



West Coast Pukeko Trend Counts

Results of West Coast Pukeko Monitoring conducted April 2022.

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Summary

Pukeko are monitored annually on the West Coast using roadside transect counts with the data being analysed by Route Regression Analysis. Mean annual trend count figures for the West Coast population indicate pukeko have declined on average 6% over the last 23 years. Although pukeko numbers show considerable variation between years the standard error in the results has reduced in response to the large number of years surveyed and is currently 2%. Staff recommendations: That the council receives this report. Continue with current monitoring regime and bag limits. Continue to monitor the new transect sites in the north.

Introduction & Methods

Pukeko typically make up a small portion (~10%) of the annual estimated hunter harvest in the West Coast Region. To assess pukeko population trends annual counts using the methods outlined in the Fish & Game Standard Operating Procedure for Pukeko Monitoring have been undertaken on the West Coast since 2000. These results can then be compared to the annual estimated hunter harvest figures to see if any trends are apparent.

The 2022 counts were completed in late April by staff with the help of volunteers. Data is analysed in accordance with the Fish & Game Standard Operating Procedure - Route Regression (Kelly 2006). Three additional sites with good pukeko numbers were counted for the third year at Barrytown, Birchfields and Karamea to give better geographical coverage and indication of pukeko numbers in the northern region.

Results

A total of 673 pukeko were counted at the traditional survey sites, a 18% decrease from the 2021 count (793 pukeko). This year's count is significantly lower (66%) than the 2000-2022 average of 1,237 pukeko. There is significant fluctuation in the estimates of the pukeko population over time. Annual estimated hunter harvest during the same period again shows considerable fluctuation although there appears to be a decline in harvest over time particularly post 2007 (Figure 1).

Only 39 pukekos were counted at traditional northern sites continuing the trend of low numbers post 2011 and well below the 2000-2022 average of 402 pukeko. At the new northern sites 1,174 pukeko were counted, being 17% up on the 2021 count (947) and the same as the 2020 count. At the southern sites 634 pukeko were counted which is below the 2000-2022 average of 843 pukeko. (Appendix 1).

