Statistics of animal use in research and teaching, Victoria

1 January 2020 – 31 December 2020

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Executive Summary

In Victoria, the use of animals for scientific research, teaching and testing is regulated by the *Prevention of Cruelty to Animals Act 1986* (the Act). Organisations or individuals that conduct scientific procedures with animals must hold an authorising licence issued by Animal Welfare Victoria.

The Act also requires that the breeding of specified animals (guinea pigs, rats, mice, and non-human primates) to be used in scientific procedures is authorised by a Specified Animals Breeding Licence. Licences are subject to conditions prescribed by the Prevention of Cruelty to Animals Regulations 2019.

Each year, licence holders are required to submit data on their use of animals. This report details the number and species of animals reported by licence holders for the period 1 January to 31 December 2020.

In this period, 1,701,099 animals were used under licence for scientific research, teaching and testing. This is a 48 per cent decrease in animal use in 2020 compared to 2019, and 0.52 per cent above the 10-year average of 1,692,379 animals. Most of the decrease can be explained by significantly larger numbers of poultry reported to have been used in 2019 than in 2020, as well as a decrease in fish and some categories of birds reported to have been used between years.

A total of 67,689,951 embryonated eggs were reported in 2020. These embryonated eggs are reported distinct from other animal use given the scale, and as the category was first reported in 2018, to prevent the skewing of historical data. The embryonated eggs were primarily used for vaccine production.

In 2020, around 56 per cent of the non-specified animals reported as used for scientific purposes were privately owned animals on a farm, 29 per cent were sourced from their natural habitat and 7 per cent from own derivation. For specified animals, 67 per cent were bred by the licence holders for their own supply, 17 per cent were sourced from Victorian Specified Animal Breeding Licenced suppliers, and 13 per cent were sourced from interstate institutions authorised to distribute specified animals.

The most common impact on animals during research, teaching and testing was observational study involving minor interference (50 per cent), followed by minor conscious intervention (27 per cent) and minor physiological challenge (9 per cent). Less than one per cent of animals experienced death as an end point.

Following their use in research, teaching and testing, 27 per cent of animals were humanely euthanised.

Introduction

Animals are used for research and discovery in many fields of science. The *Prevention of Cruelty to Animals Act 1986* (the Act) regulates their use in Victoria.

The use of animals for scientific research, teaching and testing is termed ‘scientific procedures’ by the Act and must only be conducted under a licence. Laboratory mice, rats, guinea pigs, rabbits and non-human primates are classed in the legislation as ‘specified animals’ and their commercial production and supply requires a separate licence (specified animal breeding licence).

Animal Welfare Victoria licences and monitors the scientific use of animals in Victoria. It safeguards the well-being of animals by assessing applications for licences to ensure they meet legislative requirements; monitoring compliance; providing advice on best practice procedures, housing and care; and providing training for Animal Ethics Committee (AEC) members. The Act requires animal use to be conducted under a licence and overseen by an AEC.

The AEC is responsible for determining whether animal use is ethically justified and for ensuring that there are no available alternatives, prior to that use commencing. They weigh the predicted scientific or educational value of the projects against the potential effects on the welfare of the animals.

Each year, licence holders are required to submit data on their use of animals.

This report details the number and species of animals reported by licence holders for 2020. Research and teaching organisations report the number of animals they used for scientific procedures as well as any animals held in breeding colonies for in-house supply. Commercial producers of specified animals for the supply of research report the number of breeders and the number of stock animals produced.

This report includes information on where animals were sourced, the purpose and benefit of their use, the impact it had on their well-being, and whether or not they were killed at the conclusion of the project.

Part 1: Guide to reading the report

1.1 The use of animals in research and teaching

1.1.1 Why are animals still used for experiments?

Over time, many animal experiments have been replaced by valid alternative methods. The process of validation is complex and rigorous, to ensure reproducibility and accuracy. Unfortunately, not all research methods can be replaced at this time, but it is an ongoing endeavour. More information about replacement, reduction and refinement can be found at www.nc3rs.org.uk.

1.1.2 What protections are in place?

Researchers and teachers must apply to an AEC for every project they conduct using animals. Before giving their approval, the AEC must be convinced that the animal use is justified. They weigh the predicted scientific or educational value of the projects against the potential effects on the welfare of the animals.

Applicants must demonstrate to the AEC that their project fulfils the principles of the three R's (Replacement, Reduction and Refinement):

1. Replacement: methods that either partially or completely replace the use of animals must be sought. The use of animals is prohibited if a valid, non-animal alternative exists.
2. Reduction: animal numbers must be statistically calculated to be the minimum necessary to achieve the results, and not so low as to render the exercise invalid.
3. Refinement: every effort must be made to minimise the impact on the animals involved, e.g. applying technology that allows an earlier conclusion to the study; ensuring best-practice anaesthesia and analgesia; by providing care and husbandry that meets the animal's psychological and physical needs.

AECs have a legal obligation to refuse to approve any project they consider unjustified or lacking scientific merit.

1.1.3 Who is on an Animal Ethics Committee?

There are four categories of membership on an AEC. At least one member of each category must be present to make a decision about a new project. The categories are:

Category A	veterinarian.
Category B	researcher or teacher with substantial and recent experience in the use of animals for scientific purposes relevant to the business of the AEC.
Category C	person with demonstrable commitment to, and established experience in, furthering the welfare of animals, who is not employed by or otherwise associated with the institution, and who is not currently involved in the care and use of animals for scientific purposes.
Category D	person not employed by or otherwise associated with the institution and who has never been involved in the use of animals in scientific or teaching activities, bringing a completely independent view to the AEC, and must not fit the requirements of any other category.

1.2 Reporting process

1.2.1 How is the data collected?

Organisations and individuals licensed to use animals for research and teaching are responsible for providing the data to Animal Welfare Victoria by 31 March every year, for the previous calendar year.

1.2.2 Why is this data collected?

The reporting process collates data in the same areas that are the major considerations for the AEC when assessing an application. The broad outcomes of project purposes must be achieved by the more specific project benefits outlined in the application. The potential benefits are compared with the likely welfare impacts in a cost benefit analysis. Each member of the AEC must decide, according to their own judgement, if the project is justified in an ethical sense. This information informs policy decisions and is used to direct risk-based inspections and educational programs.

