



ANNUAL GAME REPORT | 2019

NELSON MARLBOROUGH FISH & GAME

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EXECUTIVE SUMMARY

Nau mai - welcome to the 2019 Nelson Marlborough Game Report - an annual summary of what Fish & Game have been doing on behalf of regional game licence holders.



The 2018-19 drought was the worst in two decades, and hit the Tasman region both economically and ecologically, including the mallard population. The number of mallards in the landscape took a dive, and, consequently, so did mallard harvest and hunter effort. It is unknown whether the drought weighed on the minds of prospective licence holders in their decision making whether to buy a licence, or not, however there is little doubt Fish & Game have some significant work to do in the R3 area to *maintain and build the number of hunters participating in gamebird hunting* (see page 18 for more information on the 2020 Mentor programme).

On the wetland development front 2019 was fairly productive, with new wetlands created at Gibbs Road, Sunrise Valley, and the early stage of another at Eves Valley. It is expected these wetlands will be balloted out to hunters in the next season or so, and priority will be given to new hunters in the mentor programme. Considerable efforts continue at Para - the regions signature wetland.

The Rabbit Island pheasant hunt goes from strength to strength, and in 2019 was very popular with hunters. So too, was the end of season game food

fiesta, with chef and hunter, Phil Hazeldine, putting on a culinary masterclass to rapturous applause.

After two years of waiting, we finally learn the answer to the question: is the New Zealand endemic grey duck (pārerā) extinct. You can find the answer to this intriguing question on page 23.

Opening Day was principally spent in Golden Bay - an area of this region which had not been visited for a number of years. While the day dawned typically fine, the enthusiasm of local hunters was not diminished and some decent bags were obtained. Pleasingly, compliance was excellent, with zero offences detected on the day.

Chukar were re-introduced to the gamebird schedule for the first time in 25 years, with 20 Molesworth winter hunting blocks set aside for chukar hunting for the entire month of July. Though few birds were harvested in Molesworth, staff wish to build on the work done and look forward to another season in 2020 - you can find more information on page 12.



We continue to get some excellent data from the Ducky Diary group, who provide Fish & Game with some very important information on the gamebird population which is used to help set daily bag limits, but also other important information not collected through the game harvest surveys. This group of passionate hunters live and breathe gamebird hunting, and are all too willing to give their time....Fish & Game thanks them for their continued efforts.

Noho ora mai.



SPECIES MONITORING



Monitoring of mallard, paradise shelduck, swan, shoveler and grey teal is carried out annually across the region at varying times of year. The data in the following pages are used to help set daily bag limits for each species.

MALLARD MONITORING

Annual mallard monitoring was carried out in late March across Marlborough, Tasman and Golden Bay. A total of 65 sites are monitored, spread evenly between Marlborough and Nelson. In Marlborough there was a decrease of around 6%, which is not surprising considering the dry conditions during spring and early summer of 2018. In Nelson, although a 4.6% increase was recorded, staff are certain this was a false determination of the overall population as it was thought, due to the drought, many ponds had dried up which increased the population at the monitoring sites which all held water. An example of this is at Wakapuaka Oxidation Ponds, where the population was more than double the usual count. The count at this site alone was enough to push the net population recorded into the positive, however, considering the poor spring breeding conditions, staff believe this was certainly not the case. For example, if the Wakapuaka count was said to be the same as last year (455 birds), the overall mallard count at all Nelson/Tasman sites would be 1729 - an overall decrease of 19%.

	2016	2017	2018	2019	
Marlborough	1510	1619	1811	1704	-5.90% v
Nelson/Tasman	1589	1896	2131	2229	4.60% ^



While there was only a difference in 9 birds counted between this year and the previous, as already mentioned, with many of the traditional ponds dry or near dry, there is little doubt birds had located to areas which held water. Many of the monitoring sites are coastal locations, and it is the opinion of the writer that more inland monitoring sites should be added (ponds, and even specific river areas where a reasonably accurate count would be possible).

MALLARD MONITORING RESULTS

	2016	2017	2018	2019
Motueka	376	486	401	274
Nelson	947	1024	1258	1447
Golden Bay	266	386	472	508
Havelock	190	251	225	263
Blenheim	1320	1368	1586	1441
TOTAL	3099	3515	3942	3933

Specific bird counts from all monitoring sites can be found in the appendix.





SPRING BREEDING CONDITIONS

The 2019 Spring mallard breeding season has been an unusual one, with staff of the opinion that the breeding was later than normal, with few broods seen during September, and a noticeable amount of "breeding antics" (a precursor to nesting) during October - later than normal. This Spring has definitely been more traditional in that regular - though relatively minor - rainfall events have taken place, and typical Spring turbulence has been a feature. Colder than normal temperatures may be a reason why the perceived breeding was later than normal.

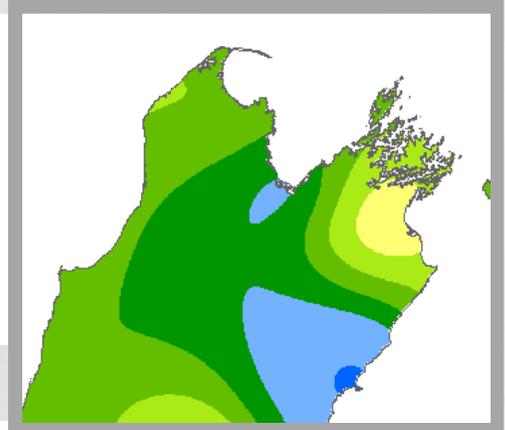
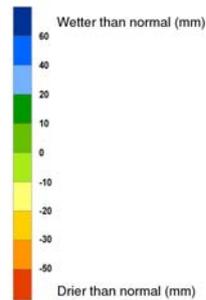
Wet Spring and early Summer periods are highly beneficial for rearing mallard broods, with ephemeral water creating refuge from predators and additional food source, and the potential for hens to raise multiple broods in a given year - see Appendix (page 30) for more information on this. Looking at the NIWA soil moisture maps (shown below), it can be seen soil moisture levels are higher than the same time last year when the region was in the early stages of the worst drought in nearly three decades, which means mallard breeding success should be better than last year, however recent TDC rainfall and soil moisture monitoring indicate the year to date has been drier than average - see page 15. The soil moisture deficit map (below) map shows that the area north of Blenheim towards Havelock/Pelorus remains fairly dry, however as can be seen by the historical average (lower left) - this is fairly typical.

As mentioned, at the time of writing Tasman District Council monitoring reports that rainfall in parts of the district is about 20% behind the annual average for this time of year, and soil moisture is lower than what NIWA has determined, with soil moisture levels at 38% at the Takaka monitoring site and 53% at Appleby. It is of staff opinion that the TDC monitoring data should have greater weight than the NIWA data (below) when allocating a seasonal wetness score.

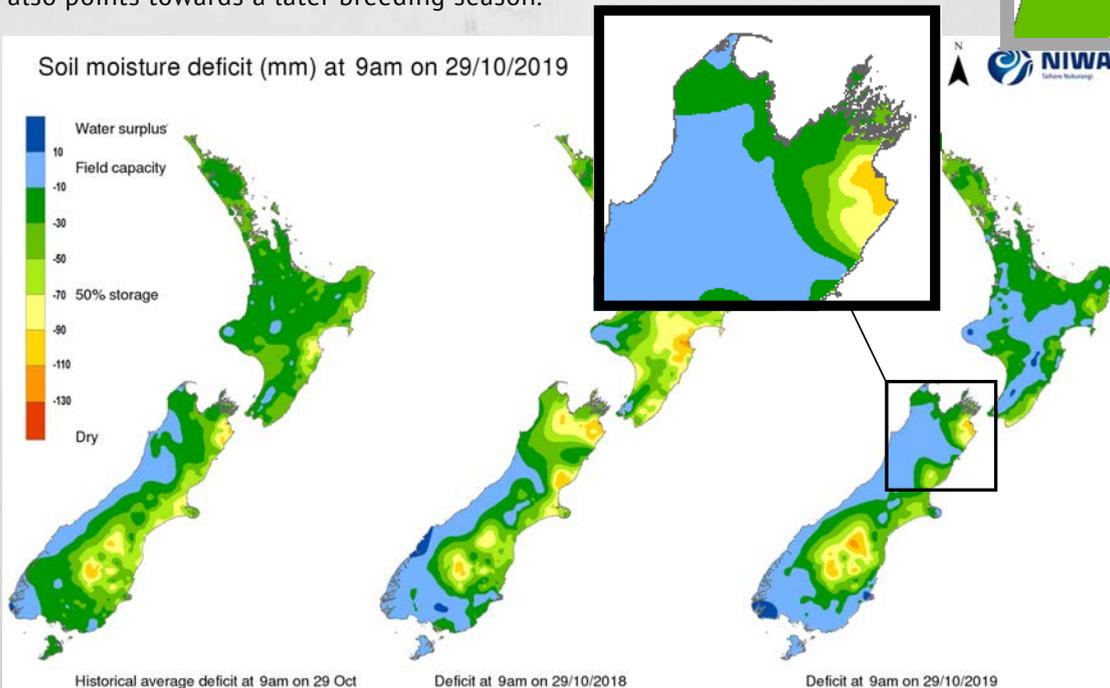
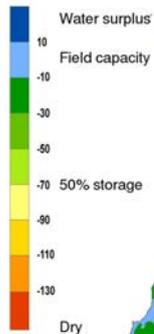
In Para Wetland, good numbers of ducks have been observed probably because it has been fairly wet, however it is not sure if that is because of the regular rainfall or changes in bed level / sediment / weed build up in main channel or decent flows in the Wairau.

It has also been observed that there is a noticeable variability in duckling size which is unusual and also points towards a later breeding season.

Soil moisture anomaly (mm) at 9am on 29/10/2019



Soil moisture deficit (mm) at 9am on 29/10/2019



The 3-panel Soil Moisture Deficit (SMD) map shows the historical soil moisture deficit at the date shown (left), the soil moisture deficit at the same time last year (middle) and the current soil moisture deficit (right). The Soil Moisture Anomaly map (above) shows the difference between the current and historical soil moisture deficits. SMD is calculated based on incoming daily rainfall (mm), outgoing daily potential evapotranspiration (PET, mm), and a fixed available water capacity (the amount of water in the soil 'reservoir' that plants can use).

