DEPARTMENT OF PRIMARY INDUSTRIES, PARKS, WATER AND ENVIRONMENT

WOMBAT POPULATION TRENDS IN TASMANIA: 1985–2017

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INTRODUCTION

Monitoring of wombats in Narawntapu National Park by the University of Tasmania has shown that the population decreased by 94% between 2010 and 2016 (Martin *et al.* in press). This decline has been attributed to a severe outbreak of sarcoptic manage, which is caused by the parasitic mite *Sarcoptes scabiei*. This has raised concern among the Tasmanian community about the status of the wombat population in other parts of Tasmania.

The aim of this report is to determine wombat population trends in regions of Tasmania monitored by the Tasmanian Spotlight Survey program.

Overview of the Tasmanian Spotlight Survey program

The Tasmanian Spotlight Survey program 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 Tasmanian Spotlight Survey program has been used successfully to monitor population trends for a number of other native mammal species. For example, data from the program was used to demonstrate the decline in Tasmanian Devil numbers due to Devil Facial Tumour Disease (Hawkins *et al.* 2006)

Since 1985, 132 transects have been monitored annually in north-western, central, north-eastern and south-eastern Tasmania. The survey does not include south-western and western Tasmania, largely due to its inaccessibility and lack of harvesting. Further transects have since been added in locations such as King and 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.

METHODS

For the purposes of this analysis we only used wombat counts for the 132 transects that were surveyed every year since 1985. Nine of the 4224 transects were not surveyed due to access issues such as a broken bridge. Wombat counts were summed for all transects surveyed each year and divided by the number of transects and graphed.

Transects were separated into four regions (northwest, northeast, central and southeast) to determine if there were any regional differences in trends.

Data for the years from 2009 to 2017 were graphed separately to compare with the period when the decrease in wombat numbers was documented by the University of Tasmania in Narawntapu National Park.

Trends in wombat counts in the West Tamar area and the Deloraine area were also graphed separately to determine whether they matched the decrease in wombat numbers reported for Narawntapu National Park over the period 2009 to 2017.

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

Wombat counts on all 132 transects

A total of 5,572 wombats was recorded over the past 32 years on 132 transects. All 132 transects recorded at least one wombat over 32 years.

Between 1985/86 and 2016/17 there was a statistically significant increase in annual wombat counts (Fig. 1). Counts showed a distinct increase 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 in counts (Fig. 1).

From 2009/10 to 2016/17 the trend in annual wombat counts has been stable with no statistically significant increasing or decreasing trend in counts (Fig. 2).

Regional Wombat Counts

From 1985/86 to 2016/17, there were statistically significant increases in annual wombat counts in all four regions, but the pattern of increase in counts varied between regions (Fig. 3). In the northeast and the southeast there has been a steady increase in wombat counts during the survey period. In the northwest, wombat counts increased from 1985/86 until about 2009, then plateaued. In the central region there was a distinct increase in counts from 1985/86 to the mid-1990s, followed by a small, gradual decline until 2010, and then counts increased sharply during the last two years of survey (Fig. 3).

From 2009/10 to 2016/17 the trend in wombat counts for the northwest, northeast and southeast regions have been stable with no statistically significant increasing or decreasing trend in counts (Fig. 4). In the central region there has been a statistically significant increase in counts (Fig. 4).

Central North Wombat Counts (focussing on transects near Narawntapu)

Counts of wombats in the west Tamar area show an increasing tend from 1985/86 to about the mid-2000s (Fig. 5). There was a large unexplained spike in wombat counts in 2006. However, from 2009/10 to 2016/17 there was a significant decreasing trend in the counts of wombats in the West Tamar area. This trend is remarkably similar to trends in wombat counts in Narawntapu National Park (Fig. 5). A similar pattern occurs for wombat counts on transects in the Deloraine area, although the post-2009/10 decrease in counts is less distinct; with no statistically significant decrease or increase detected between 2009/10 and 2016/17 (Fig. 5).

SUMMARY

The spotlight survey data indicate that wombat numbers have generally increased over the past 32 years and numbers have been stable or increasing over the past eight years

The spotlight survey counts of wombats in the areas west of the Tamar mirror the decreasing trend in wombat counts recorded by the University of Tasmania in the Narawntapu National Park and provide further evidence that the wombat population in this area has been substantially reduced. This result also demonstrates that the spotlight survey program is capable of detecting large decreases in numbers of wombats at a local level.

