2017 Victorian Hog Deer harvest report

Game Management Authority

Acknowledgements

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Contents

Background

Hog Deer (*Axis porcinus*) were introduced into Victoria from Sri Lanka and India in 1865. Today, Hog Deer are distributed in isolated groups along the south-eastern coast of Victoria from the Tarwin River area to the Gippsland Lakes region. Major populations are found on Wilsons Promontory and the off-shore islands of Corner Inlet, the Boole Poole Peninsula and the southern shore of Lake Wellington (including Dowd Morass and Lake Coleman State Game Reserves), Lake Reeve and the Lakes National Park. Hog Deer can be hunted across a range of land types within the region, including coastal parks, specified State Game Reserves, unreserved Crown land, private property (which requires the land owner's consent), and areas of state forest.

To hunt Hog Deer in Victoria, hunters must hold a current Victorian Game Licence allowing them to hunt deer. They must obtain a set of Hog Deer Tags from the Game Management Authority (GMA) and have them in their possession while hunting. Hunters wishing to hunt Hog Deer with a firearm must be the holder of a current Firearms Licence issued by Victoria Police or any equivalent current interstate Firearms Licence.

Hog Deer are one of the most actively managed game species in Victoria. A range of management activities are undertaken, including a one-month season in April, a bag limit restricted to one stag and one hind per hunter per season, and the requirement to present all harvested deer to a designated Checking Station within 24 hours of being taken. This system minimises the incidence of illegally taken animals and allows the collection of biological information.

Each year, the Blond Bay Hog Deer Advisory Group, together with the GMA and Parks Victoria, administers balloted hunting at the Blond Bay State Game Reserve and the Boole Poole Peninsula near Bairnsdale. Balloted hunting allows hunters to harvest Hog Deer in areas normally closed to hunting and at times outside of the prescribed April open season (between February and May). The number of hunters selected to take part in the balloted hunts is determined by the number of animals that can be harvested from the area without significantly affecting the health of the population or ongoing hunting opportunities. During 2017 and 2018, there will also be balloted hunting on Snake Island (Nooramunga Marine Coastal Park). This is a two-year trial, with results to be included in future harvest reports.

To monitor the health of the animals and ensure the ongoing sustainability of the population, all harvested Hog Deer must be tagged and presented to a Hog Deer Checking Station to record animal measurements such as age, foetus presence, weight and girth, and for the provision of any other biological samples that are required by the GMA, such as a jawbone for ageing purposes. For 2014 and 2015, this also included DNA samples for population genetic studies. Hog Deer Checking Stations are an important link between hunters, researchers and regulators (GMA), connecting compliance, game management, conservation biology and stakeholder services.

Introduction

The requirement to take all harvested Hog Deer to a Hog Deer Checking Station was prescribed in regulation in 1996, but harvest data extends back to 1979.

Checking stations collect a range of morphological and biological data. This report provides a comprehensive comparative summary of this data from 1979 through to the 2017 season. There is no harvest data available from 1983 to 1985 and the harvest data from 2008 onward does not include Sunday Island (Para Park) harvest data. Sunday Island collects its own data from their Checking Station based on the island. This data will be combined with mainland harvest in future reports to offer a better comparison over time.

Method

Deer presented at a Checking Station have their lower jaw bone removed so the animals can be aged into classes. The weight of the field-dressed carcasses, body measurements and dimensions are recorded, as well as whether the animal has a foetus or is in nursing stages. From 1996 onwards, the results contain more information because more data was collected.

Results

Uptake of tag packs

The 2017 season produced a record year for tag pack requests with 1,043 issued. This is a 12% increase on the 2016 season (921 tag packs) and a 15% increase on the 2015 season (881 tag packs). Historically, the average number of tag packs issued for a season is 621 (1979–2008). In 2017, the majority of the packs were issued to Victorians (89.2%); New South Wales had the second largest uptake of tags with 5.3%, hunters from Queensland and Tasmania were the next highest uptake, with 2.7% and 1.4% respectively. These figures match the historic average uptake of tag packs.