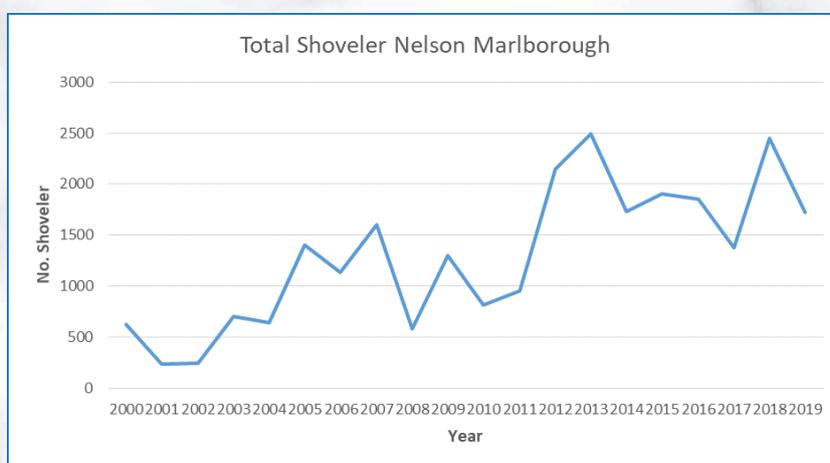
- source: niwa.co.nz



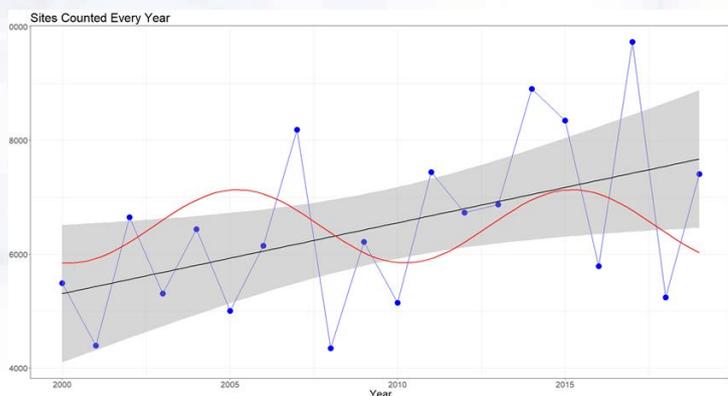
SHOVELER

Annual shoveler counts were undertaken on 5 August as part of a nationwide census of the shoveler population. The count for this year was down from 2018 with 1722 birds recorded - see table and graph below. The conditions in the Wairau Lagoons (where the majority of shoveler in this region reside) on the day were difficult and not conducive for an accurate count, so this may have impacted on the reliability of the count.

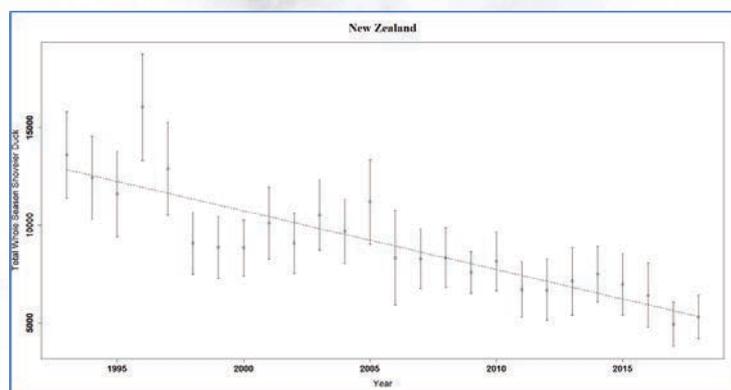
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Males	169	135	143	236	82	165	257	132	71	134	181	116	176	138
Females	111	93	112	179	69	96	183	126	47	58	143	102	63	77
Unknown Sex	851	1373	327	885	668	694	1707	2230	1615	1714	1525	1108	2213	1507
Total Shoveler	1131	1601	582	1300	819	955	2147	2488	1733	1906	1849	1377	2452	1722
Grey Teal	170	468	105	547	872	115	66	247	110	77	350	347	207	166



Nationally, this years' survey was the 20th annual count to monitor shoveler population change. The graph on the left below show that the population continues to grow, which possibly may be due to the harvest rate decline over time as shown on the graph below right. A total of 13,617 were counted at 255 sites. The 2019 total count for sites that have been counted every year (n=85) however, was 15% above the average for the period 2000 – 2018 and was up 41% on last year's count. The long-term trend at these 85 sites indicate a small linear increase over the last 20 years.



^ Total shoveler counted throughout NZ (85 sites)



^ Total shoveler harvest for New Zealand.



PARADISE SHELDUCK

Trend counts of shelduck were undertaken in late January by fixed wing plane. Two flights were required for the Tasman area - the first encompassing the area south of Nelson towards Lake Rotoiti and further south to the Springs Junction area where there are a number of key moulting sites. The second flight covered the Moutere area then over the hill to the Takaka Valley and further north west to Aorere, Westahaven and Farewell Spit (this area predominantly for swan).

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019*
Buller	1516	1577	2588	2568	2546	2320	2236	1959	2813	2639	3030	3061	2963	2657	2900	2235	3153
Tasman	3603	3898	5100	5709	5509	5588	5052	4329	4947	5476	5343	5826	6457	7398	7187	7447	6167
Molesworth	590	653	494	755	707	724	405	0	458	440	503	554	840	660	410	640	576
Wairau/Awatere	3411	2525	2624	2188	2012	3111			2092	3168	3652	3718	4114	2658	2950	3510	3742
Kaikoura	1450	740	775	1340	1102	140			199	666	920	180	810	1625	1096	1220	1350
Sounds	450	372	565	650	805	330	385		516	845	600	900	460	700	370	500	800
Total	11020	9765	12146	13210	12681	12213	8078	6288	11025	13234	14048	14239	15644	15698	14913	15552	15788

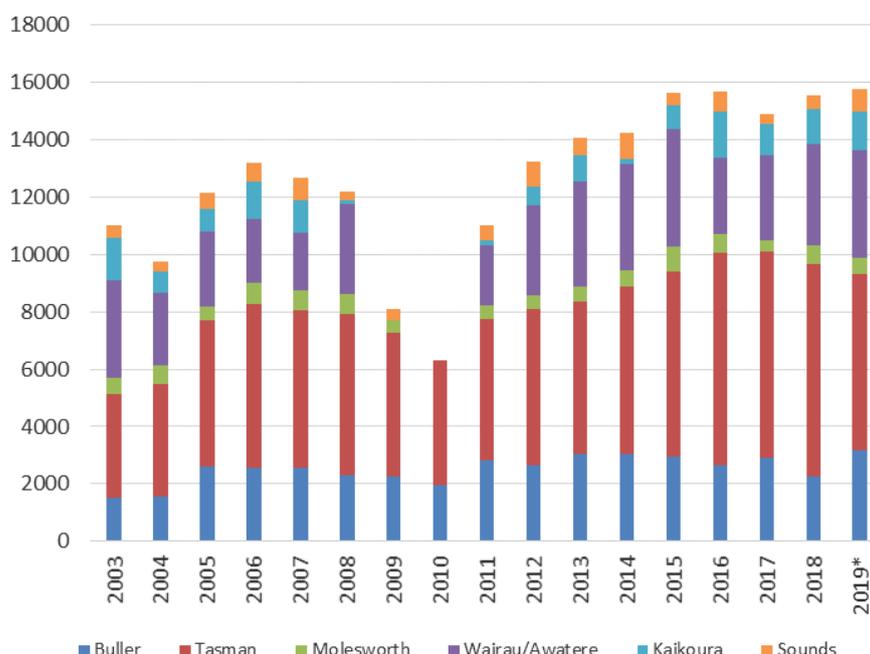
* some ponds not counted

The table and graph shows a slight increase in the population, with the gains found in the Murchison/Maruia area (approx 1000 birds), whereby there were roughly 1000 fewer birds in the Tasman area. As birds migrate freely within the Tasman - Murchison sub regions this population shift is very normal, and likely due to the dry summer conditions in Tasman.

Some ponds in Marlborough were not counted (these ponds typically yield 300-500 birds), so the overall population could have in fact been higher.



Paradise Shelduck Trend Count by Nelson-Marlborough Sub-region



This years' count is the highest recorded since 2003, indicating that unlike mallards shelduck breeding does not appear impacted by dry summers and widespread use of pasture irrigation now means plentiful grazing even during droughts.





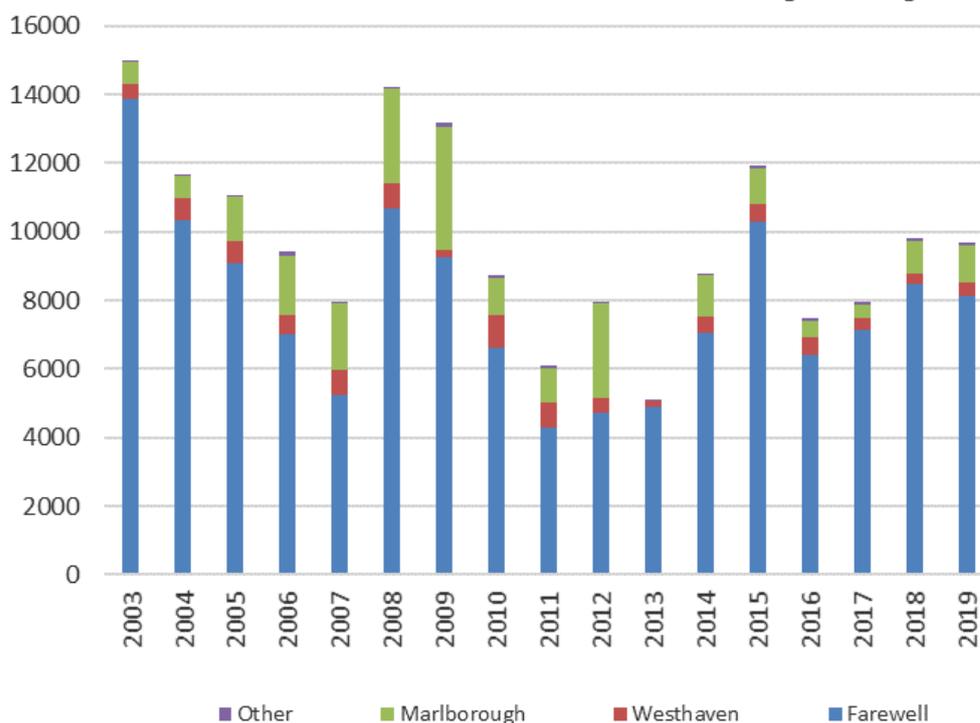
SWAN

The annual swan trend flight is taken during the shelduck trend count, and concentrates on the area of Western Golden bay where most of the birds reside. The 2019 count was very similar to the previous year, with a 9,675 birds counted at the monitoring sites.

Very little hunting effort is dedicated towards swan, with most swan taken in the Wairau Lagoons, rather than Golden Bay where one of the country's highest population resides. One reason for this is the challenging nature of hunting the birds, with swan occupying tidal sandflats where there are zero permanent maimai's and the best method for harvest is in a 'driven style', however with few hunters in Golden bay this has little uptake. Historically Fish & Game facilitated a swan drive at Westhaven Inlet which was very popular with hunters and fairly successful in terms of birds harvested..

