



18 January 2021

**The Hon Daniel Andrews MP**

Premier

Level 1, 1 Treasury Place East Melbourne VIC 3002

By email only to: [daniel.andrews@parliament.vic.gov.au](mailto:daniel.andrews@parliament.vic.gov.au)

Dear Premier,

**PROPOSAL TO BAN THE 2021 DUCK HUNTING SEASON**

The Animal Law Institute (**'the Institute'**) wishes to express its concerns regarding recreational duck hunting in Victoria, and in particular, the 2021 Duck Hunting Season proceeding.

By way of background, the Institute is a registered charity and a not-for-profit community legal centre dedicated to protecting animals and advocating for their interests through the Australian legal system. The Institute is a member of peak bodies, including the Victorian Federation of Community Legal Centres and the National Association of Community Legal Centres.

As a community legal centre and animal protection organisation, the Institute holds animal protection concerns and no confidence that the Game Management Authority ("GMA") will properly manage this season. This is because the GMA; the relevant body responsible for the compliance and enforcement of the *Wildlife Regulations 2013 (Vic)*, the *Wildlife (Game) Regulations 2012 (Vic)* ('the Regulations') and other relevant guidelines, have demonstrated a track record of a lack of prosecution despite the significant complaints received each season to date.

Whilst we are aware that the Regulations have been amended in an effort to ensure greater compliance and to afford the GMA greater control over the years, the reality is that there are



multiple examples of participants failing to comply with the Regulations each season, including the inhumane killing of both ducks and other wild birds (which are largely prohibited from hunting in any event) and the recovery and collection of the ducks in previous seasons. Despite the GMA also producing “Fact Sheets” for the season in respect of these issues, we consider that the Regulations which purport to protect animal ‘welfare’ continue to be flouted.

The Institute notes questionable findings in the report; the 2017 Pegasus Economics Report<sup>i</sup>, which found that the GMA were unable to ensure compliance with the Regulations in previous seasons, explicitly stating *'non-compliance with hunting laws is commonplace and widespread'*. Whilst in 2020, the GMA produced an update in response to some of these findings with additional measures to be taken, the Institute holds very little confidence in participants complying with these Regulations. A recent survey of participants in past Victorian seasons supports the contention that they have very little animal welfare awareness<sup>iiii</sup>, including knowing which bird species are prohibited from hunting and wounding and how to ensure the humane treatment of water birds.

Unlike previous seasons which have taken place after a drought, a report; the “Aerial Survey Wetland Birds in Eastern Australia – Annual Report” released in October 2020<sup>iv</sup>, indicates that water bird populations are still in decline and down by approximately a quarter of their population. Given the lack of compliance by participants and proper oversight by the GMA, the Institute remains concerned that wild bird populations will continue to decrease and future breeding will once again be affected in the event the season takes place.

The Institute is also wary of a further season taking place for the benefit of a very low percentage of the Victorian population who partake in recreational duck hunting in contrast with the likely negative animal ‘welfare’ implications of hunting (noting that a majority of Victorians are against recreational duck hunting and that the Institute does not condone hunting in any form). We do not believe proceeding with the season to be proportionate.



The Institute has also been made aware of not only the Regulations not being complied with in the 2020 season, but that participants also committing other offences connected to COVID19, such as gathering in large groups and not socially distancing, as well as committing certain criminal offences including drug use. Given these circumstances, the Institute holds no confidence that participants will comply with the Regulations and/or not commit animal cruelty offences in breach of the *Prevention of Cruelty to Animals Act 1986* (Vic) this season.

Given the above and the inherent cruelty in the recreational hunting of ducks, we implore you to consider banning the 2021 duck hunting season and to consider banning future seasons in line with other States, including Western Australia, Queensland and New South Wales.

Should you wish to discuss these proposals further, please contact the writers below on behalf of the Institute.

Yours faithfully,

A handwritten signature in blue ink, appearing to read "Nicky Neville-Jones".

**Nicky Neville-Jones**

Former Chair of the "Animal Welfare Committee" of the LIV and Volunteer Lawyer at the Animal Law Institute.

A handwritten signature in blue ink, appearing to read "Avishan Bird".

**Avishan Bird**

Principal Lawyer of the Animal Law Institute

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<sup>i</sup> Pegasus Economic Report 2017, Roger Fisher & Alistair Davey:

[https://www.gma.vic.gov.au/\\_data/assets/pdf\\_file/0011/481682/Assessment-of-the-GMAs-compliance-and.pdf](https://www.gma.vic.gov.au/_data/assets/pdf_file/0011/481682/Assessment-of-the-GMAs-compliance-and.pdf)

<sup>iii</sup> Survey conducted by GMA and produced in August 2020 and **enclosed** herewith.

<sup>iv</sup> Centre for Economic Science Report October 2020 and **enclosed** herewith.

# **Game Management Authority**

**Summary report of hunters' knowledge survey findings**

**August 2020**

## Table of contents

<b>Executive summary</b> .....	<b>1</b>
<b>Introduction</b> .....	<b>6</b>
<b>Research background</b> .....	<b>6</b>
<b>Research process</b> .....	<b>7</b>
Developing questions .....	7
Focus groups .....	7
Online survey .....	8
Response sample .....	9
<b>Survey results by module and question</b> .....	<b>12</b>
General module .....	13
Deer general module .....	20
Deer firearm module .....	25
Deer bow module .....	29
Deer hound module .....	33
Deer dog module .....	38
Duck and quail general module .....	42
Duck dog module .....	56
<b>Whole of survey results</b> .....	<b>61</b>
<b>Conclusions and considerations</b> .....	<b>63</b>
<b>Appendix A: Survey participant details</b> .....	<b>64</b>
<b>Appendix B: Demographic comparisons</b> .....	<b>67</b>

# Executive summary

## Background

The Game Management Authority, together with a number of other government agencies and hunting organisations, provides a range of education materials to recreational hunters to maximise their understanding of the law and good hunting practice in order to achieve safe and sustainable hunting and maximise animal welfare outcomes. The extent to which hunters access and understand this information is unknown.

In response, the Game Management Authority (GMA) decided to establish the level of understanding that new and experienced licensed recreational game hunters have of:

- ◁ current game hunting laws
- ◁ good hunting practice (e.g. humane, effective and efficient hunting techniques and practices), and
- ◁ safe hunting.

As well, the GMA wanted to identify factors that may influence hunters' level of understanding of game hunting laws and good hunting practice, like length of hunting experience, age, level of education, membership of a hunting organisation, social media use, etc. Through understanding the current knowledge of Victorian recreational Game Licence holders (referred to as a baseline), the GMA can better shape and target its future hunter education programs and determine what additional measures (e.g. introduction of a Game Licence test) might be required to ensure hunters have a minimum standard of knowledge and the community has confidence that hunting will be conducted sustainably and responsibly. At this stage, GMA also proposes to repeat the baseline survey at a later date so that the impact of current and future education programs or test requirements can be accurately measured.

### Note

Please note that this is an abridged version of the full report.

The full report included all questions and answers contained in the survey. Those questions and answers may be used in future for similar surveys to measure the effectiveness of education/extension programs or other interventions (e.g. testing) and have, therefore, been removed from this version to ensure the integrity of future performance monitoring. The 'questions' contained in this report have been 'characterised' or summarised from the actual test questions, but are provided to give an understanding of the nature of the questions posed so the reader can see areas of strength or weakness in the level of understanding on subject matters. Answers have been removed.

## Hunter knowledge research project

To achieve this purpose, the GMA engaged Australian Survey Research (ASR) in June 2019 to research Victorian licensed game hunters about their baseline knowledge.

The research had four phases:

1. Developing survey questions which GMA project staff initiated and ASR staff refined.
2. Focus groups. Eight focus groups with 60 licenced hunters in total were conducted in outer Melbourne and regional Victoria to seek feedback on what hunters considered important to hunt safely and legally and feedback on the survey questions.
3. Online web survey (survey) of licenced hunters with email addresses and/or mobile phone numbers held by GMA. A total of 5,318 licenced hunters participated in the survey which generated a sufficient sample, both in numbers and profile to be representative of the entire population of hunters with a Victorian Game Licence.
4. Analysis and reporting. This focused on the proportions of correct and incorrect answers at a question as well as licence type level.

## **Baseline knowledge survey**

At the start of the survey, respondents were asked about the game species they hunted in Victoria and the method used to hunt game. Based on their responses to these questions, respondents were shown applicable sets of questions (modules) in the survey. There were many possible ways a respondent could move through the survey, with different combinations of questions presented.

The survey comprised 108 survey questions spread across eight modules as well as demographic questions which were only asked to provide detailed information about who answered which questions more or less correctly. All questions included a question stem and then a set of answer options were presented. Some questions required one correct response while other questions required multiple responses (as in select all correct answers). Respondents were advised if single or multiple answers were required.

The eight modules were:

1. General (16 questions) – presented to all survey respondents
2. Deer general (12 questions) - presented to respondents who indicated that they hunted for game deer
3. Deer firearm (9 questions) - presented to respondents who indicated that they hunted for game deer using a firearm
4. Deer bow (8 questions) - presented to respondents who indicated that they hunted for game deer using a bow / crossbow
5. Deer hound (10 questions) - presented to respondents who indicated that they hunted for game deer using hounds
6. Deer dog (8 questions) - presented to respondents who indicated that they hunted for game deer using gun dogs/deer hunting dogs
7. Duck and quail general module (32 questions across three sub-modules of duck general, duck method and quail) - presented to respondents who indicated that they hunted for game ducks and/or stubble quail
8. Duck dog (12 questions) - presented to respondents who indicated that they hunted for game birds (duck and quail) using dogs.

All survey questions were compulsory each with randomised answer options and randomised presentation order within modules.

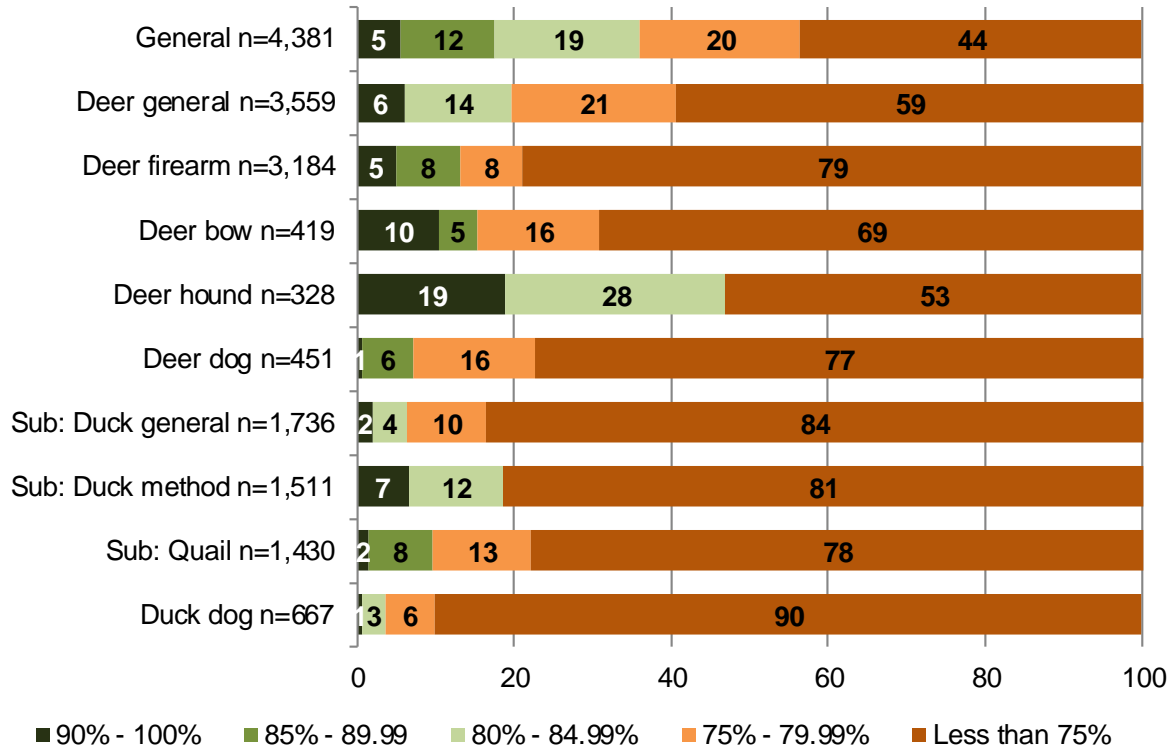
## Whole of survey results

Module analysis indicated that the Deer hound and General modules had the highest proportion of respondents who answered more of the questions correctly, while the Duck dog and Duck general modules had the lowest proportion of correct responses. The chart below includes only respondents who answered all questions within a module. Note that the chart immediately below is about modules and not about how a respondent answered across all modules.

### Proportion of correct responses within module

Base: All respondents in module, n counts displayed in chart rows

Only responses where all questions were answered within a module are shown



There were a number of common sets of modules that were presented to respondents. These are referred to as 'scenarios'. For example, a respondent who indicated that they hunted for deer only and with a bow only were presented the following modules: general, deer general and deer bow. A total of 36 scenarios were identified. Analysis was conducted to calculate the number of correct responses per scenario. The chart directly below shows the results of the analysis for scenarios that had 50 or more respondents who **answered all questions** within a scenario.

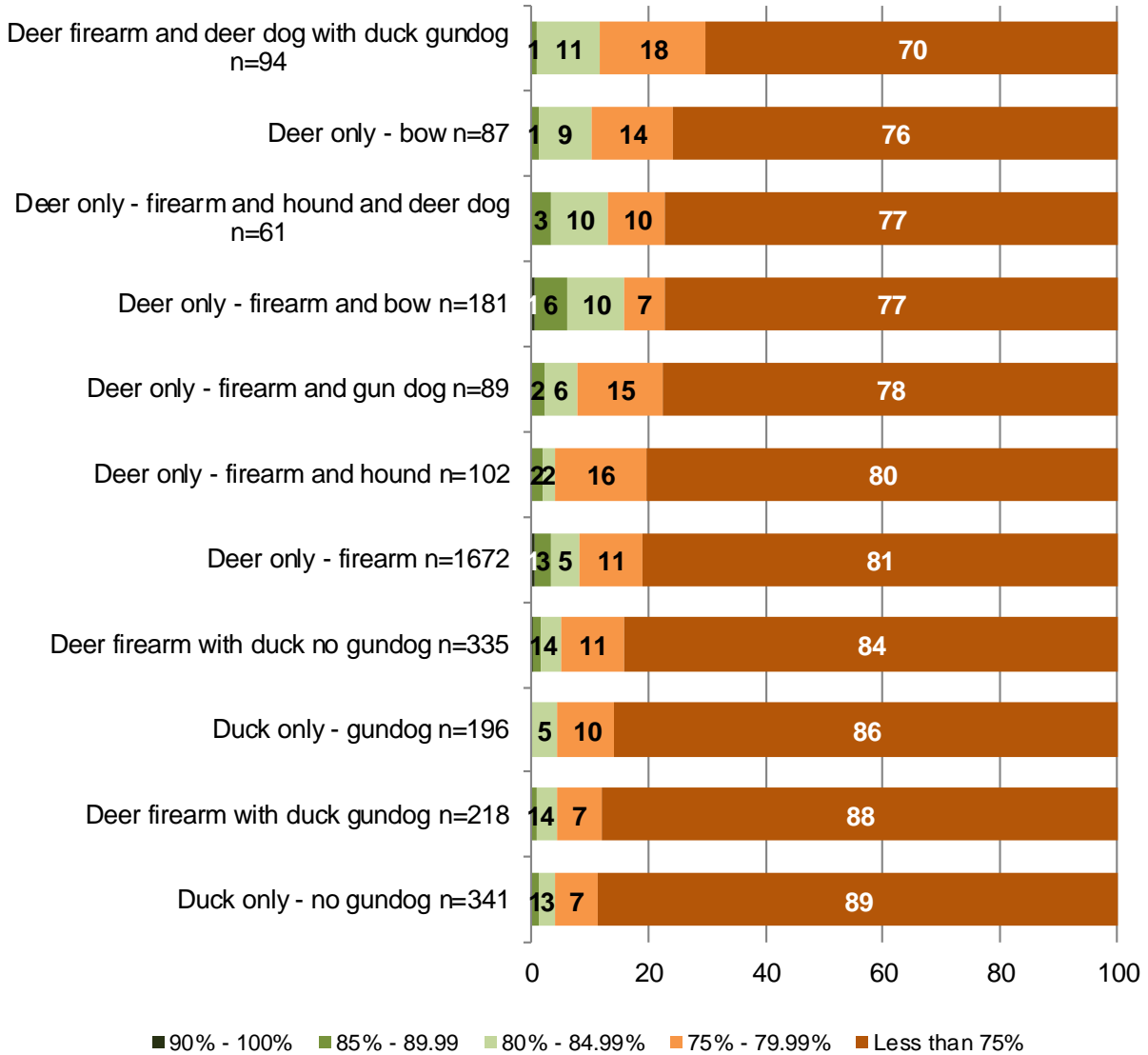
No respondents achieved 100% by answering all questions correctly. The scenario Deer only - firearm and bow had the highest proportion of correct answers, whereas relatively fewer respondents correctly answered Duck only – no gundog and Deer firearm with Duck gundog.



### Proportion of correct responses within scenario

Base: All respondents in scenario, n counts displayed in chart rows

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 Only responses where all questions were answered within a scenario are shown



## Demographic differences

Detailed demographic analysis was conducted on each question using eight demographic sub-groups, including age, hunting experience, membership of hunting-related club, etc. Results were analysed for statistically significant differences using a z test at the 95% confidence level (see Appendix B). As a general pattern, those with higher levels of education, spoke English at home (non-culturally and linguistically diverse, non-CALD) and were members of one or more hunting-related clubs tended to answer questions more correctly than other demographic groups.

In most modules while there were some differences when looking at age, hunting experience, social media use and location (as in metro / regional) sub-groups, there were no consistent patterns of answering for these demographic comparisons.

Deer bow, Deer hound and Deer dog modules had many fewer, if any, differences between any sub-groups.

# Introduction

The Game Management Authority, together with a number of other government agencies and hunting organisations, provides a range of education materials to recreational hunters to maximise their understanding of the law and good hunting practice in order to achieve safe and sustainable hunting and maximise animal welfare outcomes. The extent to which hunters access and understand this information is unknown.

In response, the Game Management Authority (GMA) decided to establish the level of understanding that new and experienced licensed recreational game hunters have of:

- ◁ current game hunting laws
- ◁ good hunting practice (e.g. humane, effective and efficient hunting techniques and practices), and
- ◁ safe hunting.

As well, the GMA wanted to identify factors that may influence hunters' level of understanding of game hunting laws and good hunting practice, like length of hunting experience, age, level of education, membership of a hunting organisation, social media use, etc. To achieve this purpose, the GMA engaged Australian Survey Research (ASR) in June 2019 to research Victorian licensed game hunters about their baseline knowledge.

This report outlines the research process, baseline survey results at an individual question level, as well as whole of survey level. Within survey modules (sets of questions) differences between sub-groups of survey respondents are discussed.

# Research background

Presently, the majority of Victorian Game Licence holders do not have to undergo any knowledge testing prior to obtaining a recreational Game Licence. Most simply apply and pay a fee before receiving a licence and can then hunt game animals—as long as they have the other appropriate authorisations to use firearms/crossbows.

Exceptions to this general pattern exist for hound hunters (who must pass a test on the law and safe and humane hound hunting practices) and game duck hunters who must successfully complete a waterfowl identification test (which tests their ability to correctly identify game and non-game waterfowl). With these exceptions, there are no other testing requirements in place in Victoria, which is inconsistent with approaches in New South Wales and other jurisdictions throughout the world, including North America and parts of Europe.

Through understanding the current knowledge of Victorian recreational Game Licence holders (referred to as a baseline), the GMA can inform the design and content of any test as well as better shape and target its future hunter education programs. At this stage, the GMA also proposes to repeat the baseline survey at a later date so that the impact of education programs or any knowledge test can be accurately measured.

# Research process

The research had four phases:

1. Developing survey questions
2. Focus groups
3. Online web survey (survey)
4. Analysis and reporting (covered in later sections to this one).

## Developing questions

After GMA and ASR workshopped the concepts of and issues around developing a baseline knowledge survey, GMA staff identified priority knowledge areas that needed to be tested, focussing on areas of high risk/high harm. Using this preparation, GMA project staff developed a draft set of questions and answers within topics, like general (for all hunters irrespective of species hunted or method of hunting), general deer hunting questions, deer hunting with hounds questions, etc. They produced several versions of each question, with some questions asked positively and others asked negatively.

To minimise the possibility of respondents sharing answers, several versions of the survey were developed. ASR and the GMA both refined the questions to a level that could be surveyed with hunters. In the end, a single draft version of the survey was produced for testing in the next phase of focus groups.

## Focus groups

In the second phase of the research, ASR conducted focus groups in November 2019 throughout Victoria. Using licence holders' residential postcodes (from licence applications), ASR identified local government areas with higher densities of licence holders. In total eight focus groups were conducted—four in regional Victoria (Benalla, Bendigo, Bairnsdale and Traralgon) and four in outer Melbourne (Attwood, Werribee, Caroline Springs and Cranbourne).

Using GMA licence lists, licence holders with email addresses and who lived in the eight localities were identified and invited to participate in a group discussion which focused on knowledge needed to hunt game in Victoria. Those who registered an interest in the discussion and who were available for the night chosen in their area were invited to attend. Each participant was given a \$50 gift card for their involvement.

In total 60 licensed hunters participated in the discussions. While most were male, two females participated. Participants hunted a wide range of species, including pest animals, and there was a mix of deer, quail and duck hunters in all groups. Several participants hunted with hounds or dogs and two were bow hunters.

During group discussions, participants were asked what they thought was important for hunters to know or be aware of to hunt legally and recreationally for game in Victoria. After discussion, participants were asked to answer a paper survey with around 100 questions on various topics. When answering, participants focused on different parts of the survey and this was dependent on the primary game species they hunted. The next step of the group discussion was to seek feedback on what questions were difficult, too easy, missing, or needed clarification.

A summary report of focus groups outlined meeting dates and participation as well as identifying key themes in discussions. A detailed report of question and answer wording changes was prepared for the GMA's consideration. Focus group findings and further GMA staff input helped refine baseline survey question and answer wording.

## Online survey

Once the baseline survey was prepared, ASR entered the survey in its proprietary web surveying system, SurveyManager, which is hosted in Australia only.

### Survey set up

The initial part of the survey included a series of demographic questions about each survey respondent and focused on details that were not available through the GMA's licence file. Cognisant of the possibility of sharing among licence holders, all survey answers were randomised. Questions were displayed in sections (topics) and randomised within a section. In addition, survey respondents could only move forward within their survey session so that could not go back and change an answer, but they could return at a later time and continue answering from the last page they had saved.

### Choosing potential respondents

The GMA's licence file included contact information. All licence holders have a physical address recorded while only a proportion have an email address, and/or mobile phone number. ASR de-duplicated the file based on email addresses and mobile phone numbers and ended up with a file of 37,791 eligible and unique potential survey participants.

### Licence holder communication

The GMA and ASR project team had a detailed communications plan which included notifying key stakeholders including peak bodies, relevant Ministers' offices, GMA Customer Contact Centre staff and GMA staff generally about the nature and purpose of the research activity. A Q&A sheet was prepared for GMA staff.

On 3 March 2020, ASR sent an initial email invitation to licence holders with email addresses and a short SMS to those with mobile phone numbers only. In total 24,553 invitation emails and 13,238 SMS were sent initially. Invited licence holders with an email address who had not completed at the time of sending were sent two additional reminder emails on 11 and 16 March. Invited licence holders without email address but with a valid mobile phone number, were sent one additional SMS reminder on 11 March. The GMA also promoted the survey through its Facebook page on 1 and 15 March 2020.

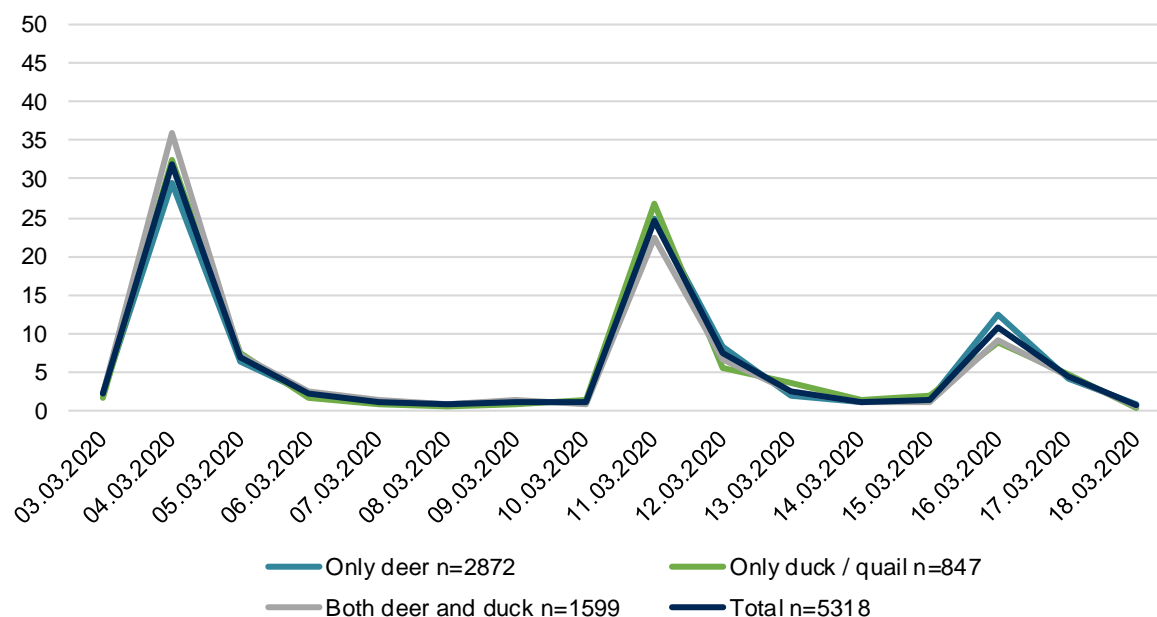
The survey was in-field from 3 March to 18 March 2020, inclusive. The first couple of days of the in-field period included a soft launch, meaning that ASR sent the invitation to a small sample, checked that respondents were having no issues with answering (like inappropriate logic or navigation), and then proceeded to invite the full sample.

## When licence holders responded

Chart 1 below shows the dates when licence holders responded. ASR sent two reminders and the response to these are shown in the two peaks after the initial invitation: 11 March and 16 March 2020.

Chart 1: Proportion of all responses by date

### Proportion of survey completions by date (%)



## Response sample

Table 1 and 2 below show that the survey sample (those who answered one or more survey questions) had a similar breakdown of licence type and location compared with both:

- ◁ the entire population of Victorian Game Licence holders and
- ◁ the sub-set of licence holders who had registered an email address and/or mobile phone number with their licence application to the GMA. The latter were those people who were invited to participate in the survey.

This is an excellent result. It indicates two things:

1. There was no non-response bias in the survey sample based on licence type and location compared with the invited sub-set and the entire population of licence holders.
2. Those licenced hunters who registered an email address and/or mobile phone with GMA have the same proportions of licence type and location compared with all licence holders, meaning they have a similar composition and are not biased, in terms of licence type and location.

It indicates that data (survey results) **did not need to be weighted**. Given the relatively low confidence intervals for each licence type and location, it also indicates that survey sample data overall can be used with confidence to represent the knowledge level of all Victorian Game Licence holders. Another way of saying this is that there were sufficient numbers of each licence type and location for the sample to be indicative of the population, irrespective of the response rate overall or for each sub-group. The exception to this statement is the small group of licence holders who had a licence type of or including 'game birds not including duck'. These hunters were licensed to

exclusively hunt native Stubble Quail and non-indigenous gamebirds. Given the small population size of this group, insufficient numbers of responses were achieved for the data to be representative of the entire 'game birds not including duck' licence type. Normal scientific research aims for a confidence interval of  $\pm 5\%$  at the 95% confidence level. See technical note below. For a detailed indication of the sample profile composition refer to Appendix A. Appendix B comprises breakdowns of results by each of the demographic profiling question.

Table 1: Population and sample comparison by permit type

Licence type (as provided by GMA)	Entire population (EP)		Population sub-set with email and/or mobile*		Survey sample		Confidence interval of sample based on EP*
	n	%	n	%	n	%	$\pm\%$
Deer (Stalking & Hounds)	2,741	5	2,008	5	324	6	5
Deer (Stalking & Hounds) & Game Birds including Duck	2,103	4	1,329	4	287	5	5
Deer (Stalking & Hounds) & Game Birds not including Duck	176	0	134	0	17	0	23
Deer (Stalking)	24,030	43	20,144	53	2,497	47	2
Deer (Stalking) & Game Birds including Duck	9,911	18	6,281	17	1,115	21	3
Deer (Stalking) & Game Birds not including Duck	2,576	5	2,120	6	211	4	7
Game birds including Duck	12,915	23	5,308	14	826	16	3
Game birds not including Duck	952	2	467	1	41	1	15
<b>Total</b>	<b>55,404</b>	<b>100</b>	<b>37,791</b>	<b>100</b>	<b>5,318</b>	<b>100</b>	<b>1</b>

\*At 95% confidence level ( $p < 0.05$ ). See technical note below for a detailed explanation of confidence intervals.

Table 2: Population and sample comparison by location

Location (based on postcode)	Entire population (EP)		Population sub-set with email and/or mobile*		Survey sample		Confidence interval of sample based on EP*
	n	%	n	%	n	%	$\pm\%$
Major city	27,406	50	19,235	51	2,566	49	2
Regional area	27,538	50	18,250	49	2,699	51	2
<b>Total</b>	<b>54,944</b>	<b>100</b>	<b>37,485</b>	<b>100</b>	<b>5,265</b>	<b>100</b>	<b>1</b>

\*At 95% confidence level ( $p < 0.05$ ). Table 2 includes those respondents with a valid postcode.

## TECHNICAL NOTE

Representativeness of a sample is often assessed at a 95% confidence level (accuracy) and a  $\pm 5\%$  confidence interval (precision).

The **confidence interval** (also called margin of error) is the plus-or-minus figure usually reported in newspaper or television opinion poll results. For example, if you use a confidence interval of 4 and 47% percent of your sample picks an answer you can be "sure" that if you had asked the question of the entire relevant population between 43% ( $47-4$ ) and 51% ( $47+4$ ) would have picked that answer.

The **confidence level** tells you how sure you can be. It is expressed as a percentage and represents how often the true percentage of the population who would pick an answer that lies within the confidence interval. The 95% confidence level means you can be 95% certain; the 99% confidence level means you can be 99% certain. Most researchers use the 95% confidence level.

When you put the confidence level and the confidence interval together, you can say that you are 95% sure that the true percentage of the population is between 43% and 51%. The wider the confidence interval you are willing to accept, the more certain you can be that the whole population answers would be within that range.

For example, if you asked a sample of 1000 people in a city which TV channel they preferred watching, and 60% said Channel A, you can be very certain that between 40% and 80% of all the people in the city actually do prefer that channel, but you cannot be so sure that between 59% and 61% of the people in the city prefer the channel.

Reference: [www.surveysystem.com/sscalc.htm](http://www.surveysystem.com/sscalc.htm)



# Survey results by module and question

In this section, answers for each survey question are presented a number of ways. There were 108 survey questions in total, spread across eight modules. The respondent count varied between questions and across modules. Please note that due to the sensitive nature of the questions and answers (e.g. they could be used for future testing or follow-up research), answers are not presented and questions have been “denatured” or summarised so they are not specific but do provide an indication of their nature.

## *How to read the results in the charts and tables*

Results for every question in the survey have been shown in tables and charts throughout this report.

The **tables** show the frequency distribution of the answers to a question, including the correct answer. The row/s with the correct result/s for a question are shaded green and **bolded**.

The **charts** show the proportion of correct and incorrect answers for all respondents and include the correct answer.

If a respondent did not answer a particular question, they were excluded from the tables and charts. This means that the bases for all questions fluctuates depending on the number of people who provided a **valid response**. All bases have been provided in the headers of the results for individual questions.

Numbers are presented throughout the report without decimal points. This means that small numbers (less than 0.5) of a percent will present as 0 in the tables. It also means that totals in the tables may not always add to 100 due to rounding. Where there are discrepancies between tables and charts, this is because decimal points are included to calculate the proportion of incorrect responses.

Some questions allowed respondents to select more than one answer. These were presented to respondents as check box style questions. In order for check box style question answers to be considered *correct* respondents needed to have selected ALL of the correct responses.

## General module

The questions in this module were displayed to all respondents, regardless of species and method of hunting.

### Summary table

The following table shows the percentage of correct and incorrect answers for each general module question, sorted by percent correct. The reference preceding each item in the table refers to the question reference which are shown in order in the later part of this section. The table excludes all respondents who did not see / answer a question. *Ö[ } q c responses* have been included in the incorrect percentage.

The results indicate that only seven questions were answered correctly by a large majority (87% or more) of respondents who provided a valid answer. Spotlighting, hunting hours, personal safety, interaction with an authorised officer may benefit from increased information / education.

Table 3: General module . summary of correct and incorrect responses

General module questions <i>Base: % of valid respondents (no answers excluded)</i>	Valid n	Correct %
G6: Hunting on private land	4,911	98
G16: Preparing to go game hunting in Victoria for the first time	5,022	97
G10: Alcohol and firearms	5,049	96
G9: Sources of game hunting information	5,049	95
G1: Crossing a fence while carrying a firearm	4,677	95
G13: Reporting illegal hunting	5,022	95
G5: Ethical and responsible hunting	4,911	87
G7: Safety and shooting	4,911	78
G4: Animal welfare	4,677	73
G14: Spotlighting	5,022	64
G15: Hours of the day for hunting	5,022	62
G8: Hunting clothing and safety	4,911	60
G11: Game species	5,049	53

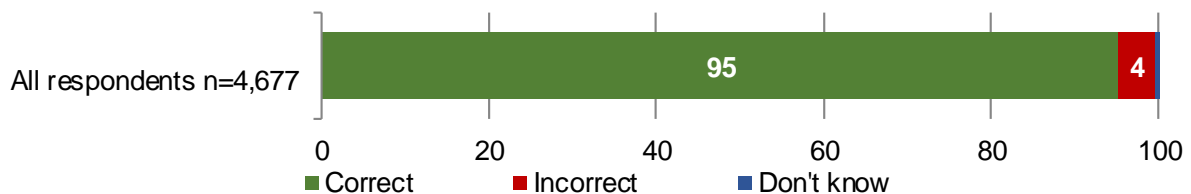
General module questions <i>Base: % of valid respondents (no answers excluded)</i>	Valid n	Correct %
G3: Personal safety	4,677	42
G2: Interacting with an authorised officer	4,677	26
G12: Cultural sites	5,049	25

## Individual question results

### **G1: Crossing a fence while carrying a firearm**

The majority (95%) of respondents answered the question correctly.

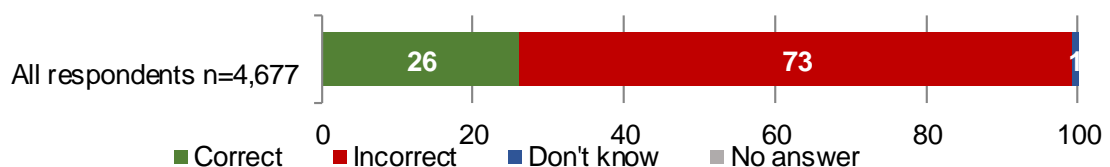
Chart 2: General module - Crossing a fence while carrying a firearm



### **G2: Interacting with an authorised officer**

Only 26% of respondents selected all three elements of the question correctly.

