

The Western Australian sheep flock- future scenarios

Prepared by Kate Pritchett, May 2016

The Western Australian sheep flock

The Western Australian sheep flock peaked during 1990 at 38.4 million head. Since this period there has been a relatively steep decline in sheep numbers to 14.01 million head in mid-2015 as seen in Figure 1.

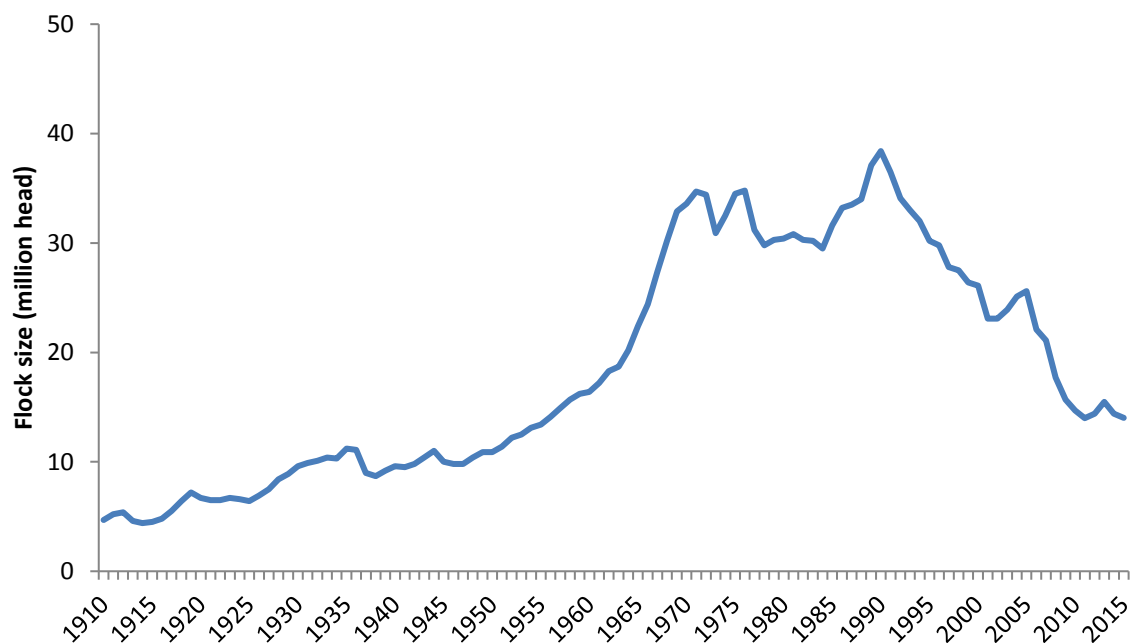


Figure 1 Western Australian sheep population (Source: Based on ABS data, DAFWA analysis)

A closer look at the more recent years shows that the Western Australian sheep flock was sold down sharply between 2005 and 2011. Between 2011 and 2013, flock rebuilding resulted in an increase of 10% from 14.0 million head to 15.5 million head. However since then the WA sheep flock has once again been reduced to 14.0 million head as of the 30th of June 2015 as seen below in Figure 2.

Since 2007, turn-off, including lamb and sheep slaughter, live export and interstate movements, has fallen from 8.4 million head to 4.4 million head in 2012 before rising to 5.9 million in 2014 and 5.5 million in 2015.

There has been a narrowing of the margin between total flock numbers and turn-off, indicative of an increased focus on meat production.