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Farewell	13860	10321	9100	7000	5258	10691	9274	6638	4277	4707	4871	7043	10283	6403	7142	8498	8133
Westhaven	455	645	623	572	700	710	199	925	727	464	193	474	525	525	332	260	390
Marlborough	629	646	1280	1732	1969	2761	3586	1095	1022	2741		1207	1048	489	404	974	1071
Other	24	20	40	126	46	43	123	96	91	11	12	62	58	86	101	97	81
Total	14968	11632	11043	9430	7973	14205	13182	8754	6117	7923	5076	8786	11914	7503	7979	9829	9675

Swan Trend Counts for Nelson-Marlborough Sub-region

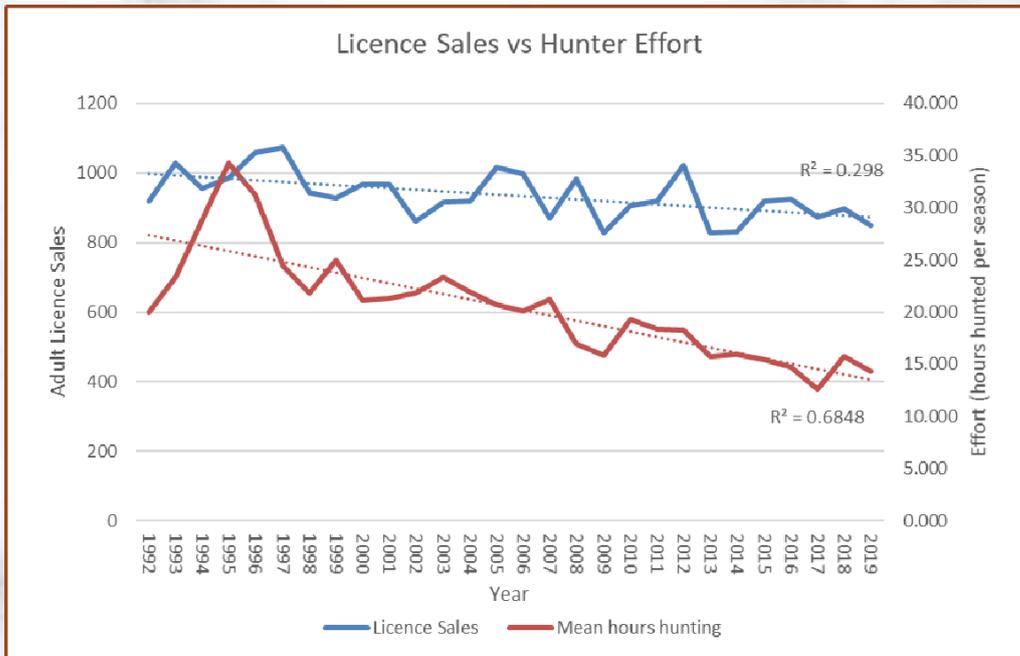


GAME HARVEST DATA

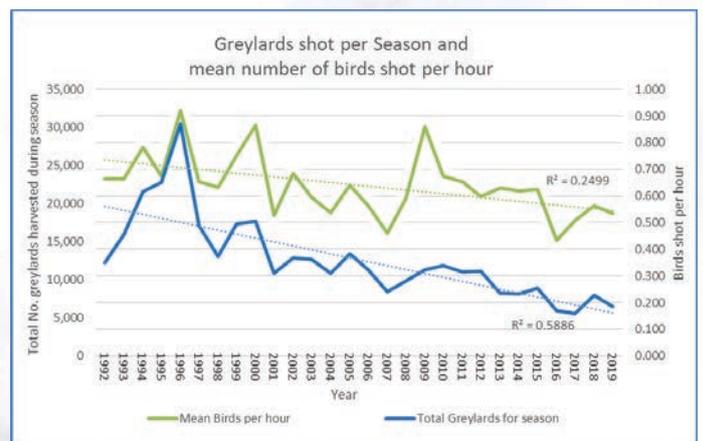
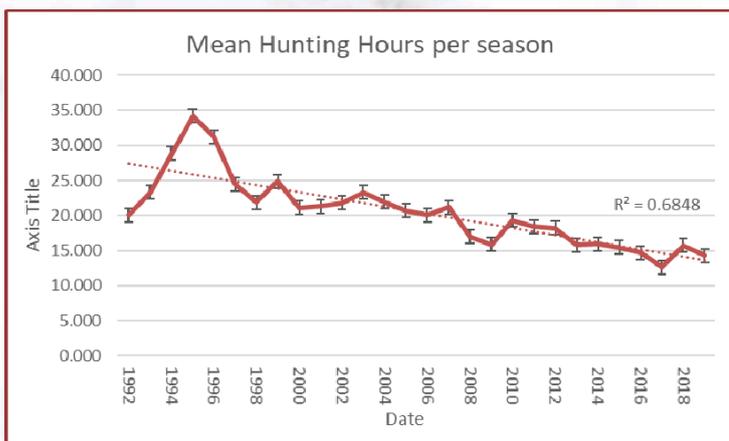
Game harvest surveys (GHS) are conducted by community groups on contract, and involves ringing 100 randomly selected hunters periodically through the gamebird season.

HUNTER EFFORT

After a slight recovery in 2018, licence sales and subsequent hunter effort took a dip this season, with an estimated 12,150 hours spent gamebird hunting in this region - see graph below. The slight decline in licence sales may have corresponded with the dry spring/summer which had a significant impact on the mallard population, although the figure of 850 licence sales is, while on the low side historically speaking, still similar to some other years. The declining trend of hunter effort/licence sales remains a concern for Nelson Marlborough Fish & Game, and indeed the organisation as a whole, and staff/Councillors will be focusing some hunting R3 efforts in this space for the 2020 season. While there is an overall decline in licence sales, the decline is not as sharp as other factors such as harvest rates or effort. The average time spent hunting per hunter for the season was estimated at 14.294 hours.



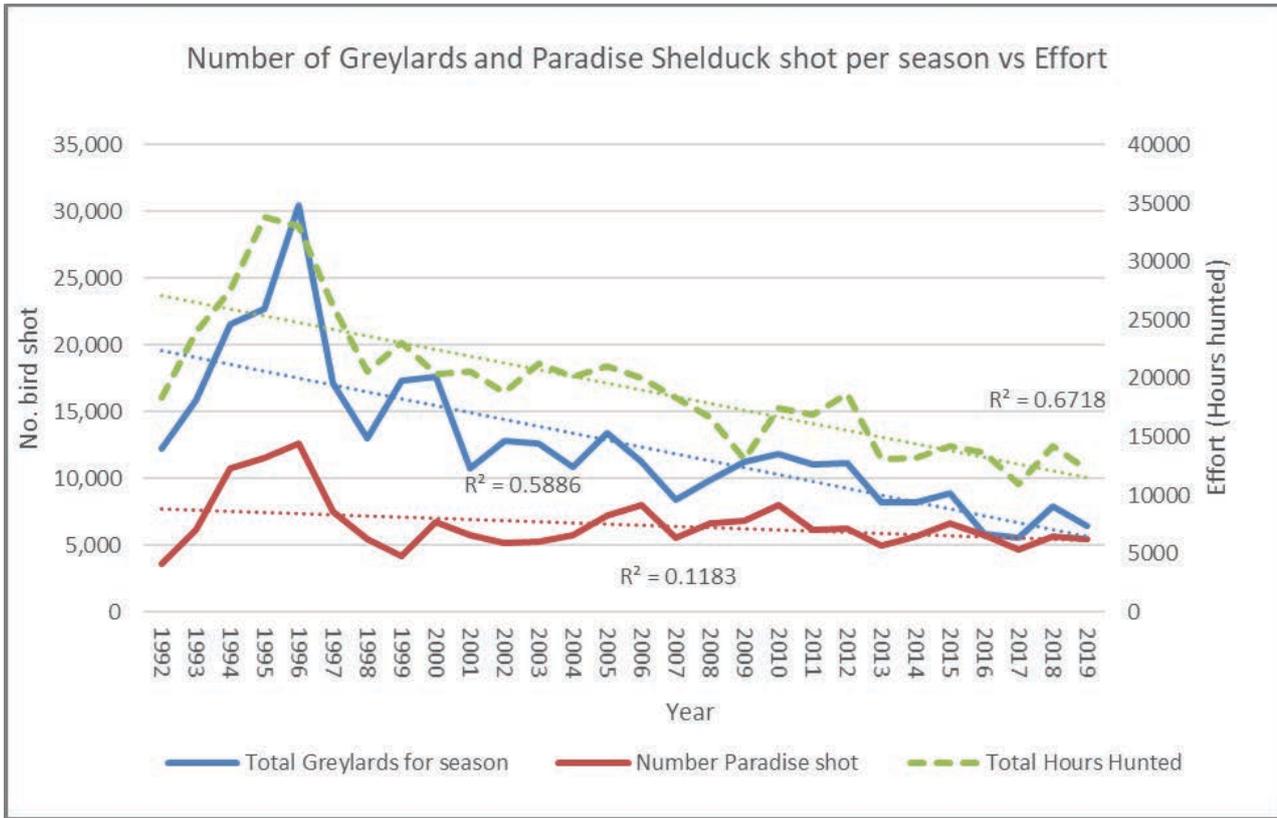
An estimated total of 6,489 greylards (5,638 mallards & 851 greys) were harvested this season, well down from last year which had an estimation harvest of 7,972 greylards. No doubt the favorable breeding conditions of the season prior accounted for the surge in birds in the 2018 season. The mean number of greylards harvested per hour this season was 0.534 birds, slightly down on last year.



GAMEBIRD HARVEST

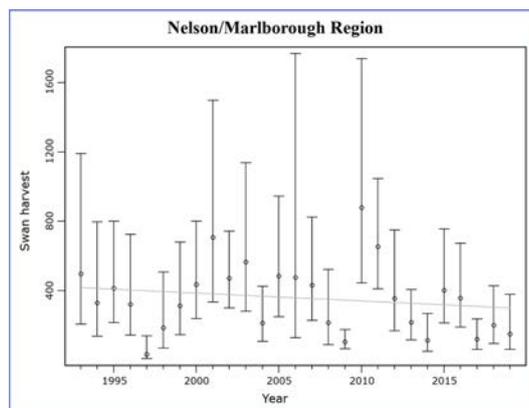
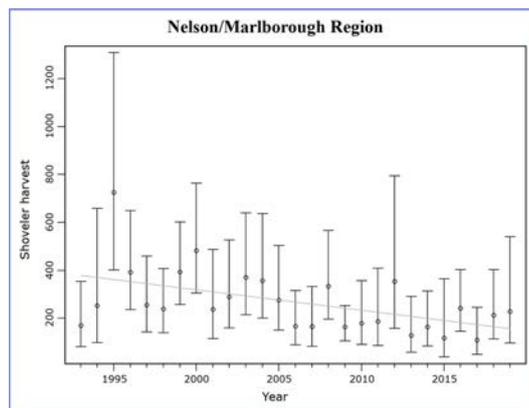
As mentioned above, nearly 6,500 greylards were harvested this season, and interestingly fewer of these were made up of grey duck, which appeared to flourish the two years prior and comprise a larger portion of the greylard harvest (also evidenced by hunter diary reports).

Paradise shelduck harvest has been the more consistent performer since 1992, with a fairly stable harvest rate even though hunter effort has decreased over time - see graph below. This season an estimated total of 5,489 shelduck were taken by hunters, an average of 6.46 birds/hunter for the season.

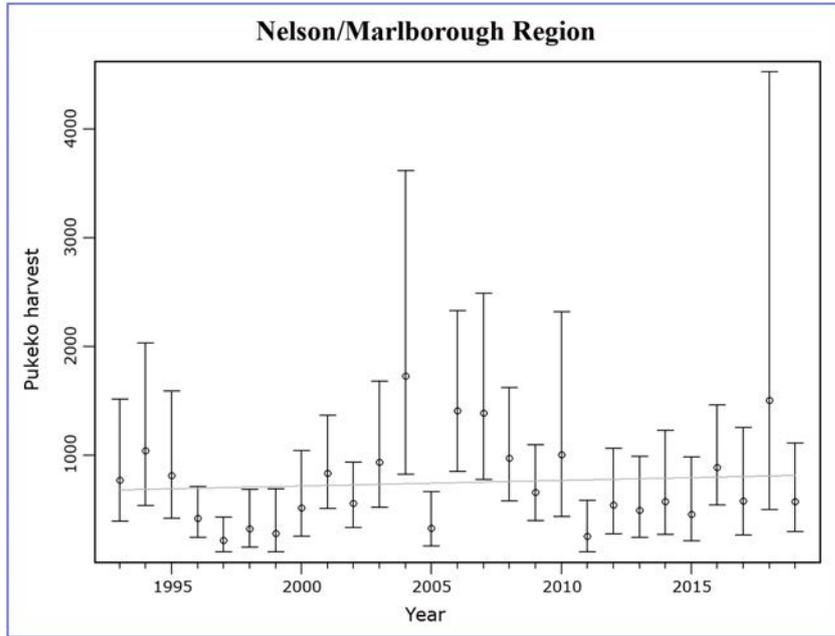


Swan and shoveler harvest can be seen in the graphs (right), and it could be said that the number of birds taken for both species are fairly low - despite good numbers present in the landscape (150 & 228 birds respectively).