1.2.3 What types of animals are counted?

The types of animals counted in the statistics for research, teaching or testing projects are:

- mammals above the mid-point of gestation. This means that if research or teaching projects use a pregnant animal past the halfway point of gestation, she and all in utero offspring must be included in the statistics.
- birds and reptiles above the mid-point of incubation or gestation. This means eggs that are used for research or teaching must be reported in the statistics, if they are past the halfway point of incubation. For live bearing reptiles, the same rule applies as for mammals.
- fish and amphibians capable of independent feeding.
- adult decapod crustaceans and cephalopods.

Reporting of breeding groups kept by scientific procedures and specified animal breeding licence holders is slightly different. The number of animals used as breeders and the number of stock animals produced must be reported.

1.2.4 Where are animals sourced from?

Specified animals must only be sourced from:

- Victorian suppliers holding a specified animals breeding licence
- an in-house breeding colony kept by a scientific procedures licence holder, or
- an interstate or overseas supplier who meets all relevant requirements of their local jurisdiction for the breeding of these animals.

Other animals may be sourced from:

- an in-house breeding colony kept by a scientific procedures licence holder
- a commercial supplier
- private donation – this may include animals that continue to stay in the custody of the owners for the duration of the project (except farm animals)
- farms, where the animals do not leave the property
- their natural habitat – these animals may be sampled in the field and immediately released, or brought into captivity
- a captive colony or zoo
- a council pound – these animals must be treated in accordance with the Victorian code of practice for the use of animals from municipal pounds in scientific procedures, or
- another source, not specified above.

1.2.5 What is meant by the project purpose?

Animals must only be used when there is no other alternative and only for a limited number of reasons. These are:

- to obtain and establish significant information relevant to the understanding of humans and/or animals, or
- to maintain and improve human and/or animal health and welfare, or
- to improve animal management or production, or
- to obtain and establish significant information relevant to the understanding, maintenance or improvement of the natural environment, or
- to achieve educational outcomes in science, as specified in the relevant curriculum or competency requirements.

1.2.6 What is meant by the project benefit?

These categories refine and add definition to the broader project outcomes reported above. The reporting categories include:

- fundamental biology/physiology
- diseases - human
- diseases - animal
- diseases - zoonotic
- environmental monitoring/ecology
- domestic animal management/production
- wildlife management/conservation
- vertebrate pest management
- production of biological products
- development of techniques
- education
- training (student use of animals)
- regulatory product testing.

1.2.7 What is meant by the impact of activities?

These reporting categories represent the highest level of impact experienced by the animal during its involvement in research, teaching or testing. An AEC must consider the well-being of animals used for scientific purposes in terms of the cumulative effects of an animal's lifetime experience. The categories are defined in Appendix 1.

1.2.8 What is meant by the number of deaths?

The fate of the animals at the conclusion of a project depends on the aims of the project.
Some projects require analysis of the animal's tissues to conclude the experiment, and they are humanely killed to obtain these results. Occasionally, an unexpected adverse event, for example an unexpected reaction, surgical complication or unrelated illness will require an animal to be euthanised. Animals must be monitored with enough frequency to promptly detect any pain or distress, whether anticipated as a result of the study or not.

Animals may be reported as used but not recorded as dead because they have been, for example:

- captured then released back to the wild
- recruited to a study while kept in the care of their owner, for example on a farm or through a vet clinic
- rehomed at the conclusion of the project.

1.3 Understanding the 2020 statistics

1.3.1 Why is the number of animals so much lower in 2020?

There was a 48 per cent decrease in animal use in 2020 compared to 2019. Most of the decrease can be explained by significantly larger numbers of poultry reported to have been used in 2019 than in 2020, as well as a decrease in fish and some categories of birds reported to have been used between years.

1.3.2 Why are 67,689,951 embryonated eggs reported in 2020?

A total of 67,689,951 embryonated eggs were reported in 2020. These embryonated eggs are reported distinct from other animal use given the scale, and as the category was first reported in 2018, to prevent the skewing of historical data. The embryonated eggs were primarily used for vaccine production.

To generate vaccine, early-stage embryonated chicken eggs are seeded with the current seasonal strain of the flu virus. Viral replication occurs in the embryonated eggs. The eggs are then harvested in the days following the midpoint of their incubation period.

Part 2: Number of animals reported as used in 2020

In 2020, a total of 1,701,099 animals were reported to be used for research, teaching and testing (scientific procedures) in Victoria. The table below shows the number of animals used by type. There was a 48 per cent decrease in animal use in 2020 compared to the reported 3,294,755 animals in 2019.

This total number of animals reported excludes 67,689,951 embryonated eggs. The majority of these eggs were sourced from a commercial supplier. These eggs were primarily used for the production of influenza vaccines.

2.1 Reported by animal type

Table 2.1 Number of animals reported as used by animal type

Animal type	Number of animals
*Guinea pig (lab)	4,335
*Macaques	108
*Marmosets	63
*Mouse (lab)	346,947
*Rabbit (lab)	805
*Rat (lab)	11,191
Amphibians	4,892
Bird exotic wild	290
Bird native captive	583
Bird native wild	28,599
Bird other	502
Cats (non-wild)	327
Cats (wild)	84
Cattle (domestic)	6,700
Cattle (wild)	2
Cephalopods	99
Crustaceans	17,518
Dasyurids	2,938
Dogs (non-wild)	2,098
Dogs, foxes (wild)	402
Exotic feral mammal other	249
Ferret (lab)	667
Fish	406,458
Goats (domestic)	790
Hares (wild)	1
Horses (domestic)	496
Koalas	51

Animal type	Number of animals
Laboratory mammal (non-specified)	84
Lizards	1,721
Macropods	1,499
Monotremes	56
Mouse (wild)	95
Native mammal other	25,569
Native Rats, Mice	2,438
Other birds	9
Other domestic mammals	137
Pigs (domestic)	261
Possums, Gliders	2,631
Poultry	743,491
Rabbits (wild)	66
Rats (wild)	54
Reptile other	95
Seals, Sealions	1,711
Sheep (domestic)	82,993
Snakes	79
Turtles, tortoises	563
Whales, dolphins	115
Wombats	237
Total	**1,701,099**

