

COMMERCIAL HARVEST QUOTA REPORT

BRUSHTAIL POSSUM

Trichosurus vulpecula

Tasmania

1 July 2013 to 30 June 2014

Wildlife Management Branch

June 2013

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1 Introduction

Section 7.4.1 of the *Wildlife Trade Management Plan for the Commercial Harvest and Export of Brushtail Possums in Tasmania- 2010-2015* (referred to as 'the Plan') requires an annual quota to be determined for the maximum number of brushtail possums (*Trichosurus vulpecula*) that may be commercially harvested from each management region in Tasmania during the quota year. The quota year extends from 1 July to 30 June of the following year.

The quota for each quota region is based on the trigger point density indices specified in section 7.4.1 of the Plan and determined by the results of annual population monitoring. The trigger points and corresponding commercial harvest quotas determined for the quota period are described in Section 2 of this document. Quotas and management responses provide a safeguard against over-harvesting of the population and are set at levels unlikely to lead to a long-term decline of the species that would threaten its survival in each region of Tasmania. Appropriate management controls will be implemented in response to any change in brushtail possum numbers identified by annual population monitoring.

The non-commercial take of brushtail possums, including that from 1080 poisoning, is not considered a management control under the Plan. However, as the non-commercial take typically accounts for between 95-99% of the total brushtail possum take in Tasmania, it is taken into account when determining commercial quotas.

Additional information that is to be reported upon but not directly applied in determining commercial quotas includes the following:

- The extent of reserved land in Tasmania;
- Seasonal climatic conditions;
- Preliminary statistics on the numbers of brushtail possums taken non-commercially;
- Preliminary statistics on the amount of 1080 used and number of carcasses recovered following any poison operation;
- The size of the allocated commercial quota for brushtail possums, set in accordance with section 7.4 of the Plan;
- Preliminary statistics on numbers of brushtail possum taken within the commercial quota;
- Preliminary statistics on the international or domestic export of brushtail possum products.

2 Determining Commercial Quotas

2.1 Trigger Points and Management Responses

Trigger Points

Trigger point density indices have been determined in the Management Plan for brushtail possum in Tasmania. Trigger points for initiating management changes in each region are given in Tables 1(a)-1(d). Commercial quotas are based on the estimated maximum total take (crop protection and commercial) and mean 3-year exponentially weighted moving average density (see the Plan section 7.4.2 for further details) from the 10 years prior to 2008-09 in each management region. In developing these trigger points, a conservative quota equal to 25% of the regional 10-year maximum take has been allocated to the commercial sector at the 10-year mean density level (to the nearest 5/km²) in each region and a sliding linear scale determined from this point.

Additional Management Responses

Management aims to maintain possum densities at between 10 and 20/km².

At densities of 20/km² or below, commercial permits in that region may be restricted to properties holding crop-protection permits. Should the density level in a management region fall below 10 possums/km², the WMB will conduct property inspections for all properties in that region on which commercial hunters wish to take brushtail possum. These inspections will determine whether that property has a legitimate crop protection need before a commercial permit to take possums on that property will be granted. DSEWPaC will be notified should commercial hunting permits be issued within a region that has a possum density below 10/km².

Where the density is above the levels at which crop damage is unacceptable in a management region (>20/km²), the intention is to drive possum populations down¹. Where the density is below that desired (<10/km²), the intention is to allow populations to recover. Where the density is at a sustainable long-term level (10-20/km²), the intention is to maintain populations in the prescribed range.

It should be noted that these trigger points assume that the annual crop protection take for specific possum population densities will be consistent with previous levels. Crop protection take is not managed under this Plan and is based on the crop-protection needs of the landholder. There is therefore a possibility, however unlikely, that future crop protection take may exceed previous levels. This would not however influence the setting of a commercial quota unless density levels observed during annual spotlight surveys indicated an associated unacceptable level of decline in possum density.

The annual commercial quotas outlined in Tables 1(a)-(d) will be implemented when population density indices fall within the corresponding trigger point range.

¹ The intention to drive possum populations down applies to situations where there is a need for crop protection from high possum densities. Where populations are at densities greater than 20/km² but are having no impact on primary production there is no intention and likely to be no need to decrease possum numbers.

Tables 1a, b, c & d: Commercial quotas to be allocated to each management region based on specific possum densities[#].

