

**WEST COAST FISH & GAME REGION**  
**GREYLARD SURVEY 2020**

*Results of Ground and Aerial Greylard Counts April/May 2020.*

*Glen Newton, Fish & Game Field Officer, June 2020.*



*Drone Footage from Greylard Surveys of Westland Bush Ponds.*



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### Summary

*Fish and Game has a responsibility to monitor Grey and Mallard Ducks under the Conservation Act. With hybridisation between the two species they are now collectively monitored and referred to as 'greylards'. West Coast Fish and Game currently count greylards at approximately eighty sites between Granity and Hari Hari. Until recently small accessible wetlands were counted by foot giving the most accurate counts while more remote, yet significant wetlands were counted by fixed wing plane giving useful estimates of greylard. In 2018 a drone was purchased to improve count accuracy at sites where it has been historically difficult to gain accurate counts. This year total greylard numbers declined 0.5% from those observed in 2019 (3312 vs 3331) and there was considerable fluctuation in the distribution of greylards. Route regression analysis shows the mean annual count for greylard has increased 7% over the last 5 years. Staff recommend are that the current greylard limit and season remains the same.*

## Introduction

The endemic New Zealand grey duck (*Anas superciliosa*) and the introduced mallard duck (*Anas platyrhynchos*) are well distributed throughout New Zealand. Both species readily hybridise together with many birds showing varying degrees of hybrid traits and are often collectively referred to as ‘Greylard duck’. On the West Coast greylard make up most of the gamebird harvest and are considered the preferable quarry by most of the region’s gamebird hunters (Kersten 2018). Fish & Game West Coast has a statutory requirement under S26Q of the Conservation Act 1987 to assess and monitor game bird populations. Monitoring should be conducted to identify the current (or recent) status of the greylard population, enabling managers to make decisions about what level of action (e.g. change in harvest, habitat creation/restoration, etc.) might be required to maintain, or at least try to maintain, the population at a desired level (McKenzie 2014).

Greylard are a transient bird readily moving from site to site according to food availability. This means that counts at any one site can be hit and miss with large fluctuations. While best practice is to undertake line transect surveys topography on the West Coast made it impractical to randomise transect locations. Instead, a small number of representative sites were chosen where an annual count of the population was made. To gain a better understanding of the West Coast greylard population, and reduce overall count variability, additional sites have been counted since 2015 over and above the originally selected sites (Adams 2015). Monitoring is carried out between Birchfield and Hari Hari and consists of counting sites that are physically defined for easy repeatability and include: lakes, ponds, streams, lagoons, and estuaries (Appendix 2). Sites encompass a variety of habitat types and areas known to have relatively high hunter usage and harvest (Kersten 2018). It is thought that this will provide an indication of the wider greylard population trends in response to hunter harvest, predation and environmental conditions, therefore aiding in the setting of effective gamebird regulations.

By counting in April each year, a snapshot of the greylard population entering the upcoming hunting season is gained. The advantage of counts undertaken at this time of the year is that they provide a measure of the status of the greylard population of interest to hunters. Also, they reflect the contributions made by survivors of the previous hunting season, their reproductive output, and the survival of these birds and their offspring through to the start of the next hunting season. A disadvantage of counts at this time of year is that the data cannot be used for setting the following seasons regulations (Taylor 2014).

The aim of the current survey was to:

- 1) Repeat the counts of sites started in 2015 to gain an index of relative abundance of greylard on the West Coast.
- 2) Identify any new sites holding greylard for repeat counting in 2021.
- 3) Use route regression analysis to assess population trends of greylard.
- 4) Provide recommendations for management of the greylard population in context of the goals and objectives of the West Coast Region ‘Sports Fish & Game Bird Management Plan’.

## Method

Due to Covid-19 restrictions the counts were undertaken in late April to mid-May across 74 sites. This is about a month later than they are normally completed. Sites were accessed by a variety of different techniques depending on site accessibility. Most sites were surveyed using a DJI Mavic Pro drone while other sites were accessed by foot, boat or kayak with binoculars being used to help counting. Three sites counted in 2019 could not be counted this season due to access issues and one site was discounted from

the analysis due to disturbance during the count. All sites were counted between 10am and 4pm NZST during settled weather periods to ensure all greylard would be loafing at, rather than returning to, or heading to feeding areas at the time of counting.