Specifically the swan population in Golden Bay is one of the highest in the country, yet there is little effort spent hunting them. The same could be said for the Wairau Lagoons in respect to the shoveler population, although with a bag limit of 2 birds/day, this may be an indication of why harvest is low, as shoveler are well regarded as a gamebird and feature frequently in the hunters bag.

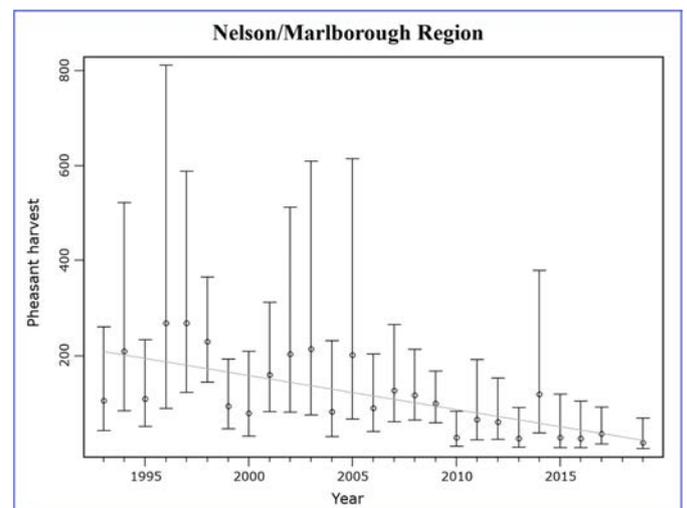
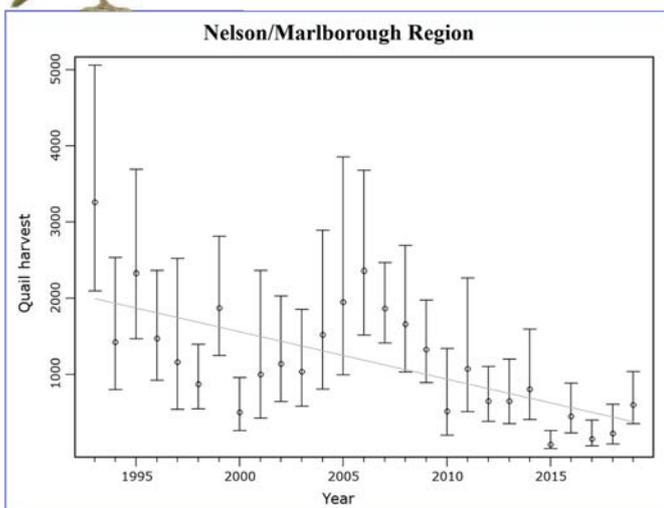
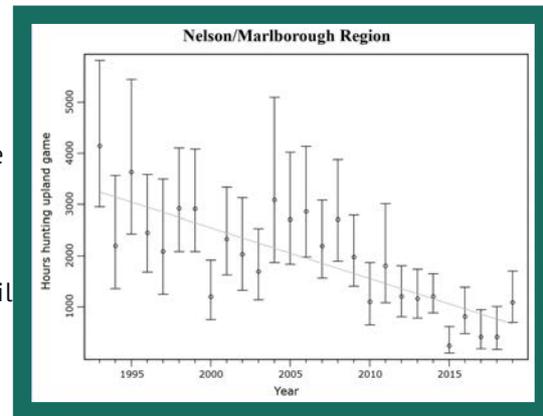


Pukeko harvest has been estimated at 575 birds. Despite the attempt to encourage more pukeko hunting, it appears there is still relatively minor uptake - though staff do field reports of hunters making the most of the extra months of hunting on offer outside of the regular season. The actual harvest of pukeko would indeed be much higher if the birds from crop depredation permits were counted.



UPLAND GAME

Upland game effort increased this season with an estimated 1,087 hours spent upland game hunting, far higher than 2018 and the most effort since 2014 (see graph right). It is not sure if this increase was to do with the new chukar season introduced this season, or potentially additional effort created through the organised Rabbit Island pheasant hunts. An estimated 600 californian quail were shot by hunters, alongside just 17 pheasant - see graphs below.



CHUKAR

Chukar were added to the 2019 gamebird schedule after an absence of around 25 years. The season for the iconic high country bird was re-introduced as staff observations, as well as reports from many others (DOC staff, high country station owners, and hunting public), indicated that the chukar population was well and truly on the rise, and that a huntable population exists, particularly in the Upper Awatere Valley and parts of Molesworth Station.

Once the decision was made by the game committee to implement a limited one month season (during July), significant time was spent organising access to Molesworth Station; liaising with hunters; creating a chukar permit, Molesworth access permit, H&S plan, and block information which was all supplied to hunters. There was a fair interest in the season, with most of the Molesworth blocks allocated for the first week in July, and tapering off from there. Some hunters traveled from as far as Whangamata in the North Island, as well as South Canterbury. A number of permits were issued for private land hunting also.

Ideally Fish & Game would like to arrange an organised hunting weekend in the Acheron catchment area (currently off limits for winter hunting), similar to what takes place on a Molesworth Goose Hunt, however it appears there is little appetite for this from Molesworth Station. This would allow for vehicle access to good upland game hunting grounds.

Unfortunately an untimely snow descended on Molesworth in the first week which curtailed the plans of some hunters, however a hardy few persevered and, though few chukar were sighted, all enjoyed the opportunity and were very interested to return, especially if in an organised form where the better hunting blocks in the Acheron catchment could be hunted. It could be said that the 20 blocks available during July are on the periphery of the chukar grounds where a higher population exists.

DOC South Marlborough have indicated they are keen to see the hunt continue for next season. From a staff perspective we wish to see this take place, considering the effort involved so far, however staff are mindful of the popularity of Molesworth for big game hunting, and as such recommend a two week season (1st two weeks of July) to be set aside for chukar hunting. Staff also recommend that around half of the hunting blocks which hold the lowest bird numbers are removed and given back to the big game hunters, and the blocks around Tarndale/Alma/Lower Severn be retained as specific chukar blocks for the month of July.

Contact was made to Muller and Middlehurst Stations who, in the consultation stage of the chukar season, indicated huntable populations of chukar existed on their farms. It turns out there was little interest in chukar hunting, and Steve Satterthwaite thought that due to the mild winter, chukar coveys were less obvious during July and could have been dwelling at higher altitudes than normal.



RECOMMENDATION

That the chukar season be retained for the 2020 gamebird season, however a two week season proposed for Molesworth.

HUNTER DIARY

The hunter diary initiative continued this season and yielded some interesting findings. Using 16 of the regions keenest hunters, My Duck Diary (MDD) was another success this year in terms of gathering some very valuable data on harvest rates and other key information (i.e., crippling rates, hunt satisfaction, mallard/grey ratio).

The group has now been contributing valuable information for three seasons, meaning useful comparisons can be made between years. The overall concept is that our region's most prolific and successful hunters upload their hunt statistics immediately following the hunt, which removes the inaccuracies in reporting that may be delivered through the regular telephone game harvest surveys.



All told this year our 13 hunters went on 153 hunts and harvested 980 game birds (excluding pukeko). Total hunts, total hours and total birds shot were lower than in 2018 - similar to results from the game harvest survey. Birds per hour and wounding rate were remarkably similar to the previous season, however there were more "other" birds harvested - possibly a result of one of our enthusiastic diarists moving to Blenheim from Tasman and taking a shining to the Wairau lagoons and the swan population that resides there.

Surprisingly the grey duck percentage was similar to 2018, which is at odds to the information from the game harvest phone surveys.

The split between public/private land was in favour of public land hunting, and as would be expected, the birds harvested per hour on private land was far higher than public land, with 1.82 birds/hr from public land hunts and a shade over 4 birds/hr on private land.

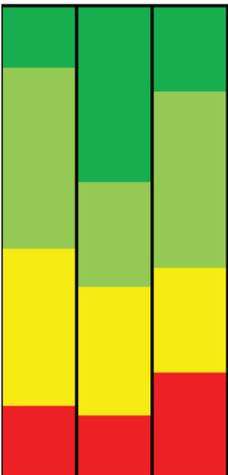
We also monitored hunter effort by location and there was a 63/27% split in favour of Marlborough locales, noting that Tasman based hunters frequently headed to Marlborough, (particularly Havelock/Pelorus area), to hunt.

	2017	2018	2019
Total birds shot	1266	1177	980
Total hunts	150	182	153
Total hours	404.5	423	351.5
Birds/hr	3.13	2.78	2.79
Birds/hr/Per person	1.75	1.58	1.52
Wounding rate	N/C	5.01%	5.04%
% grey duck	21%*	25%	26%
Total greylard	548	517	374
Total shelduck	639	570	456
Total other (excluding pukeko & quail)	79	90	150

*2017 limited dataset

Public/private land split %		61/39
Public land birds/hr	363/199.5	1.82
Private land birds/hr	617/152	4.06
Blenheim/Tasman hunt %	96/57	63/27

2017 2018 2019



Key
 ■ Excellent
 ■ Good
 ■ OK
 ■ Poor

Hunt satisfaction was monitored and had more instances of hunts that were deemed poor in comparison to the two seasons prior, however when excellent and good hunts were combined the percentage of these hunts was comparable to previous seasons - see graph left.