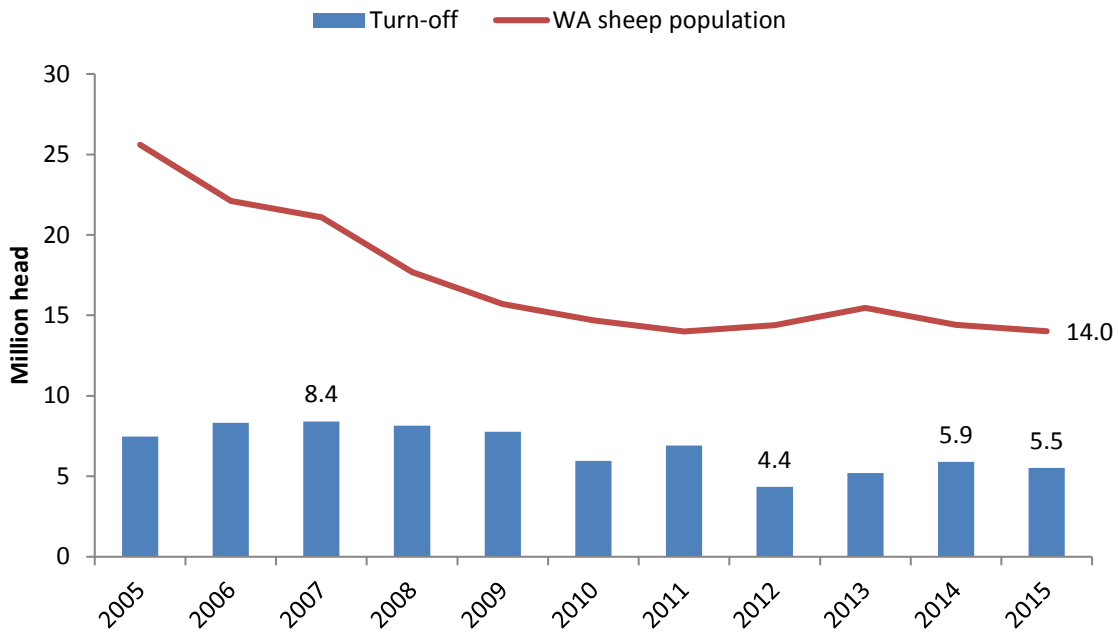


Figure 2 Western Australian sheep population changes between 2005 and 2015 and total turn off (Source: Based on ABS data, DAFWA analysis)

Figure 3 illustrates that using current turn off levels (July 2015 to March 2016) to predict the total turn off for the financial year 2015-16, the state flock would fall to 12.7 million head as of the 30th June 2016.

Opening number of sheep	14.0 million †
Number of ewes joined	6.5 million ^
Marking rate	88% ^
Lambs marked (est.)	5.7 million ^
Turn off	
Lambs slaughtered	2.7 million ^
Sheep slaughtered	1.3 million ^
Live exports	1.8 million ^
Interstate movements	0.1 million ^
Total turn off (est.)	6.0 million
Losses on farm (~7%)	1.0 million ^
Closing number of sheep (est.)	12.7 million ^ (-9.1%)

† ABS estimate

^ DAFWA estimate

Figure 3 Projection of sheep population at the close of 2015-16

Future scenarios

Three scenarios were modelled in order to predict what the state sheep flock may look like in 2017-18 if future seasons were similar to that experienced during 2014-15.

Scenario 1

The first scenario holds the turn off in future years at the same level as experienced in 2014-15 (5.5 million head). Other variables such as the percentage of ewes, marking rate and number of ewes mated were calculated using average rates in recent years.

This gave a closing flock number of 11.31 million head as shown below in Table 1.

Table 1 Projection of flock numbers in 2017-18 under scenario one

Opening number of sheep	12.39	million
Number of ewes joined	6.04	million
Marking rate	88%	million
Lambs marked (est.)	5.30	million
Turn off		
Lambs slaughtered	2.35	million
Sheep slaughtered	1.33	million
Live export	1.79	million
Interstate movements	0.04	million
Total turn off (est)	5.51	million
Losses on farm (7%)	0.9	million
Closing number of sheep	11.31	million

The number of sheep in 2017-18 may actually be even lower as the turn off rate for 2015-16 is predicted to be higher than that for 2014-15. This is being attributed to the dry conditions felt during spring in some prime sheep producing regions of WA.

As illustrated in Figure 3, at the close of 2015-16 it is estimated that the state flock will fall to 12.7 million head if current turn off is maintained. When taken into account the closing number of sheep in 2017-18 is reduced to 10.48 million (Table 2), provided the turn off rate returns to that of 2014-15 from 2016-17 onwards.

Table 2 Projection of flock numbers in 2017-18 under scenario one taking into account the 2015-16 forecast

Opening number of sheep	11.78	million
Number of ewes joined	5.74	million
Marking rate	88%	million
Lambs marked (est.)	5.04	million
Turn off		
Lambs slaughtered	2.354	million
Sheep slaughtered	1.327	million
Live export	1.788	million
Interstate movements	0.044	million
Total turn off (est)	5.51	million
Losses on farm (7%)	0.8	million
Closing number of sheep	10.48	million

Scenario 2

The second scenario maintains the ratio of turn off to the opening number of total sheep constant at the 2014-15 level. This is more likely due to the fact that the overall number of sheep will affect the number available to be turned off. As in scenario one, average values were used for the other variables.