Densities listed refer to the 3-year exponentially weighted moving average density. Shaded rows show the likely annual quotas for each region based on long-term average densities.

a. Central Region 10-year maximum take = 60,760 10-year average density = 78.4/km ²	
Density (possums/km ²)	Commercial quota
≥100	18,988
95	18,040
90	17,090
85	16,140
80	15,190
75	14,242
70	13,292
65	12,342
60	11,393
55	10,442
50	9,493
45	8,544
40	7,595
35	6,645
30	5,696
25	4,747
20*	3,798
15*	2,849
<10*	Up to 1,899
5	0
0	0

b. South East Region 10-year maximum take = 132,000 10-year average density = 50.0/km ²	
Density (possums/km ²)	Commercial quota
≥100	66,000
95	62,700
90	59,400
85	56,100
80	52,800
75	49,500
70	46,200
65	42,900
60	39,600
55	36,300
50	33,000
45	29,700
40	26,400
35	23,100
30	19,800
25	16,500
20*	13,200
15*	9,900
<10*	Up to 6,600
5	0
0	0

c. North East Region 10-year maximum take = 160,000 10-year average density = 32.9/km ²	
Density (possums/km ²)	Commercial quota
≥100	114,284
95	108,570
90	102,856
85	97,142
80	91,428
75	85,714
70	80,000
65	74,284
60	68,570
55	62,856
50	57,142
45	51,428
40	45,714
35	40,000
30	34,286
25	28,572
20*	22,858
15*	17,144
<10*	Up to 11,430
5	0
0	0

d. North West Region 10-year maximum take = 24,700 10-year average density = 22.9/km ²	
Density (possums/km ²)	Commercial quota
≥100	24,700
95	23,465
90	22,230
85	20,995
80	19,760
75	18,525
70	17,290
65	16,055
60	14,820
55	13,585
50	12,350
45	11,115
40	9,880
35	8,645
30	7,410
25	6,175
20*	4,940
15*	3,705
<10*	Up to 2,470
5	0
0	0

[#] Tabled quotas show a sliding density scale in 5/km² increments as a simple guide. Actual quotas are set using the exact density estimate.

* Commercial take may be restricted to properties covered by existing crop protection permits.

2.2 Current Population Trends and Quotas

As required by the Plan, regional brushtail possum population trends were monitored through the annual program of statewide spotlight surveys. Referred to as the 2012 surveys, the most recent set of surveys were undertaken during the period November 2012 to January 2013.

Monitoring of trends in regional brushtail possum populations is undertaken through a system of standardised spotlight survey counts performed annually on mainland Tasmania. The standardised surveys are carried out in accordance with the method set out in the Tasmanian Spotlight Survey Manual (Hocking & Driessen 1992) and analysed in accordance with the methods described in section 7.6 of the Plan. The results of these surveys provide the basis for determining the regional commercial quotas set in the document. Normally quotas will be set annually in June based on data from the previous surveys. Analysis of the current population trend for each region (with the exception of South West Region due to the limited data available and the absence of commercial activity in this region) is provided below.

As stipulated in the Plan, commercial quotas are to be determined annually for the maximum number of brushtail possums that may be commercially harvested in each region during the quota period. These quotas are based on the sliding scale provided for each management region (see Tables 1(a)-(d)). In this quota report the quota is being determined for the period 1 July 2013 to 30 June 2014.

The commercial quotas for the four management regions are based on the 3-year exponentially weighted moving average (EWMA) density for each region and the predetermined sliding scale of quotas for each region as stipulated in the Plan (Tables 1(a)-(d)). The quotas determined by that process, for each region, are described below and summarised in Table 2.

Table 2. Regional commercial harvest quotas for brushtail possum for the period 1 July 2013 – 30 June 2014 based on mean 3-year EWMA density.

Region	2012/13 Quota	Quota for July 2013-June '14
Central	7 063	10 138
South East	19 935	22 968
North East	26 286	26 744
North West	5 854	5 681
Total	59 138	65 531

2.2.1 Central Region

In the spotlight surveys undertaken in the Central Region in 2012, the observed density of brushtail possums more than doubled from 30.7/km² to 69.6/km², while the three-year Exponentially Weighted Moving Average (EWMA) increased from 37.2/km² to 53.4/km². This significantly reverses a trend of declining density evident over several years (see Figure 1). The three-year EWMA remains considerably higher than the trigger point (density = 20/km² or below) that initiates additional management controls (section 2.1).

Reference to Table 1(a) indicates the appropriate quota for this region at this density is **10 138** possums for the quota year 2013-14.