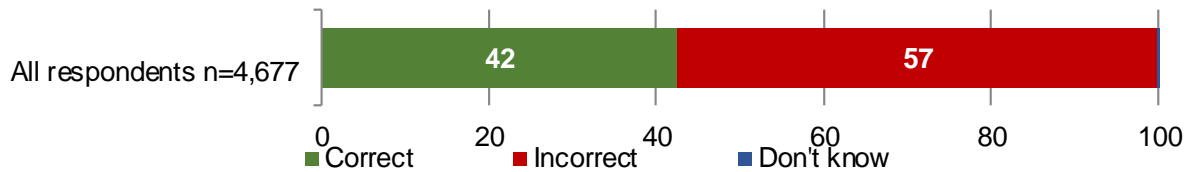
Chart 3: General module - Interacting with an authorised officer



### G3: Personal safety

Four options needed to be chosen to answer this question correctly and while 96% correctly chose the first of these options, 42% selected all four correct options.

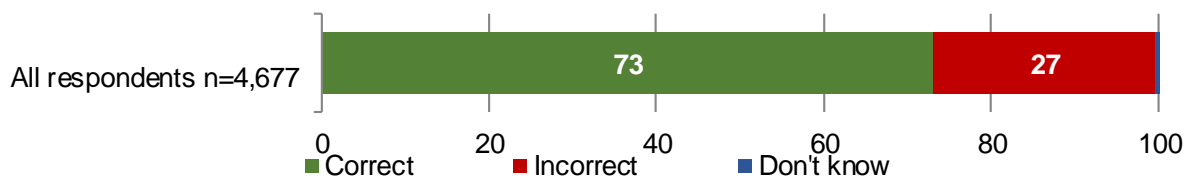
Chart 4: General module - Personal safety



### G4: Animal welfare

Three options needed to be chosen to answer this question correctly and while 88% (not necessarily the same 88% of respondents) chose two of the three correct options, 73% selected all three correct options.

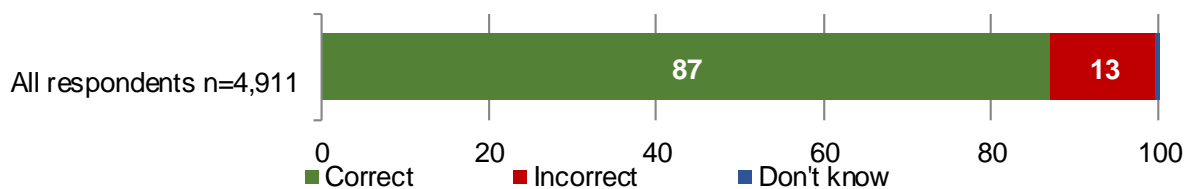
Chart 5: General module - Animal welfare



### G5: Ethical and responsible hunting

Three options needed to be chosen to answer this question correctly, while 93%-95% chose at least one of the correct options, 87% selected all three correct options.

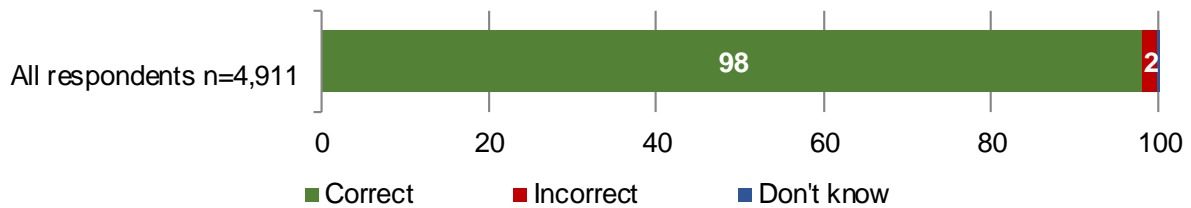
Chart 6: General module - Ethical and responsible hunting



### G6: Hunting on private land

98% of respondents chose the correct answer to this question.

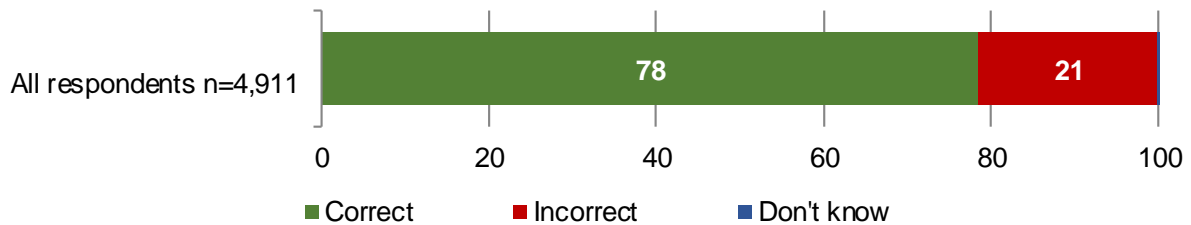
Chart 7: General module - Hunting on private land



### G7: Safety and shooting

Two options were required to answer this question correctly and while 95% chose the most popular correct option, 78% selected both correct options.

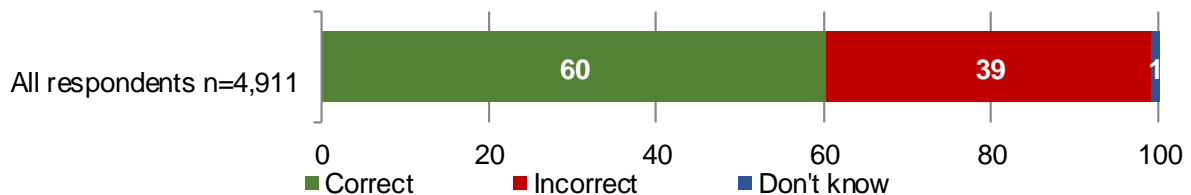
Chart 8: General module . Safety and shooting



### G8: Hunting clothing and safety

Two options were required to answer this question correctly and while 94% chose the most popular correct option, 60% chose both correct options.

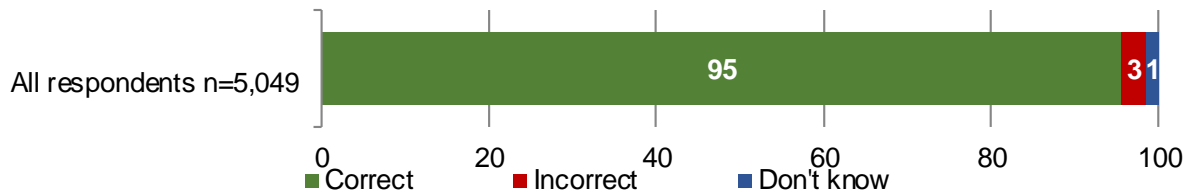
Chart 9: General module . Hunting clothing and safety



### G9: Sources of game hunting information

95% of respondents answered this question correctly.

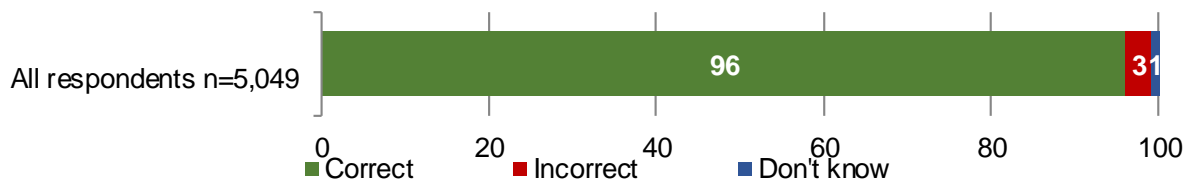
Chart 10: General module . Sources of game hunting information



### G10: Alcohol and firearms

96% of respondents answered this question correctly.

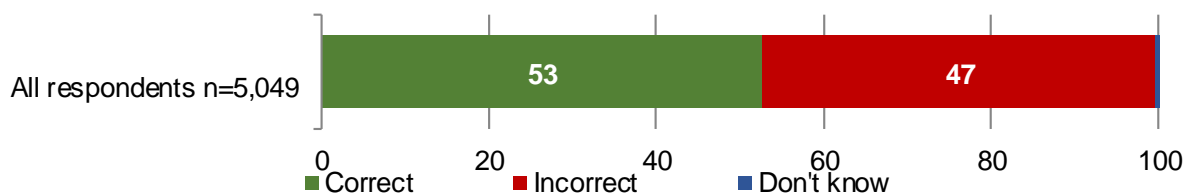
Chart 11: General module . Alcohol and firearms



### G11: Game species

Three answers were required to answer this question correctly. While 97% of respondents chose the most popular correct option, 53% chose all three correct answers.

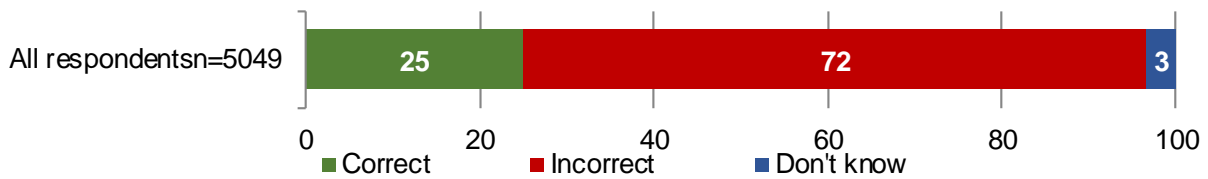
Chart 12: General module . Game species



### G12: Cultural sites

Two answers were required to answer the question correctly and while 95% selected one of the correct answers, 27% selected the other, resulting in a net correct score of 25% for this question.

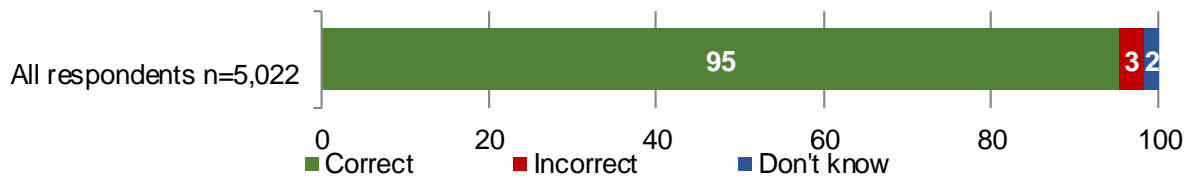
Chart 13: General module . Cultural sites



### G13: Reporting illegal hunting

95% of respondents chose the correct answer to this question.

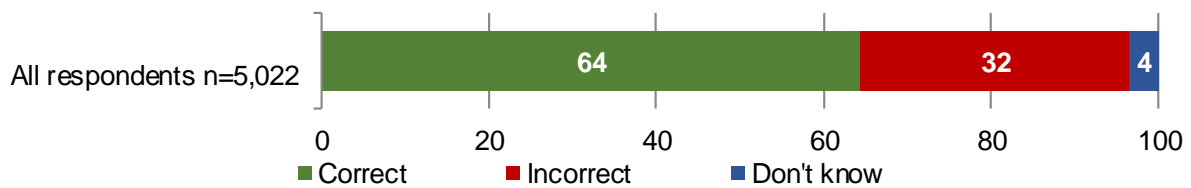
Chart 14: General module . Reporting illegal hunting



### G14: Spotlighting

64% chose the correct answer for this question.

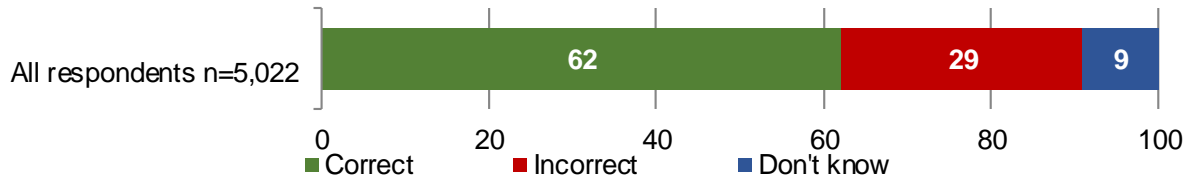
Chart 15: General module . Spotlighting



**G15: Hours of the day for hunting**

62% of respondents chose the correct answer.

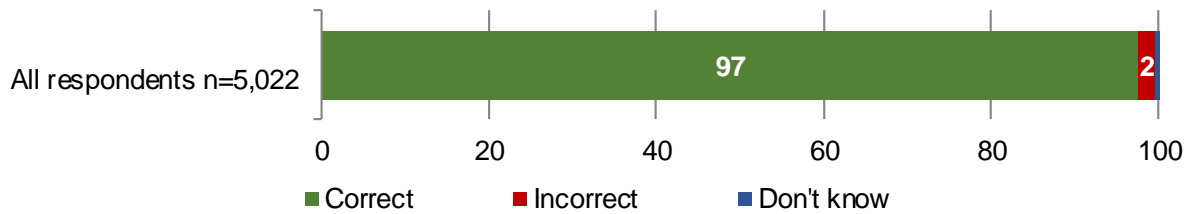
Chart 16: General module . Hours of the day for hunting



**G16: Preparing to go game hunting in Victoria for the first time**

97% of respondents chose the correct answer to this question.

Chart 17: General module - Preparing to go game hunting in Victoria for the first time





## Deer general module

The questions in this module were shown to all respondents who indicated that they hunted deer, irrespective of their deer hunting method.

### Summary table

The following table shows the percentage of correct and incorrect answers for each deer general module question, sorted by percent correct. The reference preceding each item in the table refers to the question reference which are shown in order in the following part of this section. The table excludes all respondents who did not see / answer a question. Do not correct responses have been included in the incorrect percentage.

Five questions achieved a percent correct score of 86% or above. However, hunting in national parks, transporting deer, storing ammunition, spotlighting and hog deer questions could all benefit from increased information / education. Note that a high percentage of people answered 'no' (and were therefore counted as incorrect) for the two hog deer questions in this module. If licence holders did not hunt hog deer, focus group feedback indicated that they tended not to know the answers to these questions.

Table 4: Deer general module - summary of correct and incorrect responses

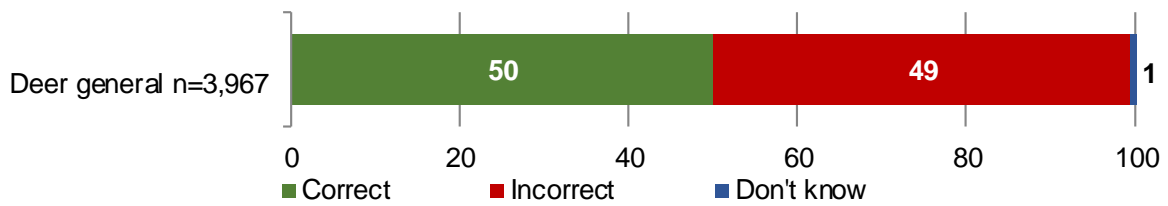
Deer general module questions Base: % of valid respondents (no answers excluded)	Valid n	Correct %
DG2: Wounding	3,967	99
DG3: Permission and private property	3,967	99
DG4: Disposing of deer carcass remains	3,967	93
DG11: Ammunition storage in a vehicle	3,559	86
DG12: Open season dates for deer	3,559	86
DG7: Stalking in national parks	3,738	69
DG6: Hog deer harvest limits	3,738	64
DG10: Personal safety while carrying a deer trophy	3,559	58
DG1: Transporting a harvested deer	3,967	50
DG5: Storing ammunition	3,738	46
DG8: Spotlight regulations	3,738	35
DG9: Unused hog deer tags	3,559	4

## Individual question results

### DG1: Transporting a harvested deer

Two options were required to answer this question correctly and while 70% of respondents chose one of the correct options, 50% of those who answered, chose both.

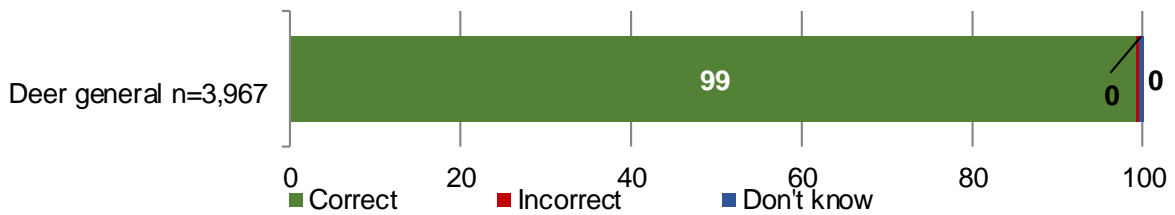
Chart 18: Deer general module . Transporting a harvested deer



### DG2: Wounding

Nearly all people who answered this question answered it correctly (99%).

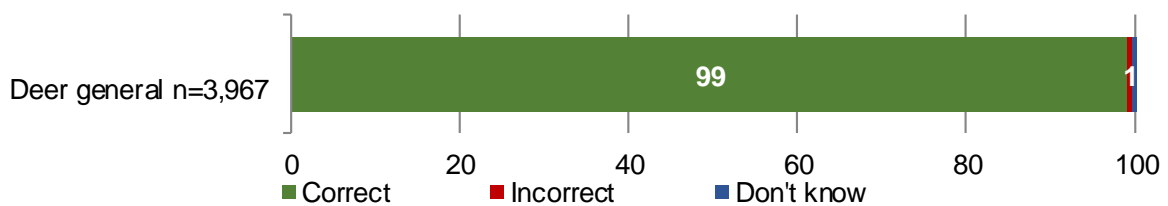
Chart 19: Deer general module - Wounding



### DG3: Permission and private property

Nearly all people who answered this question answered it correctly (99%).

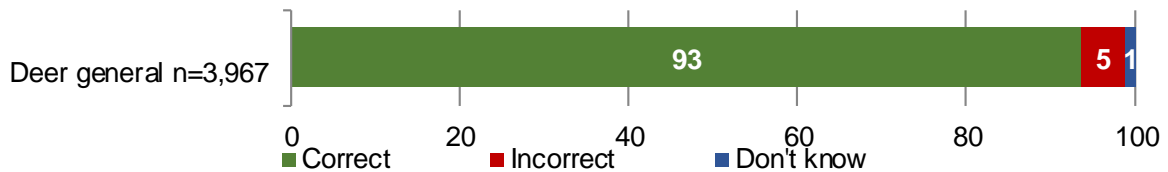
Chart 20: Deer general module - Permission and private property



**DG4: Disposing of deer carcass remains**

A majority (93%) of respondents answered this question correctly.

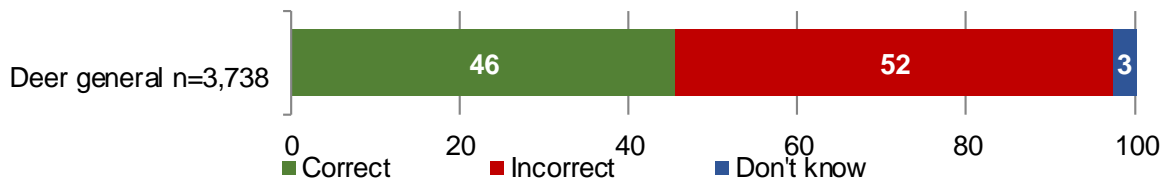
Chart 21: Deer general module - Disposing of deer carcass remains



**DG5: Storing ammunition**

Three options were required to answer this question and 46% of respondents answered all three correct options.

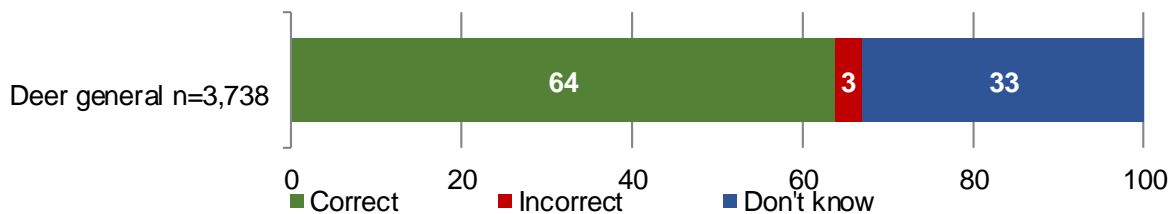
Chart 22: Deer general module - Storing ammunition



**DG6: Hog deer harvest limits**

64% of respondents chose the correct answer for this question, noting that 33% did not know the answer, probably because these respondents did not hunt hog deer.

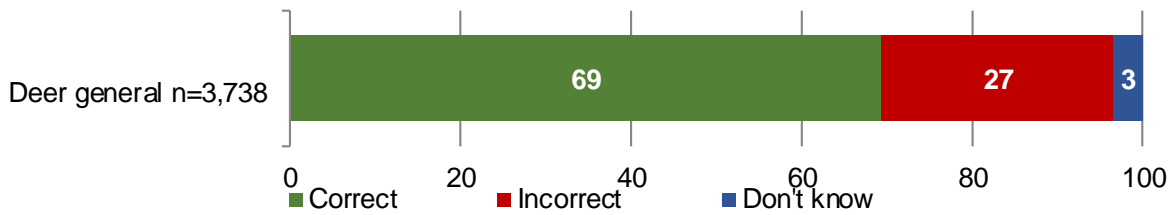
Chart 23: Deer general module - Hog deer harvest limits



**DG7: Stalking in national parks**

While a majority of respondents (69%) chose the correct answer to this question, 18% of all respondents believed that hunting is banned in Victorian national parks (an incorrect answer).

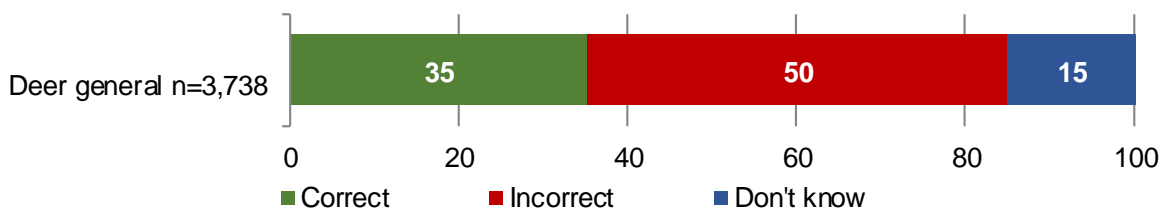
Chart 24: Deer general module - Stalking in national parks



**DG8: Spotlight regulations**

35% of all respondents chose the correct answer to this question, reinforcing that spotlighting is not well understood by licensed hunters.

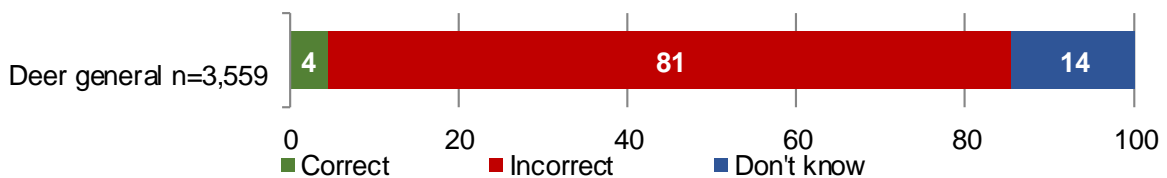
Chart 25: Deer general module - Spotlight regulations



**DG9: Unused hog deer tags**

A very small proportion of all respondents (4%) answered this question correctly, probably compounded by lack of knowledge from those deer hunters who do not hunt hog deer.

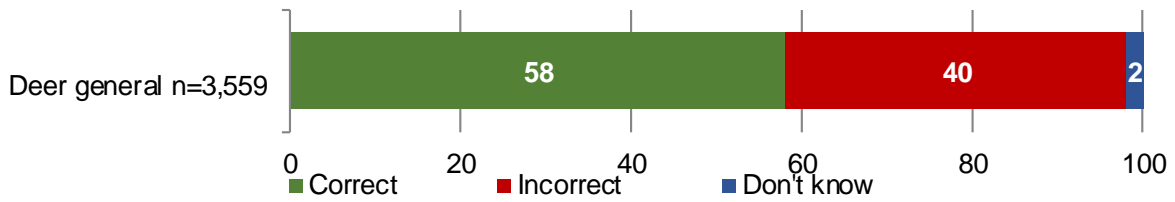
Chart 26: Deer general module - Unused hog deer tags



**DG10: Personal safety while carrying a deer trophy**

While equal proportions (83%) of all respondents chose each of the two correct answers to this question, 58% chose both.

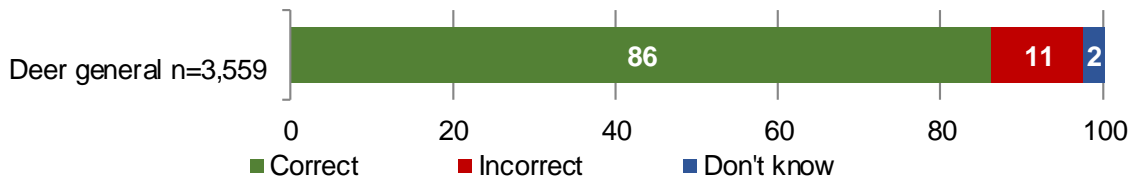
Chart 27: Deer general module - Personal safety while carrying a deer trophy



**DG11: Ammunition storage in a vehicle**

Most respondents (86%) choose the correct answer to this question.

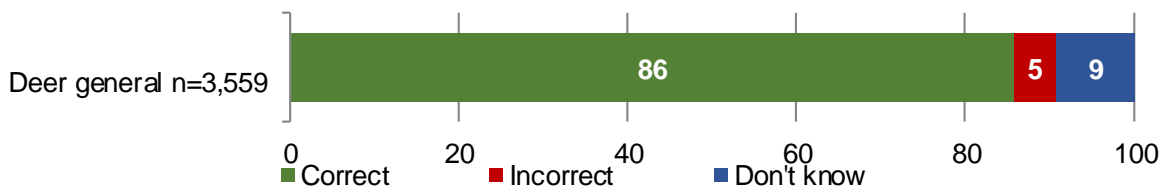
Chart 28: Deer general module - Ammunition storage in a vehicle



**DG12: Open season dates for deer**

A majority of respondents (86%) chose the correct answer to this question.

Chart 29: Deer general module - Open season dates for deer



## Deer firearm module

The questions in this module were presented to all respondents who indicated that they hunted deer with a firearm.

### Summary table

The following table shows the percentage of correct and incorrect answers for each deer firearm module question, sorted by percent correct. The reference preceding each item in the table refers to the question reference which are shown in order in the following part of this section. The table excludes all respondents who did not see / answer a question. Only valid responses have been included in the incorrect percentage.

Two questions were answered correctly by 87% or more of survey respondents with valid answers. Percent correct proportions dropped considerably after that. The answers to any questions related to calibre were not usually known to most hunters. Also, this group of hunters tended not to know the answers to shotgun-related questions, probably because they did not use them for hunting.

Table 5: Deer firearm module - summary of correct and incorrect responses

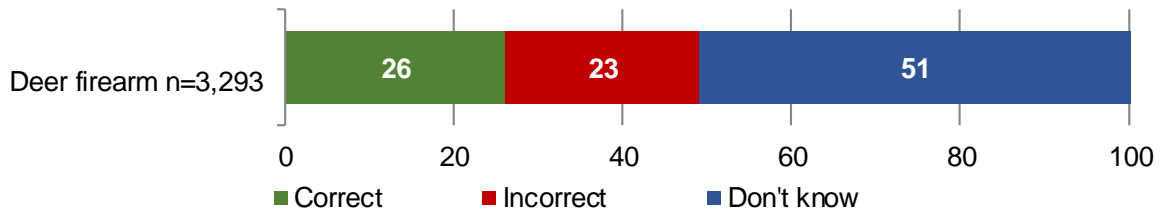
Deer firearm module questions <i>Base: % of valid respondents (no answers excluded)</i>	Valid n	Correct %
DF4: Shooting at a deer running away	3,293	96
DF6: Minimum calibre and projectile weight for sambar deer	3,184	87
DF3: Improving shot accuracy	3,293	80
DF2: Anatomical aim points	3,293	73
DF8: Minimum calibre and projectile weight for non-sambar deer	3,184	43
DF5: Shotgun configurations	3,184	33
DF1: Smooth bore firearm sights	3,293	26
DF9: Muzzle-loaders	3,184	24
DF7: Shotgun gauges for deer hunting	3,184	17

## Individual question results

### DF1: Smooth bore firearm sights

26% of all respondents answered this question correctly.

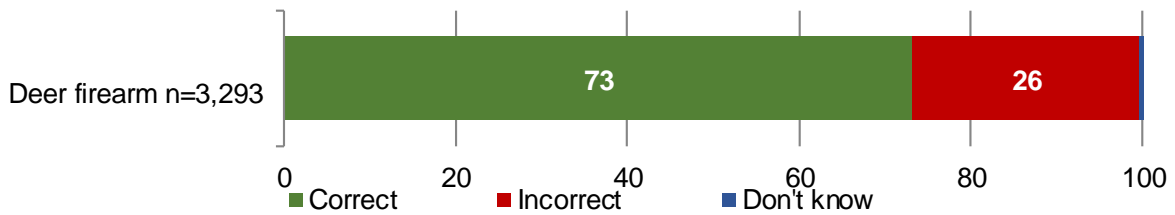
Chart 30: Deer firearm module . Smooth bore firearm sights



### DF2: Anatomical aim points

Two answers were required to answer this question correctly, 73% of all respondents chose both correct answers.

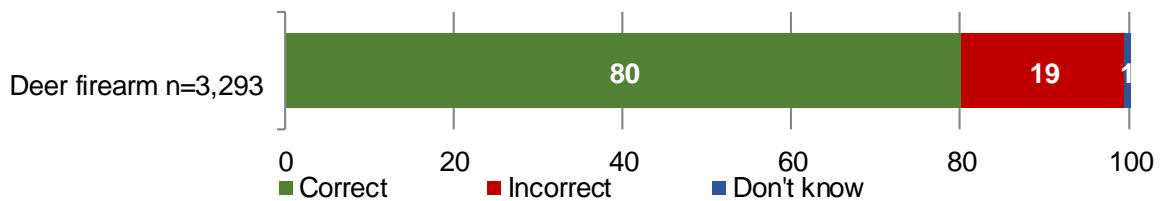
Chart 31: Deer firearm module . Anatomical aim points



### DF3: Improving shot accuracy

Three correct answers were required to get this question correct and 80% of respondents answered all options correctly.

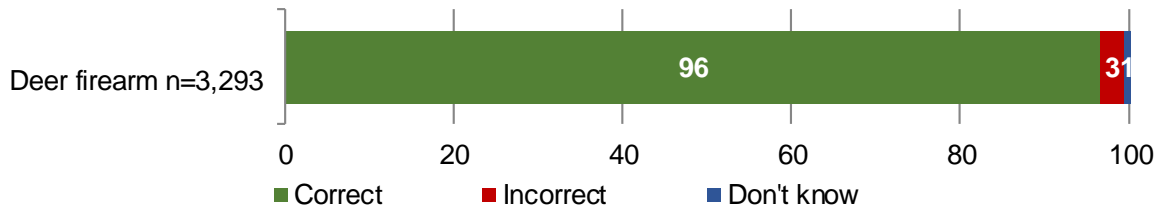
Chart 32: Deer firearm module . Improving shot accuracy



**DF4: Shooting at a deer running away**

Nearly all people who answered this question answered it correctly (96%).

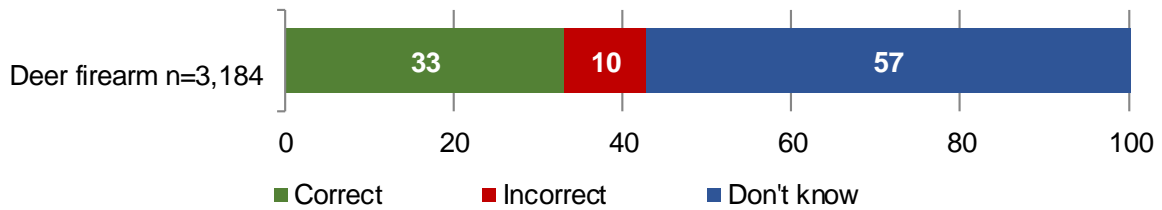
Chart 33: Deer firearm module . Shooting at a deer running away



**DF5: Shotgun configurations**

Most commonly, respondents did not know the answer to this question, only a third answered it correctly (33%).

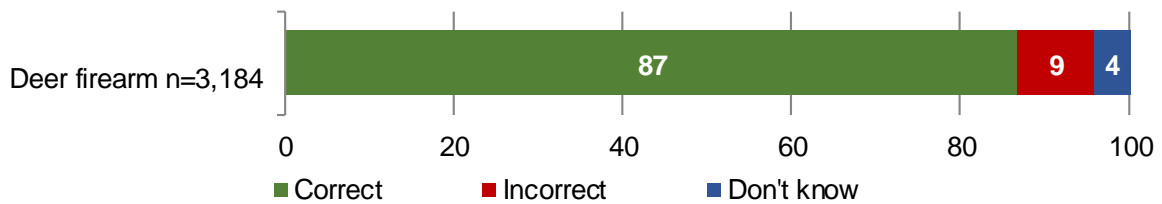
Chart 34: Deer firearm module . Shotgun configurations



**DF6: Minimum calibre and projectile weight for sambar deer**

Of those people who answered the question, the majority (87%) answered correctly.

Chart 35: Deer firearm module . Minimum calibre and projectile weight for sambar deer

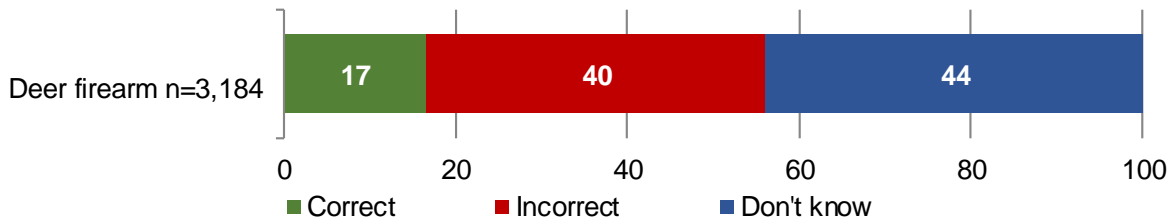




**DF7: Shotgun gauges for deer hunting**

A small proportion of all respondents (17%) selected all three correct options for this question and 44% of respondents did not know the answer.

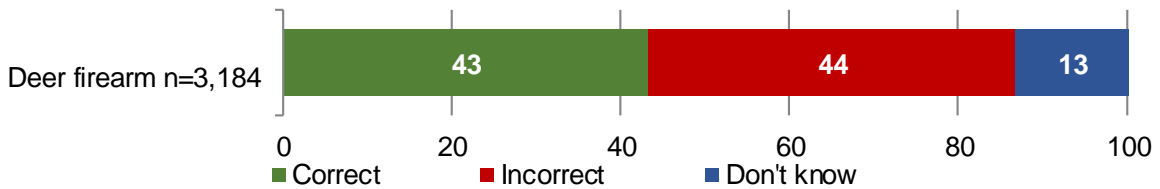
Chart 36: Deer firearm module . Shotgun gauges for deer hunting



**DF8: Minimum calibre and projectile weight for non-sambar deer**

More respondents answered this question incorrectly (44%) than correctly (43%).

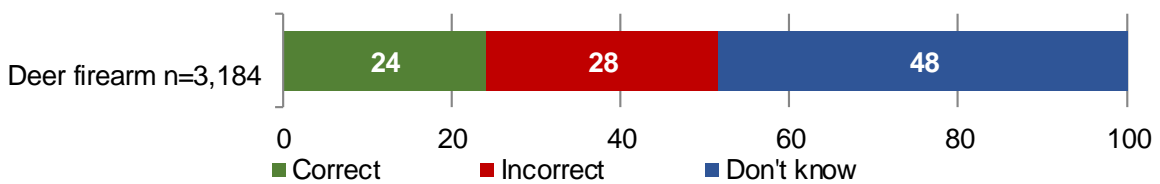
Chart 37: Deer firearm module . Minimum calibre and projectile weight for non-sambar deer



**DF9: Muzzle-loaders**

Most commonly, respondents did not know the answer to this question. Note that an explanation of a muzzle loader was provided with the question.

