Natural Values Conservation Branch

Natural and Cultural Heritage Division

WOMBAT POPULATION TRENDS IN TASMANIA: 1985–2020

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INTRODUCTION

The common wombat (*Vombatus ursinus*) is found in south-eastern Queensland, eastern New South Wales, eastern and southern Victoria, south-eastern South Australia and Tasmania. Three subspecies are recognised: *V. u. hirsutus*, which is found on mainland Australia, *V. u. tasmaniensis*, which is found on mainland Tasmania and *V. u. ursinus*, which was once found widely on Bass Strait islands but is now restricted to Flinders Island (and Maria Island off eastern Tasmania following its introduction to the island in the 1970s). The common wombat is not considered to be at threat of extinction and its conservation status is not listed as being threatened under Tasmanian or Commonwealth legislation.

Wombat populations throughout south-eastern Australia are affected by sarcoptic mange which is caused by the parasitic mite *Sarcoptes scabiei*. The parasite is of human origin and there is strong evidence to suggest that it was introduced into Australia by Europeans and their domestic animals during colonisation. Although mange is widespread in common wombat populations in south-eastern Australia, rarely does it cause large population declines. Outbreaks are anecdotally associated with times of nutritional stress, adverse weather conditions, and/or high population densities.

There is currently no national wombat population monitoring program and to date Tasmania is the only jurisdiction that regularly monitors wombat populations, including documenting the prevalence of mange (www.dpipwe.tas.gov.au/wombats). Monitoring of wombats in Narawntapu National Park by the University of Tasmania between 2010 and 2016 has shown that the population in the park decreased by 94% (Martin *et al.* 2018). This decrease was attributed to a severe outbreak of sarcoptic mange. Notwithstanding this outbreak, recent monitoring of mange prevalence by the Tasmanian Department of Primary Industries, Water and Environment (DPIPWE) in wombat populations in Tasmania has detected a low overall level of mange across most parts of the State. Further information on the prevalence of mange in wombats in Tasmania can be found on the DPIPWE website (https://dpipwe.tas.gov.au/wildlife-management/fauna-of-tasmania/mammals/possums-kangaroos-and-wombats/wombat/wombat-mange/monitoring-data).

The aim of this report is to update information on long-term population trends of common wombats in Tasmania.

Overview of the Tasmanian Spotlight Survey program

The Tasmanian Spotlight Survey program (the Survey) was established with the primary aim of monitoring population trends of harvested species such as wallabies and possums across those parts of mainland Tasmania where harvesting occurred. The Survey has also been successfully applied to monitor population trends for a number of other native mammal species. For example, data from the program was used to demonstrate the decrease in Tasmanian Devil numbers due to Devil Facial Tumour Disease (Hawkins *et al.* 2006; Lazenby *et al.* 2018).

Since 1985/86, 132 transects have been monitored annually in north-western, central, north-eastern and south-eastern Tasmania, but not in the south-west and west, largely due to its inaccessibility. Further transects have since been added in other locations, including Flinders Island. A transect comprises a 10 km section of road and adjacent land that is surveyed for mammals at night with the aid of a spotlight.

The numbers of wombats per transect are used as an index to determine population trends. Population indices are widely used to determine whether populations are increasing, decreasing or stable (Gibbons and Gregory 2006; Greenwood and Robinson 2006).

METHODS

Wombat counts for the 132 transects that were surveyed by DPIPWE staff between November and March every year since 1985/86 were used. During this time nine of the 4,620 transects were not surveyed due to access issues such as broken bridges. To account for these missing transects the average number of wombats seen per transect was used to show trends in wombat counts for different regions, i.e. wombat counts were summed for all transects surveyed each year and divided by the number of transects per region. A complete description of the spotlight survey method is given in Driessen and Hocking (1992).

Transects were aggregated into four regions (north-west, north-east, central and south-east) to determine if there were any regional differences in trends.

Data for the years from 2009/10 are presented separately to more directly compare with the period from when the decrease in wombat numbers was documented by the University of Tasmania in Narawntapu National Park.

Wombat population trends in the West Tamar area and the Deloraine area are also presented separately to determine whether they reflect the decrease in wombat numbers reported for Narawntapu National Park since 2009 as documented by the University of Tasmania (Martin *et al.* 2018) and to determine if any recovery has occurred.

