

From	GAME MANAGEMENT AUTHORITY	Ref
Title	ARRANGEMENTS FOR THE 2026 STUBBLE QUAIL SEASON	File
		Due As soon as possible

1. Key Information

Background

The Stubble Quail is the most common quail species in Australia and the only native quail species that can be hunted in Victoria. The Wildlife (Game) Regulations 2024 (the Regulations) prescribe the annual arrangements for the Stubble Quail season, such as season dates, bag limits and hunting methods, including the use of gundogs. The season runs for approximately three months commencing on the first Saturday in April and concluding on 30 June. The daily bag limit is 20 birds. Seasonal arrangements have remained unchanged for several decades, except for 2023 where the season length was reduced to 35 days.

Approximately 20,800 people are licensed to hunt Stubble Quail in Victoria. Harvest surveys show the number of hunters who actually hunt each year fluctuates between approximately 3,000 – 8,000. In 2025, an estimated 7,800 licence holders self-identified as ‘Stubble Quail hunters.’ The average season harvest is approximately 170,000 birds per year. However, this can fluctuate in response to bird abundance, with harvest levels in the last decade or so ranging from a low of approximately 16,000 in 2014 to a high of approximately 678,000 in 2011 (this excludes COVID-affected years). The average quail harvested per hunter per hunting day is approximately six birds. See Attachment 1 for more information on Stubble Quail biology, ecology and hunting.

Systemic protections from overharvesting

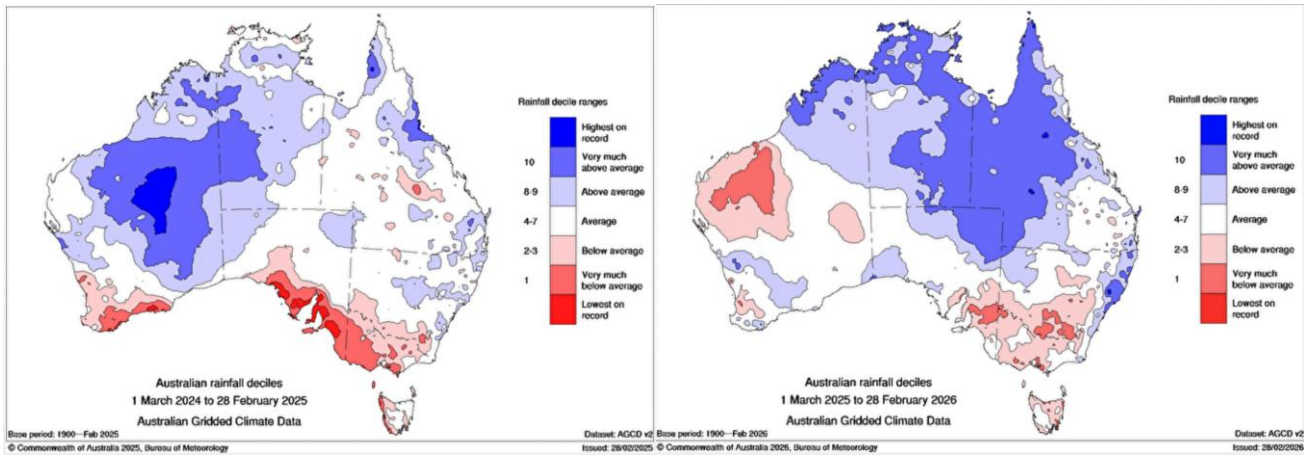
The majority of hunting occurs on private land. Permission to hunt must be obtained from the landowner/manager before being allowed to hunt with firearms. This prevents large concentrations of hunters in any one area. The number of hunters hunting at any one time and in an area is generally low, and hunters are dispersed in low densities. Stubble Quail are dispersed widely across the landscape in variety of habitats. This combination of dispersed hunting pressure, low hunter numbers and densities and the lack of bird concentration provides a level of protection from over-harvesting. Stubble Quail are also cryptic (secretive, well-camouflaged and not easy to see) and difficult to locate unless they are flushed while walking or located with the use of a gundog.

Current habitat conditions for Stubble Quail

Stubble Quail predominantly occur in open grasslands (native and improved) and croplands, and these environments benefitted from three years of high rainfall across eastern Australia associated with the 2020-2022 La Niña event. However, habitat conditions for Stubble Quail declined in 2024 following a period of below average rainfall over most of Victoria in the previous 12 months. In 2025, conditions improved slightly, particularly in the southwest of the state, although it is still drier than average (see Figure 1). Wetter conditions since winter 2025 have marginally increased pasture (grasses and crops) growth in Victoria (see Figure 2). Conditions declined in New South Wales but improved considerably in Queensland and marginally in South Australia.