Chart 38: Deer firearm module . Muzzle-loaders



## Deer bow module

Questions in this module were presented to respondents who indicated that they hunted deer using a bow. This may have been exclusively with a bow or in addition to a firearm.

The following table shows the percentage of correct and incorrect answers for each deer bow module question, sorted by percent correct. The reference preceding each item in the table refers to the question reference which are shown in order in the following part of this section. The table excludes all respondents who did not see / answer a question.  $\emptyset$  } q c responses have been included in the incorrect percentage.

Three questions achieved a 90% or above correct score. All minimum draw weight questions had very low scores percent correct proportions. Questions that focused on a particular species also had lower scores.

### Summary table

Table 6: Deer bow module - summary of correct and incorrect responses

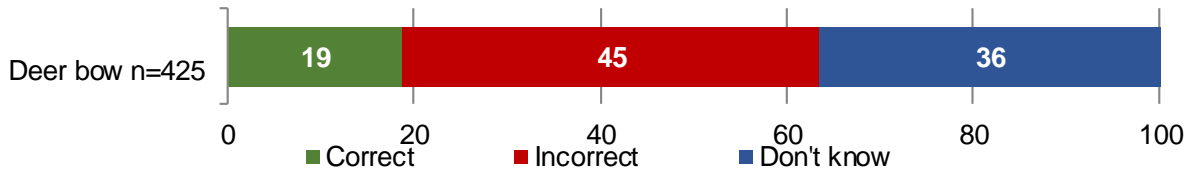
Deer bow module questions Base: % of valid respondents (no answers excluded)	Valid n	Correct %
DB4: Anatomical aim points for bows and crossbows	425	99
DB6: Arrow heads	419	96
DB7: Maximum distance for a bow	419	90
DB3: Sharpened cutting blades on broadhead arrows	425	83
DB8: Compound bow arrow specifications	419	52
DB5: Draw weight for long, recurve or compound bow	419	37
DB2: Cross bow draw weight for sambar deer	425	23
DB1: Cross bow draw weight for smaller deer	425	19

## Individual question results

### **DB1: Cross bow draw weight for smaller deer**

Most survey respondents (81% of all respondents) did not know the correct answer to this question.

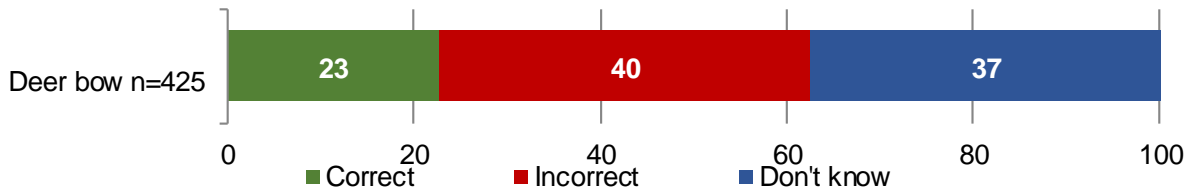
Chart 39: Deer bow module . Cross bow draw weight for non-sambar deer



### **DB2: Cross bow draw weight for sambar deer**

Just under a quarter (23%) of respondents answered this question correctly.

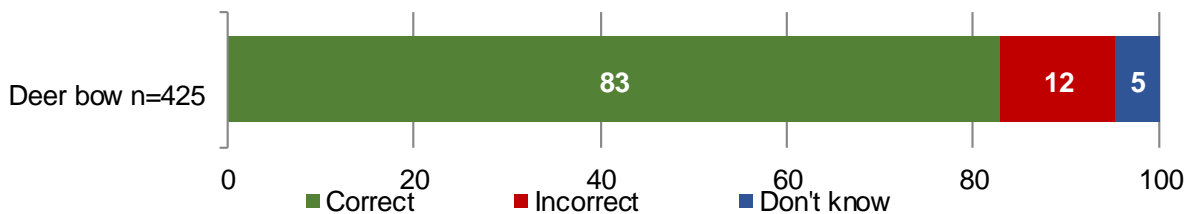
Chart 40: Deer bow module - Cross bow draw weight for sambar deer



### **DB3: Sharpened cutting blades on broadhead arrows**

A majority of all survey respondents correctly answered this question (83% of valid answers were correct).

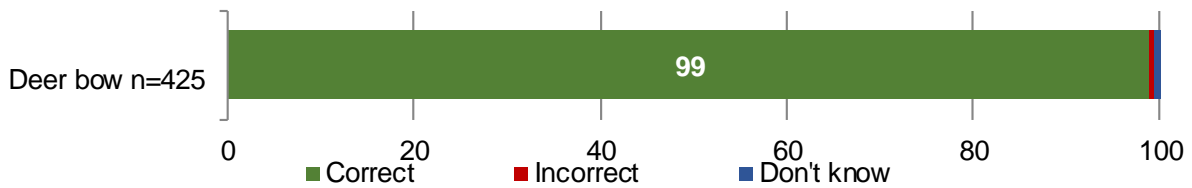
Chart 41: Deer bow module - Sharpened cutting blades on broadhead arrows



**DB4: Anatomical aim points for bows and crossbows**

Nearly all (99%) valid answers to this question were correct.

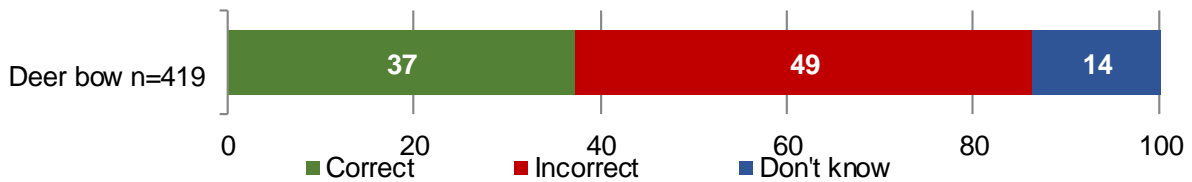
Chart 42: Deer bow module - Anatomical aim points for bows and crossbows



**DB5: Draw weight for long, recurve or compound bow**

Just over a third of all survey respondents answered this question correctly with a very similar proportion choosing a similar, but incorrect option.

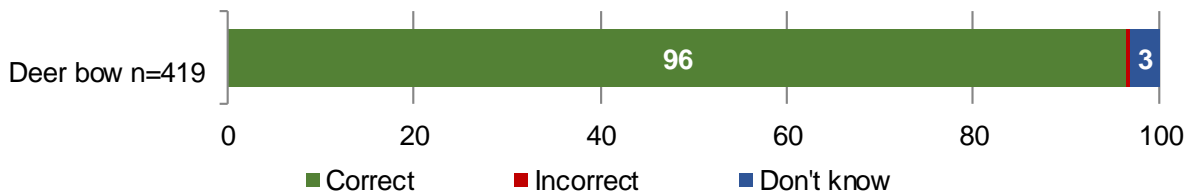
Chart 43: Deer bow module - Draw weight for long, recurve or compound bow



**DB6: Arrow heads**

Most respondents (96%) knew the correct answer to this question.

Chart 44: Deer bow module - Arrow heads



**DB7: Maximum distance for a bow**

A large majority (90%) of all survey respondents answered this question correctly.

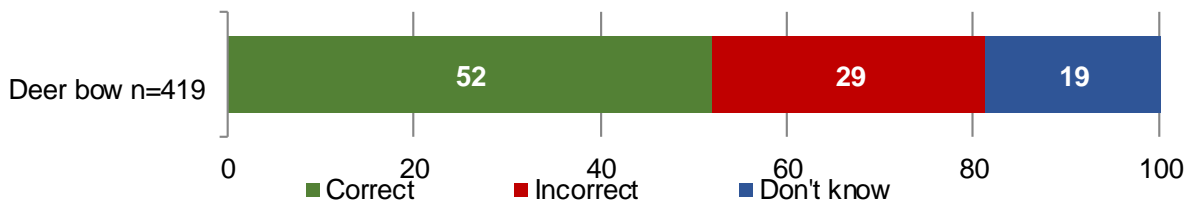
Chart 45: Deer bow module - Maximum distance for a bow



**DB8: Compound bow arrow specifications**

Approximately half of valid respondents (52%) answered this question correctly, but a notable proportion thought a similar option was correct. A relatively high proportion did not know the answer to this question.

Chart 46: Deer bow module - Compound bow arrow specifications



## Deer hound module

Questions in this module were presented to respondents who indicated that they hunted deer using hounds. This is in addition to using a firearm and possibly a bow to hunt deer.

The following table shows the percentage of correct and incorrect answers for each deer hound module question, sorted by percent correct. The reference preceding each item in the table refers to the question reference which are shown in order in the following part of this section. The table excludes all respondents who did not see / answer a question. Only correct responses have been included in the incorrect percentage.

Three questions achieved an 87% or above correct score. The maximum size of a hunting crew and age of microchipping questions were lowest scoring and would benefit from increased information / education.

### Summary table

Table 7: Deer hound module - summary of correct and incorrect responses

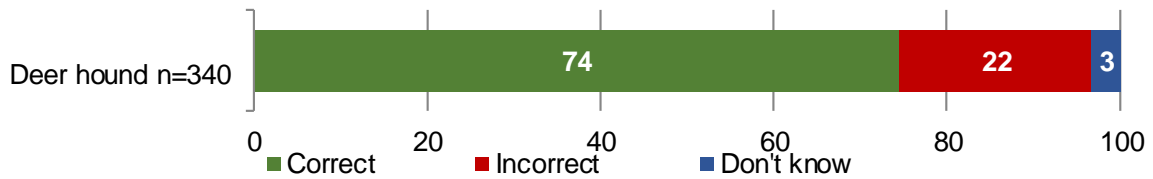
Deer hound module questions Base: % of valid respondents (no answers excluded)	Valid n	Correct %
DH6: Prohibited areas	328	95
DH7: Hound breeds	328	90
DH9: Legality of hunting in a particular area	328	87
DH8: Hound hunting season	328	84
DH5: Responsibility for hounds	340	75
DH1: Pack size	340	74
DH2: Hound pups	340	73
DH4: Collar tags	340	60
DH10: Numbers of hunters	328	39
DH3: Microchipping	340	35

## Individual question results

### DH1: Pack size

Approximately three quarters (74%) of all survey respondents correctly answered this question.

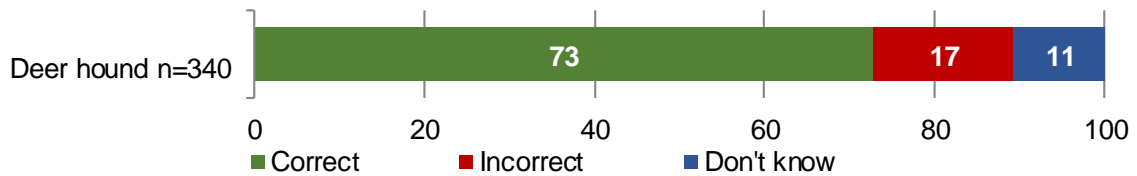
Chart 47 Deer hound module - Pack size



### DH2: Hound pups

A majority (73%) of all valid survey respondents correctly answered this question.

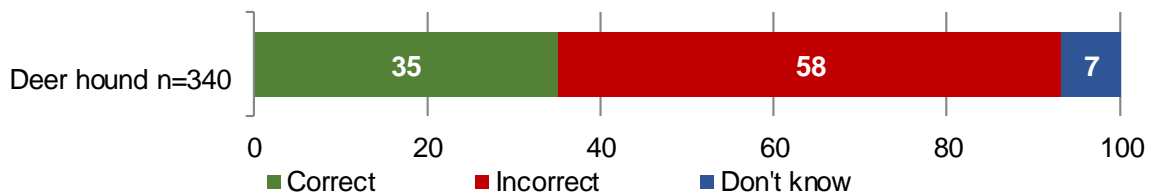
Chart 48: Deer hound module - Hound pups



### DH3: Microchipping

The most common answer to this question was incorrect, but the next most common answer was correct.

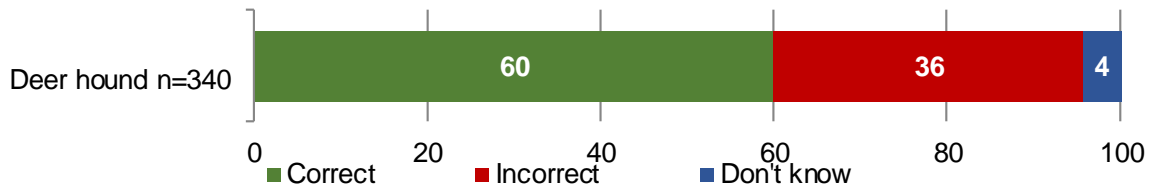
Chart 49: Deer hound module - Microchipping



#### DH4: Collar tags

A majority (60%) of valid respondents got this answer correct, but a significant proportion chose an incorrect answer.

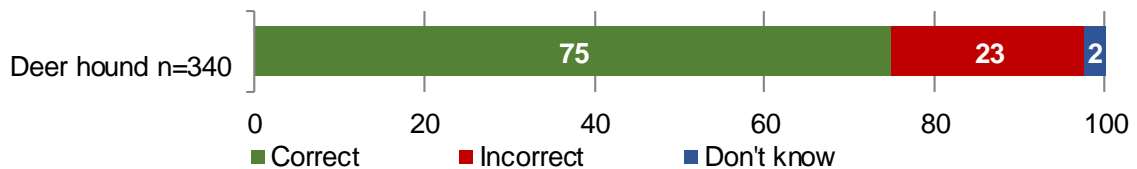
Chart 50: Deer hound module - Collar tags



#### DH5: Responsibility for hounds

A majority (75%) of all valid survey respondents provided the correct answer to this question.

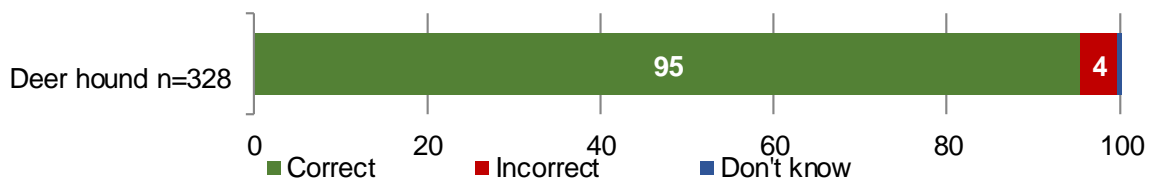
Chart 51: Deer hound module - Responsibility for hounds



#### DH6: Prohibited areas

A majority (95%) of all valid survey respondents provided the correct answer to this question. Less than 1% of respondents did not know the answer.

Chart 52: Deer hound module - Prohibited areas

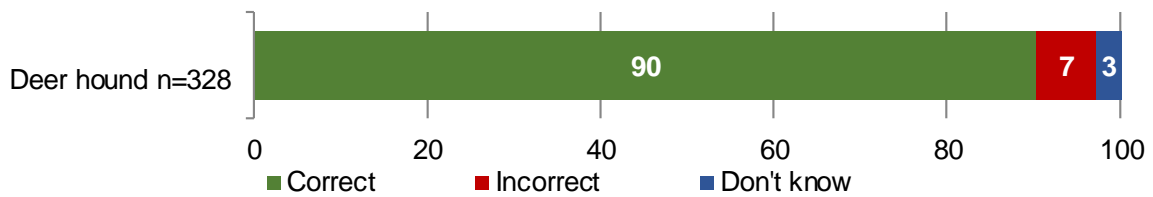




**DH7: Hound breeds**

A majority (90%) of all survey respondents answered this question correctly.

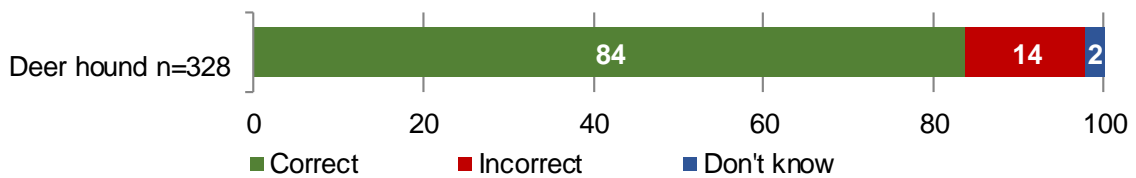
Chart 53: Deer hound module - Hound breeds



**DH8: Hound hunting season**

A majority (84%) of all valid survey respondents answered this question correctly.

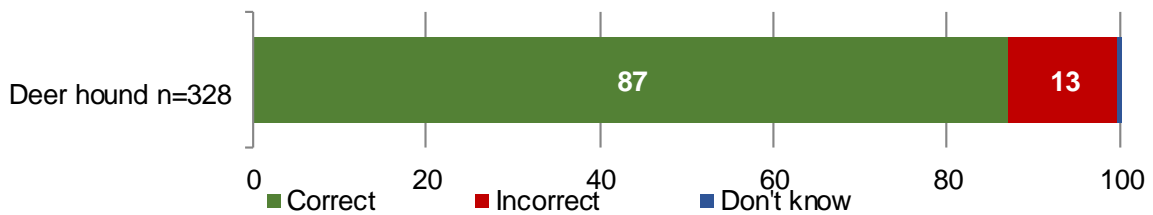
Chart 54: Deer hound module - Hound hunting season



**DH9: Legality of hunting in a particular area**

A majority (87%) of all survey respondents answered this question correctly.

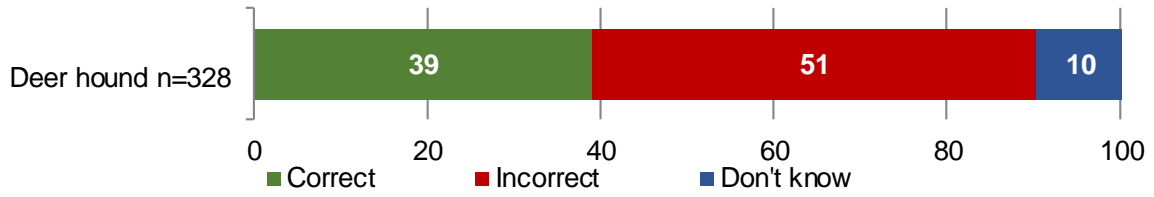
Chart 55: Deer hound module - Legality of hunting in a particular area



**DH10: Numbers of hunters**

Responses to this question varied, with 39% of respondents selecting the correct response ,36% selecting an incorrect response and 10% who did not know the answer.

Chart 56: Deer hound module - Numbers of hunters



## Deer dog module

Questions in this module were presented to respondents who indicated that they hunted deer using gundogs or deer hunting dogs (not hounds). This is in addition to using a firearm and possibly a bow and hounds to hunt deer.

The following table shows the percentage of correct and incorrect answers for each deer dog module question, sorted by percent correct. The reference preceding each item in the table refers to the question reference which are shown in order in the following part of this section. The table excludes all respondents who did not see / answer a question. *Ö[ } q c responses* have been included in the incorrect percentage.

No question achieved an 80% or above correct score while four questions scored less than 50% correct by those who answered the questions in this module. Knowing where to find lists of permitted breeds, dog restrictions when hunting and breeds that can be used with fallow deer were least well known and only by a small proportion of valid survey respondents.

### Summary table

Table 8: Deer dog module - summary of correct and incorrect responses

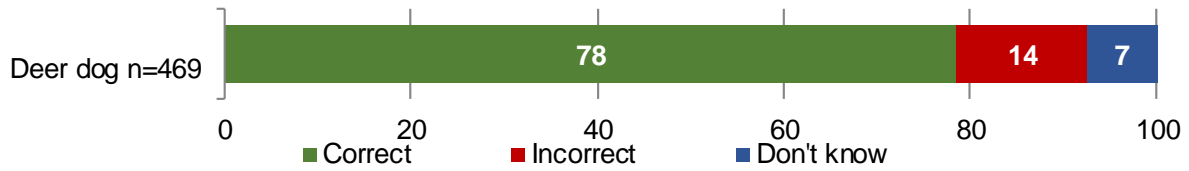
Deer dog module questions <i>Base: % of valid respondents (no answers excluded)</i>	Valid n	Correct %
DD1: Hunting with dogs in national parks	469	78
DD3: Hunting on hot days	469	78
DD7: Cross-breed dogs	451	77
DD2: Hunting with dogs for hog deer	469	75
DD5: Gundogs numbers	451	47
DD6: Breeds of dog	451	39
DD8: Restrictions on dog actions	451	18
DD4: Categories of dogs for fallow deer hunting	469	16

## Individual question results

### **DD1: Hunting with dogs in national parks**

A majority (78%) of all survey respondents correctly answered this question.

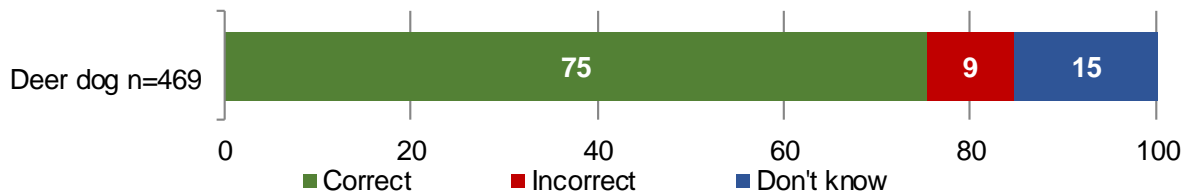
Chart1: Deer dog module - Hunting with dogs in national parks



### **DD2: Hunting with dogs for hog deer**

A majority (75%) of all valid survey respondents correctly answered this question.

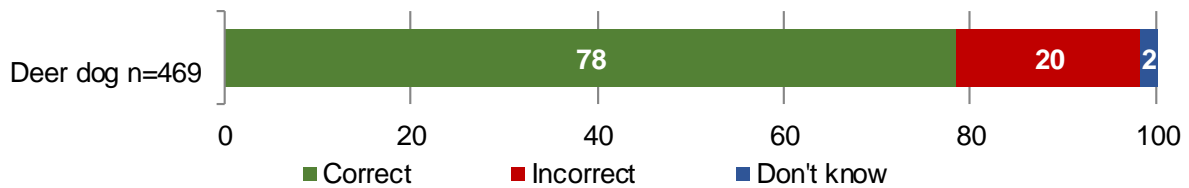
Chart 57: Deer dog module - Hunting with dogs for hog deer



### **DD3: Hunting on hot days**

A majority (78%) of all valid survey respondents correctly answered this question.

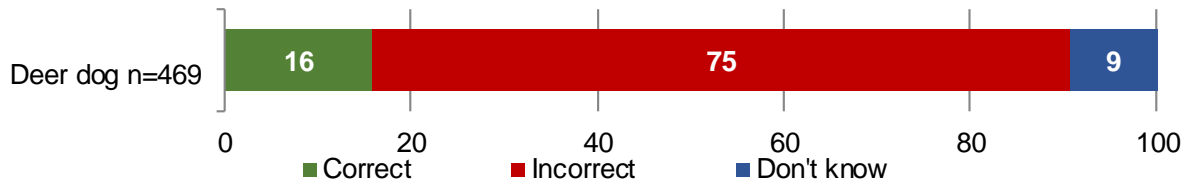
Chart 58: Deer dog module - Hunting on hot days



**DD4: Categories of dogs for fallow deer hunting**

Two answers were required to answer this question correctly and 16% of all survey respondents chose these two answers, even though 84% of all survey respondents chose one correct answer.

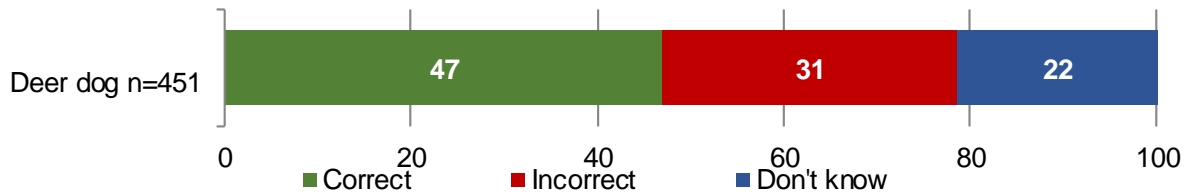
Chart 59: Deer dog module - Categories of dogs for fallow deer hunting



**DD5: Gundogs numbers**

The most commonly selected answer to this question was correct (47% of valid responses), but 22% of all survey respondents indicated that they did not know the answer.

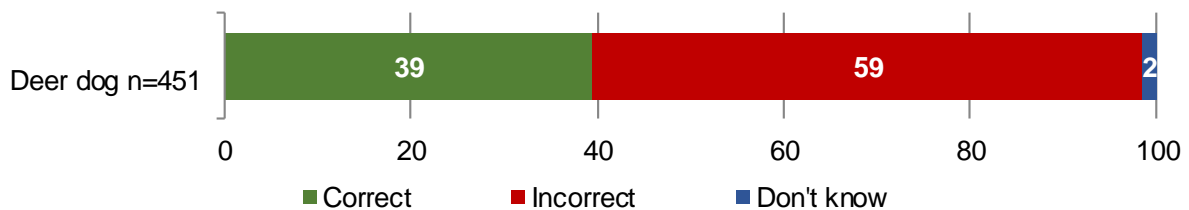
Chart 60: Deer dog module - Gundogs numbers



**DD6: Breeds of dog**

Three answers were required to answer this question correctly and 39% of all survey respondents chose all three.

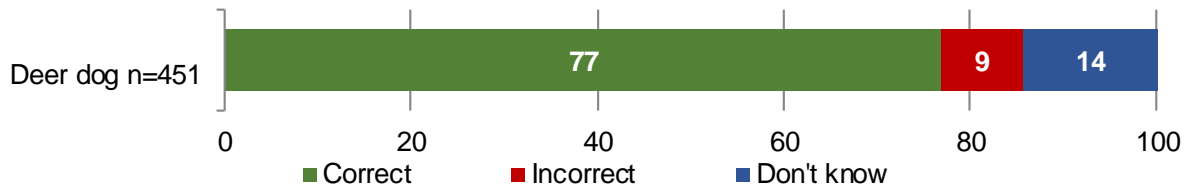
Chart 61: Deer dog module - Breeds of dog



**DD7: Cross-breed dogs**

A majority of people who answered this question, answered correctly (77%), but 14% indicated that they did not know the answer.

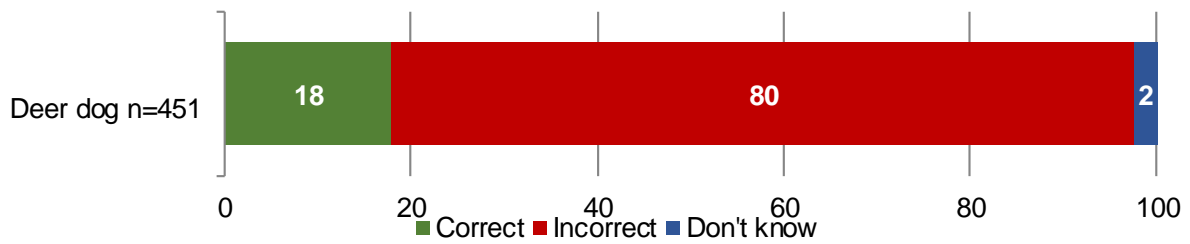
Chart 62: Deer dog module - Cross-breed dogs



**DD8: Restrictions on dog actions**

Three answers were required to answer this question correctly and 18% of all survey respondents answered correctly.

Chart 63: Deer dog module - Restrictions on dog actions



## Duck and quail general module

The questions in this module were shown to respondents who indicated that they hunted duck and/or quail. Both species are covered with a game bird including duck Game Licence in Victoria.

Because of the number of questions in this module, three tables have been presented and results from each are discussed separately.

The following tables show the percentage of correct and incorrect answers for each duck and quail general module question, sorted by percent correct. The reference preceding each item in the tables refers to the question reference which are shown in order in the following part of this section. The table excludes all respondents who did not see / answer a question. Only correct responses have been included in the incorrect percentage.

### Summary tables

As a general statement, the percentage of correct answers for all duck hunting related questions, including quail was lower than for most deer hunting related questions.

Duck general sub-module: Three questions achieved a 93% or more correct score. However, seven of the 12 questions in the module scored less than 50% indicating need for considerable information / education on the lower scoring topics.

Table 9: Duck general module - summary of correct and incorrect responses

Duck general module questions <i>Base: % of valid respondents (no answers excluded)</i>	Valid n	Correct %
DUG5: Spent cartridges	1,821	99
DUG12: Pellet spread	1,736	95
DUG6: Respecting other hunters	1,821	93
DUG9: Waterfowl wounding causes	1,736	79
DUG8: Non-game duck species	1,821	58
DUG3: Swatter load shot size	1,971	47
DUG2: Swatter loads	1,971	44
DUG11: Field dressing ducks	1,736	39
DUG10: Minimising wounding	1,736	37
DUG7: Identifying game ducks	1,821	20
DUG4: Swatter load risks	1,971	15
DUG1: Dispatch of downed ducks	1,971	13

Duck method sub-module: Note that all respondents who indicated that they hunted duck received the following questions. Two questions achieved a 92% or more correct score. However, three of the 11 questions in the module scored less than 50%.

Table 10: Duck method general module - summary of correct and incorrect responses

Duck method module questions Base: % of valid respondents (no answers excluded)	Valid n	Correct %
DM10: Anatomical aim points	1,511	96
DM7: Shotgun cartridge characteristics	1,573	92
DM9: Maximum shotgun gauge	1,511	82
DM5: Assessing shotgun patterns	1,573	76
DM1: Shotgun patterns	1,625	61
DM3: Storing lead shot intended for other species	1,625	58
DM4: Maximum shooting distance	1,625	58
DM6: Shot materials	1,573	53
DM11: Lead shot allowances	1,511	45
DM8: Bringing ducks in	1,573	28
DM2: Sources of information for loads and chokes	1,625	24

Quail sub-module: Note that all people who indicated that they hunted duck were also asked about quail because this species forms part of a duck hunting Game Licence. A considerable proportion of survey respondents probably did not hunt quail which is indicated through the large proportion of don't know answers for the quail questions. In this analysis, don't know counted as an incorrect answer. The highest scoring quail questions was 85% correct and four of the nine questions scored less than 50% correct.



Table 11: Quail module - summary of correct and incorrect responses

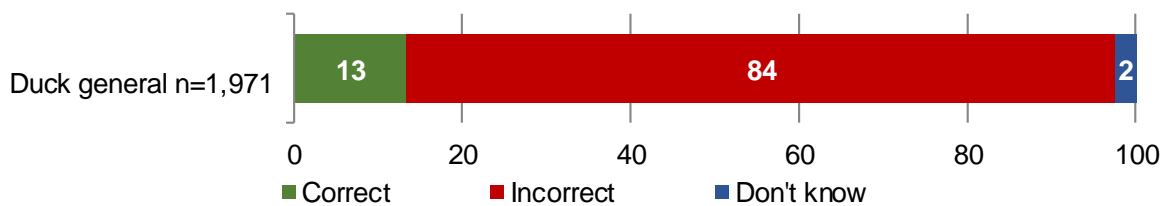
Quail module questions Base: % of valid respondents (no answers excluded)	Valid n	Correct %
Q7: Sources of information on state game reserves	1,430	85
Q1: Undersize or juvenile stubble quail	1,487	80
Q2: Stubble quail season dates	1,487	65
Q6: Safety in quail hunting	1,430	60
Q3: Stubble quail bag limit	1,487	54
Q5: Attracting stubble quail	1,430	42
Q8: Recovering downed stubble quail	1,430	37
Q4: Quail species	1,487	23
Q9: Permitted shot types	1,430	19

## Individual question results

### **DUG1: Dispatch of downed ducks**

Three answers were required to answer this question correctly, 13% chose all three.

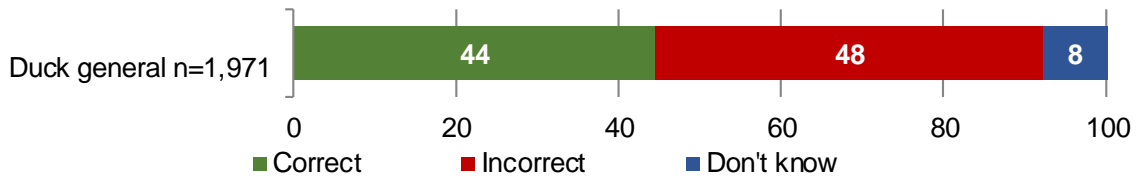
Chart 64: Duck and quail general module . Dispatch of downed ducks



### DUG2: Swatter loads

While the most commonly chosen answer (44%) was the correct one, nearly half of all respondents chose an incorrect option.

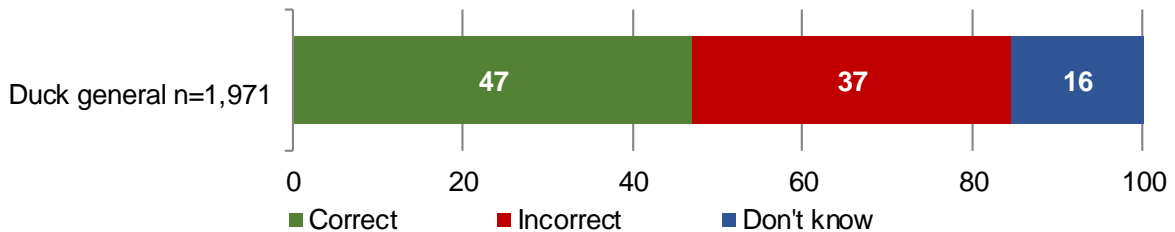
Chart 65: Duck and quail general module - Swatter loads



### DUG3: Swatter load shot size

The most commonly chosen answer (47%) was the correct one, but 16% of all survey respondents did not know the answer to this question and 38% gave an incorrect answer.

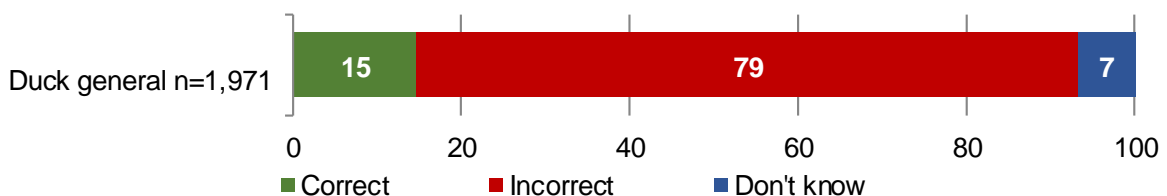
Chart 66: Duck and quail general module - Swatter load shot size



### DUG4: Swatter load risks

Three answers were required to correctly answer the question and while 68% of all survey respondents chose at least one correct answer, 15% chose all three.

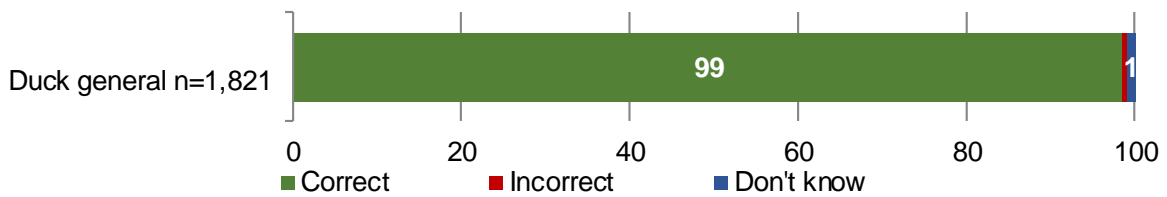
Chart 67: Duck and quail general module - Swatter load risks



**DUG5: Spent cartridges**

Nearly all (99%) survey respondents that provided valid answers answered this question correctly.

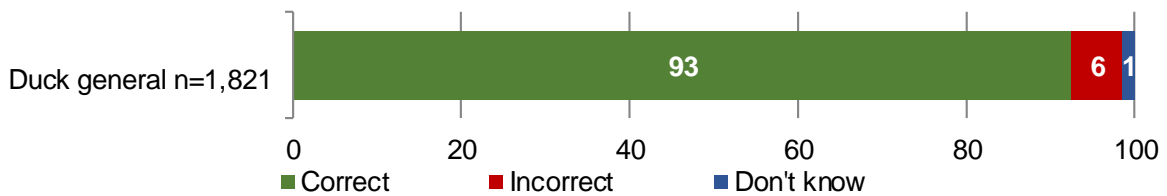
Chart 68: Duck and quail general module - Spent cartridges



**DUG6: Respecting other hunters**

Most respondents (93%) providing valid responses answered this question correctly.

