

Norecopa: *what's in it for me?*



norecopa.no/DVE-vilt

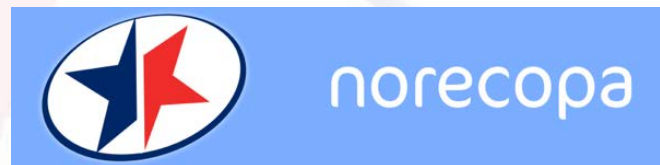
marksandspencer.com

adrian.smith@norecopa.no

Norecopa

Norges konsensus-plattform for erstatning, reduksjon
og forbedring av dyreforsøk

Tilstreber å være en kilde til globale 3R-ressurser



<https://norecopa.no>

Norecopa: PREPARE for better Science



Stiftet i 2007

European Consensus-Platform for Alternatives

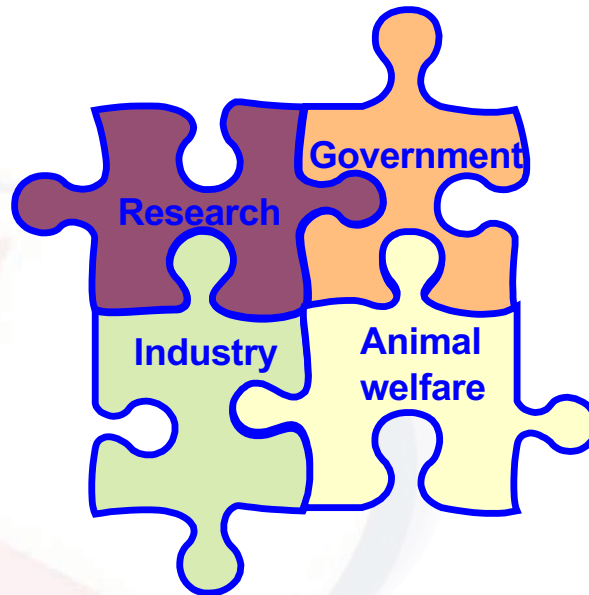
ecopa.eu



ecopa støtter nasjonal plattformer som har representanter for alle de 4 store interessepartene i sitt styre:

Opprettet i 2003:

Danmark
Finland
Frankrike
Italia
Norge
Spania
Sverige
Tyskland



Norecopa: PREPARE for better Science

Styret:

- **Bente Bergersen**, *Mattilsynet, styreleder*
vara: Gunvor Knudsen, Mattilsynet
- **Chris Noble**, *Nofima Tromsø*
vara: Siri Kristine Gåsnes, Veterinærinstituttet
- **Kristian Straume-Lie**, *Biomark*
vara: Ingebjørg Sævareid, Salmon Group
- **Susanna Lybæk**, *Dyrevernalliansen*
vara: Birgitte Fineid, Dyrebeskyttelsen Norge

Norecopa er ikke

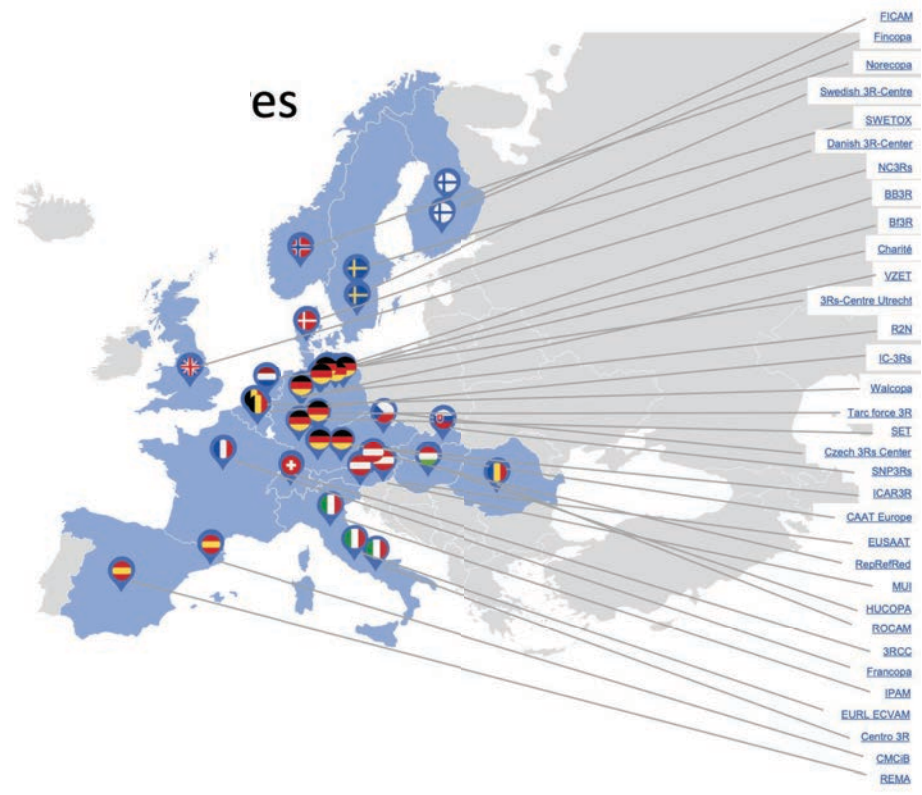
- **en dyrevernorganisasjon**
- **et forvaltningsorgan**
- **en forskerforening**