Active hunters, hunter success and observation index

In 2017, from the hunters who received a tag pack, only 16% were successful in harvesting an animal. This included four hunters who took both a stag and hind.

Hog Deer harvest

The total number of Hog Deer harvested (1979–2017) is shown in Figure 1. There is no data available for 1983–1985 and the data up to and including 2007 also contains the Sunday Island (Para Park) harvest. In 2017, 164 Hog Deer were harvested (134 stags and 30 hinds), equating to 18.3% of the year's harvest. Fourteen deer were harvested from the Blond Bay and Boole Poole ballots (8.5%); a further 40 were taken from the Snake Island trial ballot. The Snake Island trial ballot harvest data is not included in this report. Eighty-eight (66%) stags were harvested on private land and 14 (47%) hinds were harvested on private land throughout the 2017 Hog Deer season.

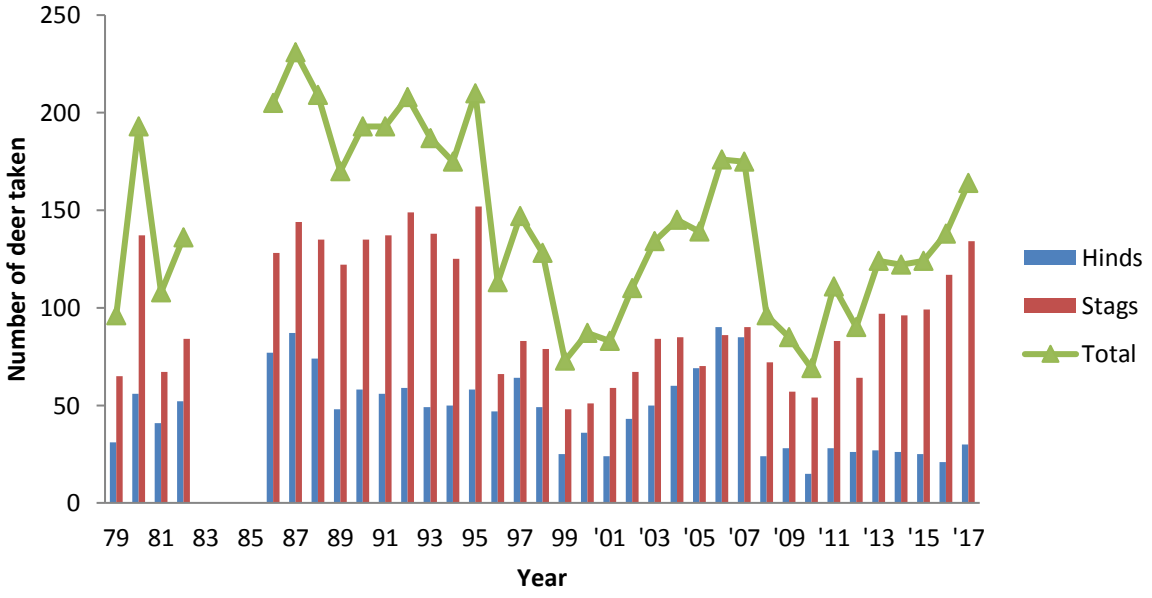

Figure 1: . Total Number of Hog Deer harvested from 1979 to 2017.
NOTE: No data available from 1983 to 1985. From 2008 onwards Sunday Island harvest data is excluded.

Sex ratio

Figure 2 shows the percentage of stag to hind harvested from 1979 to 2017. There is no data available from 1983 to 1985 and the data up to and including 2007 also contains the Sunday Island harvest. The Sunday Island harvest has a major effect on the sex ratio in Figure 2; for example, the 2005–2007 harvest shows a 1:1 ratio of stags to hinds, but this was due a concerted effort made to reduce hind numbers on Sunday Island. This is the only time where the hinds have been harvested at the same level as stags. Traditionally, the stag harvest was between 60% and 70% (roughly a 1.5–2:1 ratio), but in recent years the hind harvest has stayed relatively static while the stag harvest continues to grow. In 2015, 2016 and 2017 the sex ratio in the harvest was 3.96:1, 5.57:1 and 4.47:1, respectively.

