

2026

Kuruwhengi, the Australasian Shoveler Duck A Monitoring Report 2000 – 2026



Cover Photo: Allen Stancliff
Author: Matthew McDougall
Adress for correspondence: mmcdougall@fishandgame.org.nz

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Summary

Fish and Game New Zealand conducted a national count of kuruwhengi, Australasian shoveler duck (*Spatula (Anas) rhynchos*) on 3 August 2026. This is the 27th annual count (2000 – 2026) to monitor change in Australasian shoveler duck population at surveyed sites across New Zealand.

Five indices were examined:

- total national count ($n=277$ survey sites),
- the sum of counts from sites that have been counted every year ($n=70$),
- the number of shoveler counted per site ($n=277$),
- a two-year trend of each site (2025–2026; $n=264$) and,
- a 27-year trend of each site (2000–2025; $n=277$).

Population trends are derived from a regression line, i.e., a linear slope, fitted to the annual (log) count for each site and then the average of all the regression coefficients is back transformed.

The 2026 total count (12,789, $n=277$ sites counted) was the 22nd highest ranked count in the 27 years and similar to last year's count of 12,274 ($n=273$ sites counted).

The long-term trend indicates a small decrease in the population across sites counted (average regression coefficient = -0.039; 95 CI -0.071 – -0.005; $n=277$) and no statistically significant change over the last two years (-0.084; 95% CI -0.284 – 0.124).

A linear regression line fitted to the 70 sites that have been counted every year (27 years) suggest no change in the shoveler population ($\beta_{year} = -19.89$; $P = 0.604$), however annual counts at these sites have fluctuated.

Sex ratios were examined using a chi-squared test. Reported observations of females were significantly fewer ($P<0.0001$) than males with a ratio of 0.57 females to males. This sex imbalance is consistent with ratios from previous years (0.63 females to males; $P<0.001$).

The national survey is an index of population change at surveyed sites. However, count sites are not randomly selected so inference about national and regional shoveler populations must be made with caution.

Indices, and counts, point to either a small decrease or a relatively stable shoveler population at surveyed sites. Regional game bird regulations of shoveler duck therefore are assessed as currently sustainable.

Introduction

Two species of extant shoveler duck are recorded in New Zealand, the northern shoveler (*Spatula clypeata*), a rare arctic vagrant, and the Australasian shoveler (*S. rhynchos*) or kuruwhengi, a common native (Heather & Robertson, 1996), referred to henceforth as shoveler.

Shoveler are filter feeders (Crome, 1985; Potts, 1977) that extract relatively fine seeds, planktonic animals (e.g. cladocerans, copepods, rotifers, and ostracods), and small snails by sifting water through lamellae on their bills (Marchant & Higgins, 1991; Potts, 1977). Shoveler are considered a bird of lowland fertile wetlands

(Heather & Robertson, 1996; Williams, 1981b) but also frequent sheltered estuaries (Marchant & Higgins, 1991).

Shoveler are classified as a game bird under Schedule 1 of the Wildlife Act 1953 and are managed by Fish and Game. The species can be hunted subject conditions published in the annual Game Bird Gazette Notice.

The effective monitoring of game birds was set as a high priority by the New Zealand Fish and Game, Game Bird Research Committee. It was proposed to monitor shoveler duck, within a national framework (Rodway, 1999) as this species is very mobile and tends to disperse nationally (Barker et al., 2005; Caithness' et al., 2002; Sutton et al., 2002; Williams, 1981b) compared with other more sedentary game species in New Zealand such as the mallard (*Anas platyrhynchos*) (Balham & Miers, 1959; M. McDougall, 2012) or the paradise shelduck (*Tadorna variegata*) (Barker, 1990; Williams, 1981a).

Method

Survey Design

The aim of the shoveler survey is to detect an annual change in the population of shoveler duck at pre-breeding sites (Figure 1) and to monitor long-term changes at these sites.

The survey date was Monday 3rd of August 2026 to coincide with pre-breeding flock formations (Williams, 1981b). Chosen sites were visited and the number of male and female shoveler and total number of grey teal were recorded. Where sex could not be determined due to light conditions, distance, or large numbers, shoveller were recorded as unidentified sex.

Survey Sites

Shoveler prefer lowland fertile waterways such as ponds and lakes (Williams, 1981b). Fish and Game did not have data on this type of habitat to allow us to randomly select count sites so in 2000 staff were asked to select a minimum of 10 count sites in each region where shoveler are known to congregate prior to breeding. Over the 27 years, 449 different survey sites (annual range = 202–291; Figure 1) have been counted but some are not surveyed every year due to several factors including, loss of access, detectability and difficulty conducting an accurate count. New count sites have been added to offset some of these sites.

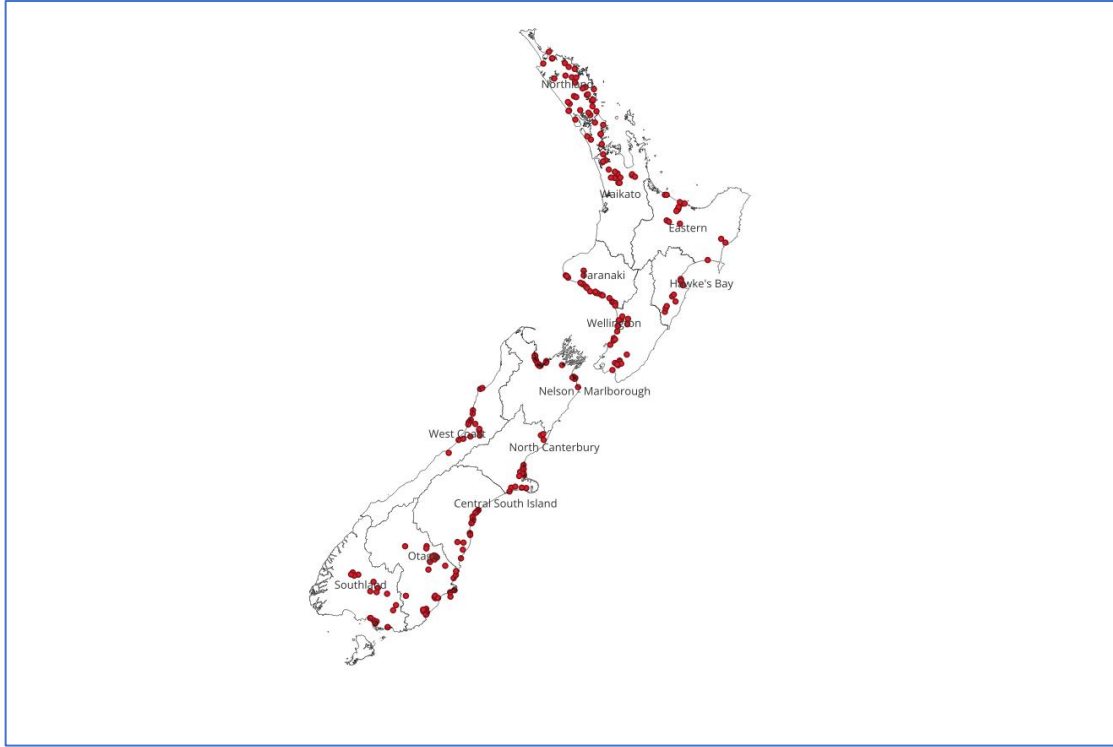


Figure 1. Shoveler 2026 count locations (red dots). Black lines are regional Fish and Game boundaries.

Survey forms

Count location information is kept on an MS Access database. Survey forms were printed using MS Access and mail merge in MS Word. Each form was pre-printed with site specific information including site name, grid references, the name of last year's observer (to try and ensure observes are paired with the same sites each year to minimise observer bias) and site access details. Comments and weather conditions from the preceding year were also included.

Analysis

Count data was examined using three different methodologies; (1) sites that have been counted for the 27 years were summed ($\sum C_t$) and, (2) a variant on the route regression method (Geissler & Sauer, 1990) where counts were converted to their natural log ($\ln C_{ij} + 1 = y_{ij}$) and a temporal regression line was fitted to each site then the average regression coefficient across all sites was estimated to provide the long-term trend.

The average of the regression coefficient i.e., population change (lambda), was derived as the exponent of the mean regression coefficient:

$$\hat{\lambda} = (e^{\bar{b}} - 1) \text{ (Rosenberg, 1998).}$$

Managing null data with natural log of zeros in regression models lacks consensus (Bellégo et al., 2022). Here, 1 was added to the count data given the natural log of 1 is zero.

The back transformation of the natural log estimate can be biased. A possible correction is (Geissler & Sauer, 1990):

$$\hat{\lambda} = \exp \{ \ln (\bar{b} - 0.5 \widehat{variance} [\ln(b)]) \}$$

(3) Counts at each site were analysed using a generalised linear mixed model (GLMM). Year was included as a categorical fixed effect (factor), allowing abundance to vary among years without assuming a linear temporal trend, while count site was included as a random intercept to account for repeated observations at the same sites and persistent differences in abundance among sites. Thus, year effects were estimated across all sites, while baseline abundance was allowed to differ among sites. Counts were modelled using a negative binomial distribution with a log link after a Poisson model showed evidence of overdispersion. Models were fitted using the glmmTMB package in R (Brooks et al., 2017).

$$\begin{aligned} Count_{ij} &\sim \text{Negative Binomial}(\mu_{ij}, \theta) \\ \log(\mu_{ij}) &= \beta_0 + \beta_i^{Year} + b_j \\ b_j &\sim N(0, \delta_j^2) \end{aligned}$$

Where: $i = \text{year}$

$j = \text{site}$

Male:Female Ratio

The chi-square goodness of fit test was used to test whether the expected ratio of 50:50 males to females was observed.

$$\chi^2 = \sum_{i=1}^k \frac{(O_i - E_i)^2}{E_i}$$

Where:

E_i = The expected frequency of the i th class

O_i = The observed frequency of the i th class

Degrees of freedom; $\nu = k-1 = 2-1 = 1$

The Hypothesis is:

H_0 : That the ratio of males to females is 50:50,

H_A : The ratio of males to females is not 50:50.

Results

Sites

In 2026 a total of 277 sites were counted throughout New Zealand (Table 2; Appendix 6), 73 of which have been surveyed for the past 27 years. The number of sites counted in each region varied from 11 – 42.

Count Spread

A southerly snowstorm affected the planned count date (3 August 2026) particularly for South Island regions. Of the 277 sites 89% of sites were counted on the 3rd of August and 3% on the 4th of August 2026 (Table 1). The remainder were counted between 27 July and 7 August 2026.

Table 1. Count date by Region

Region	Total	27/07/2026	28/07/2026	29/07/2026	30/07/2026	1/08/2026	2/08/2026	3/08/2026	4/08/2026	6/08/2026	7/08/2026
Auckland/Waikato	24					1	2	21			
Central South Island	22							22			
Eastern	17							17			
Hawke's Bay	11							11			
Nelson/Marlborough	23							22	1		
North Canterbury	15							12	1	1	1
Northland	34							34			
Otago	42							42			
Southland	17							14	3		
Taranaki	28							28			
Wellington	25							25			
West Coast	19	2	6	5	1				5		
TOTAL	277	2	6	5	1	1	2	248	10	1	1

Count Results

Total annual counts: The 2026 total shoveler count 12,789 ($n= 277$ sites) was similar to last year's count 12,244 ($n= 274$ sites; Figure 2, Table 3). The fitted regression line indicates no significant long-term change in the total annual national shoveler count ($\beta_{Year} = 68.84; P = 0.0894$).

North Island total counts have also been relatively stable ($\beta_{Year} = -1.075; P = 0.957$), whereas the South Island total counts have increased over the study ($\beta_{Year} = 166.93; P < 0.0001$).

Shoveler counted per site: The random effects model (Figure 4) indicates counts per site fluctuating across time without a consistent trend.

Long- and short-term trends: The trend over the 27 years indicates a small decrease in the shoveler population at the sites counted in 2026 (-0.039 ; 95 CI $-0.071 - -0.005$; $n=277$; Figure 3).

The average regression coefficient for all sites counted in both 2025 and 2026 ($n=264$) was -0.084 however the confidence intervals span zero ($-0.284 - 0.124$; Figure 3).

North and South Island trends: Both the North (-0.058 ; 95% CI $-0.114 - 0.001$) and South (-0.19 ; 95%CI $-0.05 - 0.013$) Islands show no discernible trend over the 27 years.