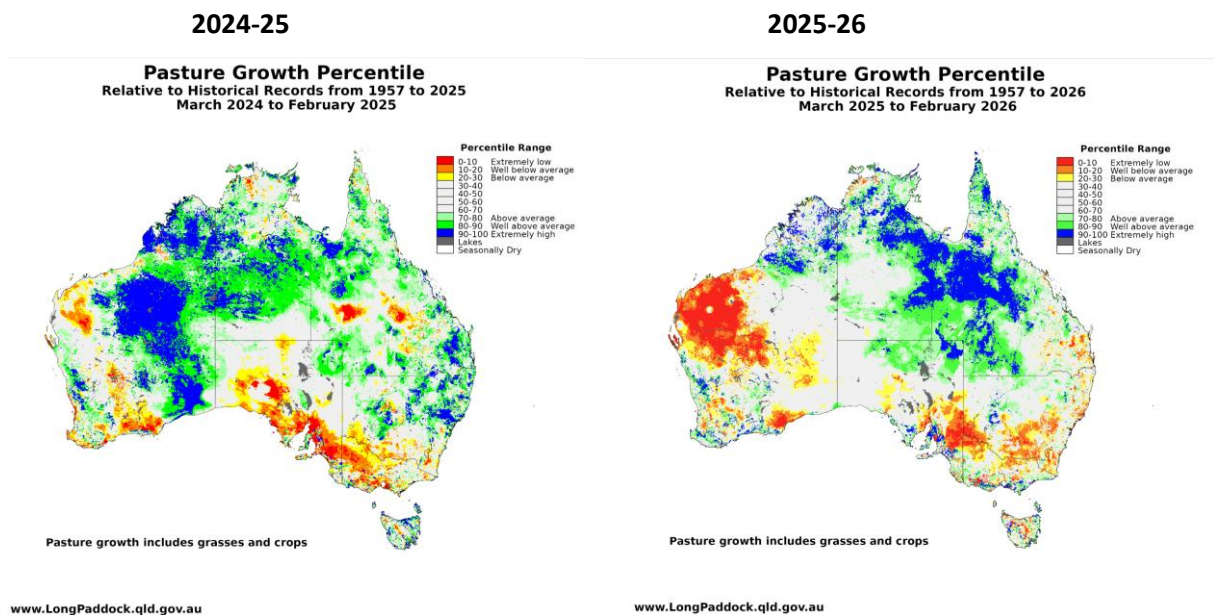
Stubble Quail take advantage of cropped areas, where they feed on spilled grain. The Commonwealth Department of Agriculture, Fisheries and Forestry forecast that winter crop production in Victoria is estimated to increase by up to 17% in 2025– 26. This is 11% above the 10-year average. Increased production follows rainfall in October that is expected to benefit yields and improve later-sown crops across most growing regions in Victoria.

Figure 1: Australian rainfall March- February, inclusive, for 2024/25 and 2025/26