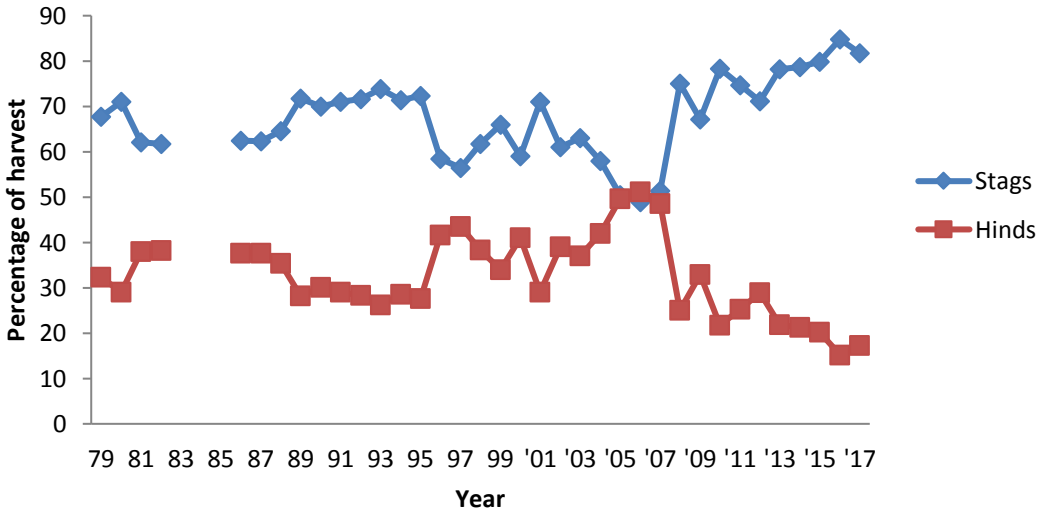

Figure 2: Historic percentage of Hog Deer stag and hind harvest.
NOTE: There is no data available from 1983 to 1985. From 2008 onwards, Sunday Island data has been excluded.

Hog Deer age classes

The age of Hog Deer is determined by examining the jaw bones from deer presented at Checking Stations. This information is important as it allows other measurements to be linked with age (e.g. weight) and the condition of the population in general can be observed and assessed to see if any population management could be appropriate. Figure 3 compares the hind age class of the 2017 harvest to the overall average (1996–2017). This shows a slight trend in younger animals being taken. The 2017 harvest shows a low take in the 3.5-year age class and no 5.5 age class animals were harvested. Figure 4 shows the stag age class of the 2017 harvest compared to the overall average (1996–2017). The 2017 data shows a distinct trend for older animals to be harvested, particularly the 3.5 and 4.5 age classes; this trend is also shown in the overall average data but at a reduced level. A One Way ANOVA analysis found that the 2017 stag harvest was not statistically significant different to the overall harvest data (f-ratio 3.40 and p-value 0.09).