Transects were established on Flinders Island in the 1990s and since 1994/95 eight transects have been surveyed annually. Trends in wombat counts for these transects are also presented.

A regression procedure was performed on the yearly counts to provide a statistical test of trends in the data. Linear and polynomial (second or third order) terms were fitted and the best-fit line was the one that explained most of the variation in the yearly counts (using R^2-adjusted). Only regression lines that were statistically significant ($P<0.05$) are shown.

RESULTS

State-wide Wombat Trends (excluding west and south-west)

A total of 6,305 wombats were recorded over the past 35 years on all 132 transects. All 132 transects recorded at least one wombat over 35 years.

Between 1985/86 and 2019/20 there was a statistically significant increasing trend in the wombat population index (Fig. 1). The index increased from 1985/86 to the mid-1990s, and then remained relatively stable for nearly 20 years, and this was then followed by a recent small upward turn commencing about ten years ago (Fig. 1).

From 2009/10 to 2019/20 there was a statistically significant increasing trend in the wombat population index (Fig. 2).

Regional Wombat Trends

Over the 35 years from 1985/86 to 2019/20, there were statistically significant increasing trends in wombat population indices in all four regions; however, the pattern of increase varied between regions (Fig. 3):

- In the **north-east** there was an increasing trend from 1985/86 until about 2000/01 and then the trend line remained stable.
- In the **south-east** there has been a steady increasing trend over the survey period.
- In the **north-west**, the wombat population index increased from 1985/86 until about 2009, and then plateaued, with a slight downturn in recent years.
- In the **central** region there was a distinct increase in the index from 1985/86 to the mid-1990s, followed by a small, gradual decline until 2010, when the index increased during the last four years of survey (Fig. 3).

Over the past eleven years from 2009/10 to 2019/20, the trends in wombat population indices for the **north-west**, **north-east** and **south-east** regions have been stable with no statistically significant increasing or decreasing trend (Fig. 4). In the **central** region there has been a statistically significant increase in the index (Fig. 4).

Central North Wombat Trends (focussing on transects near Narawntapu National Park)

In the **West Tamar** area of the central region, there was an increasing trend in the index from 1985/86 to about the mid-2000s (Fig. 5). There was an unexplained spike in wombat counts in 2006. From 2009/10 to 2016/17 there was a significant decreasing trend in the wombat population index with no wombats detected in 2015/16 and 2016/17. This trend tracks a similar decline in wombat counts in Narawntapu National Park monitored by the University of Tasmania (Martin *et al.* 2018). A low number of wombats have been detected in 2017/18 and 2019/20. Additional camera monitoring in Narawntapu National Park by DPIPWE has recorded wombats without mange over the past two years.

Wombat trends from the **Deloraine** transects of the central region show an increase from around 1990/91 to about 2010/11, when the index plateaued and then decreased in recent years. The trend was stable between 2009/10 and 2019/20 (Fig. 5).

Flinders Island Wombat Population Trends

Wombats on Flinders Island represent a unique endemic subspecies (*Vombatus ursinus ursinus*). This subspecies was previously found widely on Bass Strait Islands but is now restricted to Flinders Island and more recently also on Maria Island, following its introduction in the 1970s. Wombat trends on Flinders Island were generally stable between 1994/95 and 2011/12 (Fig. 6). Trends then increased from 2011/12 to 2019/20, with the highest wombat counts recorded in the past three years.

SUMMARY

The Tasmanian Spotlight Survey data indicate that state-wide wombat populations have generally increased over the past 35 years and numbers have been stable or, in one region, increasing over the past ten years. There is some evidence of a small decrease in the population index in the Deloraine area and in the northwest region during the past few years; however, this decrease is well-within background variation.

The population of the unique endemic subspecies on Flinders Island (*V. u. ursinus)* is increasing. Furthermore, additional spotlight monitoring of this subspecies on Maria Island, as part of another targeted monitoring program, shows that since 2010 (when monitoring commenced) and 2015 the wombat population increased on the island, with a small decreasing trend between 2015 and 2019 (Ingram 2019).

The spotlight survey data for wombats in the West Tamar area mirror the decreasing trend in wombat counts recorded by the University of Tasmania in the Narawntapu National Park between 2010 and 2016, providing further confirmation that the wombat population in this area has substantially reduced. This result also demonstrates that the spotlight survey program can detect large decreases in numbers of wombats at a local level.