**Specified animals*

Table 2.2 Number of animals reported as used by animal type and project purpose

Animal Type	Educational objectives	Environmental objectives	Improve animal management/ production	Maintenance/ improvement human/animal health/welfare	Understand human/animal biology	**Total**
*Guinea pig (lab)	268		24	4,008	35	**4,335**
*Macaques				37	71	**108**
*Marmosets					63	**63**
*Mouse (lab)	8,642	193	11,240	75,579	251,293	**346,947**
*Rabbit (lab)	46		18	659	82	**805**
*Rat (lab)	444		447	3,229	7,071	**11,191**
Amphibians	85	3,541	77	10	1,179	**4,892**
Bird exotic wild		290				**290**
Bird native captive	80	48	8	16	431	**583**
Bird native wild	4,074	23,397	16		1,112	**28,599**
Bird other				2	500	**502**
Cats (non-wild)	229	10		82	6	**327**
Cats (wild)		78			6	**84**
Cattle (domestic)	1,050	168	4,569	856	57	**6,700**
Cattle (wild)					2	**2**
Cephalopods	1	20	78			**99**
Crustaceans	1,604	1,407	14,507			**17,518**
Dasyurids	31	2,634	3		270	**2,938**

Animal Type	Educational objectives	Environmental objectives	Improve animal management/ production	Maintenance/ improvement human/animal health/welfare	Understand human/animal biology	**Total**
Dogs (non-wild)	1,335	368	6	143	246	**2,098**
Dogs, foxes (wild)		401			1	**402**
Exotic feral mammal other				238	11	**249**
Ferret (lab)	17			416	234	**667**
Fish	270	309,831	22,873		73,484	**406,458**
Goats (domestic)	26		756	8		**790**
Hares (wild)		1				**1**
Horses (domestic)	227		48	146	75	**496**
Koalas		37		14		**51**
Laboratory mammal (non-specified)					84	**84**
Lizards	39	1,093	538	5	46	**1,721**
Macropods		1,195			304	**1,499**
Monotremes		52		1	3	**56**
Mouse (wild)	7	81	7			**95**
Native mammal other	51	22,135		15	3,368	**25,569**
Native Rats, Mice	1	2,384			53	**2,438**
Other birds	9					**9**
Other domestic mammals	125			12		**137**

Animal Type	Educational objectives	Environmental objectives	Improve animal management/ production	Maintenance/ improvement human/animal health/welfare	Understand human/animal biology	**Total**
Pigs (domestic)	55		88	12	106	**261**
Possums, Gliders	8	2,091	1	100	431	**2,631**
Poultry	354		726,043	13,835	3,259	**743,491**
Rabbits (wild)	61	2			3	**66**
Rats (wild)	24	25		5		**54**
Reptile other	71	23			1	**95**
Seals, Sealions		1,711				**1,711**
Sheep (domestic)	14,187	192	61,106	7,133	375	**82,993**
Snakes	4	68	7			**79**
Turtles, tortoises		526			37	**563**
Whales, dolphins				100	15	**115**
Wombats		225			12	**237**
Total	**33,425**	**374,227**	**842,460**	**106,661**	**344,326**	**1,701,099**

**Specified animals.*

Table 2.3 Number of non-specified animals used by animal type by source

Animal Type	Animals in their natural habitat	Australian captive colony/zoo	Commercial supplier	Municipal pound	Other source	Own Derivation	Private donation	Privately owned animals on a farm	Removed from Aust. natural habitat	**Total**
Amphibians	4,622	109	107			3			51	**4,892**
Bird exotic wild	290									**290**
Bird native captive		51	57			429	46			**583**
Bird native wild	28,559	40								**28,599**
Bird other	2		500							**502**
Cats (non-wild)	31		1	26	103	8	153	5		**327**
Cats (wild)	84									**84**
Cattle (domestic)			1,229		154	1,183	10	4,124		**6,700**
Cattle (wild)	2									**2**
Cephalopods	20								79	**99**
Crustaceans	1,482		1				2		16,033	**17,518**
Dasyurids	2,737	16				185				**2,938**
Dogs (non-wild)	324				707	34	953	80		**2,098**
Dogs, foxes (wild)	402									**402**
Exotic feral mammal other	35					214				**249**
Ferret (lab)			667							**667**
Fish	310,783		8,202			71,701	9		15,763	**406,458**
Goats (domestic)					7	8	2	773		**790**
Hares (wild)	1									**1**

Animal Type	Animals in their natural habitat	Australian captive colony/zoo	Commercial supplier	Municipal pound	Other source	Own Derivation	Private donation	Privately owned animals on a farm	Removed from Aust. natural habitat	**Total**
Horses (domestic)			108		126	123	30	109		**496**
Koalas	37								14	**51**
Laboratory mammal (non-specified)						84				**84**
Lizards	1,691	5			9				16	**1,721**
Macropods	1,417	4				78				**1,499**
Monotremes	55	1								**56**
Mouse (wild)	88							7		**95**
Native mammal other	25,550	19								**25,569**
Native Rats, Mice	2,438									**2,438**
Other birds						9				**9**
Other domestic mammals			12		39	86				**137**
Pigs (domestic)			127			85		49		**261**
Possums, Gliders	2,589	2			6				34	**2,631**
Poultry			53,163		49	11,796		678,483		**743,491**
Rabbits (wild)	5							61		**66**
Rats (wild)	30							24		**54**
Reptile other	24					71				**95**
Seals, Sealions	1,711									**1,711**
Sheep (domestic)	15		13,113		113	2,206	5	67,541		**82,993**
Snakes	76				3					**79**

Animal Type	Animals in their natural habitat	Australian captive colony/zoo	Commercial supplier	Municipal pound	Other source	Own Derivation	Private donation	Privately owned animals on a farm	Removed from Aust. natural habitat	**Total**
Turtles, tortoises	563									**563**
Whales, dolphins	115									**115**
Wombats	237									**237**
Total	**386,015**	**247**	**77,287**	**26**	**1,316**	**88,303**	**1,210**	**751,256**	**31,990**	**1,337,650**