Sites that had been counted every year: there is no indication that the counts at these sites are increasing or decreasing ($\beta_{Year} = -19.89; P = 0.604$; $n=70$; Figure 5)

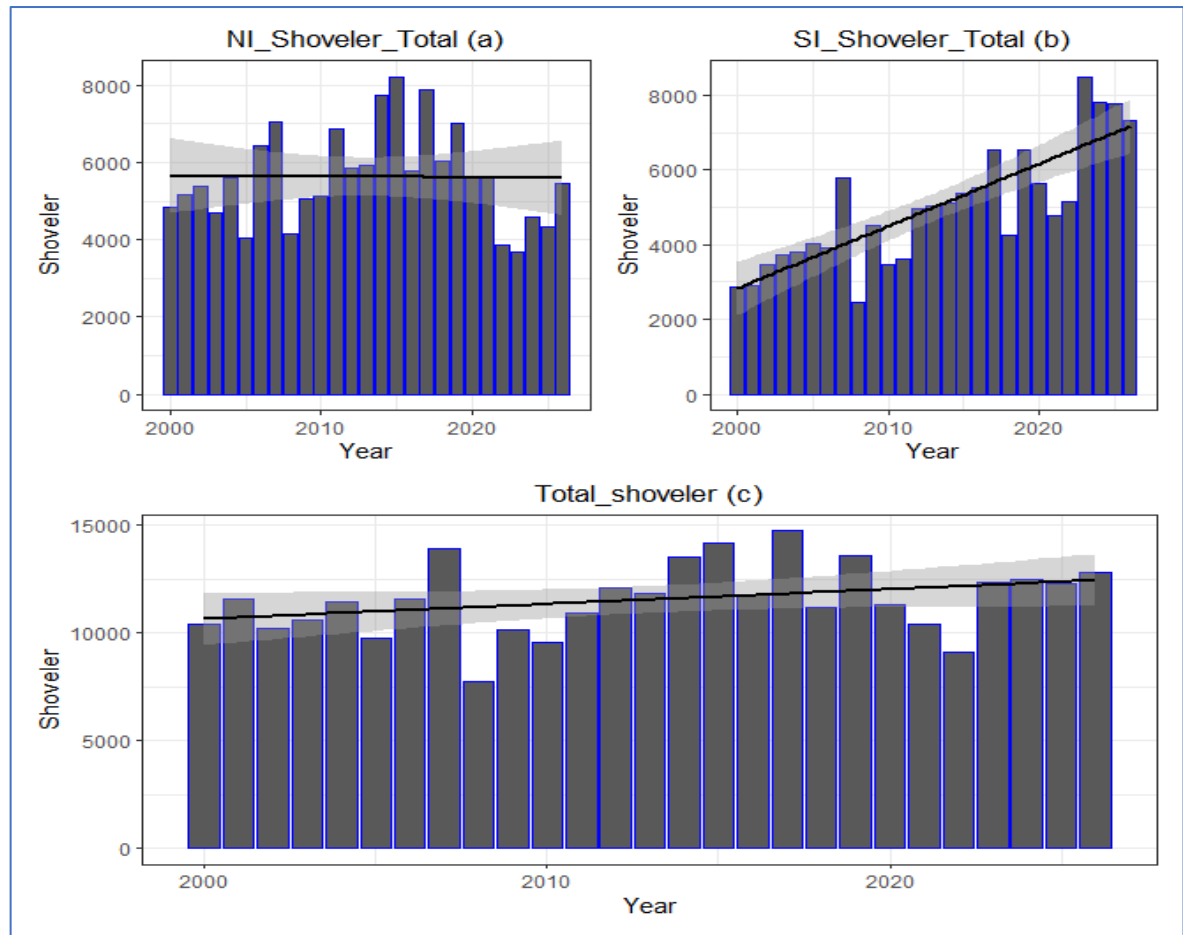


Figure 2. Total shoveler counted throughout New Zealand 2000–2026 in the North Island (a), South Island (b), and both islands (c). The solid black lines are the regression lines.

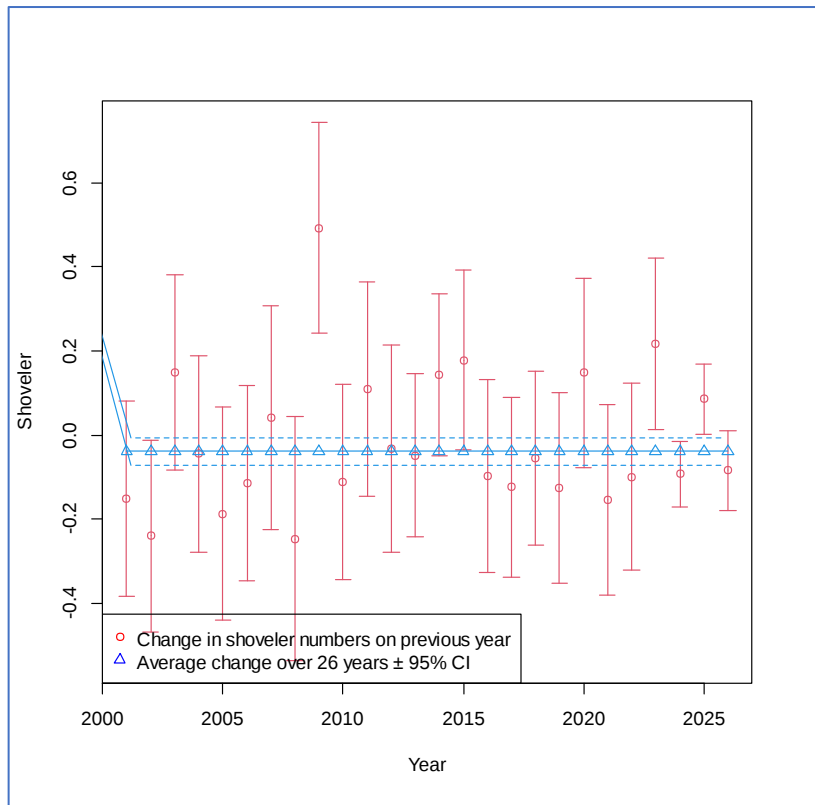


Figure 3. Annual change in shoveler count (red point estimates $\pm 95\%$ CI). Blue line is change over the 26 years ($\pm 95\%$ CI; $n=277$).

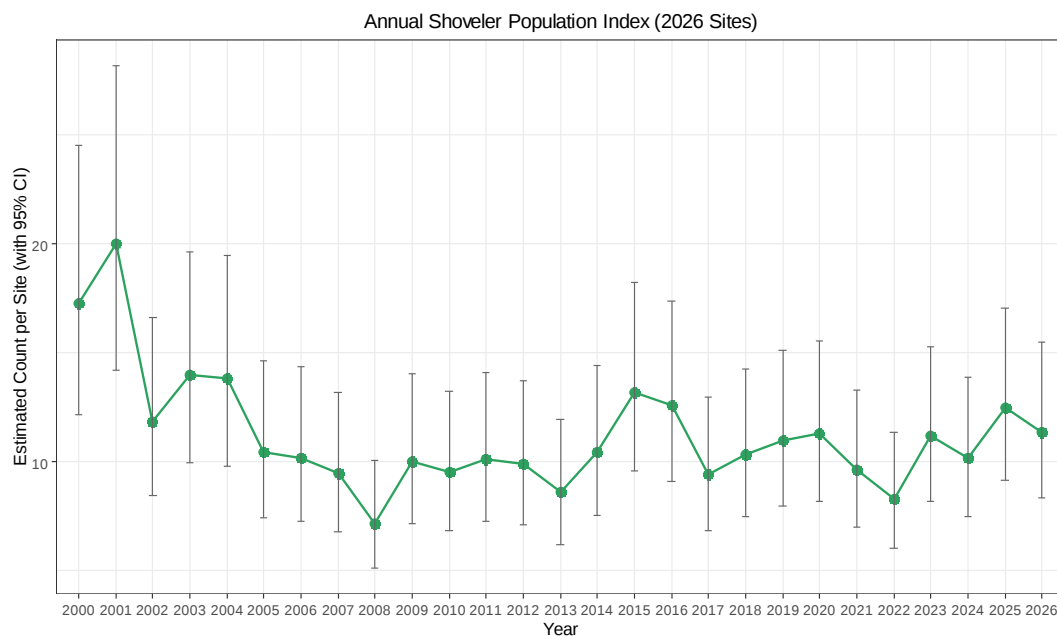


Figure 4. Estimated population index for shoveler from 2000 – 2026 for the sites counted in 2026 ($n=277$) based on GLMM where sites are estimated as a random effect.

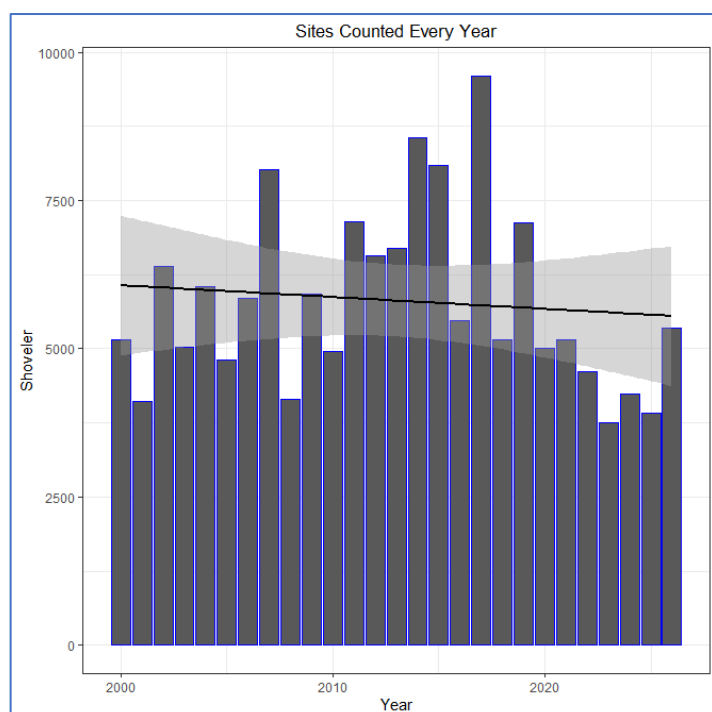


Figure 5. Total shoveler count of the sites that have been counted every year (27 years; $n=70$). The black line is the regression line.

Male Female Ratios

The 2026 female: male ratio was 0.57 which differs from the 50:50 ratio hypothesised ($\chi^2 = 446.387$; $P < 0.0001$). The observed imbalance in the female: male ratio in 2026 is similar to previous years (Appendix ; Table 5). Over the 27 years the average ratio of recorded females to recorded males is 0.63 ($\chi^2 = 7408.8$; $P < 0.0001$).

Table 2. Number of sites counted by year and region

Year	Northland	Auckland/Waikato	Eastern	Taranaki	Hawke's Bay	Wellington	Nelson/Marborough	West Coast	North Canterbury	Central South Island	Otago	Southland	Total
2000	19	47	17	23	10	18	63	10	7	16	42	16	288
2001	20	48	17	23	10	22	67	11	8	17	32	16	291
2002	23	27	17	15	9	20	45	12	9	20	30	15	242
2003	21	26	16	16	9	22	43	14	8	20	30	16	241
2004	18	17	18	16	9	23	44	13	9	20	29	16	232
2005	21	22	18	23	9	23	56		7	20	31	16	246
2006	16	21	18	18	11	23	55	12	9	20	27	16	246
2007	22	20	18	22	11	23	42	12	9	20	29	16	244
2008	12	20	19	11	10	23	33	12	9	22	21	16	208
2009	10	21	17	11	11	24	26	12	9	22	23	16	202
2010	12	21	19	21	11	29	26	12	8	22	25	16	222

2011	12	20	16	22	11	32	26	12	5	22	26	16	220
2012	13	20	16	22	10	32	26	12	7	22	31	17	228
2013	15	20	19	23	10	32	26	13	8	22	32	12	232
2014	15	20	20	25	10	32	26	13	8	22	31	17	239
2015	15	20	20	25	12	32	26	13	9	22	34	17	245
2016	19	21	19	25	11	31	26	13	9	22	35	17	248
2017	21	21	17	25	11	31	24	13	9	22	38	17	249
2018	26	21	17	25	9	30	23	13	9	22	38	17	250
2019	29	22	18	26	9	30	21	14	9	22	38	17	255
2020	30	20	17	25	9	21	21	14	9	21	36	16	239
2021	26	22	17	25	9	22	19	14	9	22	38	16	239
2022	27	21	17	26	10	23	19	15	16	22	38	17	251
2023	28	21	17	26	11	23	20	19	16	22	38	18	259
2024	36	22	17	27	11	21	24	19	15	22	45	18	277
2025	33	23	17	27	11	25	21	19	15	22	44	17	274
2026	34	24	17	28	11	25	23	19	15	22	42	17	277

Table 3. Shoveler and grey teal counts form the last ten years (2015–2026) by region (previous years are in Appendix)

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
AUCKLAND/WAIKATO												
SHOVELER MALES	614	355	272	253	417	377	311	169	224	335	244	220
SHOVELER FEMALES	406	258	161	143	193	194	212	92	140	204	161	147
SHOVELER UNKNOWN SEX	1751	1450	1826	1695	2239	2632	2880	622	810	455	948	682
GREY TEAL	293	187	424	505	301	203	190	164	328	394	252	512
CENTRAL SOUTH ISLAND												
SHOVELER MALES	442	352	450	178	99	391	116	339	552	496	407	446
SHOVELER FEMALES	243	191	328	110	63	245	74	253	360	286	180	177
SHOVELER UNKNOWN SEX	38	125	147	53	188	47	7	156	195	54	88	207
GREY TEAL	2573	2395	3731	1182	3383	3991	456	2533	3081	5560	1833	2166
EASTERN												
SHOVELER MALES	189	112	64	68	87	140	131	73	126	72	51	40
SHOVELER FEMALES	166	86	37	44	61	99	87	44	82	47	26	29
SHOVELER UNKNOWN SEX	41	265	53	112	180	69	12	47	94	52	57	166
GREY TEAL	300	57	131	86	187	181	75	64	120	82	84	219
HAWKE'S BAY												
SHOVELER MALES	91	621	1395	140	246	209	198	104	279	230	190	77
SHOVELER FEMALES	76	280	595	60	321	149	186	54	174	156	199	68
SHOVELER UNKNOWN SEX	2830	703	2377	1662	1515	52	252	1462	17	1797	575	2356
GREY TEAL	18	382	1667	5	0	62	65	13	337	2240	162	1605
NELSON/MARLBOROUGH												
SHOVELER MALES	134	181	167	176	138	290	111	93	101	134	124	140
SHOVELER FEMALES	58	143	102	63	77	120	44	28	43	59	59	74
SHOVELER UNKNOWN SEX	1714	1525	1108	2213	1507	1944	1676	956	1653	1607	2020	1634
GREY TEAL	77	350	347	207	166	329	166	71	1131	1202	1118	901
NORTH CANTERBURY	0	0	0	0	0	0	0	0	0	0	0	0

