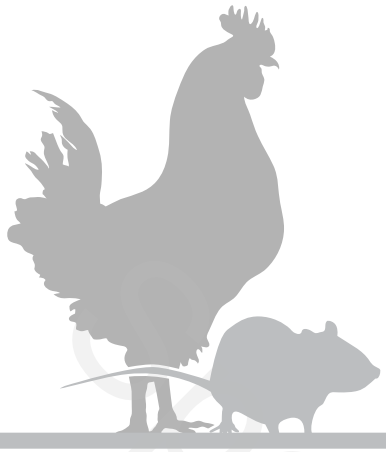

CCAC Animal Data Report

2013

Speaking of Research

Canadian Council on Animal Care
Conseil canadien de protection des animaux

ACKNOWLEDGMENTS

The CCAC extends its sincere thanks to all those responsible for submitting annual animal data for 2013. Without the work and dedication of animal care committee members and coordinators, investigators, and teachers, this report would not be possible.

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INTRODUCTION

As part of its accountability to the Canadian public and its commitment to transparency, the Canadian Council on Animal Care (CCAC) publishes an annual report on the number of animals included in Canadian science for research, teaching and testing. CCAC-certified institutions are also required to provide specific information regarding the types of animal-based science conducted and the invasiveness of the procedures undertaken. These data help the CCAC, CCAC-certified institutions and their animal care committees make decisions on allocation of additional animal care to areas where there is the potential for pain and distress.

For additional detailed data, a comprehensive breakdown of the 2013 animal data is available on the CCAC website in sortable and downloadable Excel files.

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SUMMARY OF ANIMAL DATA FOR 2013

In 2013, there were 3,023,184 animals used in research, teaching and testing reported to the CCAC (Figure 1 and Table 1).

- The three animal types most often used in 2013 were mice (40.8%), fish (32.1%) and rats (7.5%) (Figure 1).
- The majority of animals (61.6%) were used in studies of a fundamental nature/basic research or Purpose of Animal Use (PAU) 1, representing 1,897,813 animals (Table 2).
- The benefit of assigning Category of Invasiveness (CI) to protocols prospectively is that it allows animal care committees to signal to the scientific staff, veterinarians and animal care staff the type of care a cohort of animals should receive. In the highest Category of Invasiveness E or CI E, 78,294 (2.5%) animals were counted (Table 3), down from 93,242 (3.1%) counted in 2012. The three types of animals most frequently used in CI E were fish, mice and guinea pigs.

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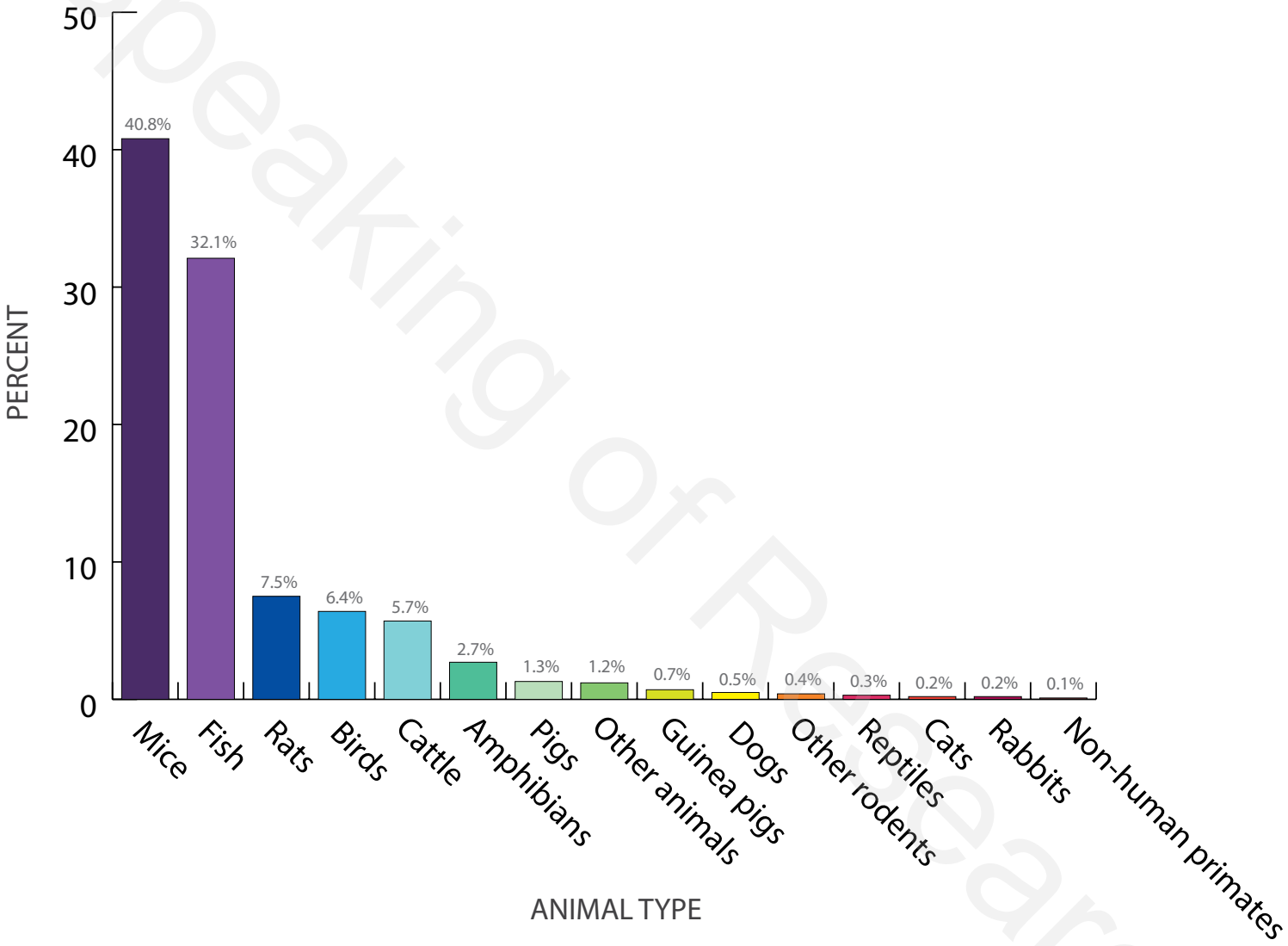
NUMBER AND TYPE OF ANIMALS IN SCIENCE