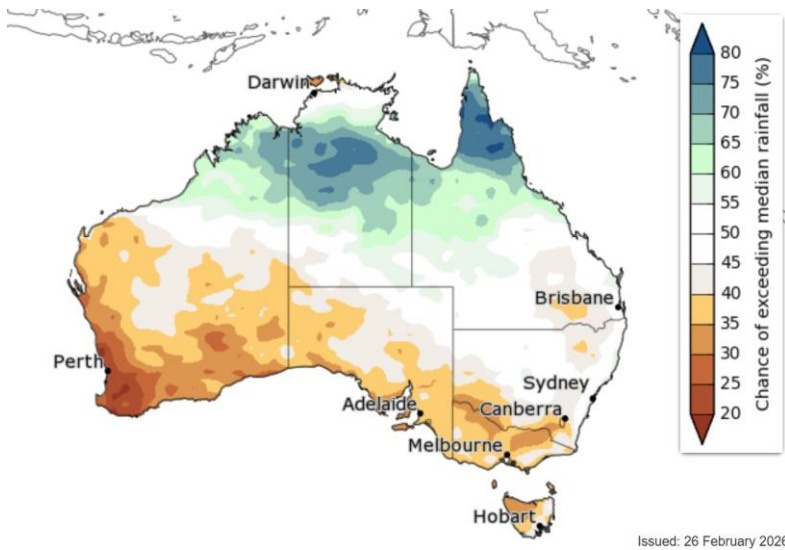
Source: Bureau of Meteorology

Figure 2: Pasture (grasses and crops) growth 2024-25 compared to 2025-26



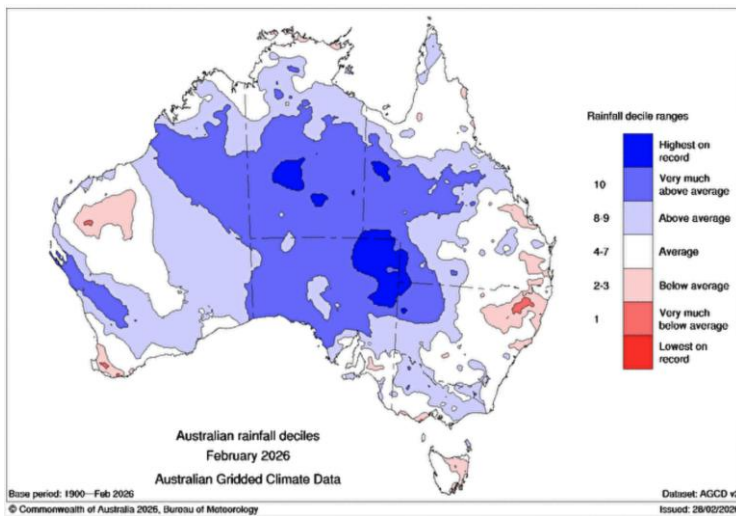
The Bureau of Meteorology predicts that much of Victoria will experience below median rainfall for the Autumn period (see Figure 3). March-May maximum temperatures are likely to be warmer than the median for most of Australia. However, large parts of Victoria experienced above average rainfall during February which may in the short-term offset the impacts of the predicted drier conditions expected over the coming months (see Figure 4).

Figure 3: Chance of exceeding median rainfall March-May 2026



Source: Bureau of Meteorology

Figure 4: Rainfall February 2026



Source: Bureau of Meteorology

Stubble Quail abundance

The GMA engages independent wildlife consultants to collect the field data and independent expert biometricians from the Arthur Rylah Institute for Environmental Research (ARI), Department of Energy, Environment and Climate Action (DEECA) to analyse the data and prepare a Stubble Quail abundance report. A preliminary report has been prepared to inform this brief. A final technical report will be completed in the coming months. A copy of the preliminary report is included at Attachment 2.

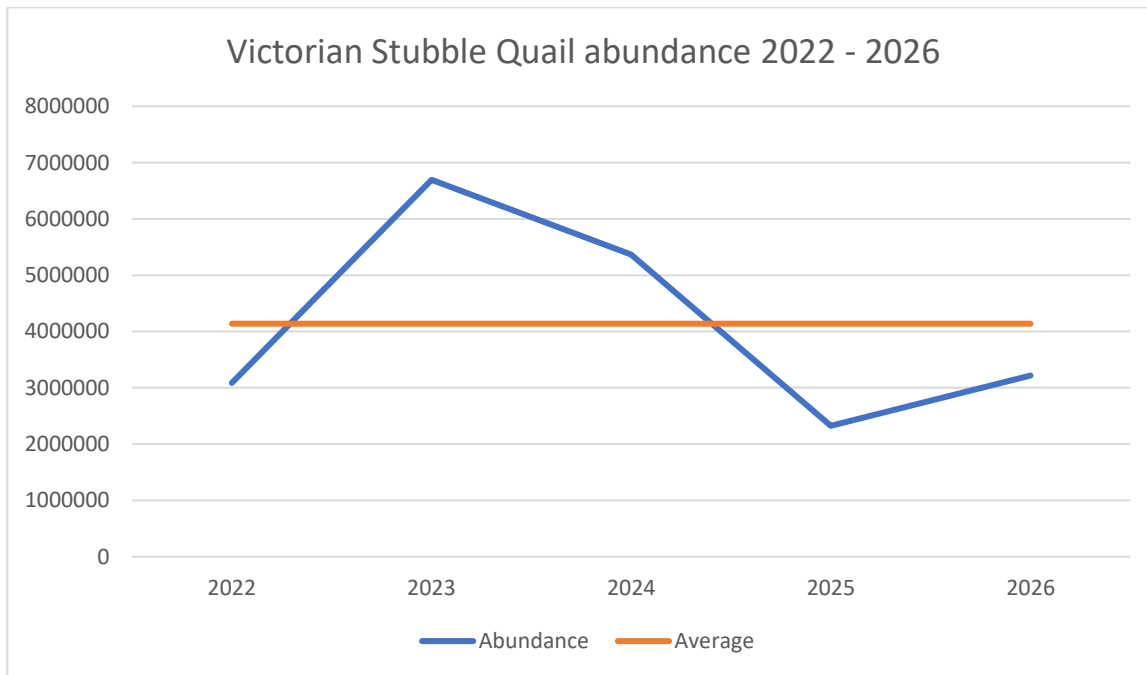
Line transect distance sampling surveys were undertaken for Stubble Quail across Victoria during January of 2026. Surveys were confined to habitat that was mapped as either pasture, dryland crops or native grassland. While Stubble Quail do occur in other habitat types, these three land use categories comprise the majority of its habitat in Victoria.

Model-based distance sampling analysis estimated a total abundance of 3.2 million Stubble Quail in Victoria (95% confidence interval (CI) 2.0 – 5.2 million). The abundance estimate was of good precision (coefficient of variation= 0.24) and shows an increase of 38% in the quail population since the previous (2025) survey which reported an estimated 2.3 million birds (95% CI, 1.50 – 3.6 million), which was the lowest abundance reported since surveys began in 2022 (see Figure 5). 2026 abundance is 78% of the average since surveys began in 2022.