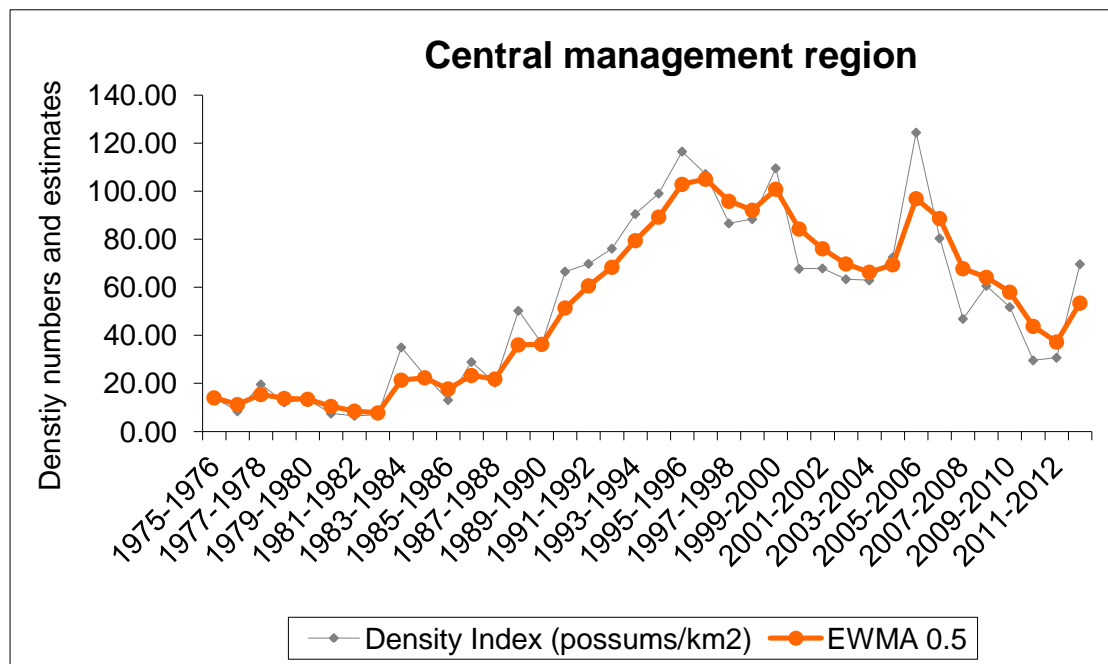


Figure 1 Central Region historical and current Density Index and three-year density trend

2.2.2 South East Region

In the South East Region the observed density of brushtail possums increased from 36.8/km² to 39.5/km², and the three-year Exponentially Weighted Moving Average (EWMA) increased from 30.2/km² to 34.8/km². This continues a trend of increasing density evident over the last two years (see Figure 2). The EWMA is well above the trigger point (density = 20/km² or below) that initiates additional management controls (section 2.1).

Reference to Table 1(b) indicates the appropriate quota for this region at this density is **22 968** possums for the quota year 2013-14.

