GAME REPORT

2017

A summary of the 2017 gamebird season, produced for elected Councilors and licence holders of Nelson Marlborough Fish & Game region.

TABLE OF CONTENTS

Contents

INTRODUCTION

Summary of the Season

Welcome to the 2017 Game Report for Nelson Marlborough Fish & Game Region.

For the first time in decades, the greylard limit was adjusted for the 2017 season following record lows from the game harvest data in terms of harvest and effort expenditure, which was also mirrored in our 2016 mallard trend counts. Besides lowering the limit to 8 greylards/day, magazine extensions were banned on semi-automatic shotguns. The rationale of these moves was to try and reverse the diminishing greylard population which has been occurring over time, made considerably worse from the very dry Spring in 2015.

But there is light on the horizon. The 2016 breeding season was the polar opposite to the dry year prior, and the greylard population took a swing north. This was evidenced in our trend counts, but also frequent observations by staff and gamebird hunters, and thus there was an air of positivity going into the 2017 season. Staff feel that this good fortune, along with changes to the regulations in terms of a lower limit, and an increasing focus on pukeko management, will hopefully go some way towards us ultimately observing a rise in the regional greylard population.

HIGHLIGHTS

It's been an eventful and productive year in terms of gamebird management. Highlights include facilitating the Rabbit Island organised pheasant hunt, along with our predator control efforts here; our pukeko competition, which has received better than expected participation and has, no doubt, gone some way to slowing the spiraling pukeko population; the inaugural Fred Rouse Trophy (for best junior hunter) which was awarded to Holly Irvine; and the outstanding contributions from participants of the duck diary initiative, which data will be used to help set future bag limits.

Staff have also been busy working with Sumitomo Forestry to create a new wetland in Supplejack Valley (Moutere area) which will be used for balloted hunting opportunities. The good news for hunters is there is a willingness from Sumitomo Forestry to add more new wetlands to the list in the coming years.

Staff and rangers spent Opening Day in Marlborough, focusing on the Havelock Estuary and other locations like Para Wetland. It would be fair to say that most licence holders encountered showed good adherence to the new regulations, and all enjoyed a great day hunting, with many limits taken. This positive opening weekend feedback from Para Wetland hunter ballot holders was also satisfying for staff, indicating this large scale, hunter funded wetland enhancement project is starting to deliver on one of its key objectives.

ISSUES OF CONCERN

While the greylard population appears to be slowly in decline, one apparent trend which is showing a disquieting outlook, is hunter effort. While licence sales have more or less remained within an acceptable range, hunter effort continues to decline disproportionally to licence sales, and at around 11,000 total hours, this equates to an average just 14 hours effort for the season per hunter (based on game harvest survey

data). One reason for this may be the increasing disposition for Nelson Marlborough hunters to look out of region for their hunting, however the question must be asked: what can Fish & Game do to increase effort and fully maximise the value of their licence?

LOOKING AHEAD

Staff intend to implement a more robust method for setting the greylard limits as we believe the daily bag limit for each season should be in alignment with the current population. As a result it is proposed a 20 point system be implemented which factors in breeding conditions/success as well as results from game harvest surveys and mallard monitoring.

The hunter diary initiative will carry on, utilising harvest data from some of the region's most prolific and dedicated hunters. It is after two or more year's data collection that we will begin to see accurate game harvest statistics which can form part of the decision making. This hunter diary scheme may also assist us in gaining insight into whether an increased hunter focus on pukeko harvest this season (due to promotional effort), makes any material difference to future greyllard population levels within defined areas that diary holders regularly hunt in.

Staff will continue to facilitate organised hunts on behalf of Nelson Marlborough licence holders. The Rabbit Island pheasant hunt will again be a focus for the 2018 season, and the ever popular pukeko hunt at Wakapuaka is likely to occur.

Fish & Game will continue to look for opportunities to create and enhance wetlands, noting this is the area Otago Fish & Game have decided to put effort into, in preference to piecemeal predator control effort, as based on the national mallard research data and the difficulty in achieving landscape scale predator reduction, habitat creation work is considered by Otago to be a more cost-effective use of hunter generated funding. As well as hopefully creating more wetland habitat for waterfowl, some projects will also potentially provide future balloted hunting opportunities within the Nelson/Marlborough Region where public space hunting is becoming more difficult over time as rural-residential development continues at pace.

Gamebird Monitoring

MALLARD MONITORING

Each year in late March/early April, Fish & Game staff undertake our annual 'greylard' counts for all mallard, grey, and hybrid ducks of these two species. We now have 56 sites located mainly along coastal sites within our region from Collingwood through to Marlborough.

Table 1. Results from mallard monitoring in Nelson/Golden Bay (left) and Marlborough (right) 2015-2017

Location GB / NsN	2015	2016	2017	
Kainui Dam	59	45	0	↓
Wakapuaka Oxidation	549	411	441	↑
Thorpe Street	27	36	74	↑
Staples St /Kumera's Est	85	33	58	↑
Motueka Oxidation Ponds	91	136	81	↓
Bells Is. Oxidation Ponds	126	113	138	↑
Lodders Lane	33	52	20	↓
Puketawhai	39	22	82	↑
Takaka Oxidation Ponds	57	21	68	↑
Motupipi Estuary (Nees R)	79	35	19	↓
Waitapu Estuary (Wharf Rd)	9	30	46	↑
Waitapu Est (Rangihaeata Head)	91	97	42	↓
Parapara Inlet	59	9	66	↑
Collingwood Estuary	45	15	53	↑
Gorge Creek	0	0	35	↑
Pakawau Inlet	4	14	13	↓
Lake Killarney		45	44	↓
Old Wharf Rd Motueka		71	90	↑
Eastons Pond		26	81	↑
Marriages Rd		22	15	↓
Aranui Rd Mapua		30	25	↓
Rabbit Island TicToc		16	40	↑
Washbourne Gardens Richmond		52	66	↑
Daelyn Pond		50	0	↓
Nelson Airport estuary		20	24	↑
Saxton Field		20	60	↑
Templemore Pond		44	75	↑
Founders Park		34	30	↓
Queens Gardens		90	110	↑
Total		**1589**	**1896**	19.3% ^

Location Marlborough	2016	2017	
Havelock Estuary 1	44	60	↑
Havelock Estuary 2 Kaikumera Bay	33	39	↑
Havelock Estuary 3 Km road sign	5	2	↓
Havelock Estuary 4 Kaituna arm	25	26	↑
Mahikipawa Wheadon Ck	17	95	↑
Mahikipawa Taylors Ck	38	20	↓
Head of Mahikipawa	28	0	↓
Ngakuta Bay	0	9	↑
Para Swamp honey pot	5	1	↓
Para Swamp Dbl Mgt	17	1	↓
Bush Rd Pond Tuamarina	18	0	↓
Yealands pond	0	43	↑
Opawa River campground	17	38	↑
Waihopai Vly Rd pond	24	26	↑
PPCS pond	30	110	↑
Old Pond	100	110	↑
New Nth Bubbler	20	0	↓
New Sth Bubbler	20	0	↓
Nth Pond 2b	320	330	↑
Middle Pond 2C	210	230	↑
Sth Overflow/natural ponds	50	0	↓
Taylor DS SH1	26	12	↓
Springlands retirement village	76	57	↓
Bothams Bend	21	15	↓
Grovetown Lagoon	110	172	↑
Grovetown Lagoon	85	13	↓
Pollard Park	140	130	↓
Wairau Diversion	31	80	↑
Total	**1510**	**1619**	7.22% ^

Note these sites confounded by wet weather/later sampling date

Count results this year were interesting, with a 19% increase on 2016 results in bird numbers from Golden Bay through to Nelson, declining to only a 7% increase for the drier Marlborough sites – see table 1. Prior to the lower 2016 counts, our Game Harvest Telephone Survey results had revealed a steep decline in greylard harvest resulting in the lowest total harvest on record.

MONITORING AND REGULATIONS

To try and reverse, or at least slow this trend, Nelson Marlborough Fish & Game Councilors voted to reduce the Nelson/Marlborough greyllard daily bag limit from 15 to 8 for the 2017 season, along with banning magazine extensions. As it transpired the wet spring/summer appears to have led to a significant 'bounce-back' in the population, probably attributable to an abundance of ephemeral waterbodies within a duckling brood home range, as this is known to double duckling survival rates. Anecdotal reports by hunters and staff observations over spring/summer confirmed that the mallard population had indeed flourished, but would this be seen in hunter bag results? It was also apparent that some hens had multiple successful clutches due to the longevity of the favorable conditions. The wet spring/summer, along with theoretically less total harvest following it due to the daily bag limit reduction may hopefully see a lift in our greylard population when it comes time to carry out our mallard trend counts in Autumn 2018.