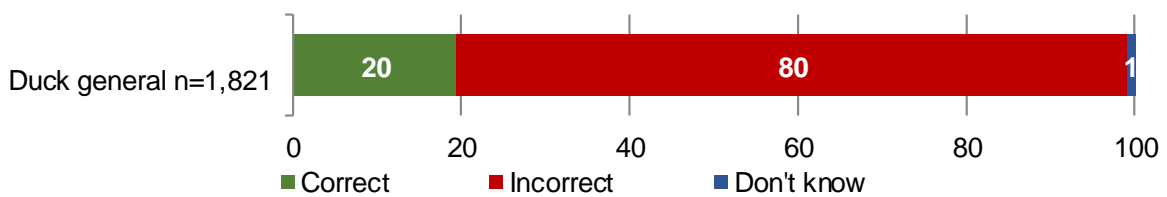
Chart 69: Duck and quail general module - Respecting other hunters



**DUG7: Identifying game ducks**

Three answers were required to correctly answer the question with one in five (20%) respondents answering correctly.

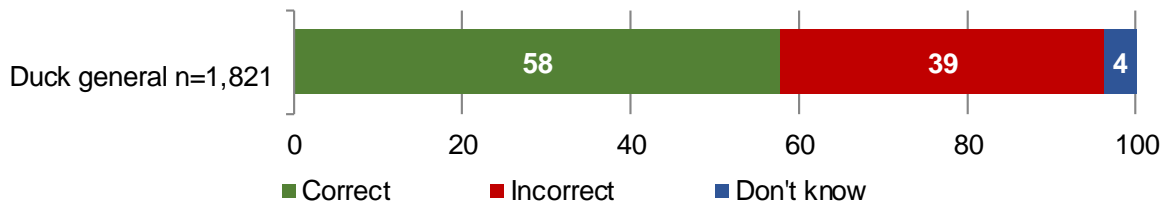
Chart 70: Duck and quail general module - Identifying game ducks



### DUG8: Non-game duck species

Three answers were required to correctly answer the question and 58% chose all three.

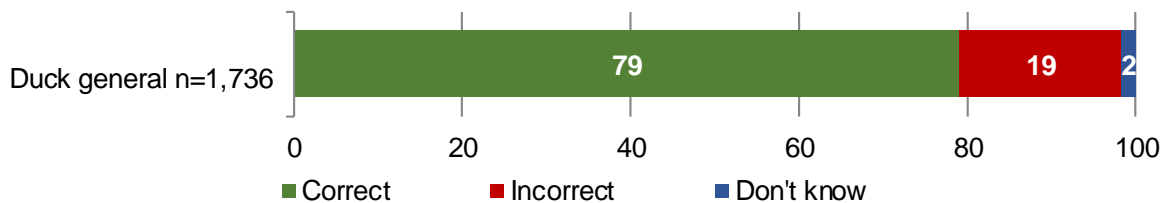
Chart 2: Duck and quail general module - Non-game duck species



### DUG9: Waterfowl wounding causes

Three answers were required to correctly answer the question and 79% chose all three.

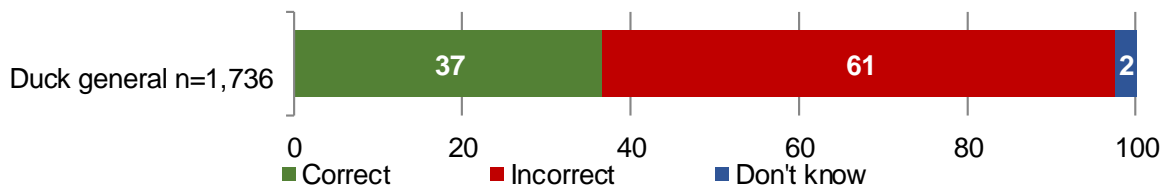
Chart 71: Duck and quail general module - Waterfowl wounding causes



### DUG10: Minimising wounding

Two answers were required to correctly answer the question and 37% of all survey respondents chose both correct options.

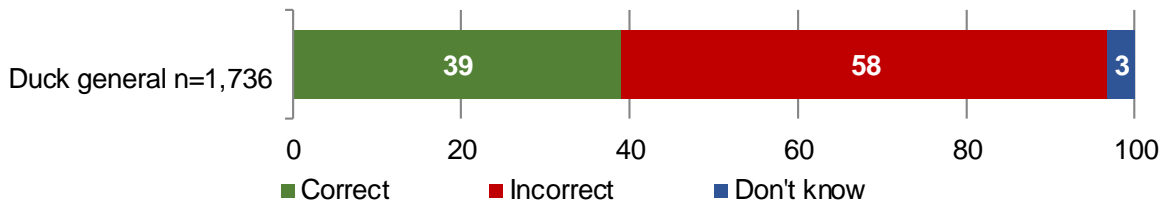
Chart 72: Duck and quail general module - Minimising wounding



### DUG11: Field dressing ducks

Two answers were required to correctly answer the question and 39% of all survey respondents chose both correct options.

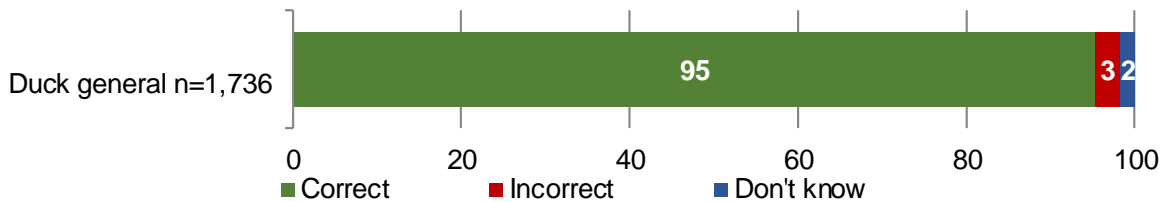
Chart 73: Duck and quail general module - Field dressing ducks



### DUG12: Pellet spread

A large majority (95%) of respondents chose the correct answer for this question.

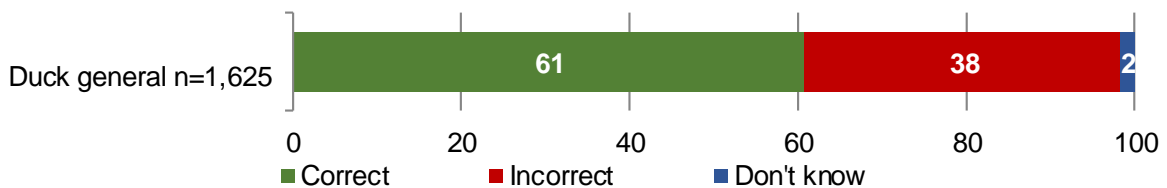
Chart 74: Duck and quail general module - Pellet spread



### DM1: Shotgun patterns

The correct answer was most commonly chosen (by 61%), but a significant proportion chose another answer.

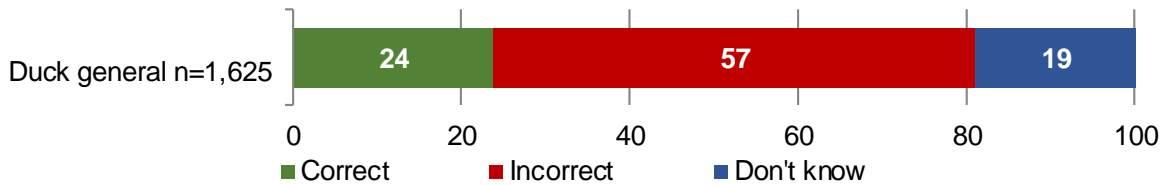
Chart 75: Duck and quail general module - Shotgun patterns



**DM2: Sources of information for loads and chokes**

Most commonly an incorrect answer was chosen for this question, resulting in 24% of survey respondents choosing the correct answer.

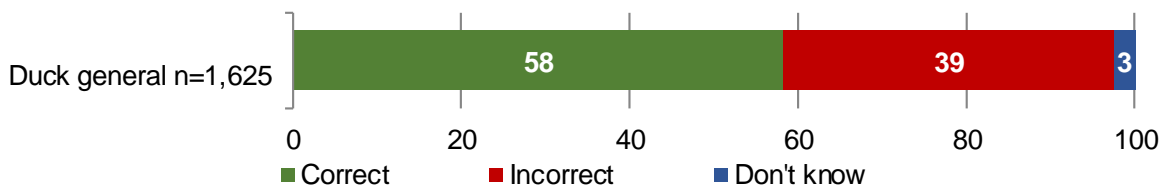
Chart 76: Duck and quail general module - Sources of information for loads and chokes



**DM3: Storing lead shot intended for other species**

The most commonly chosen answer was the correct one for this question, but a significant proportion of all survey respondents chose an incorrect option.

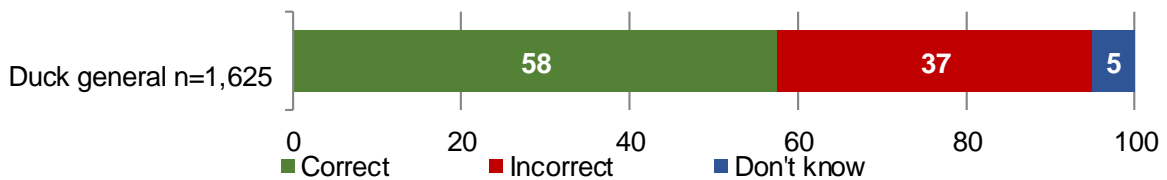
Chart 77: Duck and quail general module - Storing lead shot intended for other species



**DM4: Maximum shooting distance**

The most commonly chosen answer was the correct one for this question, but a significant proportion of all survey respondents chose an incorrect option.

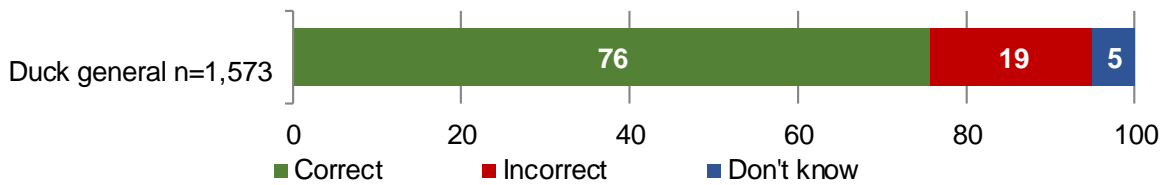
Chart 78: Duck and quail general module - Maximum shooting distance



**DM5: Assessing shotgun patterns**

A majority of valid respondents (76%) chose the correct answer for this question.

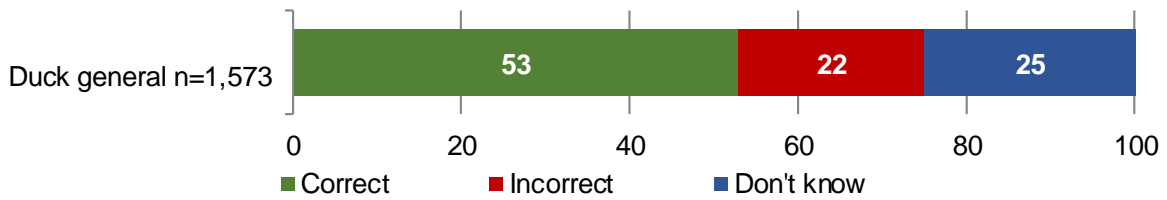
Chart 79: Duck and quail general module - Assessing shotgun patterns



**DM6: Shot materials**

The correct answer was most commonly chosen, but one quarter of respondents did not know the answer.

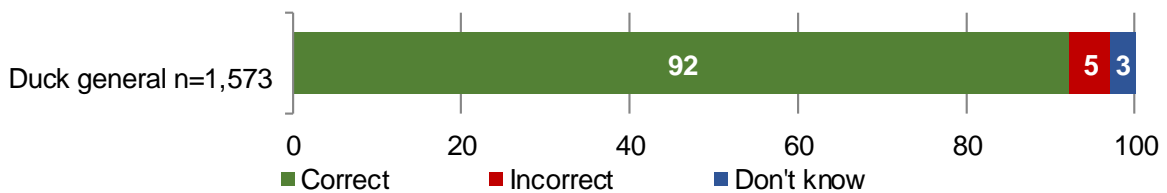
Chart 80: Duck and quail general module - Shot materials



**DM7: Shotgun cartridge characteristics**

A majority of valid respondents (92%) chose the correct answer for this question.

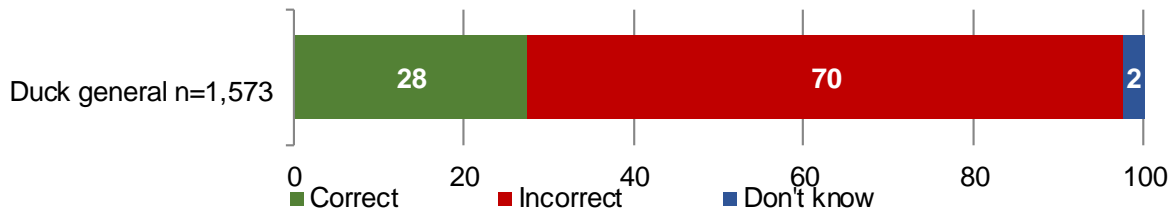
Chart 81: Duck and quail general module - Shotgun cartridge characteristics



**DM8: Bringing ducks in**

Three answers were required to answer this question correctly and while a majority of all survey respondents chose two of the correct answers, 28% chose all three.

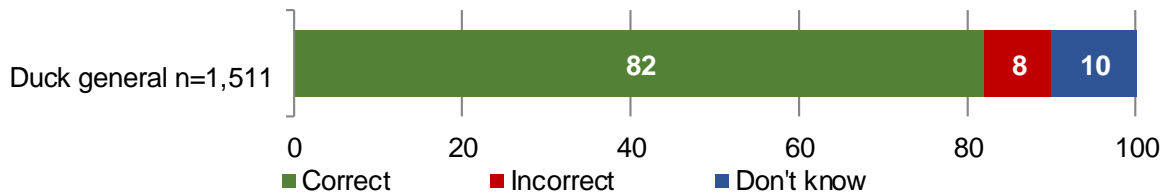
Chart 3: Duck and quail general module - Bringing ducks in



**DM9: Maximum shotgun gauge**

A majority of valid respondents (82%) chose the correct answer for this question.

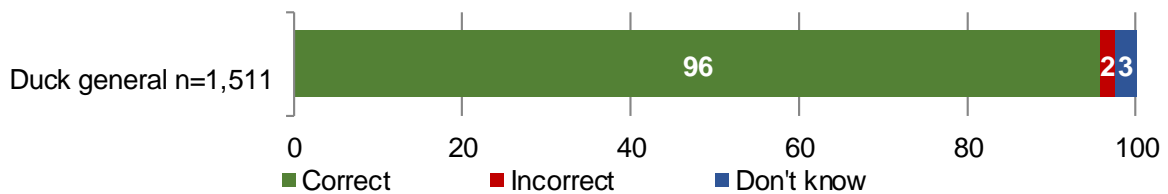
Chart 82: Duck and quail general module - Maximum shotgun gauge



**DM10: Anatomical aim points**

A majority of valid respondents (96%) chose the correct answer for this question.

Chart 83: Duck and quail general module - Anatomical aim points

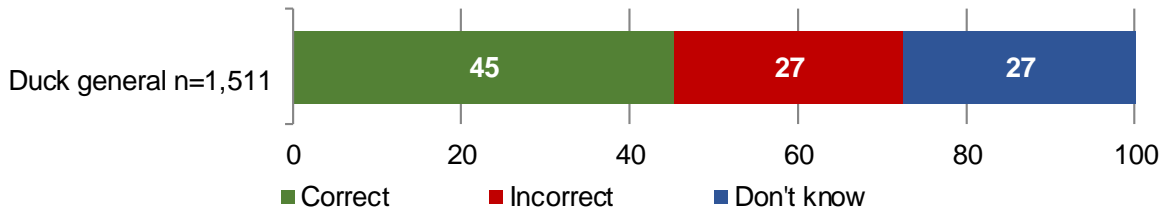




**DM11: Lead shot allowances**

While the correct answer was the most commonly chosen answer by all survey respondents, a notable proportion chose a wrong answer or indicated that they did not know the answer.

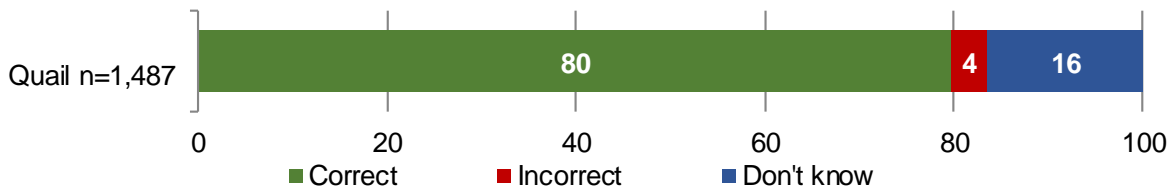
Chart 84: Duck and quail general module - Lead shot allowances



**Q1: Undersize or juvenile stubble quail**

Of those who answered the question, most were correct, but a notable proportion indicated that they didn't know the answer.

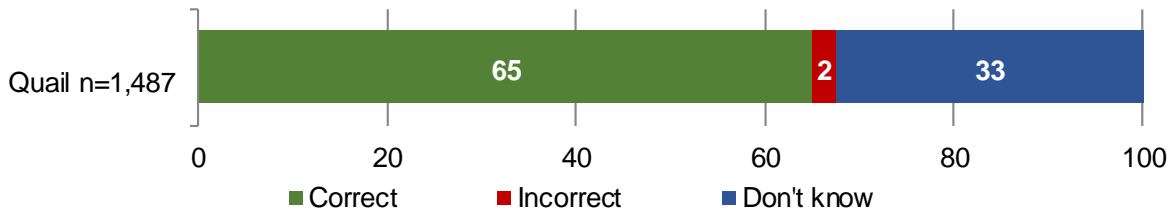
Chart 85: Duck and quail general module - Undersize or juvenile stubble quail



**Q2: Stubble quail season dates**

Of those who answered the question, most were correct (65%), but a notable proportion indicated that they didn't know the answer, probably because many did not hunt quail.

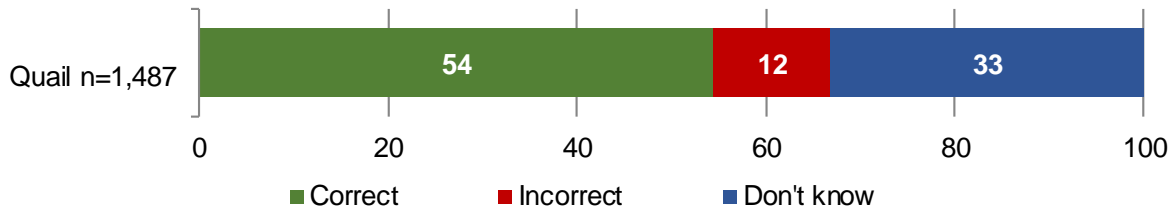
Chart 86: Duck and quail general module - Stubble quail season dates



### Q3: Stubble quail bag limit

Of those who answered the question, many were correct (54%), but a notable proportion indicated that they didn't know the answer, probably because many did not hunt quail.

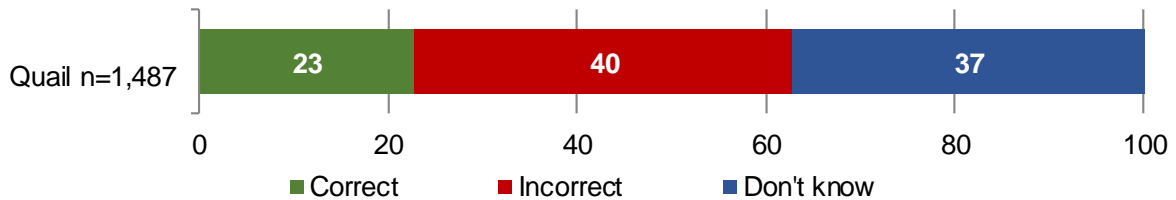
Chart 87: Duck and quail general module - Stubble quail bag limit



### Q4: Quail species

Two answers were required for this question to be answered correctly and of all survey respondents, only 23% selected both answers. Again, there was a notable proportion of 'don't know' answers.

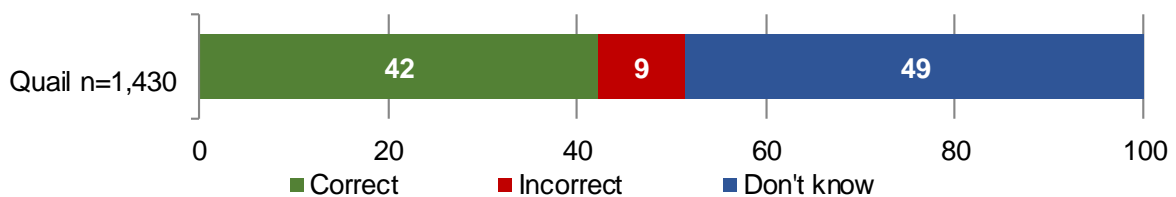
Chart 88: Duck and quail general module - Quail species



### Q5: Attracting stubble quail

The most commonly selected answer (after don't know) was correct.

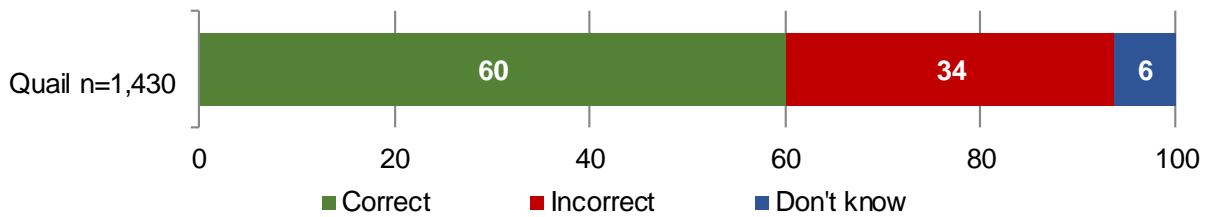
Chart 894: Duck and quail general module - Attracting stubble quail



**Q6: Safety in quail hunting**

Three answers were required to answer correctly and 60% of all survey respondents selected all three answers. Note that the don't know response for this question is relatively low, probably because the question was about safety and not quail or methods of hunting.

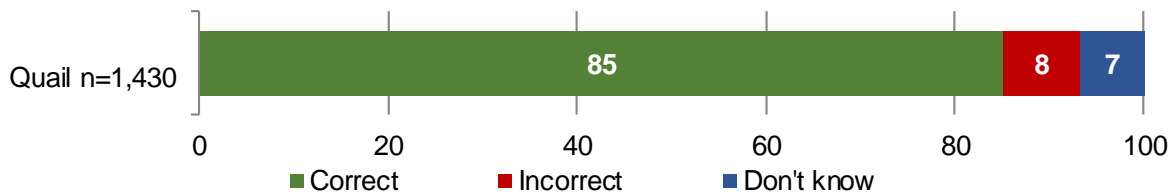
Chart 90: Duck and quail general module - Safety in quail hunting



**Q7: Sources of information on state game reserves**

Most but not all (85%) of valid survey respondents answered this question correctly.

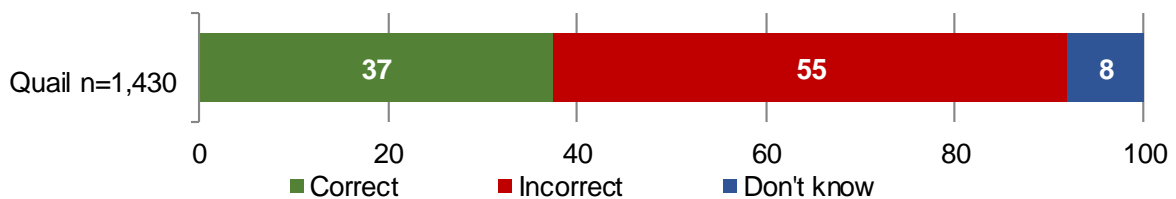
Chart 91: Duck and quail general module - Sources of information on state game reserves



**Q8: Recovering downed stubble quail**

Over a third (37%) of all survey respondents selected the three options required for a correct answer to this question.

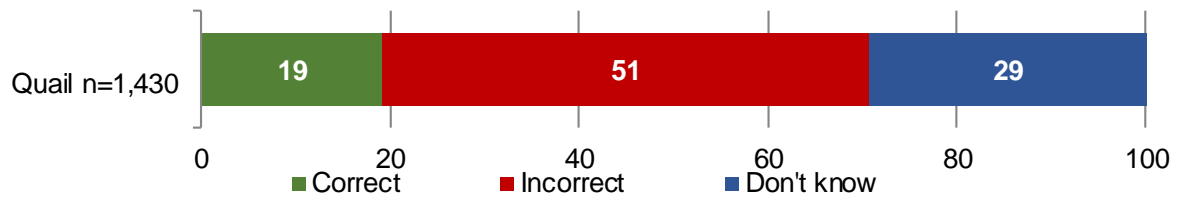
Chart 92: Duck and quail general module - Recovering downed stubble quail



**Q9: Permitted shot types**

19% of all survey respondents selected the three options required for a correct answer to this question.

Chart 93: Duck and quail general module - Permitted shot types



## Duck dog module

Only people who indicated that they hunted for ducks with dogs answered the following questions.

The reference preceding each item in the table immediately below refers to a question reference which is shown in question order in the following part of this section. The table excludes all respondents who did not see / answer a question. Only correct responses have been included in the incorrect percentage.

Two questions achieved a percent correct score of 90% or above, while six of the 12 questions in the module had percent correct scores less than 50%.

### Summary table

Table 12: Duck dog module - summary of correct and incorrect responses

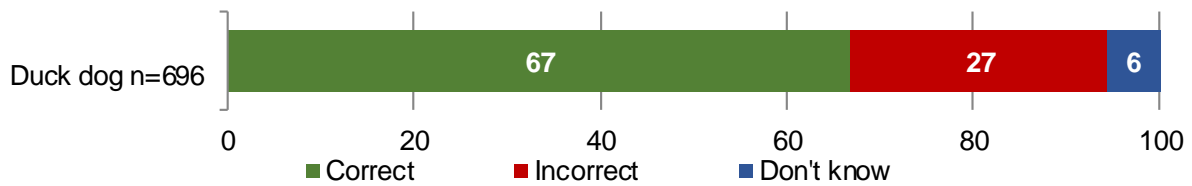
Duck dog module questions Base: % of valid respondents (no answers excluded)	Valid n	Correct %
DUD8: Gundog restrictions	672	93
DUD9: Gundogs allowed for quail hunting	682	91
DUD2: Snake bite	696	81
DUD12: Gundog management on hot days	682	73
DUD1: Gundog breeds for gamebirds	696	67
DUD7: Training gundogs in a state game reserves	672	65
DUD5: Blue-green algae	672	47
DUD11: Firearm use for gundog training	682	32
DUD3: Gundog training	696	24
DUD10: Number of gundogs for stubble quail hunts	682	20
DUD6: Gundogs in state game reserves	672	16
DUD4: Numbers of gundogs	696	15

## Individual question results

### **DUD1: Gundog breeds for gamebirds**

The most commonly selected answer was also the correct one for this question.

Chart 94: Duck dog module - Gundog breeds for gamebirds



### **DUD2: Snake bite**

Most survey respondents answered this question correctly.

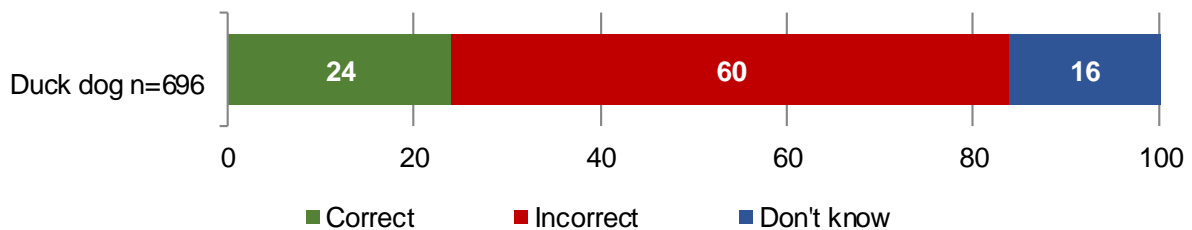
Chart 95: Duck dog module - Snake bite



### **DUD3: Gundog training**

The most commonly selected answer was incorrect for this question, resulting in 24% of all survey respondents getting this question correct.

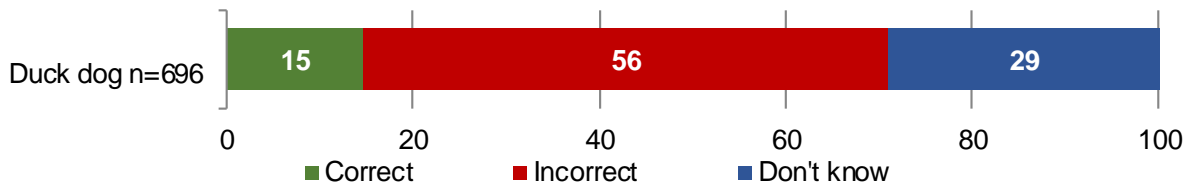
Chart 96: Duck dog module - Gundog training



**DUD4: Numbers of gundogs**

The most commonly selected answer was incorrect for this question, resulting in 15% of all survey respondents getting this question correct.

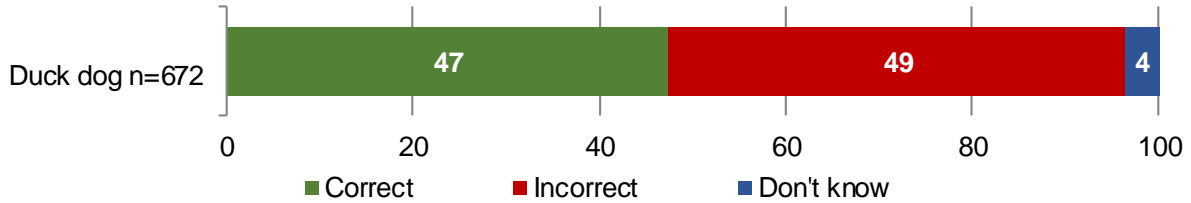
Chart 97: Duck dog module - Numbers of gundogs



**DUD5: Blue-green algae**

Three answers were required to answer the question correctly and of all survey respondents 47% selected all three.

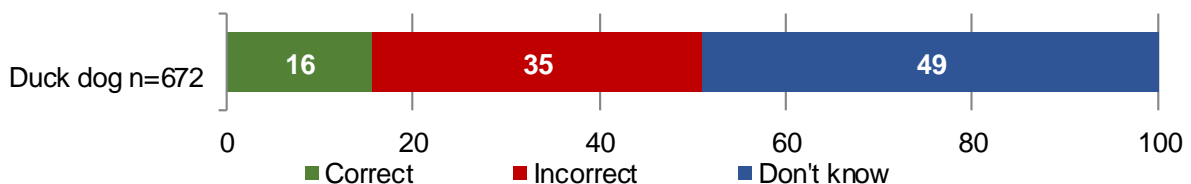
Chart 98: Duck dog module - Blue-green algae



**DUD6: Gundogs in state game reserves**

The largest group of survey respondents did not know the answer to this question.

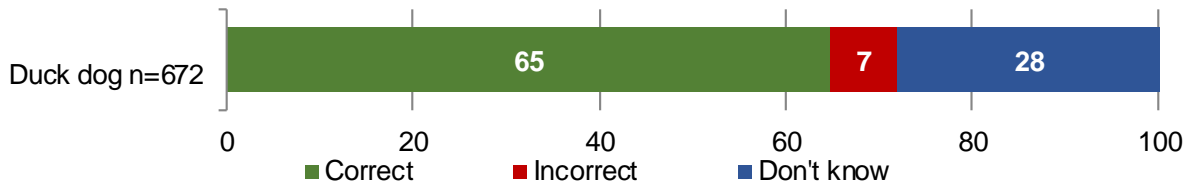
Chart 99: Duck dog module - Gundogs in state game reserves



**DUD7: Training gundogs in a state game reserves**

Most commonly survey respondents chose the correct answer to this question, but a notable proportion did not know the answer.

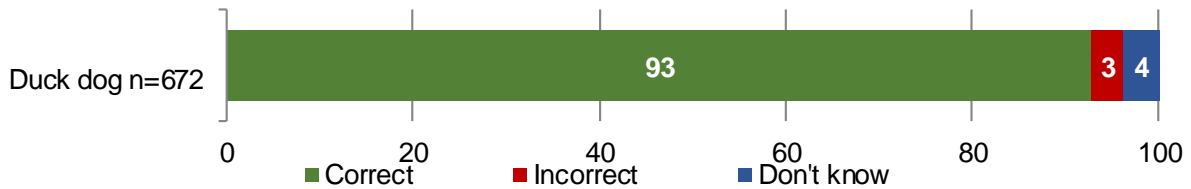
Chart 100: Duck dog module - Training gundogs in a state game reserves



**DUD8: Gundog restrictions**

Most survey respondents who answered the question got this question right (93%).

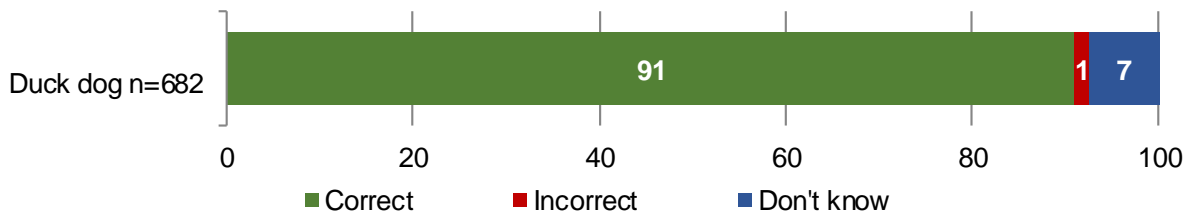
Chart 101: Duck dog module - Gundog restrictions



**DUD9: Gundogs allowed for quail hunting**

Most survey respondents who answered the question (91%) did so correctly.

Chart 102: Duck dog module - Gundogs allowed for quail hunting

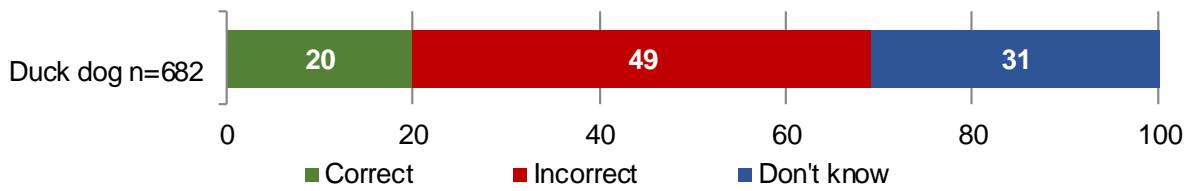




**DUD10: Number of gundogs for stubble quail hunts**

The most commonly selected answer to this question was incorrect, and a large proportion of respondents did not know the answer.