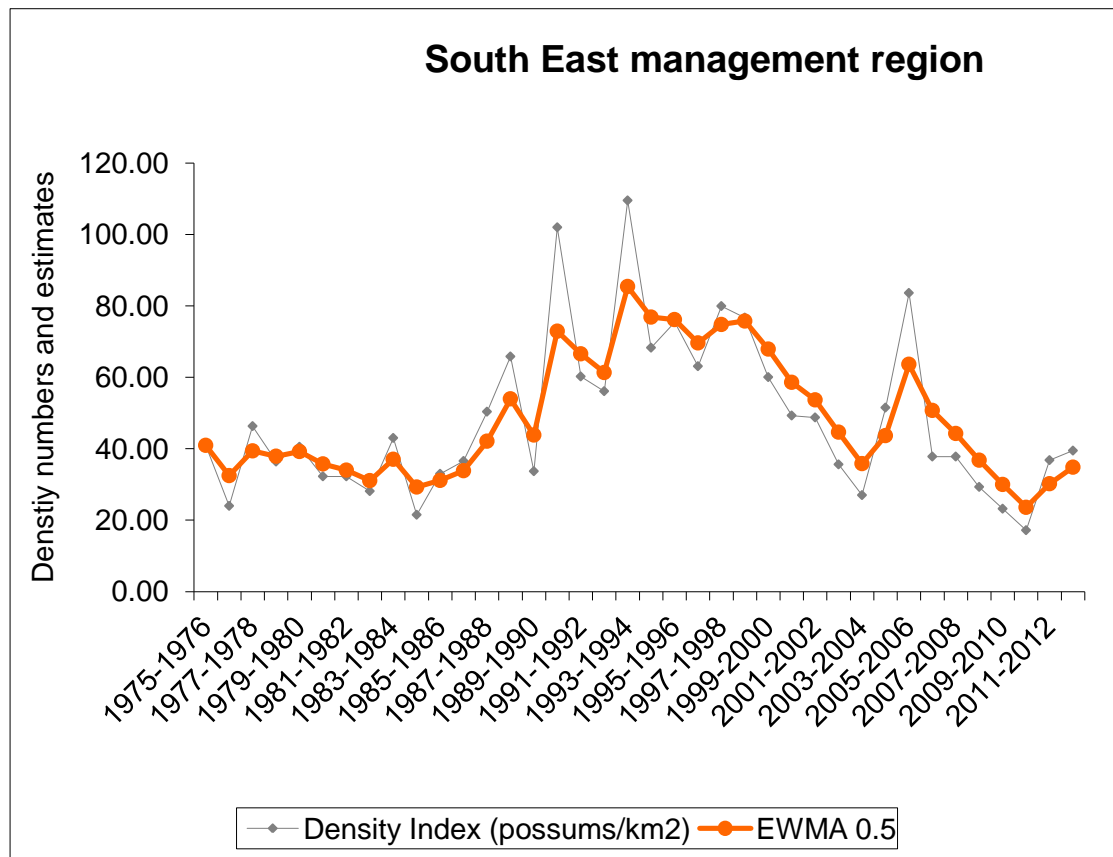


Figure 2 South East Region historical and current Density Index and three-year density trend

2.2.3 North East Region

In the North East Region the observed density of brushtail possums has declined slightly from 24.5/km² to 23.8/km². There was little change in the three-year Exponentially Weighted Moving Average (EWMA) (see Figure 3), which was 23.4/km² (previously 23.0/km²) and remains above the trigger point (density = 20/km² or below) that initiates additional management controls (section 2.1).

Reference to Table 1(c) indicates the appropriate quota for this region at this density is **26 744** possums for the quota year 2013-14.