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
SHOVELER MALES	128	217	561	188	88	156	40	421	1194	1429	1149	953
SHOVELER FEMALES	88	184	568	132	67	138	29	263	680	806	565	438
SHOVELER UNKNOWN SEX	164	240	0	86	2046	155	0	7	754	262	242	415
GREY TEAL	445	640	880	589	2253	153	20	276	3863	2314	3184	5226
NORTHLAND												
SHOVELER MALES	67	14	57	116	64	133	44	63	64	147	86	47
SHOVELER FEMALES	36	8	42	58	44	61	45	42	38	82	49	29
SHOVELER UNKNOWN SEX	0	0	0	6	0	10	81	0	0	0	0	3
GREY TEAL	99	56	42	67	58	127	39	72	63	148	72	68
OTAGO												
SHOVELER MALES	183	391	1412	300	487	392	1055	1008	904	884	1228	1200
SHOVELER FEMALES	128	346	982	183	378	332	793	532	577	506	810	836
SHOVELER UNKNOWN SEX	1387	354	23	448	436	541	0	1	221	103	74	24
GREY TEAL	800	735	1256	871	1053	628	776	1483	1299	1276	2627	1848
SOUTHLAND												
SHOVELER MALES	393	782	460	487	614	516	551	465	534	305	181	166
SHOVELER FEMALES	240	457	155	219	213	196	192	241	651	291	117	77
SHOVELER UNKNOWN SEX	22	63	50	26	49	4	17	334	60	408	429	349
GREY TEAL	271	448	344	246	298	770	296	353	374	343	292	381
TARANAKI												
SHOVELER MALES	326	194	198	190	199	178	266	167	286	218	204	274
SHOVELER FEMALES	161	88	80	66	75	69	110	73	111	80	97	150
SHOVELER UNKNOWN SEX	692	16	47	268	218	54	14	82	25	161	196	213
GREY TEAL	397	55	171	286	196	125	153	82	118	236	92	146
WELLINGTON												
SHOVELER MALES	491	979	459	674	215	533	297	329	420	229	340	249
SHOVELER FEMALES	289	623	335	682	169	567	166	186	304	151	283	166

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
SHOVELER UNKNOWN SEX	419	88	135	51	827	135	318	292	510	172	654	552
GREY TEAL	354	374	226	321	832	643	185	389	413	303	803	368
WEST COAST												
SHOVELER MALES	34	50	42	27	62	128	74	98	106	194	139	113
SHOVELER FEMALES	22	40	36	24	35	69	47	43	46	102	67	72
SHOVELER UNKNOWN SEX	85	0	9	0	0	0	0	0	0	0	35	0
GREY TEAL	278	446	121	405	377	337	212	295	516	424	562	241
TOTAL SHOVELER MALES	3092	4248	5537	2797	2716	3443	3194	3329	4790	4673	4343	3925
TOTAL SHOVELER FEMALES	1913	2704	3421	1784	1696	2239	1985	1851	3206	2770	2613	2263
TOTAL SHOVELER UNKNOWN SEX	9143	4829	5775	6620	9205	5643	5257	3959	4339	5071	5318	6601
TOTAL SHOVELER	14148	11781	14733	11201	13617	11325	10436	9139	12335	12514	12274	12789
TOTAL GREY TEAL	9143	4829	5775	6620	9205	5643	5257	3959	4339	5071	5318	6601

Discussion

Fish and Game staff, OSNZ individuals, and volunteers conducted the 27th annual national shoveler duck count in July and August 2026 with 89% of sites (n=227) surveyed on August 3rd. Although termed national, the sites were not randomly selected, so the survey is considered an index of population status at these pre-breeding flocking sites only and not a national population count *per se* (but see the Sites discussion below).

Count Results

Long-term indices indicate that the shoveler population at surveyed sites is either stable or has undergone a small decline. The two-year population change from the last year (2025 to 2026) suggest a small decrease in the population however the confidence interval span zero which indicates no significant change.

The total count data indicates a stable North Island and national population while the South Island population may be increasing. The issue of comparing total count between years is compromised by the annual change in the number of sites that are counted (due to issues such as loss of access). A better approach may be to look at the average count per site (total annual shoveler count at surveyed sites/number of sites counted in that year) however this has issues as well. Surveyors have dropped sites that have historically had low numbers and picked up new sites presumably with more birds. This introduces a possible upward bias. Nevertheless, at this stage shoveler per site has not changed over time.

Count design

There are issues with a single annual count providing an indication of population change (Johnson, 2008). For example, the shoveler survey does not account for detectability or observer bias. Detectability is influenced by the distance from the observer to the birds, cover, weather, light and the conspicuousness of the animal being observed (male shoveler plumage is more recognisable than that of the female and so are more easily identified). Moreover, observer bias is influenced by experience, skill, and the type of binoculars/ spotting scope surveyors use. To address some of this bias survey sheets are circulated prior to the count with details of the observer in the preceding year, to try and ensure that the same person counts the same sites each year with instructions on where to count the birds from (i.e., standardise the observation point and the observer).

Detectability is difficult to accurately assess and may bring its own set of bias and inaccuracy (depending on the surveyor). In some larger wetland complexes detectability may also change due to wetland water levels and or weather as birds may be more concentrated or widely dispersed depending on habitat availability, particularly in tidal areas. Shoveler, however, generally appear to occupy the same areas of the wetlands from year to year (pers. obs.), perhaps reducing the consequences of not recording detectability. Weather is also a contributing factor to detectability. Observers regularly make a comment on the weather if the conditions are not conducive to counting. Nevertheless, when count data (2000 – 2021) was modelled against weather covariates the results were counter intuitive. It was hypothesised that wind strength and rain would decrease the count, however the covariate estimates suggest otherwise. The only meaningful covariate was the count decreased when there was a southerly component in wind direction (a southerly is

usually associated with a cold weather pattern across Aotearoa). Part of this anomaly may be explained by the large number of low counts, almost 40% of counts were 1 or 0. But it is unclear why the models fit the data so well ($P < 0.001$) and yet do not make sense (M. B. McDougall, 2021).

Sites

The non-random selection of survey sites is a weakness of this monitoring programme when attempting to make inference for a national population of highly mobile individuals. Ideally a random sample would be taken from all shoveler habitat but as shoveler habitat has not been mapped nationally and habitat changes with land use transformation, this cannot be easily completed. Ideally, a stratified sampling regime should be developed. One option is to derive a random sample from the eBird data and either conduct a one-off count or a count every five years.

A systematic count of shoveler duck has been conducted by the Ornithological Society of New Zealand (OSNZ) known as the bird Atlas program. Count data and site information is recorded in eBird (*eBird: An online database of bird distribution and abundance*. eBird, Cornell Lab of Ornithology, Ithaca, New York; <https://ebird.org/region/NZ>). In New Zealand 8,505 sites have been recorded (eBird 2025) however there are a number of instances where the same general area is recorded under multiple names or location ID's. For example, the Bromley Sewage Treatment plant in Christchurch is recorded as approximately 16 different locations. If the eBird sites within one km of each other are clustered, then the number of sites where shoveler have been reported reduces to 847. During the Fish and Game survey 2000 – 2026) 467 sites have been counted approximately half the number of sites (clusters) counted nationally by OSNZ.

The consequence of non-random habitat selection is that no formal inference about the status of the national population can be made. Readers will have to judge for themselves if counts from 277 sites are a fair representation of the national shoveler population.

Sex ratios

The consistent imbalance of females to males in the count data may be due to the ease of distinguishing male shoveler from other waterfowl at this time of the year. Alternatively, the result may occur because males were identified as males and females as unidentified sex, or it may be a true reflection of the population balance. This imbalance is very similar to mallards trapped for banding in the Eastern Region (0.66 juvenile females to juvenile males; 0.74 adult females to one adult male) (M. McDougall, 2010) and many other dabbling duck populations globally which is largely attributed to sex specific mortality. Female to male ratios of shoveler banded 1971 – 1988 in New Zealand, 0.54 (Williams 2024), is also consistent with our observations. Nevertheless, it is likely that the imbalance is a combination of a sex imbalance *and* observers identifying a higher proportion of the males as males.

Count Date

The 3rd of August was chosen as the count date. This date coincides with the end of the waterfowl season and the pre-breeding flocks that begin to gather at the end of July (Williams, 1981a). The timing of the count is a compromise between females moving away to nest and the end of the waterfowl season. The date is also consistent between years for the past two decades which removes another factor of variability with the census counts.

Analysis technique

No one analysis technique provided the full picture as to what was happening. Each of the four methods provided a slightly different insight into the data. Using the route regression method is useful where counted sites are not consistent from year to year. In addition:

- New sites can be included.
- Small sites are comparable to large sites.
- Sites that are disturbed or missed do not affect the estimate (but may affect the error of the estimate).
- The estimate is an estimate of the change in population with an associated error.

Nevertheless, this method provides no insight on the total population size and, as alluded to above, is compromised by lack of randomisation in count site selection. Further the variance estimates shown in the graph do not account for the individual variance of each regression estimate nor detection probabilities. Therefore, the very narrow CI around the trend estimates is underestimating the true variability. A hierarchical model using Bayesian techniques may be a better approach (Sauer & Link, 2011)

The 70 sites counted each year likely provide a good basis for a longitudinal study, however these sites might be preferred shoveler habitat and not reflect wider changes to regional landscapes, regional weather variations such as flooding and droughts or what is happening to the wider national population. The counts at these sites may in fact increase in years when other habitat has dried up or is sub-optimal and the population has decreased either within or across regions.

The generalized linear mixed models are a useful technique for analysing non-normal count data and handle repeat measurements at the same sites, especially when dealing with categorical variables. They also cope with many zero counts that cannot be transformed to a normal distribution (Bolker et al., 2009).

Conclusion and Recommendations

Shoveler duck abundance at the sites counted has fluctuated over the 27 years however the national average trend across monitored sites is relatively stable. This suggests that long term harvest of this species has been sustainable.

Fish and Game should consider:

- a national harvest strategy given the presumption that the population is monitored as such.

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Appendix 1

Shoveler and grey teal counts by region and year

Table 4. Count data 2000 - 2014

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Auckland/Waikato															
Sum of Shoveler Males	561	356	181	242	186	322	222	62	123	201	572	619	175	475	498
Sum of Shoveler Females	397	240	94	176	139	227	150	36	69	161	328	222	102	303	379
Sum of Shoveler Unknown Sex	168	1434	259	987	1602	151	2210	1548	1010	934	268	2247	713	982	4144
Sum of Total Shoveler	1126	2030	534	1405	1927	700	2582	1646	1202	1296	1168	3088	990	1760	5021
Sum of Grey Teal				0	348	732	15	98	0	12	511	101	446	1000	348
Central South Island															
Sum of Shoveler Males	0	229	166	241	168	174	267	220	267	825	265	228	1296	191	1161
Sum of Shoveler Females	0	138	140	167	115	127	210	154	122	242	122	183	67	97	437
Sum of Shoveler Unknown Sex	629	94	160	31	52	134	18	56	98	49	281	33	99	511	16
Sum of Total Shoveler	629	461	466	439	335	435	495	430	487	1116	668	444	1462	799	1614
Sum of Grey Teal					510	3033	2143	1817	4882	4303	3467	5980	3011	3102	3746
Eastern															
Sum of Shoveler Males	549	232	77	177	638	216	99	162	57	119	149	60	96	64	110
Sum of Shoveler Females	288	124	60	121	402	82	58	104	40	72	58	31	62	42	91
Sum of Shoveler Unknown Sex	285	2786	683	931	91	697	936	534	1027	59	731	174	129	163	80
Sum of Total Shoveler	1122	3142	820	1229	1131	995	1093	800	1124	250	938	265	287	269	281
Sum of Grey Teal					38	146	113	111	44	149	92	208	83	438	173
Hawke's Bay															
Sum of Shoveler Males	446	400	267	307	357	355	55	183	97	161	430	223	128	51	17
Sum of Shoveler Females	304	281	200	188	235	246	36	133	102	77	148	115	105	36	15
Sum of Shoveler Unknown Sex	2404	1055	3059	1575	2501	2093	2834	4243	1803	2758	2373	1988	3054	2644	1615