There is a possibility that the final abundance figure included in the final technical report may differ from that recorded in the preliminary report, however, any change is not expected to be material.

The observed increase in abundance this year has coincided with improved average rainfall across Victoria in 2025 when compared with 2024 which may have affected Stubble Quail survival and reproduction. This is typical of Stubble Quail ecology as they are known to be a ‘boom and bust’ species. This means they experience dramatic fluctuation in population size, going through periods of rapid growth (‘boom’) followed by sharp declines (‘bust’) predominantly driven by rainfall and its influence on food availability. Abundance declined after 2023 following a period of below average rainfall and has increased this year following a period of slightly improved rainfall.

Figure 5: Victorian Stubble Quail abundance 2022 – 2026



Harvesting

When comparing the annual reported harvest with annual abundance, under current seasonal arrangements, harvest as a percentage of abundance has ranged from 2.1% to 8.5% (average 4.4%) of the total population since 2022 (see Table below).

In the USA, simulation harvest modelling determined that the most commonly harvested quail species (the Northern Bobwhite Quail) could be sustainably harvested at a rate of 20-25%. Thirty percent harvests resulted in a high probability of quasi-extinction (inability to sustain a stable or growing population) and 40% harvesting was not sustainable.

Sustainable harvest rates for Stubble Quail have not been determined for Victoria. However, those identified for Bobwhite Quail provide a guide for Victoria given the similarities between the species. Current harvest

rates under the existing regulatory regime are considered to fall within sustainable limits, even with wounding losses of up to 30%¹ factored in (see Table).

At the lower 95% confidence interval of 2.0 million Stubble Quail (which is similar to last year’s abundance), the long-term average harvest of 170,000 birds equates to an 8.5% harvest which is well within assumed sustainable limits. At the reported abundance of 3.2 million birds for 2026, the long-term harvest would constitute 5.3% of the total abundance and at the upper 95% confidence interval of 5.2 million birds, 3.3%. Hence, proceeding with the prescribed daily bag limit of 20 Stubble Quail and the season length for the 2026 season is not considered to pose a risk to the conservation of the species.

Table: Victorian Stubble Quail abundance and harvest rates 2022 – 2026

Year	Abundance	Reported harvest	Total hunting losses (reported harvest + 30% wounding)	Reported harvest as a percentage of abundance	Total losses as a percentage of abundance
2022	3.1 million*	77,600	100,880	2.5	3.3
2023**	6.7 million	302,824	393,671	4.5	5.9
2024	5.4 million	457,399	594,619	8.5	11
2025	2.3 million	48,000	62,400	2.1	2.7
			Average	4.4	5.7
2026	3.2 million	N/A		N/A	N/A

* Abundance in 2022 was considered an underestimate. Survey methodology was later refined to achieve greater precision.

** 2023 season length was reduced to 35 days.

Recommendation

The GMA Board considers that the Victorian Stubble Quail population is at a level that can sustain harvests at the expected level under the current prescribed seasonal arrangements. Therefore, the GMA Board considers that variation from the prescribed hunting season arrangements for the 2026 season is not considered necessary for the ongoing sustainable management of the population. Population and environmental conditions will be monitored and reviewed prior to next year’s season to assess whether hunting arrangements require revision to ensure sustainability.

Social and economic impact

Given the GMA’s recommendation is to maintain the current prescribed seasonal arrangements, it has no social or economic impact on the government’s current policy position on Stubble Quail hunting.

Consideration of Flora and Fauna Guarantee Act 1988 (FFG Act) objectives

Quail hunting is not a listed threatening process under the FFG Act. However, the FFG Act Action Statement for Plains Wanderer identifies that hunting may impact the nationally critically endangered Plains Wanderer through off-target take (it superficially resembles a Stubble Quail) and disturbance (e.g. by gundogs). These issues are not considered to impact the species at a population level, and the GMA undertakes education to increase hunter awareness and compliance to address illegal hunting. Since 2025, gamebird hunters are required to complete mandatory education modules and tests before being granted or renewing a Game Licence. These modules include information on the Plains Wanderer.

The recommendations in this briefing are consistent with meeting the objectives of the FFG Act and do not conflict with any of its instruments. Conditions for Stubble Quail are such that hunting according to the prescribed requirements in the Wildlife (Game) Regulations 2024 would not put undue pressure on the species from overharvesting.

¹ The level of wounding in Stubble Quail hunting is not known. This level of wounding has been reported in Bobwhite Quail hunting in the USA.

2. Context

Stubble Quail season

The Wildlife (Game) Regulations 2024 prescribe the arrangements for the annual Stubble Quail hunting season. The prescribed bag limit is 20 birds per day and gundogs may be used to locate, flush and retrieve Stubble Quail. The prescribed season runs from the first Saturday in April to 30 June, each year. In 2026, the quail season would commence on 4 April and avoids a clash with the start of the 2026 duck season (18 March), allowing the GMA to focus compliance efforts over the opening weekend of the quail season.