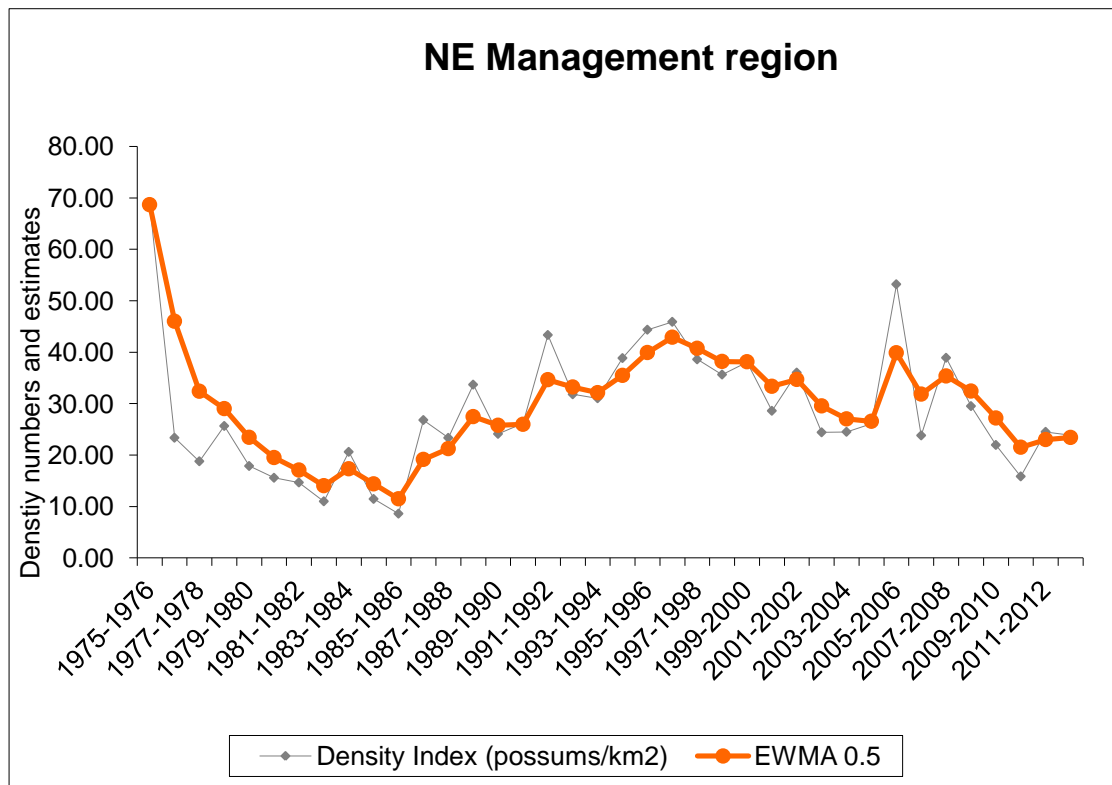


Figure 3 North East Region historical and current Density Index and three-year density trend

2.2.4 North West Region

In the North West Region the observed density of brushtail possums decreased from 23.4/km² to 22.4/km², and the three-year Exponentially Weighted Moving Average (EWMA) decreased slightly to 23.0/km² (see Figure 4). The EWMA remains above the trigger point (density = 20/km² or below) that initiates additional management controls (section 2.1).

Reference to Table 1(d) indicates the appropriate quota for this region at this density is **5 681** possums for the quota year 2013-14.

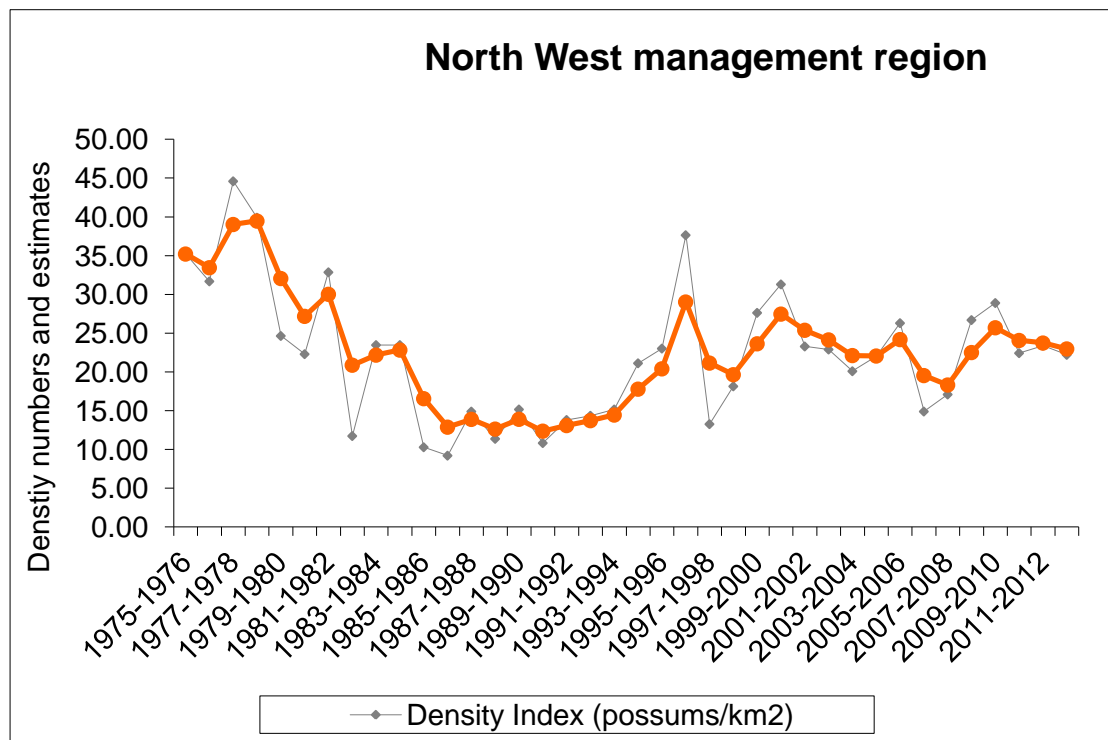


Figure 4 North West Region historical and current Density Index and three-year density trend

3 Additional Information Supporting Quota Management

3.1 Extent of Reserved Land in Tasmania

Brushtail possums are protected from harvesting on land reserved as State Reserve, National Park or other conservation reserve managed under the National Parks and Reserves Management Act 2002. The proportion of Tasmania that is reserved and not subject to possum harvesting (Figure 5) is unchanged in the last twelve months and remains at 45.4% of the total land area.