Table 2.4 Number of specified animals used by animal type by source

Animal Type	*Other	*Own Derivation	*Imported from overseas	*Victoria – Specified Animals Breeding Licenced Supplier	*Interstate institution authorised to distribute specified animals	**Total**
*Guinea pig (lab)	106	4,209			20	**4,335**
*Macaques				108		**108**
*Marmosets				63		**63**
*Mouse (lab)	5,315	235,839	2,205	57,784	45,804	**346,947**
*Rabbit (lab)		650		25	130	**805**
*Rat (lab)	59	4,284		4,585	2,263	**11,191**
Total	**5,480**	**244,982**	**2,205**	**62,565**	**48,217**	**363,449**

**Specified animals.*

2.2 Reported by project benefit

Table 2.5 Number of animals reported as used by animal type, by project benefits

Animal Type	Development of techniques	Domestic animal management/ production	Education (demonstration)	Environmental monitoring/ecology	Fundamental biology/physiology	Production of biological products	Regulatory product testing	Training (student use of animals)	Vertebrate pest management	Wildlife management/ conservation	Diseases-animal	Diseases-zoonotic	Diseases-human	**Total**
*Guinea pig (lab)	134		115		42		2	17			890		3,135	**4,335**
*Macaques					4	21							83	**108**
*Marmosets					55								8	**63**
*Mouse (lab)	948	4,575	1,862	658	133,848	607		8,940			14,691	1,075	179,743	**346,947**
*Rabbit (lab)	13				2	132		44			585		29	**805**
*Rat (lab)	8	129	26	36	3,606	121		458			208		6,599	**11,191**
Amphibians			17	3,906	8			59	21	789	82		10	**4,892**
Bird exotic wild				107						183				**290**
Bird native captive	4			16	431		6	80		36	10			**583**
Bird native wild				11,137	259					17,082	37	84		**28,599**
Bird other					500						2			**502**
Cats (non-wild)		31	5		12	12		224	10		32		1	**327**
Cats (wild)				75					9					**84**
Cattle (domestic)		5,371	416	168	6		271	446			16	6		**6,700**
Cattle (wild)				2										**2**
Cephalopods			1	20						78				**99**
Crustaceans			1,604	1,407						14,507				**17,518**
Dasyurids				2,445	188					305				**2,938**

Animal Type	Development of techniques	Domestic animal management/ production	Education (demonstration)	Environmental monitoring/ecology	Fundamental biology/physiology	Production of biological products	Regulatory product testing	Training (student use of animals)	Vertebrate pest management	Wildlife management/ conservation	Diseases-animal	Diseases-zoonotic	Diseases-human	**Total**
Dogs (non-wild)	42	10	29	30	83	33		1,238		338	288		7	**2,098**
Dogs, foxes (wild)				69						333				**402**
Exotic feral mammal other				11					24				214	**249**
Ferret (lab)					12							360	295	**667**
Fish	3	7,132	111	314,680	41,008			159	430	26,087	428		16,420	**406,458**
Goats (domestic)		764	17					9						**790**
Hares (wild)				1										**1**
Horses (domestic)	5	62	5			56		217			100		51	**496**
Koalas				17						34				**51**
Laboratory mammal (non-specified)													84	**84**
Lizards			3	1,633	25			6		54				**1,721**
Macropods				969	78					452				**1,499**
Monotremes				48						8				**56**
Mouse (wild)			7	85					3					**95**
Native mammal other				23,652						1,902	15			**25,569**
Native Rats, Mice				2,335						103				**2,438**
Other birds								9						**9**
Other domestic mammals						12		125						**137**

Animal Type	Development of techniques	Domestic animal management/ production	Education (demonstration)	Environmental monitoring/ecology	Fundamental biology/physiology	Production of biological products	Regulatory product testing	Training (student use of animals)	Vertebrate pest management	Wildlife management/ conservation	Diseases-animal	Diseases-zoonotic	Diseases-human	**Total**
Pigs (domestic)		70			40		4	55			7		85	**261**
Possums, Gliders			6	2,248						377				**2,631**
Poultry		679,534	228		3,253	2,861	46,718	31			1,565	5,542	3,759	**743,491**
Rabbits (wild)			61	5										**66**
Rats (wild)			24	23						7				**54**
Reptile other				24	2			69						**95**
Seals, Sealions				13						1,698				**1,711**
Sheep (domestic)	14	77,430	91	192	386	37	298	2,337			57		2,151	**82,993**
Snakes			3	72						4				**79**
Turtles, tortoises				563										**563**
Whales, dolphins										115				**115**
Wombats				237										**237**
Total	**1,171**	**775,108**	**4,631**	**366,884**	**183,848**	**3,892**	**47,299**	**14,523**	**497**	**64,492**	**19,013**	**7,067**	**212,674**	**1,701,099**

**Specified animals.*

Table 2.6 Number of animals used, by project impact by project benefit

Project Impact	Development of techniques	Domestic animal management/ production	Education (demonstration)	Environmental monitoring/ecology	Fundamental biology/physiology	Production of biological products	Regulatory product testing	Training (student use of animals)	Vertebrate pest management	Wildlife management/ conservation	Diseases-animal	Diseases-zoonotic	Diseases-human	**Total**
Observational study involving minor interference	15	736,196	2,573	49,866	22,710	90	550	2,898	27	12,060	959	190	19,466	**847,600**
Animal unconscious without recovery	79	166	127	13,045	41,365	73	2	752	359	51	4,322	402	32,174	**92,917**
Minor conscious intervention	1,001	34,606	1,915	269,868	45,257	1,349	403	9,643	21	41,772	4,043	5,420	45,514	**460,812**
Minor operative procedures with recovery	35	206		435	5,946	33		1,185	78	2,118	79	2	23,513	**33,630**
Minor physiological challenge	3	493	16	33,670	33,629	1,666	46,344	7		8,487	607	62	33,440	**158,424**
Surgery with recovery	38	1,977			6,329	109		24	12	4	598		18,500	**27,591**
Moderate to major		1,464			28,612	572		14			7,628	991	37,435	**76,716**

Project Impact	Development of techniques	Domestic animal management/ production	Education (demonstration)	Environmental monitoring/ecology	Fundamental biology/physiology	Production of biological products	Regulatory product testing	Training (student use of animals)	Vertebrate pest management	Wildlife management/ conservation	Diseases-animal	Diseases-zoonotic	Diseases-human	**Total**
physiological challenge														
Death as an end point											777		2,632	**3,409**
Total	**1,171**	**775,108**	**4,631**	**366,884**	**183,848**	**3,892**	**47,299**	**14,523**	**497**	**64,492**	**19,013**	**7,067**	**212,674**	**1,701,099**

Table 2.7 Number of animals reported as used by project purpose

Project purpose	Number of animals
Educational objectives	33,425
Environmental objectives	374,227
Improve animal management/production	842,460
Maintenance/improvement human/animal health/welfare	106,661
Understand human/animal biology	344,326
Total	**1,701,099**

2.3 Number of animals used and animal deaths

Investigators must plan for animals at the conclusion of a project. If appropriate, animals are returned to normal husbandry conditions or their natural habitat. When results rely on tissue analysis, this usually requires the humane killing of the animals. Opportunities to rehome animals that are not needed for tissue analysis are considered wherever possible. Under certain conditions, with special justification, an AEC may approve an animal to be used in a subsequent project.