< *Hunt satisfaction 2017-2019*

Thanks goes to MDD members:

- Reice Piggott | Heather Baigent | Ben Sowry | Rhys Barrier | Marc Jary
 Justin Weaver | Steve Holmes | Nev Gane | Geoff Irvine | Cory Jones
 Troy Appleton | Kieran Scott | Ian McLeod



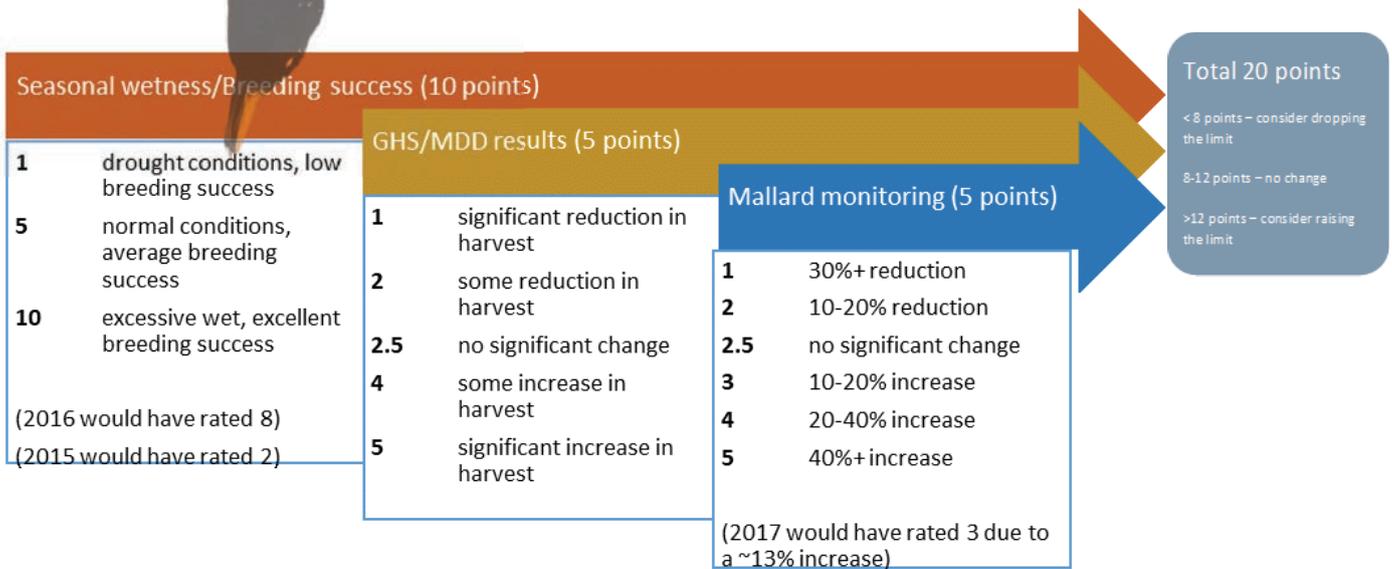
MDD IN PICTURES



REGULATION REVIEW

MALLARD LIMIT RECOMMENDATION

By using a simple points system, staff set the daily bag limit for greylards. This points system is based on spring/summer breeding and rearing conditions (10 points), which factors in monthly average rainfall figures/staff observations; game harvest data (5 points); and mallard monitoring results (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. Spring breeding/rearing conditions generally trump any conservative management measures such as bag limits/magazine restrictions, therefore receives greater weight in setting limits.



Based on the below table, we have assigned the following values to determine the greylard limit for the 2019 season:

Seasonal wetness: **4/10** (Tasman: lower than normal; Marlborough: average)

GHS/MDD results: **2/5**

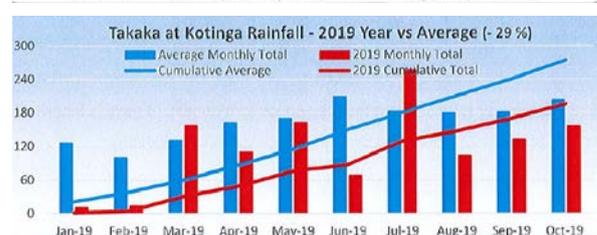
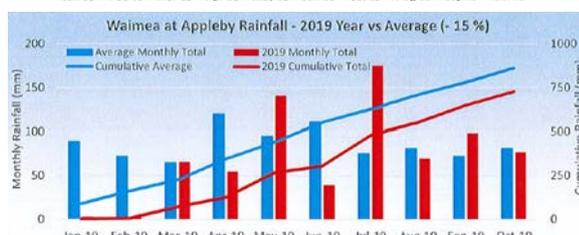
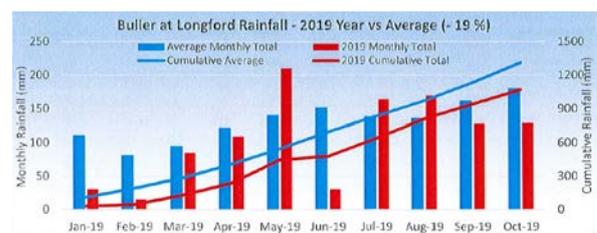
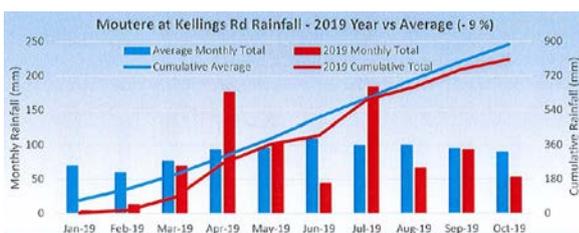
Mallard monitoring: **2.5/5** (-5.9% Marlborough, +4.6% Tasman)

TOTAL: **8.5/20** – recommend no change to limit

It is recommended that the rainfall/soil moisture data collected by TDC be used to determine a seasonal wetness score - see a selection of monitoring site graphs below. NIWA data was used to determine a score for Marlborough.

RECOMMENDATION

That the mallard/grey (greylard) limit be kept at 8 birds/day across all Nelson Marlborough sub regions for the 2020 season.



PARTICIPATION

MOTUROA | RABBIT ISLAND PHEASANT HUNT

The Moturoa | Rabbit Island pheasant hunt continues to go from strength to strength. This season three hunts were facilitated, and all were fully subscribed with 30+ hunters vying for 6-8 blocks available. The hunts were attended by hunters from all over the region, with very good patronage from Marlborough based hunters, which was excellent to see. On some of the hunts, traditional blocks were combined with adjoining blocks due to change in landscape (i.e., recently harvested blocks with little cover).

As was the case last year, the end of the island where the hunts take place continues to be logged at a pleasing rate and more and more good hunting areas are created each year. Staff also noted that inkweed is thriving which is providing a valuable food source for pheasants.

A number of roosters were harvested on the hunts, and if none were shot by a particular group, they generally at least flushed birds. The real winner though, was the number of quail on the island, and good numbers were taken by some of the groups, including several limits. As this was the final of a three year trial, Fish & Game will be meeting with TDC in due course to discuss the future of the hunt. It is the opinion of staff that the hunts are likely to continue, based on the thorough planning and implementation throughout the three year trial, and the great work done by the trapping group on the island. A small number of birds were released either during the summer (mainly hens) or leading up to the hunts (roosters). A number of the roosters were taken on the hunts, and staff and Councillors involved in the project are of the opinion that further enhancement work is beneficial. Councillor Gauld has done a fantastic job re-instating the pheasant enclosure at the Richmond office, and is successfully rearing good numbers of pheasants for release. A discussion with the game committee as to where best carry out future enhancement releases should be undertaken.



RECOMMENDATION



That enhancement releases of hen and roosters be undertaken at Rabbit Island for the 2020 season, and further discussion of other potential release locations.

> Rabbit Island has fantastic pheasant and quail habitat - this area of recently harvested pine was a hot-spot for quail



< Good numbers of quail were taken by some groups





WAKAPUAKA PUKEKO HUNT

For the second year running the Wakapuaka pukeko hunt was canned, this time due to timing in regards to calving. The landowner wishes the hunt to continue but has asked that it be moved to earlier in the season, rather than in early August.

While the hunt is beneficial in terms of bird management on this farm where the population of pukeko is very high, and also for participation reasons with the hunt being an enjoyable outing for licence holders, as well as R3 initiatives with the hunt providing a good avenue to introduce new or youth hunters, staff have some reservations about the safety of the hunt and believe the time is right for the game committee to discuss the future of the hunt.



RECOMMENDATION

That the game committee discuss the future of the annual Wakapuaka pukeko hunt.

GAMEBIRD FOOD FIESTA

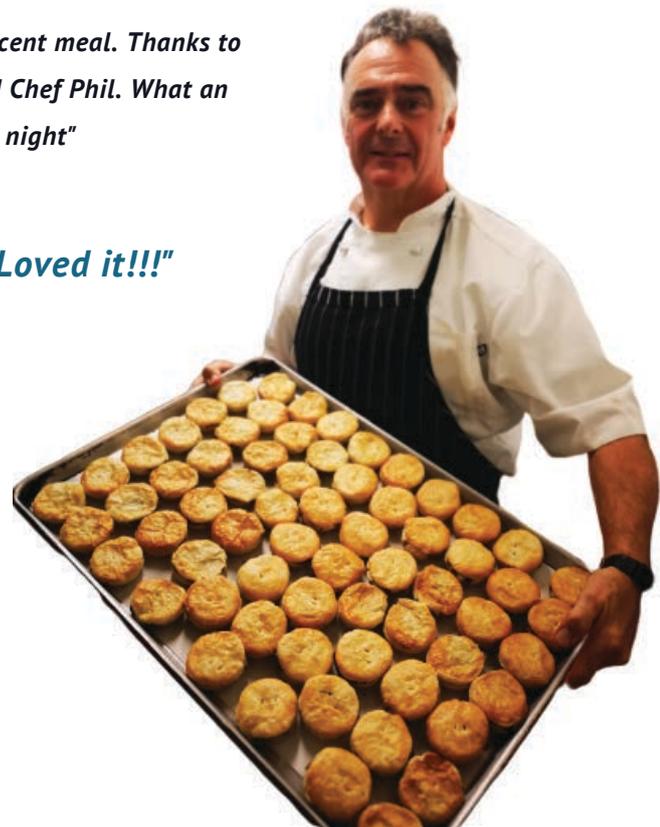
For the second year running the gamebird food extravaganza was an absolute hit with local Nelson Marlborough licence holders. Chef Phil Hazeldine once again came to the party and provided 80 odd lucky punters with an unforgettable dining experience, made up of the fruits from the gamebird season that had just finished.

Phil masterfully prepared an array of dishes, including things like pukeko pâté, KFD (Kentucky Fried Duck), smoked mallard breast wrapped in prosciutto, Indian inspired swan and duck curry, and....wait for it.....deep fried duck tongue. The mini pies, pukeko soup and swan bites also went down a treat. In total - around a dozen separate dishes were served up to the crowd. An epic feast, and a wonderful way to sign off the gamebird season - and also a complete revelation to the culinary possibilities of the game fare we harvest. Massive thanks to Phil and his staff for making the evening possible.



"Magnificent meal. Thanks to F&G and Chef Phil. What an amazing night"

"Loved it!!!"



"Was such a good inspiring night, everything tasted great, going to change the way I cook my game birds and going to target swan and pukeko now"

R3 & HUNTING

R3 stands for recruitment, retention, and reactivation and R3 activities seek to create new participants or increase participation rates of current or lapsed outdoor recreationists. While Nelson Marlborough has successfully implemented an R3 programme for fishing, trying to grow the hunter base in this region is the next step. It is clear that in this region there is a base of 'loyal' hunters that purchase a licence annually, even though the area is not well regarded for its hunting qualities, especially on public land.



Work is currently been done in the R3 sphere to 'retain' existing hunters by providing facilitated hunting opportunities: the Rabbit Island pheasant hunt (which has been valuable to retain upland game hunters as well as introduce new hunters to a different form of hunting); the Wakapuaka pukeko hunt; as well as historical hunts like the Golden Bay hunt etc. The end of season 'gamebird food fiesta' is also another draw-card that has been extremely popular and receives fitting accolades from those who attend. However it is no secret the region needs to grow the base of new hunters (juniors and new adults) to ensure a downward decline in participation does not occur, as has been the case in other regions. Lawson Davey (Fish & Game officer) and Councillor Bill O'Leary have also done some good work integrating gamebird hunting into their H.U.N.T.S course, which they hold annually. This course is a great way to identify new hunters and start them on their journey, but as gamebird hunting is fairly specialised, we believe if new hunters are 'nurtured' through the learning process, they will likely receive greater fulfillment and be retained, rather than be 'thrown into the deep end' into a region where hunting is reasonably challenging, and drop out after a year or two.

It is proposed that a mentor programme be introduced for the 2020 season, building on the excellent work already done in 2019 by Councillor Gauld, where around a dozen junior hunters were introduced to gamebird hunting in a safe and controlled environment (Challies Island and a pond in Brightwater) - see picture above right. It is imperative that this important work continues, but also provide for new adult hunters who are interested in taking up gamebird hunting.