Probably the strangest result from this observed population increase however, is a reported disproportionately high number of 'grey-type' ducks shot by hunters – see picture by Graham Wilson. This was reported from Golden Bay, Moutere, and Maruia hunters, and also it would appear from Ikamatua and Upper Grey Valley areas also, within West Coast's count sites. Early on it was also observed by many hunters within our Fish & Game managed Para Wetland in Marlborough also. Quite why this has been a matter for robust discussion, with noted waterfowl biologist Murray Williams even waging in on potential reasons for this. Interestingly, it would appear that some parts of Australia also reported a big increase in their native black duck (effectively our grey duck).

Photo: Grey type ducks featured heavily in the hunter's bag

PARADISE SHELDUCK

Trend counts for paradise shelduck and swan were carried out at the end of January by Vaughan Lynn (Marlborough), Lawson Davey (Tasman/Murchison/Golden Bay).

After a number of years on the rise, the Tasman Golden Bay population took a small dip. This could suggest that the lifting of the Tasman/Golden Bay daily bag limit to 15 birds, combined with the issuing of a significant number of summer crop depredation permits, has been successful to finally curb an expanding population within this sub-region. Alternatively we may just be observing the impact of a very dry spring in 2015, as shelduck have a much slower population increase rate than greylards, as they don't breed until at least two years of age, and generally only produce one brood per annum. Whatever the explanation however, based on the number of summer complaints staff deal with from the Tasman/Golden Bay region the population is still considered to be on the high side so it is encouraging to see the population finally start to dip.

The summer trend counts were reflected in the hunter's bag also, with 4660 birds harvested this season, well down from 5818 birds taken in 2016 – see table 2 and figure 1.

Table 2. Paradise shelduck trend counts 2003-2017.

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Buller	1516	1577	2588	2568	2546	2320	2236	1959	2813	2639	3030	3061	2963	2657	2900
Tasman	3603	3898	5100	5709	5509	5588	5052	4329	4947	5476	5343	5826	6457	7398	7187
Molesworth	590	653	494	755	707	724	405	0	458	440	503	554	840	660	410
Wairau/Awatere	3411	2525	2624	2188	2012	3111	No data	No data	2092	3168	3652	3718	4114	2658	2950
Kaikoura	1450	740	775	1340	1102	140	No data	No data	199	666	920	180	810	1625	1096
Sounds	450	372	565	650	805	330	385	No data	516	845	600	900	460	700	370
Total	**11020**	**9765**	**12146**	**13210**	**12681**	**12213**	**8078**	**6288**	**11025**	**13234**	**14048**	**14239**	**15644**	**15698**	**14913**

While there was a minor reduction in numbers for four of the six sub-regions, the Buller and Wairau/Awatere populations saw a moderate increase. However, in general, shelduck numbers remain relatively steady in the scheme of things, and still much lower than previous high counts from 1988-1994 when counts of 16,000-18,000 birds were common.

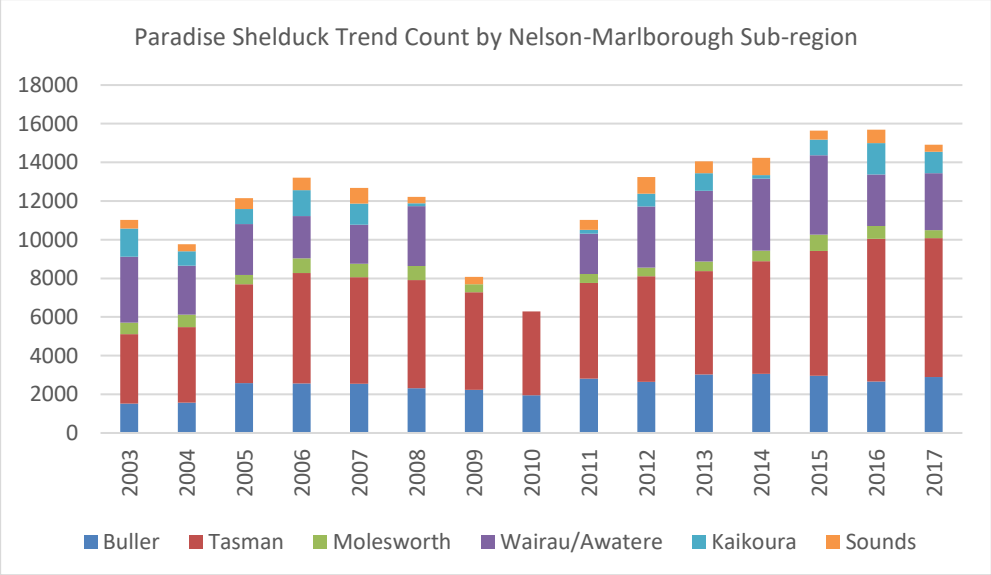


Figure 1. Results from paradise shelduck trend counts 2003-2017

SHOVELER MONITORING

Shoveler were monitored on 4 August as part of a nationwide campaign with all Fish & Game regions involved. This is the 18th annual count to monitor the change in the New Zealand population. A national total of 14,723 was counted at 245 sites, up on the previous two years – see figure 2.

MONITORING AND REGULATIONS

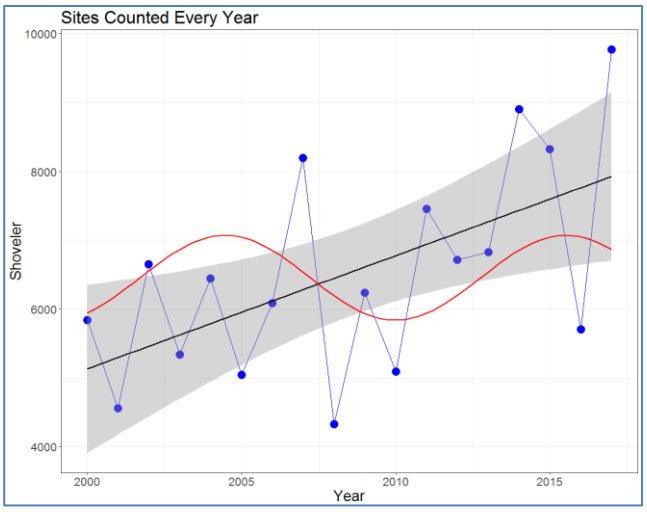


Figure 2. Total shoveler count (blue dots) of the sites that have been counted for all 18 years (n=84). The linear model (black solid line) received marginally better support than the red line model (counts are in a 10 year cycle).

Table 3. Total Shoveler and Grey Teal 2005-2017 Nelson Marlborough Region

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Males	169	135	143	236	82	165	257	132	71	134	181	116
Females	111	93	112	179	69	96	183	126	47	58	143	102
Unknown Sex	851	1373	327	885	668	694	1707	2230	1615	1714	1525	1108
Total Shoveler	**1131**	**1601**	**582**	**1300**	**819**	**955**	**2147**	**2488**	**1733**	**1906**	**1849**	**1377**
Grey Teal	170	468	105	547	872	115	66	247	110	77	350	347

Results from Nelson Marlborough counts this year are significantly lower than the previous 5 years with 1377 birds counted at 24 sites – see figure 3 and table 3, however as shoveler populations are known to be highly mobile, this comes as no surprise, and the national trend continues to rise. Grey Teal were also prevalent and are holding steady in the region.

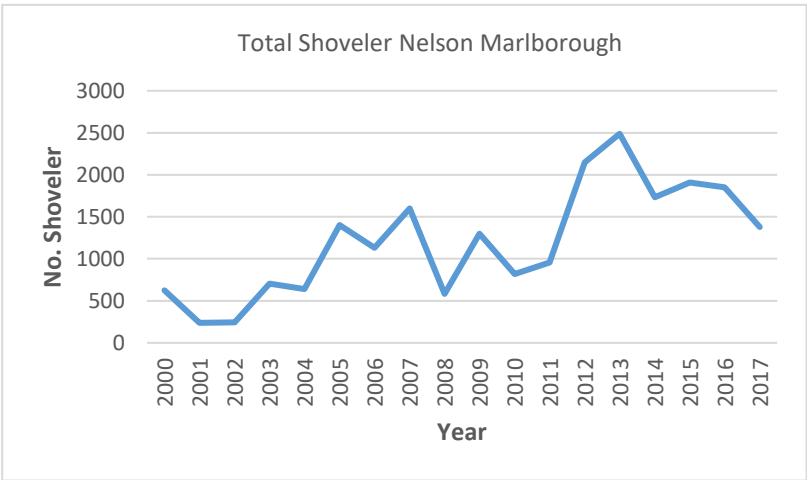


Figure 3. Total Shoveler in the Nelson Marlborough region 2000-2017

SWAN

Swan counts were carried out at the same time as the shelduck counts and as can be seen in Table 4 and Figure 4, the population is modestly higher than in 2016, however as swan distribution tends to fluctuate wildly with birds migrating freely between regions, it is difficult to read into population changes in any area.

Table 4. Swan counts for the areas within Nelson/Marlborough 2003-2017.