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Sum of Total Shoveler	3154	1736	3526	2070	3093	2694	2925	4559	2002	2996	2951	2326	3287	2731	1647
Sum of Grey Teal					283	3836	458	2529	212	854	385	375	161	277	260
Nelson/Marlborough															
Sum of Shoveler Males	111	116	122	198	155	205	169	135	143	236	82	165	257	132	71
Sum of Shoveler Females	61	100	94	204	120	141	111	93	112	179	69	96	183	126	47
Sum of Shoveler Unknown Sex	453	22	27	301	366	1055	851	1373	327	885	668	694	1707	2230	1615
Sum of Total Shoveler	625	238	243	703	641	1401	1131	1601	582	1300	819	955	2147	2488	1733
Sum of Grey Teal					957	1220	170	468	105	547	872	115	66	247	110
North Canterbury															
Sum of Shoveler Males	83	38	278	482	181	120	108	636	27	148	106	101	186	80	194
Sum of Shoveler Females	68	27	124	308	152	124	89	586	21	112	122	92	102	56	116
Sum of Shoveler Unknown Sex	185	143	124	10	73	65	482	256	0	75	13	0	0	62	68
Sum of Total Shoveler	336	208	526	800	406	309	679	1478	48	335	241	193	288	198	378
Sum of Grey Teal					4014	3570	4135	1966	86	0	510	1025	250	23	178
Northland															
Sum of Shoveler Males	30	53	28	53	60	41	24	12	64	17	23	33	101	46	54
Sum of Shoveler Females	27	44	26	49	46	27	28	9	73	12	24	13	76	31	26
Sum of Shoveler Unknown Sex	0	5	0	0	1	0	0	0	0	0	0	1	0	0	0
Sum of Total Shoveler	57	102	54	102	107	68	52	21	137	29	47	47	177	77	80
Sum of Grey Teal					246	158	43	44	37	73	13	67	36	46	159
Otago															
Sum of Shoveler Males	0	800	662	123	110	760	578	568	296	350	266	158	482	417	148
Sum of Shoveler Females	0	505	507	105	96	509	532	475	120	331	233	204	444	348	285
Sum of Shoveler Unknown Sex	1073	136	290	826	1103	241	213	423	535	338	430	845	57	737	639
Sum of Total Shoveler	1073	1441	1459	1054	1309	1510	1323	1466	951	1019	929	1207	983	1502	1072
Sum of Grey Teal					1496	1926	1940	863	895	361	810	392	759	2773	1091
Southland															

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Sum of Shoveler Males	369	260	27	92	98	216	117	228	126	114	183	430	489	337	380
Sum of Shoveler Females	210	164	22	96	101	116	103	133	68	72	93	257	243	153	214
Sum of Shoveler Unknown Sex	56	134	806	651	1118	640	359	519	204	569	537	102	128	0	105
Sum of Total Shoveler	635	558	855	839	1317	972	579	880	398	755	813	789	860	490	699
Sum of Grey Teal					268	243	317	128	377	604	175	295	429	144	195
Taranaki															
Sum of Shoveler Males	76	100	155	135	30	72	8	25	26	51	85	203	147	207	227
Sum of Shoveler Females	47	84	114	98	25	58	3	22	10	27	63	134	86	124	120
Sum of Shoveler Unknown Sex	210	196	165	68	238	3	121	124	0	40	82	115	37	29	11
Sum of Total Shoveler	333	380	434	301	293	133	132	171	36	118	230	452	270	360	358
Sum of Grey Teal					7	44	76	23	0	29	98	93	43	34	160
Wellington															
Sum of Shoveler Males	246	480	253	455	203	152	114	489	347	461	366	565	657	569	303
Sum of Shoveler Females	196	244	104	150	94	78	67	214	220	293	265	313	364	412	202
Sum of Shoveler Unknown Sex	755	459	815	787	367	311	243	60	108	116	45	175	196	72	44
Sum of Total Shoveler	1197	1183	1172	1392	664	541	424	763	675	870	676	1053	1217	1053	549
Sum of Grey Teal					269	322	146	381	84	178	216	217	169	292	203
West Coast															
Sum of Shoveler Males	39	34	37	125	89		48	55	71	54	35	82	80	48	68
Sum of Shoveler Females	18	37	40	115	85		38	51	47	30	42	49	71	36	54
Sum of Shoveler Unknown Sex	48	49	32	50	66		71	0	3	0	0	0	0	4	0
Sum of Total Shoveler	105	120	109	290	240		157	106	121	84	77	131	151	88	122
Sum of Grey Teal					210		91	79	270	83	142	317	206	113	69
Total Sum of Shoveler Males	2510	3098	2253	2630	2275	2633	1809	2775	1644	2737	2562	2867	4094	2617	3231
Total Sum of Shoveler Females	1616	1988	1525	1777	1610	1735	1425	2010	1004	1608	1567	1709	1905	1764	1986
Total Sum of Shoveler Unknown Sex	6266	6513	6420	6217	7578	5390	8338	9136	5115	5823	5428	6374	6120	7434	8337
Total Sum of Total Shoveler	10392	11599	10198	10624	11463	9758	11572	13921	7763	10168	9557	10950	12119	11815	13554

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total Sum of Grey Teal				0	8646	15230	9647	8507	6992	7193	7291	9185	5659	8489	6692

Appendix 2

Male: female ratios

Table 5. Male: Female ratio by year

Year	F:M_Ratio	Chi_Square	P_value
2000	0.644	193.7072	P<0.001
2001	0.642	242.2532	P<0.001
2002	0.677	140.2816	P<0.001
2003	0.676	165.103	P<0.001
2004	0.708	113.8288	P<0.001
2005	0.659	184.6163	P<0.001
2006	0.788	45.59555	P<0.001
2007	0.724	122.3041	P<0.001
2008	0.611	154.6828	P<0.001
2009	0.588	293.3581	P<0.001
2010	0.612	239.7736	P<0.001
2011	0.596	293.0428	P<0.001
2012	0.465	798.7533	P<0.001
2013	0.674	166.0829	P<0.001
2014	0.615	297.1104	P<0.001
2015	0.619	277.7305	P<0.001
2016	0.637	342.9137	P<0.001
2017	0.618	499.8276	P<0.001
2018	0.638	224.0055	P<0.001
2019	0.624	235.8114	P<0.001
2020	0.650	255.1243	P<0.001
2021	0.621	282.2323	P<0.001
2022	0.556	421.7151	P<0.001
2023	0.669	313.7889	P<0.001
2024	0.593	486.5523	P<0.001
2025	0.601	430.26164	P<0.001
2026	0.577	446.3872	P<0.001

Appendix 5

2026 Count Details

count by region

Region	Auckland/Waikato				
	Site	Males	Females	Unknown Sex	Total
	Caldwells Dam	0	0	0	0
	Chick's Pond	0	0	0	0
	Clarks Bay Shelbank	12	4	0	16
	David Saxton Wetland	0	0	0	0
	Fisher Pond	0	0	0	0
	Helensville Oxy. Ponds	26	18	0	44
	Kennys	1	1	0	2
	Kidds, Karaka	9	5	0	14
	Lake Waikare	0	0	280	280
	Leighton's Lake	17	12	0	29
	Mangere Water Storage	60	40	3	103
	Meremere Power Station	8	6	0	14
	Meremere WWTP	0	0	0	0
	Murray Young Wetland	0	0	0	0
	Ralph Road Ponds	0	0	13	13
	Rhyburns Lagoon	0	0	0	0
	Rosedale Oxy. Ponds	18	14	0	32
	Strakas Refuge	6	6	0	12
	Tee Head Pond	13	6	4	23
	Tuakau Oxy. Ponds	3	1	0	4
	Wairewa Oxy. Ponds	11	6	0	17
	Wellsford Oxy Ponds	10	8	4	22
	Whangamarino	8	5	378	391
	Whitney's Lake	18	15	0	33
Region	Central South Island				
	Site	Males	Females	Unknown Sex	Total

	All Day Bay Lagoon	25	19	0	44
	Bells Irrigation Pond	13	8	0	21
	Bortons Settling Pond	0	0	0	0
	Devils Bridge Wetland	12	7	0	19
	Horseshoe Lagoon	0	0	0	0
	Normanby Lagoon	27	6	3	36
	Old Orari Lagoon	4	2	0	6
	Opihi Lagoon	3	1	0	4
	Opihi Lagoon Nth Arm	51	29	0	80
	Opihi Lagoon Sth Arm	10	5	0	15
	Orari Lagoon	0	0	0	0
	Otipua Wetland	0	0	0	0
	Pareora Freezing Works	0	0	0	0
	Pareora Lagoon	0	0	0	0
	Pig Hunting Creek Lagoon	9	4	0	13
	Rooneys Pond	12	4	20	36
	Saltwater Creek	0	0	0	0
	Smithfield Settling Pond	1	1	0	2
	Spider Lagoon	4	3	0	7
	Wainono Lagoon	66	30	148	244
	Wainono Reserve	185	43	36	264
	Washdyke Lagoon	24	15	0	39
Region	Eastern				
	Site	Males	Females	Unknown Sex	Total
	Aniwhenua Lake	0	0	69	69
	Awaiti Wildlife	0	0	16	16
	Bethlehem Wetlands	6	4	1	11
	Bookers Pond	0	0	0	0
	Braemar Lagoon	1	1	0	2
	East Valley Pond	0	0	0	0

Kaituna Cut	0	0	0	0
Kaituna Wildlife	0	0	0	0
Kawerau Road Pond	0	0	8	8
Matata Wildlife Refuge	10	4	0	14
Poverty Bay Golf Club	13	7	0	20
Repongaere Lake	10	13	0	23
Rerewhakaaitu	0	0	0	0
Rotomahana Wildlife	0	0	1	1
Rotoroa Lake	0	0	71	71
Tamurenui Lake	0	0	0	0
Thornton Lagoon	0	0	0	0

Region

Hawke's Bay

Site	Males	Females	Unknown Sex	Total
Clive East Road	0	0	62	62
Horseshoe Lake	12	12	0	24
Lagoon Farm	0	0	47	47
Pirimu	0	0	37	37
Poukawa	0	0	1760	1760
Roto O Kiwa	31	31	0	62
Turfrey Swamp	18	14	0	32
Waitangi (Horseshoe)	16	11	0	27
Westshore Ponds	0	0	191	191
Whatuma	0	0	235	235
Willow Dam	0	0	24	24

Region

Nelson/Marlborough

Site	Males	Females	Unknown Sex	Total
Bell's Island	0	0	0	0
Best Island	0	0	0	0
Big Lagoon	0	0	303	303
Coastal Highway Pond	7	4	0	11

Corder Pond	0	0	0	0
Havelock Estuary	0	0	21	21
Kumaras/Oxidation Ponds	18	12	33	63
Kumera Estuary	0	0	0	0
Lower Waimea River	0	0	0	0
Maori Lookout	0	0	660	660
Mapua	0	0	0	0
Mapua School	0	0	0	0
Motueka River mouth	0	0	0	0
Motueka Sandspit	0	0	0	0
Moutere Inlet	0	0	0	0
Mouth of O'Connor's	0	0	0	0
Oxidation Ponds	0	0	346	346
Pearl Creek	0	0	0	0
Port Motueka Estuary	0	0	0	0
Te Aropipi Channel	0	0	271	271
Traverse	0	0	0	0
Wakapuaka Oxidation	115	58	0	173
Wakapuaka Pond	0	0	0	0

Region

North Canterbury

Site	Males	Females	Unknown Sex	Total
A&P Ponds	4	1	2	7
Bromley Sewage Ponds	64	32	0	96
Brooklands Lagoon	87	60	0	147
Cheviot Settling Ponds	39	28	16	83
Coopers Lagoon	0	0	65	65
Greenpark Sands (Lake	299	92	25	416
Harts Creek Reserve	8	3	5	16
Kaiapoi Wastewater	278	154	94	526
Lake Ellsmere - Kaituna	40	14	0	54

	Lake Forsyth	34	10	79	123
	St Annes Lagoon	38	9	34	81
	Styx Mill Reserve	11	5	0	16
	The Sister Ponds	4	2	0	6
	Travis Wetland	21	21	0	42
	Tutaepatu Lagoon	26	7	95	128
Region	Northland				
	Site	Males	Females	Unknown Sex	Total
	Ararua	0	0	0	0
	Borrowcut Wetland	0	0	0	0
	Dargaville (Oxidation	5	4	0	9
	Flaxmill Wetland	0	0	0	0
	Glinks Gully	0	0	0	0
	Greenheart Pond	0	0	0	0
	Hikurangi Oxidation	2	0	0	2
	Hokianga (Rawene	0	0	0	0
	Hospital Pond	0	0	0	0
	Kaeo Oxidation Ponds	0	0	0	0
	Kaitaia Oxidation Ponds	0	0	0	0
	Kaiwaka Rail Pond	3	1	0	4
	Karikari Oxidation Ponds	0	0	0	0
	Kawakawa Wetlands	7	5	3	15
	Lake Manuwai	0	0	0	0
	Lake Omapere Kaikohe	0	0	0	0
	Lake Ora	0	0	0	0
	Lake Owhareiti	0	0	0	0
	Mangawhai Pond	0	0	0	0
	Marsden Cove Ponds	0	0	0	0
	Maungaturoto Oxidation	1	0	0	1
	Ngunguru Oxidation Pond	12	7	0	19

	Omaha Wastewater	14	11	0	25
	Opahi Swamp	2	0	0	2
	Port Marsden Hwy Ponds	0	0	0	0
	Red Hill	1	1	0	2
	Riverside Drive	0	0	0	0
	Rototuna	0	0	0	0
	Ruakaka Oxidation	0	0	0	0
	Taipa Marsh	0	0	0	0
	Wairua wetlands	0	0	0	0
	Waitangi Wetlands	0	0	0	0
	Waro Lake	0	0	0	0
	Whangarei	0	0	0	0
Region	Otago				
	Site	Males	Females	Unknown Sex	Total
	Balclutha Backwater	2	0	0	2
	Balclutha Oxidation	43	21	0	64
	Blakelys Dam	100	80	0	180
	Blueskin Bay	0	0	0	0
	Borrow Pits	8	6	0	14
	Camerons Dam	68	41	0	109
	Carr's Oxbow	0	0	0	0
	Catlins Lake	57	50	0	107
	Creamery RD Pond	14	14	0	28
	Duffys Lane	2	1	0	3
	Finegand WR	0	0	0	0
	Hawksbury Lagoon	100	80	0	180
	Inch Clutha WMR	59	30	0	89
	Kaitangita Oxidation	0	0	0	0
	Kogans Bridge Oxbows	0	0	0	0
	Lake Dunstan	23	18	0	41

