Animal Research Statistics Tasmania

Annual Report

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Department of Natural Resources and Environment Tasmania

Tasmanian Government

This report has been compiled in accordance with Section 35 of the *Animal Welfare Act 1993* from animal usage statistics submitted by institutions licensed under the Act for the period 1 January 2023 to 31 December 2023.

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ABBREVIATIONS **35**

Summary

This report details animal use for research and teaching purposes in Tasmania from 1st January to 31st December 2023. The summaries and analyses in this report are compiled from project data submitted by licensed institutions as required by the *Animal Welfare Act 1993*. The report complies with nationally agreed definitions for the collation of statistics of animal use for scientific purposes and includes data collected on live, non-human vertebrates and cephalopods.

Of the 65 licensed institutions required to report, 38 used animals during the reporting period, comprising 20 Tasmanian resident institutions and 18 institutions head quartered interstate. The Department of Natural Resources and Environment Tasmania (NRE Tas), The Australian Museum and Commonwealth Scientific and Industrial Research Organisation (CSIRO) were the only government departments reporting animal use in 2023. There were also 9 academic, 12 not-for-profit institutions and 15 commercial entities.

There were 2 animal ethics committees (AECs) resident in Tasmania supervising projects within the Tasmanian jurisdiction during 2023 – the NRE Tas AEC and the University of Tasmania (UTAS) AEC.

The NRE Tas AEC provided project assessment and monitoring services to 36 external licensed institutions during 2023. 23 of these external institutions reported animal use in 30 projects. The NRE Tas AEC also supervised 16 internal departmental projects that reported animal use during the reporting period.

A total of 257 individual projects were reported in 2023, which is an increase on the previous year when 201 projects were reported. Of these, 99 were projects involved in understanding biology and 84 were environmental studies. The remaining projects were undertaken for the purposes of education, health and welfare and/or management and production. In 2023, a total of 402,146 animals or sightings of animals were reported, recording an increase from the 114,401 reported in 2022. Several large bird, fish and native mammal surveys were undertaken in 2023 and thus these were the animal categories accounting for the majority of this increase in animal use numbers or sightings of animals in 2023.

UTAS continued to be the most active research institution using animals for scientific purposes in Tasmania, reporting data from 163 projects, representing 63.4% of all projects reported. The number of animals reported by UTAS increased from 83,787 in 2022 to 224,726 in 2023. Several wild bird and native mammal observational projects undertaken in 2023 accounted for most of this change. Such significant fluctuations in specific animal use from one year to the next is common in a dynamic research context.

Fish were the most numerous category recorded in 2023, accounting for 180,545 animals in 60 projects. Native mammals were the next most common animal categories reported, accounting for 134,142 of animals used. Camera trap sighting or observations with minor interference accounted for 130,575 (97%) of native mammal use. Birds (mainly in observational studies) accounted for 41,598 in 69 projects. Consistent with this, most animals reported were in environmental studies.

Laboratory rodent use during 2023 involved 7,320 rats and mice. This is a decrease from the 8,644 reported in 2022. A proportion of these laboratory mammals are used in colony establishment or maintenance which fluctuates from time to time, and accounts for some of the variation in laboratory animal use numbers from year to year. The other major contributors to overall numbers were the domestic mammal category (mainly cattle and sheep) representing 26,956 animals and exotic feral animal category representing 9,171 animals, of which most were camera trap sightings for both categories. Relatively small numbers of reptiles and amphibians were reported in 2023, as occurred in 2022.

Of the 157,780 animals recorded in projects using higher impact procedures, 136,092 were fish caught as part of marine surveys involving trawling. In Tasmania research involving trawling of wild fisheries is included within the *Animal Unconscious Without Recovery* procedural group. Apart from these surveys, 92% of animals were involved in projects using lower impact procedures and 8% of animals were involved in projects using higher impact procedures.

Overall, the relatively low impact procedures of *Camera traps only, Observation with Minor Interference, Minor Conscious Procedure,* and *Minor Physiological Challenge* were applied to 61.3% (or 244,373) animals and were utilised in 66% of projects in 2023.

Only two projects in Tasmania in 2023, involving the eradication of feral cats, had procedures where death was an end point or deliberate measure.

1 Introduction

This report details animal use for research and teaching purposes in Tasmania from 1 January to 31 December 2023. Section 1 provides background information about the legislative requirements for reporting and how the data is compiled each year, noting any significant changes to the procedures that may affect comparisons. Section 2 outlines the animal use in Tasmania during the reporting period. Summary statistics are provided in Section 3.

1.1 Regulation of animal research in Tasmania

Animal research in Tasmania is regulated via several mechanisms:

(a) Animal Research Legislation

Part 4 of the *Animal Welfare Act 1993* (the Act) deals with animal research including teaching. Since proclamation of this part of the Act on 1 April 1996, institutions are required to be licensed by the Minister if they wish to use animals in research and teaching in Tasmania.

The Act allows licensed institutions to conduct animal research as approved by Animal Ethics Committees (AECs) in a self-regulatory environment. The institutions are, however, subject to inspection by Inspectors of Animal Research at least on an annual basis. In practice this is applied as an ongoing monitoring program with emphasis on ensuring the respective AECs are compliant and functioning and institutions are fulfilling their responsibilities according to the approved Code of practice.

The definition of 'animal research' in the Act is:

'a procedure, test, experiment, inquiry or study on an animal which –

(a) is undertaken to develop, demonstrate or acquire knowledge, or techniques, in an area of science or teaching; and

(b) is likely to have a significant adverse effect on the welfare of the animal.'

Regulation 7 of the *Animal Welfare (General) Regulations 2013* provides for an inspector to determine whether an activity is or is not animal research. A precautionary approach is used in these determinations, based on an assessment of the risk of welfare compromise from the proposed use of, for example, novel techniques, therapeutics, nutrients, or changes in habitat. It should be noted that an institution may permit their AEC to approve research activities that require approval, for example for funding or publishing purposes, that have been previously determined by the inspector not to be research.

The Act has provision for the inclusion of additional species by regulation within the meaning of 'animal' for particular purposes under the Act. The class *Cephalopoda* which includes octopus, cuttlefish, nautilus and squid, was afforded this status of 'animals' for the purposes of research in January 2009. The reporting of cephalopods has been mandatory since then.

(b) The Code

A core condition of licensing is compliance with the approved Code of Practice. Currently this is the nationally agreed *Australian Code for the Care and Use of Animals for Scientific Purposes 8th edition (2013)* (the Code). The Code and associated reference documents are published by the National Health and Medical Research Council (NHMRC) and provide specific requirements and guidance for the use of animals for scientific purposes to investigators, teachers, institutions and AECs. The eighth edition of the Code received Ministerial approval in October 2013, superseding the seventh edition. The Code was updated in 2021 to incorporate a new Section 7: Cosmetic Testing. No change in statistical reporting came about as a result of the new Code coming into operation.

The Code requires that a decision to use animals must be properly justified, and animals may only be used after due consideration of the '3Rs' (replacement, reduction and refinement). The principles of the '3Rs' are, in brief, that animals may only be used where there are no alternatives enabling ***replacement*** of animals with other methods; where ***reduction*** is applied such that the number of animals used is absolutely necessary to achieve the aims of the project; and where ***refinement*** of techniques is used to reduce the welfare impact on animals approved for use and promote the animals' wellbeing.

Provided research and teaching activities are properly approved and monitored within a licensed institution by its AEC, and the institution, its AEC and researchers and teachers comply with the Code, the use of animals for research and teaching is protected from sections 8 and 9 of the Act *(*cruelty and aggravated cruelty). While sections 8, 9 and 10 of the Act do not apply to the reasonable use of fish in commercial and recreational activities, the research provisions do apply to aquatic vertebrates and cephalopods as well as terrestrial vertebrates.

Research project proposals are examined, approved and monitored by an AEC that has been constituted and authorised by the institution in compliance with the approved Code. Institutions that have too few projects or are not sufficiently resourced to have their own AEC may use the services of another institution's AEC. For instance, in 2023, 36 external institutions were approved to use the NRE Tas AEC services for project assessment and monitoring: of these institutions, 23 used animals in the reporting period.

(c) Licensing

Any individual or organisation may apply to be a licensed 'institution' for the purposes of conducting animal research in Tasmania. The conditions of the licence require compliance of the institution and any persons under its auspices with the Tasmanian animal welfare legislation and the approved Code.

Licence applicants from outside Tasmania must agree to comply with the Code and provide evidence that they are equivalently licensed in their resident jurisdiction to ensure adequate monitoring of their AEC's compliance with the Code by an equivalent regulator.

Institutions that share another institution's AEC must do so via a formal sharing agreement that complies with the principles set down in the Code and that also address any other issue specific to the host or external institution.

(d) Annual reporting

Institutions are required to provide an annual report to the Minister on their activities in relation to animal research under section 35 of the Act. The report is to contain *the numbers and types of animals used* and *the types of animal research carried out*. A report summarising the institutional reports (this document) is to be tabled in both Houses of Parliament prior to 30 September each year.

(e) Inspectors

The Minister appoints inspectors under section 36 of the Act. Inspectors advise the Minister on matters relating to the granting and cancellation of licenses, the conduct of the AECs and general compliance with the approved research Code of Practice. The monitoring of compliance includes the inspection of animal holding facilities within each institution, attending meetings of AECs and the collation of the annual State report. Inspectors have specific powers to investigate suspect non-compliance with the animal research provisions of the Act.