The spotlight survey data for wombats suggest that the wombat population decrease is localised to the West Tamar area with no evidence to suggest there is a sustained decrease in wombats more broadly in Tasmania. Indeed, the overall State-wide trend for wombats in Tasmania has increased between 1985/86 and 2019/20.

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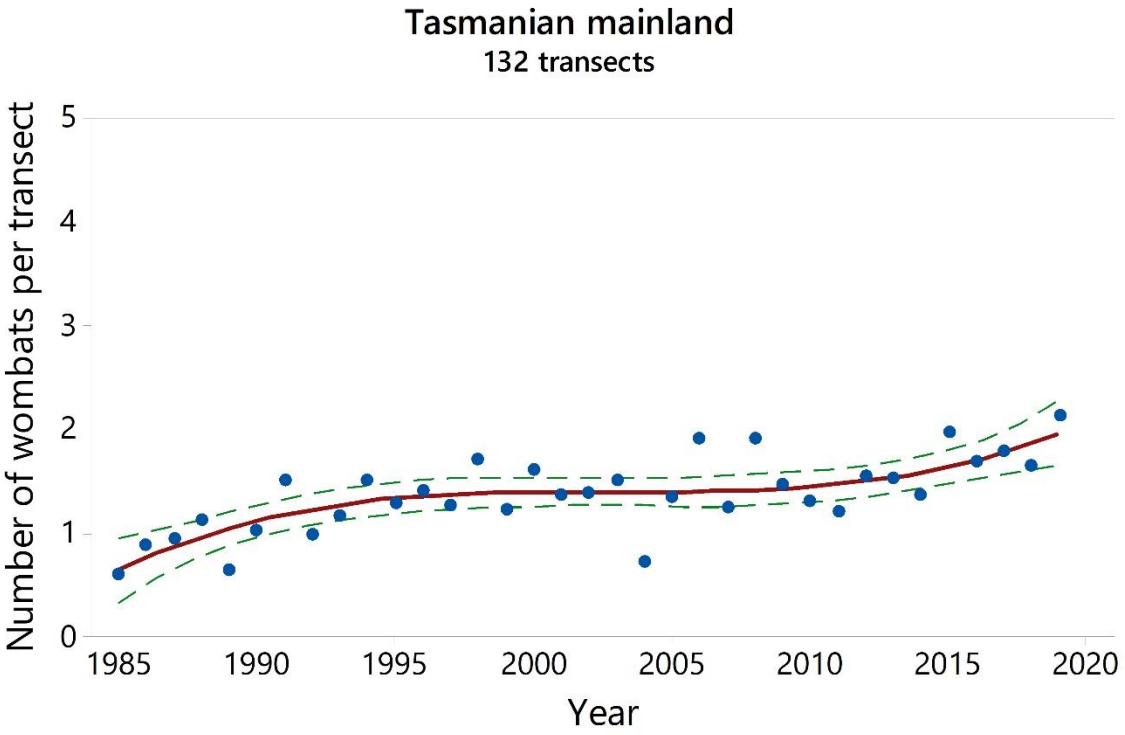

Fig. 1. Yearly counts of wombats from 1985/86 to 2019/20 on all transects.
Polynomial regression analysis for wombat counts versus year is significant (P = 0.000, R^2 (adj) = 53%).