The spotlight survey counts of wombats indicate that the wombat population decrease is localised to the west Tamar area with no evidence to suggest there is a decrease in wombats more broadly in Tasmania. Closer examination of the spotlight survey data have not revealed other localised areas where wombat numbers have changed, but this will be the focus of further investigation.

REFERENCES

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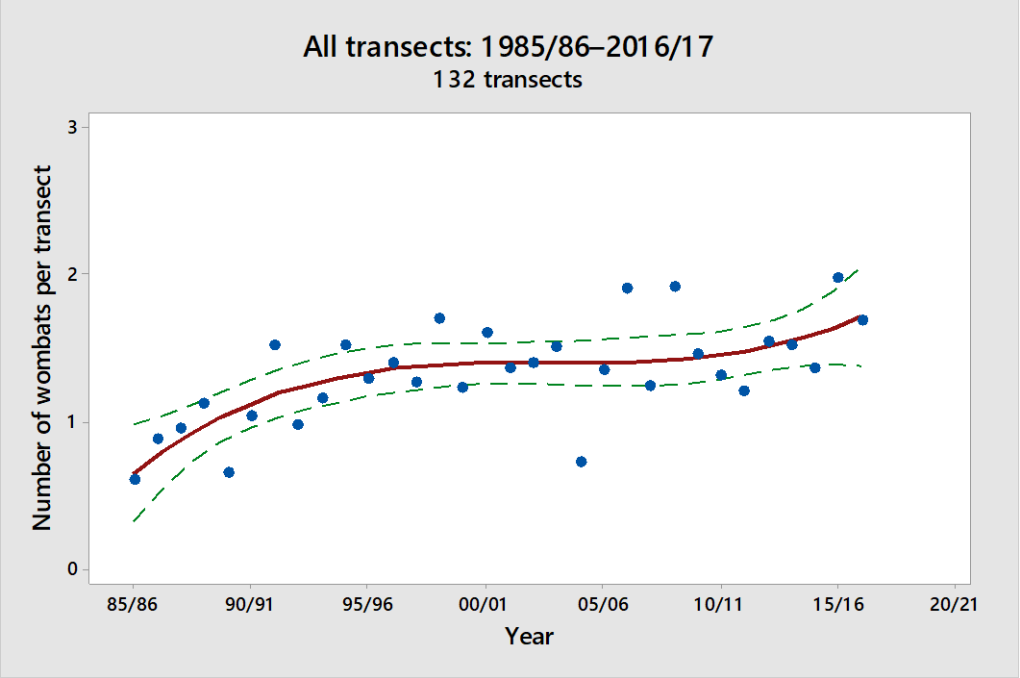

Fig. 1. Yearly counts of wombats from 1985/86 to 2016/17 on 132 spotlight survey transects.
Polynomial regression analysis for wombat counts versus year is significant ($P<0.0001$, R^2 (adj) = 43%).