(f) Permits for wildlife and fisheries

Institutions intending to use wildlife, including native fish, for scientific purposes must also apply to the NRE Tas Environment Heritage and Land Division and Inland Fisheries Service for appropriate permits.

1.2 Annual reporting in Tasmania

A reporting format was developed by the then Code Liaison Group (now known as the Code Reference Group or CRG) of the NHMRC for the purpose of compiling annual national statistics. It was endorsed by the Tasmanian Animal Welfare Advisory Committee as suitable for State reports to avoid NHMRC-funded institutions having to duplicate reporting effort.

During 2007, regulators from all states and territories agreed on an amended animal category and type list with animals grouped into more logical categories. This list was supported by the CRG and was used for the 2007 report in Tasmania and nationally from 2008. The calendar year reporting period is used as it is consistent with most other agencies collecting animal use statistics.

Data is submitted by the responsible investigator for each project during the calendar year and collated into a standard spread sheet by their institution. If no animals were used in the reporting period despite approval to do so, the project is not included in this report.

Meaningful reporting of wild animal use that may be described as using indirect or proxy procedures, such as the collection of feathers from vacated nests, remains a contentious area and is best resolved on a case-by-case basis by the AEC involved during the project approval process where factors such as animal disturbance and damage to habitat can be explored.

Only animals used in the Tasmanian jurisdiction are required to be noted in this report. There are, however, animals used in other jurisdictions or Commonwealth waters that are reported by licensees where they have no alternative means of reporting. Where these reports impact significantly on the data or interpretations presented in this report they are noted.

Each jurisdiction collects data on animals that fall within its legislative scope. If comparing data across jurisdictions, it should be noted that, for example, fish or cephalopods may not be required to be reported in some jurisdictions. Similarly, Tasmania does not require reporting of decapod crustaceans although 'crustaceans' are included if reported.

The Tasmanian animal use statistics are published on the NRE Tas website once they have been tabled in Parliament (https://nre.tas.gov.au/biosecurity-tasmania/animal-biosecurity/animal-welfare/animal-research#Annualreportingofanimalusestatistics). Most other Australian jurisdictions also publish a summary report at least. A national repository of animal use statistics is no longer maintained.

1.2.1 Explanation of the reporting format

The reporting spread sheet requires the selection of one option from a drop-down list in each of the three main areas listed below (purposes, procedures, and animals). All projects are reported separately.

A project sometimes has multiple purposes, and it is quite common for a project to deploy multiple procedures and use multiple animal categories, and these are reported separately for each project. Examples of the types of activities that should be reported within each procedure group are provided in the reporting spread sheet to improve reporting precision.

Like previous reports, animals may be deployed to or simply observed in multiple projects in the reporting period. This leads to a degree of double counting that cannot be avoided. The overall number of individual animals used is therefore likely to be an overestimate and may be more precisely understood to be 'uses'. The numbers reported against purposes and procedures are considered accurate, however.

The inclusion of comments within the reporting format enables some contextualisation of the animal use and assists with resolving double counting issues.

1.2.2 Application of categories

Animal categories - within each animal category there are several types. Sub-types may also be included where it is considered they are of particular interest to the State. For reporting purposes, the term 'animal' covers fully metamorphosed juveniles, embryos in the latter half of gestation, eggs in the latter half of incubation and larval fish that can feed independently. This definition complies with the National Statistics of Animal Use for Scientific Procedures and is consistent with the Code. All life stages of relevant species are included under the Act, however.

The categories routinely reported against are:

Amphibians

Aquatic animals (non-mammalian)

Birds

Domestic mammals (including livestock species)

Exotic feral mammals

Exotic zoo animals

Laboratory mammals

Native mammals (including marine mammals)

Primates

Reptiles

Projects involving exotic zoo animals or primates have not been conducted in Tasmania for some time although those options remain available.

Purpose of Project – categorises the reason/s for the study.

Understanding Biology e.g. comparative anatomy studies, animal physiology, adaptations of wild animals, wildlife survival studies.

Health and Welfare e.g. cancer research, drug therapy, residue and toxin testing, vaccine development.

Management or Production e.g. effect of nutrition supplements, evaluating husbandry techniques, animal production trials.

Education e.g. classroom studies on animal behaviour or physiology.

Environmental Study e.g. population surveys, acquisition of museum specimens.

Procedures used – broadly describes the severity of the procedures used (i.e. the impact on the animal).

The following procedures are reported on:

Camera Trapping Only: This category was introduced in the 2014 report. It was previously included in *Observation Involving Minor Interference*). It refers to studies exclusively using continuous or motion-triggered photographic recording of animals via fixed cameras with or without lures/baits in the aquatic or terrestrial environment. Note that camera trap numbers relate to sightings rather than individual animals as it is usually not possible to differentiate between individuals of the same species.

Observation Involving Minor Interference: studies in which the normal activities of animals are impacted in a minor way.

Examples of Observation Involving Minor Interference:

- Wildlife studies involving repeated spotlighting or intrusion into groups of animals or nursing animals.
- Feeding trial, such as Digestible Energy determination of feed in a balanced diet.
- Behavioural study with minor environmental manipulation.
- Teaching of normal, non-invasive husbandry such as handling, grooming, etc.
- Production of products, such as hormones or drugs, in milk or eggs from genetically modified animals that are subject to normal husbandry procedures only.

Note some observational data collection has no conceivable impact on animals. For instance, the detection of bat species by recording echolocation calls or collection of scats in the wild environment. Where an institution identifies and reports such activity it is recorded against their name, but no further reference is made in the report.

Minor Conscious Procedure: animal is subjected to minor procedures that would normally not require anaesthesia. Any pain is minor or short term and analgesia is usually considered unnecessary although it may be used; some distress may occur as a result of trapping or handling.

Examples of Minor Conscious Procedure:

- Tail tipping and toe clipping for identification of animals.
- Injections, blood sampling in conscious animal.
- Minor dietary or environmental deprivation or manipulation, such as feeding nutrient-deficient diets for short periods.
- Trapping and release as used in species impact studies, etc.
- Trapping and humane euthanasia for collection of specimens.
- Shearing and similar livestock management practices.

Minor Operative Procedure with Recovery: animal is rendered unconscious, with as little pain or distress as possible. A minor procedure such as cannulation or skin biopsy is carried out and the animal is allowed to recover. Depending on the procedure, pain may be minor or moderate and post-operative analgesia may be appropriate.

Field capture using chemical restraint methods is also included here.

Examples of Minor Operative Procedure with Recovery:
- Biopsies under anaesthesia or sedation.
- Cannulations under anaesthesia or sedation.
- Sedation/anaesthesia for relocation, examination, or injections/blood sampling.

Major Surgery With Recovery: generally, animal is rendered unconscious, with as little pain or distress as possible. A major procedure such as abdominal or orthopaedic surgery is carried out and the animal allowed to recover. Post-operative pain is expected to be considerable and requiring analgesia if possible.

Examples of Major Surgery with Recovery:
- Orthopaedic surgery.
- Abdominal or thoracic surgery.
- Transplant surgery.

Minor Physiological Challenge: animal remains conscious for some or all of the procedure. There is interference with the animal's physiological or psychological processes. The challenge may cause only a small degree of pain/distress or any pain/distress is quickly and effectively alleviated.

Examples of Minor Physiological Challenge:
- Minor infection, minor or moderate phenotypic modification, early oncogenesis.
- Arthritis studies with pain alleviation.
- Prolonged deficient diets, induction of metabolic disease.
- Polyclonal antibody production.
- Antiserum production.

Major Physiological Challenge: animal remains conscious for some or all of the procedure. There is interference with the animal's physiological or psychological processes. The challenge causes a moderate or large degree of pain/distress which is not quickly or effectively alleviated.

Examples of Major Physiological Challenge:
- Major infection, major phenotypic modification, oncogenesis without pain alleviation.
- Arthritis studies with no pain alleviation, uncontrolled metabolic disease.
- Isolation or environmental deprivation for extended periods.
- Monoclonal antibody raising in mice.

Animal Unconscious Without Recovery: the animal is rendered unconscious under controlled circumstances with as little pain or distress as possible. 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 of Animal Unconscious Without Recovery:
- Laboratory mammals killed humanely for dissection, biochemical analysis.
- Teaching surgical techniques on live, anaesthetised animals that are not allowed to recover following the procedure.

Note that in Tasmania research involving trawling of wild fisheries is included within this procedural group as it is considered to describe more accurately the impact on the individual animal captured this way. Although trawling results in the death of most animals captured, death is not a measure in itself and is thus not considered to be a 'death as the end point' activity (see below).

Death as the End Point: the aim of the experiment requires the animal to die unassisted, i.e. not euthanised, as death is a critical measure of the experimental treatment.

Examples of Death as the End Point:
- Toxicological experiments (e.g. ascertaining LD50s)
- Assessing the relative resistance to the effects of infections if euthanasia cannot be provided at any stage to achieve the aim of the experiment.

2 Animal research activities for 2023

2.1 Institutions

There were 65 licensed institutions required to report animal use during 2023. They are listed below.