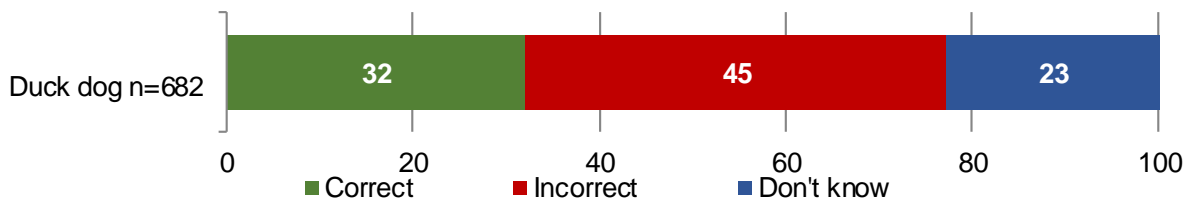
Chart 103: Duck dog module - Number of gundogs for stubble quail hunts



**DUD11: Firearm use for gundog training**

The most commonly selected answer to this question was incorrect, and a notable proportion of respondents did not know the answer.

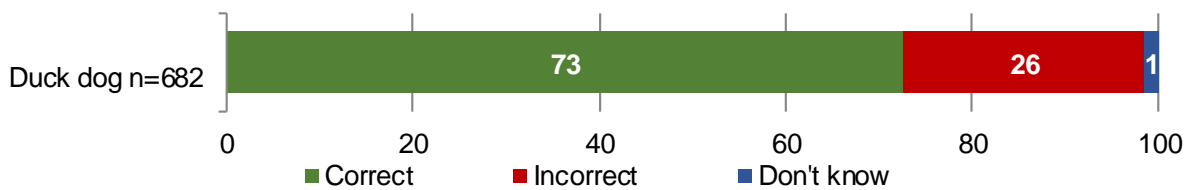
Chart 104: Duck dog module - Firearm use for gundog training



**DUD12: Gundog management on hot days**

Three answers were required to answer this question correctly and 73% of all survey respondents selected all three.

Chart 105: Duck dog module - Gundog management on hot days



# Whole of survey results

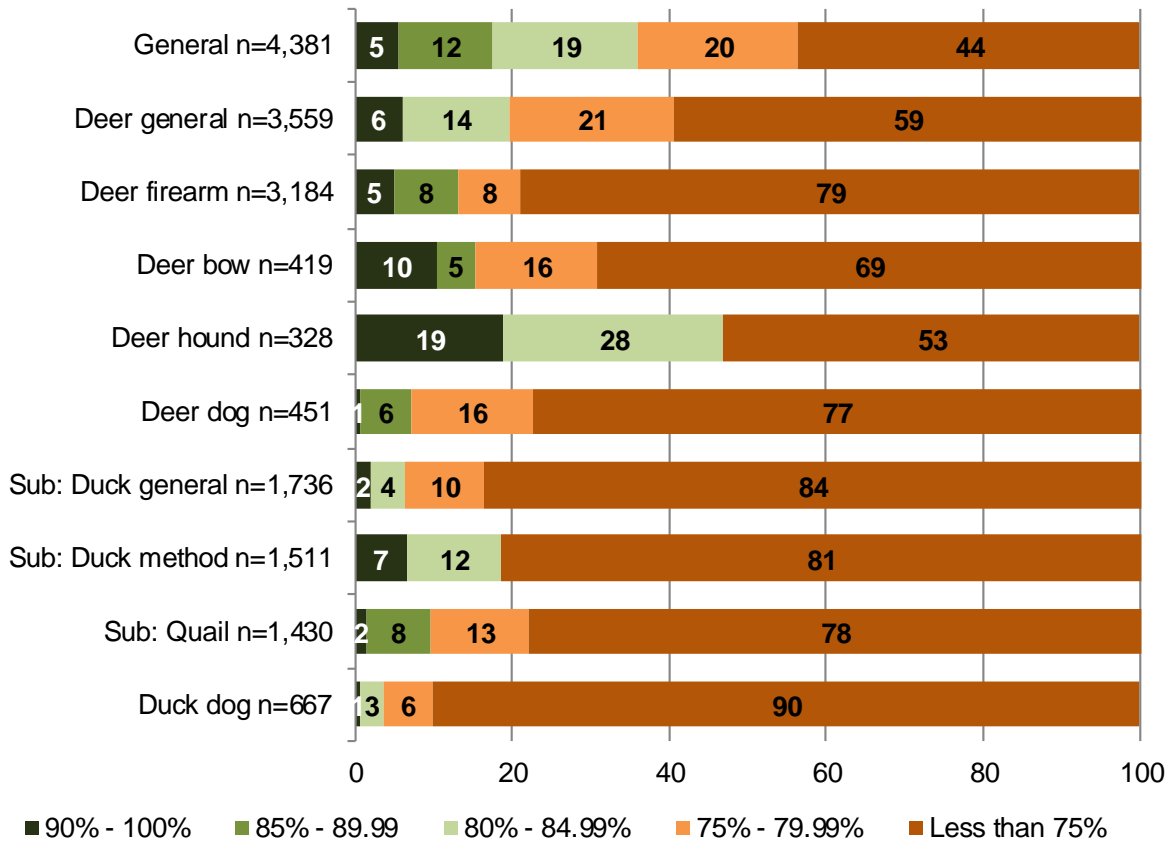
This section looks at how well survey participants did from a whole of survey perspective, as distinct from an individual question perspective. At the start of the survey, respondents were asked about the game species they hunted in Victoria and the method used to hunt game. Based on their responses to these questions, respondents were shown applicable sets of questions (modules) in the survey. There were many possible ways a respondent could move through the survey, with different combinations of questions presented. We have referred to these as 'scenarios'. For example, a respondent who indicated that they hunted for deer only and with a bow only were presented the following modules: general, deer general and deer bow.

A total of 10 modules and 36 scenarios were identified. Analysis was conducted to calculate the number of correct responses within each module and each scenario. The chart below displays the results for respondents who answered **all questions** within a **module**. The modules Deer hound and General had the highest proportion of respondents who answered more of the questions correctly, while the Duck dog and Duck general had the fewest correct responses.

The chart below includes only respondents who answered all questions within a module.

## Proportion of correct responses within a module

*Base: All respondents in module, n counts displayed in chart rows  
Only responses where all questions were answered within a module are shown*



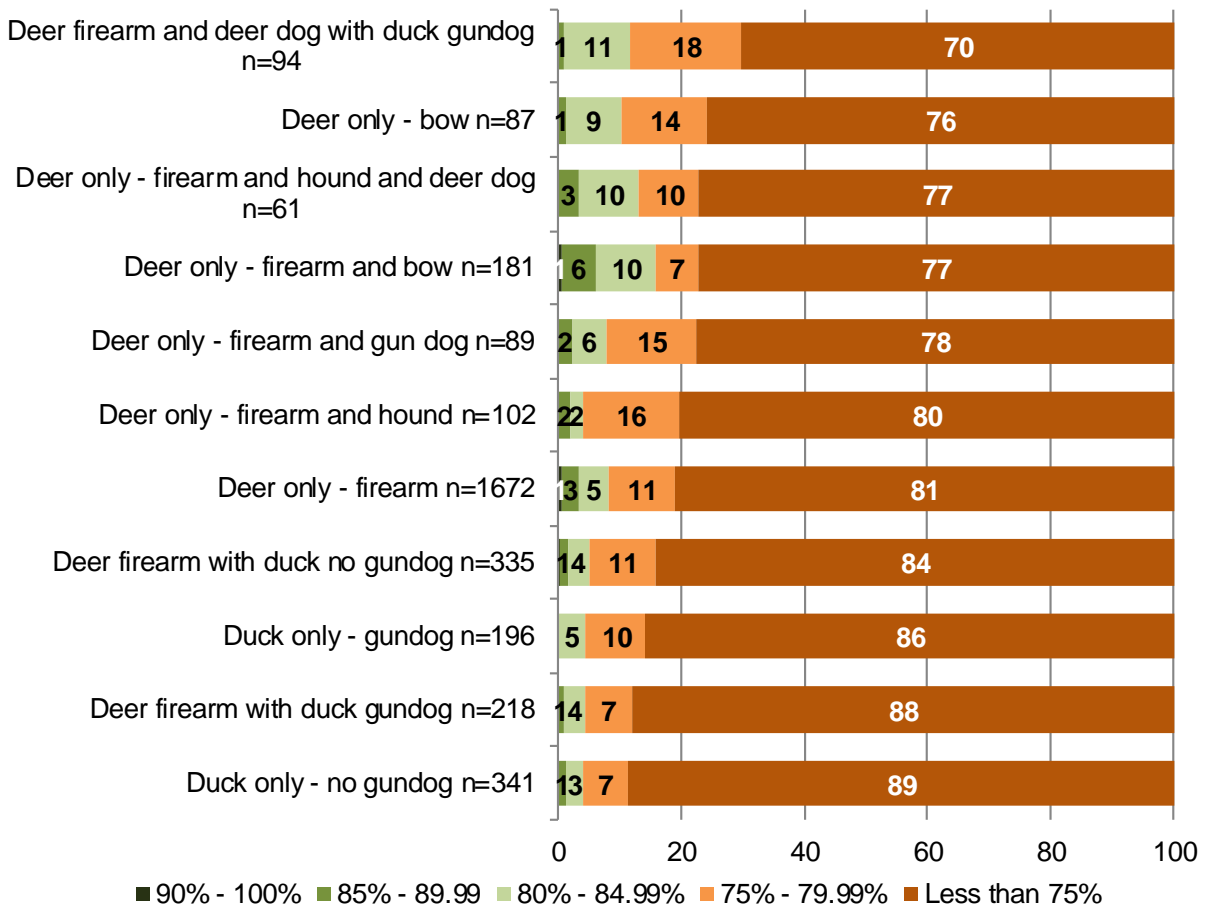
The following chart show the results of the analysis for scenarios that had 50 or more respondents who answered **all questions** within a scenario.

No respondents achieved 100%, that is, answered all questions correctly. The scenario Deer only - firearm and bow had the highest proportion of correct answers, whereas relatively fewer respondents correctly answered Duck only – no gundog and Deer firearm with duck gundog.

### Proportion of correct responses within a scenario

Base: All respondents in scenario, n counts displayed in chart rows

Only responses where all questions were answered within a scenario are shown



# Conclusions and considerations

## Conclusions

This section draws conclusions about the findings within the body of the report as well as the demographic comparisons in Appendix B.

### *Deer hunters compared with duck hunters*

Overall, no one group stood out as being far more knowledgeable than other groups of hunters. Most commonly, respondents who answered all questions within a module answered less than 75% of questions correctly. The modules with the highest proportion of respondents achieving the majority of correct answers were the Deer hound and General modules. Hound hunters may have performed better given they are already required to pass a knowledge test.

The more detailed analysis in the scenario section reinforced the idea that more hunter knowledge was required across species type and hunting method. The scenario with the highest proportion of correct responses was Deer only – firearm and bow, whereas relatively fewer respondents correctly answered Duck only – gundog and Duck only – no gundog.

Demographic analysis indicated very few statistically significant differences in modules related to Deer bow and Deer hound. The proportion of correct scores in these two modules tended to be higher on average compared with other modules.

### *Demographic differences*

Hunters that spoke English as a first language and those with a higher level of completed education achieved better results. These two demographics were linked, with more English speakers having completed some type of higher education.

As a pattern, those who had been hunting game in Victoria for more than 20 years had higher scores.

Those who were members of a gun, game hunting, shooting club / organisation in Australia tended to answer more questions correctly.

We note that social media usage made no discernible difference to scores.

### *Hunter knowledge in general*

The demographic analysis as well as the module and scenario comparisons indicate that every hunter group and every demographic cohort would benefit from increasing their knowledge of hunting laws and good hunting practice.

### *Species-focus*

Results from the initial focus groups as well as the numeric results indicated that some hunters had knowledge of certain species. For example, those who hunted sambar deer knew a lot about sambar but not a lot about any other type of deer. For any future surveying, it needs to be made clear before attempting any knowledge-based survey that participants need to know about all species of deer or game bird, not just the ones that they hunt or have hunted in the past.

The same comment can be made about firearms calibres and bullet weights. It needs to be made clear to survey participants that they need to know that all types of firearms / calibre / bullet weights will be surveyed for, not just the ones that they hunt with right now.

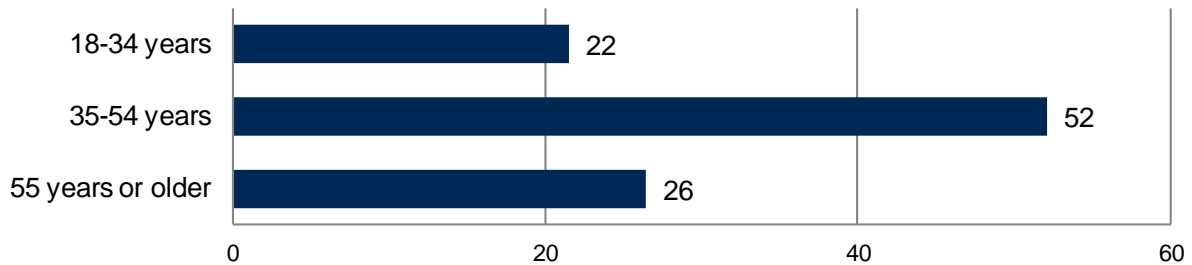
# Appendix A: Survey participant details

Survey participants were asked a number of demographic questions. Their answers were used to segment participants and then used analyse survey results. Cross tabulations of survey answers with various demographic segments have been presented in the body of the report. This appendix outlines the overall sample answers to the demographic questions.

## Age (%)

Base: All respondents, n=5,318.

Number may not total to 100% due to rounding

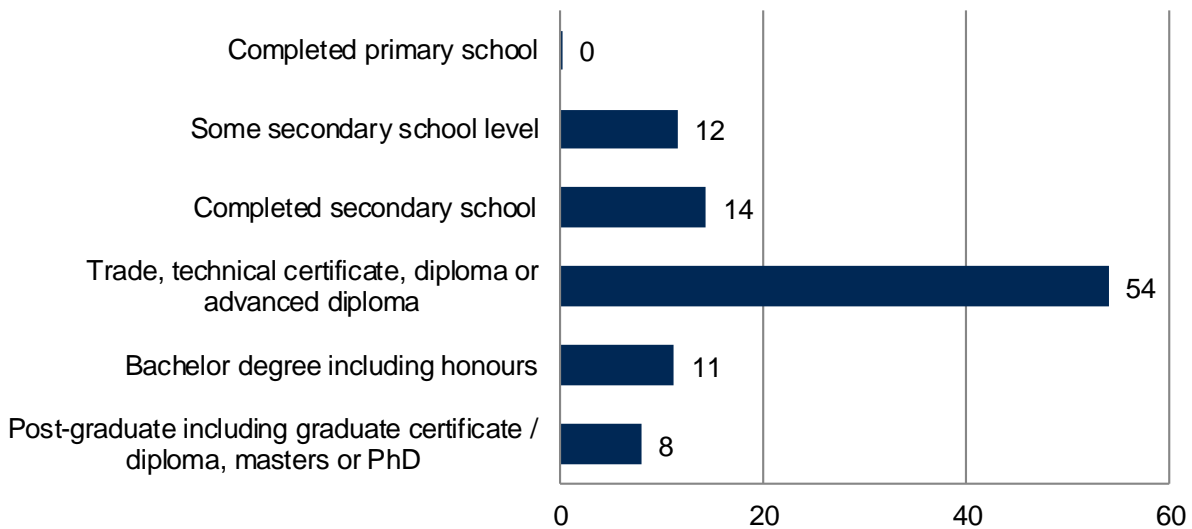


A majority of licence holders had post-secondary qualifications. The largest group had a certificate or diploma.

## Highest level of education

Base: All respondents, n=5,318

Number may not total to 100% due to rounding

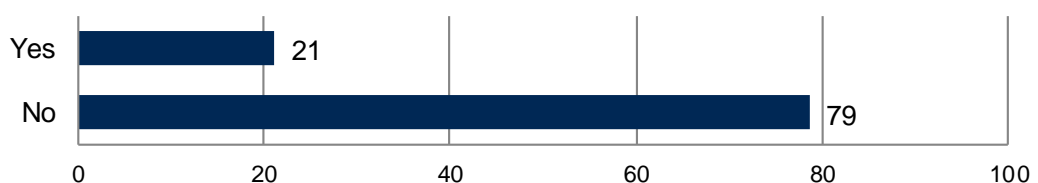


A majority of respondents spoke only English at home.

## Speak language other than English at home (%)

Base: All respondents, n=5,318

Number may not total to 100% due to rounding

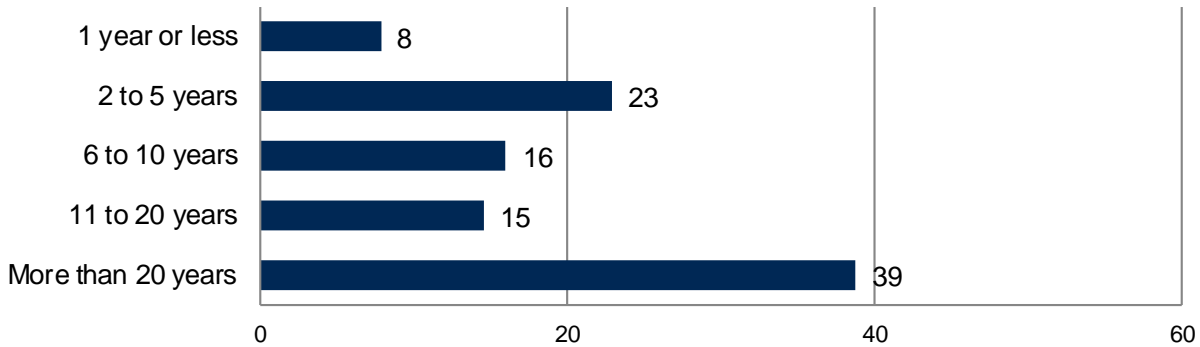


Most commonly, respondents had more than 20 years of **game** hunting experience in Victoria, while 31% had five or fewer years of experience.

### Length of time hunting game in Victoria

Base: All respondents, n=5,318

Number may not total to 100% due to rounding

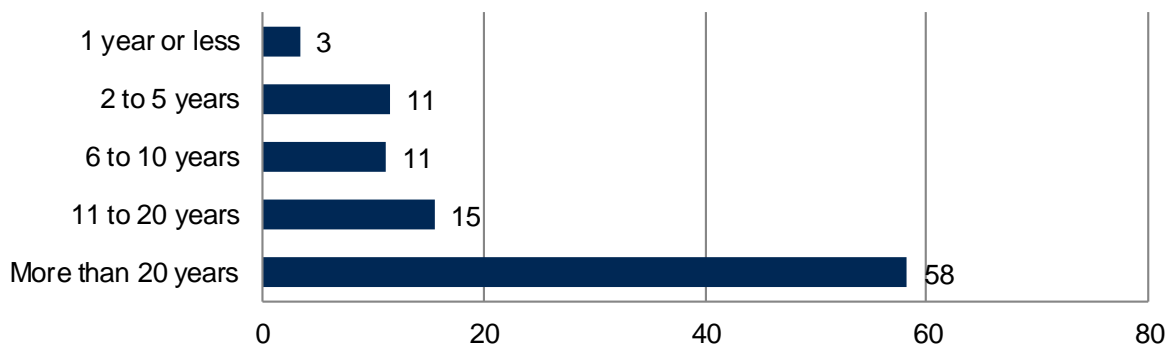


Most commonly respondents had more than 20 years of **any type of hunting experience anywhere**, while only 14% had five or fewer years of experience. This included hunting game and pest animals anywhere in Australia and internationally.

### Length of time hunting any type of animal, anywhere (%)

Base: All respondents, n=5,318

Number may not total to 100% due to rounding

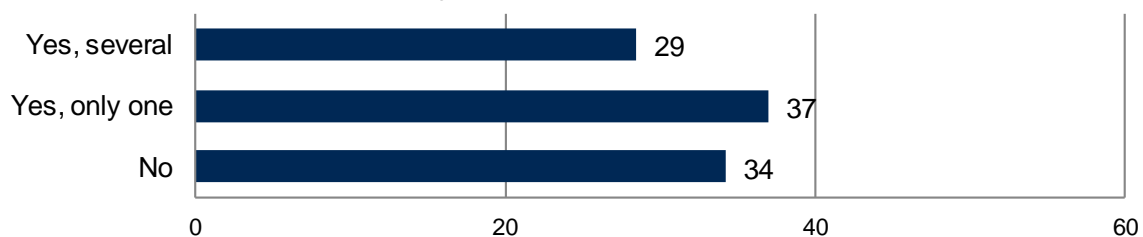


Licensed hunters fell into three clear groups in terms of hunting-related association membership. One third of Victorian licensed hunters belong to no clubs or organisations while two-thirds belonged to one or more hunting-related clubs / organisations.

### Member of a gun, game hunting, shooting club or organisation somewhere in Australia (%)

Base: All respondents, n=5,318

Number may not total to 100% due to rounding

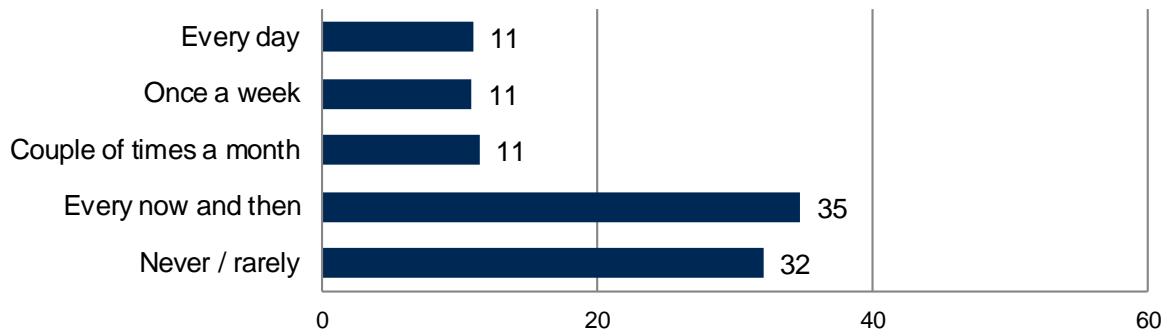


The survey respondent sample was evenly split into three groups with respect to their use of social media: around a third never or rarely used social media, one third used it infrequently, and another third used it frequently (monthly or more frequently).

### Frequency of use online social media to inform about game hunting rules in Victoria

Base: All respondents, n=5,318

Number may not total to 100% due to rounding



## Appendix B: Demographic comparisons

This appendix includes tables detailing the percent correct findings of all survey questions cross-tabulated against eight different profiling questions:

- < Age group
- < Highest level of education
- < Language other than English spoken at home
- < Location (derived from postcode)
- < Length of time respondents have been hunting game in Victoria
- < Length of time respondents have been hunting any type of animal, anywhere
- < Membership of a gun, game hunting, shooting club or organisation in Australia; and
- < Frequency of social media usage for sourcing information about Victorian game hunting rules.

The tables show the proportion of respondents within each category who provided a correct answer to the questions- indicated by %+. Non-responses were excluded from the question bases.

Results were analysed using a z test. **Yellow** highlighting in the cells indicate statistically significantly higher results at a 95% confidence level. A statistically significant result indicates that it was a true difference and not due to measuring error. Differences can be small yet statistically significantly different.



## General module questions - % correct differences

The higher scoring groups by key demographics in the **general** module were:

- ◀ Education: higher levels of education
- ◀ CALD: non-CALD (Culturally and Linguistically Diverse)
- ◀ Club membership: members of one or more clubs.

While there were some differences by age, location, hunting experience and social media use, the differences were small and not consistent across the module. In other words, there was little overall pattern of difference within these demographics.

Table 13: General module questions by demographics

General module questions (% correct)	Age group %+			Highest level of education %+			Language other than English at home %+		Location %+	
	18-34 years n=1,144 %	35-54 years n=2,768 %	55 years or older n=1,406 %	Secondary n=1,382 %	Certificate / diploma n=2,870 %	University (BD and higher) n=1,030 %	Yes n=1,124 %	No n=4,180 %	Major city n=2,566 %	Regional area n=2,699 %
G1: Crossing a fence while carrying a firearm	94	96	95	94	96	96	92	96	94	96
G2: Interacting with an authorised officer	32	28	19	19	26	36	21	27	27	25
G3: Personal safety	40	45	39	34	44	51	34	45	43	42
G4: Animal welfare	73	74	71	65	74	84	57	77	70	76
G5: Ethical and responsible hunting	89	87	87	82	88	92	78	89	86	88
G6: Hunting on private land	98	99	98	97	99	99	96	99	98	98
G7: Safety and shooting	81	78	77	74	78	85	70	81	77	80
G8: Hunting clothing and safety	61	62	57	62	59	62	60	60	58	62

General module questions (% correct)	Age group %+			Highest level of education %+			Language other than English at home %+		Location %+	
	18-34 years n=1,144 %	35-54 years n=2,768 %	55 years or older n=1,406 %	Secondary n=1,382 %	Certificate / diploma n=2,870 %	University (BD and higher) n=1,030 %	Yes n=1,124 %	No n=4,180 %	Major city n=2,566 %	Regional area n=2,699 %
G9: Sources of game hunting information	96	96	94	94	96	97	95	96	96	95
G10: Alcohol and firearms	97	96	95	96	96	97	96	96	97	95
G11: Game species	51	53	53	50	54	53	46	54	50	55
G12: Cultural sites	26	24	26	25	24	28	23	25	24	25
G13: Reporting illegal hunting	95	96	94	95	95	96	94	96	95	95
G14: Spotlighting	56	66	67	64	64	66	65	64	66	63
G15: Hours of the day for hunting	62	63	59	54	63	69	59	63	64	61
G16: Preparing to go game hunting in Victoria for the first time	98	98	97	97	98	98	96	98	97	97

Table 14: General module questions by demographics continues

General module questions (% correct)	Hunting game in VIC			Hunting any type of animal, anywhere			Member of gun, game hunting, shooting club/organisation in AU			Frequency of social media usage for VIC game hunting rules info		
	5 years or less n=1,634	6 - 20 years n=1,624	> 20 years n=2,060	5 years or less n=793	6 - 20 years n=1,415	> 20 years n=3,095	Yes, several n=1,517	Yes, only one n=1,970	No n=1,823	Monthly or more frequently n=1,765	Infrequent n=1,847	Never/ rarely n=1,703
	%	%	%	%	%	%	%	%	%	%	%	%
G1: Crossing a fence while carrying a firearm	94	96	96	92	95	96	97	95	94	95	95	96
G2: Interacting with an authorised officer	29	28	23	27	29	25	29	25	25	25	27	27
G3: Personal safety	45	43	40	39	42	44	48	44	37	41	41	45
G4: Animal welfare	73	73	73	64	72	76	81	73	67	72	73	74
G5: Ethical and responsible hunting	88	86	87	86	86	88	91	88	83	89	87	85
G6: Hunting on private land	98	98	99	96	98	99	99	98	98	98	99	98
G7: Safety and shooting	80	78	77	80	78	78	80	80	76	78	79	79
G8: Hunting clothing and safety	58	60	63	56	60	61	60	60	62	61	61	59
G9: Sources of game hunting information	97	96	94	96	97	95	96	95	95	96	96	94
G10: Alcohol and firearms	97	97	95	97	97	96	96	96	96	96	96	96
G11: Game species	36	53	66	34	48	59	61	51	47	54	53	51
G12: Cultural sites	25	25	25	22	26	25	25	26	24	24	24	26

General module questions (% correct)	Hunting game in VIC			Hunting any type of animal, anywhere			Member of gun, game hunting, shooting club / organisation in AU			Frequency of social media usage for VIC game hunting rules info		
	5 years or less n=1,634	6 - 20 years n=1,624	> 20 years n=2,060	5 years or less n=793	6 - 20 years n=1,415	> 20 years n=3,095	Yes, several n=1,517	Yes, only one n=1,970	No n=1,823	Monthly or more frequently n=1,765	Infrequent n=1,847	Never/ rarely n=1,703
	%	%	%	%	%	%	%	%	%	%	%	%
G13: Reporting illegal hunting	96	96	94	93	96	95	96	96	94	96	96	94
G14: Spotlighting	62	61	69	59	61	67	65	66	62	64	65	63
G15: Hours of the day for hunting	60	63	63	57	62	63	68	63	56	66	61	59
G16: Preparing to go game hunting in Victoria for the first time	97	98	97	97	98	97	98	98	97	98	98	97

## Deer general module - % correct differences

The higher scoring groups by key demographics in the **deer general** module were:

- ◁ Education: higher levels of education for some but not all questions
- ◁ CALD: non-CALD (Culturally and Linguistically Diverse)
- ◁ Hunting experience: more experience
- ◁ Club membership: members of one or more clubs.

While there were some differences by age, location and social media use, the differences were small and not consistent across the module. In other words, there was little overall pattern of difference within these demographics.

Table 15: Deer general module questions by demographics

Deer general module questions (% correct)	Age group			Highest level of education			Language other than English at home		Location	
	18-34 years n=1,021	35-54 n=2,436	55 or older n=1,014	Secondary n=1,122	Certificate / diploma n=2,444	University (BD and higher) n=873	Yes n=949	No n=3,509	Major city n=2,187	Regional area n=2,240
	%	%	%	%	%	%	%	%	%	%
DG1: Transporting a harvested deer	55	50	46	48	49	56	43	52	47	53
DG2: Wounding	99	100	99	99	100	99	98	100	99	100
DG3: Permission and private property	99	99	99	99	99	99	98	99	99	99
DG4: Disposing of deer carcass remains	90	94	94	91	94	95	91	94	93	94
DG5: Storing ammunition	42	45	49	44	45	50	42	46	44	47
DG6: Hog deer harvest limits	61	62	69	65	65	58	65	63	62	66
DG7: Stalking in national parks	72	69	67	64	69	75	64	70	69	70
DG8: Spotlight regulations	34	35	35	34	36	35	34	35	34	37

Deer general module questions (% correct)	Age group			Highest level of education			Language other than English at home		Location	
	18-34 years n=1,021	35-54 n=2,436	55 or older n=1,014	Secondary n=1,122	Certificate / diploma n=2,444	University (BD and higher) n=873	Yes n=949	No n=3,509	Major city n=2,187	Regional area n=2,240
	%	%	%	%	%	%	%	%	%	%
DG9: Unused hog deer tags	3	4	8	4	4	6	4	5	4	5
DG10: Personal safety while carrying a deer trophy	57	62	51	51	60	64	50	60	58	59
DG11: Ammunition storage in a vehicle	86	87	84	83	87	91	81	88	87	86
DG12: Open season dates for deer	83	87	84	84	86	87	82	86	84	87

Table 16: Deer general module questions by demographics continues

Deer general module questions (% correct)	Hunting game in VIC			Hunting any type of animal, anywhere			Member of gun, game hunting, shooting club/ organisation in AU			Frequency of social media usage for VIC game hunting rules info		
	5 years or less n=1,554	6 - 20 years n=1,451	> 20 years n=1,466	5 years or less n=748	6 - 20 years n=1,267	> 20 years n=2,445	Yes, several n=1,336	Yes, only one n=1,647	No n=1,481	Monthly or more frequently n=1,502	Infrequent n=1,541	Never/ rarely n=1,426
	%	%	%	%	%	%	%	%	%	%	%	%
DG1: Transporting a harvested deer	48	53	49	46	51	51	55	49	46	52	50	48
DG2: Wounding	99	99	100	98	99	100	99	100	99	100	99	99
DG3: Permission and private property	99	99	99	99	99	99	100	99	99	99	99	99
DG4: Disposing of deer carcass remains	91	94	96	88	93	95	95	94	92	94	94	93
DG5: Storing ammunition	43	44	49	41	40	49	49	46	41	44	47	46
DG6: Hog deer harvest limits	54	65	73	52	62	68	71	66	54	69	64	59
DG7: Stalking in national parks	70	71	67	66	70	70	74	70	63	75	70	63
DG8: Spotlight regulations	31	36	38	26	34	38	36	36	34	34	36	35
DG9: Unused hog deer tags	2	4	7	2	3	6	7	4	3	4	4	5
DG10: Personal safety while carrying a deer trophy	58	57	59	55	56	60	64	56	55	59	57	59
DG11: Ammunition storage in a vehicle	85	87	87	84	86	88	90	86	83	87	87	85
DG12: Open season dates for deer	82	88	87	79	86	87	89	86	81	87	86	84

## Deer firearm module - % correct differences

The higher scoring groups by key demographics in the **deer firearm** module were:

- < Age: 55 or older on some but not all questions
- < Education: higher levels of education
- < CALD: non-CALD (Culturally and Linguistically Diverse)
- < Hunting experience: more experience
- < Club membership: members of one or more clubs.

While there were some differences by location and social media use, the differences were small and not consistent across the module. In other words, there was little overall pattern of difference within these demographics.

Table 17: Deer firearm module questions by demographics

Deer firearm module questions (% correct)	Age group			Highest level of education			Language other than English at home		Location	
	18-34 years n=972	35-54 n=2,345	55 or older n=983	Secondary n=1,078	Certificate / diploma n=2,352	University (BD and higher) n=838	Yes n=906	No n=3,381	Major city n=2,097	Regional area n=2,161
	%	%	%	%	%	%	%	%	%	%
DF1: Smooth bore firearm sights	23	26	29	23	27	29	25	26	25	27
DF2: Anatomical aim points	77	74	69	68	75	75	67	75	73	74
DF3: Improving shot accuracy	82	81	77	73	81	89	70	83	79	81
DF4: Shooting at a deer running away	95	97	96	95	97	97	92	97	96	97
DF5: Shotgun configurations	28	33	37	29	34	36	34	33	32	34
DF6: Minimum calibre and projectile weight for sambar deer	81	87	91	83	88	89	83	88	86	88



Deer firearm module questions (% correct)	Age group			Highest level of education			Language other than English at home		Location	
	18-34 years n=972	35-54 n=2,345	55 or older n=983	Secondary n=1,078	Certificate / diploma n=2,352	University (BD and higher) n=838	Yes n=906	No n=3,381	Major city n=2,097	Regional area n=2,161
	%	%	%	%	%	%	%	%	%	%
DF7: Shotgun gauges for deer hunting	14	17	18	11	17	22	17	16	17	15
DF8: Minimum calibre and projectile weight for non-sambar deer	42	43	45	35	44	51	40	44	41	45
DF9: Muzzle-loaders	15	23	32	20	25	27	21	25	22	26

Table 18: Deer firearm module questions by demographics continues

Deer firearm module questions (% correct)	Hunting game in VIC			Hunting any type of animal, anywhere			Member of gun, game hunting, shooting club / organisation in AU			Frequency of social media usage for VIC game hunting rules info		
	5 years or less n=1,465	6 - 20 years n=1,413	> 20 years n=1,422	5 years or less n=696	6 - 20 years n=1,220	> 20 years n=2,373	Yes, several n=1,299	Yes, only one n=1,580	No n=1,414	Monthly or more frequently n=1,433	Infrequent n=1,489	Never/ rarely n=1,376
	%	%	%	%	%	%	%	%	%	%	%	%
DF1: Smooth bore firearm sights	20	25	33	16	23	30	36	24	19	26	26	25
DF2: Anatomical aim points	72	75	73	68	75	74	77	74	69	77	72	71
DF3: Improving shot accuracy	79	81	80	75	80	81	84	79	78	82	79	80
DF4: Shooting at a deer running away	96	97	97	94	97	97	97	97	95	96	97	97
DF5: Shotgun configurations	27	29	43	23	27	38	44	30	25	36	33	31
DF6: Minimum calibre and projectile weight for sambar deer	82	89	90	76	85	90	93	88	79	88	86	87
DF7: Shotgun gauges for deer hunting	15	15	19	12	13	19	23	15	12	18	16	16
DF8: Minimum calibre and projectile weight for non-sambar deer	39	42	48	32	41	47	53	43	33	47	41	43
DF9: Muzzle-loaders	18	22	33	14	16	30	32	23	17	26	23	23

## Deer bow module - % correct differences

There were few differences between any demographic sub-groups for this module, except those who were members of one or more hunting-related clubs tended to score more correctly.