The distribution of reserves covers all management regions. In addition, much of the possum population outside of reserves is indirectly protected from harvesting by difficult

terrain, dense bush or lack of access for hunters. There are also large populations of brushtail possums in many suburban areas of Tasmania.

Under this management plan, harvesting or culling of brushtail possums in Tasmania will be undertaken only on or adjacent to land used for primary production; i.e. land used for the production of crops (including plantation timber) and/or pasture.

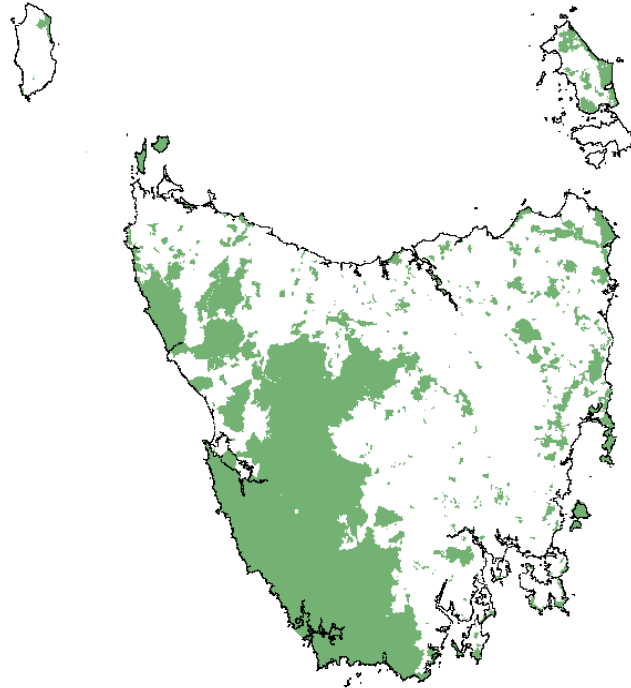


Figure 5: Extent of reserved land (shaded green) in Tasmania managed under the *National Parks and Reserves Management Act 2002*. Note: there is no current commercial brushtail possum harvest on Tasmanian offshore islands, including King or Flinders Islands.

3.2 Seasonal Climatic conditions

The following summary is based on seasonal summary reports from the Bureau of Meteorology².

Winter rainfall was below average across most of Tasmania, except in the northwest which had close to average winter rainfall. Temperatures were close to average overall.

Spring 2012 was dry with warm days. Rainfall was generally below average following dry conditions in October and November, though a few areas received close to average spring rain. Maximum temperatures were up to one degree warmer than normal, whilst minimum temperatures were close to average.

Summer of 2012-13 was warm and dry; it was the warmest summer on record for Hobart with temperature records broken. Minimum temperatures were also warmer than average, by 1.4 °C. Rainfall was below average in most areas of Tasmania, especially in the southeast where many sites observed their driest summer since the record dry of 2002–03.

There were many bushfires in the summer, the most destructive of those in January, with several tens of thousands of hectares of bushland burnt.

² <http://www.bom.gov.au/climate/current/season/tas/archive/> accessed 18 April 2013

Autumn in Tasmania was warm and dry overall. There were isolated, record heavy rain events in the north and southeast although overall there was below average autumn rain for most areas.

In summary, although drier than recent years, conditions have been such that there has been sufficient food sources to ensure adequate recruitment of brushtail possums over the reporting period for most of the state (as evidenced by the generally stable population densities recorded over the last two years) and strong recruitment in the Central Region.

3.3 Preliminary Statistics on the Number of Brushtail Possums Taken for Non-commercial Purposes

Since the decline of the harvest of brushtail possums for the fur trade in the early 1980s there has been a substantial increase in the non-commercial take of brushtail possum by landholders for crop protection purposes in Tasmania. Crop Protection Permit data are available from 1997 to the present (Table 3).

The average estimated annual non-commercial harvest, in Tasmania, for that period is 266,787 brushtail possums per year (range: 172,067* to 391,381). * Note 28% of returns are still outstanding for this period therefore the final estimate of take may change. Data for the year 2012-13 are not included in this comparison as the percentage of returns received at the time of writing was only 23%)

Table 3: State-wide estimates of the number of brushtail possums taken by non-commercial shooting under crop protection (CPN) permit in Tasmania.