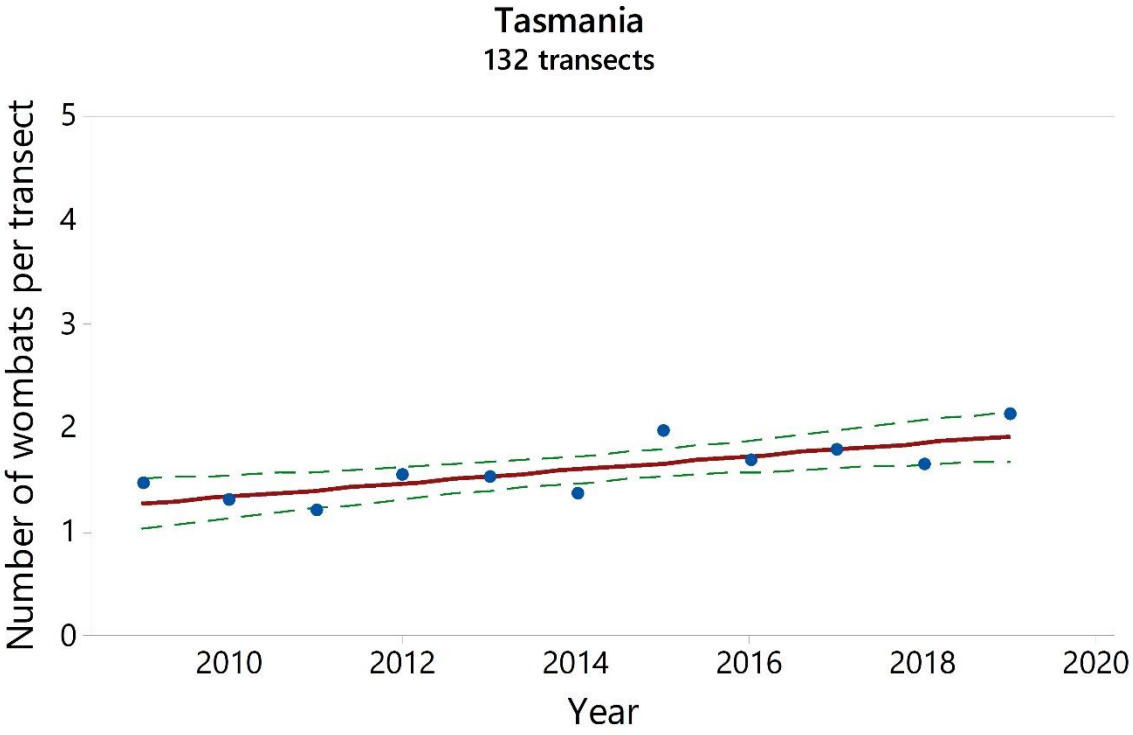

Fig. 2. Yearly counts of wombats from 2009/10 to 2019/20 on all transects.
Linear regression analysis for wombat counts versus year is significant (P = 0.006, R^2 (adj) = 54%).