Data was recorded on survey sheets and entered into the greylard survey database. A comparison of this year's count with site long term averages was made. To enable easier interpretation of the data and to account for movement between adjacent sites data was amalgamated into 'area' counts. Further analysis of numbers was completed using Fish & Game best practice Route Regression analysis.

## Results

A total of 3,318 greylard were counted during the survey which was almost identical when compared to greylard counted in 2019 (3,331 greylard 0.5% decrease) but above the 2015-2020 average of 3, 248 greylard (Figure 1). While the total count was slightly down on 2019 there was a considerable fluctuation in the distribution of greylard. Areas in 2020 with notable increases from 2019 were at Westport South, Reefton, lakes Poerua, Mahinapua, Ianthe and Hari Hari. Areas in 2020 with notable decreases from 2019 were Westport North, Grey Valley, Kokiri, Greymouth township, Lake Arthur, and Groves Swamp (Table 1). A full list of sites with data for the last five years is included in Appendix 1.

Route regression analysis shows the greylard population has increased by 7% pa over the last 5-years. The standard error in the counts over the 5-year period is 6% (Figure 2).

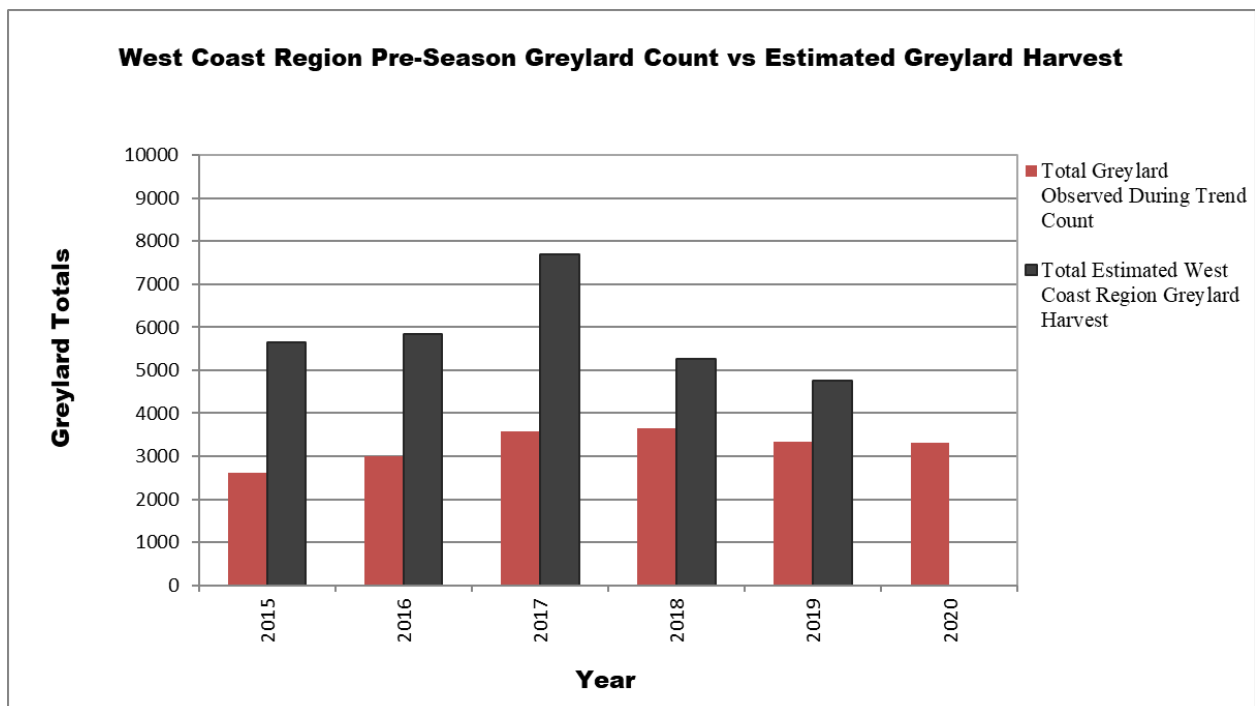


Figure 1. West Coast Region pre-season greylard count vs estimated greylard harvest from Hunter Harvest Survey 2015-2020.