MENTOR PROGRAMME

The mentor programme proposes to put new hunters in touch with our regions most successful hunters, where they will take them out and teach them the basics of their successful hunting techniques (decoys, calling, safe shooting, weather conditions etc). The new hunters and mentors would receive priority when it comes to balloted hunting spots, as well as priority for any organised gamebird hunts (including the Rabbit Island pheasant hunt). The programme would also see a continuation of the junior hunter mentorship initiative driven by Councillor Gauld.

WETLAND DEVELOPMENT AND ENHANCEMENT

PARA WETLAND - BLENHEIM

Para Wetland is Nelson Marlborough's signature wetland, and one that has received considerable financial backing from the Game Bird Habitat Trust, alongside other funding avenues. In the past 12 months, ongoing work has continued at the wetland, which is now really starting to take shape - thanks to the dedicated efforts of Vaughan Lynn.

Here is a summary of the work undertaken at para Wetland in the past year:

- Held three Conservation Volunteer NZ working days using staff from Pernod Ricard Winemakers
- Had two planting days involving Queen Charlotte College
- Weed released around the native plantings that we have planted over the last four years
- Continued to control climbing vine weeds around existing established plantings
- Carried out gorse and broom control along the State Highway One road verge
- Ongoing liaison with the "Whale Trail Project" to identify a preferred route for the proposed cycleway / walkway that will minimise the impact to the Para restoration project
- Continue to maintain the dry weather 4wd access track at the southern end of the wetland, and the adjacent fence in a stock proof condition
- Planted a further 400 Kahikatea trees that were germinated from seeds collected from the few remaining remnant trees within the wetland
- Ongoing liaison with Marlborough District Council River Engineers over bed levels of the Wairau River as this impacts upon the summertime water levels in Para
- Presented evidence at the Marlborough Environment Plan hearings in support of our submission relating to water level management in Para
- Continued ground based control of willow regrowth in the drier areas of the wetland as conditions allowed
- Liaised with the Environmental Section of Marlborough District Council to try and get them more involved in the project. This has resulted in John Preece being commissioned by MDC to write a restoration report for the wetland. Hopefully this will result in some funding being made available for future weed control and hydrology surveys
- Continued to seek funding from DOC & Fish & Game system to help out with ongoing willow control work
- Changed the skin on the large billboard at the Northern Boundary to read "Another Wetland Saved by Fish & Game"
- Getting increasing amounts of positive feedback and support from the general public on how they can see that the project is progressing and the difference that it is making.



SUPPLEJACK & SUNRISE - TASMAN

Staff continue to spray weeds and plant out the wetlands at Supplejack and Sunrise Valley's. The expectation is that these ponds will be able to be hunted next season, and given priority to seasoned hunters wishing to mentor new hunters, or new hunters looking for a place to go.

v > *The Sunrise Valley wetland has been planted in carex and oaks*



> *An aerial view of the Supplejack wetland, with good surrounding quail hunting area*



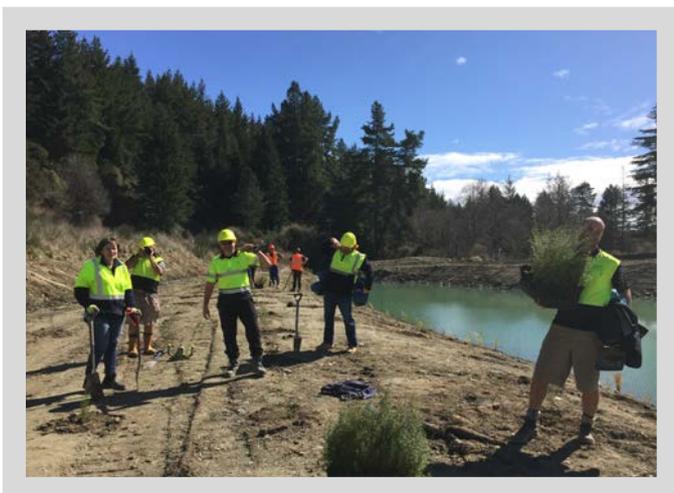
GIBBS ROAD

Gibbs Road Pond #1 continues to get frequent patronage during the gamebird season by several permitted hunters. One of the hunters, Phil Madill, has recently planted a number of carex, oaks, and manuka at the site, which will hopefully survive the summer and add value to the wetland.

Nelson Forests Ltd are currently taking gravel from a small river flat adjacent to the upper Motueka River further down Gibbs Road and we will, piece by piece, end up with a large wetland (Gibbs Road Pond #2). The first stage of the wetland has been developed and recently a planting day was held with Nelson Forests staff and Fish & Game. Most of the plants for the day were donated by Pete Taia of Westbank Natives, a hugely generous offer. Hundreds of carex and manuka were donated, and all of these were planted during Spring at several wetland sites.

The next stage of Gibbs Road #2 will be dug over the coming year and will be planted when finished. The end result will be a very large wetland which Fish & Game will ballot out to hunters. It will also likely be a shelduck moulting site, as well as valuable duck habitat.

Fish & Game assisted on the day >



< *Excellent top soil was provided at the site*

POTENTIAL EVES VALLEY WETLAND DEVELOPMENT - TASMAN

The Pigeon Valley Fire recovery process has provided NMFG with an opportunity to initiate the development of another wetland at this location, which will have a dual function for fire control and wetland hunter ballot pond. Tasman District Council and Sumitomo Forestry are in the process of discussing potential fire recovery options for both native forest re-establishment and wetland creation. F&G staff assisted by Councillor Gauld have taken levels at a potential development site and will assist with a consent application process should the proposal get a green light.



TOP VALLEY - MARLBOROUGH

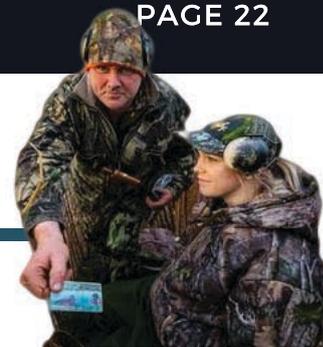
The manager undertook an inspection of Top Valley wetland with Mike Aviss and Peter Hamill from MDC. It was agreed that weed control should be a priority for this wetland, with Laurel cherry needing urgent control this summer from the \$1400 remaining GHT grant for this wetland. Longer term we may wish to apply for funding for a resource consent to undertake aerial/ground control of Crack willow and perhaps limited earth works to open the reserve back up for waterfowl. The existing wetland would also make a good potential site for translocation of hatchery reared giant kokopu in partnership with DOC/Iwi if this project eventuates in future.

CHALLIES ISLAND - TASMAN

F&G staff still take occasional weed control work here for TDC on a cost recovery basis. It is notable that less duckling broods are now reared here than initially, due possibly to the popularity of the river park areas with dog walkers. On a brighter note however, this year the wetland was used on a number of occasions by Councillor Gauld, in order to introduce new young people to the sport of game bird hunting. Councillor Gauld constructed a hunting platform at the southern end and successfully introduced a dozen young hunters (under 16 years of age) to a gamebird hunting experience with several birds being taken for the table on each outing. This potentially forms an excellent model for the wider use of ballot hunting ponds which F&G control access to, in future, and aligns very well with the national R3 strategy and the need for mentorship programs and the like. In future we hope to expand this approach to several other reputable hunters (e.g. duck diarists) as the region moves to implement a new/young hunter mentorship program. This would ideally be signaled at the time of firearms licencing for new hunters within the Nelson Marlborough region, in terms of “how to give gamebird hunting a go”.



COMPLIANCE | OPENING DAY



Opening Day compliance was spent in Golden Bay and around Blenheim. In Golden Bay, two teams of rangers worked the coastal margins and the Aorere and Takaka catchments, and caught up with a number of hunters, though, as evidenced by a number of un-shot ponds, it was deemed that hunters were few on the ground in comparison to years gone by. Pleasingly, of the 33 licence checks, all hunters were found to be fully compliant - with just one minor issue that was resolved, and all were happy to see rangers out and about. The 2018 Opening Day was characterised by fully compliant hunters also, and as such, we have not had to deal with any serious non-compliance for the past two seasons which is exceptional.

Typically for the top of the South, hunters in Golden Bay had a mixed range of fortunes for their efforts. On one or two prolific ponds limit bags of greylards were achieved, but some of the public land locales were on the quiet side. On one pond in the Aorere, shelduck were piling into the pond but were left in favour of greylards. Staff arrived on the scene with three hunters and were staggered by the numbers of unfazed shelduck flying around the pond. As it turned out, the group were concentrating on mallards and saving the parrie hunt for the afternoon.

At Para Wetland, although large areas of the wetland did dry up in the summer drought, several ponds did retain water and the whole wetland was re-hydrated after rain in early April, so it wasn't all bad news for hunters. The hunting this season wasn't as good as the previous two seasons but was still average or thereabouts for Para, and most hunters encountered on opening weekend were happy with their bags. With the new ponds that have been created in recent years we are still able to currently provide for hunter demand at Para (which remains fairly steady), and this year saw around 10 parties (approximately 25 hunters) enjoy hunting at the wetland.

A further 41 licence checks were achieved at the Rabbit Island pheasant hunts, making the total a shade over 70. Ideally we would like to reach 10% of licence holders, however this target was not met. Yet if out of region hunters are taken out of the equation, this year we would have a base of around 600 people hunting within the Nelson Marlborough region, and would have met the 10% aim, therefore a discussion with the game committee should be held as to whether the 10% target should be for individuals that hunt within this region only.



RECOMMENDATION

That the 10% licence target be modified to include hunters operating within the Nelson Marlborough region only.





MALLARD GENETICS RESEARCH

In 2017, noted United States duck geneticist Philip Lavretsky from the University of Texas El Paso spent two weeks in New Zealand, to answer the question: is the New Zealand Grey duck (pāpera) extinct? The key purposes of Phil's research was to genetically identify pure NZ grey (if they exist); establish the amount of hybridization that occurs within grey/mallard ducks; develop a regional map of where we have true pure grey ducks, pure mallards, and where hybridisation exists; and develop a key which Fish & Game NZ can use to determine whether the birds have pure genetic lines, or the level of hybridization.

The results from the research are in, and contrary to popular belief, the pure New Zealand grey duck still exists in New Zealand, with the regional stronghold area, not surprisingly, being the West Coast of the South Island. Yet the study's conclusion that the Southern Alps act as a barrier to gene flow is different to that of staff who are of the view that grey duck still exist in West Coast and Golden Bay due to the predominance of native forest cover landscape and native forested streams, which greys live in and mallards do not (being more of an agricultural landscape bird).

