gazetted season, delegate hunting to authorised licence holder groups under DOC permit for special control hunts.
- Steer requests by 'out of region' hunters to areas where crop predation has occurred previously.
- Retain current bag limits and season duration.

References

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

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

Appendices

Appendix A: Aerial and ground counts of moult sites from 1993 to 2017.

Area (North of the Taramakau)	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	
L. Haupiri	702	794	762	540	660	660	490	420	450	450	300	200	350	180	80	320	200	20	20	100	230	230	150	330	430	
L. Poerua	190	216	298	480	210	300	160	320	150	600	300	450	300	160	70	110	450	50	300	30	120	108	232	596	790	
Lake Brunner	2722	1400	1440	1200	2200	1950	2100	2550	2050	400	1680	750	1000	800	1000	1350	1400	300	500	900	500	700	1655	2100	1020	
Ikamatua	1522	1500	2062	2500	2800	2200	1800	2000	2500	1900	1410	600	2500	1600	1200	1500	1000	1000	120	700	120	70	3	0	80	
Ikamatua					600	550	400	400	1000	700	3	0	1000	1350	700	1500	1750	2000	1300	600	500	980	900	420	750	
Barrytown Lagoon	156	219	164	204	266	230	215	165	270	300	210	150	300	450	450	320	400	370	400	290	230	290	330	170	192	
Fergusons pond	300	2900	1600	0	175	350	550	12	450	0	5	0	0	150	200	150	0	0	0	0	0	0	0	0	20	
Karamea	226	383	354	580	740	450	780	850	1450	1400	1120	1300	570	660	1000	1000	1100	2000	200	1200	1450	950	1450	1100	950	
Virgin Flat																			700	650	600	450	580	700	124	
Collins and Gillows	340	437	426	542	873	890	705	990	1186	1330	1060	1100	1050	1600	1085	700	950	1850	1200	1000	288	450	580	350	380	
Kokiri pond	2400	2200	2400	2280	3200	3000	2100	3500	3350	4000	3200	1800	2600	2500	1500	2500	3000	3500	3300	2000	1800	1900	1500	1100	426	
Ahaura River	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50	50	35	50	95	120	115	56	114	110	113	
Grey River	3902	400	74	182	10	80	200	160	0	0	230	230	165	150	570	410	1960	200	280	320	747	191	910	1261	2579	
Grey River Ngahere					450	510	530	580	750	1150	2500	1260	3000	560	350	900	500	1000	280	1950	2500	500	400	1150	309	
Runanga Oxidation Ponds															0	0	250	400	400	300	80	300	200	400	350	
Inangahua/Buller	166	77	78	148	150	160	160	220	180	160	85	100	100	90	60	100	80	80	200	150	150	290	280	170	130	
Bell Hill Airstrip			440	850	400	10	1400	310	4	100	550	1250	2200	1800	2200	1600	3000	1600	1400	900	950	450	276	250	120	
Bell Hill house															0	0	450	500	400	190	1	300	290	17	8	
Waipuna Farm				163	0	220	150	1	0	0	2	50	50	50	30	70	0	0	0	0	0	0	0	0	0	
Waipuna Farm				340	0	0	0	120	0	0	0	95	0	0	30	100	0	160	150	205	195	139	225	34	90	
Lake Kangaroo	0	0	0	0	0	0	0	0	0	0	0	0	0	130	0	150	180	160	0	8	20	30	6	27	10	
Lady Lake					700	1110	270	360	800	820	410	200	110	350	80	310	200	250	80	250	120	60	145	25	40	
Lake Swan	0	0	0	0	0	0	0	0	0	0	0	0	0	200	600	200	150	0	150	100	125	220	180	97	170	
Mawheraiti							65	10	0	0	0	0	0	0	0	0	0	100	0	40	0	37	104	93	321	
Greenstone Pond	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	350	20	100	110	40	55	50	0	85	
Camerons (new River pond)																							50	100	50	
Reddale Pond																					1600	700	750	400	800	1100
Reefton Oxi ponds																					300	70	319	450	380	

Area (South of the Taramakau)	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	
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	
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	
Lake Wahapo	0	0	0		0	0	0	0	0	0	0	0	0	200	20	0	0	25	70	30	40	98	0	60	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	
Five Mile Lagoon	0	0		0	0	0	0	0	0	0	0	0	0	280	260	80	70	50	130	100	103	104	110	160	94	
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	
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	
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	
Cook River																						130	59	284	70	296
Waitaha Lagoon	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	
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	
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	
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	
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	
Whataroa River																										
Lake lanthe																										
Lake Mapourika																										
Okarito Lagoon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	500	0	0	550	900	780	70	484	530	565	1854	
Wanganui Lagoon	0	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
Poerua River pond																										
Hari Hari farms																										
Gillespies beach																										
Lake Kaniere																										
Waiho River																										

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		