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Farew ell	13860	10321	9100	7000	5258	10691	9274	6638	4277	4707	4871	7043	10283	6403	7142
Westhaven	455	645	623	572	700	710	199	925	727	464	193	474	525	525	332
Marlborough	629	646	1280	1732	1969	2761	3586	1095	1022	2741		1207	1048	489	404
Other	24	20	40	126	46	43	123	96	91	11	12	62	58	86	101
Total	**14968**	**11632**	**11043**	**9430**	**7973**	**14205**	**13182**	**8754**	**6117**	**7923**	**5076**	**8786**	**11914**	**7503**	**7979**

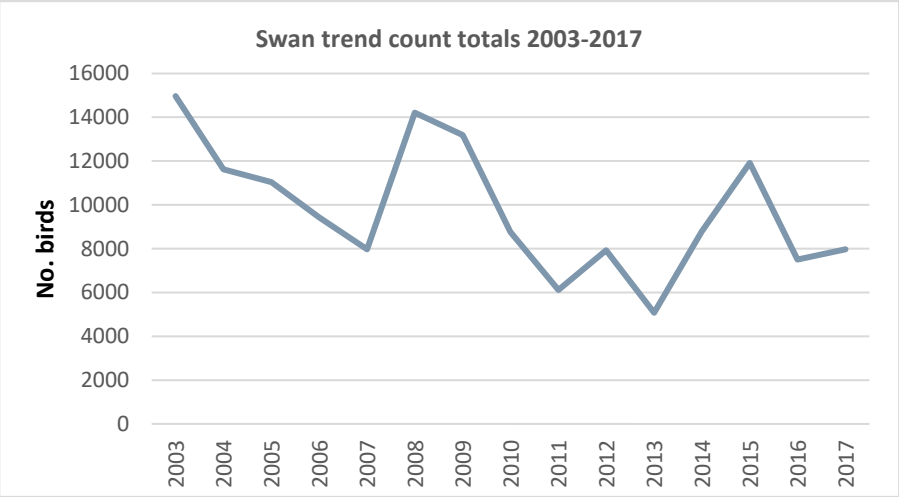


Figure 4. Swan trend counts by sub region for Nelson/Marlborough 2003-2016.

The highest concentration of swan continues to be in western Golden Bay (Farewell and Westhaven) with around 94% of the region's swan population in this small area, where they are subject to negligible (if any) hunter harvest. As swan are not particularly sought after by gamebird hunters, low numbers of birds are harvested traditionally. Results from the game harvest survey indicate that 118 ± 42 swan were harvested in this region.

Game Harvest Data

Game harvest surveys are carried out at regular intervals throughout the season, with a target of 100 licence holders each period. Survey questions include birds harvested, area hunted and hours spent hunting.

HUNTER EFFORT

Table 5 highlights the active waterfowl hunters for each period in Nelson Marlborough region (note this does not include out of region hunting), which shows a fairly typical pattern over the course of the season with high opening weekend effort (understanding that around 30+ hunters may have hunted out of region), a reduction through the middle season and a surge towards the end of regular season (period 6). Interestingly, the final period in August shows four active waterfowl hunters (for which only pukeko is available in Tasman/Golden Bay), which, averaged over the total licence database, would equate to approximately 35 hunters targeting pukeko, probably due to the promotional effort going into pukeko hunting currently.

Table 5. Hunter effort in the Nelson Marlborough region May-August. Note this excludes out of region hunting

Survey period	Licence holders sampled	Active waterfowl hunters	Active upland game hunters
Period 1: Opening weekend	97	64*	0
Period 2: 08/05/2017 to 21/05/2017	94	42	1
Period 3: 22/05/2017 to 04/06/2017	100	33	2
Period 4: 05/06/2017 to 18/06/2017	101	19	1
Period 5: 19/06/2017 to 02/07/2017	100	17	1
Period 6: 03/07/2017 to 30/07/2017	100	30	4
Period 7: 31/07/2017 to 27/08/2017	98	4	0

**it is expected that a fair majority of the remaining 33 hunters in period 1 would be hunting out of region, with a small number not hunting at all.*

Total hunter effort has decreased from 13,623 ± 893 hours total in 2016, compared with 11,010 ± 780 hours for this season, noting that this is for the Nelson Marlborough region only and does not factor in out of region hunting, of which Nelson Marlborough hunters are well known for utilising.

While licence sales have been reasonably steady (albeit a very slight decrease over time), mean hours hunted (per hunter/per season) has gone down from 34.2 hours/season in 1995, compared to 12.6 in 2016, with a slight rise to 14.7 hours this season – quite a telling reduction when comparing the trajectory of the lines in figure 5. This may be attributable to a number of factors, of which less abundant greylards may be one. Other reasons behind the decrease may be increased hunter effort outside the region, but also an indication of other pressures that compete for recreational time, which is a feature in modern times.

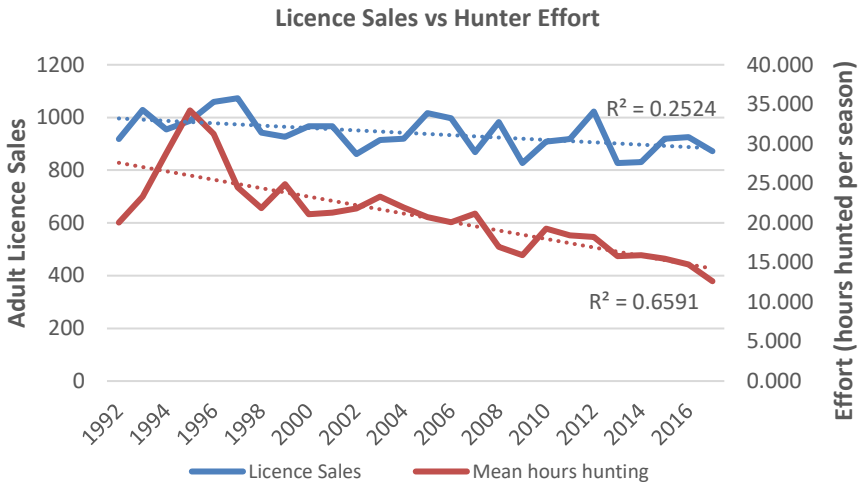


Figure 5. Licence sales vs hunter effort: mean hunter effort has reduced steadily since 1992.

An estimated total of 5,603 greylards, and 4660 shelduck were harvested in the 2017 season – see figure 6. Unsurprisingly, the graph also shows that the greylard population (dictated by breeding success) closely follows that of the shelduck. Total hunter hours predictably follows numbers of birds harvested.

One of the key statistics from a management point of view is birds shot per hour as this provides a true reflection of hunter success over time, which is uninfluenced by fluctuating licence sales, and important in the proposed scoring system to set greylard limits – outlined on page 14.

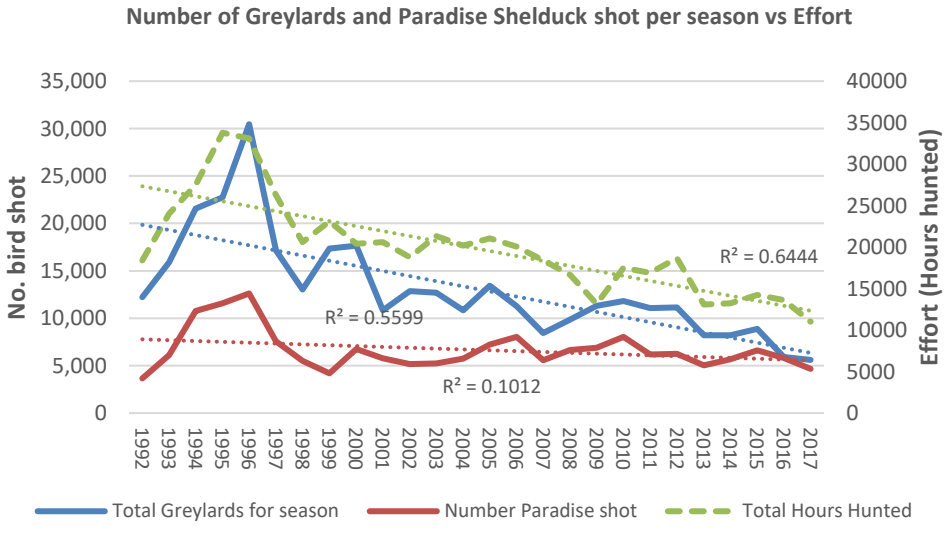


Figure 6. Total shelduck/greylard harvest vs effort (total hours hunted)