Norecopa er en selvstendig medlemsorganisasjon med egne meninger som tilstreber konsensus mellom partene

European network of 3R Centres (EU3Rnet)

Interaktivt kart:

norecopa.no/3REuropeOverview



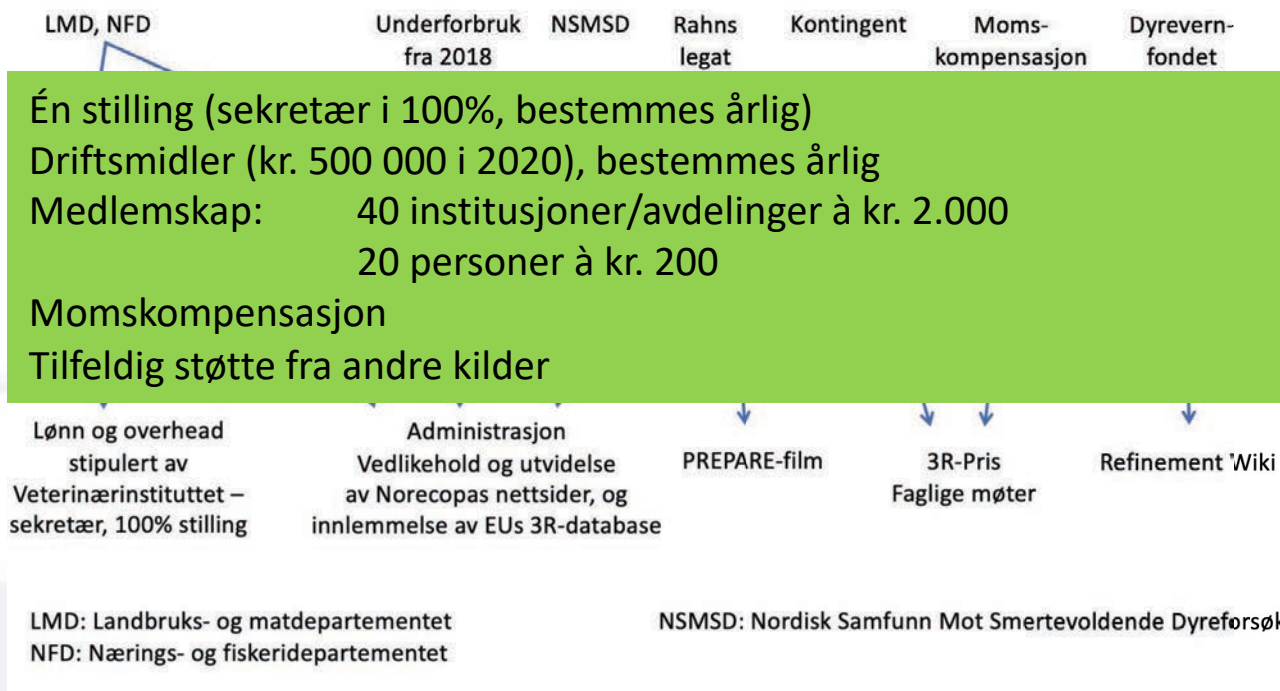
Please note that some of these Centres, such as EURL ECVAM, serve more than the country in which they have been placed.

This overview has been compiled by Norecopa. Please report any errors or send suggestions for additions to post@norecopa.no
 Designed by PresentationGo.com. Flags from flaticon.com

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Årsrapporten fra 2019: Grovfordeling av Norecopas inntekter


Omtrentlig fordeling av Norecopas inntekter i 2019 på de ulike kostnadspostene



Er du eller din arbeidsplass medlem?