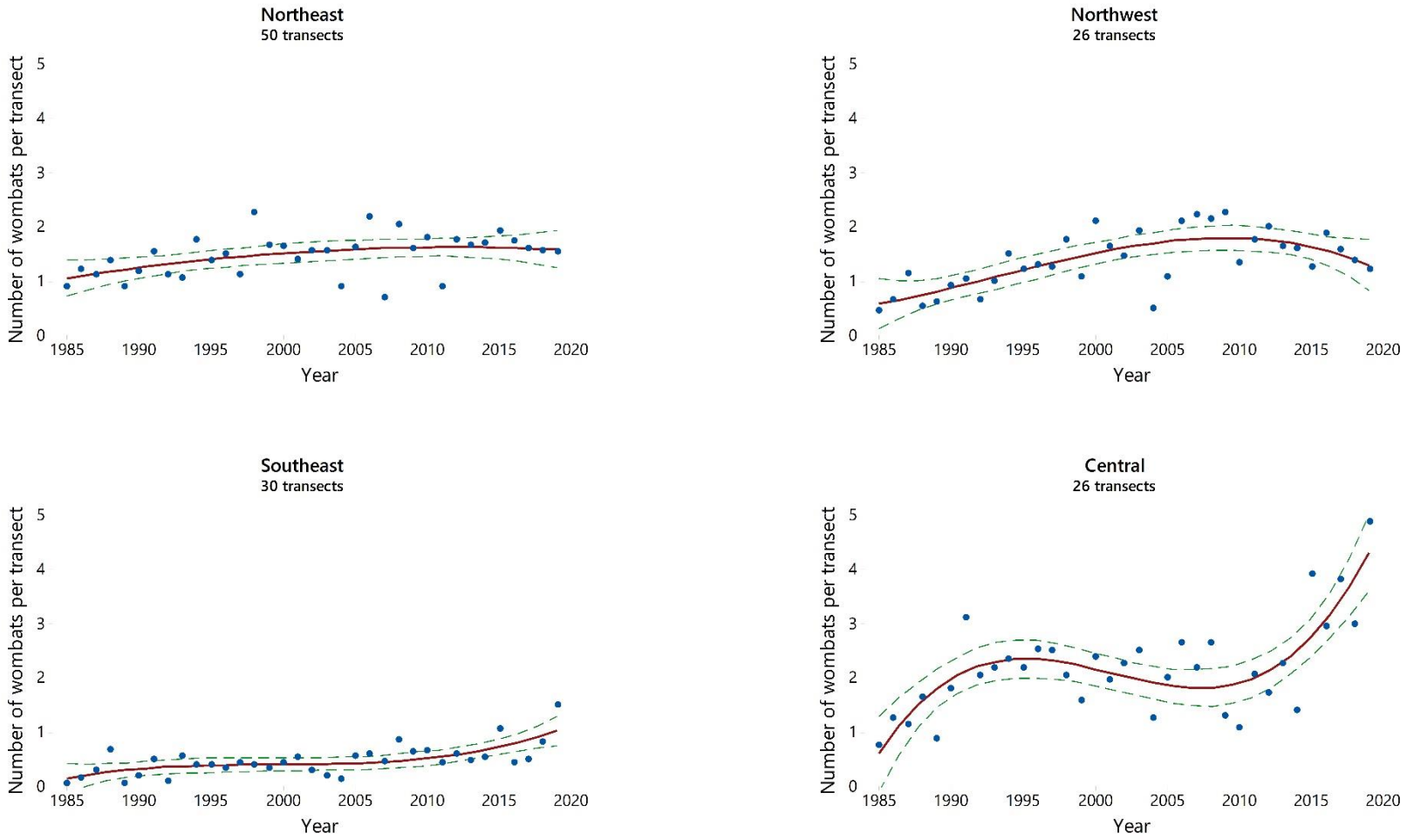

Fig. 3. Yearly counts of wombats from 1985/86 to 2019/20 for each region.
Regression analyses for wombat counts versus year are all significant ($P \leq 0.05$; R^2 (adj.): NE = 17%; NW = 49%; SE = 43%; C = 59%).