Table 1. Comparison of West Coast Region pre-season greylard counts by site/area for 2018-2020 and 2015-2020 average.

Site/Area	2018	2019	2020	Average*	Note
North Westport	18	64	0	48	Birchfield north and south
Westport South	247	144	261	226	Virgin Flat, Okari, Holcim, Bradshaws, Tiphead, Nine Mile
Reefton	62	16	83	55	Oxidation Ponds
Barrytown	360	300	325	262	Barrytown Lagoon and Bisset Ponds
Grey Valley	186	64	44	91	Ikamatua, Snowy, Kennedy
Kokiri	25	103	59	47	Meat Works
Lake Brunner	271	333	334	358	Yacht club, Molloy, Old mouth, Swans Retreat, Boat ramp
Lake Poerua	171	134	355	173	
Greymouth Town	220	333	232	241	Paroa oxidation, Waterwalk, Cobden, Lake Ryan
Hokitika	140	101	92	133	Oxidation ponds
Lake Arthur	231	392	278	324	Lake Arthur, Beside Arthur, Farm ponds, Cuddy's, Nolans, Staples
Groves Swamp	769	622	180	497	Ogilvies, Tukes Lagoon, Pukaki, Mont's Creek, Shooting Creek, Harman
Mahinapua	86	87	191	81	Mirror Creek, Small bay, Picnic Bay, Grebe Bay and Mahinapua Creek
Totara Lagoon/Ross	117	125	135	118	
Lake Ianthe	372	84	120	154	North West Bays, Southern Bay
Hari Hari	182	170	263	198	Blowhard ponds, Harris ponds, Wanganui River, Tommy's Ponds, Roadside ponds