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1.  United States
2.  United Kingdom
3.  Canada
4.  India
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7.  Australia
8.  Germany
9.  Brazil
10.  France

over 9 000 nettsider
over 300 000 treff i 2020

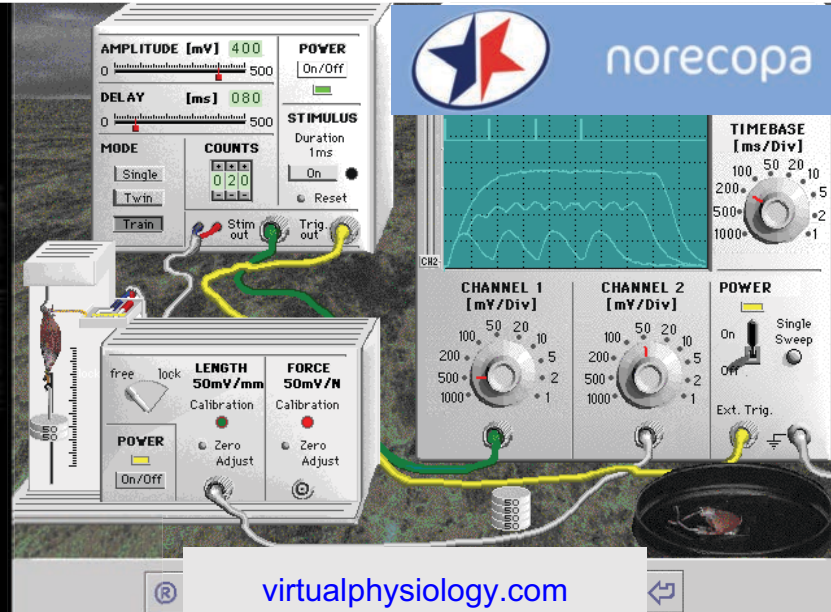
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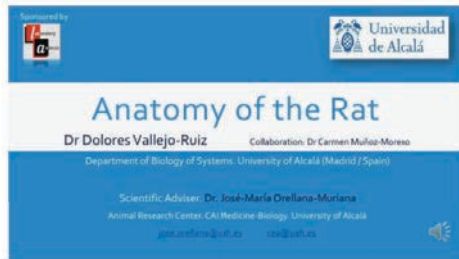
Rat s.c. injection
Norecopa | 1,380 views



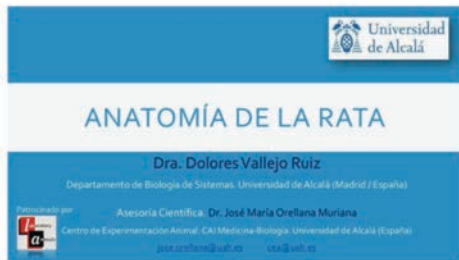
Rat i.p. injection (method 1)
Norecopa | 1,415 views



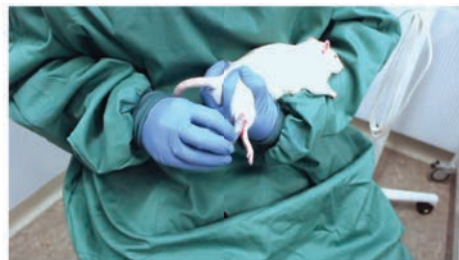
Rat i.p. injection (method 2)
Norecopa | 1,280 views



Anatomy of the rat
Norecopa | 1,310 views



Anatomía de la rata
Norecopa | 977 views



Blood sampling of the rat from the saphenous vein
Norecopa | 5,299 views

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Mink

I.v. injection



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3R-Guide (390 guidelines for animal research and testing): norecopa.no/3r-guide



Guidelines for proper care and use of wildlife in field research

3R Guide database/10812

Prepared by a committee of The Wildlife Society.

Refinements in telemetry procedures

3R Guide database/10693

Seventh report of BVAAWF/FRAME/RSPCA/UFAW Joint Working Group on Refinement, Part A.