Table 2.8 Number of animals used and deaths by type

Animal type	Number of animals	Number of deaths
*Guinea pig (lab)	4,335	4,211
*Macaques	108	30
*Marmosets	63	36
*Mouse (lab)	346,947	308,312
*Rabbit (lab)	805	718
*Rat (lab)	11,191	10,229
Amphibians	4,892	135
Bird exotic wild	290	0
Bird native captive	583	95
Bird native wild	28,599	15
Bird other	502	502
Cats (non-wild)	327	19
Cats (wild)	84	0
Cattle (domestic)	6,700	91
Cattle (wild)	2	0
Cephalopods	99	71
Crustaceans	17,518	9,994
Dasyurids	2,938	116
Dogs (non-wild)	2,098	5
Dogs, foxes (wild)	402	0
Exotic feral mammal other	249	214
Ferret (lab)	667	667
Fish	406,458	60,033
Goats (domestic)	790	148
Hares (wild)	1	0
Horses (domestic)	496	17
Koalas	51	1
Laboratory mammal (non-specified)	84	84
Lizards	1,721	25
Macropods	1,499	78
Monotremes	56	0
Mouse (wild)	95	0

Animal type	Number of animals	Number of deaths
Native mammal other	25,569	7
Native Rats, Mice	2,438	0
Other birds	9	0
Other domestic mammals	137	2
Pigs (domestic)	261	121
Possums, Gliders	2,631	12
Poultry	743,491	63,240
Rabbits (wild)	66	0
Rats (wild)	54	0
Reptile other	95	0
Seals, Sealions	1,711	0
Sheep (domestic)	82,993	2,530
Snakes	79	0
Turtles, tortoises	563	0
Whales, dolphins	115	0
Wombats	237	0
Total	**1,701,099**	**461,758**

**Specified animals.*

Part 3: Animal use statistics from 2011 to 2020

3.1 Number of animals used in research, teaching and testing from 2011 – 2020

The number of animals used in research, teaching and testing in 2020 was 1,701,099.