Table 19: Deer bow module questions by demographics

Deer bow module questions (% correct)	Age group			Highest level of education			Language other than English at home		Location	
	18-34 years n=126	35-54 n=321	55 or older n=84	Secondary n=100	Certificate / diploma n=297	University (BD and higher) n=132	Yes n=105	No n=425	Major city n=256	Regional area n=267
	%	%	%	%	%	%	%	%	%	%
DB1: Cross bow draw weight for non-sambar deer	16	20	19	10	20	21	16	19	18	20
DB2: Cross bow draw weight for sambar deer	16	26	20	18	25	20	23	23	22	23
DB3: Sharpened cutting blades on broadhead arrows	83	81	88	76	84	85	84	83	82	83
DB4: Anatomical aim points for bows and crossbows	99	99	99	97	99	100	98	99	99	100
DB5: Draw weight for long, recurve or compound bow	32	42	27	28	38	40	32	39	33	41
DB6: Arrow heads	96	97	96	97	97	96	96	96	98	95
DB7: Maximum distance for a bow	78	92	96	91	90	88	89	90	87	93
DB8: Compound bow arrow specifications	42	53	61	49	55	46	61	50	51	53

Table 20: Deer bow module questions by demographics continues

Deer bow module questions (% correct)	Hunting game in VIC			Hunting any type of animal, anywhere			Member of gun, game hunting, shooting club/ organisation in AU			Frequency of social media usage for VIC game hunting rules info		
	5 years or less n=220	6 - 20 years n=167	> 20 years n=144	5 years or less n=103	6 - 20 years n=138	> 20 years n=289	Yes, several n=189	Yes, only one n=187	No n=155	Monthly or more frequently n=211	Infrequent n=161	Never/ rarely n=159
	%	%	%	%	%	%	%	%	%	%	%	%
DB1: Cross bow draw weight for smaller deer	19	17	21	10	18	22	26	14	15	18	21	17
DB2: Cross bow draw weight for sambar deer	21	23	24	11	21	27	32	18	15	23	22	22
DB3: Sharpened cutting blades on broadhead arrows	81	84	84	80	85	83	86	86	74	82	82	84
DB4: Anatomical aim points for bows and crossbows	99	98	100	98	99	100	100	100	97	100	98	99
DB5: Draw weight for long, recurve or compound bow	37	42	32	33	39	38	44	36	29	36	40	37
DB6: Arrow heads	95	96	98	95	98	96	97	97	95	98	94	97
DB7: Maximum distance for a bow	85	93	94	79	91	93	91	90	87	92	91	85
DB8: Compound bow arrow specifications	50	50	57	56	42	55	55	54	46	54	53	48

## Deer hound module - % correct differences

There were few statistically significant differences between any sub-groups for this module.

Table 21: Deer hound module questions by demographics

Deer hound module questions (% correct)	Age group			Highest level of education			Language other than English at home		Location	
	18-34 years n=161	35-54 n=253	55 or older n=82	Secondary n=144	Certificate / diploma n=306	University (BD and higher) n=45	Yes n=85	No n=409	Major city n=145	Regional area n=347
	%	%	%	%	%	%	%	%	%	%
DH1: Pack size	75	75	71	70	77	74	59	77	69	76
DH2: Hound pups	75	74	67	73	74	61	63	74	70	73
DH3: Microchipping	39	36	26	39	34	32	43	34	37	34
DH4: Collar tags	59	60	62	59	60	65	54	61	57	61
DH5: Responsibility for hounds	71	73	86	74	76	74	67	76	76	74
DH6: Prohibited areas	96	95	96	97	95	90	91	96	94	96
DH7: Hound breeds	88	90	94	92	89	90	89	90	89	91
DH8: Hound hunting season	86	84	80	83	84	87	80	84	80	85
DH9: Legality of hunting in a particular area	82	91	84	85	89	83	73	89	86	88
DH10: Numbers of hunters	40	34	38	43	33	37	36	36	37	36

Table 22: Deer hound module questions by demographics continues

Deer hound module questions (% correct)	Hunting game in VIC			Hunting any type of animal, anywhere			Member of gun, game hunting, shooting club/ organisation in AU			Frequency of social media usage for VIC game hunting rules in info		
	5 years or less n=71	6 - 20 years n=191	> 20 years n=234	5 years or less n=44	6 - 20 years n=145	> 20 years n=305	Yes, several n=187	Yes, only one n=166	No n=143	Monthly or more frequently n=183	Infrequent n=169	Never/ rarely n=144
	%	%	%	%	%	%	%	%	%	%	%	%
DH1: Pack size	66	77	75	65	74	76	72	77	74	69	74	81
DH2: Hound pups	76	74	71	74	74	72	69	74	75	73	71	75
DH3: Microchipping	34	38	34	29	37	35	33	39	33	38	31	36
DH4: Collar tags	72	55	60	65	62	59	61	62	57	61	53	68
DH5: Responsibility for hounds	76	70	78	74	71	77	76	78	70	73	77	75
DH6: Prohibited areas	96	93	97	93	93	97	96	97	92	95	94	98
DH7: Hound breeds	83	88	94	76	87	93	89	91	90	88	87	97
DH8: Hound hunting season	85	82	85	86	80	85	82	84	86	85	79	89
DH9: Legality of hunting in a particular area	79	87	90	72	88	89	91	86	84	89	83	90
DH10: Numbers of hunters	36	39	39	41	35	40	38	42	35	38	42	36

## Deer dog module - % correct differences

There were some statistically significant differences between sub-groups for this module, but no general patterns of difference.

Table 23: Deer dog module questions by demographics

Deer dog module questions (% correct)	Age group			Highest level of education			Language other than English at home		Location	
	18-34 years n=177	35-54 n=349	55 or older n=130	Secondary n=143	Certificate / diploma n=392	University (BD and higher) n=120	Yes n=118	No n=536	Major city n=245	Regional area n=402
	%	%	%	%	%	%	%	%	%	%
DD1: Hunting with dogs in national parks	72	78	87	75	80	77	69	80	76	80
DD2: Hunting with dogs for hog deer	68	76	81	77	75	74	75	76	74	76
DD3: Hunting on hot days	76	79	79	73	79	84	67	81	78	78
DD4: Categories of dogs for fallow deer hunting	17	15	17	12	14	26	10	17	14	16
DD5: Gundogs numbers	44	50	42	44	44	59	43	48	48	46
DD6: Breeds of dog	35	37	50	41	37	45	39	40	42	38
DD7: Cross-breed dogs	69	81	76	79	77	76	78	77	78	76
DD8: Restrictions on dog actions	20	17	18	18	18	16	24	17	20	16

Table 24: Deer dog module questions by demographics continues

Deer dog module questions (% correct)	Hunting game in VIC			Hunting any type of animal, anywhere			Member of gun, game hunting, shooting club/ organisation in AU			Frequency of social media usage for VIC game hunting rules info		
	5 years or less n=89	6 - 20 years n=230	> 20 years n=337	5 years or less n=38	6 - 20 years n=179	> 20 years n=438	Yes, several n=304	Yes, only one n=186	No n=165	Monthly or more frequently n=267	Infrequent n=225	Never/ rarely n=164
	%	%	%	%	%	%	%	%	%	%	%	%
DD1: Hunting with dogs in national parks	71	72	84	70	73	81	81	78	74	77	78	81
DD2: Hunting with dogs for hog deer	63	73	80	43	68	80	79	79	63	75	75	76
DD3: Hunting on hot days	70	76	82	61	75	81	80	75	80	79	76	81
DD4: Categories of dogs for fallow deer hunting	22	14	15	30	13	16	11	18	23	15	11	23
DD5: Gundogs numbers	51	49	45	48	42	49	48	44	49	43	49	50
DD6: Breeds of dog	37	30	46	22	33	43	41	35	41	43	44	28
DD7: Cross-breed dogs	67	75	81	70	69	80	77	78	76	77	77	78
DD8: Restrictions on dog actions	13	19	19	22	19	17	18	18	18	16	19	19



## Duck and quail general module - % correct differences

The higher scoring groups by key demographics in the **duck general** sub-module were:

- ⟨ Age: 35-54 year olds on some but not all questions
- ⟨ Education: higher levels of education
- ⟨ CALD: non-CALD (Culturally and Linguistically Diverse)
- ⟨ Location: people living in regional areas
- ⟨ Hunting experience: more experience on some but not all questions
- ⟨ Club membership: members of one or more clubs.

The higher scoring groups by key demographics in the **duck method** sub-module were:

- ⟨ Age: 55 years or older on some but not all questions
- ⟨ Education: higher levels of education
- ⟨ CALD: non-CALD (Culturally and Linguistically Diverse) on some but not all questions
- ⟨ Location: people living in regional areas on some but not all questions
- ⟨ Hunting experience: more experience on many but not all questions
- ⟨ Club membership: members of one or more clubs
- ⟨ Social media: Frequent users on many but not all questions.

The higher scoring groups by key demographics in the **quail** sub-module were:

- ⟨ Age: 35 years or older on some but not all questions
- ⟨ Education: higher levels of education
- ⟨ CALD (Culturally and Linguistically Diverse): mixture of differences
- ⟨ Hunting experience: more experience on some but not all questions
- ⟨ Club membership: members of one or more clubs
- ⟨ Social media: Frequent users on some questions.

Table 25: Duck and quail general module questions by demographics

Duck general module questions (% correct)	Age group			Highest level of education			Language other than English at home		Location	
	18-34 years n=481	35-54 n=1,170	55 or older n=795	Secondary n=638	Certificate / diploma n=1,344	University (BD and higher) n=448	Yes n=552	No n=1,889	Major city n=1,142	Regional area n=1,279
	%	%	%	%	%	%	%	%	%	%
DUG1: Dispatch of downed ducks	15	15	10	8	14	19	11	14	13	13
DUG2: Swatter loads	46	47	41	38	45	54	36	47	43	46
DUG3: Swatter load shot size	44	49	46	44	46	54	46	47	46	48
DUG4: Swatter load risks	13	16	14	13	15	17	15	15	14	15
DUG5: Spent cartridges	99	98	99	98	99	99	96	99	98	99
DUG6: Respecting other hunters	95	94	90	88	94	96	87	94	90	94
DUG7: Identifying game ducks	25	20	16	14	20	26	14	21	18	21
DUG8: Non-game duck species	59	61	52	54	59	59	51	59	57	58
DUG9: Waterfowl wounding causes	80	80	77	68	82	87	72	81	77	81
DUG10: Minimising wounding	44	37	33	31	37	44	30	38	34	39
DUG11: Field dressing ducks	47	39	35	32	39	48	32	41	39	39
DUG12: Pellet spread	93	96	96	93	96	97	89	97	94	97

Table 26: Duck and quail general module questions by demographics continues

Duck general module questions (% correct)	Hunting game in VIC			Hunting any type of animal, anywhere			Member of gun, game hunting, shooting club / organisation in AU			Frequency of social media usage for VIC game hunting rules info		
	5 years or less n=277	6 - 20 years n=680	> 20 years n=1,489	5 years or less n=152	6 - 20 years n=573	> 20 years n=1,714	Yes, several n=845	Yes, only one n=851	No n=746	Monthly or more frequently n=900	Infrequent n=846	Never/ rarely n=698
	%	%	%	%	%	%	%	%	%	%	%	%
DUG1: Dispatch of downed ducks	12	14	13	9	14	13	17	14	8	13	13	14
DUG2: Swatter loads	50	45	43	43	44	45	46	45	41	46	44	43
DUG3: Swatter load shot size	45	48	47	43	46	48	52	48	40	48	47	46
DUG4: Swatter load risks	14	14	15	13	14	15	16	14	14	14	16	14
DUG5: Spent cartridges	97	98	99	96	98	99	100	99	98	99	98	99
DUG6: Respecting other hunters	89	94	93	83	94	93	95	93	88	94	92	91
DUG7: Identifying game ducks	23	25	17	16	25	18	21	21	16	20	19	19
DUG8: Non-game duck species	49	55	60	48	57	59	63	59	49	62	57	53
DUG9: Waterfowl wounding causes	73	82	79	67	82	79	84	79	73	81	78	78
DUG10: Minimising wounding	41	41	35	34	41	36	42	37	31	39	37	34
DUG11: Field dressing ducks	39	44	37	35	42	38	48	39	28	46	37	34
DUG12: Pellet spread	86	95	97	80	93	97	98	96	90	97	94	94

Table 27: Duck and quail general module questions by demographics continues

Duck method module questions (% correct)	Age group			Highest level of education			Language other than English at home		Location	
	18-34 years n=481	35-54 n=1,170	55 or older n=795	Secondary n=638	Certificate / diploma n=1,344	University (BD and higher) n=448	Yes n=552	No n=1,889	Major city n=1,142	Regional area n=1,279
	%	%	%	%	%	%	%	%	%	%
DM1: Shotgun patterns	47	59	69	62	60	62	65	60	61	61
DM2: Sources of information for loads and chokes	21	25	23	17	23	35	24	24	25	23
DM3: Storing lead shot intended for other species	52	57	62	59	58	59	59	58	58	58
DM4: Maximum shooting distance	66	58	53	57	57	61	61	57	60	56
DM5: Assessing shotgun patterns	78	77	73	71	76	83	68	78	74	77
DM6: Shot materials	33	53	61	50	55	51	48	54	50	55
DM7: Shotgun cartridge characteristics	92	92	93	91	92	96	84	94	90	94
DM8: Bringing ducks in	32	28	25	23	28	33	21	29	29	27
DM9: Maximum shotgun gauge	73	79	90	83	82	83	80	83	81	83
DM10: Anatomical aim points	94	96	96	95	96	97	91	97	95	97
DM11: Lead shot allowances	34	44	51	42	45	51	36	47	41	49

Table 28: Duck and quail general module questions by demographics continues

Duck method module questions (% correct)	Hunting game in VIC			Hunting any type of animal, anywhere			Member of gun, game hunting, shooting club / organisation in AU			Frequency of social media usage for VIC game hunting rules info		
	5 years or less n=277	6 - 20 years n=680	> 20 years n=1,489	5 years or less n=152	6 - 20 years n=573	> 20 years n=1,714	Yes, several n=845	Yes, only one n=851	No n=746	Monthly or more frequently n=900	Infrequent n=846	Never/ rarely n=698
	%	%	%	%	%	%	%	%	%	%	%	%
DM1: Shotgun patterns	48	50	67	40	44	66	70	59	51	62	60	60
DM2: Sources of information for loads and chokes	19	26	24	19	23	24	32	24	13	29	20	22
DM3: Storing lead shot intended for other species	52	54	60	46	56	60	63	58	51	59	57	59
DM4: Maximum shooting distance	57	62	56	59	63	56	60	57	55	61	54	58
DM5: Assessing shotgun patterns	77	77	75	70	75	76	82	76	67	78	77	72
DM6: Shot materials	35	46	58	25	41	58	59	54	43	55	49	54
DM7: Shotgun cartridge characteristics	86	92	93	79	90	94	95	93	88	94	90	94
DM8: Bringing ducks in	27	30	27	22	29	28	34	26	21	32	28	22
DM9: Maximum shotgun gauge	70	78	86	66	73	86	85	82	79	84	79	84
DM10: Anatomical aim points	91	95	97	87	94	97	97	97	93	94	96	97
DM11: Lead shot allowances	20	40	51	13	34	50	55	44	35	47	42	47

Table 29: Duck and quail general module questions by demographics continues

Quail module questions (% correct)	Age group			Highest level of education			Language other than English at home		Location	
	18-34 years n=481 %	35-54 n=1,170 %	55 or older n=795 %	Secondary n=638 %	Certificate / diploma n=1,344 %	University (BD and higher) n=448 %	Yes n=552 %	No n=1,889 %	Major city n=1,142 %	Regional area n=1,279 %
Q1: Undersize or juvenile stubble quail	75	80	82	78	80	83	85	79	81	79
Q2: Stubble quail season dates	50	66	70	66	65	66	78	62	68	63
Q3: Stubble quail bag limit	44	56	57	56	53	56	66	52	59	50
Q4: Quail species	16	25	23	18	23	31	22	23	24	22
Q5: Attracting stubble quail	47	40	43	42	43	42	46	41	42	43
Q6: Safety in quail hunting	62	63	56	55	60	69	54	62	63	58
Q7: Sources of information on state game reserves	83	86	85	84	86	84	85	85	86	84
Q8: Recovering downed stubble quail	41	39	34	32	37	48	31	39	37	38
Q9: Permitted shot types	12	17	25	15	19	28	17	20	19	20

Table 30: Duck and quail general module questions by demographics continues

Quail module questions (% correct)	Hunting game in VIC			Hunting any type of animal, anywhere			Member of gun, game hunting, shooting club/ organisation in AU			Frequency of social media usage for VIC game hunting rules info		
	5 years or less n=277	6 - 20 years n=680	> 20 years n=1,489	5 years or less n=152	6 - 20 years n=573	> 20 years n=1,714	Yes, several n=845	Yes, only one n=851	No n=746	Monthly or more frequently n=900	Infrequent n=846	Never/ rarely n=698
	%	%	%	%	%	%	%	%	%	%	%	%
Q1: Undersize or juvenile stubble quail	72	76	82	67	74	82	85	80	73	81	80	78
Q2: Stubble quail season dates	52	57	70	51	53	69	72	68	53	70	64	62
Q3: Stubble quail bag limit	44	49	58	41	47	57	63	56	40	61	51	52
Q4: Quail species	21	22	23	16	19	24	29	22	16	27	21	21
Q5: Attracting stubble quail	45	44	41	36	42	43	46	42	38	43	43	40
Q6: Safety in quail hunting	61	60	60	55	61	60	67	57	56	63	58	59
Q7: Sources of information on state game reserves	82	87	85	78	85	86	88	86	81	88	84	84
Q8: Recovering downed stubble quail	34	39	37	35	39	37	39	37	36	38	36	37
Q9: Permitted shot types	10	13	23	11	11	22	27	18	11	22	17	19

## Duck dog module - % correct differences

The higher scoring groups by key demographics in the **duck dog** module were:

- ◀ Age: 55 or older on some but not all questions
- ◀ Education: higher education on some but not all questions
- ◀ CALD: non-CALD (Culturally and Linguistically Diverse) on some but not all questions
- ◀ Hunting experience: 6-20 years' experience
- ◀ Club membership: members of one or more clubs on some but not all questions.

While there were some differences by location and social media use, the differences were small and not consistent across the module. In other words, there was little overall pattern of difference within these demographics.

Table 31: Duck dog module questions by demographics

Duck dog module questions (% correct)	Age group			Highest level of education			Language other than English at home		Location	
	18-34 years n=244	35-54 n=610	55 or older n=359	Secondary n=310	Certificate / diploma n=680	University (BD and higher) n=213	Yes n=295	No n=916	Major city n=529	Regional area n=675
	%	%	%	%	%	%	%	%	%	%
DUD1: Gundog breeds for gamebirds	75	70	60	61	68	72	64	68	68	66
DUD2: Snake bite	75	83	80	79	79	89	69	84	77	83
DUD3: Gundog training	25	23	26	22	23	30	36	21	30	19
DUD4: Numbers of gundogs	14	13	17	18	13	15	23	13	17	13
DUD5: Blue-green algae	54	51	40	38	49	59	44	48	48	46
DUD6: Gundogs in state game reserves	20	17	12	14	14	24	18	15	16	14



DUD7: Training gundogs in a state game reserves	56	59	76	70	61	69	57	67	64	65
DUD8: Gundog restrictions	90	93	94	92	92	97	93	93	91	94
DUD9: Gundogs allowed for quail hunting	86	92	92	88	93	92	90	91	90	91
DUD10: Number of gundogs for stubble quail hunts	17	17	25	24	16	25	24	19	24	17
DUD11: Firearm use for gundog training	27	33	33	30	33	32	34	32	31	33
DUD12: Gundog management on hot days	72	74	71	61	76	80	65	75	71	74

Table 32: Duck dog module questions by demographics continues

Duck dog module questions (% correct)	Hunting game in VIC			Hunting any type of animal, anywhere			Member of gun, game hunting, shooting club/ organisation in AU			Frequency of social media usage for VIC game hunting rules in VIC		
	5 years or less n=90	6 - 20 years n=321	> 20 years n=802	5 years or less n=52	6 - 20 years n=254	> 20 years n=904	Yes, several n=506	Yes, only one n=403	No n=301	Monthly or more frequently n=510	Infrequent n=404	Never/ rarely n=299
	%	%	%	%	%	%	%	%	%	%	%	%
DUD1: Gundog breeds for gamebirds	74	76	64	58	76	66	72	66	59	73	63	64
DUD2: Snake bite	67	82	82	47	77	83	82	79	82	80	78	86
DUD3: Gundog training	31	31	21	32	31	23	26	24	21	21	28	24
DUD4: Numbers of gundogs	13	14	15	5	10	16	16	15	12	15	15	13
DUD5: Blue-green algae	42	57	45	22	62	46	52	44	45	51	48	42
DUD6: Gundogs in state game reserves	5	22	14	6	14	16	19	18	6	22	12	10
DUD7: Training gundogs in a state game reserves	45	63	67	33	61	66	68	66	55	64	67	63
DUD8: Gundog restrictions	89	93	93	72	92	94	94	93	91	93	92	94
DUD9: Gundogs allowed for quail hunting	74	93	92	44	91	93	94	91	84	93	90	90
DUD10: Number of gundogs for stubble quail hunts	13	22	20	0	20	21	22	21	14	22	20	17
DUD11: Firearm use for gundog training	26	28	34	11	33	33	31	35	31	30	36	30
DUD12: Gundog management on hot days	74	75	72	61	72	73	75	74	65	73	70	75





Planning,  
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# Aerial Survey of Wetland Birds in Eastern Australia - October 2020 Annual Summary Report

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**Government of South Australia**

Department for Environment  
and Water



Environment,  
Land, Water  
and Planning



**Queensland  
Government**

# 2020 Aerial Survey of Wetland Birds in Eastern Australia

## Summary

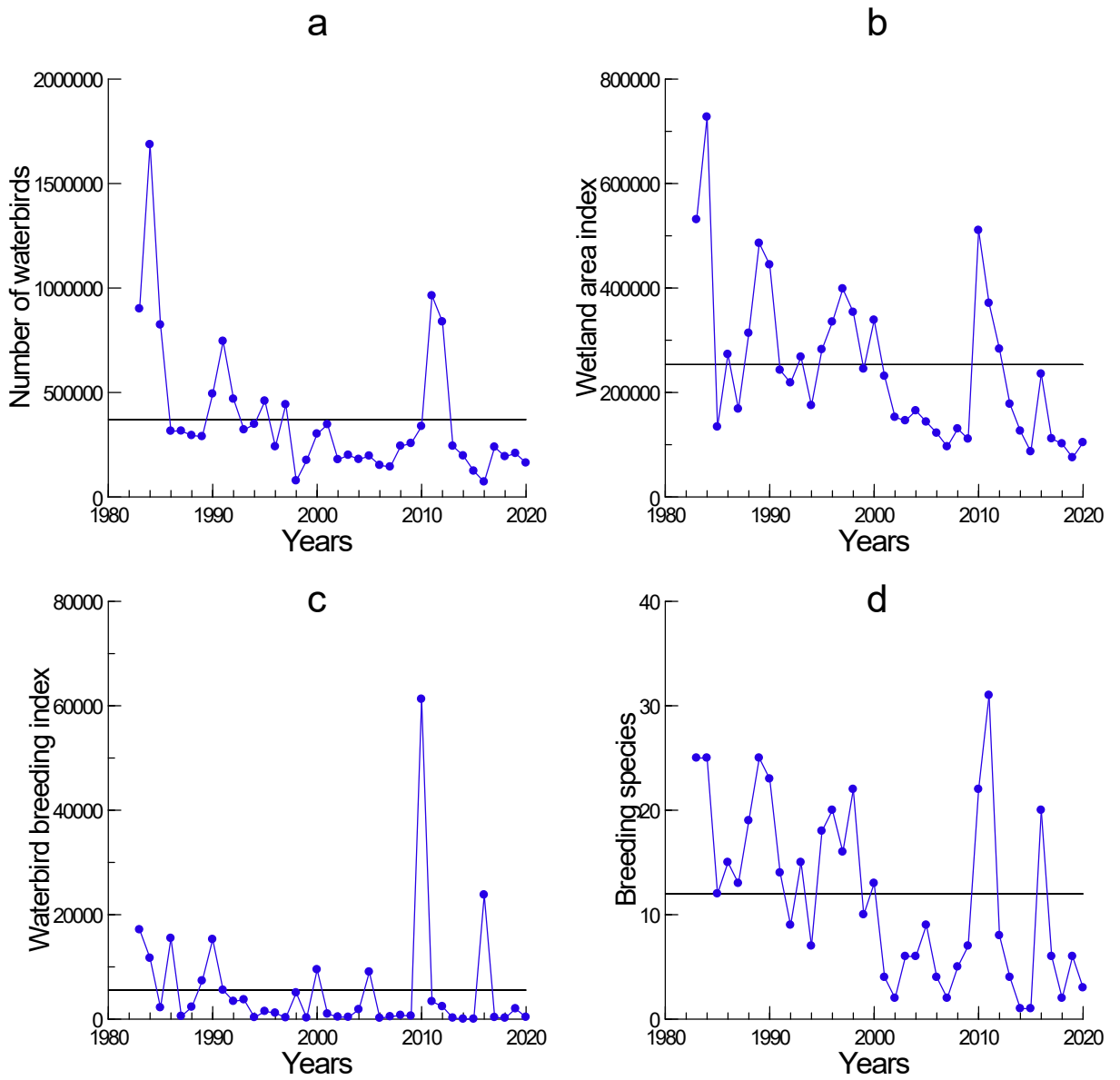
1. Average to above average rainfall in most of eastern Australia from January to April 2020 has enabled partial recovery of some of the rainfall deficiencies, but significant further rain is required for a substantial recovery in Murray–Darling Basin water bodies after record breaking drought during 2016-2019.<sup>1</sup>
2. There has been limited recovery in water storage levels in the Murray-Darling Basin with the rain since January 2020<sup>1</sup>. Water storages in the northern Basin reached the record low of 5.4% of combined capacity in mid-January, 7.5% lower than at any point during the Millennium Drought.
3. At December 2020, around 67% of Queensland was in drought or drought affected<sup>3</sup>; in NSW 10% of the state is in drought or drought affected<sup>2</sup>. Around 70% of South Australia is drought affected<sup>4</sup>. Most of Victoria has received average rainfall during 2020, but long term (4 year) deficiencies persist in the north west and south east<sup>1</sup>.
4. Four major indices for waterbirds (total abundance, breeding index, number of species breeding and wetland area index) continue to show significant declines over time. If 1983 & 1984 peak years are omitted then 3 of the 4 major indices still show significant decline (OLS regression at  $p=0.05$ ; variables 4th root or log transformed where appropriate; Fig. 1; Table 1). Long term trends are more informative for predicting population status than year to year fluctuations.
5. Total waterbird abundance in 2020 ( $n=162,824$ ) decreased from 2019 and remains well below average: the 6<sup>th</sup> lowest in 38 years. Waterbirds were most abundant in bands 5 and 10 (Figs 1, 2 & 5).
6. Breeding species' richness and breeding abundance, decreased considerably compared to the previous year; breeding was widely distributed across most survey bands (Fig. 6) and comprised mostly of black swans.
7. Species functional response groups (feeding guilds) all showed significant long term declines (OLS regression at  $p=0.05$ ; variables 4th root or log transformed where appropriate. Fig. 3; Table 2). Long term changes were also observed in decadal averages of total abundance, wetland area index, breeding index and breeding species' richness (Fig. 4).
8. Wetland area index (104,014 ha) was the fifth lowest since surveys began, well below the long term average. Some rivers and wetlands in the northern Lake Eyre Basin including the Diamantina and Georgina rivers, held small amounts of water and supported low numbers of waterbirds. Lakes Torquinnie, Mumbleberry and Galilee were dry; The largest concentrations of waterbirds were located in the Paroo overflow Lakes, the Macquarie Marshes and Goorganga Creek floodplain and Lake Moondarra in the north (Fig. 5).
9. The Macquarie Marshes had moderate levels of water augmented by environmental flows, provided by the NSW Government and Commonwealth managed environmental water and supported considerable numbers and diversity of waterbirds. The Lowbidgee wetlands had low to moderate inundation, and they supported moderate numbers of waterbirds with no breeding recorded. The southern-most wetlands in the Menindee Lakes system were mostly dry, while outside the survey band to the north Copi Hollow and Lakes Wetherell, Pamamaroo, Bijiji and Balaka held water. Overall, there were few waterbirds and no breeding activity. The Tallywalka lakes system was also dry (Fig. 7).

## **2020 Aerial Survey of Wetland Birds in Eastern Australia Summary (continued)**

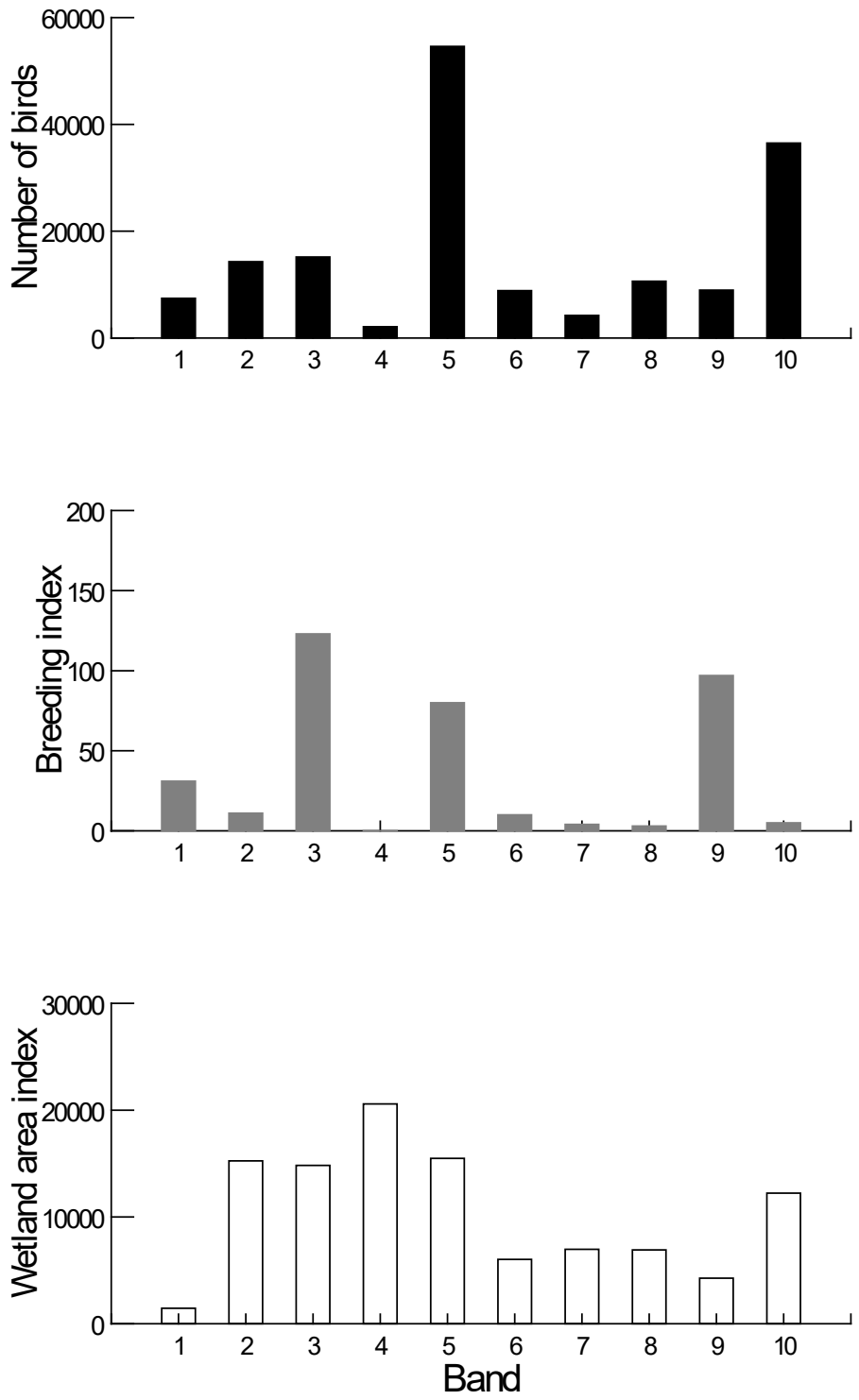
10. Waterbirds were more widely dispersed than in the previous year; 5 wetlands supported more than 5,000 waterbirds representing 35% of the total abundance – three of these occurred in the Murray-Darling Basin (Fig. 5). These areas were distributed in bands 10 and 5 and generally supported high species diversity (Figs 2 & 7). More than 48% of surveyed wetlands supported no waterbirds (includes wetlands that were dry).
11. Total breeding index (nests + broods) was 364 (all species combined), a considerable decrease from the previous year (1,987) and well below the long term average (Figs. 1 & 6). Breeding species' richness was extremely low, with only 3 species recorded breeding, the sixth lowest on record. Black swans comprised most of the breeding recorded (296), 81% of the total.
12. All game species abundances were well below long term averages, in some cases by an order of magnitude; five out of eight species continue to show significant long term declines (OLS regression at  $p=0.05$ ; variables 4th root or log transformed where appropriate. Table 3). Grey teal declined significantly from the previous year (Fig. 13).
13. Waterbird indices across river basins generally reflected low levels of available of habitat and drought intensity in the preceding 4 years; 2020 abundance and wetland area rose sharply in the Murray-Darling Basin compared to the previous year. Conversely abundance in the Lake Eyre basin decreased strongly after available habitat declined (Fig. 8).
14. Across Eastern Australia overall abundance, breeding index and breeding species richness are positively related to available habitat (wetland area index). Conversely, declines in wetland area are likely to result in declines in waterbird abundance, breeding and breeding species richness (Fig. 9).
15. Selected species distribution and abundances are shown in figures 10-19; Freckled duck and Plumed whistling-duck are included for comparison with game species. Map plots in these figures show 2020 distribution and trend plots show changes in abundance over time (1983-2020). Horizontal lines in trend plots indicate the long term average.