Lake Tuakitoto	118	80	0	198
Lake Waihola	36	20	0	56
Lake Waipori	60	24	0	84
Lone Pine Reservior	0	14	24	38
Mathias Dam	20	10	0	30
McSkimmings Pond	10	5	0	15
Merton Arm	0	0	0	0
Middlemarch Sewage	25	18	0	43
Old River Channel	36	16	0	52
Palmerston Oxidation	30	21	0	51
Patersons Dam	38	27	0	65
Pleasant River Estuary	26	20	0	46
Prison Oxidation Ponds	6	4	0	10
Puerua River Estuary	5	2	0	7
Ranfurly Sewage	1	0	0	1
Rutherfords Dam	200	158	0	358
Sinclair Wetland	15	4	0	19
Stirling Oxidation	7	6	0	13
Stoney Ck Lagoon	2	2	0	4
Styx	0	0	0	0
Taieri Lake	0	0	0	0
Taieri Mouth School	2	1	0	3
Takitakitoa Wetlands	28	15	0	43
Tapanui Oxidation Ponds	29	20	0	49
Waikouaiti Sewage	0	0	0	0
Winmill Dam	30	28	0	58

Region

Southland

Site	Males	Females	Unknown Sex	Total
Acton Downs Pond	0	0	0	0
Big Lagoon	60	23	0	83

City Lagoon	0	0	165	165
Daffodil Bay	0	0	174	174
Dawson City GMA	31	10	0	41
Gore Oxidation Ponds	26	23	0	49
Lake Te Anau Outlet	0	0	0	0
Little Lake Waituna	0	0	0	0
Lumsden Oxidation	27	6	0	33
Mahinga Kai Pa site	0	0	0	0
Mataura Oxidation	11	9	0	20
Outlet Area Kakapo	2	1	0	3
Peter Menlove's Pond	0	0	10	10
Riversdale Gravel Pit	2	1	0	3
Ryan's Pond	0	0	0	0
Te Anau Oxidation Ponds	7	4	0	11
Waimatuku Wetland	0	0	0	0

Region

Taranaki

Site	Males	Females	Unknown Sex	Total
Arrenmore	0	0	0	0
Eltham Oxidation Ponds	26	13	0	39
Hauroto Road	0	0	0	0
Hawera Oxidation Ponds	28	9	160	197
Julian's Lake	5	3	0	8
Kaitoke Lake	20	13	20	53
Lake Herengawe	0	0	0	0
Lake Kohata	0	0	0	0
Lake Marahau	0	0	0	0
Lake Oturi	17	5	0	22
Lake Pauri	7	4	0	11
Lake Rotokauwau	12	0	33	45
Lake Waiau	0	0	0	0

	Lake Waikato	0	0	0	0
	Lake Waipu	70	75	0	145
	Lake Westmere	0	0	0	0
	Lake Wairua	0	0	0	0
	Lower Ball Road	0	0	0	0
	Lower Taumaha Road	0	0	0	0
	Manaia Oxidation Ponds	1	1	0	2
	Milne's Lake	0	0	0	0
	Nowell's Lake	0	0	0	0
	Opunake Oxidation Ponds	8	5	0	13
	Opunaki Lake	2	1	0	3
	Patea Oxidation Ponds	60	17	0	77
	Ratana Oxidation Ponds	0	0	0	0
	Stratford Oxidation Ponds	18	4	0	22
	Waverly Oxidation	0	0	0	0
Region	Wellington				
	Site	Males	Females	Unknown Sex	Total
	Barton's Lagoon	4	4	0	8
	Boggy Pond	0	0	350	350
	Carex Grove	63	21	5	89
	Carterton Sewage Ponds	0	0	0	0
	Duncans Lagoon	1	1	0	2
	Featherston Sewage	0	0	0	0
	Kourarau Dam	1	1	0	2
	Lake Omana	0	0	0	0
	Lake Omana	20	17	18	55
	Lake Wairarapa -	0	0	0	0
	Lake Wairarapa -	0	0	0	0
	Lake Wairarapa -	0	0	0	0
	Lake Wairongomai	0	0	0	0

	Masterton Sewage Ponds	60	60	0	120
	Matthews Lagoon	0	0	30	30
	Otaki Sewage Ponds	35	17	0	52
	O-Te-Pua Wetland	11	7	0	18
	Pounui Lagoon	0	0	136	136
	Pukepuke Lagoon	38	28	13	79
	Smiths	0	1	0	1
	Voss Lagoon	3	1	0	4
	Waikanae Sewage Ponds	13	8	0	21
	Wairio Pond	0	0	0	0
	Waitawa Lake	0	0	0	0
	Waiterere Beach Road	0	0	0	0
Region	West Coast				
	Site	Males	Females	Unknown Sex	Total
	Barry Town Lagoon	13	4	0	17
	Bisset Ponds	1	1	0	2
	Blaketown Lagoon	19	8	0	27
	Bradshaws Wetland	1	1	0	2
	Buller Lagoon	6	3	0	9
	Hokitika Oxidation	20	20	0	40
	Karoro Oxidation Ponds	2	0	0	2
	Lake Brunner - Iveagh	0	0	0	0
	Lake Brunner - Swan	0	0	0	0
	Lake Ianthe	2	1	0	3
	Lake Poerua	2	2	0	4
	Lake Ryan	3	1	0	4
	Mahinapua	3	3	0	6
	NE Shore Lake Brunner	12	12	0	24
	North Cobden Lagoon	8	4	0	12
	Okuku Reservoir	0	0	0	0

Pheonix Meat Works	10	7	0	17
Runanga Oxidation Pond	11	5	0	16
South Cobden Lagoon	0	0	0	0

Appendix 6

Count site details

Region	Auckland/Waikato				
	Site	Map No	Grid Ref	Access Details	Ref No
	Beachlands	R11	775-874	North Beachlands Marina "Pine Harbour"	433
	Black Lake,	S13	913-189		378
	Caldwells Dam	R13	847-175	Through Andrew Caldwell's Farm, past woolshed, see dam from top of hill. Farm is first on right (North) past Glen Murray Hall SH22	578
	Cambridge Oxy.	S15	243-642		400
	Cathcart Property	S12	910-370	From Mill Creek, left boat and walked McKenzie stopbank. Scanned Cathcart from McKenzie	436
	Chick's Pond	T13	328-249		391
	Clarks Bay	R12	665-540	Private	581
	David Saxton	R13	881-146		609
	Duck Creek -	T11	623-568	Access by road (Hikenai-Pauanui Rd 16acre "sanctuary" opp Tanners Sawmill. Small numbers present for last 6 years	437
	Finlayson Road	S12	038-333	From Finlayson Road	376
	Firth of Thames	T12	312-400	From landing (Pipiroa Landing)	377
				Very popular shoveler counts	
	Fisher Pond	T13	324-225		390
	Francis's Pond				559
	Friedlanders				561
	Hahei Oxy.Ponds	T11	605-808		387
	Helensville Oxy.	Q10	393-038		370
	Helensville	Q10	400-010	From side of Mangakura Road	534
	Howarth	T13	490-030		397
	Huntly Oxy.	S13	023-055		395

Karaka Lakes	Q10	264-092	woodhill Forest Block 7b. Note may be closed due to deer hunting. Access via gate immediately of Lake Kereta (marked no trespassing) thence 100m to locked forest gate, past Karaka Lake No. 1 along Decon Road, thence next track left along forest boundary	535
Kennys	R13	826-096	3370 SH22 Naike	658
Kidds, Karaka	R12	722-562		445
Kopuatai West	T13	326-259	Checked most ponds from Dagger Road to the Waikaka River along the side of the Piakp River.	446
Lake Areare	S14	045-905		406
Lake B	S14	085-890	Through andrew Singers property	402
Lake C	S14	082-895	Via Andrew Hayes	403
Lake D	S14	072-894		404
Lake E	S14	105-865		405
Lake Harihari	R16	610-310		412
Lake Huiputea -	S16	040-326		453
Lake Kimihia	S13	040-112		394
Lake	S14	060-715		454
Lake	S15	053-610		407
Lake Ngaroto	S15	109-575	Used walking track around perimeter of Lake - viewing from all outcrops. Started from jetty finishing at rowing club approx 6km walk	408
Lake Ohinewai	S13	025-097	From Ohinewai Domain	384
Lake Pikopiko	S14	035-910		401
Lake Pokorua	R12	533-442	Awhiitu Peninsula. Private, scoped from private road end off Douglas Raod	611
Lake	S13	040-113	Access canal waikare-Rotokawau - boated length of lake until too shallow	383
Lake Taharoa	R16	625-360	By foot from Taharoa Village	410

Lake Waahi	S13	980-030	from crossing, under haulage road tunnelling to Coalcorp plantings, to marae and back (includes bays and streams)	396
Lake Waikare	S13	060-175	From yacht club to refuge islands then down lake to Rotokawau entry.	380
Lake Whangape	S13	900-137	from Shuggs Landing to SE Arm to Swann Island to Tikotiko arm and back.	385
Leighton's Lake	Q10	310-113	95 Tuparekura Road	542
Main Karaka	Q10	261-095	Parked car in Wilson's Road (at south end of Main Kareta Lake) Crossed private property of Geoff and Belinda Ward (025 933 729) to get to eastern edge of Woodhill Forest. Followed a well formed track (heading south) that runs along the western margins of the Kareta South Lakes (H2+3) and also the Main Karaka Lake.	530
Mangere Water	R11	670-705	Due to major works at the Ponds access is limited to Perimeter Roads	371
Matarangi Oxy.	T10	495-933		386
Meremere	S12	937-305	Roadside off SH pull in area by Meremere	652
Meremere	S12	940-301	Drive along Island Block Road Treatment pond on RHS when coming off SH1 500m from turnoff	598
Miranda	S12	162-438	South of Pukorokoro and Miranda Streams	467
Murray Young	S13	043-054	Drive down Evans Road, over bridge, wetland on right.	616
Ngaruawahia	S14	005-931	Park in entrance to /ponds and walk approx 80 mtrs to ponds which are visible from the road	399
Otorohanga	S16	050-345		409
Owera Oxy.	R10	605-102		368
Paeroa Oxy.	T13	455-215		413
Patetonga / Piako	T13	323-230		389

Peter	S13	035-265		381
Pike's Pond				558
Ralph Road	S13	015-059	Ralphs Road	393
Rhyburns Lagoon	S12	924-378	From creek, walked along stopbank	375
Rosedale Oxy.	R10	639-933	Along southern shore from plant to motorway box tunnel	369
Seagrove	R12	678-555	Through private property walked the foreshore from Clarks Creek 3.5km West	548
Strakas Refuge	R10	613-162	From weir to opposite teal	366
Te Awamutu	S15	115-538	Walked perimeter	411
Te Kuiti Oxy.	S16	983-186		414
Tee Head Pond	T13	392-192	Awaiti Canal	392
Thames Oxy	T12	370-450		388
Tuakau Oxy.	R12	797-357	From internal roads round ponds off Friedlander Rd	374
Waikato Delta	R13	655-292	Hoods Landing. Waikato Delta to top of windy channel.	373
Wairewa Oxy.	R10	619-165	On foot from road entrance along stopbank	367
Wattle Downs	R11	785-605		372
Wellsford Oxy	Q09	487-425	From St1 used Ray McFaddens race to pond entrance - walked perimeter of ponds. Tony O'Connor 021587583 call couple days before.	487
Whangamarino	S13	995-265	Used boat from end Wattle Rd launched at Herlet's Hut, down Reo Stream, along Suttons causeway to Peninsula, then across country to scan by binoc to Lone Pine	476
Whangapoa	T10	455-925	5 different points including inlets to Opitonui, Owera and Matarangi Stream	488
Whitford	R11	743-859	cnr Potts and Clifton Rds - Ayrles Pond owner Bev Conner	489
Whitianga	T11	505-795	Via various farms and by boat	490
Whitianga Oxy.	T11	510-820		379

Whitney's Lake S13

929-165

From roof of Whitney family hut.

