West Coast Pukeko Trend Counts

Results of West Coast Pukeko Monitoring conducted Autumn 2021.

Baylee Kersten, Fish & Game Officer

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 22 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 3%.

Introduction & Methods

Pukeko typically make up a small portion (~10%) of the annual estimated hunter harvest on 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 2021 counts were completed by Baylee Kersten (northern sites) and Glen Newton (southern sites) in late March. 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 second year at Barrytown, Birchfields and Karamea to give better geographical coverage and indication of pukeko numbers in the northern region.

Results

A total of 793 pukeko were counted at the traditional survey sites, a 66% decrease from 2020 count (1315 pukeko) but similar to the 2019 count (718 pukeko). This year's count is significantly lower (59%) than the 2000-2021 average of 1,263 pukeko pa. 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 58 pukekos were counted at traditional northern sites continuing the trend of low numbers post 2011 and well below the 2000-2021 average of 418 pukeko. At the new northern sites 974 pukeko were counted, being 21% down on the 2020 count (1174 pukeko). At the southern sites 735 pukeko were counted which is below the 2000-2021 average of 843 pukeko. (Appendix 1).

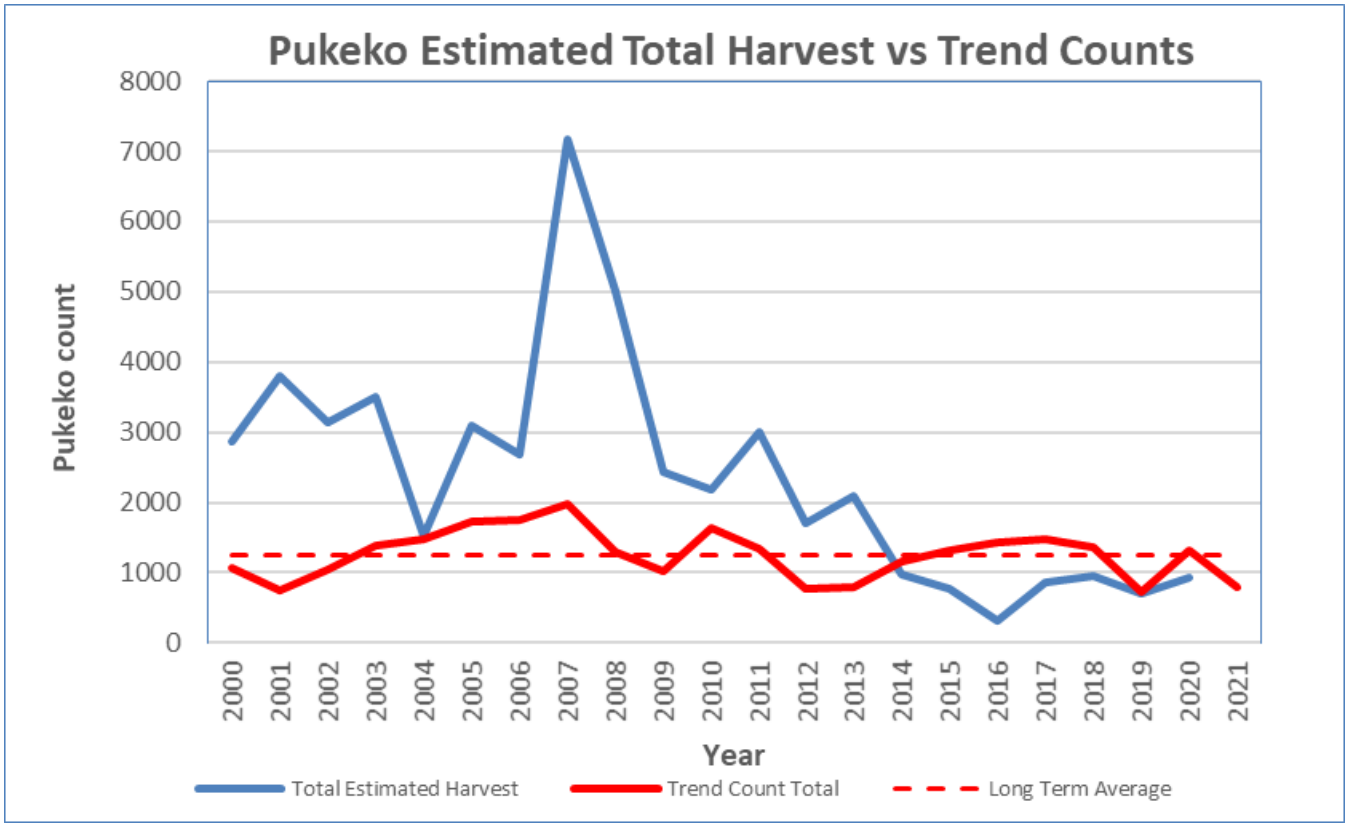

Figure 2: *Total estimated number of Pukeko harvested per annum in comparison to annual trend count results for the West Coast Region (2000-2021).*

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 3% reflecting the long-term nature of the dataset. In the short-term (5 years) the monitored sites have decreased on average 19% with both the northern (-22%) and southern sites (-16%) declining (Figure 2).