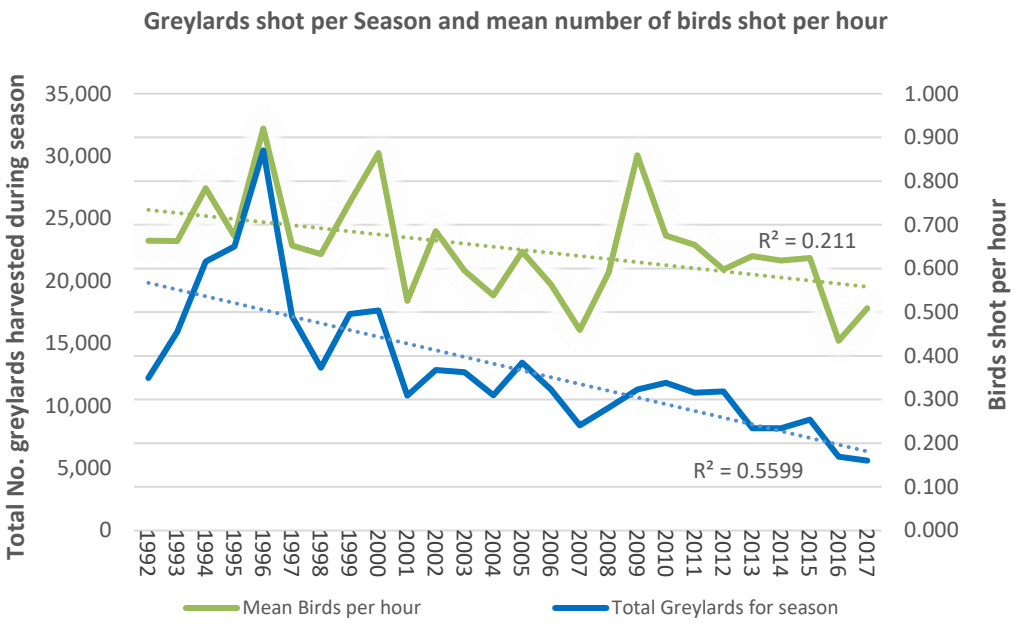


Figure 7. Total greylards harvested and mean number of birds shot per hour

Table 6. Total mallards and greys harvested 1992-2017

Year	Mallard	Grey
1992	9559	2654
1993	12740	3172
1994	18586	2968
1995	18505	4252
1996	26233	4229
1997	14080	3060
1998	10892	2140
1999	14907	2444
2000	14512	3128
2001	8300	2521
2002	10649	2225
2003	9567	3116
2004	8940	1908
2005	11226	2223
2006	9001	2289
2007	7137	1302
2008	8440	1402
2009	9853	1447
2010	10168	1661
2011	9557	1498
2012	9584	1557
2013	7085	1122
2014	6568	1619
2015	7222	1663
2016	5099	818
2017	**4412**	**1191**

Here in figure 7 there was a slight lift in birds harvested per hour in the past season, as would be predicted with a ~13% rise in the greylard population from our annual monitoring counts. Table 6 shows that while there was an increase in grey type ducks harvested, the figures don't match reports from the hunter diary programme (see below chapter), where a far higher proportion of greys were evident. However this is fairly easy to explain as many hunters may not accurately differentiate greys with hybrids and/or hen mallards.

The shelduck harvest dipped again, with around 1200 less birds shot in 2017 compared with the previous year, and while there were slightly fewer shelduck indicated by our trend counts, fewer licences were sold and this would be the probable explanation for this (figure 8).

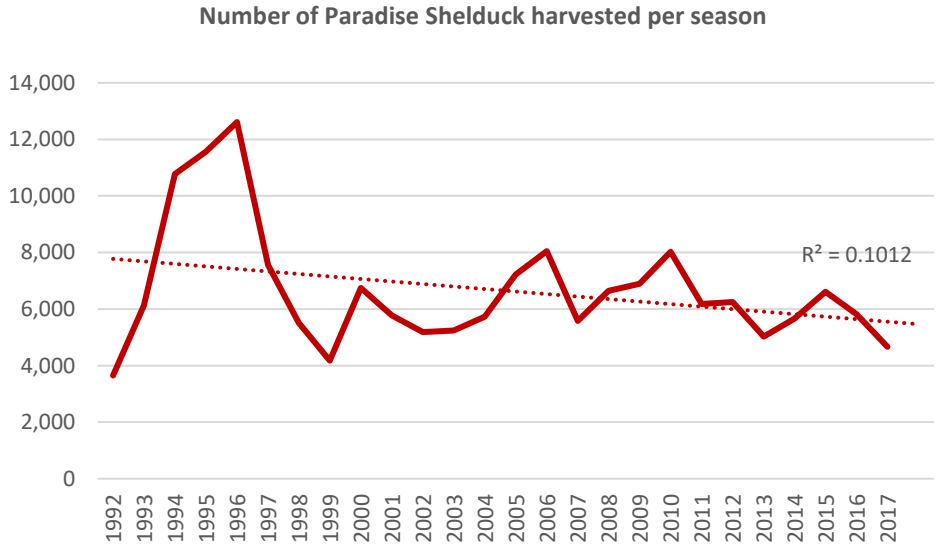


Figure 8. Total shelduck harvested 1992-2017

MONITORING AND REGULATIONS

UPLAND GAME

Results from the game harvest survey show that in 2017 there were 35 ± 17 pheasant harvested alongside 149 ± 76 quail. Effort dedicated to upland game hunting has been estimated at 413 ± 175 hours for the season. In 2016, results indicate there was more effort dedicated to upland game with higher hours (803 ± 222), and greater harvest of quail (451 ± 156), but lower harvest of pheasant (25 ± 18).

HUNTER DIARY

This year Fish & Game initiated a hunter diary (called My Duck Diary - MDD) with 15 of the region's most productive and prolific hunters. The purpose of this was to gather a parallel data set alongside the annual telephone game harvest survey as a way to validate changes in numbers of birds harvested over time, which allows for better informed decision making when setting regulations. This clutch of willing hunters who hunt on a regular basis are an untapped resource which Fish & Game to this point has not fully utilized. Staff believe the data submitted here could, in fact, be more accurate (when comparing harvest between years), than results from the national game harvest survey. Besides harvest data, we sought information on weather conditions, location, grey to mallard ratio, and hunt satisfaction.

The MDD participants submitted information on 150 individual hunts within the Nelson Marlborough region, harvesting 548 greylards, 639 shelduck, as well as several hundred other species including swan, shoveler, pukeko, canada geese and upland game. Factoring in greylard harvest only, the birds shot per hour/per hunter was 1.35 greylards – significantly higher than the general survey result of 0.5 greylards per hour – as would be expected with high calibre hunters.

Importantly, hunt satisfaction was monitored and, as figure 9 suggests, hunts that were deemed either excellent or good accounted for 53% of the total, hunts that were thought OK or average at 34%, and 13% of hunts were considered poor. Much of the poor hunting occurred on public land, particularly in coastal estuarine locations such around Riuwaka, Motueka and Pelorus – once traditionally strong hunting areas (note – the Pelorus area shot well on Opening Day – with high levels of hunter satisfaction – many taking limits).

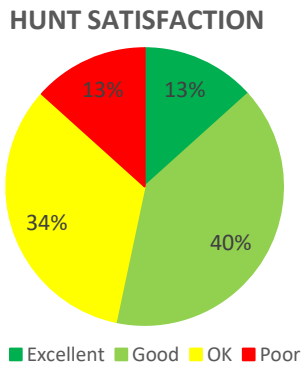


Figure 9. MDD hunt satisfaction.

Results from the duck diary initiative, as well as anecdotal reports from around the region suggest a definite surge in the number of grey type ducks present in the region this season. There are a number of possible explanations for this, the first being the very wet spring/summer making ideal conditions for nesting birds, particularly in the grey type upland habitat they are accustomed to. A second explanation could be that due to the greyllard population overall being up (as evidenced by our counts prior to the season), more greylards were proportionally harvested due to their naivety and ease of decoying.

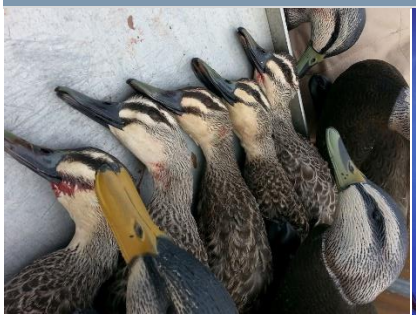
MONITORING AND REGULATIONS

The MDD hunter diary will continue next year, and it is then that we will get some tangible data to use, particularly with the introduction of a 'points' system which will be trialed to set greylard limits – see next chapter for more information on this.

Thanks to MDD contributors:

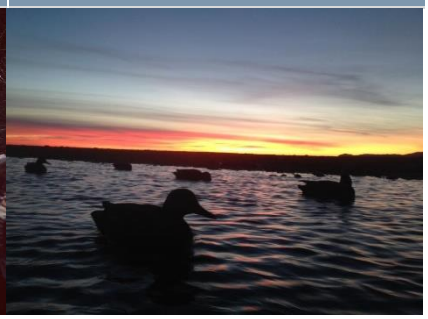
Julian Hall | Troy Appleton | Reice Piggott | Cory Jones | Simon Fowler | Jason Buys | Dale Carter | Jack Archer | Brad Tasker | Heather Baigent | Nev Gane | Ben Sowry | Marc Jary | Steve Holmes | Geoff Irvine

GREY DUCKS ON THE RISE
GRAHAM WILSON



MDD CONTRIBUTOR
DALE CARTER

DECOYS AT SUNRISE
BEN SOWRY



Regulation Changes – a review

For the 2016 gamebird season, Nelson Marlborough introduced two significant regulation changes: lowering the mallard/grey limit to 8 birds/day, and a ban on all magazine extensions. The following is a brief analysis on the effectiveness of this:

Lowering the bag limit | This is hard to quantify as there are many variables involved and it is not possible to be statistically confident in the results. In the previous season, it was calculated that a reduction from 15 to 8 birds would reduce harvest by 10%, equating to 933 birds (calculated by averaging harvest from 2014-2016). Auckland Waikato region had earlier calculated that in order to get a 50% reduction in harvest, the daily bag limit would have to be reduced to 2 birds/day –political suicide in anyone's eyes.