382

Region

Central South Island

Site	Map No	Grid Ref	Access Details	Ref No
All Day Bay	J42	438-526	Count from Waianakarua Beach Rd	77
Bells Irrigation	J41	495-882	Count from Ross road off Ikiwai Raod at Tawhai. Count from road skirting pond.	519
Bortons Settling	J41	358-895	Access via angler access/public road off SH 83. count while driving road that skirts pond.	518
Devils Bridge	J41	480-722	Devils Bridge Road from Ardgown Road. Source of an Oamaru Creek tributary.	517
Horseshoe	K38	762-553	From end of Connollys road walk south approx 800m along stopbank/beach. Count from beach	70
Normanby	J39	707-378	drive to end of lagoon drive off Normanby road. Count from beach Dune	73
Old Orari Lagoon	K38	834-623	Walk along beach north of river mouth and count from Beach dune starting near macrocarpas	64
Opihi Lagoon	K38	784-573	Count from Milford huts	69
Opihi Lagoon	K38	794-585	Park at the end of White Rd. Walk along stopbank and beach. Count all lagoon and farm pond oxbows as you go. Long walk.	67
Opihi Lagoon	K38	779-569	From end of Connollys road, north, Count from about the macrocarpus row	68
Orari Lagoon	K38	827-617	count from stopbank at the end of Parke rd.	65
Otipua Wetland	J39	705-415	Count from public walking track around wetland	72
Pareora	J39	681-329	Access along beach from freezing works	75
Pareora Lagoon	J39	678-323	Park adjacent to freezing works, walk south along track and beach to lagoon (approx 500m further along bach from freezing works pond)	76

Pig Hunting	J39	703-369	Access from end of Craigies road off SH1. count from top of beach dune and walk 800m along southern bank to count the top end of the lagoon.	74
Rooneys Pond		646-055	Access off Myers or Hayman Road via farm track. Count from southern end in paddock.	554
Saltwater Creek	J39	715-415	Walk true right of saltwater creek from SHWY 1 to sea and then along coast	71
Smithfield		703-466	Count from car park (deer unloading area) off Westcott Road (back entrance to Smithfield works)	555
Spider Lagoon	K38	816-607	Access from end of Macaulay rd. walk north along stopbank. Count all water visible until standing near centre of the lagoon complex	66
Wainono	J40	640-100	count using spotting scope from both sides. Western side from the end of Clay road opposite café. Eastern side count from two or more central points whilst driving along beach dune track	78
Wainono Reserve	J40	645-086	Access from Poingdestres rd. count from top of dune using spotting scope	79
Washdyke	K39	704-474	Park near train overbridge (assume this is on Bridge Road?), walk along beach, count from two central points on	429

Region	Eastern				
	Site	Map No	Grid Ref	Access Details	Ref No
	Aniwhenua	V16	410-126	Access at Rabbit Bridge or Dam. Count from Kopuriki Bridge first (upstream and downstream). Good idea to do this area by Kayak and lower lake by motor boat.	12
	Awaiti Wildlife	V15	453-577	Access off Gregg Road.	7
	Bethlehem	U14	853-858	SH 2 Tauranga, turn right at Bethlehem round-about into Bethlehem Road, right into Westmorland Rise, and follow down to first wetland	550
	Bookers Pond	V15	356-442	The outlet is used for sprinklers on the effluent ponds.	20
	Braemar Lagoon	V15	382-507	Braemar Road	25
	East Valley	V15	361-449	Henarae Kapa 0212232957 (security) Really two ponds. Count top pond when first comes into view as drive down hill (from Hogg Road entrance) and bottom pond once have driven down to bottom of hill and along shoreline short distance adjacent to main pond. This flows into pond 3.	21
	Kaituna Cut	V14	110-780	End of Ford Road	27
	Kaituna Wildlife	U14	070-780	Access off Parr Road, where road takes a sharp right angle to the West.	9
	Kawerau Road	V15	330-410	Kawera Road. Rotopataka Trust for permission	26
	Lake McLaren	U14	779-722		416
	Matata Wildlife	V15	410-615	Access off SH 2. Can get good view from on top of sand dunes.	8
	Poverty Bay	Y18	440-694	via Golf Club	575
	Repongaere Lake	Y18	345-780	Though John Tuhoe's property. Access track to ridge line which overlooks the lake. 4WD when dry.	18
	Rerewhakaaitu	V16	160-170	Access off Brett Road or Ash Pit Road.	11

Rotoitipaku	V15	358-427	As coming from Rotorua to kawerau go through first set of traffic lights (offices go left big car park opposite) there is an overhead road with access to it off to right off SH34. Go over bridge and head towards river will need to phone 07-323-3456 to get to open green gate (Saftey Card No. 3395 exp 4/8/2010). From Norsk Skog Effluent Plant	23
Rotomahana	V16	110-200	Turn off Waimangu Road into Wairua Road then follow angler access signs to Lake.	10
Rotorua Lake	V15	360-445	Is called pond 4 & is the pond before the outfall into the Tarawera River. The largest pond at bottom of Hogg Road. Named on Topo map..	19
Tamurenui Lake	V15	375-460	Access off SH 30.	24
Thornton Lagoon	W15	518-583	Access off Thornton Road	532
Urupa Lake	V15	359-430	From Norske Skog Tasman Effluent Plant	22
Whakaki	X19	040-300	View from railway line. Eastern side viewed from Max Pakus or A Power? Access via 1st gate on left when traveling from Whakaki to Wairoa when you first reach the lake. Whakaki Farm Brownrig - Manager Wayne Feck Manager 06-838-3998. Other access to the Eastern end can be through via Whakaki Trustees harold Ngarimu??? Brownrigg Manager Pane Hook 06-8377654. Trustee Paul Teaho 06-8384043. Permission on sign 06-8377901	17

Region**Hawke's Bay**

Site	Map No	Grid Ref	Access Details	Ref No
Clive East Road	v21	479-728	Estuary that starts at the end of old Ferry Road in Clive. There is a cycle path along the estuary	587
Horseshoe Lake	v22	310-360	Access off Mangarara Road. Stop at the gate that's sign posted for lake viewing point - walk along fence at top and walk towards lake for 5- 10m	579
Hurimoana	V21	297-767	Access of Taihape Road. Second gate after cross the Ohiwa Stream. Follow farm track around base of hill. Gate is next to a sheep dip. Farm owners are Selwyn Dorward Alness Farm 644 Taihape Road, Hastings.	2
Lagoon Farm	V21	425-827	Shallow wetlands by Lagoon Farm parallel to Prebensen Drive West of HW 2B	589
Oingo Lake	V21	315-745		15
Pirimu	U23	068-126	Access off Lake Road. Travel along high ridge Gate is the second? one back from the Lake Road intersection. John & Raymer? Barrett, Lake Station 478 Lake Road.	4
Poukawa	V22	271-515	Access Settlement Road. Turn left at sign that says Private Access beyond this point. Travel down farm track until hit drain that enters Pokawa from South end. Can Launch boat/kayak here.	6
Pump House	V21	431-830	Best access is from Tamatea Drive and walking down eastern side of drain.	14
Roto O Kiwa	V22	232-475	At the end of Boundary Road turn left and follow farm track. Land is managed by Brownriggs. First pod is dry, other one is on the West side of the railway tracks.	3
Runanga Lake	v21	427-860		16
Turfrey Swamp	V21	428-870	From SH2, 200m past Turfrey Rd by Napier airport. Best done early am to get light right.	507

Waitangi	V21	467-749	Off SH2, across Railway. Count from Railway embankment.	545
Westshore Ponds	V21	433-846	Turn off SH 2 at Westshore on to Watchman Road. Count birds from causway.	13
Whatuma	V23	110-255	Access sign off Race Course Road by cattle stop (past race course)	529
Willow Dam	U23	085-205	Access off Nichols Road. Farm House Doug Mackie 852 Porongahau Road.	5

Region

Nelson/Marlborough

Site	Map No	Grid Ref	Access Details	Ref No
Aorere Estuary	M25	807-614	Road	309
Aorere	M25	814-602	Road	310
Aorere River	M25	824-593	Boat -Ruataniwha Inlet/Aorere Mouth	308
Balfour's Pond	P28	970-618	From road bridge	256
Bankhouse	O28	694-637	Canoe from south bank	268
Bell's Island	N27	249-907	On NE Pond + other ponds	284
Best Island	N27	233-896	From road. Corner besides estuary + bridges	285
Big Lagoon	P28	035-624	From 4WD Track	251
Carter's Pond	N27	174-845	With permission, downstream pond	290
Casey Road Pond	P29	024-466	From road	248
Coastal	N27	137-028	All ponds cut off by highway, especially freshwater (Easton's)one	292
Corder Pond	O27	367-968	From beside internal road. Remove as no longer holds	279
Duck Shooter's	P28	020-602	Top of terrace & Department of Conservation sign	255
Dune Lake,	M24	882-773	From vehicle track	313
Eastern Waimea	N27	275-868	From Whakatu Drive	280
Elterwater	P29	058-334	Gate/Hill past gravel stock pile, Mrs Sandall's front lawn	246
Ferrer Creek	N26	106-149	From both sides of Lodder Lane	299
Grove Arm	P27	862-927	From road	269
Grove Mill	P28	766-650	From behind winery	267
Grovetown	P28	916-695	From Crafar maimai, olive nursery to road side	263
Havelock Estuary	P27	733-917	From vantage points from SH6	274
Island Lake,	M24	810-772	From vehicle track	314
Kaihoka Lakes	M24	756-726		317
Kenepuru Head	P27	044-035		271

Kidney Ponds	P28	042-611	From 4WD Track	253
Kumaras/Oxidati	N26	125-119	From end of Staples St through estuary to east of ponds down to coastal area	297
Kumera Estuary	N26	119-127	Walk down Northern boundary of Phil Peters horse paddock to get accurate count of birds between Kumueras carpark and oxidation pond carpark	501
Lake Grassmere	P29	095-415	SH 1 Clifford Bay Farm gate	247
Lake Jasper	P29	912-487	From vehicle halfway along lake	249
Lake Otuhie	M25	603-575		319
Lake Rotoiti	O31	588-677		245
Lake Rotorua	O31	583-663	Brian Seddon on both sides of lake	244
Lower Opawa				257
Lower Pelorus				275
Lower Waimea	N27	218-915	From Rough Island and O'Connors and out to boat ramp on Rabbit Island	282
Mahikipawa	P27	795-905	Boat	270
Mangarakau				318
Maori Is	P28	914-696	Drive along Maori Island Rd	262
Maori Lookout	P28	020-603		252
Mapua	N27	183-938	Grossis Point Reserve to Noman's Island	289
Mapua School	n27	177-955	Park at Mapua school - pond immediately behind school	590
Marahau	N26	108-235	High tide roosts at mouth of Marahau	302
Marlborough	P28	828-631	From Lake View Rd	266
Mississippi	P28	969-647	From True LH Stopbank	259
Motueka River	N26	115-138	From west bank road and from Kaiteriteri Road	298
Motueka	N26	123-102	From Motueka Quay only	296
Motupipi Inlet	N25	961-407	Boat - Mouth and estuary of Motupipi.River. On Foot at grid ref	304

Moutere Inlet	N27	141-022	From vehicle, especially at head and beside island	291
Mouth of	N27	197-921	From Hunter Brown Reserve and Equestrian Road	287
Neiman's Creek	N27	234-890	From track leading from corner of Lansdowne Rd and from Best Island road corner	281
North Wairau	P28	981-668	From Department of Conservation track beside large pines	261
Otarawao	O26	675-180	Ask Jeremy Foley	272
Otuwhero	N26	097-213	In estuary from Marahau Road	301
Oxidation Ponds	P28	969-632	All ponds including PPCS	258
Pakawau	M25	833-688	Road	311
Para	P28	898-780	By canoe from new pond outlet to Boat Point and Mackels & return	265
Parapara Inlet	M25	833-543	Road	525
Parapara Inlet	M25	832-526	Road	306
Pearl Creek	N27	210-904	End of Cotterel's Rd	283
Port Motueka	N27	113-080	High tide roost from York Park looking towards Wharf Rd	295
Puponga	M24	875-758	Road	312
Riverside Pond	N27			293
Riwaka River	N26	100-159	High tide roosts from Kaiteriteri Road	300
Robinson's	P25	785-434	D'Urville Island	273
Rough Island	N27	208-911	Old Waimea R channel to west	288
Saxton Field	N27	281-867	Off Station Road	513
Takaka River	N25	933-431	Boat - Mouth and estuary of Takaka River from Rangitaeata to Waitapu Estuary	305
Taylor Dam	P28	877-589	Flushed lake edges	264
Te Aropipi	P28	996-652	From Boulder Bank, near Waverley wreck	254
Traverse	N27	204-928	From bridge and drive along road on Southern side	286
Triangle Lake	M24	883-768	From East	315

Upper Lagoon	P28	977-633	From Harding's Rd and walkway	250
Upper Moutere	N27	107-901	Various locations	294
Wainui Inlet				303
Wairau Estuary				260
Wakapuaka	O27	465-034	From Maori Pa Rd	276
Wakapuaka	O27	377-007	From northern access road	277
Wakapuaka Pond	O27	375-990	Sewerside Drive and adjacent estuary	278
Westhaven	M24	741-710	Ferguson's Letterbox	316

Region	North Canterbury				
	Site	Map No	Grid Ref	Access Details	Ref No
	A&P Ponds	m36	759-394	Southside riding for the disabled carpark whin showgrounds off Curletts Road	627
	Bromley	M35	870-415	Drove and walked around pond. 6 ponds in all.	131
	Brooklands	M35	862-553	Survey from several shoreline locations (including observation tower).	633
	Cheviot Settling	O33	315-216		556
	Coopers Lagoon	M37	540-044	Viewed from McEvedys Road, then drove along beach side to top of lagoon in order to cover all bays.	205
	Greenpark	M36	672-152	From Eeglens? At Wolfs Road to Halswell River mouth. NB covers two Maps M36 & M37, E672 to 756, N152 to 210	417
	Harts Creek	M36	578-130	Along boardwalk North to South + use of hide. Access off Timber Yard Road	133
	Janet Stewart	M35	824-494	Off Lower Styx Rd	624
	Kaiapoi	M35	846-582	Full survey of all ponds - Follow internal perimeter road.	632
	Lake Ellsmere -	M36	820-130	Parked vehicle at both ends and walked along old rail embankment.	514
	Lake Forsyth	M36	920-120	Started from top end of bay near Kinlock? Homestead; round bay to little river; through rushes & swamp & willows along eastern embankment to settlement and to outlet.	130
	Prestons Ponds	M35	828-495	End of Metehau St (4 ponds)	625
	Rakaia Lagoon	L37	490-017	Launch boat at ramp and observe from the closed game area to the river mouth	623
	St Annes	O33	253-320	Walked around the North Side from the entrance to Rentoul Park, to a point where the Western end of the water could be seen. Southern side not walked as ewes lambing.	203