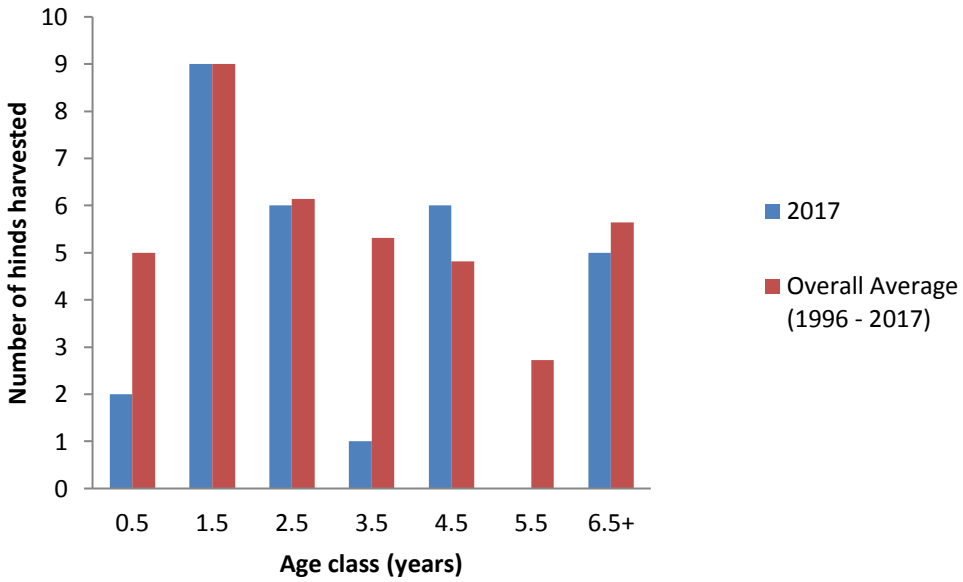

Figure 3: Historic average age class of harvested hinds compared to 2017 average age class of hind harvest.

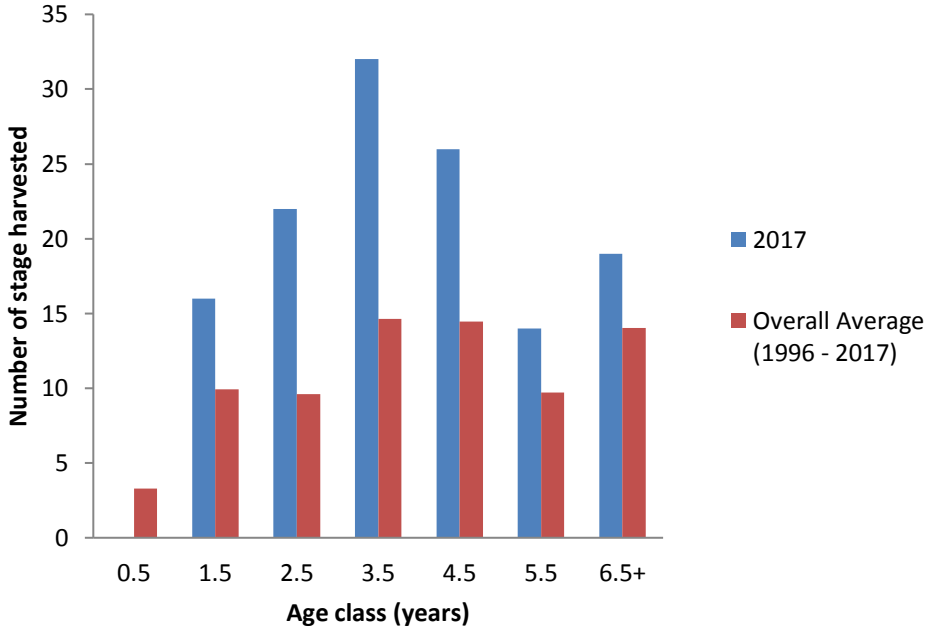

Figure 4: Historic age class of harvested stags compared to 2017 average age class of harvested stags.

Dressed body weight

Figures 5 and 6 show the average weight of hinds and stags, respectively, when compared to age class and the overall average. The 2017 hind data set closely matches the overall average. The 4.5 age class in hinds is slightly higher in the 2017 average. Stags shows greater change with the 2.5, 3.5, 4.5 and 5.5 age classes all showing increases in the 2017 data. This change was statistically significant (One Way ANOVA f-ratio 9.78 and p-value 0.02); this change may have been due to 2017 being a good growing year and the animals may have been in better condition. The range of body weight in 2017 for hinds was 10.6 kg (0.5 years) to 32.3 kg (4.5 years) and for stags 15 kg (0.5 years) to 60 kg (4.5 years).