The use of lead shot and electronic quail callers for hunting Stubble Quail are prohibited under the Wildlife (Game) Regulations 2024.

Role of the Game Management Authority in providing advice on game management

Under section 5(a) of the *Game Management Authority Act 2014* (GMA Act), an objective of the Game Management Authority (GMA) is to 'promote sustainability and responsibility in game hunting in Victoria.'

Under section 6(h), the GMA is to 'monitor, conduct research and analyse the environmental, social and economic impacts of game hunting and game management' and under section 6(i), the GMA may make recommendations to relevant Ministers in relation to:

- (i) game hunting and game management, and
- (iii) open and closed seasons and bag limits.

Section 8A 'Guiding principles' also requires the GMA to have regard to the following relevant principles when exercising its powers or performing its functions:

- (b) the principle of triple bottom-line assessment, which means an assessment of all the economic, social and environmental costs and benefits, taking into account externalities;
- (d) the principle of an evidence-based approach, which means considering the best available information when making decisions.

3. Consultation

ARI, DEECA, prepared the preliminary abundance report at Attachment 2.

4. Attachments

Attachment 1: Background on Stubble Quail biology, ecology and hunting

Attachment 2: Preliminary results from the 2026 survey of Stubble Quail in Victoria

Attachment 1

Biology and ecology

The Stubble Quail is the most common quail species in Australia. Its conservation status is listed as 'Least Concern' by the International Union for the Conservation of Nature. Stubble Quail are widespread and found throughout all states and territories of Australia. It is a nomadic species capable of long-distance movements and can respond rapidly to changing environmental conditions. It is a ground-dwelling bird that can be found in a diverse range of habitats, from very dry parts of Australia to alpine grasslands.

Stubble Quail prefer grassland made up of native or introduced grasses and crops. It has adapted to agriculture and has likely increased its range following European settlement, despite significant reductions in its original habitat of native grasslands. Stubble Quail feed on seeds, other plant material and insects. Population abundance is strongly influenced by rainfall and the resultant impact on food availability. The species is highly productive and can breed at four months of age and lays average clutches of 7-8 eggs. Although its primary period of production is in Spring each year, it can breed multiple times in a year if conditions are favourable. These life-history traits make the species resilient to recreational hunting.

Changes in agricultural practices, such as the increased use of pesticides and herbicides, large monocultures of crops and more intensively grazed pastures, has been found to impact ground-dwelling gamebirds internationally. It is currently unknown whether this has impacted Stubble Quail populations in Australia or whether it has offset any benefits to the species from agriculture.

While research into the ecology and biology of the species is limited, the Commonwealth Scientific and Industrial Research Organisation (CSIRO) undertook research into the species' breeding, movements and diet in the 1970s-80s. Harvests have been monitored in Victoria using various methods since 1996. An ongoing abundance monitoring program commenced in Victoria in 2022 under the government's Sustainable Hunting Action Plan. The GMA recently entered into an agreement with Deakin University to research the spatial ecology and survivorship of the Stubble Quail and its exposure to agricultural chemicals.

Hunting

Stubble Quail hunters collectively hunt on average for about 21,000 days per season, however, this can be as high as 49,000 days, as was the case in 2024. The average seasonal harvest per active hunter is 47 birds.

Harvest surveys show that approximately 90% of quail hunting occurs on private land, in harvested crop stubble paddocks or on improved or mixed pasture or grasslands. There are 16 State Game Reserves available for Stubble Quail hunting on public land. Approximately 70-80% of hunters use a gundog to assist in hunting.

Wounding levels in Stubble Quail hunting are unknown. The extensive use of gundogs by hunters may lower the incidence of a wounding as the use of a well-trained dog is known to reduce wounding by locating birds, allowing hunters to move within effective shotgunning range and assisting in locating downed birds. Under the Sustainable Hunting Action Plan, a Stubble Quail Wounding Reduction Action Plan has been prepared in consultation with the Wounding Reduction Working Group, which is made up of key stakeholders. The Action Plan has been submitted to you for consideration.

The GMA provides education material to hunters on how to minimise wounding and the recently introduced mandatory knowledge test for native game bird hunters includes questions on wounding.

Population estimates for Stubble Quail in Victoria

A summary of the results of the January 2026 statewide survey

M.P. Scroggie and D.S.L Ramsey

Arthur Rylah Institute for Environmental Research
Interim Report February 2026

Project summary

- Stubble Quail are legally hunted in Victoria, with the hunting season and bag limits being regulated by the Game Management Authority (GMA). To help better understand the impacts of hunting on this species, the GMA conducts annual, statewide surveys to determine the abundance of the Stubble Quail population.
- Line-transect surveys totalling 238 km in length were conducted at 76 locations across the state with a total of 123 Stubble Quail being sighted (~0.5 birds per km). The data were analysed using distance sampling and a density surface model to infer the total abundance across the extent of likely habitat in the state.
- Our analysis of the 2026 survey data led to a population estimate of 3.2 million birds (95% CI 2.0 – 5.2 million). The precision of the estimate was good (CV= 0.24), and the estimate is also consistent with a slight increase in abundance since the previous (2025) survey which reported an estimate of 2.3 million (95% CI, 1.50 – 3.6 million) birds.