Blood sampling microsite

3R Guide database/10659

This microsite provides information on blood sampling from small mammals and the most appropriate technique for removal of blood in

Supplier: **National Centre for the Replacement, Refinement and Reduction of Animals in Research (NC3Rs)**

**Guidelines for field research:
what do we have and what is
missing?**

Penny Hawkins, Research Animals
Department, Science Group, RSPCA

norecopa.no/media/6152/37hawkins.pdf

3R-Guide (390 guidelines for animal research and testing): norecopa.no/3r-guide



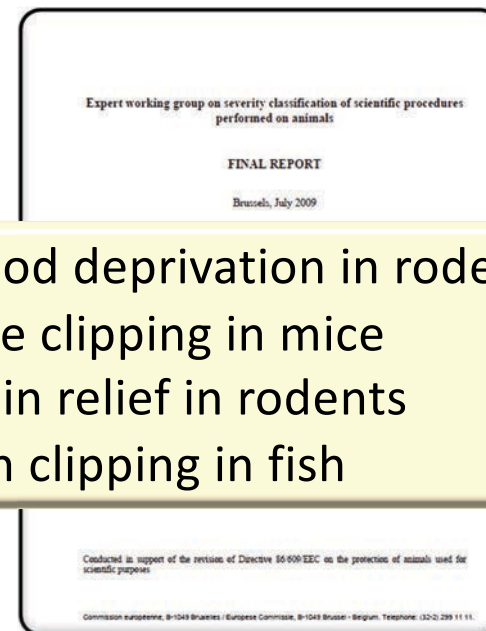
Guidance on the severity classification of procedures involving fish

Report from a Working Group convened by Norecopa


P Hawkins, N Dennison, G Goodman, S Hetherington, S Llywelyn-Jones, K Ryder and AJ Smith
Laboratory Animals, 45: 219-224, 2011
norecopa.no/categories


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Food deprivation in rodents
Toe clipping in mice
Pain relief in rodents
Fin clipping in fish



ec.europa.eu/environment/chemicals/lab_animals/pdf/report_ewg.pdf

 norecopa NORSK [ENGLISH](#)

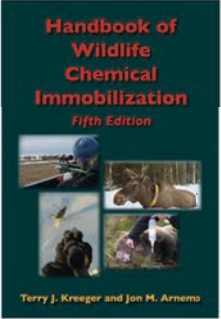
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norecopa.no / [TextBase](#) / [Handbook of Wildlife Chemical Immobilization](#) 

Handbook of Wildlife Chemical Immobilization

By Kreeger, Terry J. and Arnemo, Jon M.

Record number: 13552 (legacy id: 7068)

Description: Handbook of Wildlife Chemical Immobilization is designed for field use and will act as a rapid reference for those faced with the challenge of chemically immobilizing a wild and/or uncooperative animal. This new edition is updated with current advances in chemical immobilization and includes more species than the previous edition. The handbook contains sections on: Drug Possession and Use; Drugs Used for Animal Capture; Equipment Used for Animal Capture; Animal Capture: Putting It All Together; Animal Medical Treatment; Human Medical Treatment; Drug Dosages; and References. The Drug Dosages section contains recommended immobilizing drugs for more than 475 species of animals worldwide. The Reference section is the largest compilation in its field in the world with more than 2400 references.



Comments & References: [Fifth Edition](#), 472 four-colour pages; 111 illustrations. New reinforced, fold-flat flexibound cover. Drug doses for over 500 species. This Handbook covers legalities of drug possession and use; types of drugs used for animal capture; equipment used for animal capture; animal capture procedures and techniques; animal medical treatment; and human emergency medicine, supported by over 2,750 references. Suitable for veterinarians, researchers, veterinary students and teachers worldwide. Sold by the authors. May be ordered from [Terry Kreeger](#) or [Jon Arnemo](#). Please click [here](#) for a book review.

ISBN-10: 0692118411; ISBN-13: 978-0692118412

Price: US\$50.00

See also: *Biomedical Protocols for Free-ranging Brown Bears, Wolves, Wolverines and Lynx* (2017) by [Jon M. Arnemo](#) and [Alina L. Evans](#).

Year: 2018

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Fish | Farm animals | Laboratory animals | Wildlife and wild fish | Cephalopods | Other aquatic animals

norecopa.no / Species



Fish



Farm animals



Laboratory animals



Wildlife and wild fish



Cephalopods



Other aquatic animals

norecopa.no/species



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norecopa.no/meetings/meetings-calendar