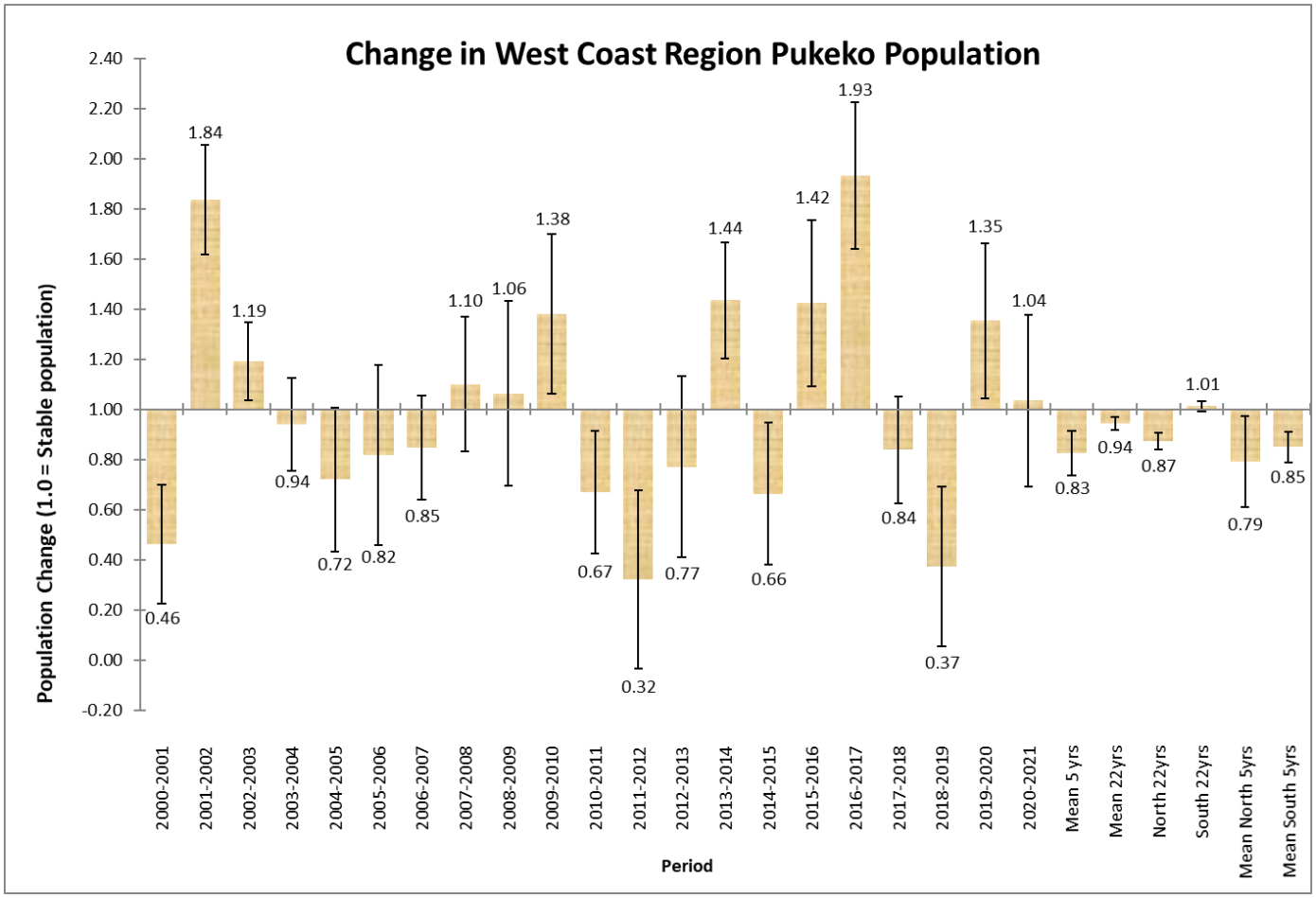

Figure 2: *Each column represents the change in the regional population between years. The mean is the average annual change over a given period. A value above or below 1.0 can be taken as the increase or decrease in population over that period. Standard error bars are also fitted to ascertain the accuracy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

Discussion

Overall, the analysis shows a decline in pukeko numbers at traditionally monitored sites over the full 22 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 consistently low since the 2013 season. 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.

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.

Over the 22 years of data collection there has been variation of the timing of counts. From the last three years, the two March counts were much lower than the May count. It was noted that in March there is a lot more cover and therefore the likely hood of seeing pukeko is reduced. To remove this variable, timing of counts in future should be aimed to be as consistent as possible from year to year.

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

- Continue with current monitoring regime and bag limits.
- Complete transects during late April every year.
- 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 2000-2020.

	Actual Count																						
Transect	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**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	**7**