Year	Number of property permits	Reported take	Total estimated CPN take	% returns
1997-98	1845	223798	391381	57.18%
1998-99	1605	179667	290106	61.93%
1999-00	1662	166183	285032	58.30%
2000-01	1689	138347	256778	53.88%
2001-02	1648	118568	203119	58.37%
2002-03	1642	137702	217829	63.22%
2003-04	1529	136196	206386	65.99%
2004-05	1573	174662	262410	66.56%
2005-06	1572	216880	294927	73.54%
2006-07	1689	285653	338812	84.31%
2007-08	1974	296021	369371	80.14%
2008-09	1675	246956	299747	82.39%
2009-10	1584	170930	203880	83.84%
2010-11	1696	159698	209960	76.06%
2011-12	1824	124239	172067	72.20%
2012-13*	1579	20480	90078	22.74%

*Preliminary results only (June 2013)

As a permit condition, landholders are required to report the number of brushtail possums taken. New permits are not granted until this information is returned. This has provided more accurate information on the non-commercial take. Details of the crop protection harvest for each of the four regions are provided in Appendix I(a)-(d).

Crop protection permits are issued for a period of up to one year from the date of assessment. Reporting on non-commercial take is not required until permits expire. As a result a large proportion of permits issued in the current year (2012/13), and a small number

from 2011/12 are not yet due for return. Estimates of the total non-commercial take have been derived by determining the reported (i.e. returns submitted) mean monthly take which is multiplied by the number of permits active during the season.

Follow-up surveys of non-respondents by the Department showed a bias in non-returns towards nil, or very low, take numbers (Greg Hocking, pers. comm.). Because of this, DPIPWE believes that extrapolating total take for non-returns from the average or median of permit return likely over-estimates total take.

3.4 Preliminary Statistics on the Numbers of Brushtail possums taken in the Commercial Harvest

Since the mid 1980s and the decline of the fur trade, there has been a much reduced commercial harvest of brushtail possum in Tasmania. Details are provided in Table 4 and 5.

Table 4: Total annual commercial harvest of brushtail possums in Tasmania between 1997 and 2013

Year	Commercial harvest
1997-98	7,200
1998-99	14,200
1999-00	11,300
2000-01	10,500
2001-02	64,600
2002-03	1250
2003-04	7251
2004-05	681
2005-06	14497
2006-07	4832
2007-08	1558
2008-09	4680
2009-10	4918
2010-11	4379
2011-12	3949
2012-13*	2946

* Preliminary figures as at May 2013

Table 5: Numbers of brushtail possums taken under commercially harvested in each management region in quota year 2012-13 (as at May 2013).

Region	Commercial permit holders	Commercial harvest
Central	1	738
South East	1	108
North East	2	2051
North West	2	49
Total	6	2946

3.5 Preliminary statistics on the amount of I080 used and the number of carcasses recovered following any poison operation.

Historically, I080 poison (sodium monofluoroacetate) was widely used in Tasmania for the control of damage by browsing mammals, including possums, to pastures and crops. The use of I080 in Tasmania for crop protection purposes has been reduced substantially over the last decade as a result of the application of more stringent requirements for its use and the promotion of alternatives.

The number of permits issued to use I080 poison and the amount of poison used are provided in Table 6. Due to the mobility of wildlife post-consumption of I080 and prior to death, and the resulting difficulty in locating the carcasses of poisoned animals, data on the number of carcasses of brushtail possum collected following the use of I080 poison is of limited value in assessing the impact on possum populations. The amount of I080 used is a more reliable indicator of potential impact than the number of carcasses collected.

Table 6: I080 use in Tasmania, 1997-2013 - number of permits issued and the amount used.

Year	Number of property permits issued	I080 usage (kg)
1997-98	647	10
1998-99	607	14.6
1999-00	587	15.2
2000-01	521	12.7
2001-02	484	9.7
2002-03	682	10.4
2003-04	436	6.1
2004-05	426	8.1
2005-06	287	5.0
2006-07	52	1.4
2007-08	49	0.7
2008-09	73	1.0
2009-10	46	0.7
2010-11	16	0.9
2011-12	13	0.4
2012-13*	28	0.9

* Preliminary results only (to end May 2012/13)

3.6 Preliminary Statistics on the Export of Brushtail Possum Products.

The approval of the *Wildlife Trade Management Plan for the Commercial Harvest of Brushtail Possum in Tasmania, 2010-15*, allows for the export of brushtail possum products from Tasmania to overseas markets. During the 2012/13 quota year to date, only a small amount of brushtail possum products were exported to overseas markets (see Table 8). Note that the statistics for the number of animals harvested under the commercial quota for any given year is not necessarily reflected in the number of carcasses or amount of fur exported in that year due to the practice of stockpiling, particularly of fur. The relatively low numbers of brushtail possum currently harvested and exported per year reflects that the industry remains in a developmental phase.