ADE Consulting Group (QLD) Pty Ltd, Queensland (no animal use in 2023)

Agscent, NSW

Apiam Animal Health, Victoria (no animal use in 2023)

Australian Museum, New South Wales (no animal use in 2023)

Australian National University (ANU), Australian Capital Territory

Australian Ocean Biotechnology Pty Ltd, Tasmania (no animal use in 2023)

Biosis Pty Ltd, Victoria

Birdlife Tasmania (Birdlife), Tasmania

Bookend Trust, Tasmania

Bush Heritage Australia, Victoria

Central Queensland University, Queensland (no animal use in 2023)

Charles Sturt University, New South Wales

Commonwealth Scientific and Industrial Research Organisation, (CSIRO)

Dairy Systems Pty Ltd Tasmania (no animal use in 2023)

DairyTas, Tasmania

Dawbuts Pty Ltd, NSW

Deakin University (Deakin), Victoria

Department of Natural Resources and Environment Tasmania (NRE Tas), Tasmania

Derwent Estuary Program (DEP), Tasmania

Eco Logical Australia Pty Ltd, New South Wales (no animal use in 2023)

Elanco, New South Wales (no animal use in 2023)

Entura (Hydro Tasmania Group), (Entura), Tasmania

Flinders University, South Australia (no animal use in 2023)

Fonterra Co-operative Group Limited, Victoria

Freshwater Biomonitoring (Freshwater), Tasmania (no animal use in 2023)

Friends of Maatsuyker Island (FoMI), Tasmania

Gallagher eShepherd Pty Ltd, Queensland (no animal use in 2023)

GHD Tasmania Pty Ltd (GHD), Tasmania

Gray, Paul, (Independent researcher), Tasmania

Huon Aquaculture Co Pty Ltd, Tasmania (no animal use in 2023)

Jacobs Group, Victoria

James Cook University, Queensland (no animal use in 2023)

Jurox Pty Ltd, New South Wales (no animal use in 2023)

Kannunah Pty Ltd, Tasmania (no animal use in 2023)

Macquarie University (Macq Uni), New South Wales

Monash University (Monash), Victoria (no animal use in 2023)

Mooney Nick Independent researcher, Tasmania

Murdoch University (Murdoch), Western Australia

Natural Resource Management – South (NRM Sth), Tasmania

Natural Resource Management –North (NRM Nth), Tasmania

Nature Advisory P/L, Victoria

New South Wales Department of Primary Industries, New South Wales (no animal use in 2023)

North Barker Ecosystem Services (North Barker), Tasmania

Pinion Advisory, Tasmania

Pocus Team (Point of Care Ultrasound Scanning), New South Wales (no animal use in 2023)

RTV Training, Tasmania

Robertson, Dr Bruce Ingram, (Independent researcher), Victoria (no animal use in 2023)

Sea Forest Pty Ltd, Tasmania

Sustainable Timber Tasmania (STTAS), Tasmania (no animal use in 2023)

Tasmanian Land Conservancy (TLC), Tasmania

Tasmanian Aboriginal Centre TAC), Tasmania

TasNature (Peter Tonelli), Tasmania

Tassal Operations Pty Ltd (Tassal), Tasmania (no animal use in 2023)

Treidlia Biovet Pty Ltd (Treidlia), New South Wales (no animal use in 2023)

University of Adelaide (UAdelaide), South Australia

University of New England, New South Wales (no animal use in 2023)

University of New South Wales (UNSW), New South Wales

University of Queensland (UQLD), Queensland (no animal use in 2023)

University of Sydney (USydney), New South Wales

University of Tasmania (UTAS), Tasmania

University of Technology Sydney, New South Wales (no animal use in 2023)

Victorian Department of Energy, Environment and Climate Action (DEECA) Victoria (no animal use in 2023)

Victorian Wader Study Group Inc (VWSG), Victoria

Western Sydney University, New South Wales (no animal use in 2023)

Zoetis Australian Research and Manufacturing, New South Wales,

There were two AECs resident in Tasmania (NRE Tas and UTAS) in 2023.

Of the 65 licensed institutions, 38 reported animal use in Tasmania in 2023. The active institutions comprised 20 Tasmanian resident and 18 head quartered interstate.

The number and variety of institutions conducting animal research in Tasmania fluctuates according to academic and commercial interests for the period. Licensed institutions include the CSIRO, environmental consultants, corporate farmers, individuals, or not-for-profit organisations as well as the conventional academic and government research entities.

The 20 Tasmanian resident institutions using animals in 2023 comprised 1 academic institution (UTAS), 1 government department (NRE Tas), 8 commercial entities and 10 not-for-profit organisations. Interstate institutions using animals comprised one Australian Government entity, 9 academic institutions, 6 commercial entities, and 2 not-for-profit organisations. There were no overseas institutions licensed in the state during 2023.

Table 1 lists the institutions that used animals and the categories and numbers of animals involved, including a comparison with 2022 data. Table 2.1 summarises animal categories used; Table 3 provides detail on the types of animals used by each institution, and Figure 1 provides a 5-year visual comparison.

In 2023, 402,146 animals or sightings of animals were reported within 257 projects (compared to 114,401 in 201 projects in 2022).

The major contributor to this increase in animal use over 2022 figures, was an increase in the numbers of fish and birds (see sections 2.2 and 2.4) reported in trawling surveys and wild bird observational studies respectively.

Changes in the number of individual projects provides a rough guide to the level of activity an institution is engaged in or the level of interest an animal category or purpose is attracting from one reporting period to the next. This report includes figures illustrating the relative level of activity over the past five years in terms of project number per categories of animals (Figure 2), purposes (Figure 4) and procedures (Figure 6). Care should be taken interpreting this data on an institutional basis as projects may be the result of a licensed institution contracting or otherwise collaborating with another licensee ('lead' institution) to provide the research service entirely or a proportion of projects. The data from collaborative projects is therefore reported by the 'lead' institution to avoid double counting and maintain commercial-in-confidence.

UTAS continued to be the most active institution in Tasmania during 2023, with 163 or 63.4% of all projects reported (Table 1), compared to 130 projects in 2022, using or sighting 224,726 animals. All animal categories were represented in the UTAS report. The number of animals reported by UTAS in 2023 was increased compared to the number of animals used or sighted in 2022 (83,787) but similar to the number of animals used or sighted in 2021 (285,163). The increase was due mainly to increased sightings recorded in wild bird and native mammal observational projects or camera trap surveys assessing native and domestic animal ecosystems.

The NRE Tas Environment, Heritage and Land Division and Biosecurity Tasmania reported animal use in 8 and 8 projects respectively identifying a total of 2196 animals or 0.55% of all animals reported in 2023. In 2022, 14,047 animals were reported in 10 and 9 projects respectively. The increased animal use or sightings reported in 2022 compared to 2023 was largely due to a native animal camera trap survey conducted in 2022. NRE Tas projects included a wide variety of subjects from the management of stranded cetaceans, Tasmanian devil and orange bellied parrot conservation to the development of salmonid fish vaccines and feral cat control strategies.

Projects conducted by commercial entities involved aquatic animals in ecological surveys of waterways for various development or monitoring purposes, fauna and bird surveys for terrestrial development purposes and sheep and cattle in projects aimed at improving sheep and cattle health, welfare, and production.

In 2023, all not-for-profit organisations reporting animal use in 2023 were supervised by the NRE Tas AEC and accounted for 6,284 animals (compared to 3,265 animals in 2022) in 16 projects. Of these projects, 8 involved wild bird research, 5 involved native terrestrial wildlife research and one involved native fish research.

Nine academic institutions were active in Tasmania during 2023. Apart from UTAS, academic institutions reported a total of 3,568 animals (compared with 5,187 were reported in 2022), with each institution having between 1 to 9 projects targeting a small range of animal categories, with aquatic animals, birds, domestic and native mammals featuring.

Of the 36 external licensees using the NRE Tas AEC in 2023, 23 reported animal use, totalling 29,295 animals in 30 projects. Commercial enterprises using the NRE AEC (Biosis, Dairy Tas, Entura, Fonterra, Jacobs Group, Nick Mooney, Nature Advisory, North Barker, Pinion Advisory, RTV Training and Sea Forest) reported a total of 23,011 animals across 14 projects (2 large observational bird and wildlife surveys accounted for 21,559 of these animals)

Apart from NRE Tas, CSIRO was the only government department reporting animal use in 2023. CSIRO undertook 10 projects in Tasmania in 2023 involving 141,281 animals (400 birds, 687 cephalopods and 140,881 fish). Most of the

fish use recorded by CSIRO (136,092 of the 140,881 fish recorded) were caught via trawling in 2 projects as part of marine surveys for research purposes.

2.2 Animal categories

Tables 1 and 2.1 summarise the number of animals and projects reported within animal categories for 2023. Table 3 provides detail on the types of animals within each category used by each institution. Figures 1 and 2 illustrate a rolling 5-year distribution of animals and projects respectively within animal categories.

Aquatic animals were the most commonly reported category with 181,245 animals in 2023, which is an increase from the number (52,362) used in 2022. 180,545 of these aquatic animals were fish. The number of projects using aquatic animals increased from 41 in 2022 to 60 in 2023 and was the second most active area of research for 2023 in project terms. The largest user of aquatic animals was CSIRO. Most of the fish use recorded by CSIRO (136,092 of the 140,881 fish recorded) were caught via trawling in 2 projects as part of marine surveys for research purposes. CSIRO was the only institution reporting use of cephalopods (687) in 2023.