Background

Stubble Quail (*Coturnix pectoralis*) occupy grassland, pasture and cropland habitats across Victoria. Hunting of Stubble Quail is permitted during an annual hunting season. To help understand the impacts of hunting and to assist in determining seasonal arrangements for the hunting season for this species, the Game Management Authority commissions annual, statewide surveys with the aim of determining the total numbers of Stubble Quail in the state.

ARI has been commissioned by the GMA to analyse the data from the most recent survey (conducted during January 2026) and to provide an updated estimate of abundance to assist the GMA with setting the harvest arrangements for the forthcoming hunting season.

Approach

Line-transect distance sampling data was collected from 76 locations across the state. The data collection methods were identical to those used in previous surveys (Scroggie and Ramsey 2022; Scroggie and Ramsey 2023; Scroggie and Ramsey 2024; Scroggie and Ramsey 2025). In brief, teams of three observers walked the transects



in line-abreast (10m separation between observers) formation counting all ground-dwelling birds and measuring the perpendicular distance to each bird sighting from the transect line.

The line-transect data were analysed using conventional distance sampling (Buckland et al. 1993) to estimate the relationship between distance from the transect line and detection probability of groups of Stubble Quail, and by extension the density of Stubble Quail on each transect using the *R* package *Distance* (Miller et al. 2019). The density estimates from were then used to fit a model of spatial variation in density across the entire state using the package *dsm* (Miller et al. 2013). The influence of a variety of habitat and climatic variables on variation in density was explored as part of the modelling process with the final model including only a bivariate spatial smoothing term.

We use the spatial model of Stubble Quail density to infer the total abundance across Victoria (limited to habitat mapped as pasture, crop or grassland) and to obtain estimates for each Catchment Management Authority (CMA) area. These estimates of abundance form the key results of the analysis.

Key findings

Population estimates (in thousands) for each CMA and for the entire state are given in Table 1. We estimated the total population of Stubble Quail at 3.2 million birds (95% CI 2.0 – 5.2 million). Estimates for the entire state, and for most CMA areas were less precise than in previous years (CV > 0.25). The poorest precision was recorded in the Mallee CMA (CV = 0.47)

Table 1. Population estimates (in thousands) for each Catchment Management Area (CMA) and for the entire state along with associated measures of uncertainty – confidence intervals (95 % CI) and coefficients of variation (CV).

CMA Area	Number of sites	Transect length (km)	Estimate (95 % CI)	Coefficient of Variation (CV)
Corangamite	4	12.0	581 (335 – 1,008)	0.29
East Gippsland	6	22.1	46 (22 – 96)	0.38
Glenelg Hopkins	10	22.7	1004 (548 – 1,837)	0.32
Goulburn Broken	5	18.0	162 (88 – 297)	0.32
Mallee	10	38.7	125 (52 – 300)	0.47
North Central	11	41.6	308 (176 – 539)	0.29
North East	9	22.7	43 (19 – 96)	0.43
Port Philip and Westernport	5	10.7	263 (160 – 431)	0.26
West Gippsland	7	23.6	369 (203 – 672)	0.31
Wimmera	10	26.5	321 (171 – 601)	0.33
TOTAL	76	238.6	3,220 (2,008 – 5,166)	0.24

The inferred spatial trend in the density of Stubble Quail is illustrated in Figure 1. Densities were highest in southern Victoria in areas close to the coast, where densities greater than 60 Stubble Quail per km² were predicted. In contrast, relatively low densities were predicted across much of the north of the state.