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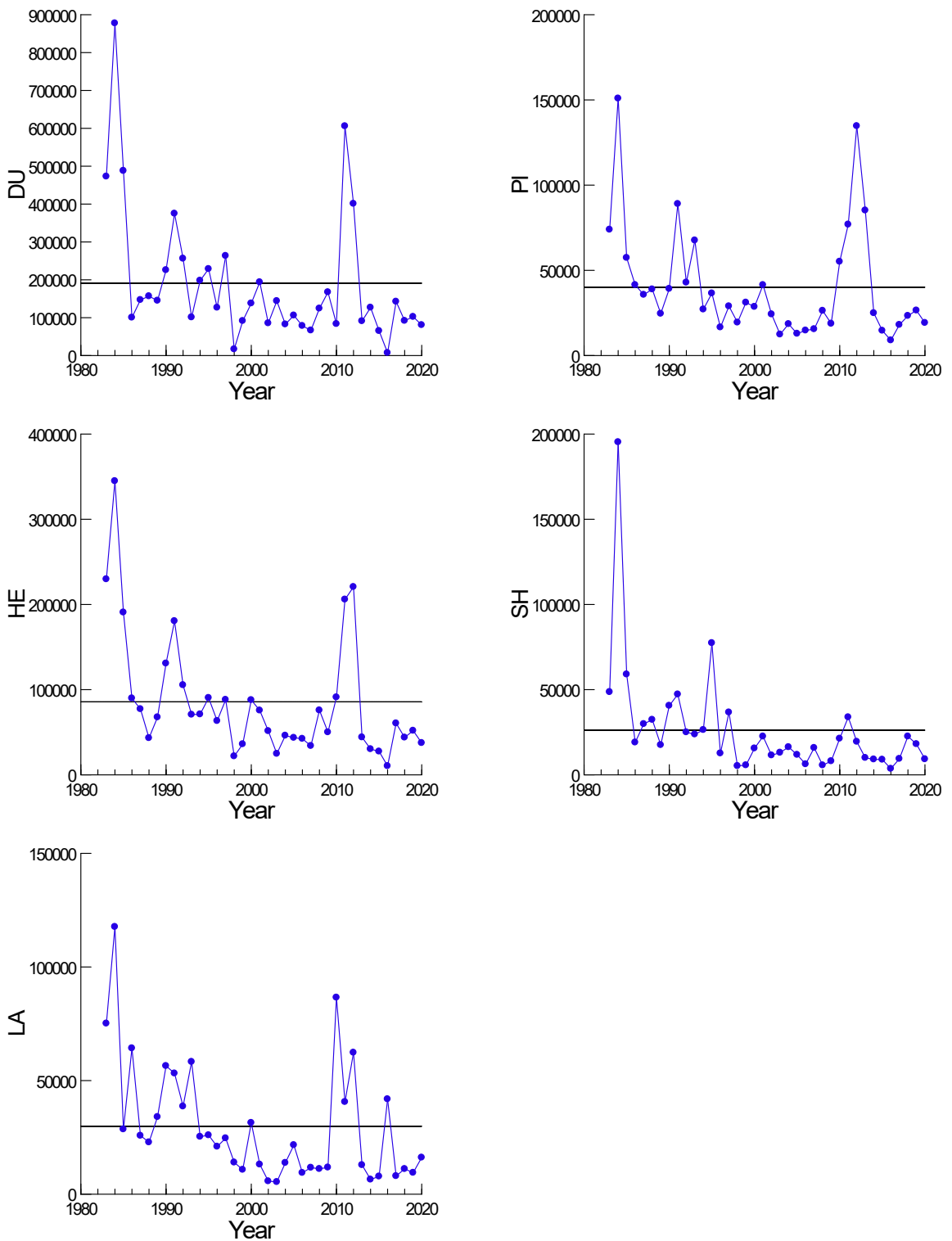


**Figure 1.** Changes over time in a) total abundance, b) wetland area, c) breeding and d) number of breeding species in the Eastern Australian Waterbird Survey (1983-2020); horizontal lines show long-term averages.

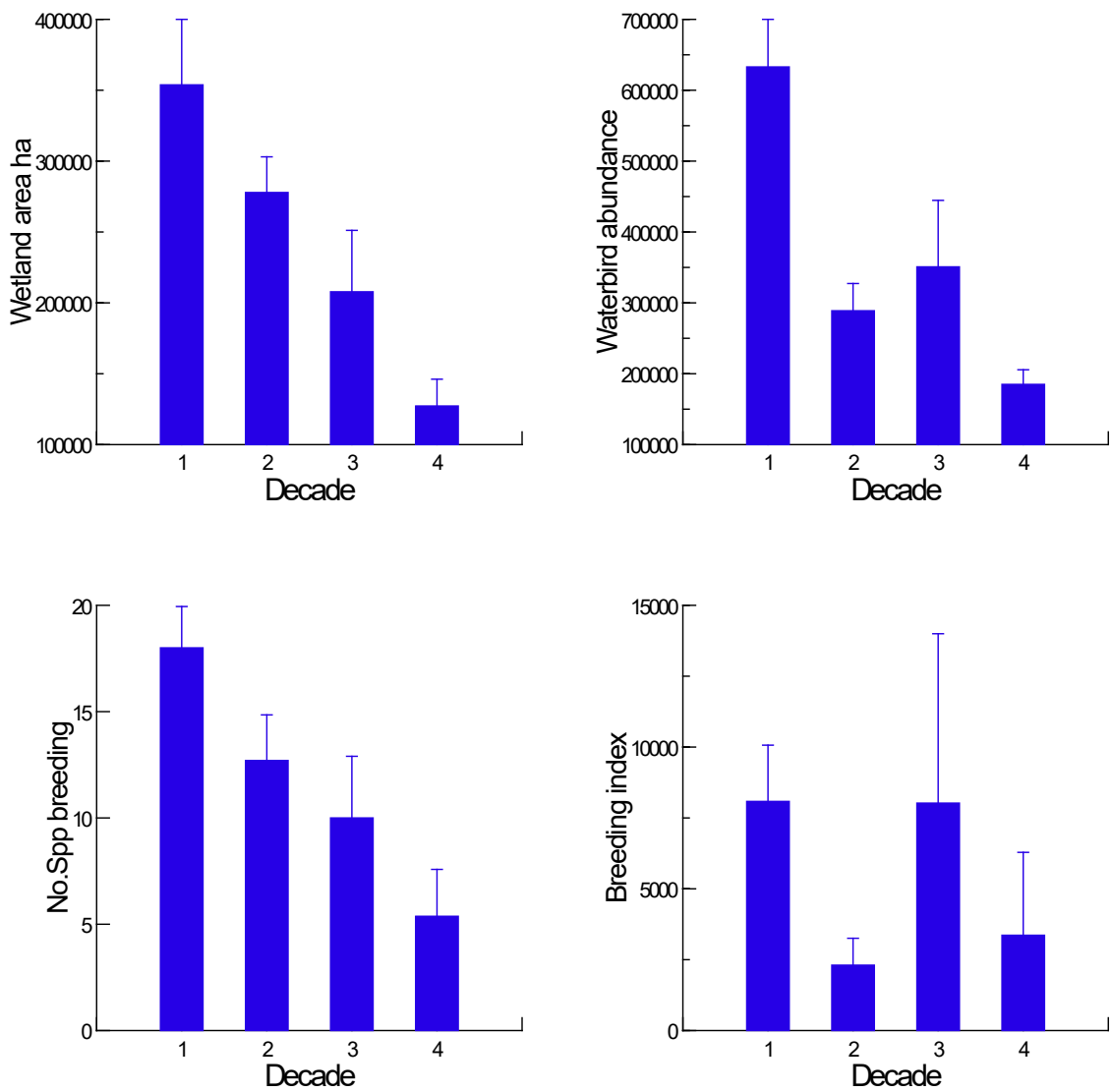


**Figure 2.** Distribution of waterbird abundance, breeding index and wetland area index in 10 survey bands of the Eastern Australian Waterbird Survey in 2020.





**Figure 3.** Changes in abundances of waterbird functional response groups (Du=ducks; Pi=piscivores; He=herbivores; Sh=shorebirds; La=large wading birds) over time in the Eastern Australian Waterbird Survey (1983-2020).



**Figure 4.** Decadal changes in indices including total abundance, wetland area, number of breeding species and breeding in the Eastern Australian Waterbird Survey (1983-2020).

**Table 1.** Trends in total waterbird abundance, wetland area index, breeding index and breeding species richness in the Eastern Australian Waterbird Survey (1983-2020).

Variable	Trend	Regression all years	Trend	Regression 1983-84 omitted
Total waterbird abundance	decline	$r^2=0.26, p=0.001$	decline	$r^2=0.16, p=0.017$
Wetland area index	decline	$r^2=0.35, p<0.001$	decline	$r^2=0.25, p=0.002$
Breeding index	decline	$r^2=0.12, p=0.031$	no trend	$r^2=0.067, p=0.127$
Breeding species richness	decline	$r^2=0.26, p=0.001$	decline	$r^2=0.20, p=0.006$

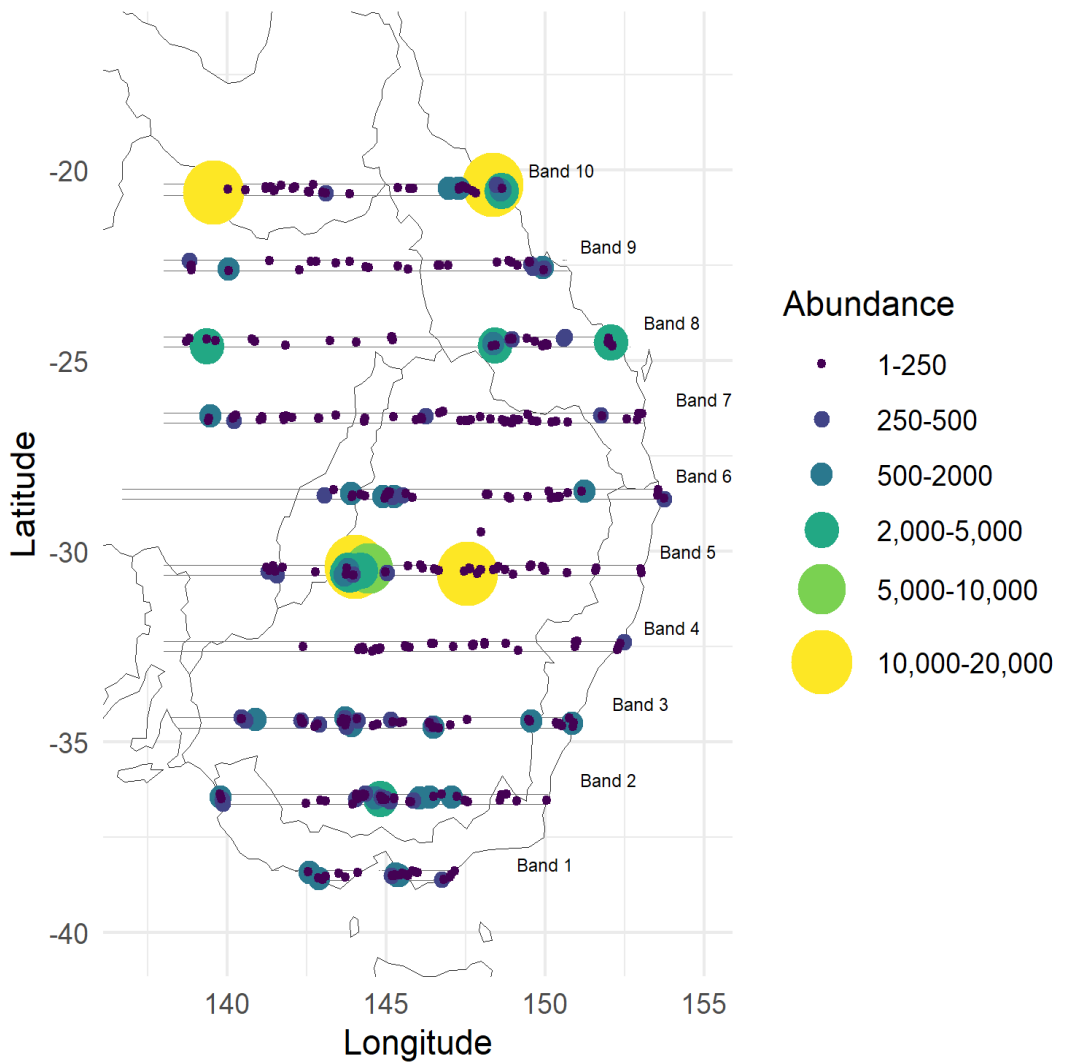
**Table 2.** Trends in abundances of functional response (Fx) groups, in the Eastern Australian Waterbird Survey (1983-2020).

Fx group code	name	Trend	Regression all years	Trend	Regression 1983-84 omitted
Du	Ducks	decline	$r^2=0.25, p=0.001$	decline	$r^2=0.16, p=0.015$
He	Herbivores	decline	$r^2=0.26, p=0.001$	decline	$r^2=0.15, p=0.019$
La	Large wading birds	decline	$r^2=0.28, p=0.001$	decline	$r^2=0.18, p=0.010$
Pi	Piscivores	decline	$r^2=0.14, p=0.019$	no trend	$r^2=0.06, p=0.141$
Sh	Shorebirds	decline	$r^2=0.37, p<0.001$	decline	$r^2=0.30, p<0.001$

**Table 3.** Trends in abundances of game species from the Eastern Australian Waterbird Survey (1983-2020).

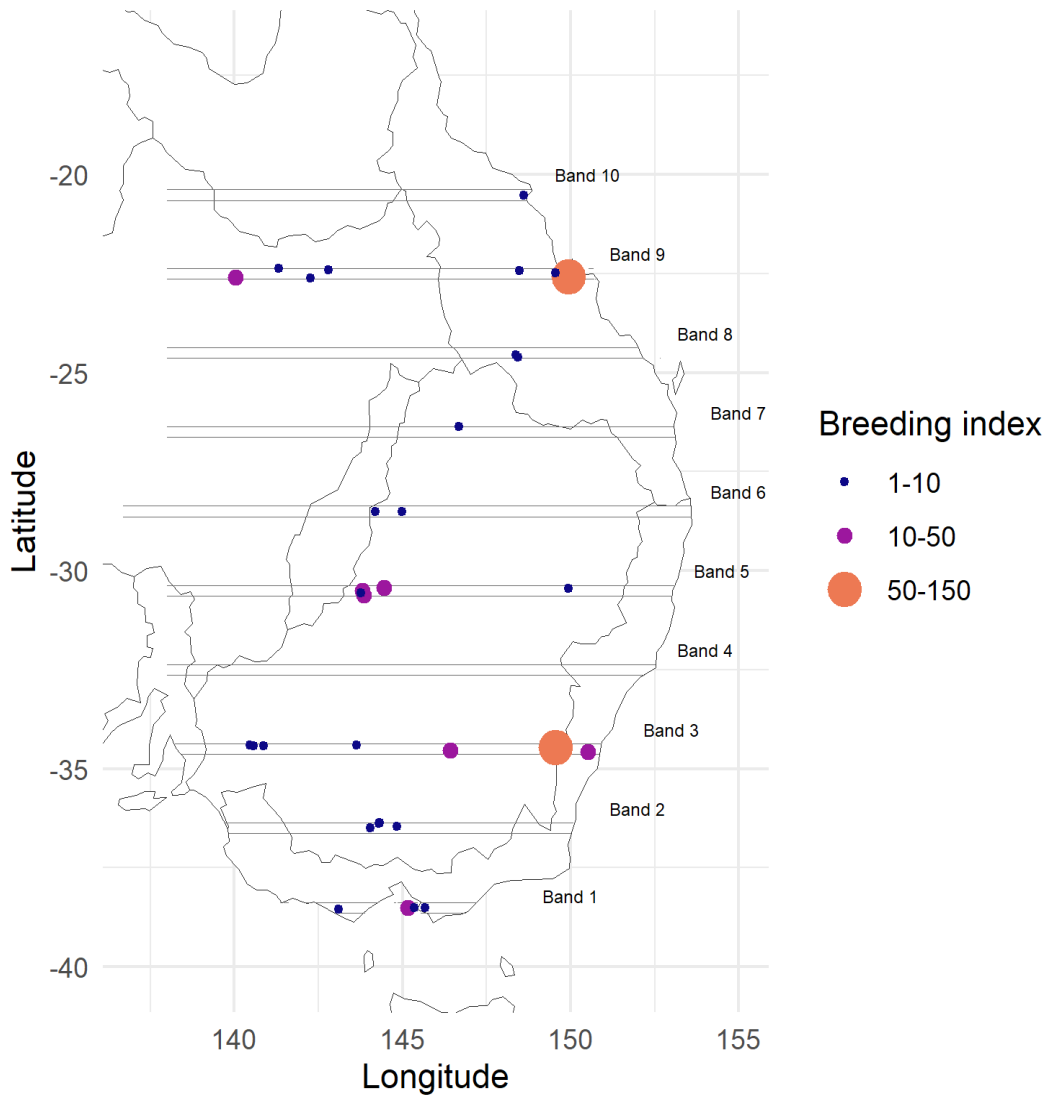
Species	Trend	Regression all years	Trend	Regression 1983-84 omitted
Pacific black duck	decline	$r^2=0.31, p<0.001$	decline	$r^2=0.19, p<0.007$
Australasian shoveler	decline	$r^2=0.54, p<0.001$	decline	$r^2=0.48, p<0.001$
Chestnut teal	no trend	$r^2=0.09, p=0.064$	no trend	$r^2=0.06, p=0.148$
Grey teal	decline	$r^2=0.21, p=0.004$	decline	$r^2=0.11, p=0.045$
Hardhead	no trend	$r^2=0.03, p=0.344$	no trend	$r^2=0.01, p=0.687$
Mountain duck	decline	$r^2=0.41, p<0.001$	decline	$r^2=0.35, p<0.001$
Pink-eared duck	no trend	$r^2=0.06, p=0.157$	no trend	$r^2=0.03, p=0.299$
Australian Wood duck	decline	$r^2=0.22, p=0.003$	no trend	$r^2=0.10, p=0.056$

2020 Total abundance 162,824



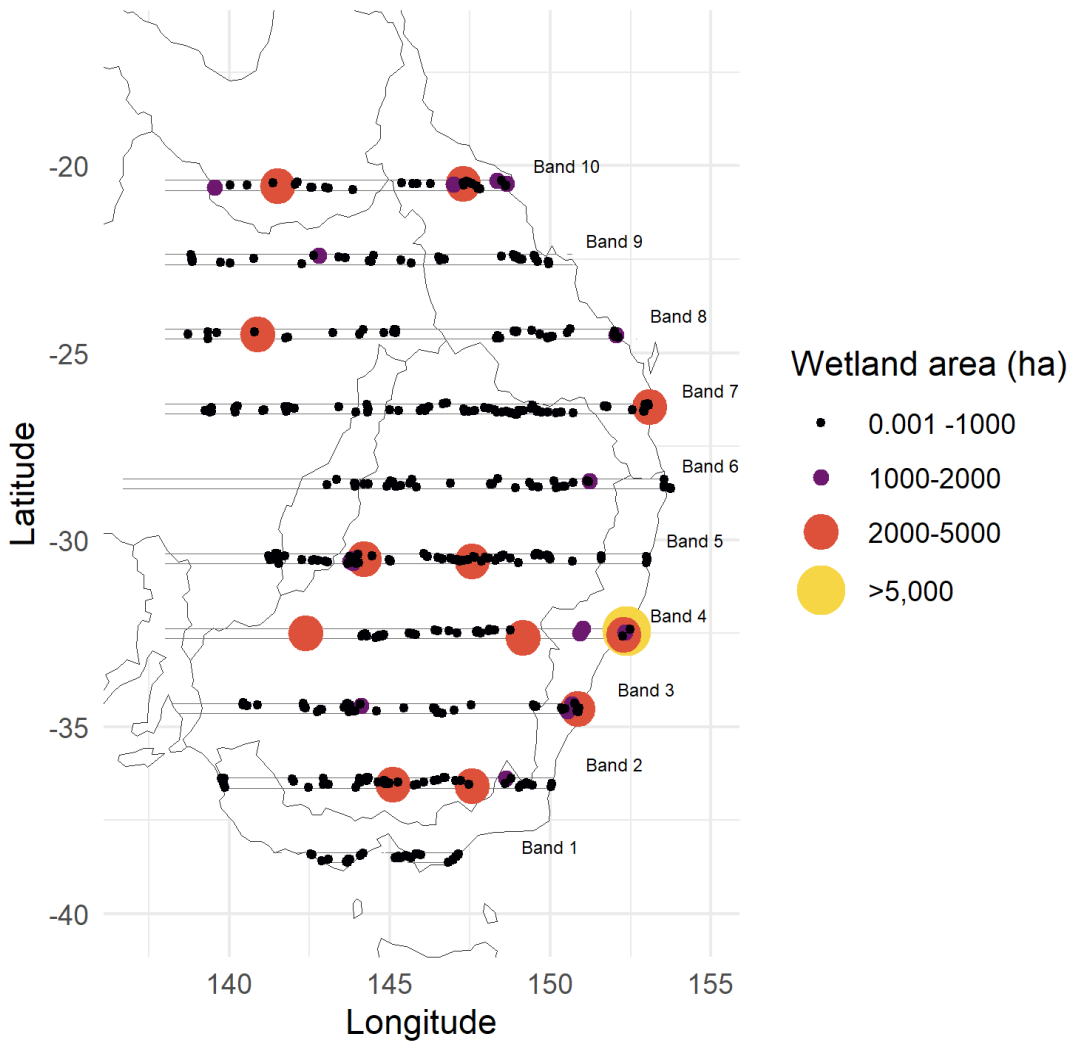
**Figure 5.** Distribution and abundance of waterbirds in the 2020 Eastern Australian Waterbird Survey. Dry wetlands and those with zero waterbirds not plotted.

## 2020 Breeding index 364

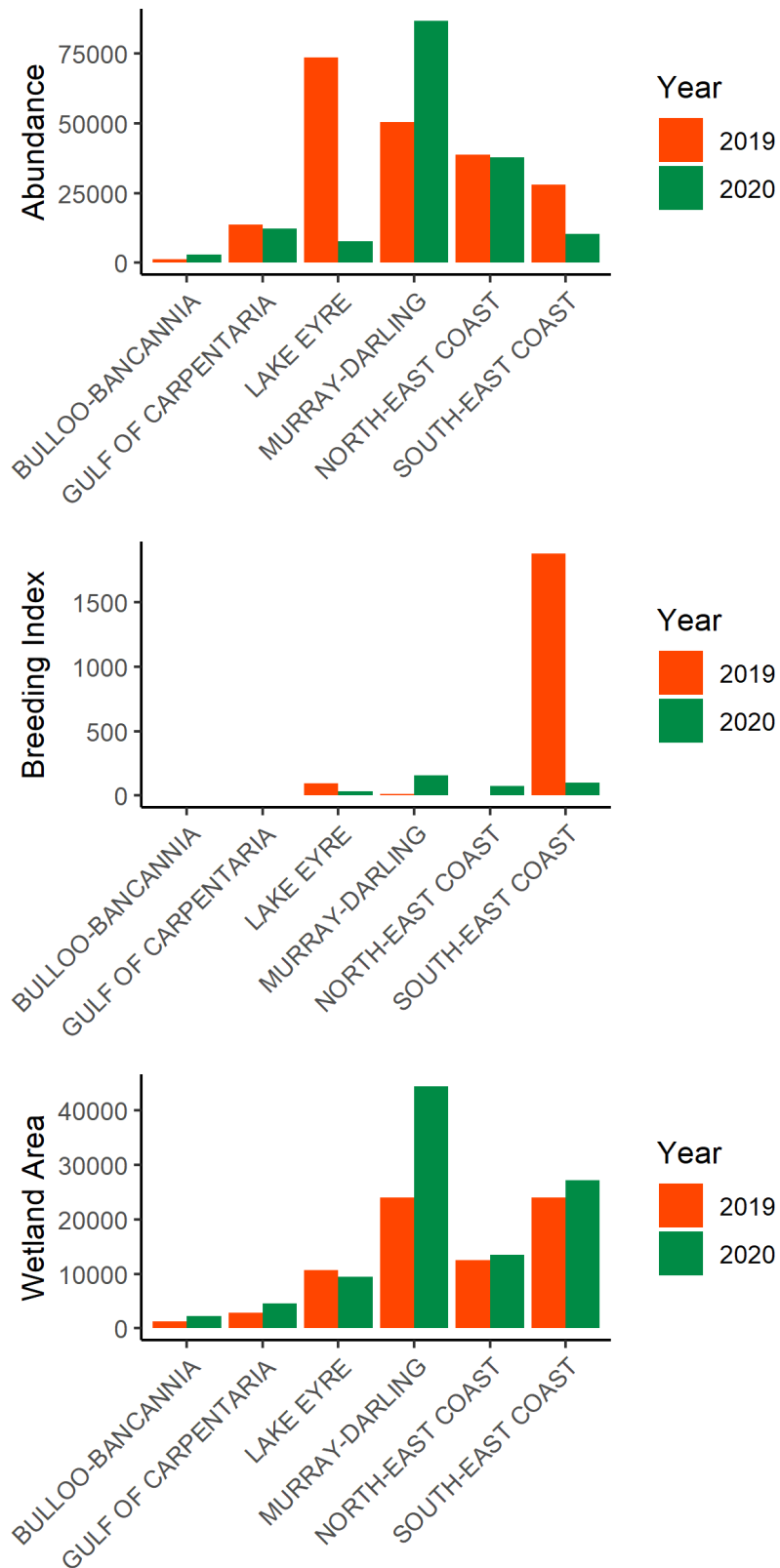


**Figure 6.** Distribution of waterbird breeding in the 2020 Eastern Australian Waterbird Survey. Only wetlands with breeding recorded are plotted.

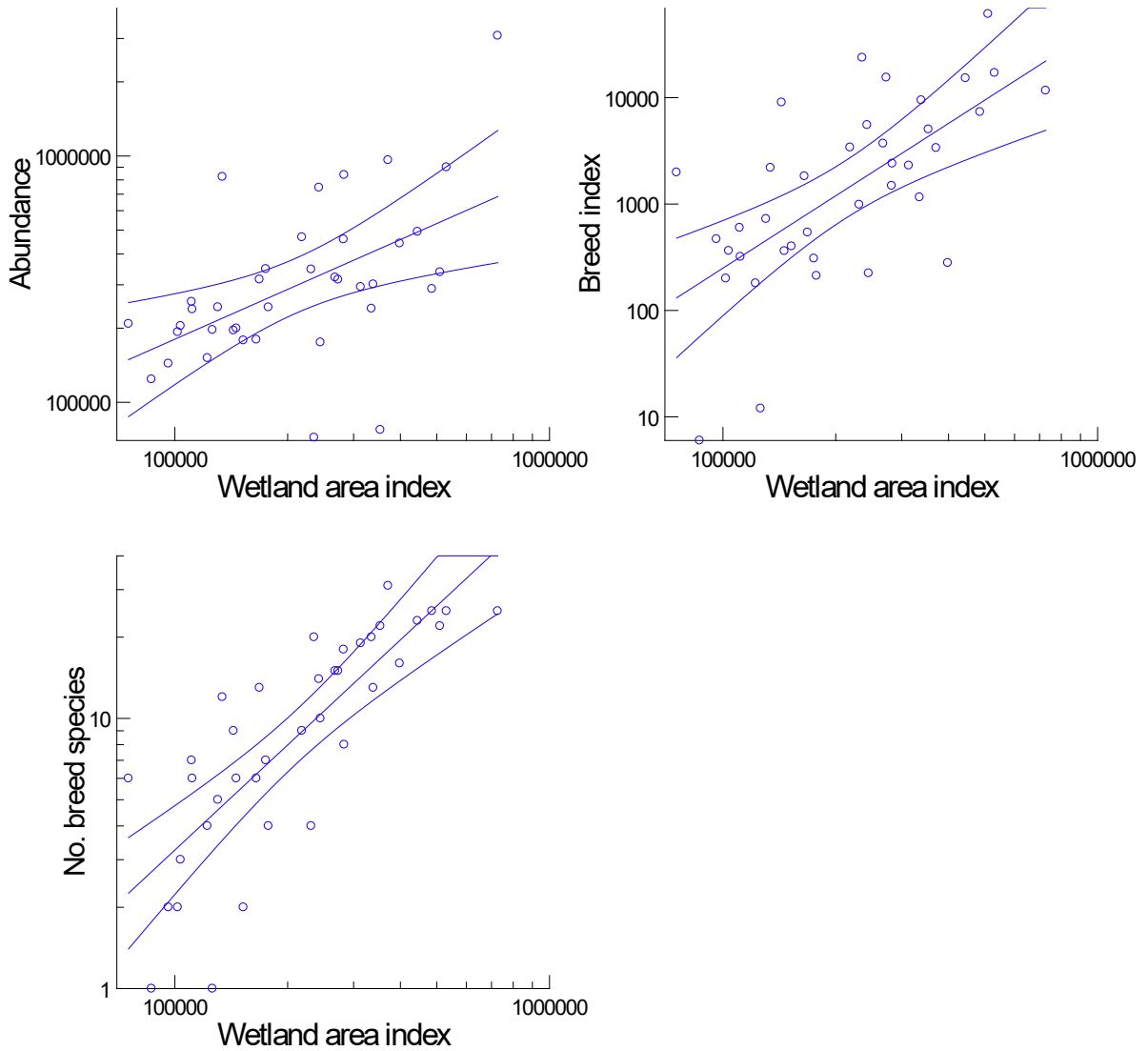
## 2020 Wetland area index 104,015 ha



**Figure 7.** Distribution of wetland area in the 2020 Eastern Australian Waterbird Survey. All surveyed wetlands with surface water present are plotted; dry wetlands not plotted.



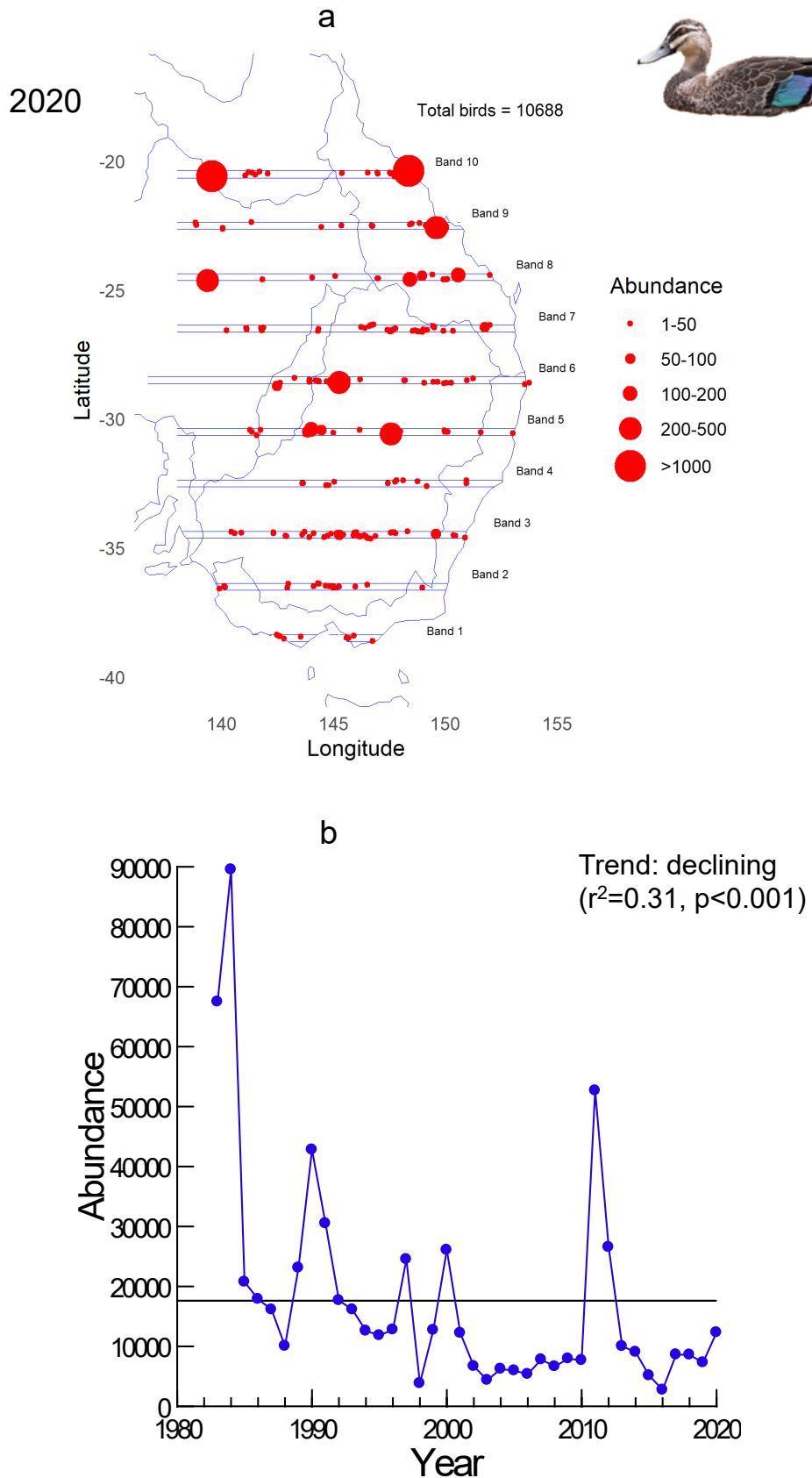
**Figure 8.** Comparison of waterbird abundance, breeding index and wetland area in major river basins in 2019 to 2020.



**Figure 9.** Interactions – mean abundance, breeding and number of breeding species with wetland area index (ha) for the Eastern Australian Waterbird Survey (1983-2020).

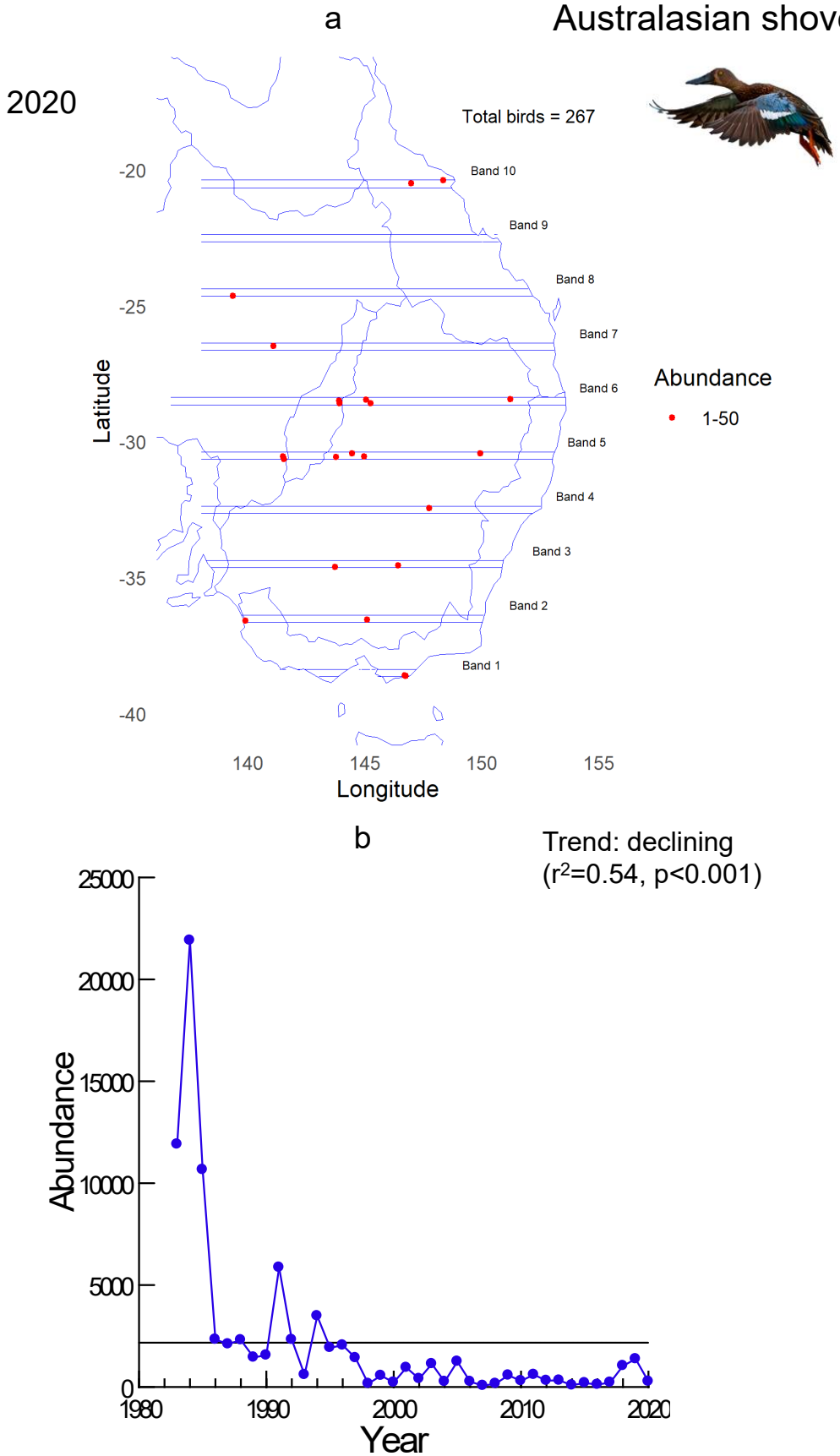


# Pacific black duck



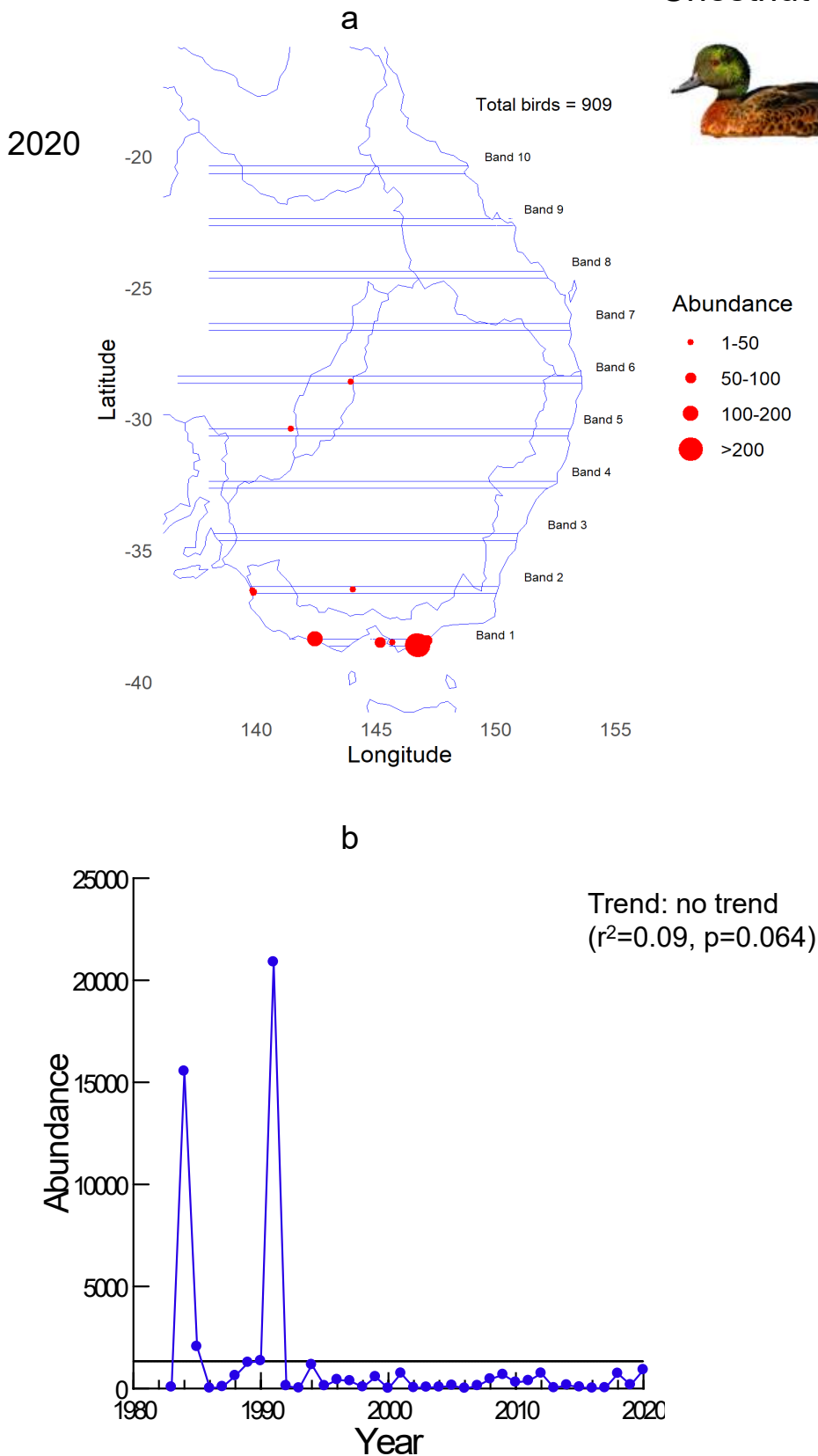
**Figure 10.** a. Distribution and abundance of Pacific black duck during the 2020 Eastern Australian Waterbird Survey. b. Changes in abundance (1983-2020). Horizontal line indicates long term average.