If the predicted 10% reduction was applied to this year's total harvest, in theory an additional 560 greylards would have been harvested had the bag limit remained at 15. This estimate is lower than the 933 birds predicted in last year's game report, however licence sale and hunter effort reductions will have influenced this total significantly.

At the end of the day the effect of springtime breeding conditions will generally trump conservative management measures such as those enacted this season with lower bag limits/banned magazine extensions, however an estimated 10% reduction in greylard harvest due to a reduced daily bag limit, when combined with promotional efforts to reduce pukeko populations within Tasman and Golden Bay, may make some material difference, especially when these initiatives coincide with a wet breeding season. Next Autumn mallard counts will should give us an indication of whether or not a population increase has transpired.

Banning of magazine extensions | The move to ban magazine extensions was introduced this season as the Council believed some hunters are unjustifiably using the extra capacity to ill effect, and may be causing inhumane deaths of birds when shooting beyond normal shotgun capabilities. In essence this was more of a symbolic move, and is thus hard to quantify its effect. There was, however, general support from licence holders, with just a few protests from those who also hunt winter geese and find it inconvenient to remove magazine extensions. Two permits were issued to licence holders who could not remove their magazine extensions.

SO HOW DO WE GET MORE MALLARDS?

The mallard population driven by: a) landscape carrying capacity, b) seasonal wetness in spring/summer increases duckling survival rate by 28-46% and provides hens with insect protein critical for nesting, c) predation (very high duckling predation rate in NZ), and d) hunter harvest (about same impact on population as predation).

A) We can influence this through wetland creation and feeding of ponds after season has closed, but it is resource hungry and will have a limited effect on mallard numbers, however it is entirely worth doing within Tasman to create additional balloted wetland hunting opportunities. See chapter on

wetland enhancement for more information about current wetland creation projects.
Unfortunately the rise of viticulture within Marlborough leading to a demise of arable cropping and other land use types, has been quite negative on the landscape carrying capacity for mallards within the Marlborough Plains and Wairau Valley area.

B) It is not possible to influence this, but should be a major factor in regulation setting with a weighting of at least 50% on the proposed regulation setting score sheet – see below.

C) Predator trapping – targeted live capture of cats in areas like Para Wetland are worth doing, but these are less effective at a landscape scale. Otago Fish & Game have consciously moved to wetland creation in preference to predator control as literature reviews suggest it is more likely to be effective. It is, however, good for Fish & Game to be involved in some predator control projects in the eyes of the public.

D) Regulation changes to bag Limits, and *"go for green"* campaign. Over the last few years around 8000 greylards are harvested in this region. If we assume there are 4000 hens and we halve our shooting of these (assuming it is practical during half (high light condition) shooting hours), then there would be 2000 less hens shot. Multiply this by 1.5 (for average duckling survival), equates to an additional 3000 mallards the following season assuming a 1.5 duckling survival average per all hens not shot (this is twice as effective as dropping bag from 15 to 8, which may have potentially contributed up to an additional 1600 birds the following year).
This would involve a massive PR campaign for the region but could deliver excellent results if pursued. This is especially pertinent with a lower 8 bird limit whereby hunters could 'draw out' their hunting day by targeting drakes only – a complaint by some hunters over opening weekend who limited out within an hour. It would be worth further discussion on this about how best to push this initiative and keep it at the top of the hunters mind throughout the season and in subsequent years (understanding that in half-light it is difficult, not possible for grey ducks, and not all hunters will wish to partake in this with "ducks being hard enough to come by at the best of times"). If there was enough buy in from hunters for the go for green campaign and the population increases, a possible carrot to dangle would be a future increase to the bag limit.

POINTS BASED SYSTEM FOR SETTING GREYLARD BAG LIMIT TO BE TRIALLED

For the coming season Nelson Marlborough proposes to use a point's based system for setting greylard limits. This has arisen as a result of relying on what staff believe is an inaccurate use of mallard monitoring, that relies on trend data from the previous year to set limits, which may still not be appropriate for the incoming season. Also important is a general desire among some licence holders for a more robust method of determining limits. Spring/summer conditions is the primary determining factor in population change, with prolonged wet periods during spring/summer beneficial for breeding success, and dry springs of significant adverse effects. The national mallard research program clearly demonstrated this with duckling survival rate doubling in the presence of ephemeral puddles within their home range for the first week of their life. Mallard monitoring only commenced in 2015 in this region, and while there are some reservations about its accuracy, it is still a useful piece of the puzzle when used with game harvest data and breeding success if used correctly.

The points system to set the daily bag limit factors in spring/summer breeding and rearing conditions (10 points) based on monthly average rainfall figures/staff observations; game harvest data (5 points); and mallard monitoring (5 points), to form a total out of 20, which will ultimately determine whether current limits remain as they are, or there is consideration to raise or lower the daily bag – see figure 10.

In order to correctly use this system, there would have to be a change to the date mallard monitoring is carried out. Traditionally mallard surveys are done in early April as part of the national monitoring programme, however we are seeking to trial carrying this out in early February before the Game Gazette is confirmed and sent to the Minister of Conservation for approval. A trial February count would be followed up with the normal April count to determine the influence of confounding variables such as moulting behavior and the like. The staff recommendation here would be to propose a daily bag limit based on the current evidence available, and if anything changes after the mallard monitoring, there would still be sufficient time to modify the game notice before final approval.

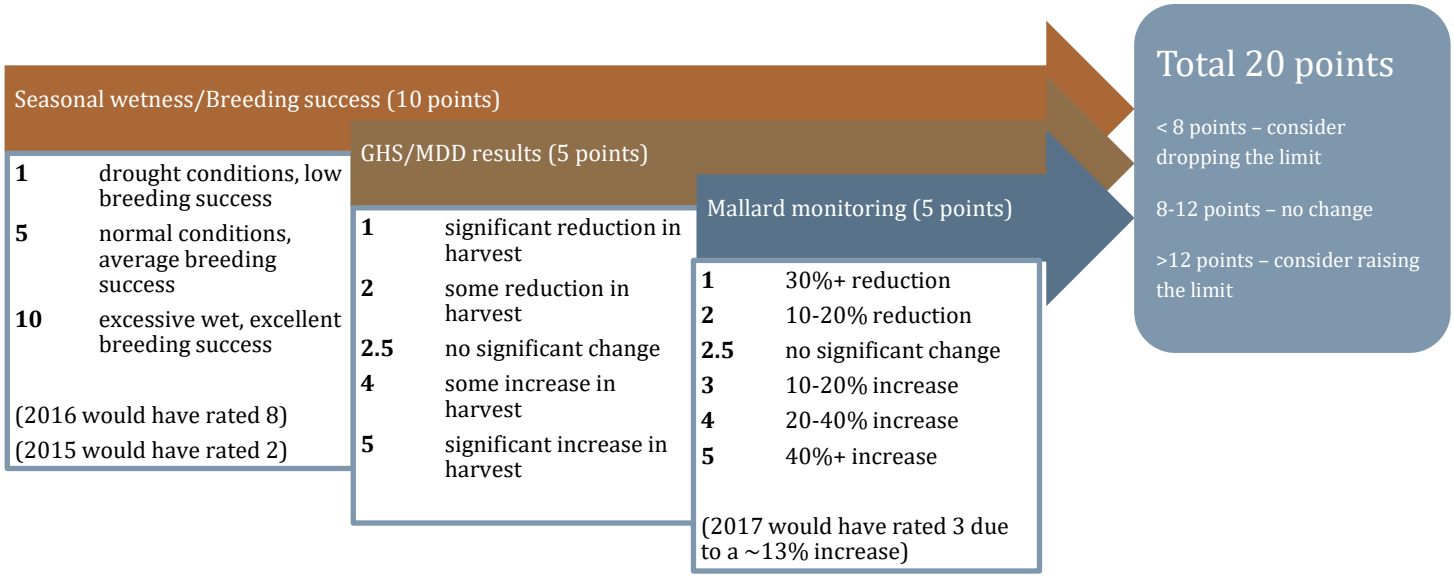


Figure 10. Proposed point system for setting mallard limits

RECOMMENDATION: That the Game Committee discuss the merits of a point system for setting greylard limits, establishing criteria for the seasonal wetness/breeding success, game harvest data and mallard monitoring results, similar to the proposal outlined in figure 10. This would also involve modifying when mallard monitoring takes place.