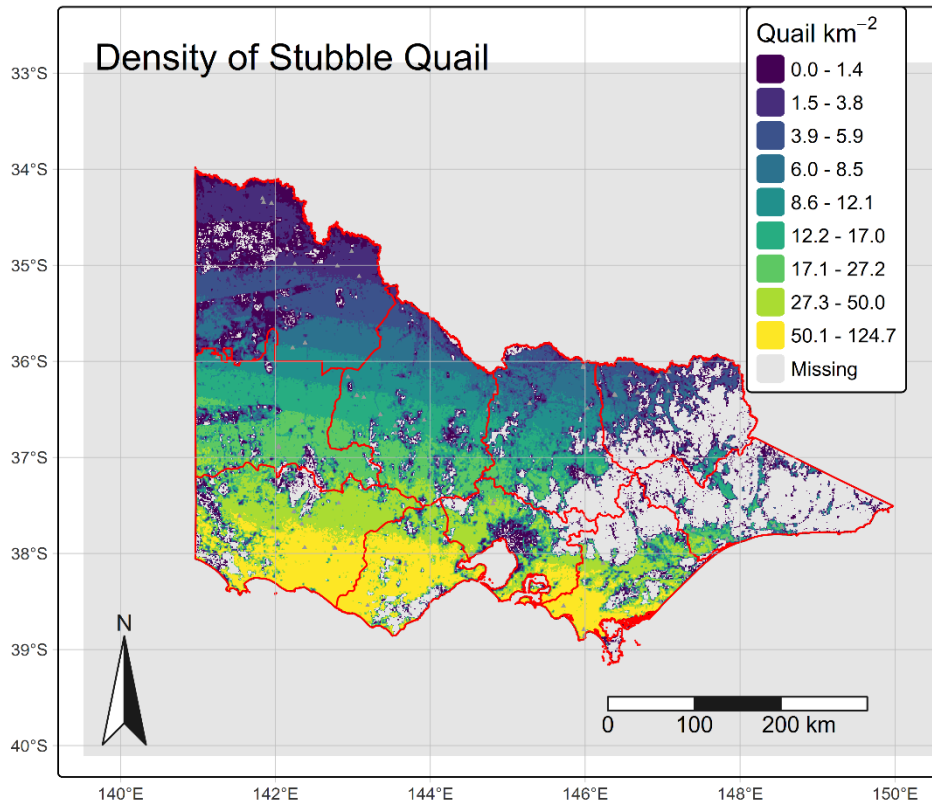


Figure 1. Spatial variation in estimated Stubble Quail abundance (individuals per km² of habitat).

Temporal trends in abundance of Stubble Quail for the entire state and for each CMA are illustrated in Figures 2 and 3 respectively. The point estimate of total abundance for 2026 was higher than that from 2025, although there are slightly broader uncertainty bounds around the 2026 estimate. Given the higher point estimate and broad overlap between the confidence intervals of the 2025 and 2026 estimates, there is no evidence to suggest that the population has declined since 2025 in spite of widespread drought conditions across much of Victoria during 2025.

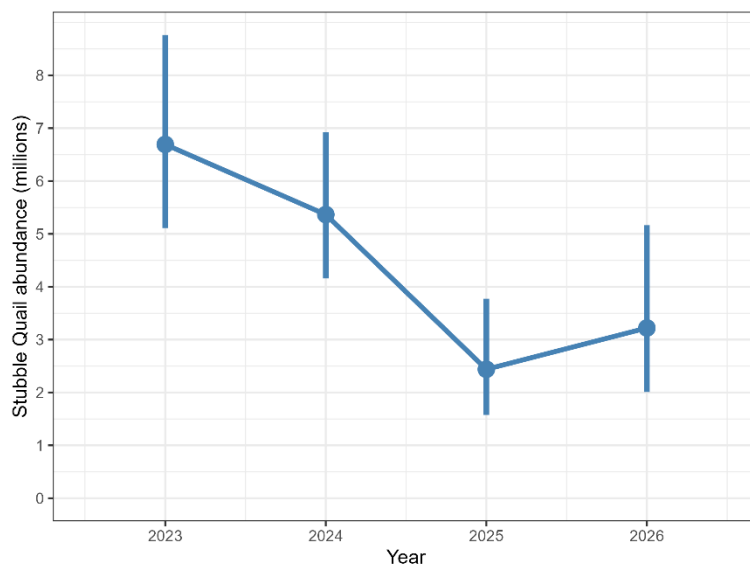


Figure 2. Estimated trends in abundance of Stubble Quail for the state of Victoria 2023-2026.

Temporal trends in abundance varied among CMAs (Figure 3), with the point estimates for four CMAs being lower than those from 2025, and those for six CMAs being higher. In most cases however, the degree of uncertainty in the successive estimates precludes a statistically unambiguous conclusion as to whether the population increased

or decreased. It is notable that the most obvious decreases occurred in the north of the state (e.g. Mallee, North Central, Goulburn Broken and North East), while marked increases were apparent in a few southern CMAs (Glenelg/Hopkins, Corangamite, Port Philip and Westernport, West Gippsland). A fuller statistical examination of regional trends will be made in the full technical report.