This projection gives an opening number of 13.0 million head for 2017-18, and a closing number of 12.68 million head (Table 3). It would also result in a total turn off of less than 5 million head, a level only recorded once in the last 15 years. Work reported by Curtis and Hardy at an earlier SILC meeting indicated that processors and exporters require a minimum of 5.6 million head per year, just to keep the businesses turning over.

Table 3 Projection of flock numbers in 2017-18 under scenario two (turn off remains a constant proportion of opening number)

Opening number of sheep	13.00	million
Number of ewes joined	6.34	million
Marking rate	88%	million
Lambs marked (est.)	5.57	million
Turn off		
Lambs slaughtered	2.12	million
Sheep slaughtered	1.20	million
Live export	1.61	million
Interstate movements	0.04	million
Total turn off (est)	4.98	million
Losses on farm (7%)	0.91	million
Closing number of sheep	12.68	million

When the 2015-16 forecast is taken into account in scenario two 2017-18 (Table 4) numbers are further reduced. The opening number was estimated to be 12.42 million head and the closing number was 12.11 million head. The ratio of turn off to opening number was returned to that of 2014-15 for the years 2016-17 onwards.

Table 4 Projection of flock numbers in 2017-18 under scenario two taking into account the 2015-16 forecast

Opening number of sheep	12.42	million
Number of ewes joined	6.05	million
Marking rate	88%	million
Lambs marked (est.)	5.32	million
Turn off		
Lambs slaughtered	2.03	million
Sheep slaughtered	1.14	million
Live export	1.54	million
Interstate movements	0.04	million
Total turn off (est)	4.75	million
Losses on farm (7%)	0.87	million
Closing number of sheep	12.11	million

Scenario 3

Scenario three is similar to scenario two except that the turn off to opening number ratio for lamb slaughter, sheep slaughter, live export and interstate transfers was calculated as the average of those ratios across the last five years (2010-11 to 2014-15). As in the other scenarios, average values were used for the other variables (marking rates, death rates, proportion of breeding ewes in the flock).

As seen below in Table 5 the third scenario gave an opening number of 13.15 million sheep in 2017-18 and a closing number of 12.89 million sheep. Again annual turn off would be below 5 million.

Table 5 Projection of flock numbers in 2017-18 under scenario three

Opening number of sheep	13.15	million
Number of ewes joined	6.41	million
Marking rate	88%	million
Lambs marked (est.)	5.63	million
Turn off		
Lambs slaughtered	1.86	million
Sheep slaughtered	1.13	million
Live export	1.68	million
Interstate movements	0.29	million
Total turn off (est)	4.96	million
Losses on farm (7%)	0.92	million
Closing number of sheep	12.89	million

When the 2015-16 flock projection is taken into account the opening number of sheep in 2017-18 is 12.48 million head and the closing number is 12.24 million head. The average turn off to opening number ratio five year average was used for 2016-17 onwards.

Table 6 Projection of flock numbers in 2017-18 under scenario three taking into account the 2015-16 flock projection

Opening number of sheep	12.48	million
Number of ewes joined	6.09	million
Marking rate	88%	million
Lambs marked (est.)	5.35	million
Turn off		
Lambs slaughtered	1.77	million
Sheep slaughtered	1.07	million
Live export	1.59	million
Interstate movements	0.28	million
Total turn off (est)	4.71	million
Losses on farm (7%)	0.88	million
Closing number of sheep	12.24	million

Put simply, turn off (plus deaths) has been higher than lambs marked. As a consequence, unless marking rate increases and/or turn off (and deaths) decreases, then flock size will continue to decline.

Some of this decline has been from willing sellers, keen to change enterprises and happy to destock while prices are good. Eventually, those producers wishing to continue running sheep will resist the demand, making it increasingly difficult for processors and live sheep exporters to fill their orders.

Flock demographics

Flock structure

Over the last 25 years the Western Australian sheep flock has undergone quite a significant change in flock structure as seen in Figure 4. In 1990 breeding ewes accounted for 45% of the flock. In 2014 this has risen to 61%. This is driven by the increasing importance of sheep meat to the sheep industry. In 1990 the industry was very much a wool focused industry but today is much more of a dual product industry. A similar trend is evident in the proportion of lambs in the flock. It has risen from 21% to 29% of the flock.