Figure 3.1 Number of animals used, 2011 – 2020

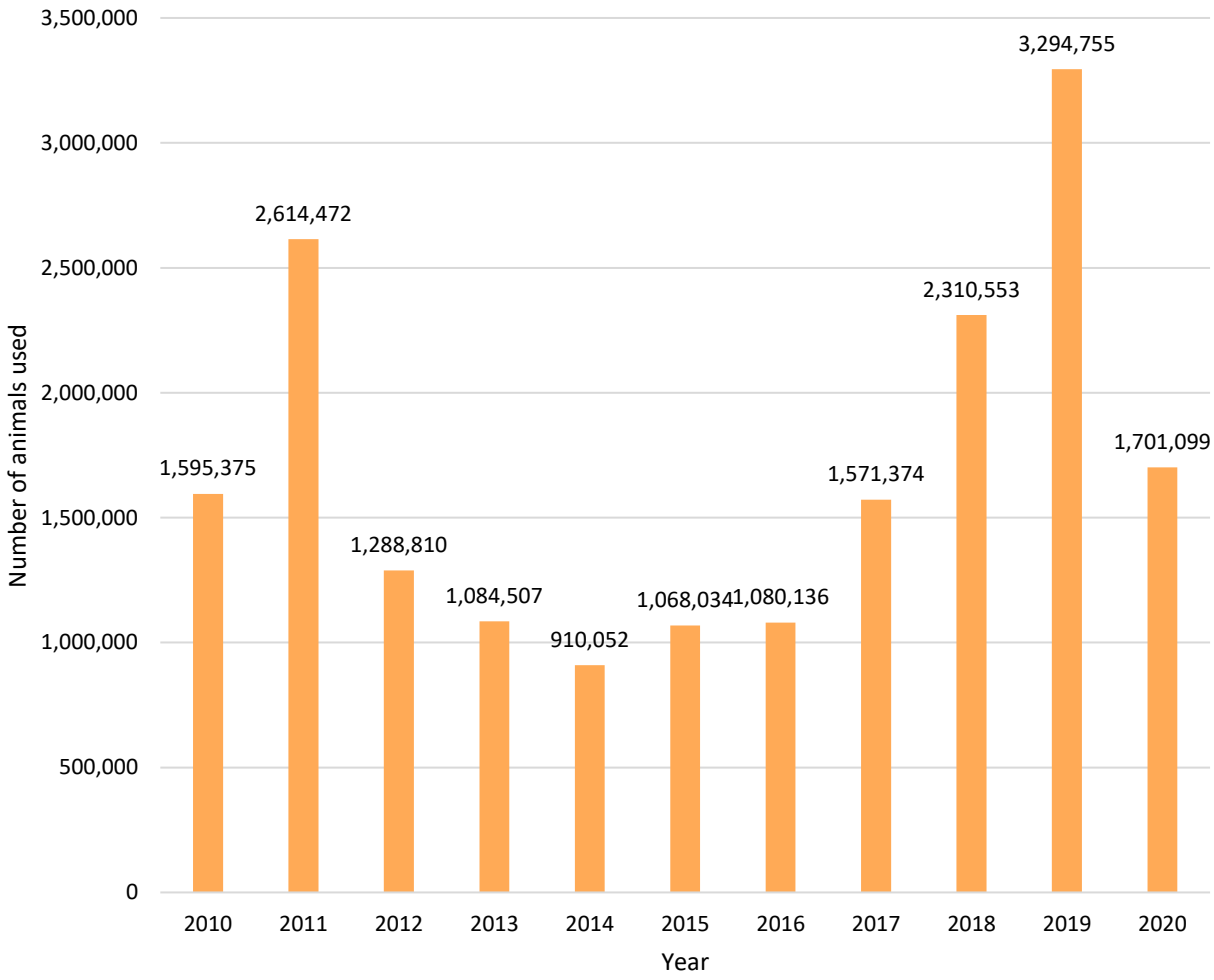


Figure 3.2 Percentage of animals used by project purpose, 2016 – 2020

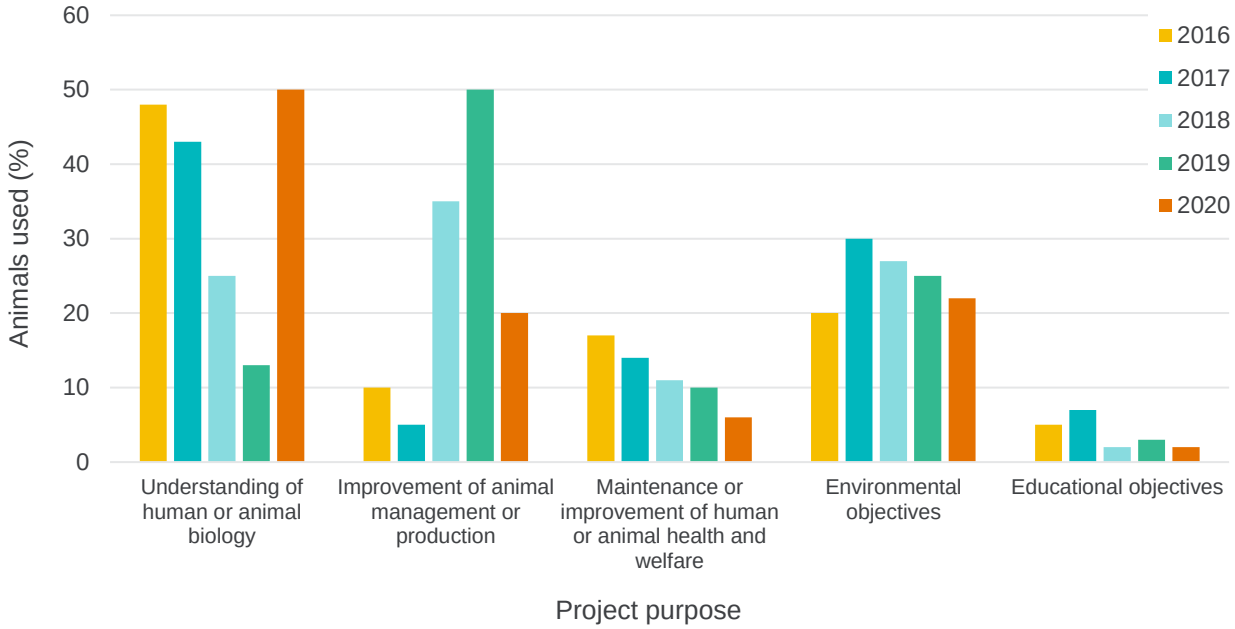
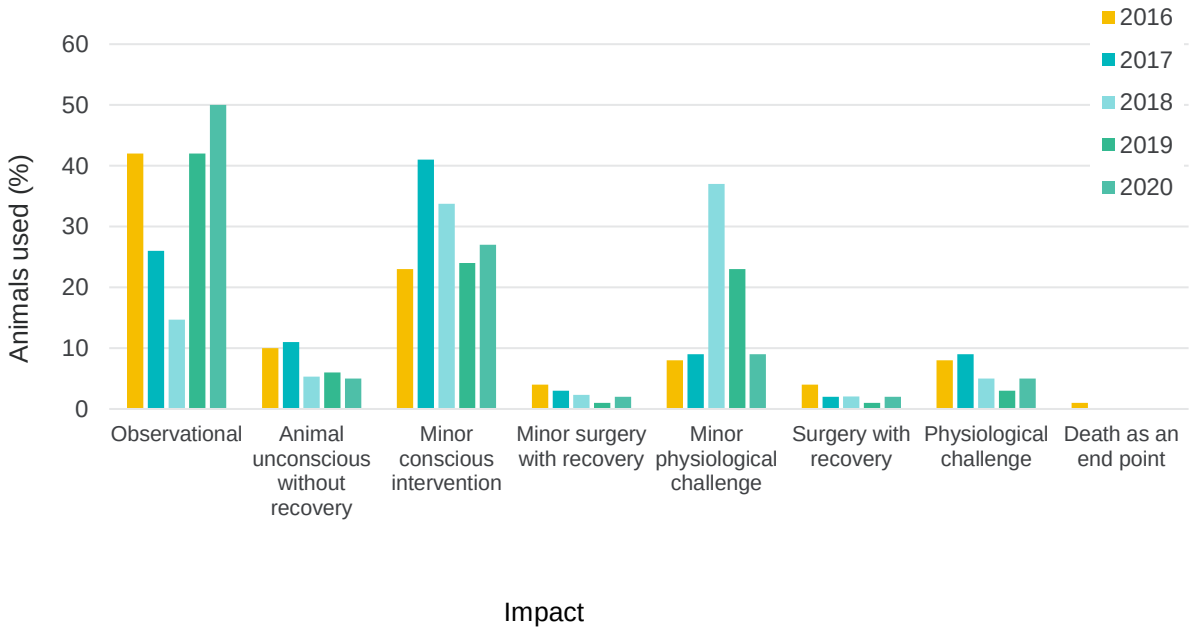