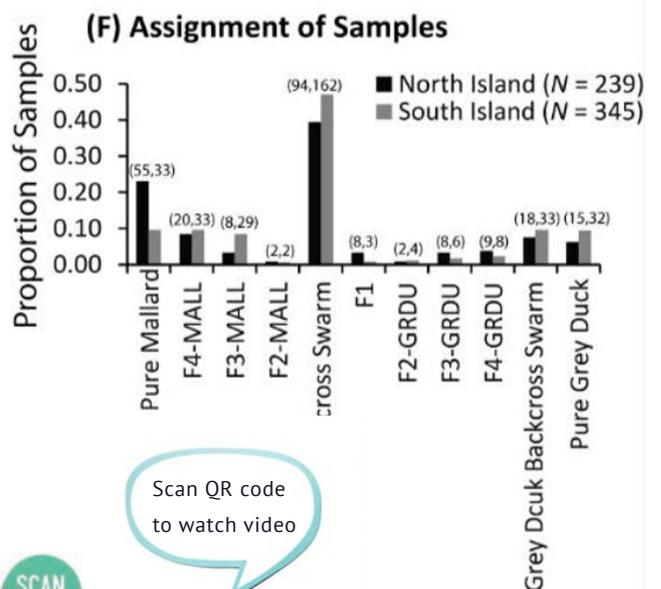
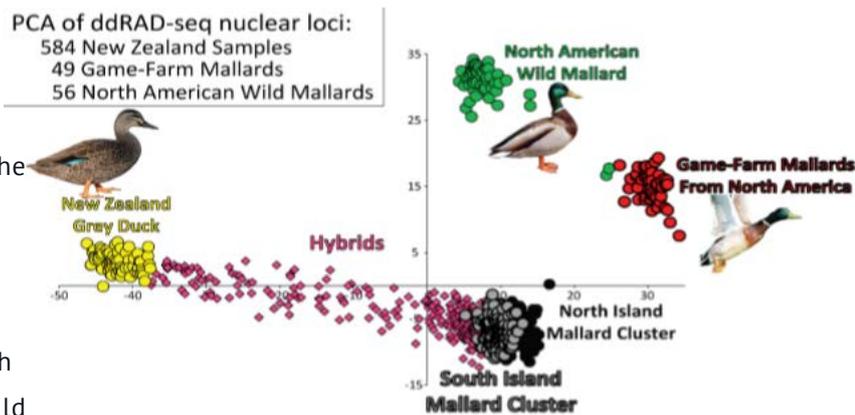
This is news that is unashamedly welcomed, as Fish & Game (as successor to former Acclimatisation Societies), have become under increasing fire for the 'extinction' of the endemic pāpera, due to historical liberations of ~25,000 North American game-farm mallards between 1940-1960, which have extensively hybridised with the pāpera.

From DNA testing of the 673 'greylards' samples from both the North and South islands (as well as North American wild and game-farm mallards), the majority of samples (53%) were found to be hybrid swarm backcrosses, however, genetically pure Grey Ducks (8%) were found across the landscape - see figures right.

All told, our regional hunters contributed around 60 birds to the research, encompassing a cross section of ducks from pure looking greys to pure looking mallards and everything in between. The birds were sourced from a diverse geographical area, including Golden Bay, Tasman, Marlborough and Murchison. Pleasingly a number of the birds samples from this region were pure grey's.

Fish & Game produced a short video about the research when Phil and his team were in New Zealand collecting and analysing the birds. You can view the video by scanning the QR code (right) or visiting:

<https://www.youtube.com/watch?v=ybiTUHe7CQM>



Scan QR code to watch video



GENERAL

LICENCE SALES

Game licences sold in 2019 took a slight dip, with 40 fewer full licence equivalents (LEQ's) sold this season. This is the lowest number of licences sold since 2006, and while this amounted to only \$2,000 difference compared to 2018 (due to annual licence increase), if the downward trend continues this should be a serious concern to Fish & Game, and it may take considerable R3 efforts, such as the mentor programme, to start reversing this trend.



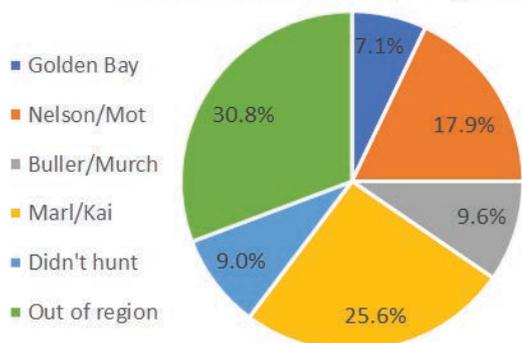
Year	Licence Sales (LEQ's)	Game Income Generated
2006	952	\$ 69,698
2007	914	\$ 68,733
2008	980	\$ 76,686
2009	1017	\$ 81,576
2010	1059	\$ 85,068
2011	977	\$ 84,277
2012	964	\$ 85,077
2013	975	\$ 88,026
2014	909	\$ 83,077
2015	955	\$ 86,060
2016	948	\$ 87,426
2017	893	\$ 83,428
2018	923	\$ 87,099
2019	883	\$ 85,097

HUNTER DISTRIBUTION OVER OPENING WEEKEND

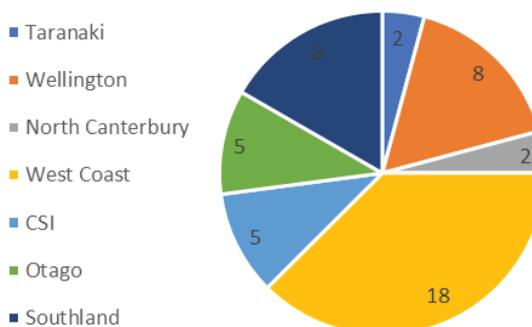
A sample of 156 Nelson Marlborough licence holders after Opening Weekend was carried out as part of the game harvest survey. Locally, the Marlborough/Kaikoura area was the most popular sub-region (25.6%), followed by Nelson/Motueka (17.9%), Buller/Murchison (9.6%), and Golden Bay (7.1%). A fairly normal percentage of around 30% of hunters chose to hunt outside of the region, and 9% of hunters did not hunt Opening Weekend at all.

Of the 48 hunters who hunted outside of Nelson Marlborough, the most popular region among the surveyed group was West Coast (38%), followed by Southland & Wellington (17%), Otago & Central South Island (10%), and Taranaki & North Canterbury (4%). Typically more hunters would frequent the North Canterbury, and in all likelihood would have, but such are the vagaries of the game harvest survey data.

Hunter Distribution on Opening Weekend



Out of region hunting distribution on Opening Weekend

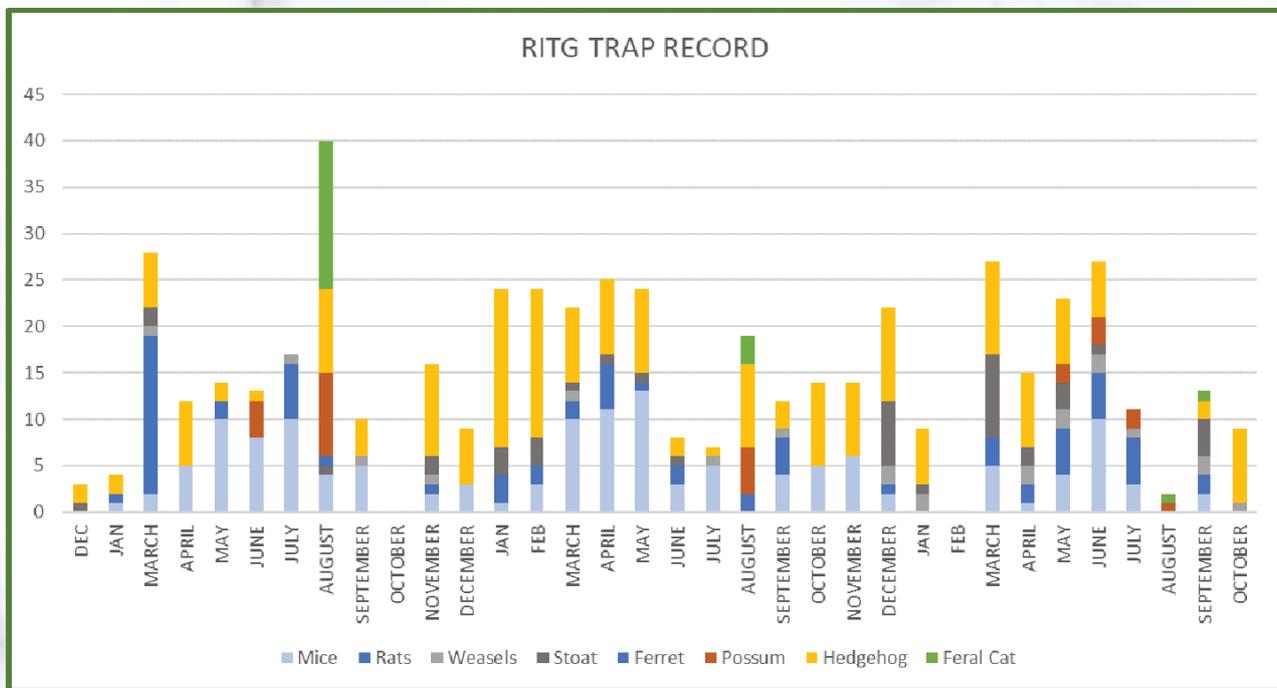


MOTUROA | RABBIT ISLAND TRAPPING GROUP

The trapping group at Moturoa/Rabbit Island continues to do outstanding work to reduce the impact of predators on native taonga and gamebirds. The voluntary group, principally comprised of Robert Dodunski, Graeme Ivey and Chris Tonkin, visit the island each month to clear the lines and re-bait the traps.

To date in 2019, 136 pests have been destroyed by the group, and 517 in total since Fish & Game took the reins in 2017. Unfortunately due to lack of time, the winter feral cat sting was not able to be completed, but staff will endeavor to see this in place for next year. As an aside, Councillor Gauld has been continuing his excellent work by trapping cats out at Challies Island and in the past year has destroyed around 16 feral cats, which goes to show just how prolific these predators are in the landscape.

	Mice	Rats	Weasels	Stoat	Ferret	Possum	Hedgehog	Feral Cat	TOTAL
TOTAL (2017-2019)	138	71	21	43	1	26	196	21	517



FORESTRY ACCESS FOR UPLAND GAME

NMF&G staff are working with forest companies Tasman Pine Ltd and Nelson Forests to solidify upland game hunting access on exotic forestry estates. While permits for upland game can presently be obtained, staff are keen to promote hunting in these forest areas as there is an untapped and underutilised quail resource. Specifically, for Tasman Pine Ltd forests, staff will identify good quail hunting blocks (<5 year harvested), and formalise access to these specific blocks, which will likely include providing hunters with a permit and key access via locked gates - which has been previously unattainable.

Ideally, some of the upland game blocks will be around areas where Fish & Game have created wetlands (Eves, Supplejack and Sunrise Valley's), so we envisage that hunters may be able to have a morning hunt on one of the ponds, and follow it up with a spot of upland game hunting on surrounding hillsides. There is also potential to carry out limited releases of pheasants, particularly in the low lying areas adjacent to the wetlands, which is an option that should be discussed by the game committee.

ACCESS | RESOURCE MANAGEMENT ACT (RMA) ACTIVITY

While most Resource management advocacy tends to focus on water quality/fishery issues, some aspects such as wetlands and hunter access issues occasionally come up. The notified Marlborough Environment Plan (MeP) had a number of wetland or hunting related provisions which F&G staff submitted on including a proposal for removal of structures such as maimai's after the gamebird season – we opposed this ideological position, and are still awaiting a decision. A number of provisions in relation to wetland management were also submitted on, with particular focus on Para Wetland.

Management of the hydrology and water quality of Lake Elterwater (wildlife refuge) was also submitted on through the Marlborough Environment Plan process.

Recognition of existing hunting opportunity/gamebird habitat value within Marlborough's estuaries was also sought through our MeP submission, and assurance of the continuation of gamebird hunting as a permitted activity status.