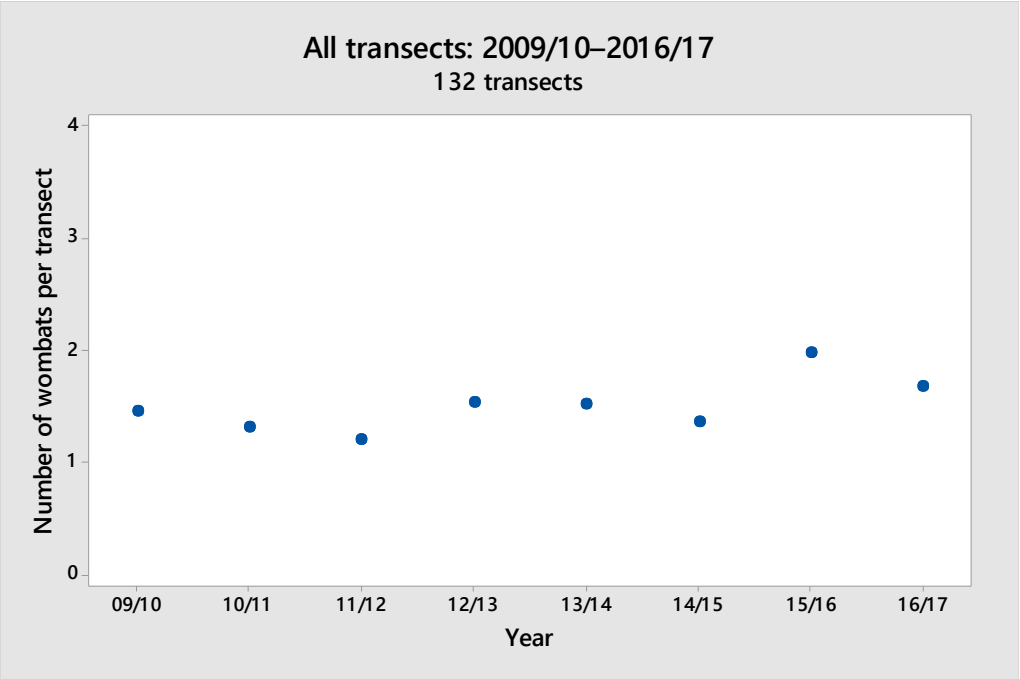

Fig. 2. Yearly counts of wombats from 2009/10 to 2016/17 on 132 spotlight survey transects.
Regression analyses for wombat counts versus year is not significant ($P>0.05$).

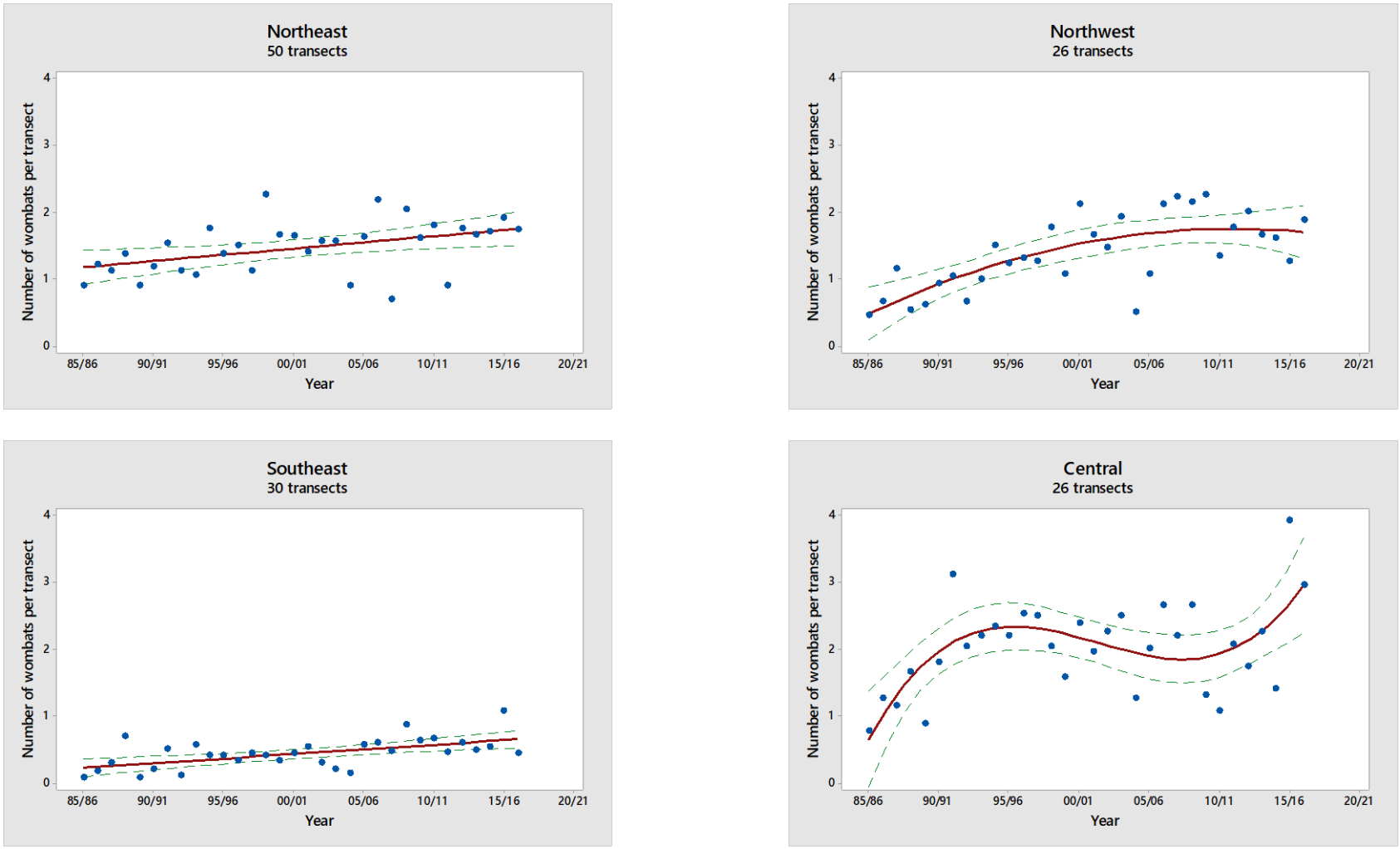

Fig. 3. Yearly counts of wombats from 1985/86 to 2016/17 for each region.
Regression analyses for wombat counts versus year are all significant ($P < 0.05$; R^2 (adj.): NE = 17%; NW = 49%; SE = 30%; C = 35%).