Figure 3.3 Percentage of animals used by impact type, 2016 – 2020



3.2 Number of specified animals used from 2011 – 2020

Figure 3.4 Number of specified mice used, 2011 – 2020

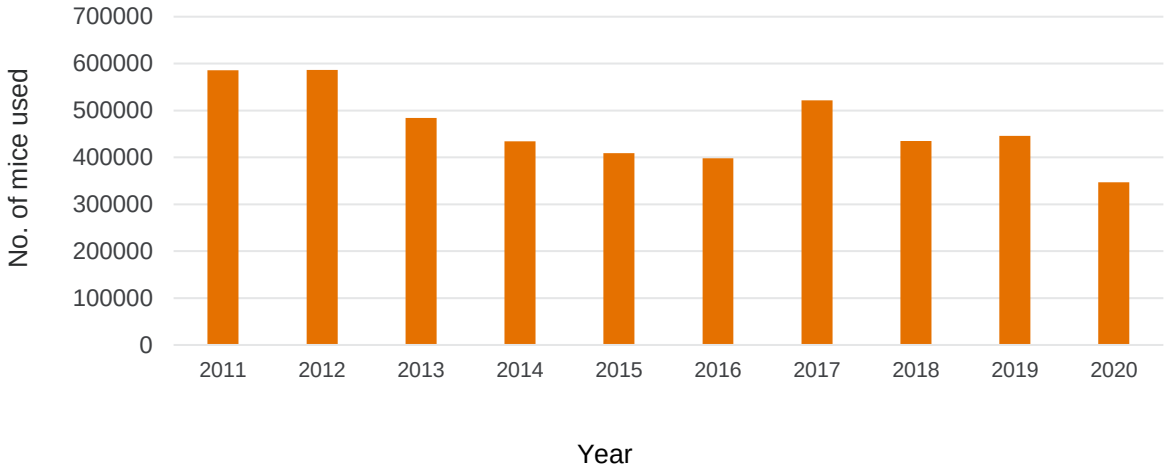


Figure 3.5 Number of specified animals, excluding mice and non-human primates 2011-2020

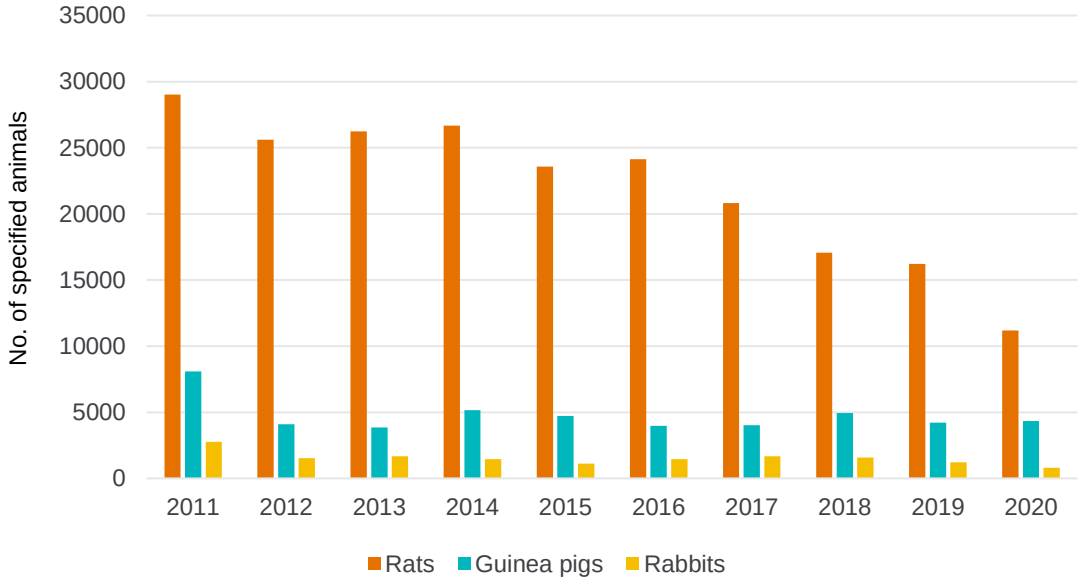
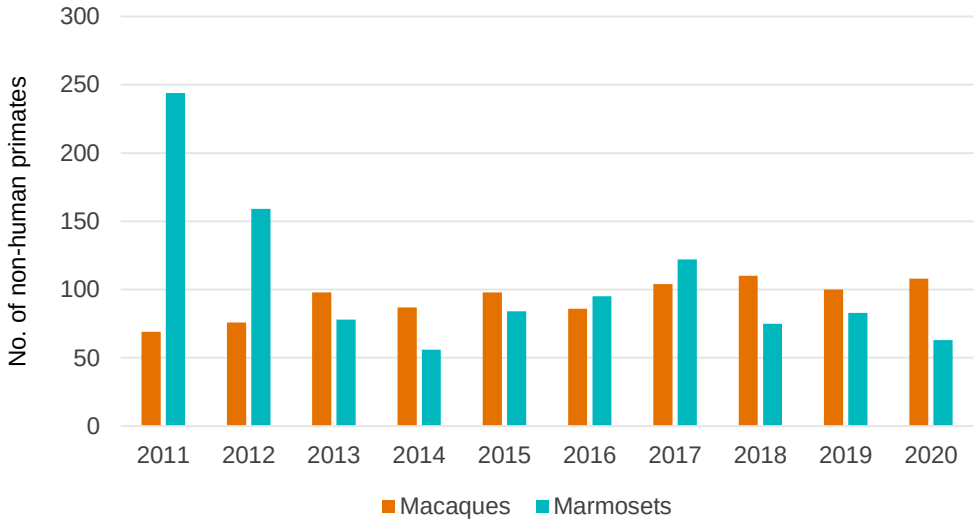


Figure 3.6 Number of non-human primates, 2011 - 2020



3.3 Number of animals used in breeding colonies from 2011 – 2020

Figure 3.7 Number of specified mice in breeding colonies, 2011 – 2020

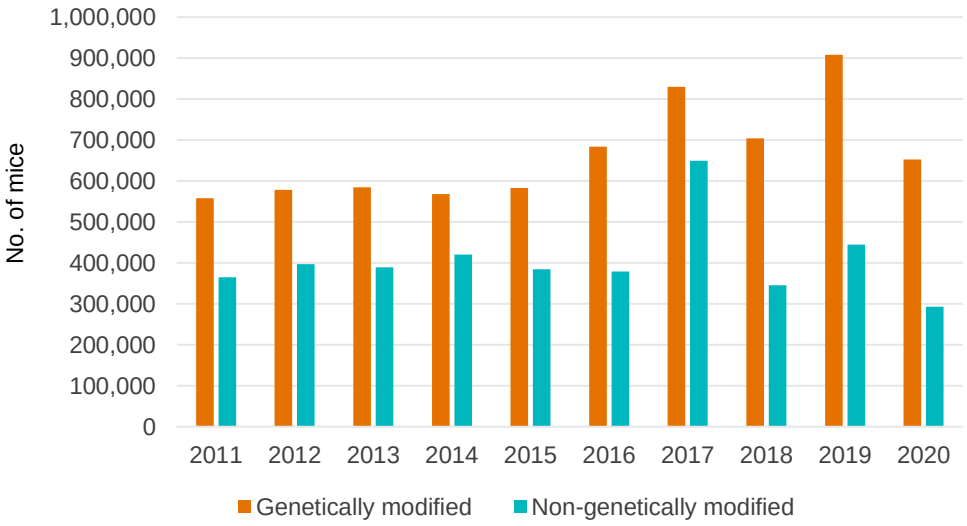


Table 3.1 Number of non-genetically modified specified animals in breeding colonies by animal type, 2011 – 2020