UTAS used a total of 38,061aquatic animals (compared to 42,633 in 2022), almost all of which were fish. Aquatic research projects included a range of subjects including the development of fish vaccines, aquaculture production, feral fish species control strategies, conservation strategies for threatened marine species, impacts of climate change on marine species and ecological surveys. One project, using 2,700 zebra fish, is an example of the increasing use of 'laboratory' fish in the field of biomedical research. Currently crustaceans do not need to be reported. However, sometimes institutions may include crustaceans' numbers despite this not being a requirement. If reported, these animal numbers are usually included in this report for interest. In 2023 no use of crustaceans was reported.

Native mammals were the second most active area of research for 2023 in terms of animal numbers. 134,142 native mammals were reported in 2023, which is a large increase from the 28,948 reported in 2022, but similar to the 168,318 reported in 2022, Several large camera trap or observational surveys undertaken in 2023 accounts for most of this animal use, Native mammals were also the third most common category in terms of project numbers. There were 52 projects using native mammals in 2023, down from 54 in 2022. In 2023 UTAS projects accounted for 123,835 native mammals reported. As in previous years, camera trap sightings, observational studies and environmental surveys accounted for most of the native mammal animal use in 2023. Two UTAS projects alone in 2023, using camera traps or observation only, accounted for 84,524 native mammal sightings. Camera trap sightings or observations with minor interference accounted for 130,575 (97%) of native mammal use.

Birds accounted for 41,598 animals used in 2023. This also is a large increase from the 8,488 reported in 2022. There was also an increase in the number of projects using birds, from 47 in 2022 to 69 in 2023. Fluctuations in specific animal use and sightings from one year to the next is common in a research context, particularly in projects recording wild bird camera trap or observational sightings. Two UTAS observational projects alone accounted for 13,094 bird sightings in 2023. Camera trap sightings or observations with minor interference accounted for 99% of bird use in 2023. Projects involving birds included conservation requirements and ecological studies of Tamanian threatened species, the impact of human activities on wild bird populations and mapping migration patterns.

Domestic mammal use in 2023 involved 26,956 head used in 37 projects, which is a large increase on the number reported in 2022 (10,066 in 17 projects). However, two camera trap surveys assessing wildlife habitat accounted for 16,110 of these domestic mammal sightings. Apart from these surveys the majority were reported in livestock management projects, aimed for instance, at grazing behaviour, improved animal welfare or breeding success of terrestrial livestock species.

Exotic feral mammal use involved 9,171 animals, which was greater than that reported in 2022 (4,010). Most projects in 2023 involved camera trap sightings or observation with minor interference procedures and involved 99% of animal use in this category. The projects involved mainly cats, rabbits, rats, and mice.

Laboratory mammal use involved 7,320 mammals (all rodents) in biomedical research in 2023. This was a decrease on 2022 figures when 8,644 laboratory mammals were reported. Some of these fluctuations in animal use numbers may occur due to colony establishment and maintenance, which varies from time to time. The number of animals maintained in breeding colonies fluctuates with specific project requirements and is therefore highly unpredictable. There were 45 projects using laboratory mammals in 2023, which is an increase compared to the 34 projects reported in 2022. Some 312 rats and mice were used for training and assessment of rodent experimental techniques.

Reptile use in 2023 involved 1,634 lizards and other reptile species, in 19 projects, down from 1,858 reptiles used in 16 projects in 2022. UTAS projects accounted for most (over 98%) of the reptiles reported in 2023. The remainder were reported as part of ecological surveys.

Amphibian use in 2023 involved 73 frogs in one project undertaken by UTAS. Commercial organisations undertaking environmental and ecological surveys were the only other users of amphibians in 2023, reporting 7 frogs across 2 projects.

2.3 Purposes

Table 2.2 summarises the research and teaching purposes for which animals were used during 2023. Figure 3 and 4 illustrates a rolling 5-year distribution of animals and projects respectively within purposes. Table 4 presents detail on the purposes and procedures applied to animal types within categories.

Environmental studies used 308,375 animals (or 76.5%) in 2023. This is a substantial increase in the number of animals used or sighted for this purpose compared to that used or sighted in 2022 (63,915), with the majority of these animals being recorded in camera trap or observational studies. The number of projects (84) also increased compared to the 68 projects undertaken in 2022 for this purpose. Environmental projects involved large numbers of macropods (55,619), wild birds (29,760), fish (152,031), and possums (23,775), however, almost all animal categories and types were represented.

Understanding biology projects used 62,627 animals in 99 projects in 2023, compared to 22,112 animals and 82 projects in 2022. This is an increase in animal use numbers and continues the upward trend that had been occurring in the 3 years prior to 2022. Fish (14,563), native mammals (32,218) and wild birds (10,572) featured, accounting for over 91% of animals reported in this type of project.

Management and production research accounted for 15,589 animals used in 25 projects, compared to 12,993 animals in 16 projects in 2022. The majority of animals used for this purpose were fish (8,784), cattle (1,570), sheep (1,125) and laboratory mice and rats (2,540 and 450 respectively), as part of rodent colony management, maintenance and breeding projects.

Health and welfare studies reported an increased level of animal use in 2023 (12,463 animals) when compared to that used in 2022 (10,062). The number of projects conducted for this purpose also increased from 33 in 2022 to 37 in 2023. As has been the case for several years, the majority of projects and animals used in this area were livestock (6,670 in 2023 compared with 5,049 in 2022), fish (4,737 in 2023 compared with 3,582 in 2022), or laboratory mice and rats (385 in 2023 compared with 901in 2022) aimed at improving livestock, salmonid or human health and welfare respectively.

Education projects reported for 2023, used a smaller number of animals (3,583) to those reported in 2022 (5,420), however involved 18 projects compared to 10 projects in 2022. 312 of animals used in this category were laboratory rodents used in the training of experimental techniques. Observational bird, domestic mammal and fauna surveys undertaken as part of a teaching program by UTAS accounted for majority of animal use in this category. 430 fish, 1,124 birds and 956 domestic mammals were used or sighted in educational projects.

2.4 Procedures

Table 2.3 summarises the procedures used on animals during 2023. Figures 5 and 6 illustrate rolling 5-year distributions of animals and projects respectively, according to various procedural categories. The procedures are listed below in descending order of animal use; procedures are listed in the tables in ascending order of welfare impact.

Animal Unconscious, No Recovery procedures were applied to 154,205 animals in 72 projects. The number of projects using these procedures, is greater than that in 2022 (58 projects), as was the number of animals used in these projects compared to 2022 (16,191). These procedures were applied mainly to fish (149,320) and laboratory mammals (4,022) as has been the case for several years. With regard to aquatic animals, these procedures were applied in wild fisheries, aquaculture disease management and production projects and a biomedical project involving zebrafish. In Tasmania research involving trawling of wild fisheries is included within the *Animal Unconscious Without Recovery* procedural group. In 2023 there were two large marine surveys for research purposes which involved trawling and the use of 136,092 fish and these surveys accounted for 88% of animals recorded in this category. These fish were retained as specimens

and were not subject to any other procedures. The large representation of laboratory mammals is consistent with the invasive nature of some biomedical research where recovery is not in the interests of the animal.

Observation with Minor Interference procedures were applied to 118,113 animals in 118 projects in 2023. This is an increase on 2022 figures of 65,899 animals in 80 projects. Native mammal (48,414), Bird (38,751), aquatic animal (19,754) and domestic mammal (8,359) surveys were the main users of observational procedures in 2023.

Camera Traps Only sightings increased markedly during 2023 with 111,869 sightings reported in 15 projects. This is compared to 19,628 sightings in 14 projects in 2022. Most of the sightings were recorded in environmental projects, with the remainder in management and production projects. Most sightings were of native mammals (82,151) followed by domestic mammals (16,536), exotic feral mammals (7,986), fish (2,619) and birds (2,577).

Minor Conscious Procedures were applied to 14,035 animals across 59 projects in 2023, which was an increase in relation to the number of animals used but a decrease in relation to the number of projects compared to 2022 figures (11,343 animals used in 62 projects). These procedures were applied mainly to aquatic animals (5,641), laboratory mammals (3,056), native mammals (3,201), birds (579) and cattle and sheep (1,507). Several of the projects involving laboratory mammals in this category were addressing routine laboratory rodent colony maintenance. Minor conscious procedures were also applied in projects addressing population monitoring (e.g. via bird banding and telemetry), domestic and wild animal disease and genetic surveillance, and habitat use.

Minor Operative Procedures With Recovery were applied to 2,345 animals. This is an increase on 2022 figures (1,201 in 2022). There was a slight increase in the number of projects using this procedure, with 19 in 2023 (compared to 17 in 2022). These procedures are generally applied to a wide range of animals as they include anaesthesia with recovery – a common procedure for restraining wild mammals, fish, and birds. In 2023 2,127 (91%) of animals subjected to these procedures were fish species addressing specific disease issues.

Major Physiological Challenge was applied to 1,057 animals in 2 projects in 2023. This was a decrease in both project numbers and animal use numbers compared to the 2,792 animals used in 6 projects in 2022. As for previous years, the majority of animals undergoing this procedure were part of a project concerned with farmed salmonid disease prevention, accounting for 1,032 animals reported. The other project using this procedure was concerned with the impacts of climate change on reptiles. No laboratory rodents underwent this procedure in 2023.

Minor Physiological Challenge was applied to 263 animals across 3 projects in 2023. A cattle project accounted for 80 of animals reported in this category, with reptiles accounting for a further 183 animals. These procedures were applied to 108 animals across 3 projects in 2022.

Major Surgery With Recovery procedures were applied to 234 animals in 2023 in 4 projects. (In 2022 these procedures were applied to 58 animals in 8 projects). These procedures were applied exclusively to mice involved in neuropathology research.