Webinar and Meetings calendar

November 2020

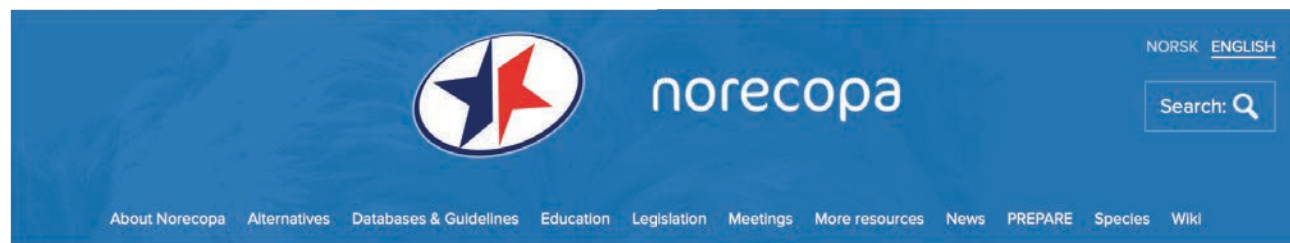
- > [Aquatic Animal Welfare Conference 2020](#), 2-6 November 2020 (virtual event)
- > [Improving the reproducibility of cell line research](#), webinar, 3 November 2020
- > [FSVO/UFAW/HSA Online Symposium: Humanely Ending the Life of Animals](#), 3-4 November 2020
- > [Symposium and Workshop: Replacing Fetal Bovine Serum \(FBS\) in Research and Testing](#), Munich, 3-4 November 2020
- > [EARA Media Training Workshop \(for Spain\)](#), online workshop, 4 November 2020
- > [ABSA 63rd Annual Biosafety and Biosecurity Conference](#), 4 - 6 November 2020 (virtual event)
- > [EARA Media Training Workshop \(for Switzerland\)](#), online workshop, 5 November 2020
- > [Minipigs in translational immunosafety assessment](#), webinar, 5 November 2020
- > [Responsible Research 101 Course: 9-19 November 2020](#)
- > [Anaesthesia, analgesia and surgery in mice and rats](#), online/Stockholm, 9-13 November 2020
- > [Do's and don'ts in rodent surgery aseptic technique](#), webinar, 10 November 2020
- > [EPAA Annual Conference](#), 10 November 2020 (virtual event)
- > [Fondamenti di Gestione di un Moderno Stabulario per Roditori](#), webinar in Italian, 10-11 November 2020

Norecopa: PREPARE for better Science

Pdf-filer av 80+ presentasjoner ved Norecopas møter



Norecopa: PREPARE for better Science



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norecopa.no/meetings/presentations



Most of the presentations on this page are from events arranged by Norecopa. A few of them are from external events where Norecopa's staff have lectured.

They are grouped into

[Koenig 101017.pdf](#)

- > [General presentations](#)
- > [Care and use of animals in field research](#)
- > [Care and use of farm animals in research](#)
- > [Care and use of fish in research](#)

Title	Speaker	Affiliation	Year
General presentations			
Design of animal studies: Increasing reproducibility and animal welfare	Adrian Smith	Norecopa	2020
PREPARE before you ARRIVE: Good reporting relies on good planning	Adrian Smith	Norecopa	2019
Animal-free testing and humans-on-a-chip: How far have we come?	Leopold Koenig	TissUse GMBH, Berlin, Germany	2017
Nordic 3R-Centres: What can we offer?	Tom Bengtsen	Denmark's 3R-Center	2017
Prize-winning 3R activity in Norway	Gøril Eide	University of Tromsø, Norway	2017
Have the 3Rs made any difference?	Elliot Lilley	RSPCA, UK	2017

The screenshot shows the norecopa website with a blue header containing the logo and navigation menu. The main content area is titled "Harmonisation of the Care and Use of Wild and Domestic Mammals and Birds in Field Research" and "Oslo airport Gardermoen, 26-27 October 2017". It includes a paragraph about the meeting's purpose, a list of topics addressed, and a section for the consensus statement.

Harmonisation of the Care and Use of Wild and Domestic Mammals and Birds in Field Research
Oslo airport Gardermoen, 26-27 October 2017

This international consensus meeting was a follow-up of [Norecopa's consensus meeting in 2008](#). There were 32 participants from 4 countries (32 from Norway, 4 from Sweden, 3 from the UK and 1 from the Netherlands). We are very grateful to [Laboratory Animals Ltd.](#) for sponsorship of the meeting.

Much has happened since 2008: not least, implementation of EU's [Directive 2010/63](#) and new [Norwegian legislation](#). Both of these contain new concepts and relatively few specific statements about field research. There are many unanswered questions which need to be discussed. One of these concerns the dividing line between capture, marking and sample collection of animals for management purposes, and for research. Another aim of the meeting was to close the gap between researchers working in the field and those working with laboratory animals, and to present [the PREPARE guidelines](#) for planning research.

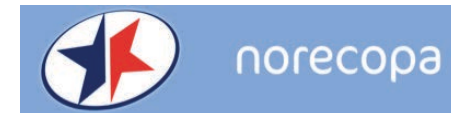
This meeting addressed:

- > EU and national legislation, and how it applies to field research
- > Ethics, health and welfare
- > New technologies, methods and approaches
- > Planning field research

The meeting discussed the use of domestic animals (e.g. sheep and reindeer) in field research, as well as wildlife.