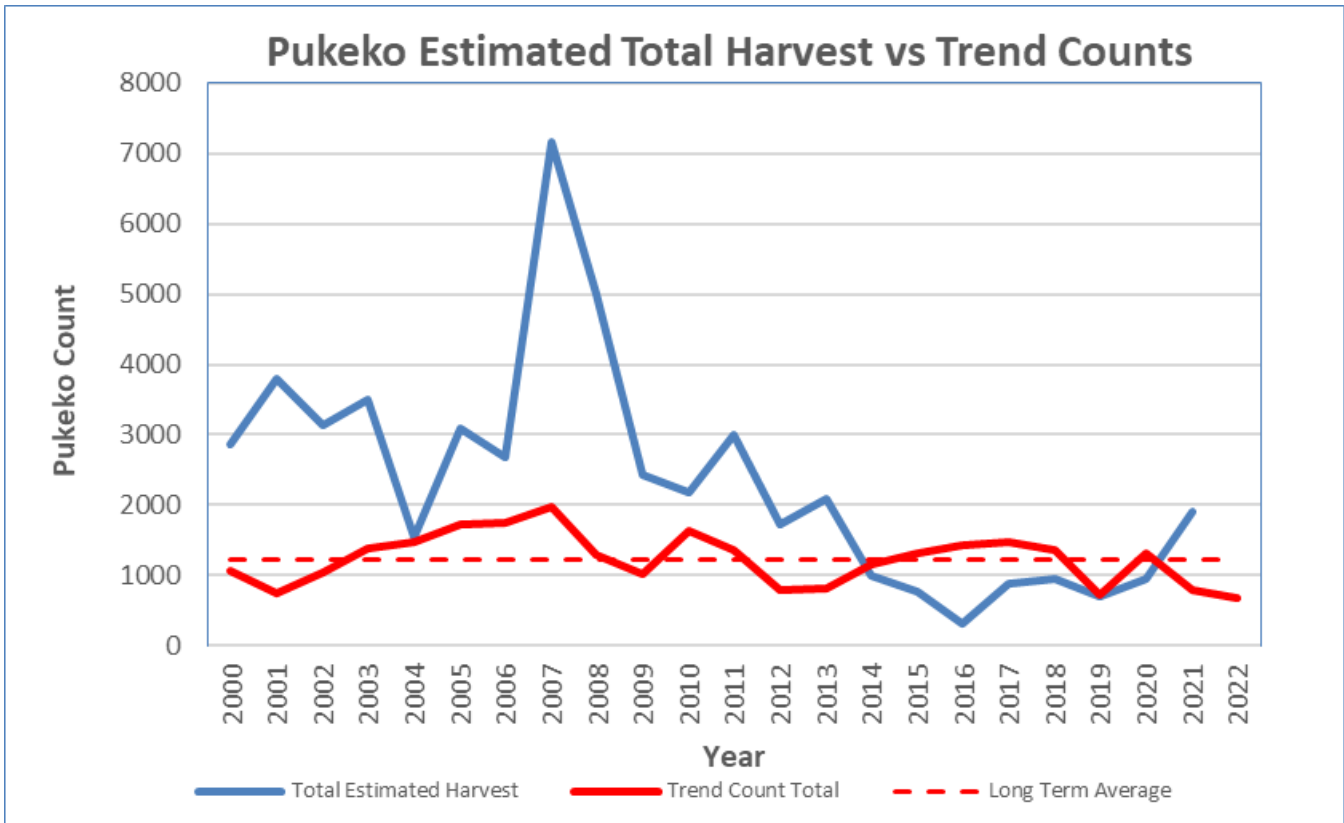


Figure 1: Total estimated number of Pukeko harvested per annum in comparison to annual trend count results for the West Coast Region (2000-2022).

The route regression analysis shows that in the long-term (22 years), despite large yearly fluctuations, the monitored West Coast pukeko population has decreased on average 6%. This decline is attributed solely to the northern population (-14%) as the southern population has increased by 1%. The standard error in the counts has now reduced to 2% reflecting the long-term nature of the dataset. In the short-term (5 years) the monitored sites have decreased on average 18% with both the northern (-18%) and southern sites (-17%) declining (Figure 2).

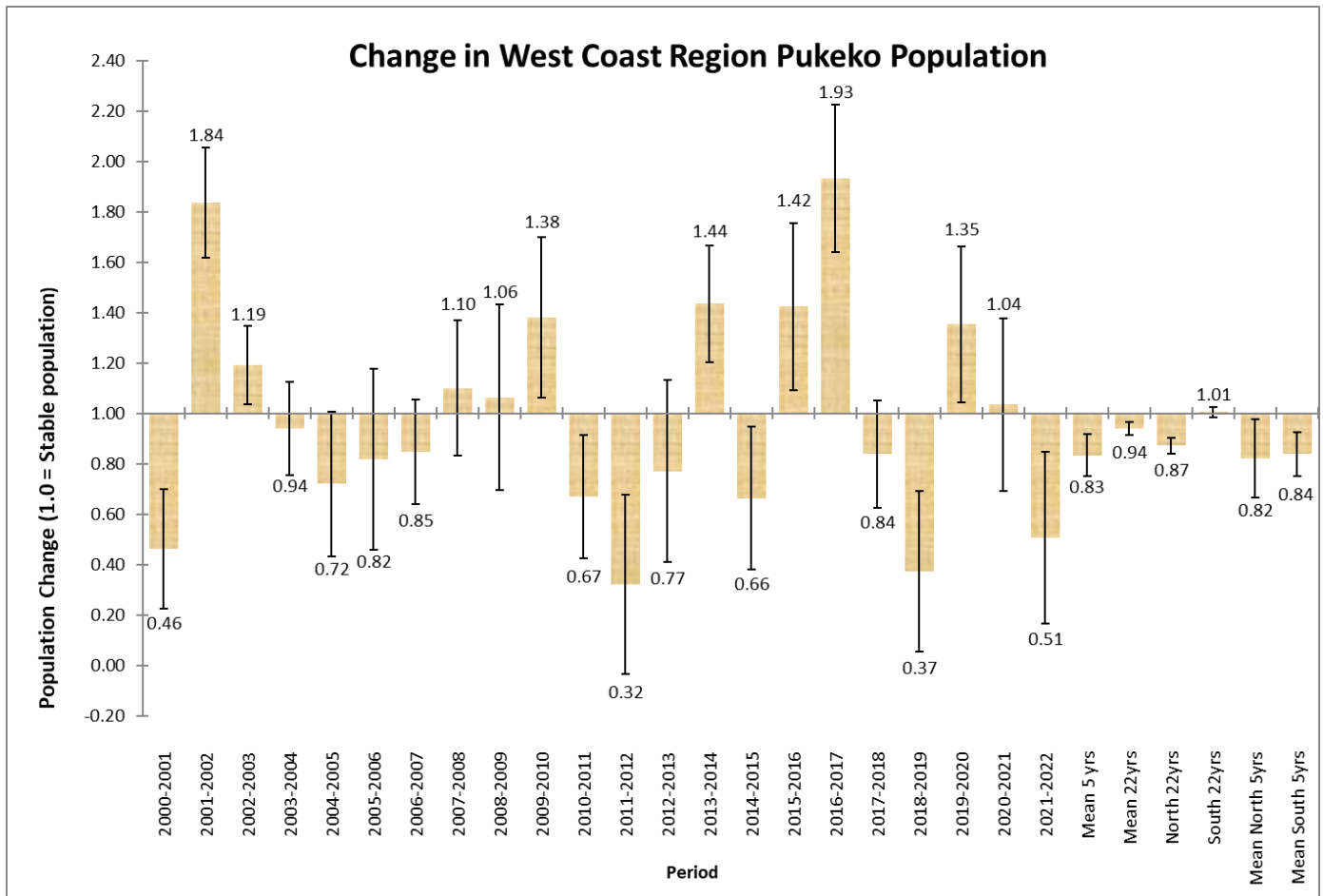


Figure 2: Each column represents the change in the regional population between years. The mean is the average annual change over a given period. A value above or below 1.0 can be taken as the increase or decrease in population over that period. Standard error bars are also fitted to ascertain the accuracy of the survey.