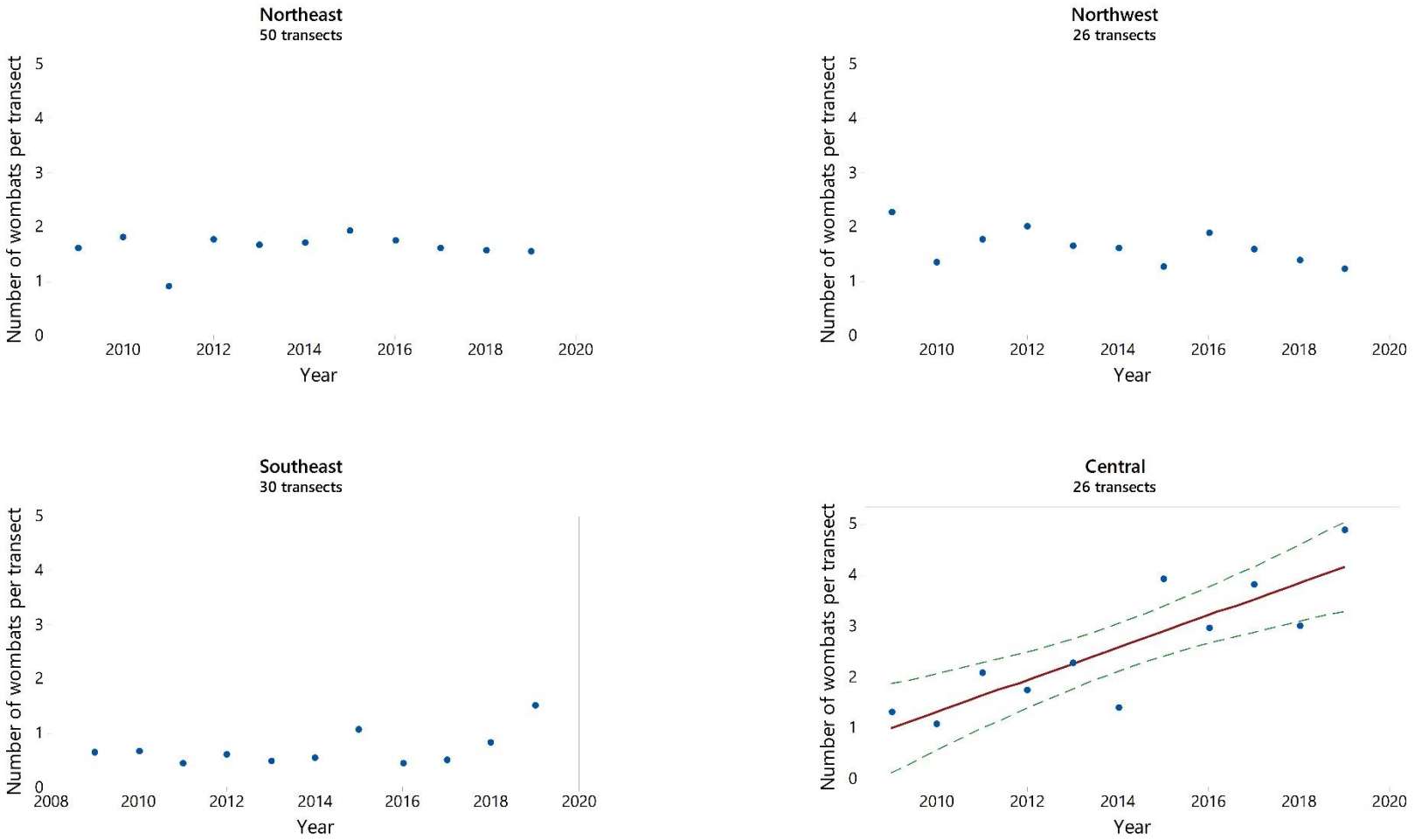

Fig. 4. Yearly counts of wombats from 2009/10 to 2019/20 for each region.
Regression analyses for wombat counts versus year are not significant except for the central region (P = 0.001; R^2 (adj.) = 69%).