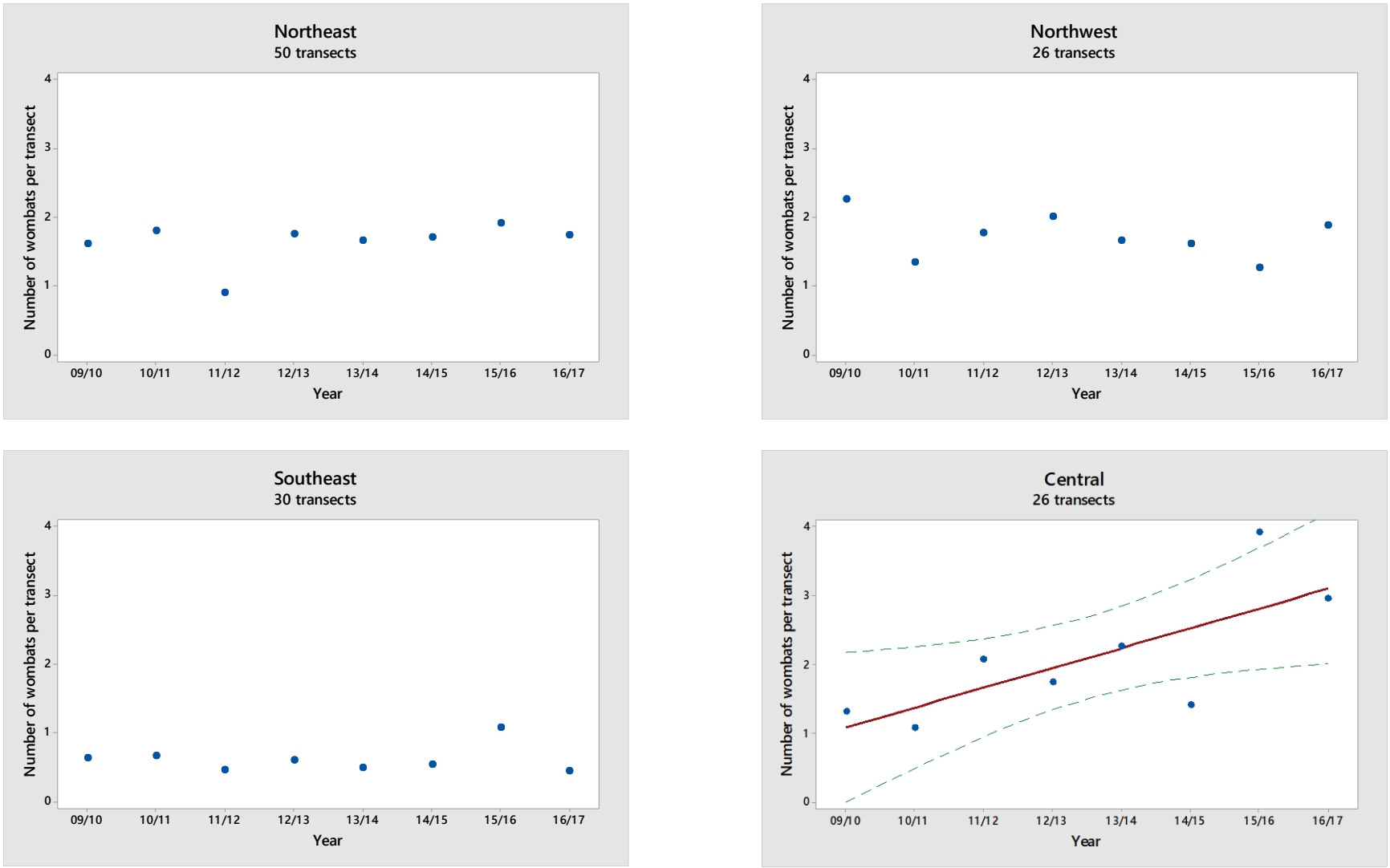

Fig. 4. Yearly counts of wombats from 2009/10 to 2016/17 for each region.
Regression analyses for wombat counts versus year are not significant except for the central region (P = 0.035; R^2 (adj.) = 48%).