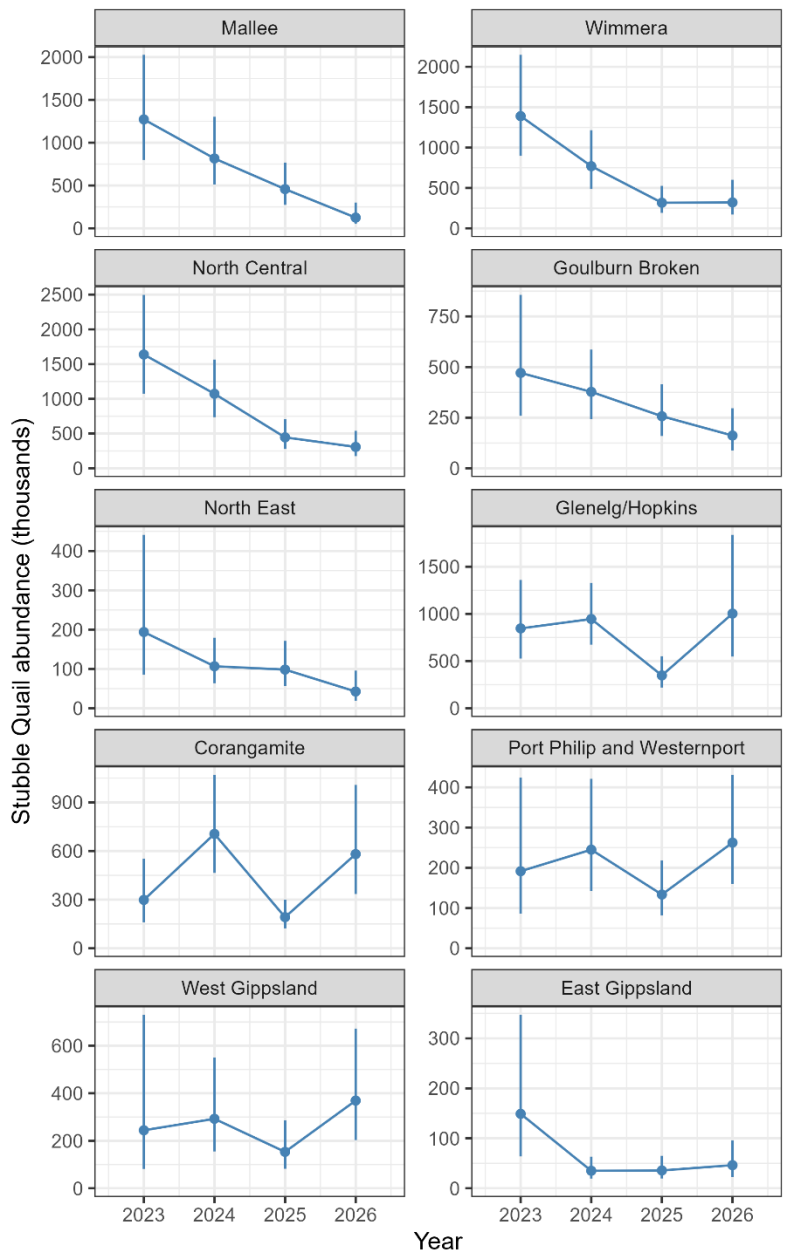


Figure 3. Estimated abundance of Stubble Quail in Victoria for individual CMA areas 2023-2026.

Recommendations for management/policy

The results of the analysis of the survey data show that Stubble Quail abundance across the state has not decreased significantly since the previous (2025) survey. Accordingly, GMA can have confidence that similar hunting arrangements to those that applied during 2025 are appropriate.

It is worth noting that the final inferences regarding abundance may change slightly in the final report as further refinements to the spatial density model are likely. However, it is very unlikely that these changes will result in changes to the abundance estimate that would require alteration to the harvest arrangements.

Given the drought conditions that have occurred across much of the state through 2025 it is notable that an overall decline has not occurred, although trends in regional (CMA) abundance have included both declines and

increases. If current drought conditions continue during 2026 then it is plausible (but not certain) that we may see a decline in abundance. The results of the next survey (due to be completed during January 2027) will be keenly anticipated for this reason.

The slightly poorer precision of this year's population estimates (despite being based on broadly similar survey methods and effort) is worthy of further investigation. Nevertheless, the precision of the estimates is adequate for the required decision-making context. Options for improving the estimates will be explored in the forthcoming technical report.

Further reading

Buckland ST, Anderson DR, Burnham KP and Laake JL (1993). 'Distance sampling: estimating abundance of biological populations'. (Springer: New York)

Miller DL, Burt ML, Rexstad EA and Thomas L (2013). Spatial models for distance sampling data: recent developments and future directions. *Methods in Ecology and Evolution* **4**, 1001–1010. doi:10.1111/2041-210X.12105

Miller DL, Rexstad E, Thomas L, Marshall L and Laake JL (2019). Distance sampling in R. *Journal of Statistical Software* **89**, 1–28. doi:10.18637/jss.v089.i01

Scroggie MP and Ramsey DSL (2022). Abundance estimates for Stubble Quail in Victoria: Results from the 2022 survey. Arthur Rylah Institute for Environment Research Technical Report Series No. 342. Arthur Rylah Institute for Environmental Research, Heidelberg. Available at: https://www.gma.vic.gov.au/__data/assets/pdf_file/0004/893110/Abundance-estimates-for-Stubble-Quail-in-Victoria-2022.pdf

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