In addition to the MeP process a number of meetings were held to try and resolve conflict between cycleway proponents and existing hunter use, including advising on the least impact route (on gamebird hunting) for a cycleway through: Wakapuaka sandflats, Para Wetland, and a joint walk/cycleway around Grovetown Lagoon.

Finally, a change of farm management at the Balfour property, southern Wairau Lagoons, has seen a historic negotiated accessway over private land, now closed. Staff continue to try and work on an option for controlled access during the hunting season with the new manager.

HUNTER ADVOCACY

NZ Council recently changed the Para Billboard skin to read: Another wetland saved by Fish & Game. A national press release celebrating world wetlands day followed this sign installation. Some follow up media interest and articles ran after the press release.

CROP DEPREDATION

A total of 66 crop depredation permits were issued for the 2018-19 financial year - 20 more than what was issued in 2018. 25 were issued for pukeko control, 27 for paradise shelduck control, 3 for mallard control, and 11 for combined pukeko / shelduck / mallard control. The summer drought likely spiked complaints, however staff believe there is now a better understanding from landowners who have pukeko/shelduck issues, to get in touch with Fish & Game for a permit.

SMALL GAME PERMITS FOR HUNTING ON D.O.C ESTATE

Fish & Game staff have been in liaison with DOC (South Marlborough) to determine if it's possible to hunt upland game on DOC estate, principally Forest Park areas such as the Branch/Leatham. The response from DOC is that it is possible to hunt quail on some DOC areas, as long as the hunter obtain a small game permits from the South Marlborough Office.



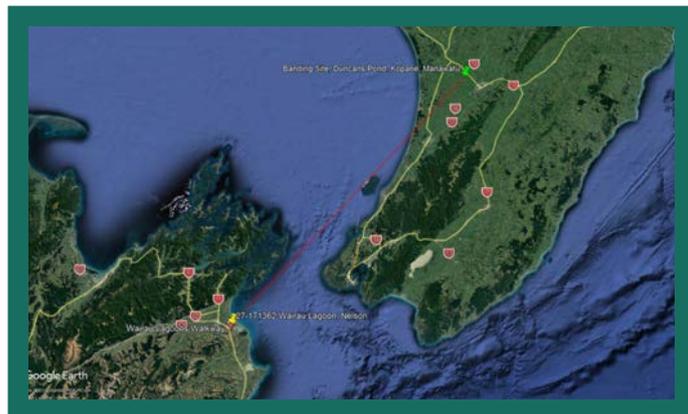
2020 BANDING PROJECT | BAND RETURNS

Fish & Game, with primary assistance from Councillor Gauld, has embarked on a banding project, capturing urban and semi-rural ducks to try and determine mallard movements within this area. The goal is to band at least 100 birds, with the birds primarily coming from a pond in Brightwater.

The banding project also has the additional R3 benefits, as hunters love to obtain a band from their bounty, and for many this is a once in a lifetime feat, if at all.

While banding is regularly undertaken by North Island Fish & Game regions, in the South Island the management practice is seldom utilised, and this is the first attempt at banding mallards for many decades in Nelson Marlborough.

However jet setting mallard ducks that have been banded in the North island regularly migrate to the South Island, and featured in the bags of two Nelson based hunters during the course of the 2019 season. On Opening Weekend, a banded mallard drake was shot on a pond in the Moutere area, which had been banded in the Thames area in January 2017 and had traveled nearly 500km. Towards the close of the season another banded mallard drake was shot, again in the Moutere area, which originated from the Manawatu area, and was captured and banded as a juvenile male in January this year. Last year, a bird also banded in Manawatu was shot by a local hunter in the Wairau Lagoons. If you think Nelson is a long way from home for these particular ducks, spare a thought for the flight times of three mallards which were banded in Auckland/Waikato and ended up in New Caledonia!



^ Phil Bradfield was surprised to find a mallard he'd shot wearing some jewellery. The bird was banded in Manawatu.



Location: Marlborough	2016	2017	2018	2019	
Havelock Estuary 1	44	60	22	31	↑
Havelock Estuary 2 Kaikumera	33	39	9	8	↓
Havelock Estuary 3 Km road	5	2	19	7	↓
Havelock Estuary 4 Kaituna arm	25	26	56	74	↑
Mahikipawa Wheadon Ck	17	95	7	21	↑
Mahikipawa Taylors Ck	38	20	41	6	↓
Head of Mahikipawa	28	0	28	50	↑
Okiwa Bay	0	0	34	64	↑
Ngakuta Bay	0	9	9	2	↓
Para Swamp honey pot	5	1	0	9	↑
Para Swamp Dbl Mgt	17	1	12	0	↓
Bush Rd Pond Tuamarina	18	0	3	5	↑
Yealands pond	0	43	0	22	↑
Opawa River campground	17	38	54	8	↓
Waihopai Cemetary Pon	24	26	5	44	↑
PPCS pond	30	110	33	69	↑
Old Pond	100	110	144	159	↑
New Nth Bubbler	20	0	0	47	↑
New Sth Bubbler	20	0	23	0	↓
Nth Pond 2b	320	330	249	201	↓
Middle Pond 2C	210	230	490	383	↓
Sth Overflow/natural ponds	50	0	0	57	↑
Taylor DS SH1	26	12	71	69	↓
Springlands retirement village	76	57	91	161	↑
Bothams Bend	21	15	0	11	↑
Grovetown Lagoon (Wharf Rd)	110	172	220	37	↓
Grovetown Lagoon (Cemetary)	85	13	38	34	↓
Pollard Park	140	130	128	125	↓
Wairau Diversion	31	80	25	0*	↓
Total	1510	1619	1811	1704	-5.90%

* Diversion running high and turbid

NELSON/TASMAN/GOLDEN BAY	2015	2016	2017	2018	2019	
Kainui Dam	59	45	0	37	0	↓
Wakapuaka Oxidation	549	411	441	455	955	↑
Thorpe Street	27	36	74	42	56	↑
Staples St /Kumera's Est	85	33	58	37	11	↓
Motueka Oxidation Ponds	91	136	81	134	40	↓
Bells Is. Oxidation Ponds	126	113	138	256	116	↓
Lodders Lane	33	52	20	14	20	↑
Puketawhai	39	22	82	6	56	↑
Takaka Oxidation Ponds	57	21	68	34	74	↑
Motupipi Estuary (Nees R)	79	35	19	48	34	↓
Waitapu Estuary (Wharf Rd)	9	30	46	13	32	↑
Waitapu Est (Rangihaeata Head)	91	97	42	179	164	↓
Parapara Inlet	59	9	66	45	68	↑
Collingwood Estuary	45	15	53	69	64	↓
Gorge Creek	0	0	35	46	14	↓
Pakawau Inlet	4	14	13	17	4	↓
Lake Killarney		45	44	21	54	↑
Old Wharf Rd Motueka		71	90	124	32	↓
Eastons Pond		26	81	44	59	↑
Marriages Rd		22	15	50	34	↓
Aranui Rd Mapua		30	25	18	13	↓
Rabbit Island TicToc		16	40	83	44	↓
Washbourne Gardens Richmond		52	66	41	43	↑
Daelyn Pond		50	0	46	0	↓
Nelson Airport estuary		20	24	24	0*	↓
Saxton Field		20	60	33	86	↑
Templemore Pond		44	75	72	60	↓
Founders Park		34	30	28	29	↑
Queens Gardens		90	110	115	67	↓
Pearl Creek				42	34	↓
Dredge Pond				59	12	↓
Awa Awa Road				6	25	↑
Total (dotted border only)		1589	1896	2131	2229	4.60%

*Nelson Airport - pond drained no ducks seen

WANT MORE MALLARDS? DO SOMETHING ABOUT IT!

EXCERPTS FROM CALIFORNIA WATERFOWL ASSN RESEARCH

GIVE DUCKLINGS A PLACE TO GROW: BROOD WATER

Ducklings need water that has food for growth and cover for protection. Forbs (low broadleaf plant) are very beneficial because they can increase invertebrate quantity and diversity – important duckling food. Perennial and annual plants (tules, cattails, smartweed, watergrass) can provide more structured habitat for birds to hide in.

There are two common types of brood water: reverse-cycle wetlands that are flooded in spring and summer, but dry in fall and winter, making them (largely) unhuntable, and semi-permanent wetlands that can rear broods in spring and summer, be drained to allow discing or mowing, then re-flooded for hunting.

Reverse-cycle wetlands are significantly better for broods: Duckling survival can be up to 300% higher, in large part because they are rich in invertebrates (duckling food), and the lack of semi-permanent or permanent water deters predators from calling them home.

PREDATOR MANAGEMENT

It's a popular belief that predator management can do wonders to improve nest success. Although this may be true on a small scale, it is not really a viable long-term option, especially on a large scale. This type of management is only really effective on islands where ground nesting birds and introduced predators cohabit and can be completely eradicated. For example, in California it's more effective (and less time-consuming) in the long run to limit predators with the design of your habitat. If you increase nest success within a trapped block by controlling predators, you get more ducklings coming off the landscape, but wherever your property ends, there will be plenty of predators on the perimeter. Once a hen leads her brood off the safety of your property, she is providing predators a veritable fluffy duckling buffet.

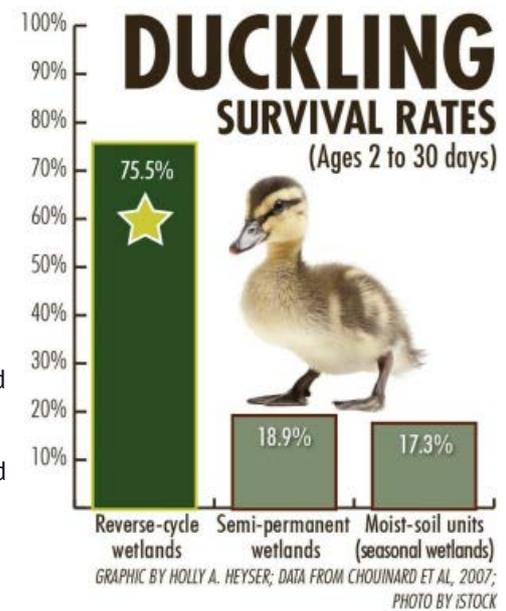
Remember that increased prey leads to increased predators. So, the longer you maintain predator control, the more likely you'll be attracting more of the very same predators you are trying get rid of.

GIVE DUCKS A PLACE TO NEST: UPLAND HABITAT

To nest, ducks need sufficient upland habitat, ideally within a mile of a water source: wetlands, rice fields or irrigation ditches/sloughs. Sloughs and ditches are least desirable because they're filled with predators. The more breeding habitat there is near water, the more hens will attempt to nest. Perennial and annual grasses and forbs are ideal vegetation for nesting. You can go with native or non-native perennial grasses (such as tall wheat grass, fescue). Forbs (flowering plants) provide more invertebrates (bugs) for birds that have high protein needs, including upland birds. They're also great for pollinators.

A mix of grasses and broad-leafed plants/forbs helps provide structure and shade, which can help keep late-season eggs from cooking when inland temperatures get into multiple 100-plus-degree days – when the annuals start to die, the perennials provide more cover. Encourage native vegetation along the wetland/upland transitions and edges. This will reduce time and money spent eradicating undesirables.

For more information, visit: <https://www.calwaterfowl.org/conservation-programs/mallard-breeding-habitat/>



Reverse-cycle wetland: The opposite of seasonal wetlands, dry for most of the hunting season and providing the much needed summer water. These provide the best vegetation and invertebrate populations for broods, and discourage predator use.