Discussion

Overall, the analysis shows a decline in pukeko numbers at traditionally monitored sites over the full 23-year survey period. This is the result of a major decline in pukeko at sites in the northern region, particularly the Mawheraiti, Nelson Creek, Kotuku and Bell Hill sites. Estimated pukeko harvest fluctuated over the same period but has remained low until last season when harvest rose. There appears to be no correlation between harvest and pukeko counted but rather reducing populations where land development has occurred. From casual observation locations where there has been limited land development and pockets of ideal habitat has been left, pukeko populations appear to be very healthy.

With there now being opportunities to harvest pukeko in the summer, its likely harvest will increase significantly. This may raise concerns regarding the sustainability of such pressure, with a declining population observed in the traditional northern sites. What provides reassurance is organised hunts targeting pukeko at the three new northern sites, despite this concentrated hunting effort, their counts have remained relatively steady. This is a good indication that pukeko can likely sustain elevated levels of hunting pressure when suitable habitat is present.

The distribution of pukeko seems to be focused on areas of pasture with good ground cover being available. Development of pasture and removal of cover may be a factor in declining pukeko numbers as could other environmental factors such as climate, with cold winters being suggested to reduce populations in the Otago region.

While there is doubt as to whether roadside transects are a reliable estimate of the total regional population, they are a simple, cost-effective way of monitoring the pukeko population. They meet key statistical criteria of randomisation and repeatability with the only real potential issue being observer bias. Given pukeko are not highly sought after as a gamebird the current level of monitoring is considered appropriate.

Recommendations

- That the council receives this report.
- Continue with current monitoring regime and bag limits.
- Continue to monitor the new transect sites in the north.

References

Kelly Dean, 2006. *National Pukeko Trend Count Report (2006)* West Coast Fish & Game Region. Internal Report.

Appendix 1: Pukeko transect count data 2000-2022

Transect	Actual Count																							
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	LT Av.
Rough	10	2	3	5	3	5	10	17	23	21	40	9	2	0	2	0	0	0	1	0	0	11	0	7
Mawheraiti	51	62	34	76	28	40	75	171	58	27	64	42	6	0	0	4	0	6	3	6	12	6	7	34
Ikamatua	29	3	3	6	15	0	7	0	0	4	18	8	0	0	1	0	2	5	6	0	0	0	11	5
Waipuna	33	15	9	2	0	0	2	0	0	6	19	3	0	0	4	0	13	36	9	2	0	6	0	7
Ahaura	25	34	46	52	36	30	0	2	9	4	33	2	14	11	5	0	3	33	18	0	0	0	0	16
Nelson Creek	114	48	107	177	197	210	387	403	263	98	252	271	6	2	0	0	0	1	11	0	6	0	0	111
Kotuku	356	198	327	316	368	479	361	390	264	25	193	139	15	14	36	68	44	9	15	5	20	12	1	159
Bell Hill	11	50	51	75	57	119	128	124	67	103	233	130	19	0	6	3	0	13	4	0	12	20	20	54
Crooked River	6	1	6	11	4	0	0	0	0	7	0	0	0	0	0	0	1	6	4	4	16	3	0	3
Styx	14	5	6	25	22	30	9	8	24	2	16	25	10	12	13	25	34	10	11	7	4	4	0	14
Camelback	31	2	34	48	40	45	29	23	47	24	41	41	2	27	20	16	17	18	48	20	34	60	119	34
Lake Arthur	47	30	27	30	46	33	20	17	69	47	56	69	63	69	75	156	102	164	154	22	69	77	88	67
Pukekura	14	3	14	23	7	31	4	2	17	12	3	25	3	0	0	0	0	4	0	5	0	5	0	7
Bonar	4	0	7	2	10	1	11	15	9	22	2	7	0	12	11	4	8	5	2	2	0	2	2	6
Poerua	48	19	94	120	132	262	386	460	191	243	320	253	265	239	385	408	486	305	247	247	457	289	115	260
La Fontaine	45	83	99	290	263	291	205	225	177	308	245	267	278	262	386	380	444	277	314	134	246	86	94	235
Te Taho	5	6	11	9	41	8	1	0	7	10	5	3	4	15	8	0	18	43	32	31	55	8	4	14
Whataroa Flat	161	170	113	88	165	39	97	90	58	8	74	55	80	126	160	177	194	433	407	203	361	173	186	157
Waitangi-Toana	61	19	50	28	33	106	20	26	2	54	28	3	15	14	41	70	57	105	83	30	23	31	26	40
Total	1065	750	1041	1383	1467	1729	1752	1973	1285	1025	1642	1352	782	803	1153	1311	1423	1473	1369	718	1315	793	673	1229