CHUKAR

There is a small group of hunters who have expressed an interest in hunting chukar, for which there has been a closed season for many decades. Staff are of the view that some limited hunting via a permit only

system could be beneficial in terms of gathering more information on the distribution of these birds, and recreational opportunities should be provided for if there is no significant cost to the chukar population.

1080 operations that have taken place (and are scheduled to occur) in Molesworth and much of the Awatere Valley is, in all probability, going to be beneficial for upland game by exterminating ground predators such as possums and mustelids – probably the key driver of the population. This has certainly been the case from anecdotal reports from the owner of Muller Station. Central South Island and Otago region staff (both have a chukar season), are also of the view that harvest plays a very minor role in the chukar population dynamics within their regions. The fact that hunters often have to walk two days before they even encounter chukar, means 1) harvest will always be very limited, and 2) chukar hunting is only going to be attractive to a few very dedicated upland gamebird hunters. The nature and distribution of chukar also means it is not (and never will be), cost effective for Fish & Game staff to try to survey and monitor this species. The permit requirement for a hunter diary scheme such as the one run by CSI on the other hand, provides an opportunity for hunters to fill this information void.

The key issue is access. This adds some complication to the possibility of hunting chukar as there are two distinct available hunting options: 1) high country stations in the Awatere Valley, confined to private access agreements; and 2) public hunting on Molesworth Station, which would be subject to block availability due to farming practices and winter access arrangements.

RECOMMENDATION: That a trial chukar season be discussed, with a view that if acceptable, a change to the regulations be sought to allow chukar hunting for a 6 week chukar season within the NM region with a 2 bird daily limit **BY PERMIT ONLY** for the 2018/19 season. This gives us the ability to issue very few or even no permits over the course of the 2018/19 gamebird season, with permit issuing to be tightly controlled under direction from the game committee in terms of number issued/locations etc.

Organised Hunts

This year, Fish & Game facilitated three organised hunts, the Annual Pukeko Hunt at Wakapuaka, and two balloted pheasant hunts at Moturoa/Rabbit Island. As a way to curtail the rise in pukeko numbers in the Tasman Golden Bay area, a competition has also been set up to encourage hunters to target the birds which are having a known effect on the greylard population.

RABBIT ISLAND PHEASANT HUNT

For the first time in several decades, pheasant hunting made a return to Rabbit Island after successful lobbying by Fish & Game when the Rabbit Island Management Plan was reviewed. The new management plan now allows for 3 organised hunts each season, to take place over on the eastern end of Rabbit Island, typically on public land hunting pheasant weekends. The trial period runs for three years, whereby if the hunts remain a success, both from a Fish & Game point of view and in the public eye, they should continue.

The eastern end of the island was divided up into 8 blocks, and these were balloted out to teams who applied for the hunt – see figure 11, with all blocks subscribed for the two hunts (unfortunately, severe weather saw one of the scheduled hunts cancelled).

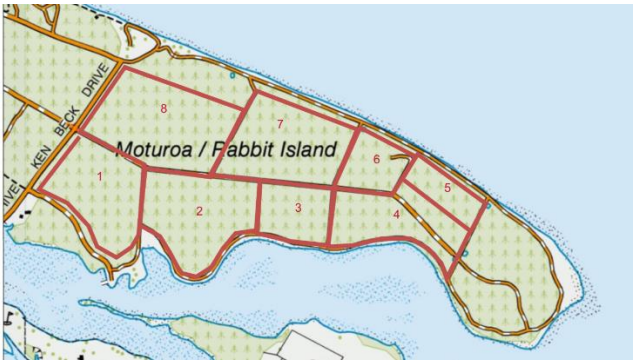


Figure 11. Rabbit Island balloted pheasant blocks

There is good pheasant habitat in places on this end of the island, particularly in areas harvested within 5 years, however, as much of the forest remains in mature trees, pheasant numbers at this point in time are relatively low. It is of the view of staff that the pheasant population will improve over time when more of the mature exotic forestry gets harvested and the spray programme ceases (one block of low scrub which held 20-30 pheasants all vanished after helicopter boom spraying to prepare for planting).

The number of birds taken was low for the hunts, however all hunters appreciated the efforts and indicated a willingness to return next year. With future habitat improvements and predator control, staff believe the pheasant population will improve in this area (as it has on the western end of the island where large areas of forest have been harvested in recent years).

Fish & Game have been involved with a predator trapping programme on the island since December 2016, which was a concept that was floated to TDC Councilors while seeking access to hold organised hunts on the island, and has hopefully gone some way to alleviate any concerns which may have been held by some people – see page 24 for more information.

PARTICIPATION

ANNUAL PUKEKO HUNT AT WAKAPUAKA

Pukeko drives are apparently not a new thing in Nelson Marlborough, and it seems a case of history repeating in this instance, only in another area. Prior to the grape boom Marlborough was a pukeko paradise, and in 1957, two pukeko drives were carried out in order to curb numbers, one on the Opawa River at Riverlands and one at Canvastown, with 180 birds "destroyed" (as it is said in the 1957 annual report).

Fast forward sixty years at Wakapuaka, where around 50 hunters congregated for our annual drive on a Sunday, two weeks after the close of the regular season (the hunt carried out then to promote post regular season pukeko hunting and not interfere with our hunters ambitions to maximise mallard/parrie opportunities). The end result was similar to the 1957 drives with 180 birds "harvested" (as it is now correct to say). All birds were processed on the day and salami's were made with the meat procured.

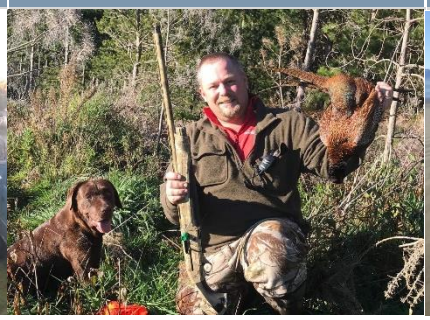
PUKEKO COMPETITION

This season Fish & Game are running a pukeko competition, similar to that of the North Canterbury F&G Great Swan Comp. The essence of the competition is to try and address flourishing pukeko numbers in the Tasman/Golden Bay area as staff believe they are having a real effect on the mallard population. Further rationale for running the competition includes promoting pukeko as a challenging and fun gamebird to hunt; to encourage hunters to make the most of the extended 8 month season in Tasman/Golden Bay; and promote the culinary qualities of the often unacknowledged pukeko.

The main prize for the competition is a brand new Franchi shotgun valued at $1500 – see picture right. Staff are aware of a number of dedicated licence holders "gunning" for the new shotgun, with some individual tallies well in excess of 350 birds at the time of writing. The extended summer season should also see more birds bought to the table.

HUNT BRIEFING
RABBIT ISLAND PHEASANT HUNT

HUNT SUCCESS
IAN SUTHERLAND



HUNT SIGNAGE
RABBIT ISLAND

WETLAND DEVELOPMENT AND ENHANCEMENT

Para Wetland Development

A community environment/partnership fund grant for $40,000 over a two year period has been secured through the Department of Conservation (DOC). This grant is for establishing native plantings at various locations within Para, primarily to enhance waterfowl nesting and rearing habitat, and to provide a buffer / screening for waterfowl and hunters from the State Highway. These plantings will also provide other benefits to bird and fish life, and over time, improve the aesthetics of the wetland. The money from the grant is to be used for the purchase and planting of plants and follow up weed releasing. We are over halfway through the planting project which is going well.

Conservation Volunteers New Zealand and Pernod Ricard Winemakers (PRW) continue to be involved with the enhancement of Para Wetland. As a result of the Kaikoura earthquake the commitment of labour resources from PRW to the project has been reduced. However, this just means less PRW staff are available for each working day and we are still making significant progress with their assistance, particularly with the implementation of the DOC community partnership fund for native plantings. Outward Bound have also been involved with the implementation of the native plantings project committing to two working days per annum.

The water levels within the wetland never dried up enough over the traditionally dry summer months to allow access for heavy machinery. Consequently, planned earthworks have been put on hold until the next dry summer. Staff and contractors were also busy, when water levels and climatic conditions allowed, undertaking follow up willow regrowth and other ground based weed control works. Unfortunately due to the higher than normal summer water levels less follow up willow control was completed than was desired.

HUNTING AT PARA WETLAND 2016

Again it was another successful hunting season at Para with hunters who put in the effort being rewarded. A wet spring, which was great for waterfowl breeding, was followed by a wetter than normal summer meaning the wetland never dried out and there were plenty of ducks using the entire wetland right up to opening weekend. This also meant harvest was much more evenly distributed over the entire wetland giving all hunters a fair opportunity as opposed to there being only one or two wetter hot spots. A reduction in bag limit also contributed to a more even harvest across all hunters. Hunters who achieved bags early in the morning and left meant that later flying ducks were available to other hunters who had had a slower start. Good but patchy hunting continued throughout the season and hunter feedback was positive. It appeared that a higher than normal proportion of grey type ducks were harvested from Para than normal, particularly over opening weekend.