Death as the End Point procedures are rarely used in Tasmania. Only two projects, involving the eradication of feral cat species, had procedures where death was an end point or deliberate measure in Tasmania in 2023.

Of the 157,780 animals recorded in projects using higher impact procedures, 136,092 were fish caught as part of marine surveys for research purposes involving trawling. Apart from these surveys, 8% of animals were involved in projects using higher impact procedures.

The relatively low impact procedures of *Camera traps only, Observation with Minor Interference, Minor Conscious Procedure,* and *Minor Physiological Challenge* were applied to 61.3% (or 244,373) animals and in 66% of projects in 2023.

3 Tables and figures All summarised data is displayed in this section.

Table 1 Summary of animal categories used by institutions in 2023

Institution	Project number	Amphibia	Aquatic animals	Birds	Domestic mammals	Exotic feral mammals	Lab mammals	Native mammals	Reptiles	Total
Agscent	1				40					40
ANU	6	0		103					25	128
Biosis	1			8059				7857		15916
Birdlife Tas	3			3182						3182
Bookend Trust	1							1		1
Bush Heritage Aust	1					116		425		541
Charles Sturt Uni	3			350						350
CSIRO	10		140881	400						141281
DairyTas	1				80					80
Dawbuts/Zoetis	1				540					540
Deakin Uni	1			353		84		297		734
DEP	1			179						179
Entura	1		262							262
Fonterra	3				920					920
FoMI	1			1127						1127
GDH Tas	10	3		198		205		88	6	500
Gray, Paul	1							1		1
Jacobs Group	1							0		0
Macq Uni	1			145						145
Mooney, Nick	1			22						22
Murdoch Uni	4		4		1000	1		126		1131
NRE Tas	16		1737	96	34	79		250		2196
NRM Nth	1			34						34
NRM Sth	3		120					150		270
Nature Advisory	2			5643						5643
North Barker	1			0						0
Pinion Advisory	1				96					96
RTV Training	1				22					22
Sea Forest	1				50					50
TAC	1	4				113				117
Tas Nature	1			36						36
TLC	1					21		615	1	637
UAdelaide	1					3				3
UNSW	1		180							180
USydney	9				400			497		897
UTAS	163	73	38061	21512	23774	8549	7320	123835	1602	224726

VWSG	1			159						159
2023 Totals	**257**	**80**	**181245**	**41598**	**26956**	**9171**	**7320**	**134142**	**1634**	**402146**
2022 Totals	201	25	52362	8488	10066	4010	8644	28948	1858	114401

Table 2 Animal categories, purposes and procedures in 2023

Table 2.1 Animal categories used in 2023

Animal category	Animals per category	Projects per category *
Amphibia	80	2
Aquatic animals	181245	60
Birds	41598	69
Domestic mammals	26956	37
Exotic feral animals	9171	17
Lab mammals	7320	45
Native mammals	134142	52
Reptiles	1634	19
Total	**402146**	**301***

***A project may use multiple animal categories. See body of report Section 1.2.1**

Table 2.2 Research and teaching purposes used in 2023

Purpose	Animals per purpose	Projects per purpose *
Education	3763	18
Environmental study	308375	84
Health & welfare	12463	37
Management & production	15589	25
Understanding biology	62627	99
Total	**402817***	**263***

***A project may have multiple purposes. See body of report Section 1.2.1**

Table 2.3 Research and teaching procedures used in 2023

Procedure	Animals per procedure*	Projects per procedure*
Camera Traps only	111869	15
Observation with minor interference	118206	118
Minor conscious procedure	14035	59
Minor physiological challenge	263	3
Minor operative procedure with recovery	2345	19
Major physiological challenge	1057	2
Major surgery with recovery	234	4
Animal unconscious no recovery	154132	72
Death as end point	12	2
Total	**402153***	**294***

***A project may use multiple procedures. See body of report section 1.2.1**

Table 3 Summary of animal types used by institutions in 2023

Institution>	Agscent	ANU	Biosis	Birdlife Tas	Bookend Trust	Bush Heritage	Charles Sturt U	CSIRO
Amphibia								
Amphibia								
Aquatic animals								
Cephalopods								687
Crustaceans								
Fish								140194
Other Aquatic Animals								
Birds								
Exotic wild								
Native captive								
Native wild		103	8059	3182			350	400
Other birds								
Poultry								
Domestic Mammals								
Cats								
Cattle								
Deer								
Dogs								
Goats								
Horses								
Pigs								
Sheep	40							

Cats						2		
Mice						109		
Other exotic feral mammals								
Pigs								
Rabbits								
Rats						5		
Laboratory mammals								
Mice								
Rats								

Cetaceans								
Echidna						1		
Macropods						237		
Native Rats and Mice						38		
Other Native Animals			7857		1	5		
Platypus								
Possums and Gliders						46		
Quoll						2		
Tasmanian Devils						13		
Wombats						83		
Reptiles								
Lizards		25						
Total	**40**	**128**	**15916**	**3182**	**1**	**541**	**350**	**141281**

Table 3 Summary of animal types used by institutions in 2023

Institution	DairyTas	Dawbuts	Deakin	DEP	Entura	Fonterra	FoMI	GHD
Amphibia								
Amphibia								3
Aquatic								
Cephalopods								
Crustaceans								
Fish					262			
Other Aquatic Animals								
Birds								
Exotic wild			35					
Native captive								
Native wild			318	179			1127	198
Other birds								
Poultry								
Domestic mammals								
Cats								
Cattle	80					920		
Deer								
Dogs								
Goats								
Horses								
Pigs								
Sheep		540						
Exotic Feral Mammals								
Cats								
Mice								
Other exotic feral mammals			4					5
Pigs								
Rabbits			79					200
Rats			1					
Laboratory								
Mice								
Rats								
Native Mammals								
Cetaceans								
Echidna			8					3
Macropods			209					45
Native Rats and Mice			1					
Other Native Animals			15					24
Platypus								
Possums and Gliders			60					13
Quoll								
Tasmanian Devils								1
Wombats			4					2
Reptiles								
Lizards and snakes								6
Total	**80**	**540**	**734**	**179**	**262**	**920**	**1127**	**500**

Table 3 Summary of animal types used by institutions in 2023

Institution>	Gray, P	Jacobs	Macq Uni	Mooney	Murdoch	NRE Tas	NRM Nth
Amphibia							
Amphibia		,					
Aquatic animals							
Cephalopods							
Crustaceans							
Fish					4	1737	
Other Aquatic Animals							
Birds							
Exotic wild			145				
Native captive						21	
Native wild				22		75	34
Other birds							
Poultry							
Domestic Cats							
Cattle						20	
Deer							
Dogs							
Goats							
Horses							
Pigs							
Sheep					1000	14	
Feral Cats						53	
Mice						26	
Other exotic feral mammals							
Pigs							
Rabbits							
Feral Rats					1		
Laboratory mammals							
Mice							
Rats							
Cetaceans							
Echidna							
Macropods					57		
Native Rats and Mice							
Other Native Animals	1	0			44	3	
Platypus					25		
Possums and Gliders						4	
Quoll						31	
Tasmanian Devils						212	
Wombats							
Reptiles							
Lizards							
Total	**1**	**0**	**145**	**22**	**1131**	**2196**	**34**

Table 3 Summary of animal types used by institutions in 2023 continued

Institution	NRM Sth	Nature Adv	Nth Barker	Pinion	RTV	Sea Forest	TLC
Amphibia							
Amphibia							
Aquatic animals							
Cephalopods							
Crustaceans							
Fish	120						
Other Aquatic Animals							
Birds							
Exotic wild							
Native captive							
Native wild		5643	0				
Other birds							
Poultry							
Cats							
Cattle				96	22		
Deer							
Dogs							
Goats							
Horses							
Pigs							
Sheep						50	
Cats							
Mice							
Other exotic feral mammals							21
Pigs							
Rabbits							
Rats							
Laboratory mammals							
Mice							
Rats							
Cetaceans							
Echidna							
Macropods							204
Native Rats and Mice							
Other Native Animals							
Platypus							
Possums and Gliders	150						289
Quoll							74
Tasmanian Devils							21
Wombats							27
Reptiles							
Lizards							1
Total	**270**	**5643**	**0**	**96**	**22**	**50**	**637**

Table 3 Summary of animal types used by institutions in 2023 continued

Institution	TAC	Tas Nature	UAdelaide	UNSW	USyd	UTAS	VWSG
Amphibia	4					73	
Amphibia							
Aquatic animals							
Cephalopods							
Crustaceans							
Fish				180		38048	
Other Aquatic Animals						13	
Birds							
Exotic wild						961	
Native captive							
Native wild		36				19523	159
Other birds						1028	
Poultry							
Cats							
Cattle						7033	
Deer							
Dogs						18	
Goats						68	
Horses							
Pigs							
Sheep					400	16655	
Cats			3			1253	
Mice	113					61	
Other exotic feral mammals						2409	
Pigs							
Rabbits						3846	
Rats						980	
Laboratory mammals							
Mice						6129	
Rats						1191	
Cetaceans						102	
Echidna						1094	
Macropods						55414	
Native Rats and Mice						164	
Other Native Animals						34567	
Platypus						3	
Possums and Gliders						23272	
Quoll						2368	
Tasmanian Devils					497	3141	
Wombats						3710	
Reptiles							
Lizards and snakes						1602	
Total	**117**	**36**	**3**	**180**	**897**	**224726**	**159**

*Dawbuts and Zoetis were both involved in the same project. The animal use data for this project is recorded in table 3 (above) under Dawbuts only to avoid duplication.