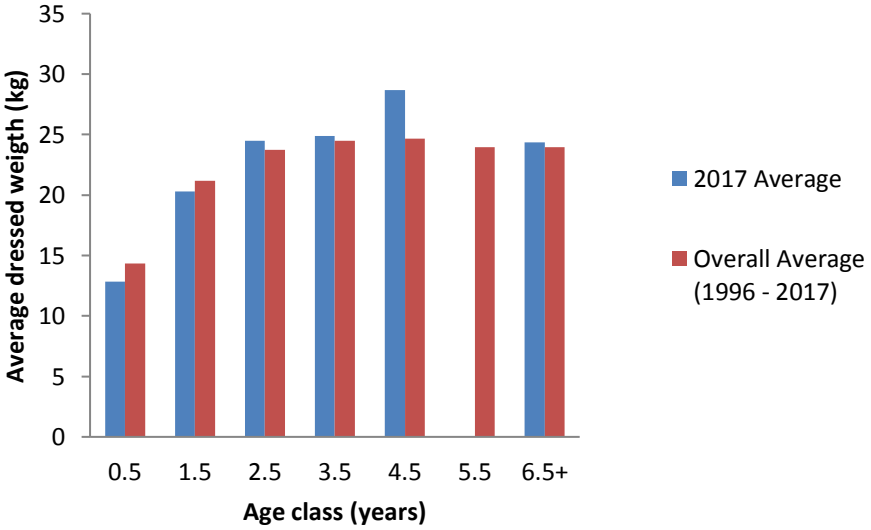

Figure 5: Historic average age class versus weight (kg dressed) of harvested Hog Deer hinds compared to 2017 average.

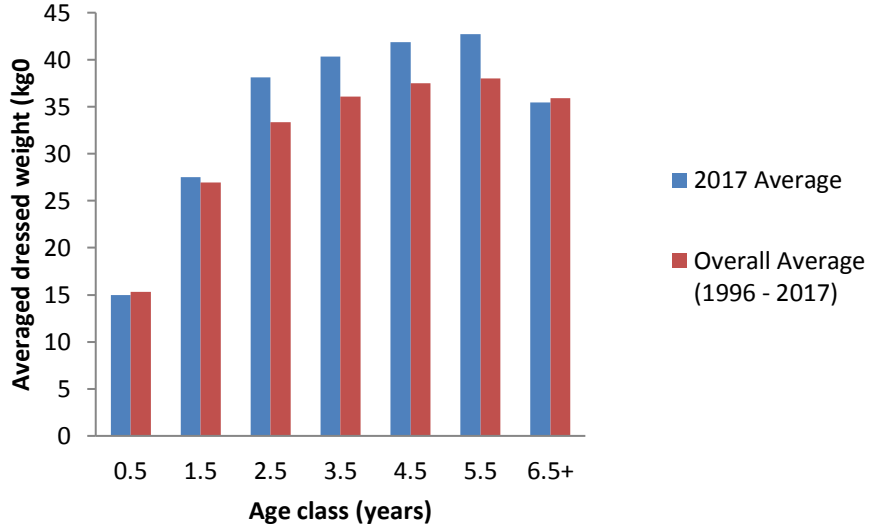

Figure 6: Historic average age class versus weight (kg dressed) of harvested Hog Deer stags compared to 2017 average.

Reproductive condition

Hinds presented at a Checking Station are all assessed for signs of reproduction. This includes the presence or absence of a foetus, lactation and nursing signs. Figure 7 shows hinds in reproductive condition versus hinds that are not. From 2013 to 2015, no hinds in reproductive condition were recorded. Rates of reproductive condition were very low in 2016 and 2017. The high rates of reproductively active hinds pre-2008 is from the Sunday Island hind harvest.