Table 8: Total number of brushtail possums exported as either meat or fur

Year	Possums Exported as Fur	Possums Exported as Meat
2010-11	491	0
2011-12	1000	536
2012-13*	7025	681

*Preliminary figures as at May 2013

Appendix 1(a): Estimates of number of brushtail possums taken annually by non-commercial shooting in Central Region.

Year	Number of property permits	Reported take	Total estimated CPN take	% returns
1997-98	212	70362	98136	71.70%
1998-99	184	58477	84061	69.57%
1999-00	203	54180	78004	69.46%
2000-01	174	43269	60716	71.26%
2001-02	163	31489	46661	67.48%
2002-03	194	45183	57291	78.87%
2003-04	198	41257	55951	73.74%
2004-05	168	33897	47064	72.02%
2005-06	179	39164	54344	72.07%
2006-07	189	49930	58252	85.71%
2007-08	221	49396	56271	87.78%
2008-09	195	31538	35344	89.23%
2009-10	212	31434	35828	87.74%
2010-11	222	38599	51933	74.32%
2011-12	204	20883	30430	68.63%
2012-13*	167	3648	21007	17.37%

* Preliminary results only (June 2013)

Appendix 1(b): Estimates of number of brushtail possums taken annually by non-commercial shooting in South East Region.

Year	Number of property permits	Reported take	Total estimated CPN take	% returns
1997-98	694	77048	117519	65.56%
1998-99	568	70040	89601	78.17%
1999-00	528	53190	68001	78.22%
2000-01	528	41313	52310	78.98%
2001-02	553	44098	57515	76.67%
2002-03	577	58314	74276	78.51%
2003-04	560	52871	67444	78.39%
2004-05	593	66881	82798	80.78%
2005-06	607	81401	100838	80.72%
2006-07	617	97299	115227	84.44%
2007-08	657	111498	130578	85.39%
2008-09	603	67935	79698	85.24%
2009-10	550	58866	67451	87.27%
2010-11	590	41057	49843	82.37%
2011-12	617	30640	38660	79.25%
2012-13	510	8703	29789	29.22%

* Preliminary results only (June 2013)

Appendix 1(c): Estimates of number of brushtail possums taken annually by non-commercial shooting in North East Region.

Year	Number of property permits	Reported take	Total estimated CPN take	% returns
1997-98	663	71138	151654	46.91%
1998-99	611	46905	93049	50.41%
1999-00	591	51656	111827	46.19%
2000-01	600	48318	117849	41.00%
2001-02	571	32694	66435	49.21%
2002-03	524	27813	52050	53.44%
2003-04	534	37107	67170	55.24%
2004-05	518	63565	113540	55.98%
2005-06	499	85250	119494	71.34%
2006-07	561	120822	140625	85.92%
2007-08	614	113891	140420	81.11%
2008-09	584	131944	161204	81.85%
2009-10	575	65649	79638	82.43%
2010-11	614	71435	94937	75.24%
2011-12	654	66872	91113	73.39%
2012-13	637	6456	33987	19.00%

* Preliminary results only (June 2013)

Appendix 1(d): Estimates of number of brushtail possums taken annually by non-commercial shooting in North West Region.

Year	Number of property permits	Reported take	Total estimated CPN take	% returns
1997-98	269	5150	10186	50.56%
1998-99	239	4136	8748	47.28%
1999-00	335	7157	16884	42.39%
2000-01	384	5447	17005	32.03%
2001-02	353	10287	24703	41.64%
2002-03	343	6392	14424	44.31%
2003-04	237	4961	9114	54.43%
2004-05	252	9569	16982	56.35%
2005-06	260	7546	11609	65.00%
2006-07	303	17302	20886	82.84%
2007-08	326	19158	23838	80.37%
2008-09	270	15085	19868	75.93%
2009-10	233	14808	18650	79.40%
2010-11	265	8261	12728	64.91%
2011-12	311	5608	8677	64.63%
2012-13	255	1662	7183	23.14%

* Preliminary results only (June 2013)