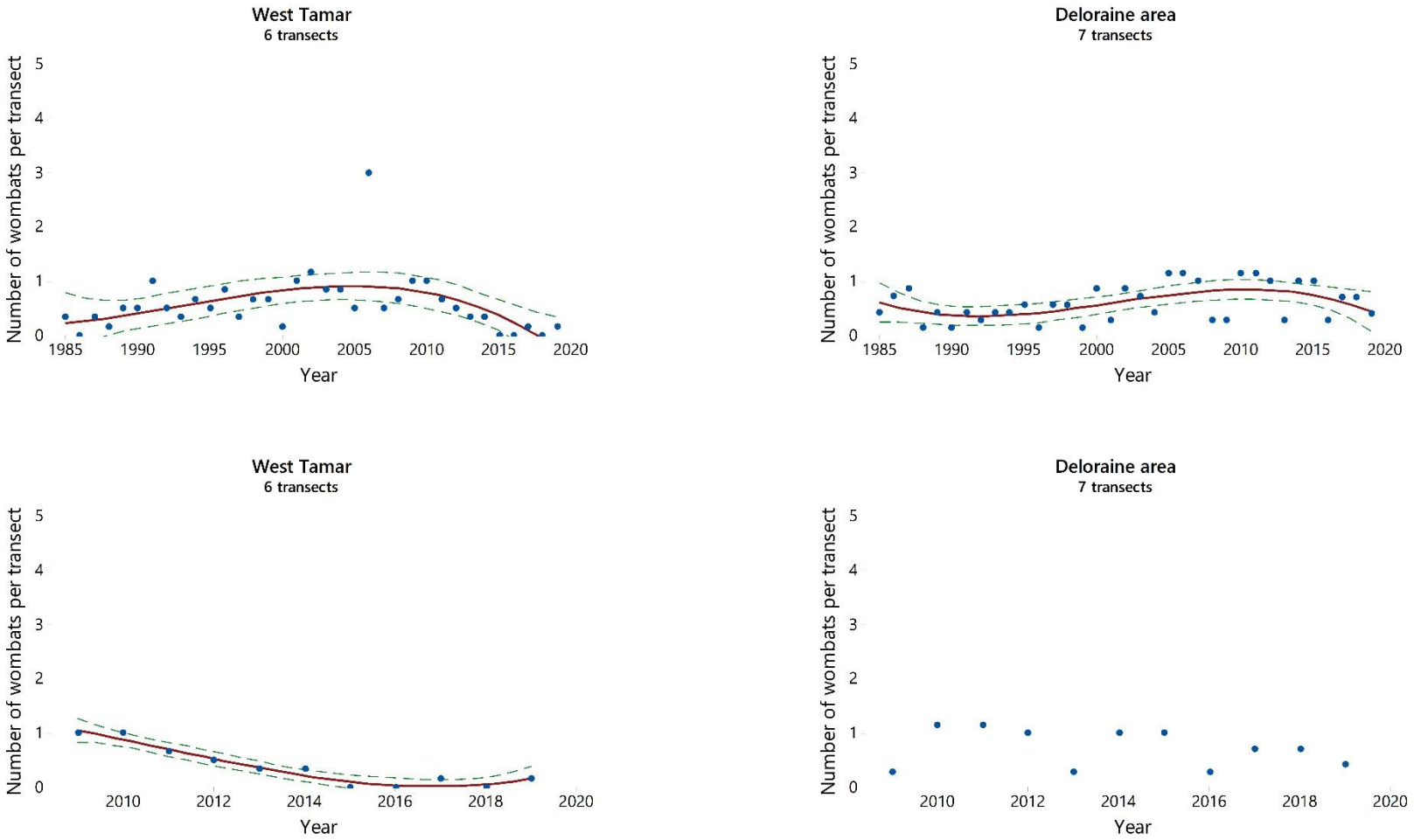

Fig. 5. Yearly counts of wombats from 1985/86 to 2019/20 and from 2009/10 to 2019/20 in the west Tamar and Deloraine areas.
Regression analyses for wombat counts versus year are significant ($P < 0.05$; R^2 (adj.): West Tamar area: 1985/86–2019/20 = 25%, 2009/10–2019/209 = 93%; Deloraine area 1985/86–2019/20 = 21%) except for the Deloraine area 2009/10–2019/20 ($P > 0.50$).

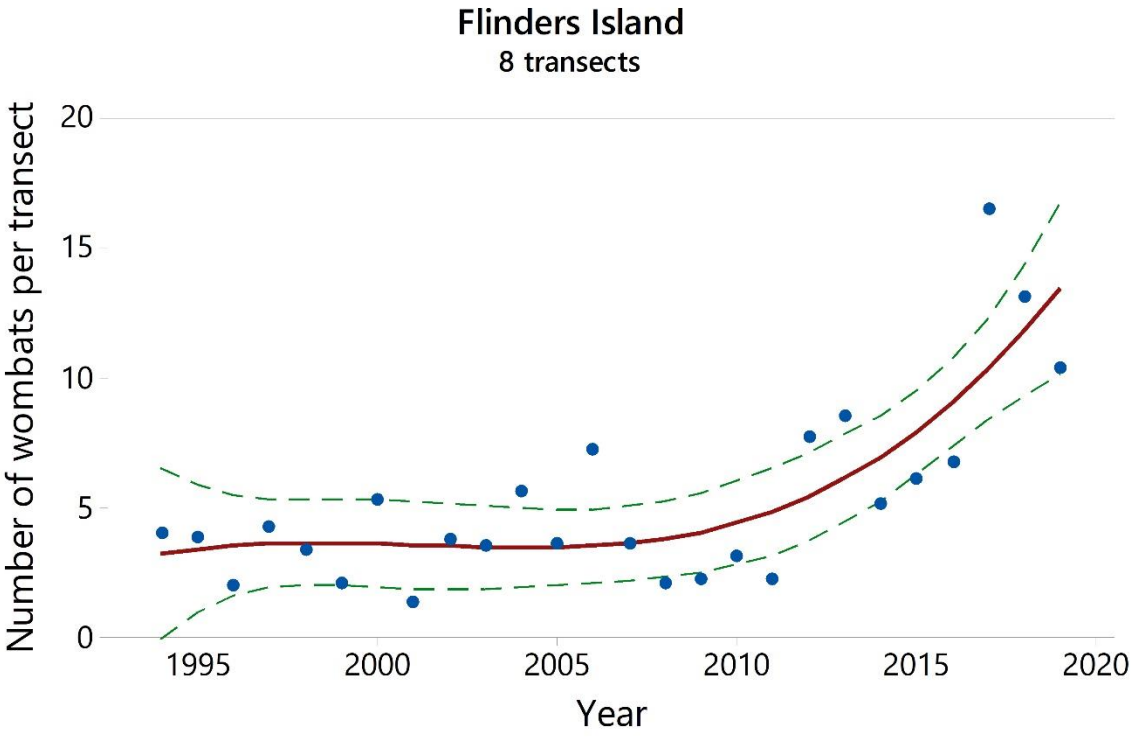

Fig. 6. Yearly counts of wombats from 1994/95 to 2019/20.
Polynomial regression analysis for wombat counts versus year is significant (P = 0.000, R^2 (adj) = 58%).