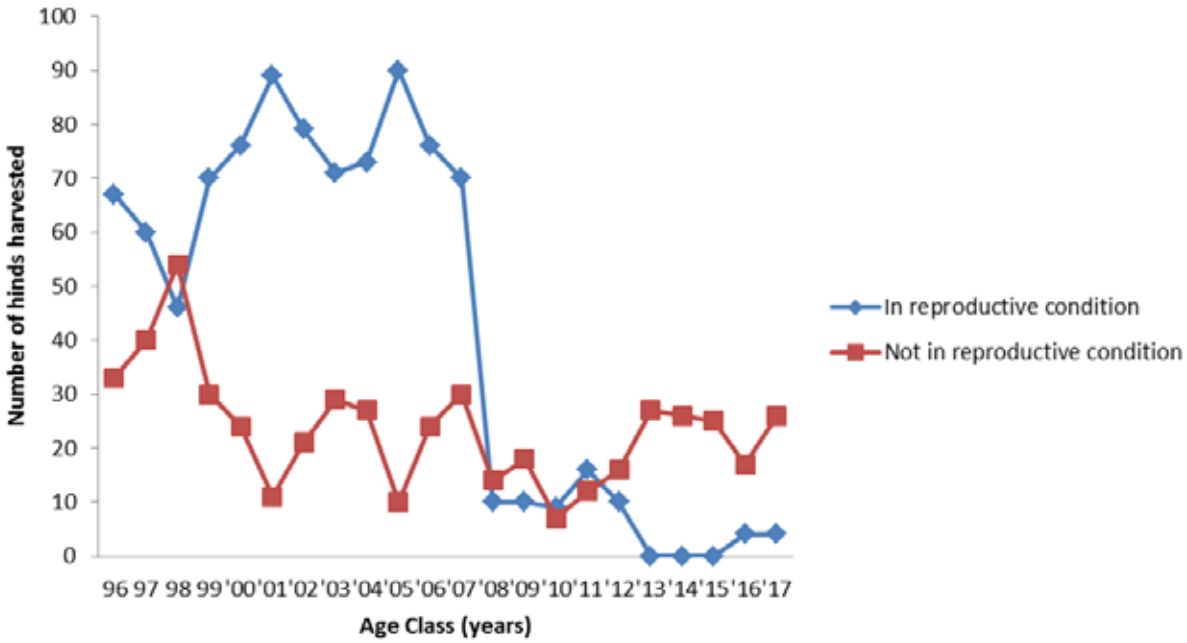

Figure 7: Harvested hinds in reproductive condition versus those that are not.
NOTE: Date pre-2008 contains the Sunday Island harvest. The 2013–2017 data showing hinds in reproductive condition is very low and unlikely to be accurate. While most hinds hunted during the prescribed April season should not be in reproductive condition it is important to gather accurate data in case this pattern changes; if many of the hinds were in reproductive condition it may have an impact on population recruitment.

Average antler length

Stags with antlers have had both antler lengths averaged and compared through age and time. Figure 8 shows the 2017 averaged lengths compared to the overall average and age class. The observed trend is that older stags have more potential to grow longer antlers. the 2017 data is similar to the overall average data. Antlers were slightly longer from stags in the 3.5 and 4.5 age classes in the 2017 harvest, compared to the same age classes of the overall average; but the change was not statistically significant (One Way ANOVA f-ratio 1.30 and p-value 0.37). The longest antlered stag was from the 6.5+ age class, with an average length of 43.1 centimetres.