Styx Mill Reserve	M35	782-489	Styx Reserve Birds on all 3 ponds. Access via public walkway off Styx Mill road.	585
The Sister	O32	306-347	Walked around Southern end of main pond to be able to see all of the water area. NB the pond on the North side of the Sisters Rd alongside the entrance to the main pond was viewed from the road.	204
Travis Wetland	m35	858-459	Carpark of Mairehau Rd. Walk to bird hides + access points	626
Tutaepatu	M35	860-645	This was originally recorded as Woodend Lagoon. Gladstone Road, then walk 400m to lagoon. NB Cannot walk around shore. Or via Tahaitaua coastal park Woodend Beach	132

Region	Northland				
	Site	Map No	Grid Ref	Access Details	Ref No
	Ararua	Q08	152-707	12.4 km on Ararua Rd from SH 12. 10 Ha irrigation lake on edge of road Jackson's prepoerty.	428
	Aupouri Forest	N03		Travelled 5km North of Lake Bullrush to un named lake . Situated in D.O.C RESERVE. Just North of Swan Lake.The Grid ref for this is wrong. Have change GR but not sure if this is the site???	153
	Aupouri Forest	N03	051-072	Access on foot at end of Road	152
	Borrowcut	Q06	239-221	Turn West off State Highway 1 next to Hikurangi and follow Jordan Valley Rd until the Wairua River bridge is reached . Cross bridge and turn right then follow stopbank Rd until wetland is reached on the right hand side.	155
	Bulrush Lake	N03	109-215		620
	Dargaville	P07	913-853	Turn left off State Highway 14 just over bridge prior to entering Dargaville. Follow road to pondes.	147
	Doug Donaldson	Q08	381-595	Farm track past Burnt? 1/2 round shed off Ranganui Road off Oneriri Road Kaiwaka. Farm for sale. Doug Donaldson 09-431-2228	580
	Flaxmill Wetland	P07	873-893	Located off Waihue Rd, Northwest of Dargaville (5km). Observed from town end (Southern Pond)	533
	Glinks Gully	P08	886-691	In gully on left approx. 250m down Glinks Road	599
	Greenheart	P07	062-004	End of Bob Taylor Rd and walk in	586
	Hikurangi	Q06	026-021	Turn left into oxidation ponds off Jordan Valley road from state Highway 1 near Hikurangi. Ponds situated at the end of the raceway.	138

Hokianga	O05	563-428	Short drive from township. (Western side of bight) Clear. Bino observation.(7x50)The grid ref for this site was wrong think I have corrected it?? (MM)	143
Hospital Pond	O05	564-432	Below hospital 445m North of Rawene oxidation ponds	619
Kaeo Oxidation	P04	806-775	Omaunu Road North of Kaeo, right into dip Road. 60m over bridge left poplar lined drive. Left at first house marked Belinda? 2580629.6,6677540.3	641
Kaikohe	P05	050-083	Take TePua road off state highway 1. The whole lake has a road in close proximity to the lakes periphery. Bordering landowners are very helpful.	142
kaikohe	P05	853-415	Accessed of Cumbers Road, South of Kaikohe on Mangakahia Road.	503
Kaitaia	O04	316-768	303 Bonnett Road	608
Kaiwaka Rail	Q08	381-596	Off Ranganui Road (past woolshed) new manager is Brett Best 021956-676	602
Karikari	O03	446-036	Inland Road Karikari through recycling depot	606
Kauri Dairy	Q06	018-029	Access is via Dairy farm raceway prior to Dairy Company entrance when heading North. Follow race until settling pond is reached.	139
Kawakawa	P05	062-448	Off Mill Road near Kawakawa on SH1	504
KeriKeri	P05	042-597	Access is via Te Wairoa Rd near Haruru Falls.Check Topo for details.	150
Lake Manuwai	P04	893-691	End of Sandys Road Kerikeri	531
Lake Omapere	P05	819-493	6 km North of Ohaewai on SH 1	426
Lake Ora	Q06	011-027	Able to walk around lake. Lake area approx 7 acres.	506
Lake Owhareiti	P05	964-455	Accessed off Ludbrook Road off SH 1 at Pakaraka	425

Mangawhai	R08	521-680	The sanctuary gated subdivision wetlands and ponds off Robert Hastie Drive	594
Marsden Cove	Q07	443-945		650
Marua	Q06	035-025	Private irrigation dam. Access through farm.	141
Matakohe	Q08	065-014	Turn right off State Highway 12 when heading to Ruawai into Oparakau Rd. Follow Rd till Ball Rd is reached . Follow Ball Rd, then take the first left into Murphy Rd. Irrigation dam is 12 Hectares in size on private property.	149
Maungaturoto	Q08	339-649		648
Mimiwhangata	Q06	403-103		502
Ngunguru	Q06	465-183	Off Waiotoi Road on LHS long driveway opposite No. 3132 Ponds tucked into hill	607
Omaha	R09	673-371	64 Jones Road, Warkworth. Alastair Chisholm is the person in charge at Jones Road and very helpful. (021 833 494). We counted from this location: -36.354672, 174.747055 Which can be easily accessed from the carpark here: -36.353942, 174.746357	646
Opahi Swamp	P06	038-335	Off Matawai-Marommaku road swaamp right hand side of road near Marommaku from SH1	505
Port Marsden	Q07	418-920	3.9km on right from Marsden point roundabout on SH15A opposite Development gravel site Access through farm gate then Ta5ranaki gate.	595
Pouto Peninsula	Q09	135-387	Turn right just before road bridgeon Pouto road. Bridge is approx 2.5km before the end of the road.Follow road until Lake is sighted on the right hand side.	144
Pouto Peninsula	P09	042-042	Turn right off Pouto Peninsula onto Ari Ari Rd, follow road until the first t rack on the left is encountered. Follow track until lake is spotted.	146

Pouto Peninsula	P09	004-049	45 KMS from Dargaville on Pouto Rd. Lake is visual from road on right hand side heading South.	148
Pouto Peninsula	Q09	014-038	Same as Lake Rotokawau except lake is on the left hand side of the road as one proceeds.	145
Rawene	O05	564-432	393 Rawene Road Private Pond off Rawene Road between oxidation pond and hospital	613
Rawene	O05	566-408	Off Rawene Rd park in old siding 1.5km up Rawene Road on RHS. Walk into plantation forest to view wetland	593
Red Hill	R08	899-699	Off Red Hill Cemetry Road on Leith McKenzie property	427
Riverside Drive	Q07	327-067		642
Riverside Drive	Qo7	327-067		647
Rototuna	P09	040-494	45 KM from Dargaville on Pouto Road	618
Ruakaka	Q07	433-916	Ponds off Imovale Road	424
Smiths Irrigation	Q06	214-222	Private Farm Race Leading from Tanekaha Road, Off Jordan Valley Road	552
Souther	P05	908-595	Access on foot from Wiroa Road Past Kerikeri Airport.	415
Taipa Marsh	O04	514-884	242 Taipa View Road	604
Taipa Oxidation	O04	524-891	Off Taipa Orruru Road	605
Waipu	Q09	040-078	Situated near township. The grid ref for this site is wrong	135
Waipu Oxidation	Q08	432-794	120 Nova Scotia Drive, Fontera supplier #11742. Take farm track to the right follow the river for 1km then turn left onto farm track heading into dune scrub on hill	596
Wairua wetlands	Q06	206-203	F&G and DoC sign on swamp Road just past Ballance Fert Silo on LHS Road	592
Waitangi	P05	030-643	Check topo for access via KeriKeri township.	151

Waro Lake	Q06	274-230	Go into Hikurangi township, drive past recycling/rubbish station down side road (east of main road). Lake at end of side road.	570
Wellsford	Q09	487-425	First turn right off State Highway 1 past Golf Course.Oxidation ponds situated at end of road.	134
Whakapara River	Q06	024-027	Access off state highway 1 where the road crosses the Whakapara river. Follow Southern river bank.	140
Whangarei	Q07	304-054	Aprox 1km down RewaRewa Rd off State Highway 1 when entering Whangarei. Easy access from road edge through gates. District Council owned property.	154

Region	Otago				
	Site	Map No	Grid Ref	Access Details	Ref No
	Balclutha	H46	576-362	Behind Nash Park. Accross (NW) from Balclutha township	584
	Balclutha	H46	583-334	Walk along railway track to point where all of the pond can be seen.	163
	Big Boggy Burn	F9	827-241	Counting point from 20m above trail, on hill @ 300m from lake. Plus count where possible on North side of wetland	583
	Blakelys Dam	H42	783-568	#188 off Gimmerburn/ Waipata Rd. Geoff Winmall new owner 0274380647	188
	Blueskin Bay			Viewed from vantage point approximately 500m past railway on rout to Warrinton?	173
	Borrow Pits	I45	912-677	View from main road	569
	Camerons Dam	H41	650-750	Drive up Hills creek Road off Oturehua Road through the Ida Valley turn left into McKnight Road it is right beside the road. (Please check grid reference as this was guess from instructions and Google Earth)	600
	Carr's Oxbow	H42	736-445	From gate 1/2 way down hill on Pateroa - Puketoi Road LHS	423
	Catlins Lake	H47	502-090	Access off Papatowai Highway	645
	Creamery RD	H42	803-543	From Creamery Road	183
	Diamond Lake	E40	446-981	Old day use picnic area midway off Gly/Paradise Road NE end.	192
	Duffys Lane			Drive along fence line from Duffys lane to end of willow view driveway	182
	Finegand WR	H46	586-631	Walked flood bank on SW bank	164
	Flood Free				165
	Frankton Arm	F41	737-668	Kawarau Falls Motor camp pier south side at outlet	191
	Glenorchy	E41	461-860	Elevated above lagoons midway on road eastern shore	194
	Hawksbury	j43	321-146	Waikouaiti - Walked along the stop bank in the centre of Hawksbury Lagoon	176

Hoopers Inlet	I44	290-800	Glassed area from Kohuka (outlet) to Hoopers Inlet Road along Hoopers inlet Road to Allans Beech Road, and along road to Murray Farm Point?	171
Inch Clutha	H46	592-345	Drove along road next to main ponds	161
Kaikorai Estuary			From standing next to bridge on main road.	169
Kaitangita	H46	663-300	From Road	159
Kidds Rd			Standing on Southern side of pond	180
Kirkpatrick	E41	614-665	Outlet North end of lake	189
Kogans Bridge				181
Lake Dunstan	G41	170-801	Gilmoree Rd off SH6. Drive to end of road through gate walk up hill to get some elevation for glasing	582
Lake Hayes	F41	802-725	Bendmeer Reserve and Aslo counted GR 797-737 Mill creek confluence reserve north shore	190
Lake Johnson	F41	736-695	Elevated position above lake on east shore	196
Lake Tuakitoto	H46	647-379	spot from two sites -46.222096, 169.828806 and -46.228476, 169.828788	158
Lake Waiholā	H45	855-620	From Titi Road (GR 855-620). Beside oxidation pond	166
Lake Waipori	H45	852-677	From Bert O'Briens front lawn	168
Lone Pine	I42	080-357	Off Golden Point Road?	547
Mathias Dam	H42	840-500	Access through Anglers Access point off Patearoa - Waipiata Road. From hill behind shooters hut.	184
Matukituki Valley				200
McSkimmings	h41	657-803		571
Merton Arm			Walked 3/4 length of estuary along SH1	174
Middlemarch			From access road.	179
Minaret Station				199

Moke Lake	E41	612-685	Elevated point off track SE corner	195
Old River	H46	647-258	Walked NW side from Sth to Nth mouth of Clutha	160
Paddock Bay				198
Palmerston	J43	325-235	Walked length of pond (West Shore) adjacent to Horse Range road	178
Papanui Inlet	J44	310-820	Glassed from Inakays? Road over entrance area, then along Cape Saunders? Road, Papanui Inlet Road to Dicks? Road, then along edge of inlet to cribs.	172
Patersons Dam	H42		Off Moa Creek Road, Ida Valley Station	564
Pleasant River	J43	315-136	Drive down Thornburn Road to T intersection turn left and drive down track 400m	656
Prison Oxidation	H45	789-532	Oxidation ponds can be seen off Back Road	597
Puerua River	H46	639-244	Turn off Kaka Point Road down farm track to the fishing hunts at river mouth	615
Ranfurly	H42	823-591	Behind Ranfurly Township	187
Reid Lake	E40	455-947	Along high terrace, east side midway?	193
Rutherfords	H42	863-578	Off Waipata - Naseby Road. From dam wall at SW corner	186
Sinclair Wetland	H45	835-645	From Road to SW at top of the hill (GR 835-645) and from boat ramp	167
Stirling Oxidation	H45	621-342	From gravel Road at GR H46 621 342	162
Stoney Ck			walked along the Southern Shore	177
Styx	H43	698-270	Off the upper Taieri - Paerau Road	572
Taieri Lake	H42	894-548	From high ground at GR H42 895-545	185
Taieri Mouth	I45	925-559	Off Akatore Rd, Behind Taieri Mouth School	588
Takitakitoa	I45	916-626	Off Takitakitoa Road - access true left bund wall	601

Tapanui	g45	187-675	Access off Duncan Road, Tapanui	630
Tomahawk	I44	191-755	Glassed area from Tomahawk Road	170
Tomahawk	I44	198-656	From behind hall and Northern carpark and track	365
Waikouaiti	I43	270-076	Counted birds by standing on the north shore	175
Wanaka				201
Winmill Dam	H42	766-561	Crn of Gimmerurn-Waipiaata Road and Patearoa-Maniotot Road	617