The wether component of the flock has decreased quite dramatically over the same time period. During 1990 wethers made up approximately 32% of the state flock but in 2014 have fallen to approximately 9% of the flock.

When only looking at the most recent 10 years the trend in flock demographics has continued, however not so dramatically. The proportion of ewes has increased from 59% to 61% and the proportion of lambs has risen from 25% to 29%. The proportion of wethers has continued to fall decreasing from 14% to 9%. Over the last 5 years however the flock composition appears to have remained relatively steady.

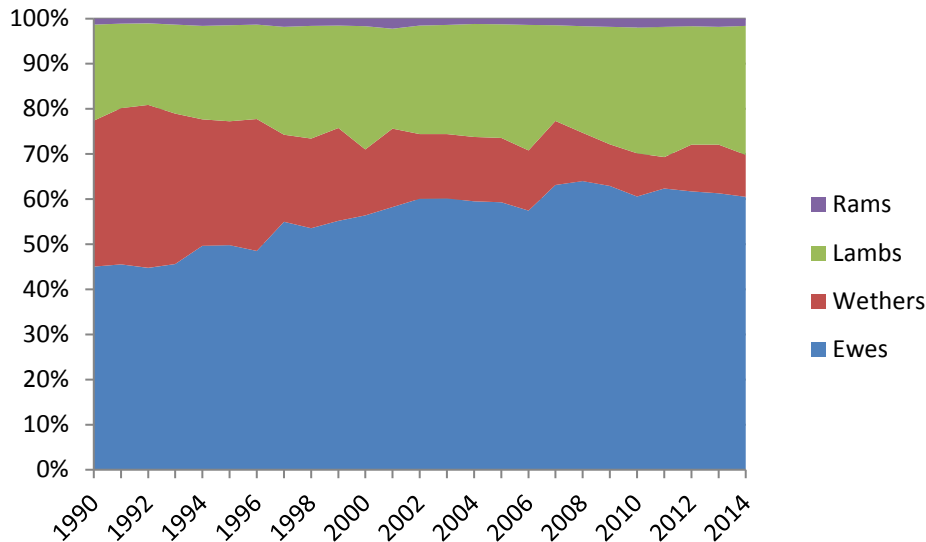


Figure 4 Western Australian flock structure between 1990 and 2014 (Source: Based on ABARES agsurf data, DAFWA analysis)

Merino vs meat

Over the last five years, Merino ewes have increased from 86% to 92% of the breeding ewe flock in WA (Table 8).

In Jun-2011, 86% of the breeding ewes were Merino of which 73% were mated to Merino rams leaving 27% producing first cross lambs. In Jun-2015, 92% of the breeding ewes were Merino, but only 70% of merino ewes were mated to Merino rams leaving 30% producing first cross lambs.

Table 7 Percent of breeding ewes on hand in WA by the type of lamb they are mated to produce. Mo – Merino; 1X – first cross; and 2X – second cross and meat breed lambs. (Source: MLA sheep meat and wool survey, DAFWA analysis)

	Mo	1X	2X
Jun-11	63%	23%	14%
Jun-12	62%	27%	11%
Jun-13	62%	24%	14%
Jun-14	64%	28%	8%
Jun-15	64%	28%	8%

Table 8 Breeding ewes on hand by breed type (Source MLA sheep meat and wool survey, DAFWA analysis)

	Merino	First cross	Dual purpose	Shedding	other
Jun-11	86%	5%	2%	3%	4%
Jun-12	89%	3%	3%	3%	2%
Jun-13	86%	3%	2%	6%	4%
Jun-14	92%	2%	1%	2%	2%
Jun-15	92%	1%	1%	3%	3%

Over the last five years, the number of merino lambs on hand at 30-June as a proportion of all lambs has remained relatively steady (Table 9).

Table 9 Lambs on hand (Source: MLA sheep meat and wool survey, DAFWA analysis)

	Merino	First cross	Dual purpose	Shedding	other (pure meat, 2nd X, etc.)
Jun-11	56%	21%	3%	5%	15%
Jun-12	55%	20%	3%	3%	18%
Jun-13	57%	16%	2%	5%	20%
Jun-14	58%	18%	3%	4%	17%
Jun-15	57%	19%	4%	3%	17%