Mawheraiti	51	62	34	76	28	40	75	171	58	27	64	42	6	0	0	4	0	6	3	6	12	6	**35**
Ikamatua	29	3	3	6	15	0	7	0	0	4	18	8	0	0	1	0	2	5	6	0	0	0	**5**
Waipuna	33	15	9	2	0	0	2	0	0	6	19	3	0	0	4	0	13	36	9	2	0	6	**7**
Ahaura	25	34	46	52	36	30	0	2	9	4	33	2	14	11	5	0	3	33	18	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	**116**
Kotuku	356	198	327	316	368	479	361	390	264	25	193	139	15	14	36	68	44	9	15	5	20	12	**166**
Bell Hill	11	50	51	75	57	119	128	124	67	103	233	130	19	0	6	3	0	13	4	0	12	20	**56**
Crooked River	6	1	6	11	4	0	0	0	0	7	0	0	0	0	0	0	1	6	4	4	16	3	**3**
Styx	14	5	6	25	22	30	9	8	24	2	16	25	10	12	13	25	34	10	11	7	4	4	**14**
Camelback	31	2	34	48	40	45	29	23	47	24	41	41	2	27	20	16	17	18	48	20	34	60	**30**
Lake Arthur	47	30	27	30	46	33	20	17	69	47	56	69	63	69	75	156	102	164	154	22	69	77	**66**
Pukekura	14	3	14	23	7	31	4	2	17	12	3	25	3	0	0	0	0	4	0	5	0	5	**8**
Bonar	4	0	7	2	10	1	11	15	9	22	2	7	0	12	11	4	8	5	2	2	0	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	**266**
La Fontaine	45	83	99	290	263	291	205	225	177	308	245	267	278	262	386	380	444	277	314	134	246	86	**241**
Te Taho	5	6	11	9	41	8	1	0	7	10	5	3	4	15	8	0	18	43	32	31	55	8	**15**
Whataroa Flat	161	170	113	88	165	39	97	90	58	8	74	55	80	126	160	177	194	433	407	203	361	173	**156**
Waitangi-Toana	61	19	50	28	33	106	20	26	2	54	28	3	15	14	41	70	57	105	83	30	23	31	**41**
Total	**1065**	**750**	**1041**	**1383**	**1467**	**1729**	**1752**	**1973**	**1285**	**1025**	**1642**	**1352**	**782**	**803**	**1153**	**1311**	**1423**	**1473**	**1369**	**718**	**1315**	**793**	**1255**