Table 4 Purposes and procedures used for animal types in 2023

	Amphi-bians	**Aquatic animals**			
	Amphibians	Cephalo-pods	Crust-aceans	Fish	Other Aquatics
Purpose					
Education				430	
Environmental study	7	687		152031	13
Health & welfare				4737	
Management & production				8784	
Understanding biology				14563	
Procedure					
Camera traps only				2619	
Observation with minor interference	7			19741	13
Minor conscious procedure				5641	
Minor physiological challenge					
Minor operative procedure with recovery				2127	
Major physiological challenge				1052	
Major surgery with recovery				77	
Animal unconscious no recovery		687		149320	
Death as End Point					

Table 4 Purposes and procedures used for animal types in 2023 continued

	Birds				
	Exotic wild	Native captive	Native wild	Other birds	
Purpose					
Education			344	800	
Environmental study	996		28466	298	
Health & welfare			431		
Management & production					
Understanding biology	145	12	10415		
Procedure					
Camera traps only	915		1592	70	
Observation with minor interference	81		37642	1028	
Minor conscious procedure	145	12	422		
Minor physiological challenge					
Minor operative procedure with recovery					
Major physiological challenge					
Major surgery with recovery					
Animal unconscious no recovery					
Death as End Point					

Table 4 Purposes and procedures used for animal types in 2023 continued

	Domestic mammals								
	Cats	Cattle	Deer	Dogs	Goats	Horses	Pigs	Sheep	other
Purpose									
Education		502						454	
Environmental study		360		18	68			16110	
Health & welfare		5730						940	
Management & production		1570						1125	
Understanding biology		9						70	
Procedure									
Camera traps only		340		18	68			16110	
Observation with minor interference		7310						1049	
Minor conscious procedure		521						986	
Minor physiological challenge								540	
Minor operative procedure with recovery									
Major physiological challenge									
Major surgery with recovery									
Animal unconscious no recovery								14	
Death as End Point									

Table 4 Purposes and procedures used for animal types in 2023 continued

	Exotic feral mammals						Laboratory mammals		
	Cats	Mice	Other exotic feral mammals	Pigs	Rabbits	Rats	Mice	Rats	other
Purpose									
Education							283	29	
Environmental study	1258	196	2552		4125	986			
Health & welfare						1	222	163	
Management & production	9						2540	450	
Understanding biology	44						3084	549	
Procedure									
Camera traps only	1030	110	2409		3846	590			
Observation with minor interference	212	60	143		279	396	7		
Minor conscious procedure	13					1	2598	458	
Minor physiological challenge									
Minor operative procedure with recovery	44						78		
Major physiological challenge									
Major surgery with recovery							157		
Animal unconscious no recovery		26					3289	733	
Death as End Point	12								

Table 4 Purposes and procedures used for animal types in 2023 continued

	Native mammals					
	Cetaceans	Echidnas	Macropods	Native Rats and Mice	Other native mammals	Platypus
Purpose						
Education			488		200	
Environmental study		1106	55619	203	10658	3
Health & welfare			57		44	25
Management & production					1092	
Understanding biology	102		2		30721	
Procedure						
Camera traps only		1105	21526	203	31458	3
Observation with minor interference	102	1	34638		9261	16
Minor conscious procedure					1484	
Minor physiological challenge						
Minor operative procedure with recovery			2		44	9
Major physiological challenge						
Major surgery with recovery						
Animal unconscious no recovery						
Death as End Point						

Table 4 Purposes and procedures used for animal types in 2023 continued

	Native mammals continued				Reptiles
	Possums and gliders	Quolls	Tas Devils	Wombats	Lizards and snakes
Purpose					
Education	53				
Environmental study	23775	2397	3228	3277	91
Health & welfare				113	
Management & production					
Understanding biology	6	78	869	436	1568
Procedure					
Camera traps only	20235	1558	2823	3250	22
Observation with minor interference	3597	128	95	576	349
Minor conscious procedure		754	963		1046
Minor physiological challenge					183
Minor operative procedure with recovery	2	35	4		
Major physiological challenge					
Major surgery with recovery					
Animal unconscious no recovery	29				34
Death as End Point					