Animal type	Year									
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Guinea pigs	388	320	244	345	294	96	48	3,202	1,543	1,207
Macaques	250	244	226	263	282	274	476	258	271	175
Marmosets	156	146	273	305	440	463	744	309	228	231
Mice	365,009	396,710	389,049	420,126	384,762	379,198	649,519	345,107	444,733	292,840
Rabbits	489	214	197	133	179	159	86	793	46	531
Rats	48,543	31,886	33,308	25,546	23,744	27,754	40,719	20,606	28,319	24,089
Total	**414,835**	**429,520**	**423,297**	**446,718**	**409,701**	**407,944**	**691,592**	**370,275**	**475,140**	**319,073**

Table 3.2 Number of genetically modified specified animals in breeding colonies by animal type, 2011 – 2020

Animal type	Year									
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Mice	558,293	578,240	584,660	568,495	582,925	683,769	829,940	704,297	908,083	652,671
Rats	1,744	1,381	1,992	4,271	2,714	2,286	2,907	2,160	2,073	1,408
Total	**560,037**	**579,621**	**586,652**	**572,766**	**585,639**	**686,055**	**832,847**	**706,457**	**910,156**	**654,079**

In 2020 a new reporting category was introduced, to capture non-specified animals in breeding colonies. This was designed to improve data accuracy for these animals. Previously, these animals may have been reported as domestic animal management/production.

Table 3.3 Number of non-genetically modified non-specified animals in breeding colonies by animal type in 2020

Animal type	2020
Amphibians	274
Cats (non-wild)	21
Cattle (domestic)	338
Dasyurids	8
Exotic feral mammal other	393
Fish	87,636
Horses (domestic)	19
Macropods	53
Poultry	52
Sheep (domestic)	1,136
Laboratory mammal (non-specified)	344
Total	**90,274**

Table 3.4 Number of genetically modified non-specified animals in breeding colonies by animal type in 2020

Animal type	2020
Amphibians	175
Bird other	34
Fish	59,248
Pigs (domestic)	55
Poultry	270
Total	**59,782**

4 Appendices

Appendix 1

Table 4.1 Reporting categories

Category	Description
Observation involving minor interference	Studies in which the normal activities of animals are minimally impacted on. For example, laboratory animals held in cages for acclimatisation; a feeding trial, such as Digestible Energy determination of feed in a balanced diet; behavioural or growth study with minor environmental manipulation; or teaching of normal, non-invasive husbandry such as handling, grooming, etc.
Unconscious without recovery	Studies in which animals are humanely rendered unconscious under controlled circumstances (i.e. not in a field situation) with as little pain or distress as possible. Capture methods are not required. Any pain is minor and brief and does not require analgesia. Procedures are carried out on the unconscious animal that is then killed without regaining consciousness. Examples include animals (including fish) in laboratory killed painlessly for dissection, biochemical analysis, etc.; or teaching of surgical techniques using live, anaesthetised patients that are not allowed to recover following the procedure.
Minor conscious intervention	Studies in which animals are subjected to minor procedures that would normally not require anaesthesia. Any pain is minor, although some distress may occur as a result of trapping or handling. For example, capture and release (with or without tagging) of animals (including fish) in the wild; trapping and humane euthanasia for collection of specimens; ear notching for identification of new line GM animals; injections, blood sampling in conscious animal; minor dietary or environmental deprivation or manipulation, such as feeding nutrient-deficient diets for short periods; or stomach tubing, branding, disbudding, shearing, etc.
Minor operative procedure with recovery	Studies in which animals are anaesthetised for a minor procedure such as cannulation or skin biopsy. Animals are allowed to recover. Depending on the procedure, pain may be minor or moderate and post-operative analgesia may be appropriate. For example, biopsies or blood sampling under anaesthesia or sedation; cannulations under anaesthesia or sedation; sedation/anaesthesia for relocation, examination or injections/blood sampling; field capture using chemical restraint methods.

Category	Description
Minor physiological challenge	Studies in which there is interference with the animals' physiological or psychological processes. The challenge may cause mild or short-lived pain/distress, or any pain/distress is quickly and effectively alleviated. For example, electrofishing; minor infection, minor or moderate phenotypic modification, early oncogenesis; arthritis studies with pain alleviation; prolonged deficient diets, induction of metabolic disease; polyclonal antibody production; or antiserum production.
Surgery with recovery	Studies in which animals are anaesthetised for a major procedure such as abdominal or orthopaedic surgery following which the animal is allowed to recover. Post-operative pain should be managed with analgesia. For example, orthopaedic surgery; abdominal or thoracic surgery; transplant surgery; or surgery under anaesthesia for implantation of telemetry tags.
Moderate to major physiological challenge	Studies in which there is interference with the animals' physiological or psychological processes. The procedure/s may cause moderate or longer lasting pain/distress. Pain or distress may not be able to be entirely alleviated, either due to the nature of the process (e.g., neurological impairment) or because of the experimental question (e.g., pain studies). Other examples include: severe infection, significant disability due to genetic modification, induction of cancer without pain alleviation; arthritis studies without pain alleviation, uncontrolled metabolic disease; isolation or environmental deprivation for extended periods.
Death as an endpoint	Studies where the death of the animal is essential for the scientific result, such as for efficacy of some antivenoms, development of pest control agents and studies of acutely fatal conditions. In these studies, death is a deliberate measure in the procedure and there can be no intervention to kill the animal humanely before death occurs in the course of the procedure. 'Death as an endpoint' procedures must be approved by the Minister for Agriculture. They do not include studies where animals are humanely killed at the conclusion of the experiment.