Consensus statement

After the meeting, the participants circulated and unanimously approved [a consensus statement describing the discussions at the meeting, their views on these topics, and a set of Action Points to address.](#)



The document is titled "Harmonisation of the Care and Use of Wild and Domestic Mammals and Birds in Field Research" and "Gardermoen, 26 – 27 October 2017". It is a "Consensus statement from the participants".

A. Introduction

An international consensus meeting was held in October 2017 to discuss the care and use of animals in field research. This was a follow-up of a meeting held in May 2008¹. There were 32 participants, mostly from Norway (24), but also from three EU Member States: Sweden (4), Great Britain (3) and the Netherlands (1).

This document summarises the participants' views on topical aspects of field research. It is a consensus statement that has been circulated to all participants for approval.

The need for knowledge and policy decisions about wildlife management and research continues to increase due to many factors, including:

- conflicts with large carnivores
- public debate about management policies for wildlife
- the effects of climate change on many species
- the emergence of diseases in wildlife such as Chronic Wasting Disease in Cervids
- the development of transport and energy production infrastructures which fragment habitats

Management decisions have often to be made relatively rapidly, in contrast to the process associated with peer review and publication of scientific papers. Management decisions often lead to interventions at the individual level, normally to the detriment of the animal's welfare but arguably for the benefit of the species (although this is often strongly debated). Wildlife research, on the other hand, is more indirect and contributes to a body of knowledge which can be used by those making management decisions.

¹<https://norecopa.no/meetings/wildlife-2008>

Page 1 of 13

norecopa.no/meetings/field-research-2017

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The presentations at the meeting

[Regulating the scientific use of animals taken from the wild](#) (Kim Willoughby, Home Office, UK)

[Marine mammals: challenges and regulations](#) (Lars Folkow, University of Tromsø)

[Challenges for the Authority](#) (Heidi Bugge, Norwegian Food Safety Authority)

[Capture and marking of large carnivores for management purposes](#) (Veronica Sahlén, Norwegian Environment Agency)

[Wildlife health status in Norway](#) (Carlos das Neves, Norwegian Veterinary Institute and University of Tromsø)

[Disease as a confounding problem and the need for surveillance](#) (Bjørnar Ytrehus, Norwegian Institute for Nature Research)

[Can we have one research ethic for wild and domestic animals?](#) (John Linnell, Norwegian Institute for Nature Research)

Ethics and the public's perception of field research (Siri Martinsen, NOAH)

Stones from the glass house: An external perspective of wildlife research (Trond Berg, Norwegian Broadcasting Corporation)

[Efforts to reduce poor reproducibility/translatibility: the PREPARE guidelines](#) (Adrian Smith, Norecopa)

[Tags on birds: how much are our guidelines flights of fancy?](#) (Rory Wilson, Swansea University)

[Camera trapping wildlife in Scandinavia - challenges and opportunities](#) (John Odden, Norwegian Institute for Nature Research)

[Status and challenges with immobilization techniques and equipment](#) (Jon Arnemo, Inland Norway University of Applied Sciences)

*Harmonisation of the Care and Use of Wild and Domestic Mammals
and Birds in Field Research*
Gardermoen, 26 – 27 October 2017

A consensus statement from the participants

A. Introduction

An international consensus meeting was held in October 2017 to discuss the care and use of animals in field research. This was a follow-up of a meeting held in May 2008¹. There were 32 participants, mostly from Norway (24), but also from three EU Member States: Sweden (4), Great Britain (3) and the Netherlands (1).

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¹<https://norecopa.no/meetings/wildlife-2008>

Inneholder oversikter over 13 konkrete tiltak som bør utføres av

- forvaltningen
- forskerne
- Norecopa

pluss 10 "Action Points"

norecopa.no/media/8171/consensus-statement.pdf

JOURNAL OF
WILDLIFE DISEASES

HOME ISSUES ONLINE FIRST AUTHOR INFORMATION HELP

Volume 52, Issue 2s

1 April 2016



RESEARCH ARTICLE | APRIL 01 2016

ANIMAL WELFARE FROM MOUSE TO MOOSE—IMPLEMENTING THE PRINCIPLES OF THE 3RS IN WILDLIFE RESEARCH 

Johan Lindsjö ; Åsa Fahlman; Elin Törnqvist

J Wildl Dis (2016) 52 (2s): S65–S77.