\*2015-2020 average

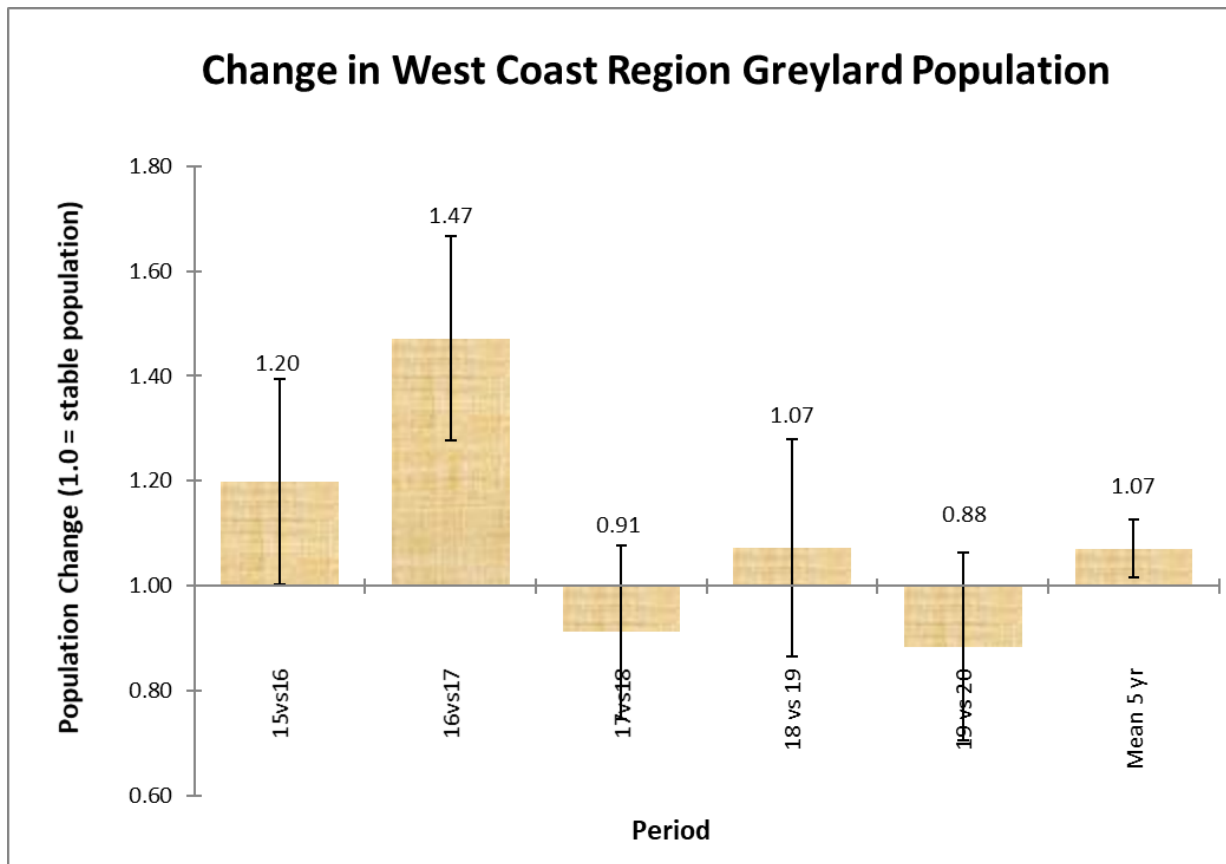


Figure 2: Each column represents the change in the regional population between years calculated by route regression analysis. The mean is the average annual change over the 2015-2019 period. A value above or below 1.0 can be taken as the increase or decrease in population over that period. Standard error bars are also fitted to ascertain the accuracy of the survey.

## Discussion

The increase in the greylard population over the last five years in conjunction with annual hunter harvest returns suggests that the population is comfortably maintaining itself at current harvest levels. Provided our monitoring is an adequate reflection of the wider population, then there appears to be no need to reduce hunter harvest. It must be noted that the survey methodology has changed over the last two seasons with the drone being used to survey several sites. This along with changes in survey personnel means the perceived increase could be accounted for by improved survey techniques although the population increase between 2015 and 2017 was observed without the use of a drone.

Continued variation in the results in 2020 compared to 2019 shows the distribution of the greylard population fluctuates significantly across favoured habitat between years and within the season. This was further confounded by covid-19 lockdown delaying the counts this season by a month. Maintaining a high number of survey sites helps to reduce variability and error in the dataset and will give greater certainty to the results in the long term.

## Recommendations

- That the council receives this report.
- That the current survey methods are maintained in the future.

- That the current greyland limit and season remains the same.

## References

- Adams R. 2015.** *Greyland Trend Surveys, April 2015. Results of trial aerial and ground trend surveys.* Fish & Game West Coast Region –Internal Report.
- Kersten Baylee, 2018.** *West Coast Region Game Bird Harvest Survey Report 2018.* Results of annual telephone survey from game bird hunter harvest. May-August 2018. West Coast Fish & Game Region. Internal Report.
- McKenzie D. 2014.** *Mallard monitoring research.* Proteus Wildlife Research Consultants.
- Taylor P.2014.** *Mallard Autumn Transect Count Methodology Research.* Fish & Game Wellington Region – Internal Report.

## Appendix 1: Raw Count Data 2016-2020

Table 1. Raw observed data from West Coast Region Greylard Monitoring Sites 2016-2020.