# Australasian shoveler

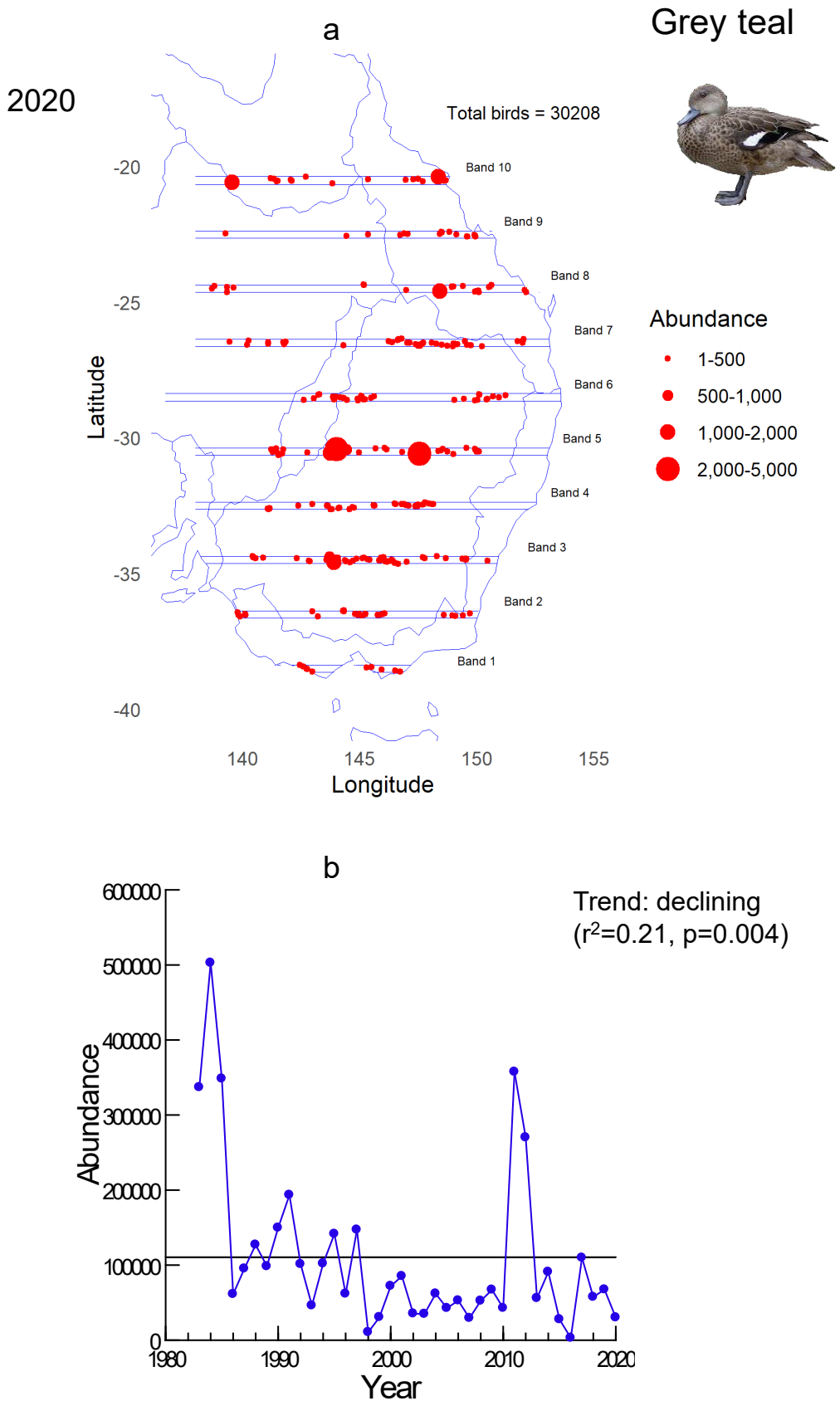


**Figure 11.** a. Distribution and abundance of Australasian shoveler during the 2020 Eastern Australian Waterbird Survey. b. Changes in abundance (1983-2020). Horizontal line indicates long term average.

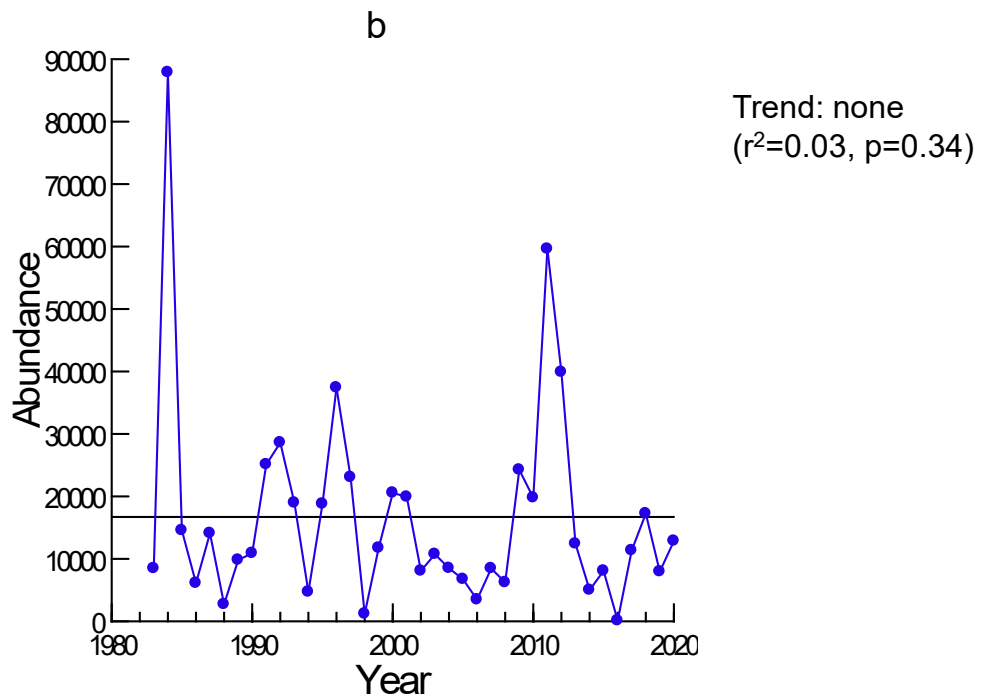
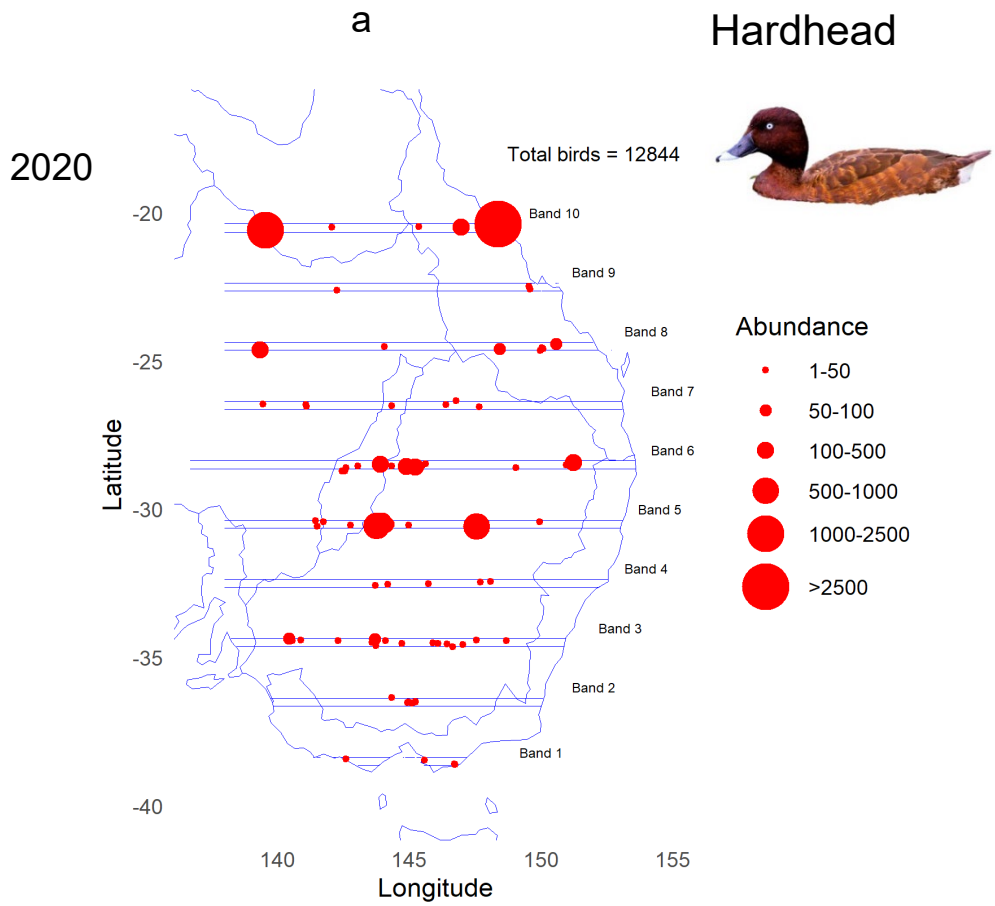
# Chestnut teal



**Figure 12.** a. Distribution and abundance of Chestnut teal during the 2020 Eastern Australian Waterbird Survey. b. Changes in abundance (1983-2020). Horizontal line indicates long term average.

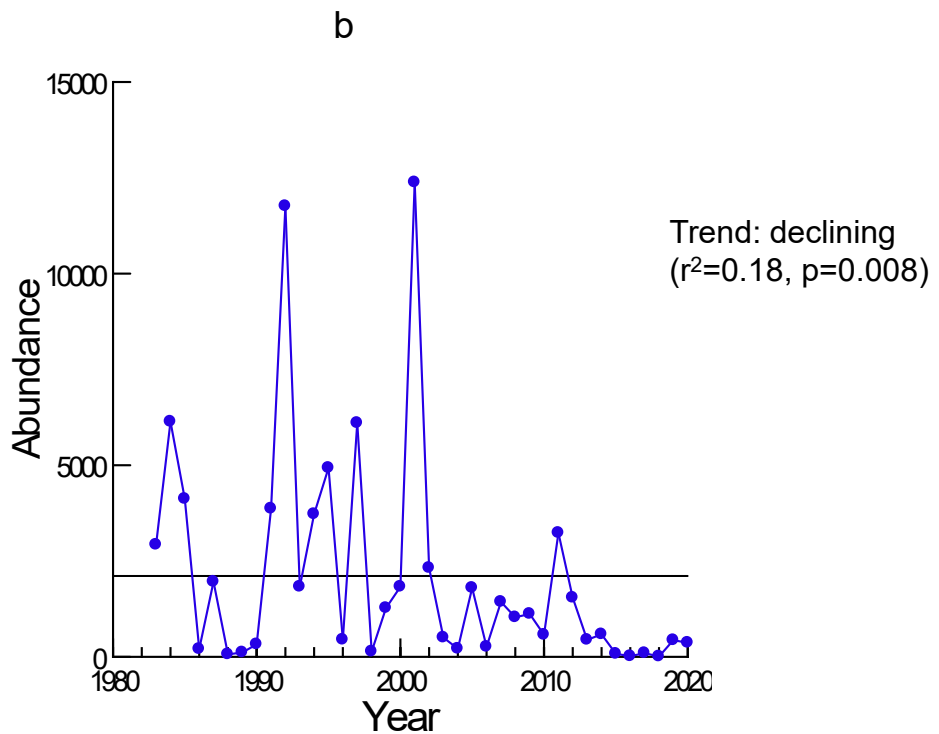
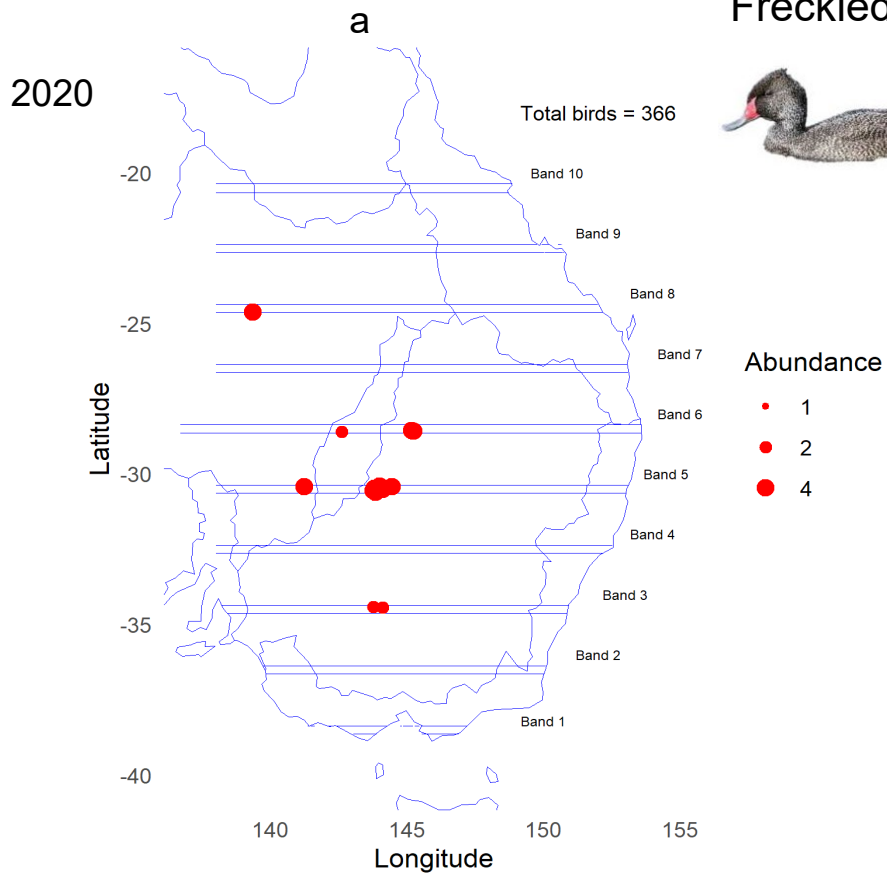


**Figure 13.** a. Distribution and abundance of Grey teal during the 2020 Eastern Australian Waterbird Survey. b. Changes in abundance (1983-2020). Horizontal line indicates long term average.



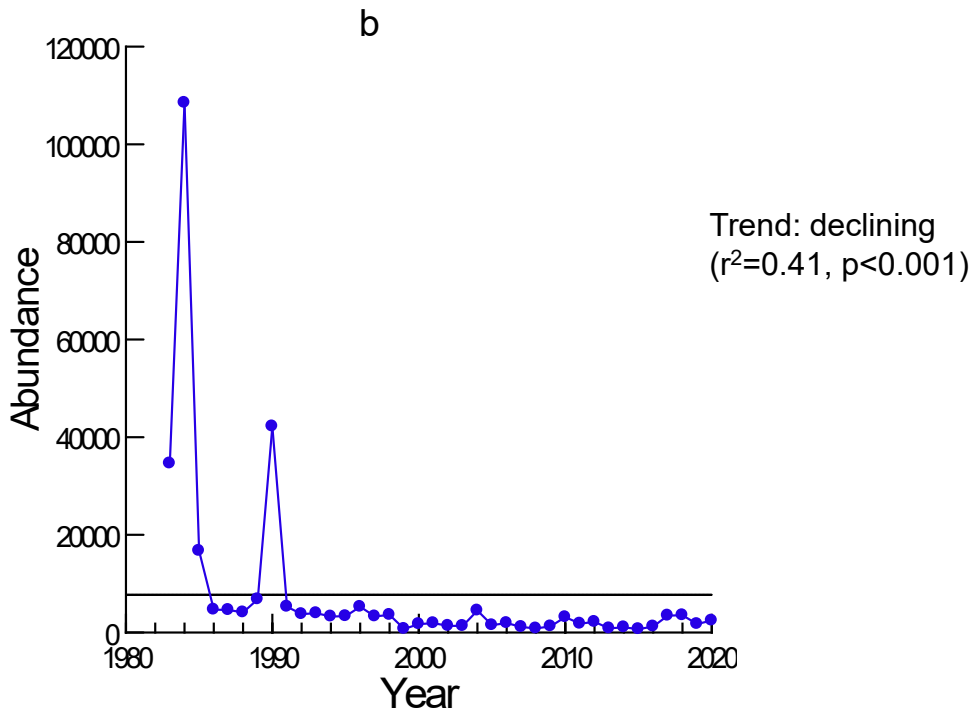
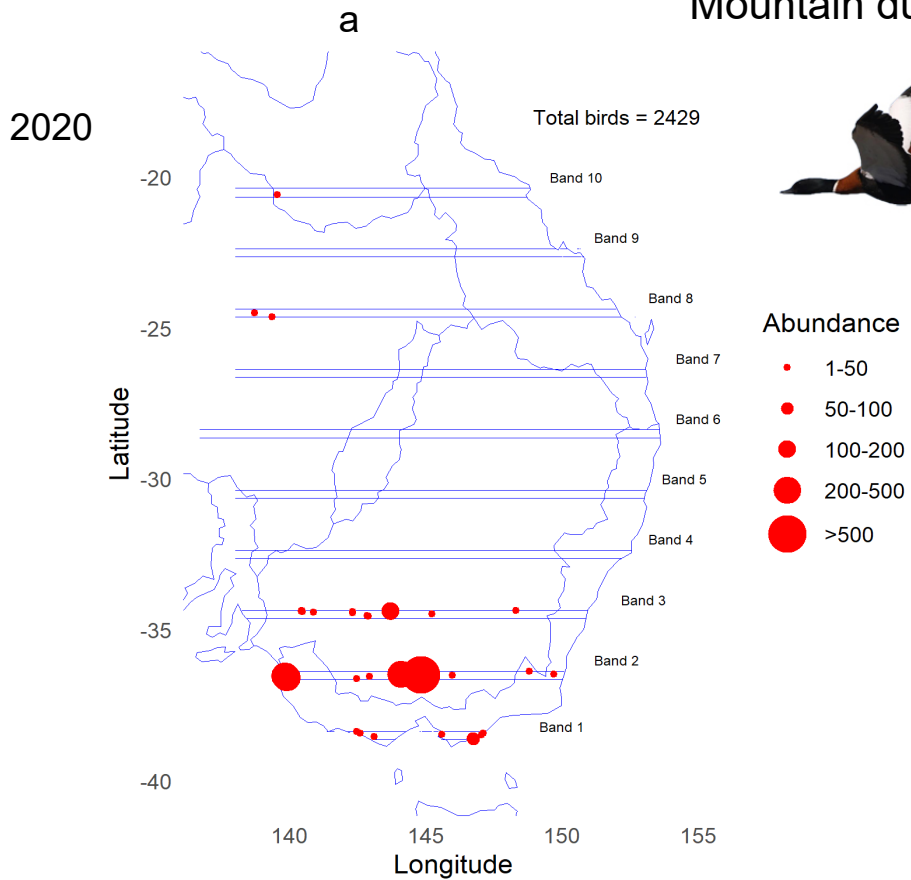
**Figure 14.** a. Distribution and abundance of Hardhead during the 2020 Eastern Australian Waterbird Survey. b. Changes in abundance (1983-2020). Horizontal line indicates long term average.

# Freckled duck



**Figure 15.** a. Distribution and abundance of Freckled duck during the 2020 Eastern Australian Waterbird Survey. b. Changes in abundance (1983-2020). Horizontal line indicates long term average.

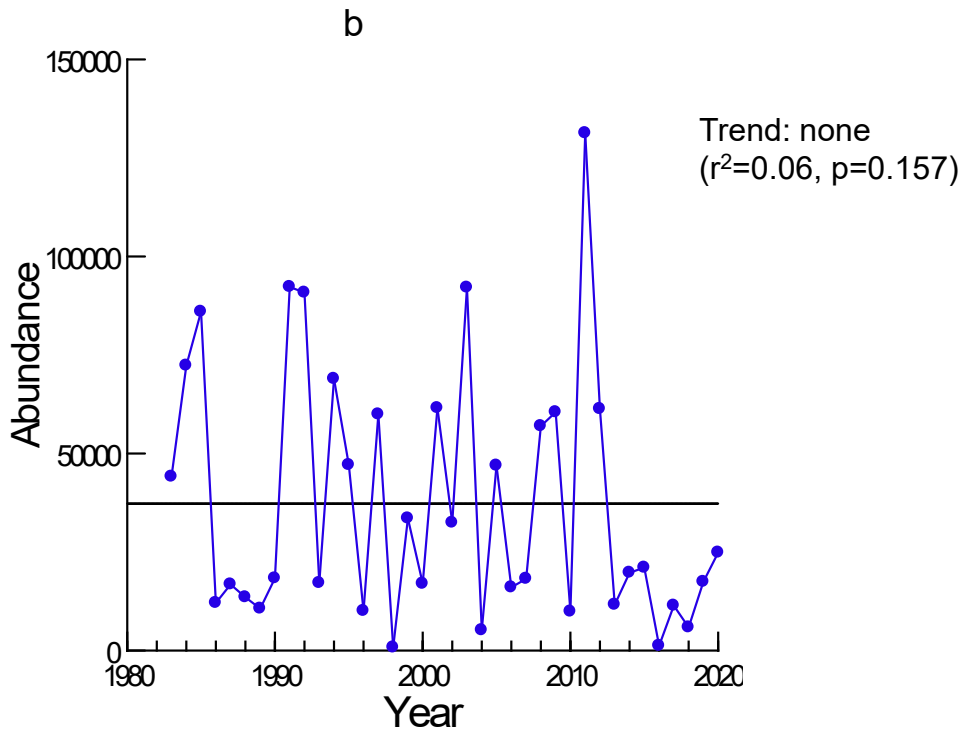
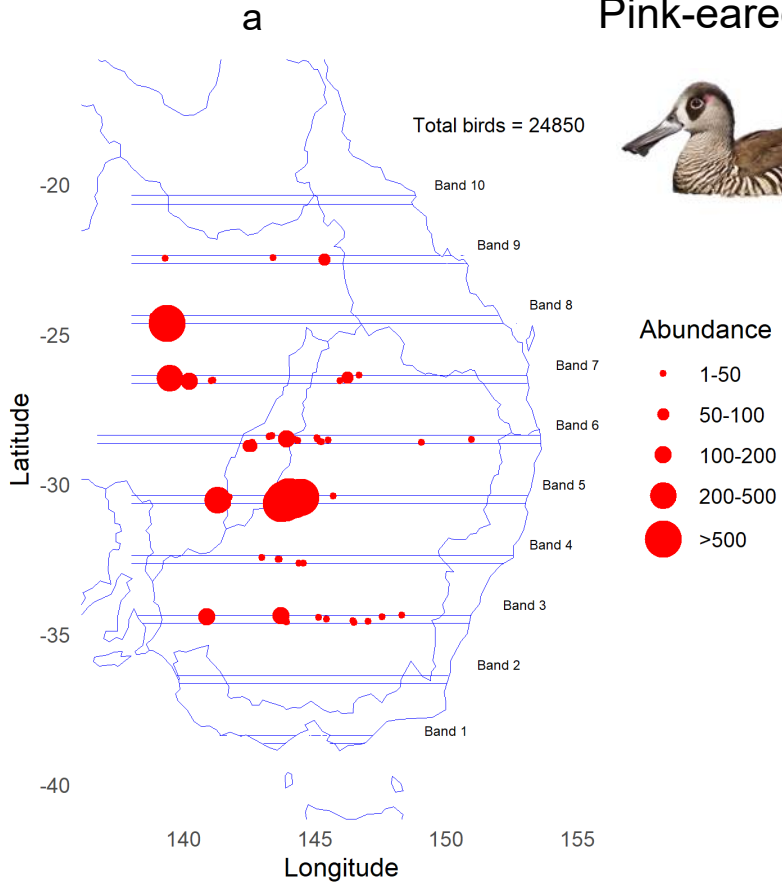
# Mountain duck



**Figure 16.** a. Distribution and abundance of Mountain duck during the 2020 Eastern Australian Waterbird Survey. b. Changes in abundance (1983-2020). Horizontal line indicates long term average.

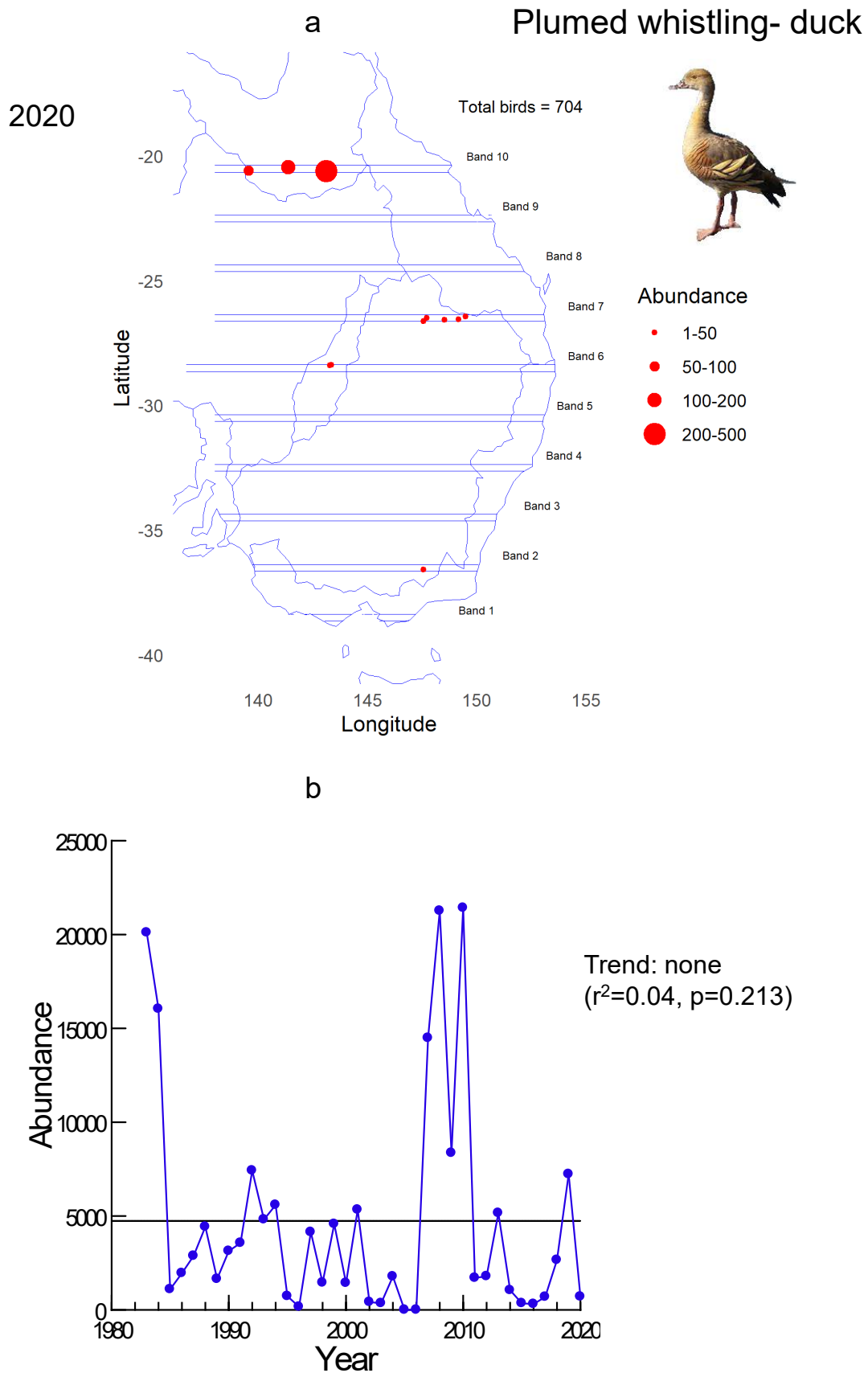
# Pink-eared duck

2020



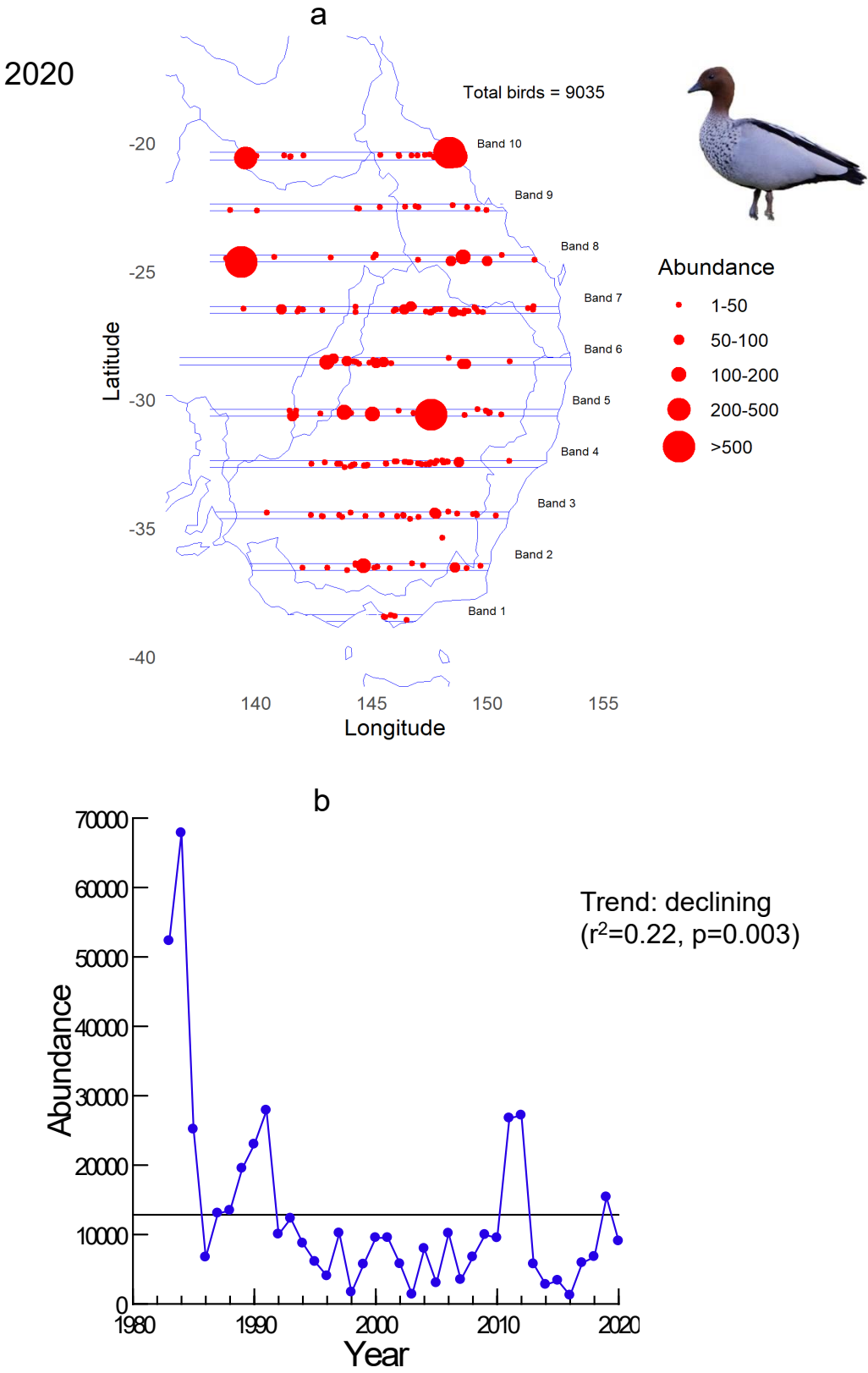
**Figure 17.** a. Distribution and abundance of Pink-eared duck during the 2020 Eastern Australian Waterbird Survey. b. Changes in abundance (1983-2020). Horizontal line indicates long term average.





**Figure 18.** a. Distribution and abundance of Plumed whistling-duck during the 2020 Eastern Australian Waterbird Survey. b. Changes in abundance (1983-2020). Horizontal line indicates long term average.

# Australian wood duck



**Figure 19.** a. Distribution and abundance of Australian wood duck during the 2020 Eastern Australian Waterbird Survey. b. Changes in abundance (1983-2020). Horizontal line indicates long term average.

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