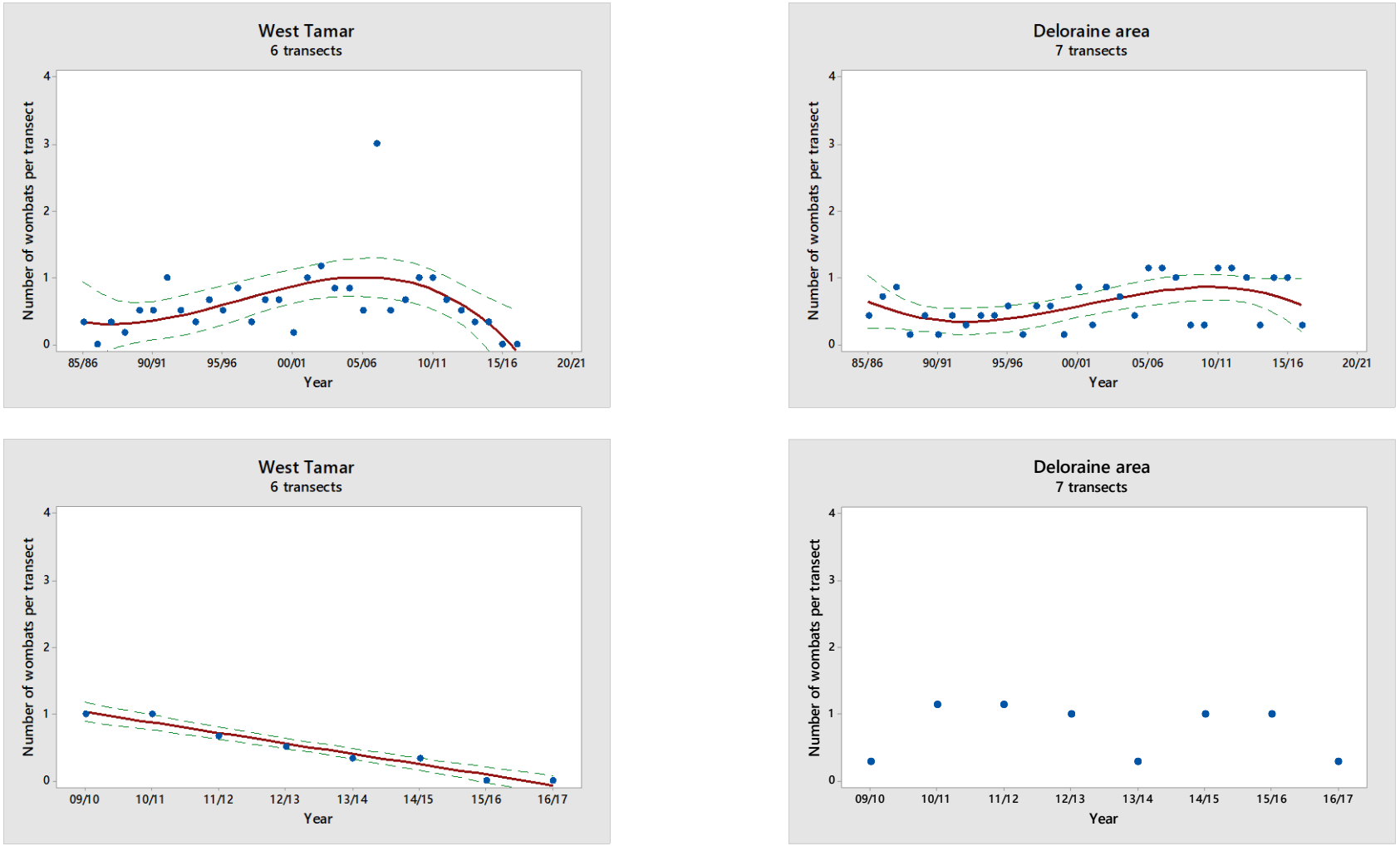

Fig. 5. Yearly counts of wombats from 1985/86 to 2016/17 and from 2009/10 to 2016/7 in the west Tamar and Deloraine areas. Regression analyses for wombat counts versus year are all significant ($P < 0.05$; R^2 (adj.): west Tamar area: 1985/86–2016/17 = 24%, 2009/10–2016/17 = 95%; Deloraine area 1985/86–2017/17 = 21%) except for the Deloraine area 2009/10–2016/17 ($P > 0.05$).