Greylard Site	2016	2017	2018	2019	2020	LTA
Barrytown lagoons	98	42	236	187	274	160
Bisset ponds	163	59	124	113	51	102
virgin flat	38	67	8	17	6	20
Okari Shed pond	16	23	45	0	0	27
Okari Causeway	0	5	0	0	0	4
Holcim	0	0	0	24	0	5
Lighthouse Private	0	0	0	7	7	3
Bradshaws West	16	34	117	21	87	72
Bradshaws East	8	37	33	0	55	23
Tiphead Shed	14	0	14	38	83	26
Tiphead Peninsula	6	14	9	19	21	18
North side estuary	8	5	3	2	0	3
Birchfield S	4	53	7	40	0	19
Birchfield N	0	137	11	24	0	29
Nine mile	40	68	18	16	9	31
O'Malley 1 (no longer have access)						5
O'Malley 2 (no longer have access)						26
O'Malley 3 (no longer have access)						17
O'Malley 4 (no longer have access)						0
Ikamatua 1	34	36	47	16	3	23
Ikamatua 2	0	0	0	0	0	0
Snowy pond	0	52	54	8	6	22
Snowy pond 2	9	48	9	2	0	12
Snowy pond 3	0	7	74	2	0	14
Kennedy	2	43	2	36	35	20
Reefton Oxi Ponds	38	103	62	16	83	55
Breadtruck Pond	48	26	56	30	n/a	35
Yacht club	0	3	0	65	100	27
Molloy	5	39	64	50	94	80
old Mouth	5	15	51	64	2	37
Swans retreat	74	454	133	154	138	187
boat ramp	61	71	23	0	0	27
Meat works pond	44	57	25	103	59	47
Paroa Oxy	47	63	11	13	45	35
Water walk pond	37	29	46	38	38	42
Cobden	98	94	105	36	28	65
Lake Ryan	84	124	58	246	121	99
Lake Poerua	109	178	171	134	355	173
Taramakau Estuary	28	13	0	22	0	13
Lake Swan				6	64	33
Lake Mudgie				12	n/a	6
Kapitea reservoir				13	50	46



Paynes Gully				116	n/a	81
Okuku Reservoir				21	12	17
Hoki Oxi Ponds	91	76	140	101	92	133
Flowery Creek Ponds	24	70	62	14	66	42
Johnson Road	12	0	0	0	0	3
Kokatahi Riverbed and Adjacent Farms		343	12	n/a	n/a	178
Lake Arthur	274	26	14	191	48	106
Beside Arthur	12	14	65	4	2	22
Farm ponds	15	45	49	28	8	26
Cuddy's	35	30	15	28	91	47
Nolans	150	39	18	136	114	98
Staples	6	45	70	5	15	25
Burdens pond	40	20	0	0	3	21
Other oxi ponds etc on loop between Kokatahi bridge and whitcombe valley road excluding lake arthur Burdens etc	72	172	27	n/a	n/a	90
Mirror Creek Mouth	2	19	8	15	28	14
Manhinapua Small Bay	0	2	7	1	52	9
Mahinapua Picnic Bay	9	13	16	19	2	9
Mahinapua Grebe Bay	0	10	20	11	44	14
Mahinapua Creek	11	22	35	41	65	35
Kaniere Bridge Pond	0	0	0	0	0	0
Totara lagoon	82	74	90	96	113	91
Tukes Lagoon	440	172	564	390	56	329
Pukaki	12	12	18	12	20	17
Monts Creek	67	9	25	126	30	47
Shooting Creek	82	85	46	48	50	64
Stopbank (Harman)	0	0	42	21	24	15
Camel Back	0	26	39	4	18	17
Silver Pines	0	0	0	21	140	23
Ogalvies	18	6	74	25	n/a	25
Arahura	n/a	n/a	n/a	n/a	n/a	0
Ross Pond	27	29	27	29	22	27
Lake lanthe NW Bays	60	8	42	21	88	42
Lake lanthe Southern Bays	85	68	330	63	32	112
Hari Hari Oxi ponds	32	23	7	42	54	31
Andy's pond 1	6	1	0	0	0	2
Andy's pond 2	0	13	13	0	0	4
Andy's pond 3	0	6	64	30	13	21
Tommy's pond	70	38	26	14	90	56
Hari Hari Roadside Pond	46	28	5	10	65	25
Blowhole Pond	20	26	19	30	16	19
Oneone	36	0	11	23	25	16
Berrys Ponds	13	6	0	0	0	3
Petersen's Effluent	24	1	37	21	0	21
<b>Total</b>	<b>3007</b>	<b>3576</b>	<b>3653</b>	<b>3331</b>	<b>3312</b>	<b>3248</b>

# Appendix 2: West Coast Greylard Survey Locations