Figure 1: Percentage of animals used in science at CCAC-certified institutions by animal type in 2013



Source: The data for this figure were derived from Excel File 1. These represent the number of animals used for research, teaching and testing in 2013.

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Table 1: Number of animals used in science at CCAC-certified institutions by animal type in 2013

ANIMAL TYPE	NUMBER OF ANIMALS
Mice	1,233,196
Fish	970,969
Rats	228,143
Birds	192,394
Cattle	171,394
Amphibians	82,542
Pigs	37,913
Other animals	35,430
Guinea pigs	20,687
Dogs	14,685
Other rodents	10,738
Reptiles	8,458
Cats	6,833
Rabbits	5,733
Non-human primates	4,069
Total	**3,023,184**

Source: The data for this table were derived from Excel File 1. These represent the number of animals used for research, teaching and testing in 2013.

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PURPOSE OF ANIMAL USE

Purpose of Animal Use or PAU refers to the reason why an animal was included in a scientific study. Each animal used in an animal-based protocol at a CCAC-certified institution is prospectively assigned to a single PAU. The CCAC collects and publishes data for PAU 1 through 5. For more information on PAUs refer to the *Instructions for Completion of the CCAC Animal Use Data Form (AUDF)*.

The purposes of animal use are:

PAU 1 Studies of a fundamental nature in science relating to essential structures or functions

PAU 2 Studies for medical purposes, including veterinary medicine, that relate to human or animal diseases or disorders

PAU 3 Studies for regulatory testing of products for the protection of humans, animals, or the environment

PAU 4 Studies for the development of products or appliances for human or veterinary medicine

PAU 5 Education and training of individuals in post-secondary institutions or facilities

Table 2: Number of animals used in science at CCAC-certified institutions by purpose of animal use (PAU) in 2013

PAU	NUMBER OF ANIMALS
1	1,897,813
2	528,116
3	243,383
4	182,050
5	228,759
Total	**3,080,121**

Source: The data for this table were derived from Excel File 2. Animals can be used in more than one protocol provided these additional protocols do not result in pain. Some animals have been counted more than once in this dataset. These data can't be compared accurately to animal data reports prior to 2012.

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CATEGORY OF INVASIVENESS

Category of invasiveness or CI describes the level of pain and/or distress that an animal could potentially be exposed to while in a scientific study. In Canada, CIs are assigned prospectively to animal-based protocols for scientific purposes. A precautionary approach is taken by animal care committees in assigning the highest CI indicative of the potential level of pain and distress to be experienced by any of the animals within the protocol. For example, in a protocol where animals are given different doses of a drug, only a few of the animals might actually experience pain and distress. However, 100% of the animals included in the study would be assigned the highest CI.

The benefit of assigning CIs prospectively is that it allows animal care committees to signal to the scientific staff, veterinarians and animal care staff the type of care a cohort of animals should receive. Staff place more emphasis on animals used in protocols with higher CIs to ensure that these animals receive additional and appropriate care to mitigate, as far as possible, any pain or distress they might experience. Examples of enhanced care could include analgesia, increased bedding, warmth, or softer food.

In 2013, only 2.5% of animals in protocols were assigned to CI E protocols, the most invasive category. Just under half of the animals (48.1%) assigned to these CI E protocols were used for testing purposes, which are required by governments to ensure that new drugs, vaccines and products are safe and efficacious for use in humans and other animals.

Since 1997, protocols involving the generation of genetically modified animals are required to be assigned to the category CI D as a precaution against any unforeseen negative consequences of the modification. Animal care committees are asked to re-classify the protocol (generally to a lower CI), once the welfare status of the new animal lines has been confirmed; however, this precautionary period can be long term and will often exceed the reporting period. As a consequence, the rise in CI D protocols in recent years is most likely a direct reflection of the increasing numbers of genetically modified animals involved in scientific studies.