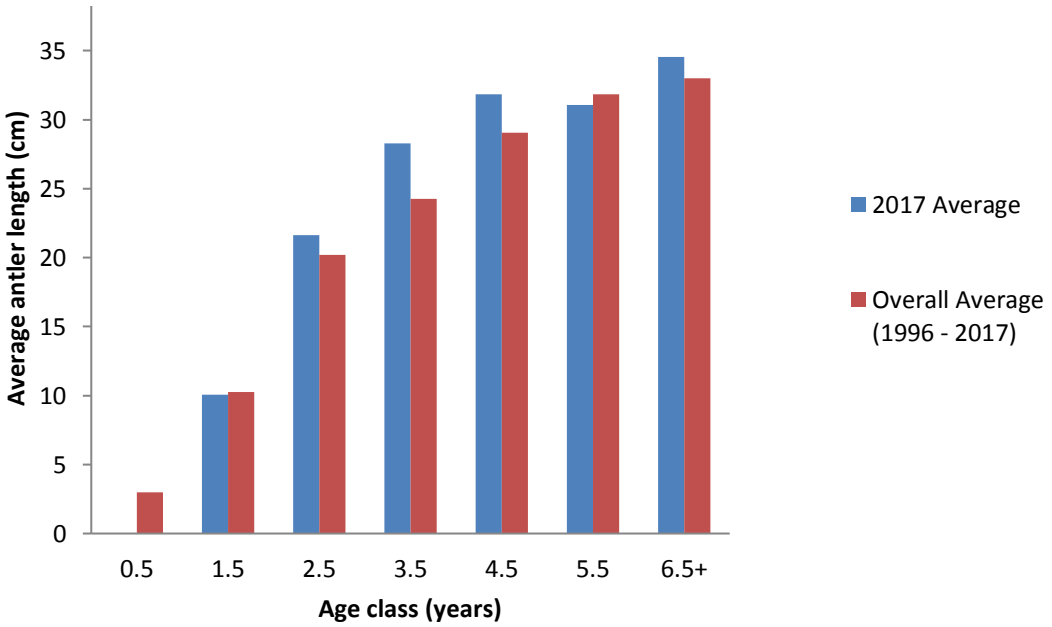

Figure 8: Average antler length for age class of harvested Hog Deer stags.

Discussion

Uptake of tag packs

The number of hunters requesting tag packs is increasing. The increase of 2017 ballot season tag packs could be attributed to the first-year trial of the Snake Island ballot. It is anticipated that this trend will continue in 2018, the second and final year of the Snake Island ballot trial. In the long term, it is unclear whether Hog Deer hunting will continue to increase in participation or whether the uptake in tag packs will plateau over time.

Active hunters, hunter success

In 2017, most hunters who received a tag pack did not harvest a Hog Deer (84%); though it is unclear how much effort, if any, the unsuccessful hunters put into hunting Hog Deer.

Hog Deer harvest

Overall, the Hog Deer harvest appears to be increasing over time; however, analysis shows the increase in harvest is attributed to Hog Deer stags taken on private property. Hog Deer are not readily available for hunting anywhere other than Gippsland, Victoria. Many hunters, including overseas hunters, are willing to pay access fees (up to $10,000 [pers. comm.]) to increase their opportunity to harvest a Hog Deer; in most cases a stag. Hind harvest and public land harvest have remained relatively constant.

The Blond Bay State Game Reserve and Boole Poole Peninsula (Gippsland Lakes Coastal Park) ballot harvest has decreased slightly through time. A number of factors may contribute to this. These areas were originally used for livestock grazing. When the livestock was removed (when the areas became public land), the vegetation composition changed, which has led to an increase of tea-tree scrub and a decrease in open areas in both the hunting areas. Fuel reduction burns are also meant to have been carried out in these areas but has yet to occur. These factors make for more difficult hunting opportunities.

The hind harvest represents a more usual ungulate harvest with a higher proportion of younger animals being taken. These animals are usually less aware/alert and often more susceptible to being harvested. As there is no age selection pressure, these younger animals will form a larger part of the total harvest. The recent harvests (2015–2017) of Hog Deer stags is skewed to mature animals (age classes 3.5 and 4.5). Historically this was not the case, with younger stags being harvested, making the hind-to-stag historical average age proportionally similar.

This trend has become apparent in recent years with the increase in Hog Deer stags harvested from private property. It is expected that the harvest would be proportionally skewed to mature stags, as paying hunters generally target mature stags with well-developed antlers.

Sex ratio

The increasing difference in sex ratio could be a cause for concern, as unbalanced herd numbers can reduce herd health, antler quality and selection pressure on resources. There is currently no evidence this is occurring, as the population appears to be well confined and below carrying capacity. Anecdotally, there may be a particularly poor sex ratio at Blond Bay, with most hunters during the ballot observing several hinds but very few stags and less mature animals. A ‘take hind first’ policy may help alleviate the sex harvest. More stags are being taken on surrounding land, which may be exacerbating the problem.