<https://doi.org/10.7589/52.2S.S65>

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 Tools 

norecopa.no/species/wildlife-and-wild-fish

Norecopa: PREPARE for better Science

Djurskyddskonferensen 2020

En djurskyddsstrategi för ett gott djurskydd

Den 17 november 2020 anordnar Jordbruksverket och Sveriges lantbruksuniversitets (SLU:s) vetenskapliga råd för djurskydd en djurskyddskonferens. Årets konferens är helt digital och kommer att livesändas via Jordbruksverkets webbplats.

Konferensens innehåll

Djurskyddskonferensen kommer ta upp aktuella djurskyddsfrågor och djurskyddsforskning och ramar in av den djurskyddsstrategi som Jordbruksverket beslutade om under våren 2020. Eftermiddagen är valbar med två olika spår; ett spår om djurskyddsforskning gris, nötkreatur och fisk samt ett spår om 3R och försöksdjur. Avslutningen är gemensam för hela programmet.

15.00-
15.20 3R vid forskning på vilda djur

Åsa Fahlman, Sveriges lantbruksuniversitet
och Johan Lindsjö, Nationellt centrum för
djurvälstånd

djur.jordbruksverket.se/amnesomraden/djur/djurskydd/djurskyddskonferensen2020

Deltar gjerne i forsknings- og utviklingsprosjekter, bl.a. med søknader til Forskningsrådet og legater

f.eks.

ENRICH Fish 3R-KART EU-datasett Fiskevaksiner NORINA Wiki Konferansestøtte

se f.eks. norecoba.no/species/fish/projects

Norecopas 3R-pris (30.000 kroner + diplom)

Interesse??



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Norecopa's 3R-prize was awarded for the seventh time in 2016 to NINA's Senior Researcher, Øystein Flagstad.

norecopa.no/about-norecopa/3r-prize



Original Article

Laboratory Animals
0(0) 1-7
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DOI: 10.1177/0023677217724823
journals.sagepub.com/home/lan
SAGE

PREPARE: guidelines for planning animal research and testing

Adrian J Smith¹, R Eddie Clutton², Elliot Lilley³, Kristine E Aa Hansen⁴ and Trond Brattelid⁵

Abstract
There is widespread concern about the quality, reproducibility and translatability of studies involving research animals. Although there are a number of reporting guidelines available, there is very little overarching guidance on how to plan animal experiments, despite the fact that this is the logical place to start ensuring quality. In this paper we present the PREPARE guidelines: Planning Research and Experimental Procedures on Animals: Recommendations for Excellence. PREPARE covers the three broad areas which determine the quality of the preparation for animal studies: formulation, dialogue between scientists and the animal facility, and quality control of the various components in the study. Some topics overlap and the PREPARE checklist should be adapted to suit specific needs, for example in field research. Advice on use of the checklist is available on the Norecoba website, with links to guidelines for animal research and testing, at <https://norecoba.no/PREPARE>.

Keywords
guidelines, planning, design, animal experiments, animal research
Date received: 5 April 2017; accepted: 27 June 2017

Introduction
The quality of animal-based studies is under increasing scrutiny, for good scientific and ethical reasons. Studies of papers reporting animal experiments have revealed alarming deficiencies in the information provided,^{1,2} even after the production and journal endorsement of reporting guidelines.³ There is also widespread concern about the lack of reproducibility and translatability of laboratory animal research.⁴⁻⁷ This can, for example, contribute towards the failure of drugs when they enter human trials.⁸ These issues come in addition to other concerns, not unique to animal research, about publication bias, which tends to favour the reporting of positive results and can lead to the acceptance of claims as fact.⁹ This has understandably sparked a demand for reduced waste when planning experiments involving animals.¹⁰⁻¹² Reporting guidelines alone cannot solve the problem of wasteful experimentation, but thorough planning will increase the likelihood of success and is an important step in the implementation of the 3Rs of Russell & Burch (replacement, reduction, refinement).¹³ The importance of attention to detail at all stages is, in our experience, often underestimated by scientists. Even small practical details can cause omissions or artefacts that can ruin experiments which in all other respects have been well-designed, and generate health risks for all involved. There is therefore, in our opinion, an urgent need for detailed but overarching guidelines for researchers on how to plan animal experiments which are safe and scientifically sound, address animal

Pre-published under Open Access on 3 August 2017 in *Laboratory Animals*, sponsored by the Universities Federation for Animal Welfare (UFAW), UK