Photo: Opening Day at Para Wetland was a social occasion.

Wetland Enhancement

FUTURE TASMAN BALLOTED HUNTING AREAS

Nelson-Marlborough Fish & Game staff are pleased to inform hunters of the construction of our first potential Tasman ballot pond within Sumitomo Forestry land at Supplejack Valley. This was after the potential development of a wetland at Trass Valley was canned due to porous soil. Developed out of consultation with Fish & Game from the overseas investment office as part of the recent sale process of Tasman Forestry lands, this initiative also has potential to deliver several more wetlands. Once wetland development is completed, if reasonable waterfowl use then occurs, we hope to ultimately ballot these spots out to hunters, as a way of partially off-setting the ongoing loss of hunting access within Tasman as rural residential lifestyle development occurs at pace. The sites should also provide potential additional waterfowl breeding habitat with Tasman. From the forestry companies perspective these sites also fulfil a role of providing additional water sources for fire-fighting, and sediment retention areas following forest harvest. The project is a win-win for both organisations, and Fish & Game really appreciate the willingness of Sumitomo to both set-aside land for this type of use, but also fund any required earthworks.

Photo: The new balloted hunting pond in Moutere in its early stages of filling up

WETLAND DEVELOPMENT AND ENHANCEMENT

CHALLIES ISLAND

A number of waterfowl broods continue to be reared at Challies Island wetland despite high public use of the area now including as a dog exercise area. Several broods were also observed utilizing the fish-out pond areas. There is limited opportunistic hunting opportunity present during adverse weather conditions although it is a very public site now. Fish & Game continue to manage this site on behalf of Tasman District Council on a partial cost-recovery basis.

GIBBS RD

Limited weed control and plant establishment at this site continues at Fish & Games cost. The site was allocated to two groups of hunters including supervised junior hunters, and reasonable waterfowl use of this wetland is now occurring. Nelson Forests are keen to develop another larger 20 hectare site downstream in conjunction with us, although it has a long time frame until completion.

KAINUI DAM

Local resident hunter and Chef extraordinaire Phil Hazeldine was again given access to this site with his agreement to facilitate another hunter group if required, although this did not eventuate as no late enquiries were received by staff.

RESOURCE MANAGEMENT ADVOCACY

Hearings for the Marlborough Environment Plan are due to start in late November although provisions for wetlands will likely be heard sometime in the New Year. Amongst other things our submission sought protection for wetland areas including Lake Elterwater and recognition of existing waterfowl hunting areas such as Havelock estuary. A specific submission point in relation to cycle-way development adjacent to Para wetland was also sought, as was permitted activity status for hunter maimais. Staff engagement with the Waimea Inlet forum continues to ensure gamebird hunting interests are preserved, and engagement with NCC biodiversity and plan processes also continues. Non-statutory liaison has also been embarked upon with Bike/Walk Marlborough in relation to potential future cycle-way route options past Para Wetland, and with Forest and Bird in relation to wetland development options for Wakapuaka Reserve land area. Retention of hunting has also been achieved within the very public NCC administered Wakapuaka wetland area, and adjacent to the new Motueka wastewater treatment system. Resource consent involvements have mainly centered around sorting out planning requirements for wetland development projects within forestry lands.

TOP VALLEY WETLAND

A limited funding grant has been provided by the NZ Game Bird Habitat Trust for us to control blackberry within Top Valley Reserve and investigate/obtain resource consent for future open-water development within the wetland.

Compliance

Staff focused Opening Day efforts this year in Marlborough, which was typically clear and calm. There were three teams out ranging: two in the Rai/Pelorus area, and the other locally around Blenheim. There were two new regulations to enforce this year: a reduction in the mallard bag limit and the banning of magazine extensions. Overall, 60 hunters were checked, with compliance levels at 95%.

One team worked private land in the Rai/Pelorus Valley's and found very few hunters, despite a number of unattended ponds and high numbers of parries around. Of the 6 hunters checked, 2 of them were found to be using lead shot and were issued infringement notices.

Photo: the Pelorus Estuary shot well on Opening Day, and there was a high level of compliance.

The estuary areas around Havelock proved to be more popular, with one team (using the F&G boat) catching up with 27 hunters, all of who were doing the right thing. All hunters checked here were happy to see F&G out on the day, and in fact, many benefited from the boat stirring up rafts of birds out at sea.

The Blenheim based team caught up with 23 hunters, most of who had modest bags, with the exception of the hunters at Para wetland where most hunters either got their limits, or were close. One ranger, when talking to a hunter's young (non-hunting) son dropped his Dad in it, when he said they had shot 11 mallards and it turned out they had only retrieved 7 (the hunter later claiming to have only "lost" 3-4 birds). At this point another hunter turned up with six mallards and claimed to have lost another 5 that he hadn't retrieved. The ranger explained that they had technically exceeded their daily bag as a lost or non-retrieved bird forms part of the bag. A warning was given to the hunters who gave their word that they wouldn't be back for an evening shot.

The ranger returned to Para Wetland in the evening and to his surprise intercepted the hunter who had been issued a warning (who had shot 6 mallards and lost another 5), after being back for an evening shot holding onto 2 mallards. He claimed to have read the rules and that the bag limits only related to birds possessed. He was subsequently sent an email revoking his access permit to Para, with this as the reason:

"The daily bag limit for grey / mallard that maybe hunted or killed as set out in Section 1 on page 17 of the regulations is 8 birds. As you had killed more than 8 mallards (6 you had in your possession and another 5 you had failed to retrieve) you were warned for exceeding your daily bag limit in the morning. You understood this

as you gave this as a reason why you would not be returning for an evening shot. You were then found again that evening with another 2 mallards that you had shot after you had returned. Your excuse was you had read the rules and were within your rights as it only related to birds in your possession. This is not the case as bag limits relate to birds killed regardless of whether they are retrieved or in your hand".

The hunter emailed the NZ Council after the event asking the following question:

"Hello, I would like to enquire about the daily bag limit and whether lost birds count towards it. The first schedule of the regulations uses the word possess, which I take to mean birds recovered. Is this the council's position also?"

Robert Sowman (NZC) has since replied to the hunter, clarifying the possession issue, to which here is detailed part of his response: *"If a hunter has killed game even if not recovered, then they would technically count towards their limit. Refer Sec 16(1)(c) Wildlife Act 1953 which refers to game taken or killed."*

Robert says, *"I accept the First Schedule of the Game Notice is unclear about what restrictions apply in the case of a person killing birds but not taking them into their possession. A future Notice needs to be adjusted to fix this ambiguity and I will see that this occurs. Meanwhile, given the above, I believe a Fish and Game Council is within its rights to apply its interpretation as Nelson/Marlborough has done in your situation".*

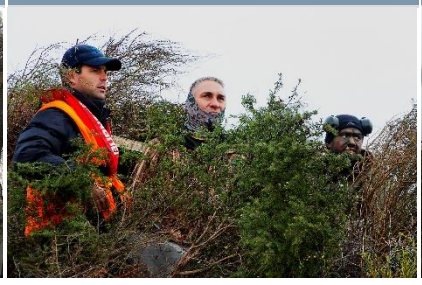
This is not the answer you were looking for, but in the context of hunting in a sporting manner and the promotion of ethical hunting standards I would hope you can accept it, if not agree".

In the future it may be a good idea for F&G to better educate hunters on this, for it is probably a common misconception and happening on a regular basis.

A further 102 licence checks were carried out after opening weekend, most of these on organised hunt events (Wakapuaka Pukeko hunt & Rabbit Island pheasant hunts). In total 1006 licences were sold, equating to 892 LEQ's (full licence equivalents). As we have a target of 10% of LEQ's checked, this was accomplished easily with 18% achieved.

AARON AND JOEL PARNELL
OPENING DAY

OPENING DAY
COMPLIANCE



COMPLIANCE CHECK
RHYS BARRIER

General Information

RABBIT ISLAND/MOTUROA TRAPPING GROUP

Fish & game have been involved in a predator trapping programme on Moturoa/Rabbit Island since December 2016, taking a small trap line over from the Rabbit Island Trapping Group. We are fortunate to have enlisted a dedicated volunteer base who assist with clearing the traps each month, for without these people the project would not be possible. Since taking over the line, the group has managed to extend the trap line from what was ~1km length, to around 5kms – see figure 12. This has been possible by securing traps through a variety of sources, such as funding through donations (PF Olsen Forestry), reparation payments from game offences, and discontinued traps sourced from DOC St Arnaud.

Traps are cleared and rebaited each month, and at the time of writing the group have destroyed 141 pests, and dedicated upwards of 150 hours checking and deploying traps, not to mention a significant investment in staff time managing the project..

In August a one month cat trapping sting was carried out, and over this time accounted for 16 feral cats, 1 ferret, 9 possums and 9 hedgehogs. Feral cats are the primary predator for pheasant so our efforts here should pay dividends in the future.