Dressed body weight

The average body weight for hinds harvested in 2017 was similar to the historical average. Only the 4.5 age class showed a difference, with a heavier average dressed weight in 2017. The increase was not statistically significant (Z-test p-value 0.77).The average weight of mature stags significantly increased in 2017. It is unclear why but a possible explanation is that the increase of mature stags being harvested from private property may contribute, as these deer are able to browse on higher-energy, nutrient-rich food, e.g. improved pasture. A good growing season in Gippsland during 2017 may also have allowed animals to maintain better condition during the hunting season.

Wilsons Promontory National Park harvest

From August 2015 to 2017, Hog Deer control programs were conducted at Wilsons Promontory National Park (WPNP) where hunting is normally prohibited. The average weight of the animals culled was significantly lighter, in both stags and hinds, compared to Hog Deer taken by the recreational harvest. The Hog Deer taken on WPNP are harvested outside the prescribed season. This may mean that weight is only a seasonal variation and not a population variation. This may be particularly relevant for WPNP, as these animals are taken at the end of winter when they may be at their lightest body weight. There is also intense grazing competition from other Hog Deer and macropods. This could lead to stunted growth and development.

Blond Bay State Game Reserve and Boole Poole Peninsula harvest

Balloted hunting on Blond Bay State Game Reserve and Boole Poole Peninsula can also occur outside of the season; however, the harvest is low and is generally in or around April. This could result in an increase in condition and weight, but not significant changes.

Snake Island harvest

Snake Island deer harvested in the 2017 trial ballot where also lighter on average than mainland-harvested Hog Deer. It is unclear why. These deer were harvested from early-February through to mid-May and the average weight did not alter during this period. Anecdotally, it has been assumed that the heaviest deer came from private land where the deer would have more access to higher-energy food. As previously mentioned, in the case of stags this assumption proved correct, however, not in hinds. One explanation could be the age class of deer being harvested and the effect this has on associated body weight. This will need to be investigated further for this hypothesis to be proved.

Reproductive condition

Historically, the hind harvest showed a large proportion of animals in reproductive condition. This is due to two factors. The first is that pre-2008 many of the hinds harvested on Sunday Island were taken outside the prescribed April season, when they are more likely to be in reproductive condition. The second factor could be a lack of awareness by some Checking Station operators, who were either not asking hunters or not picking up signs of reproduction, as indicated by the very low or non-existent rates from 2013 to 2017.

Average antler length

Antler development is dependent on age, genetics and nutrition. It takes several years for a stag to be able to grow a mature antler (for a Hog Deer, that is determined by both left and right antlers containing three clearly defined points). Older stags will generally have longer antlers. Genetic variation in some populations of deer can create a very large difference in antler size and length. A genetic study examining the Victorian Hog Deer population has shown a high level of inbreeding; in some ungulate populations this can retard the growth and/or shape of antlers. Nutrition may explain why the 3.5 and 4.5 age classes have slightly longer antlers than the overall average.

As 2017 exhibited environmental factors that favoured vegetation growth, it is reasonable to assume that the deer would have been able to put more energy into antler growth.

Summary

Overall, the Hog Deer population appears to be stable and sustainable. The harvest is increasing slightly due to private land hunting. This could potentially affect the population through a heavily unbalanced sex ratio harvest (where stags are being targeted), especially if the population reaches or exceeds carrying capacity. When a population reaches carrying capacity and the sex ratio is unbalanced, it allows immature and potentially poor genetic quality stags to breed; this can degrade the health of the population. If the population is too heavily skewed, then many of the hinds will be barren, as they will not have had the opportunity to be serviced by a stag when they are cycling. Although the balloted hunting harvest has decreased slightly, the rest of the harvest has remained relativity unchanged.

Hog Deer form a viable hunting population within Gippsland; however, Hog Deer have not experienced the same growth as Fallow and Sambar Deer populations across Victoria. Hog Deer appear to be contained within the coastal scrub and slightly further inland areas on the coastal river systems. These are possibly the only habitats where Hog Deer can successfully sustain a viable population. Both Sambar and Fallow Deer are now also found within these environments. It is unknown what effect this will have on the Hog Deer population. Potential grazing competition and territory dominance could have a negative impact on the Hog Deer population.