Region	Southland				
	Site	Map No	Grid Ref	Access Details	Ref No
	Acton Downs	E44	453-994	Adjacent Acton Downs Homestead	98
	Big Lagoon	E46	530-455	Through Tony Riegers property	543
	City Lagoon	E47	520-095		523
	Daffodil Bay	E47	487-048	From Sandy Point track to Daffodil Bay - walking track to North and grassed area to West.	568
	Dawson City	D43	107-157	Via Wilderness Road	106
	Gore Oxidation	F45	962-464	Located on southern outskirts of Gore	93
	Invercargill City	E47	524-095	From Bluff Rd, on new walking track	538
	Invercargill	E46	520-100	Via city tip	102
	Lake Murihiku	E46	457-120	Via Mark Sutton's old place. New owner Keryn Crook 03-2131208. 26 Huges Road. Take waders as you will need to wade out about 20m into lake. Be careful as mud becomes very deep about this point. Count done at -46.405518, 168.2622 degrees	103
	Lake Te Anau	D43	944-163		521
	Lake Te Anau	D43	955-163	Shoreline adjacent Te Anau Golf Course	105
	Little Lake	F47	770-965	Via eastern end Lake Waituna	92
	Lumsden	E44	552-857	Located via .5km SW of Lumsden via NS Transport access road	96
	Mahinga Kai Pa	F47	773-964		635
	Mataura	F46	896-348	Located 1 km south of Mataura on true right of Mataura River	94
	Outlet Area	D43	015-135	Via public right of way though O. Buckingham farm.	107
	Peter Menlove's	E44	523-761	At Caroline adjacent State Highway 6	97
	Riversdale	F44	760-723	Located on Dunn and Cody Road 3kms west of Riversdale.	95
	Ryan's Pond	E44	379-780	Via Castle Downs Road	99

Te Anau	D43	982-207	Adjacent left bank lower Upukeroa River	104
Waimatuku	E46	375-173	Adjacent mouth of Waimatuku Stream	100
Waituna	F47	773-966	Waituna Lagoon Road. Park by the wooden gates. Counting location is the southern end of wooden rail fence.	654
Wallacetown	E46	482-187	Adjacent Makarewa Stream	101

Region	Taranaki				
	Site	Map No	Grid Ref	Access Details	Ref No
	Arrenmore	S22	026-445	End of Makirikiri Valley road, climb over hill (south) to Arranmore wetland. Call robbie 0272147488	640
	Eltham	Q20	225-953		576
	Geary Road	Q21	299-678	Southern side of Manutahi Raod at the Geary Road corner. Go into paddock on LHS of lake	45
	Hauroto Road	Q21	151-785	Irrigation pond on Hauroto Road north of Hawera.	622
	Hawera	Q21	189-762	Off Fairfield Road off SH3 or Manawapou Road	41
	Hawken's	R22	536-503	Off the end of Hawken Road, follow track round to the right and along fence line. Climp to top of highest mound.	52
	Ihupuku Road	R22	522-557	Ihupuku Raod opposite the end of Lennox Road	50
	Julian's Lake	P21	870-902	Michelle & Richard Julian Off SH45 just north of Watino Road	40
	Kaitoke Lake	R22	871-360	Kaitoke Road. From Pritchard property, top of farm track	56
	Lake Grassmere	S22	929-333	SH3, From drive way track shown on topomap	60
	Lake	R22	503-555	From Ihupuku Road	49
	Lake Kohata	R22	876-350	Kaitoke Road. Access track from road	57
	Lake Marahau	R22	656-497	Waitotara. 187 Marahau Road, 'Marahau'. Over cattle stop follow past yards over railway lake on left.. Follow tracks to southern and northern ends of lake Call Murray Reid 0274307608	54

Lake Oturi	Q22	490-572	Rob Amon 0274713767 063465812 On RHS of Waverley Beach Road heading toward the sea. Entry on lake front (drives birds to far side of lake), then enter Dairy No.90, go into left hand paddock at the second set of gates (the one with a single pine tree in it), go to far bottom corner of paddock, across stile, out on boardwalk to maimai	48
Lake Pauri	R22	895-343	Pauri Road. At east end of lake, from road	59
Lake Ratapiko	Q19	248-213	Ratapiko Rd. Access at boat ramp for power boat arm of the lake. Access at ski club for ski arm of the lake.	537
Lake	S22	940-326	1004 SH3 call Dan Gordan 0273906611. follow track around lake	61
Lake Waiau	R22	540-548	Chris & Carley Amon 063465533 Off Ihupuku Road, walk from southern end half way up the north-western side	51
Lake Waikato	R22	628-513	3092 SH 3 farm entrance. Call Andrew first 02102869395 to access Northern end of lake follow race. Old instructions: (Russell Road, stables entrance. Roger Handley 3074 SH3)	53
Lake Waipu	S23	940-269	Rangatahi Road. Through gate with railway irons down to below woolshed	63
Lake Westmere	R22	810-436	Rapanui Road. Enter at Westmere Refuge sign	55
Lake Wiritoa	R22	884-346	SH3&Kaitoke Road. North arm accessed from Campbell's property (SH3), view points also ski club and Scoutlands	58
Lower Ball	Q21	305-664	Mark Shrider 0276688176 Up farm race by cowshed and onto gravel track to centre of crescent shaped lake	46
Lower Taumaha	Q21	278-697	Edna Saxton 067589290 Glenn Wingate Through gate on RHS near lower end of lower Taumaha Road, Manutahi	44
Manaia	P21	062-803	At the end of Sutherland road	612

Milne's Lake	Q21	208-757	Left hand lake at the end of Nowell Road off Manawapou Road Hawera	43
Nowell's Lake	Q21	204-760	Paul Roberts 021360260 Right hand lake at the end of Nowell Road off Manawapou Raod, Hawera. Andrew Roberst 0276563656	42
Opunake	p20	817-953	Off SH 45	574
Opunaki Lake	P20	842-938	?	603
Patea Oxidation	Q22	372-590	From gate on Motor Camp Road	536
Ratana	S23	949-272	Rangatahi Road, 2 ponds	62
Spence Road	Q21	325-652	RHS by old dairy shed. Park by shed and walk across concrete crossing and then left to centre of crescent shaped lake	47
Stratford	Q20	224-061	Victoria Road Stratford. Brett Cotle 0273707460	577
Waverly	Q22	492-583	Turn right over railway line 700m down Waverly Beach Road from Waverly.	546

Region

Wellington

Site	Map No	Grid Ref	Access Details	Ref No
Barton's Lagoon	S27	041-018	Form Featherston via Murphy's Line and Lake Domain Road. Barton's Lagoon is immediately north of the toilet block situated under pine trees at Lake Domain, it is immediately west of the adjacent count sites at Lake Domain wetland.	526
Boggy Pond	S27	999-927	@ Northern carpark	657
Carex Grove	S24	994-804	Carex Grove	643
Carterton	S26	203-154	Turn off SH 2 onto Dalefield Road. Entrance to sewage ponds is sign posted.	497
Duncans	S24	232-966	Owner: William Duncan 0274431998	232
Featherston	S27	077-949	Turn off State Highway 53 onto Donald Street and then turn right onto Viles Road. Entrance to sewage ponds is the first turn on the left along Viles Road.	528
Foxton 3	S24	014-838		495
Foxton 4	S24	014-845	Nigel Sexton 06-329-9797. turn off main road by water tank drive along farm track as far as possible Gap between 3 & 4 on left.	562
House Lake	S24	016-865	1st lake on LHS of Rd, En route to Lake Koputara. Mr Sexton 06-329-9797	563
Kaikokopu Lake	S24	022-898	Owner Charlie Pederson, Access via Himitangi Beach Road 404. Combination Lock 1310	566
Kourarau Dam	T27	371-093	From Gladstone via Tupurupuru Te Wharau Road	243
Lake Domain	S27	044-012	From Featherston via Murphy's Line and Lake Domain Road. To avoid any confusion the count site is not the Lake Domain Lagoon but the wetland immediately adjacent to Simmonds Lagoon at the far eastern boundary of Lake Domain.	238
Lake Koputara	S24	018-869	Owner: Tom Willis 06 327 7397	228

Lake Omanu	S24	009-816	Owner: Wellington Fish and Game	229
Lake Omanuka	S24	077-949	Owner: Cameron McKelvie 06 324 8526	226
Lake Pukekura	S24	140-816	Contact: Richard and/or Geoff George, 06 363 8576	230
Lake	S25	945-635	Off Hokio Beach.	235
Lake Rotowhero	S23	087-165	Owner: Jim McDonald 06 327 5566	225
Lake Wairarapa	S27	041-014	From Featherston via Murphy's Line and Lake Domain Road. Count site is immediately in front of the stand of Radiata Pine at Lake Domain camping ground.	239
Lake Wairarapa	S27	004-940	Off Parera Road then along the stop bank on the south side of the Oporua Spillway. Count is made from the end of the stop bank.	241
Lake Wairarapa	S27	039-990	From Featherston via SH53 and Diversion Road, then access property of Jane Gillett to the mouth of the Otakura Stream.	240
Lake Wairarapa	S27	935-964	From Featherston via Western Lake Road. Count is made from the road side adjacent to the lake.	242
Lake	S25	910-528	From Main Street in Otaki, turn onto Te Rauparaha Street, and continue along Convent Road, and then past the Otaki Golf Course onto Wairongomai Road. The Lake lies to the west of the end of Wairongomai Road across farm land.	234
Lakeview Farm	S25	985-668	Turn off Hokio Beach Road onto Moutere Road. Farm managers residence is at the end of Moutere Road, from this point lagoon can be reached via farm tracks. Contact Lindsay or Wendy Smitt, farm managers.	236
Masterton	T26	355-202	Entrance to sewage ponds is sign posted on Manaia Road just south of intersection with Homebush Road.	496

Matthews Lagoon	S27	003-913	Turn off Kahutara Road onto Parera Road. From Parera Road walk down the access track to the edge of Matthews Lagoon and then follow the eastern shore of the lagoon south past to row of poplars until a clear view of the lagoon can be obtained.	498
Middle Lake	S24	016-868	This Lake is Between Koputara and House Lake	565
Otaki Sewage	S25	902-473	Turn off SH 1 onto Riverbank Road, the entrance to the sewage ponds is signposted.	500
O-Te-Pua	S25	938-498	Turn Off Statehighway 1 just before reaching the Forest Lakes Road turn-off on the left heading north. Contact landowner Graham Booth to arrange access (04 476 9603 or	527
Pounui Lagoon	R28	878-803	Turn off Western Lake Road and travel along the stop bank that forms the northern shore of Lake Onoke.	499
Pukepuke	S24	024-936	Dept Conservation, PNth, 06 350 9700	227
Smiths	S23	101-021	Green letterbox yellow and black striped pole #244 on gate next to drive.	494
Voss Lagoon	S24	215-843	Owner: Max Voss 06 329 6835	231
Waikanae	R26	827-377	Off State Highway 1, via Moana Road, turn left at Waikanae Bowling Club onto Ono Huiawa Street, then onto Field Way and William Street, turn left off William Street onto Rutherford Drive, entrance to Sewage Treatment Plant is at the end of Rutherford Drive, contact Kapiti Coast District Council on 04-9045700 to arrang entry.	233
Wairio Pond	S27	985-930	Parera Road, Kahutara	644
Waitawa Lake	S25	935-513	Off Forest Lakes Road	567
Waiterere Beach	S25	985-682	Via the McKay property off Waiterere Beach Road	237

Region	West Coast				
	Site	Map No	Grid Ref	Access Details	Ref No
	Barry Town	k31	710-887	Drive down race on George Coutts (ph: 7311805) farm Count lagoon and small pond adjacent - take kayak to ensure small pond viewed adequately.	573
	Bisset Ponds	k31	705-811	Count all four Bisset ponds, contact leaseholder Richard Reynolds for access (027 418 2846)	637
	Blaketown	J32	615-594	Count from Raleigh street and from Floodwall pump station	122
	Bradshaws	k29	877-373	Access down farm race by powerlines. Contact farm manager for access - Jason (027 711 3536)	638
	Buller Lagoon	k29	923-394	Count Shoveler present on lower Bradshaws Creek. Access through Bob Higgins Property opposite the airport (027 287 7246)	639
	Hokitika	J32	492-241	View from road.	516
	Karoro	J32	603-566		621
	Lake Brunner -	K32	857-419	Boat 150m from shore along western shores of bay to end of Stormy Point	127
	Lake Brunner -	K32	854-448	Count via centre of Lagoon looking to both edges.	431
	Lake Ianthe	I34	160-920	Motor from jetty across lake to Raupo then anticlockwise around lake edge (150m off shore) 100m down outlet also.	120
	Lake Poerua	K32	865-315	Boatramp to lake outlet 150m offshore then down middle of lower lake to outlet stream.	129
	Lake Rotokino	I34	010-800	Up outlet creek then into western arm of lake. Count from outlet of that lake. Around southern lake edge 150m off shore to White heron lagoon. Then go into arm with hut at the end. (SW corner)	121
	Lake Ryan	J31	625-629	Counted from access road to farm and from main road to Pt Elizabeth.	124

Mahinapua	J33	385-214	Anticlockwise around lake 100m off shore - up mirror creek 100m and down lake outlet	430
NE Shore Lake	K32	855-465	Start at yacht club ramp travel around Molloy, Howitt and Pah Bays 150m from edge. Stop at entrance to Iveagh Bay (separate count /survey line).	432
North Cobden	J31	620-614	Counted from tiphead road then from Jellyman Park for northern end.	125
Okuku	BU19	651-293	Off Old Christchurch Road Baylee please check this as it is not included in your spreadsheet.	636
Pheonix Meat	K32	763-579	Counted from dumping platform just through gate	128
Runanga	J31	661-672	Off Bathhouse Road to oxidation pond outlet.	123
South Cobden	J31	620-613	Off stopbank along road edge	126