Figure 1 Animal categories used between 2019 and 2023

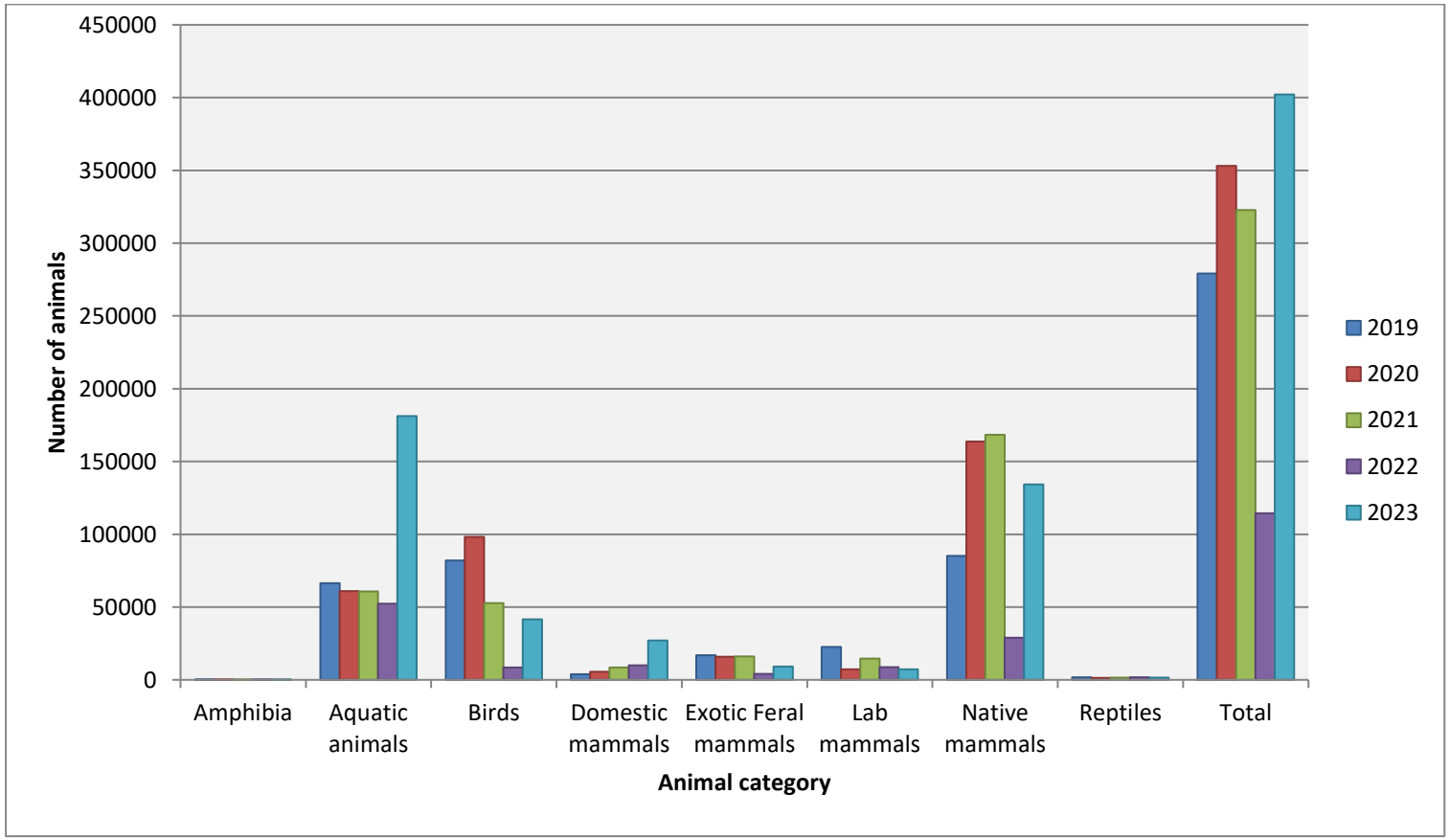


Figure 2 Projects per animal category between 2019 and 2023

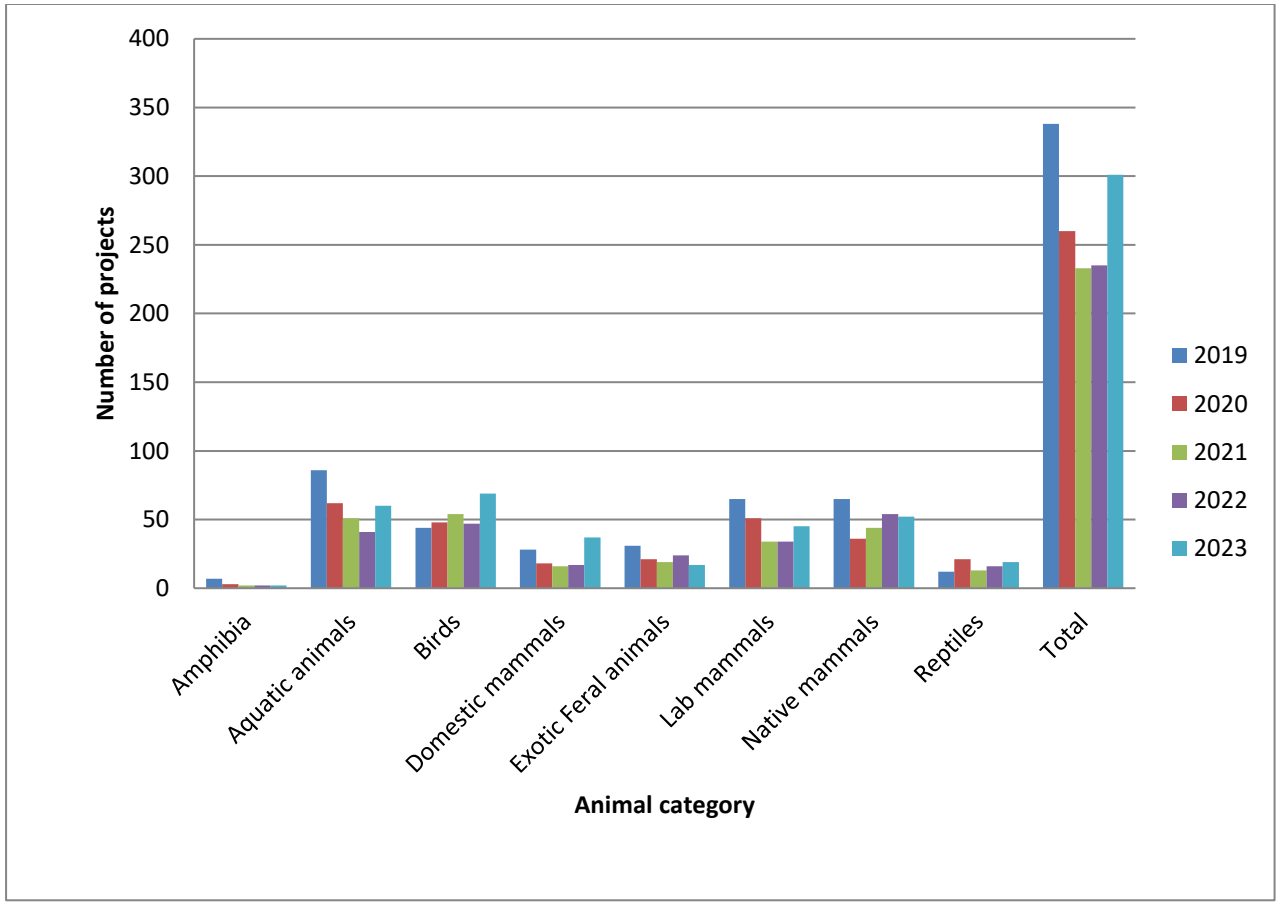


Figure 3 Purposes for which animals were used between 2019 and 2023

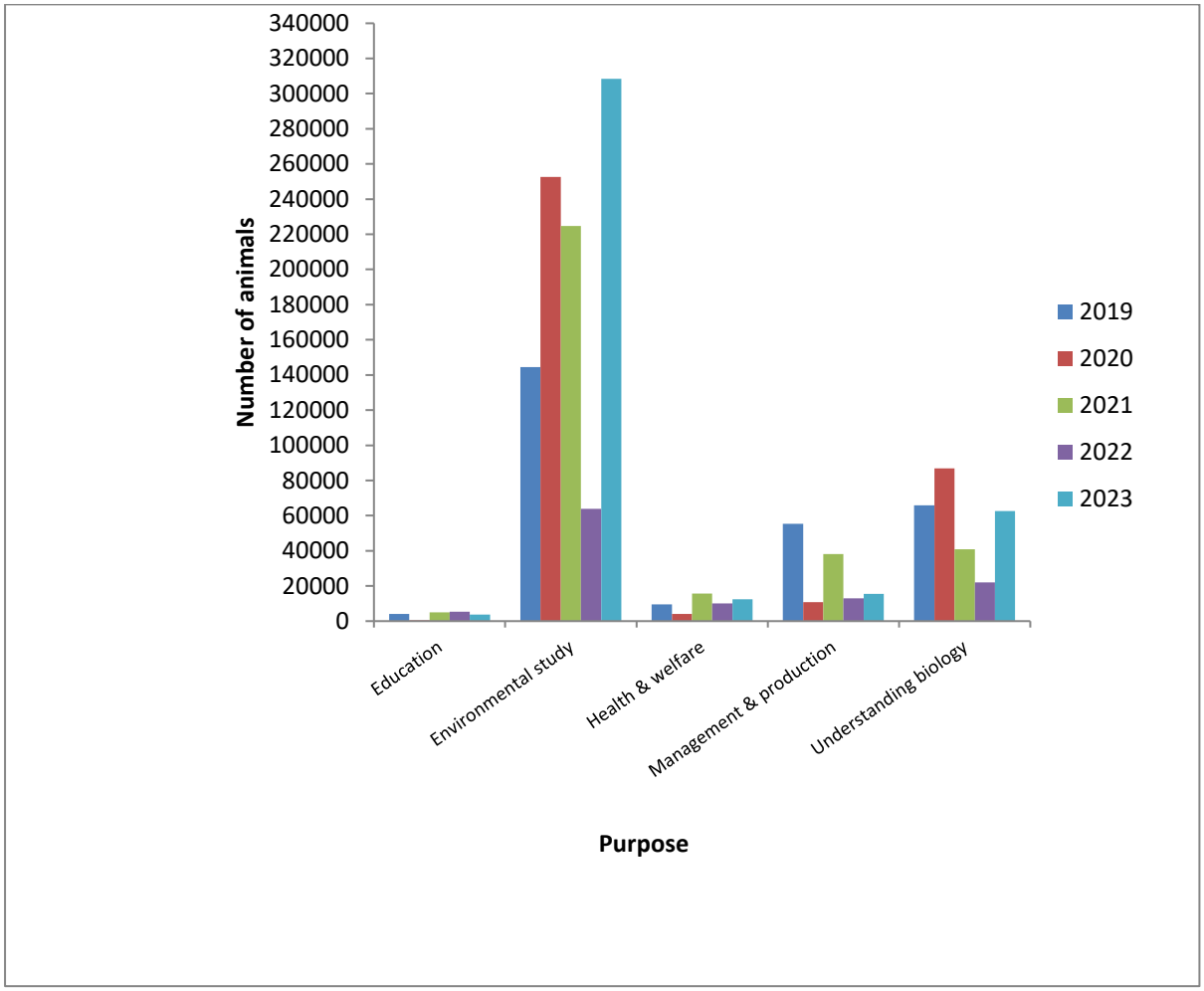


Figure 4 Projects per purposes between 2019 and 2023

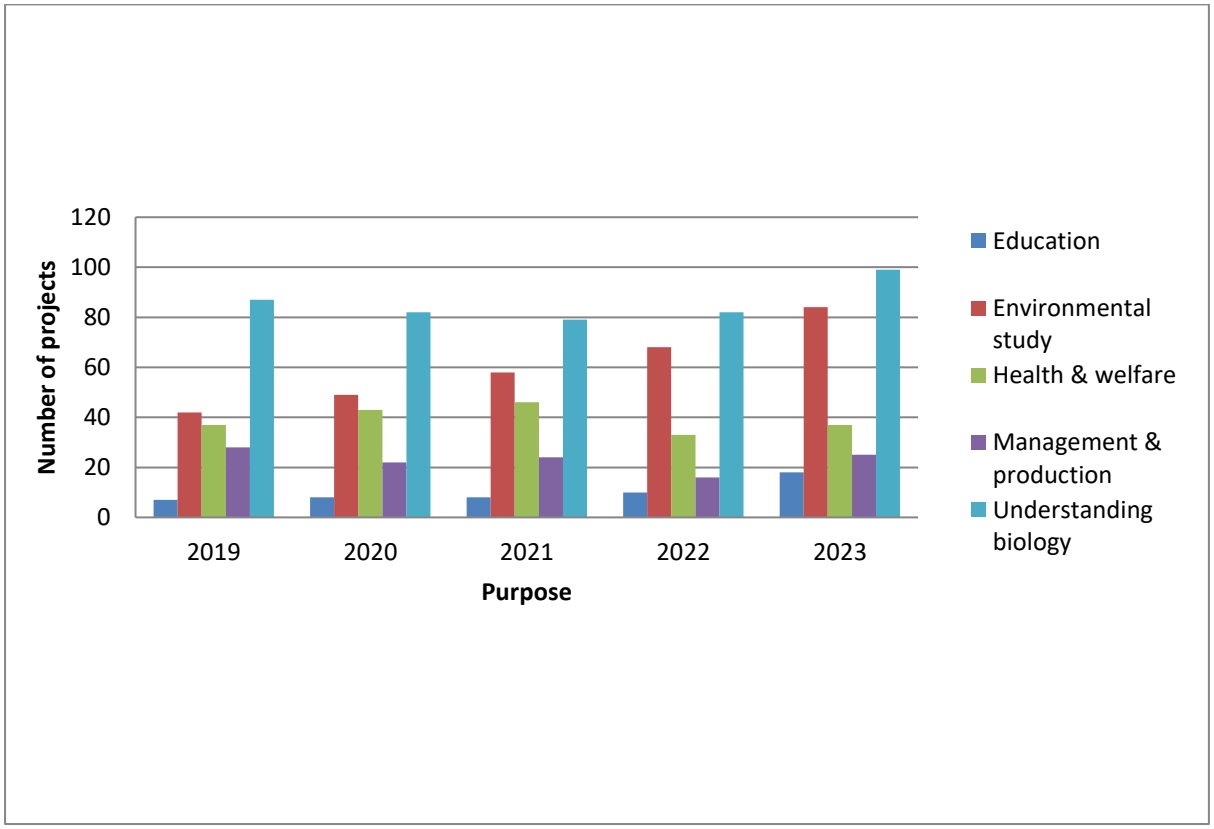


Figure 5 Procedures used between 2019 and 2023

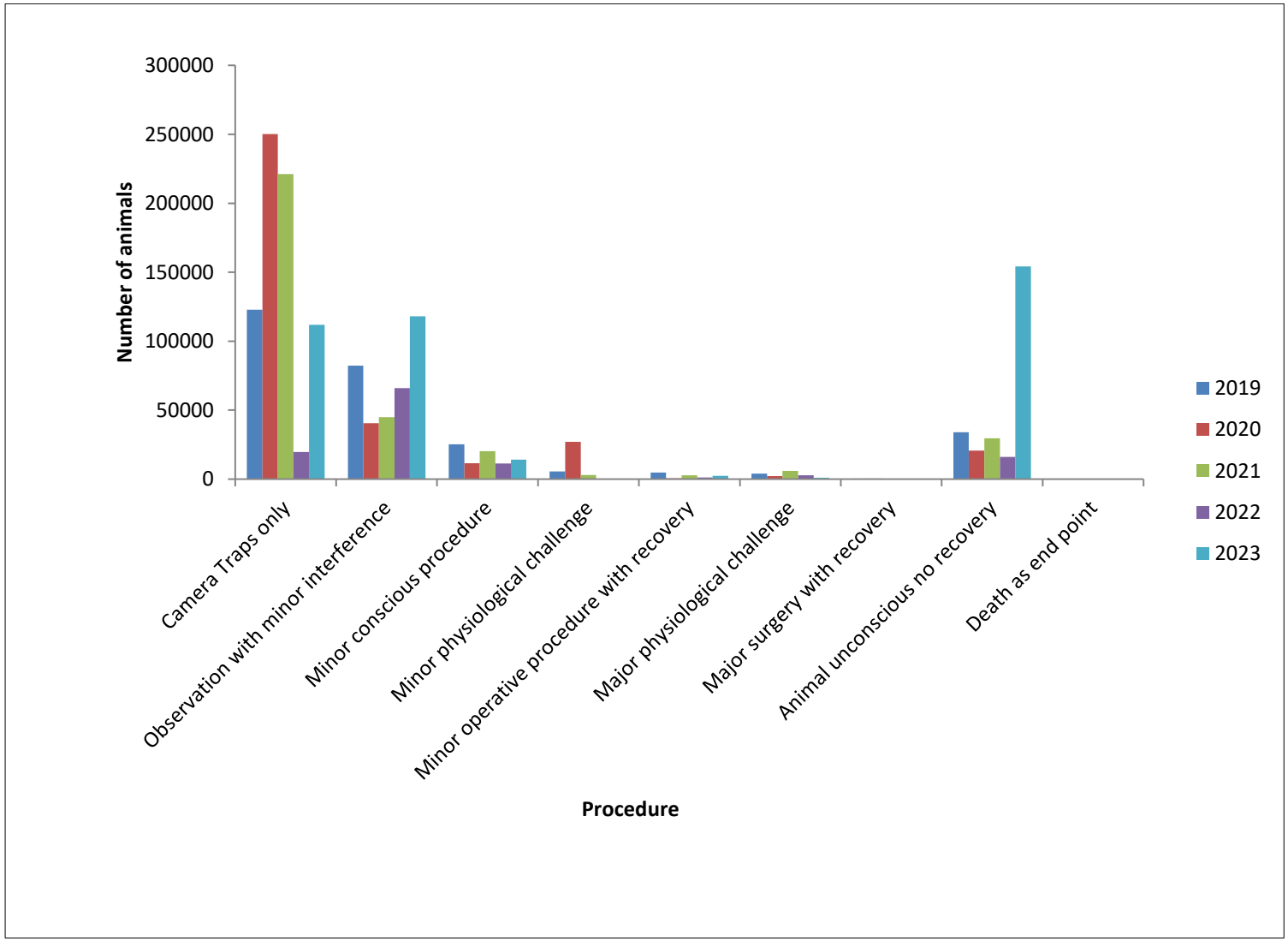
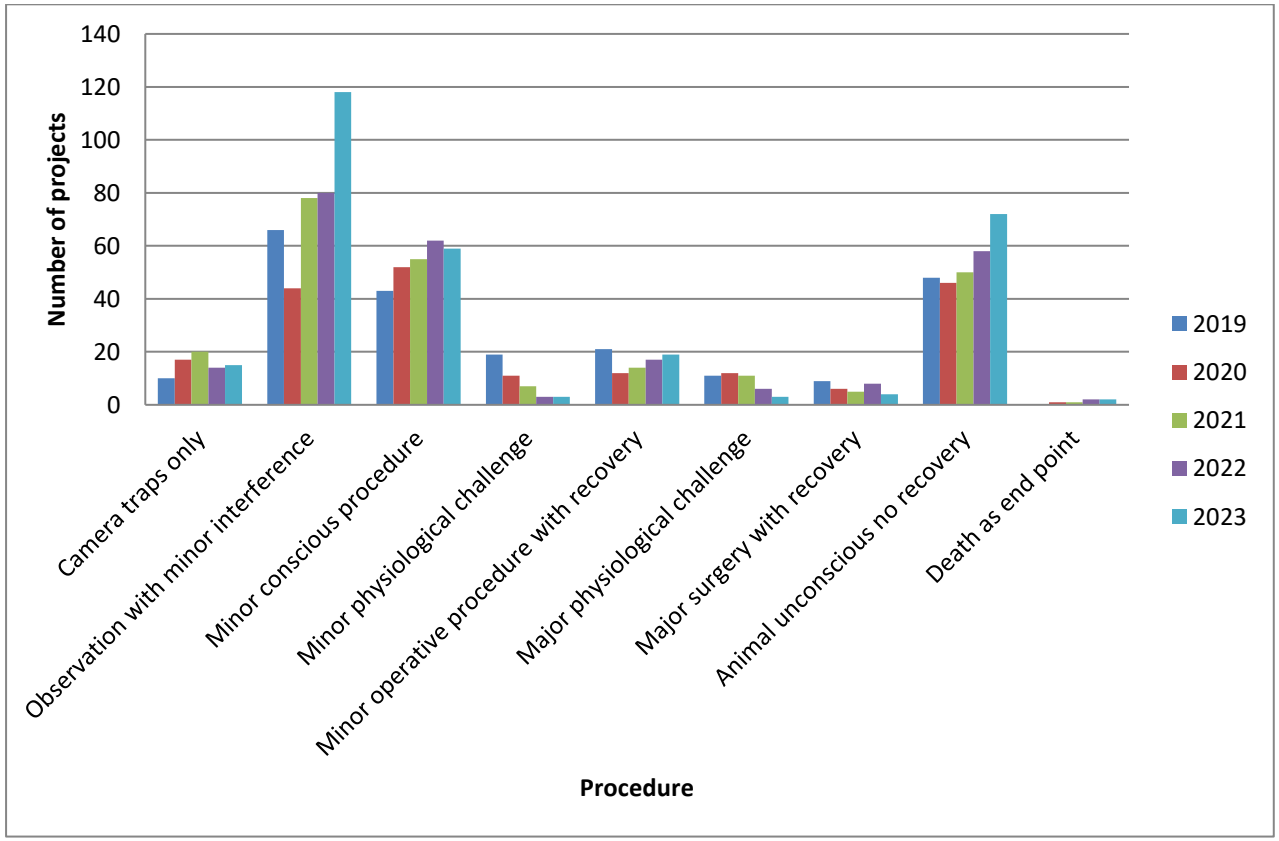


Figure 6 Projects per procedures used between 2019 and 2023



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ABBREVIATIONS

AEC	Animal Ethics Committee
ANU	Australian National University
Aust Ocean Biotech	Australian Ocean Biotechnology Pty Ltd
Birdlife.	Birdlife Tasmania
CRG	Code Reference Group (NHMRC)
CSIRO	Commonwealth Scientific and Industrial Research Organisation
Deakin	Deakin University, Victoria
DPIPWE	Department of Primary Industries, Parks, Water and Environment
Entura	Entura (Hydro Tasmania Group)
FoMI	Friends of Maatsuyker Island
Freshwater	Freshwater Biomonitoring
Gallagher	Gallagher eShepherd Pty Ltd
GHD	GHD Pty Ltd
Monash	Monash University
Murdoch	Murdoch University
NHMRC	National Health and Medical Research Council
North Barker	North Barker Ecosystem Services
NRE Tas	Department Natural Resources and Environment Tasmania
NRM Sth	Natural Resource Management – South
NSW DPI	New South Wales Department Primary Industry
STTAS	Sustainable Timber Tasmania
TLC	Tasmanian Land Conservancy
Treidlia	Treidlia Biovet Pty Ltd, New South Wales
UAdelaide	The University of Adelaide, South Australia
UNSW	The University of New South Wales
UQLD	The University of Queensland
USydney	University of Sydney, New South Wales
UTAS	University of Tasmania
Virbac	Virbac (Australia) Pty Ltd
Vic DJPR	Victorian Dept Jobs, Precinct and Regions
VWSG	Victorian Wader Study Group Inc
3Rs	Replacement, Reduction and Refinement

End