The categories of invasiveness are:

CI A Experiments on most invertebrates or on live isolates

CI B Experiments which cause little or no discomfort or stress

CI C Experiments which cause minor stress or pain of short duration

CI D Experiments which cause moderate to severe distress or discomfort

CI E Procedures which cause severe pain near, at, or above the pain tolerance threshold of unanesthetized conscious animals

The CCAC collected and published data for CI B through E in this report. For more information about CI's, refer to the *CCAC policy statement on: categories of invasiveness in animal experiments* and, for protocols using wildlife, the *CCAC guidelines on: the care and use of wildlife*.

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Table 3: Number of animals in science at CCAC-certified institutions by category of invasiveness (CI) in 2013

CI	NUMBER OF ANIMALS
B	812,118
C	1,013,414
D	1,176,295
E	78,294
Total	**3,080,121**

Source: The data for this table were derived from Excel File 2. Animals can be used in more than one protocol provided these additional protocols do not result in pain. Some animals have been counted more than once in this dataset. These data can't be compared accurately to animal data reports prior to 2012.

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CHANGES TO THE CCAC ANIMAL DATA REPORT AND DATA MANAGEMENT

CCAC certification is a condition for Canadian institutions to receive research funding from Canada's major national funding agencies (Canadian Institutes for Health Research and the Natural Sciences and Engineering Research Council) and other research funding bodies. Many CCAC-certified institutions do not receive this funding but choose to participate in the CCAC program for public accountability and to ensure they meet national standards of animal ethics and care.

Annually, CCAC-certified institutions are required to report on metrics related to animal research, teaching and testing conducted at their institutions, including the number of animals in the studies, the purpose of those studies, and the categories of invasiveness. Annual animal data reports have been published by the CCAC since 1975.

Since then, the process for data collection and publication has undergone major changes in 1996 and more recently, in 2011, when the process and tools used to collect the data were refined. CCAC-certified institutions are now asked to submit animal data using an Excel spreadsheet template and to follow the revised *Instructions for Completion of the CCAC Animal Use Data Form (AUDF)*. For processing and publication of the 2011 annual animal data report, changes included: improvements to data management, collection and validation; revisions to the publication format; and publication of a sortable, Excel spreadsheet file of the data. Due to these differences in data management and reporting, it is not possible to make accurate comparisons with CCAC PAU and CI data prior to 2012.

Data Limitations

In reviewing the information in this report, it is important to note that:

- The CCAC only collects animal data from CCAC-certified institutions. As such, some animals studied in Canadian science may not be accounted for in the CCAC's annual animal data report.
- The information gathered for this report relies on the process described in *Instructions for Completion of the CCAC Animal Use Data Form (AUDF)*. Although extensive validation of the data sets was carried out, it is difficult to determine accurately the extent of potential errors, which may have occurred at any stage in the process.

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GLOSSARY

Animals: All vertebrates and cephalopods used for research, teaching or testing, or for display purposes or eventual use in research, teaching or testing that are subjects of a written animal use protocol. Not all animals are included in the annual animal data reports (for example, breeding colony animals). Refer to the *Instructions for Completion of the CCAC Animal Use Data Form (AUDF)* for the full list of animals that are included.

Animal types: The labels used to describe broad categories of animals. It includes common animal names such as cats, dogs, guinea pigs, pigs, mice, and rats as well as broader labels such as amphibians, birds, fish, reptiles, other rodents, and other animals.

Animal use: The use of an animal in research, teaching or testing, or for display purposes or eventual use in research, teaching or testing, as described in a written animal protocol and approved by the institutional animal care committee.

CCAC-certified institution: A Canadian institution conducting animal-based science that earns a CCAC Certificate of GAP – Good Animal Practice®. The CCAC only collects animal data from institutions that participate in this program.

Category of invasiveness (CI): The level of pain and/or distress that an animal could potentially be exposed to while undergoing a scientific study. Each animal used in science at a CCAC-certified institution will be assigned prospectively to one CI (there are five levels). For more information about CIs, refer to the *CCAC policy statement on: categories of invasiveness in animal experiments* and, for protocols studying wildlife, the *CCAC guidelines on: the care and use of wildlife*.

Number of animals used: The number of animals used for research, teaching and testing during a calendar year (reported by species).

Other animals: An animal type category used to describe animal species that do not fit under any other animal type heading (for example, ferrets). Typically, these are species that are used in science less frequently.

Other rodents: An animal type category used to describe rodent animal species that are not mice, rats or guinea pigs (for example, hamsters).

Protocol: A written description of a scientific study using animals. At CCAC-certified institutions protocols must be reviewed and approved by the institutional animal care committee before animal use can occur.

Purpose of animal use (PAU): A category used to describe the reason why an animal was used in science. Each animal used in scientific studies at CCAC-certified institutions is assigned prospectively to a single PAU (there are six PAUs). For more information on PAUs, refer to the *Instructions for Completion of the CCAC Animal Use Data Form (AUDF)*.

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