Figure 12. Fish & Game has worked to extend the original trap line (blue) to now include the southern estuary side of the island (red line).

Thanks to our volunteers:

Chris Tonkin | Heather Scoltock | Lester Higgins | Ken Wright | Max Barker | Chris Clenshaw | Phil Madill | Robert Dodunski | Bruce Kean | Graeme Ivey

GENERAL

FRED ROUSE MEMORIAL TROPHY FOR BEST JUNIOR HUNTER

The Nelson Marlborough Fish & Game Council are pleased to announce Holly Irvine as the recipient of this years' trophy. It was fitting that Fred's wife Allison presented Holly with the award at the Blenheim Duck.

Holly was awarded the trophy as she had an exceptional year, having competed in the World Duck Calling Championship in Maryland USA, as well as numerous competitions in New Zealand. Holly was also successful in her hunting exploits with her father Geoff, both in New Zealand and while in America. It was unanimously agreed that she was a great ambassador for Fish & Game and indeed the pursuit of gamebird hunting – one of the key criteria for the award.

Photo: Holly Irvine with Allison Rouse on presentation of the award for Best Junior Hunter

ADVOCACY

A pre-season duck night was organised by Blenheim Hunting & Fishing, to which Fish & Game attended and spoke to the audience on the new regulations for the coming season. Nelson Marlborough Councilor Geoff Irvine also addressed the audience on tactics for successful gamebird hunting.

Public hunting locations in Nelson Marlborough have now been added to the Walking Access Commission (WAMS) website, after staff field regular calls from local hunters asking where they can hunt on public land. In Marlborough access is pretty simple, and in fact, there's a great array of public land options available ranging from the Pelorus area to the Wairau River and lagoons, and of course, the Fish & Game owned Para Wetland. In Nelson/Tasman things are a bit more complicated, owing mainly to the proliferation of cycle trails and life style blocks which has seen a reduction in available hunting space over the years.

Lawson Davey again assisted NZ Deerstalkers association with their adult hunts course, taking four new adult participants gamebird hunting as part of this course.

CROP DEPREDATION

A total of 43 crop depredation permits were issued with approximately two thirds for shelduck complaints (frequently in Golden Bay), and the remainder for pukeko (mostly in the Tasman area). When possible, junior hunters were used to address the complaints – see photo.

One permit was issued to a farm in Golden Bay, where pukeko's were frequently observed killing domestic ducklings. In this instance, pukeko's were seen to work in organised pairs to isolate ducklings before attacking and killing them.

Junior hunters are prioritized when dealing with shelduck complaints. Here James Neal and his sons Sam & Finn deal with a shelduck complaint.

Licence Holder Information

There was a fairly predictable distribution of sub regions hunted on Opening Weekend 2017 by Nelson Marlborough hunters (this does not factor in hunters leaving the region) – see figure 13.

Out of region hunters account for around ~24% of hunter distribution, with the West Coast and North Canterbury generally the most popular region. What is surprising is that ~8% of hunters did not hunt on opening weekend, quite astonishing to many who herald opening day as the best day of the year.

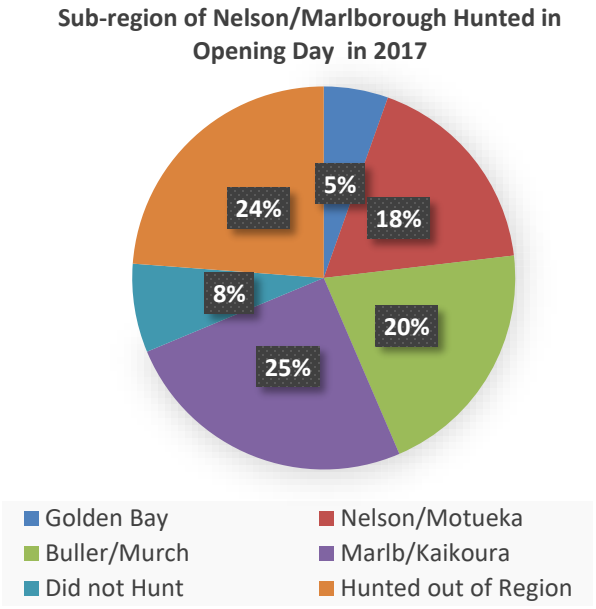


Figure 13. Distribution of Nelson Marlborough hunters on opening Weekend 2017.

LICENCE REVENUE

Licence sales (full licence equivalents – LEQ's) were the lowest in a number of years – see table 7, and as a result income derived from gamebird licences sold was slightly lower than previous years. It is possible the worst greylard harvest on record in 2016 following a dry 2015 spring contributed to this dip. Junior licences held reasonably steady with 98 junior and child licences distributed.

Table 7. Table of income generated from licence sales 2006-2017.

Year	Licence Sales (LEQ's)	Game Income Generated
2006	952	$ 69,698
2007	914	$ 68,733
2008	980	$ 76,686
2009	1017	$ 81,576
2010	1059	$ 85,068
2011	977	$ 84,277
2012	964	$ 85,077
2013	975	$ 88,026
2014	909	$ 83,077
2015	955	$ 86,060
2016	948	$ 87,426
2017	**893**	**$ 83, 428**

New Zealand Fish & Game Report

NON TOXIC SHOT

The lead shot debate continues with the sub gauge exemption now set to end, and one or two outspoken critics such as Neil Hayes continuing to criticise Fish & Game on this issue with some very far-fetched theories. The majority of game bird hunters within this region have now accepted the rationale for this however, and recent blood level work nationally by Fish & Game would appear to indicate that blood lead levels within greylards are now starting to decline as a result of the shift to steel within 12 gauge shotguns.

CAPTIVE REARED MALLARD RELEASES

This is an emerging issue within the North Island where tens of thousands of captive reared mallards and now being released onto private ponds by hunting consortiums. Fish & Game NZ are now in the process of producing national policy on when permits should be issued by the Minister for this type of operation. There are some serious ethical questions in relation to this type of hunting, however it is big business in more urbanized countries such as the UK, so demand is certainly there.

NATIONAL MALLARD RESEARCH UPDATE

Jenn Sheppard's PhD arising from this work indicates that the two critical determinants on greylard population growth are duckling and hen survival (both during and outside the breeding season). Management actions will likely need to focus on factors such as creating high quality brood rearing habitat, predator control, and shooting less hens. Habitat features to optimise brood and nesting survival will be analysed, to ultimately form a package to be disseminated amongst regional Fish & Game Councils, and from there to interested landowners.

BIRDS VERSES RUMINANTS AS SOURCE OF ANIMAL BORNE DISEASE

Nationally this has arisen, primarily due to political tensions between Fish & Game and the agricultural sector. A national review is being coordinated to inform a position statement from Fish & Game on the topic. It has not arisen within this region as yet.

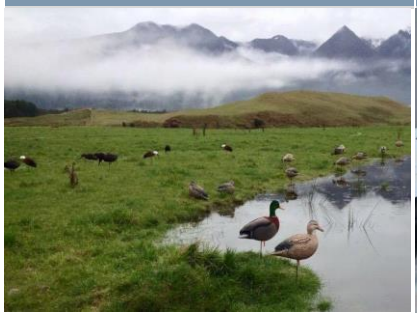
Top Shots From 2017

OPENING DAY
CORY, KERRYN & JOE

PELORUS OPENING DAY
JEAN WILLIS

'OI' THE LAB
NEV GANE

MARUIA SPREAD
REICE PIGGOTT



QUAIL IN BACON
TROY APPLETON

MIXED BAG
MARUIA VALLEY

Contact Information

Nelson Marlborough Fish & Game
66 Champion Road, Richmond
Tel 03 544 6382
nelsonmarlborough@fishandgame.org.nz
nelson.fishandgame.org.nz

Fish & Game NEW ZEALAND

APPENDIX 1 GAME HARVEST SUMMARY (EXCLUDING OUT OF DISTRICT HUNTING)

			95% Conf. Int.				95% Conf. Int.	
	Mean	**SE**	**Lower**	**Upper**	**Total**	**SE**	**Lower**	**Upper**
Waterfowl								
Hours	12.626	0.894	10.990	14.506	11,010	780	9,583	12,650
Mallard	5.059	0.566	4.062	6.300	4,412	494	3,542	5,494
Grey	1.366	0.266	0.932	2.002	1,191	232	813	1,746
Shoveler	0.124	0.052	0.055	0.282	108	45	48	246
Paradise	5.344	0.737	4.079	7.002	4,660	642	3,557	6,106
Swan	0.136	0.048	0.068	0.270	118	42	59	235
Canada geese	0.000	0.000	0.000	0.000	0	0	0	0
Pukeko	0.666	0.262	0.308	1.440	580	228	268	1,255
Upland game								
Hours	0.474	0.201	0.207	1.087	413	175	180	948
Pheasant	0.040	0.020	0.015	0.106	35	17	13	92
California quail	0.171	0.087	0.064	0.461	149	76	55	402