<https://doi.org/10.1177/0023677217724823>

Lest eller nedlastet over 15 000 ganger

Smith, AJ, Clutton, RE, Lilley, E, Hansen KEAa, Brattelid, T. (2018):
PREPARE: Guidelines for planning animal research and testing.
Laboratory Animals, 52(2): 135-141.
DOI: [10.1177/0023677217724823](https://doi.org/10.1177/0023677217724823)

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PREPARE:

Planning Research and Experimental Procedures on Animals: Recommendations for Excellence

PREPARE dekker 15 temaer:

Formulation of the study

1. Literature searches
2. Legal issues
3. Ethical issues, harm-benefit assessment and humane endpoints
4. Experimental design and statistical analysis

Dialogue between scientists and the animal facility

5. Objectives and timescale, funding and division of labour
6. Facility evaluation
7. Education and training
8. Health risks, waste disposal and decontamination

Methods

9. Test substances and procedures
10. Experimental animals
11. Quarantine and health monitoring
12. Housing and husbandry
13. Experimental procedures
14. Humane killing, release, reuse or rehoming
15. Necropsy



PREPARE



The PREPARE Guidelines Checklist Planning Research and Experimental Procedures on Animals: Recommendations for Excellence

Adrian J. Smith¹, R. Eddie Clutton¹, Elliot Lilley¹, Kristine E. Aa. Hanssen¹ & Trond Brattelid²
¹Norecopa, c/o Norwegian Veterinary Institute, P.O. Box 730 Skistum, 0106 Oslo, Norway; ²Royal (Dick) School of Veterinary Studies, Easter Bush, Midlothian, EH25 9RG, U.K.; ³Research Animals Department, Science Group, RSPCA, Woburnforce Way, Southwater, Horsham, West Sussex, RH13 9RS, U.K.; ⁴Section of Experimental Biomedicine, Department of Production Animal Clinical Sciences, Faculty of Veterinary Medicine, Norwegian University of Life Sciences, P.O. Box 8146 Dep., 0033 Oslo, Norway; ⁵Division for Research Management and External Funding, Western Norway University of Applied Sciences, 5020 Bergen, Norway.

PREPARE³ consists of planning guidelines which are complementary to reporting guidelines such as ARRIVE⁴. PREPARE covers the three broad areas which determine the quality of the preparation for animal studies:

1. Formulation of the study
2. Dialogue between scientists and the animal facility
3. Quality control of the components in the study

The topics will not always be addressed in the order in which they are presented here, and some topics overlap. The PREPARE checklist can be adapted to meet special needs, such as field studies. PREPARE includes guidance on the management of animal facilities, since in-house experiments are dependent upon their quality. The full version of the guidelines is available on the Norecopa website, with links to global resources, at <https://norecopa.no/PREPARE>.

The PREPARE guidelines are a dynamic set which will evolve as more species- and situation-specific guidelines are produced, and as best practice within Laboratory Animal Science progresses.

Topic	Recommendation
(A) Formulation of the study	
1. Literature searches	<input type="checkbox"/> Form a clear hypothesis, with primary and secondary outcomes. <input type="checkbox"/> Consider the use of systematic reviews. <input type="checkbox"/> Decide upon databases and information specialists to be consulted, and construct search terms. <input type="checkbox"/> Assess the relevance of the species to be used, its biology and suitability to answer the experimental questions with the least suffering, and its welfare needs. <input type="checkbox"/> Assess the reproducibility and translatability of the project.
2. Legal issues	<input type="checkbox"/> Consider how the research is affected by relevant legislation for animal research and other areas, e.g. animal transport, occupational health and safety. <input type="checkbox"/> Locate relevant guidance documents (e.g. EU guidance on project evaluation).
3. Ethical issues, harm-benefit assessment and humane endpoints	<input type="checkbox"/> Construct a lay summary. <input type="checkbox"/> In dialogue with ethics committees, consider whether statements about this type of research have already been produced. <input type="checkbox"/> Address the 3Rs (replacement, reduction, refinement) and the 3Ss (good science, good sense, good sensibilities). <input type="checkbox"/> Consider pre-registration and the publication of negative results. <input type="checkbox"/> Perform a harm-benefit assessment and justify any likely animal harm. <input type="checkbox"/> Discuss the learning objectives, if the animal use is for educational or training purposes. <input type="checkbox"/> Allocate a severity classification to the project. <input type="checkbox"/> Define objective, easily measurable and unequivocal humane endpoints. <input type="checkbox"/> Discuss the justification, if any, for death as an end-point.
4. Experimental design and statistical analysis	<input type="checkbox"/> Consider pilot studies, statistical power and significance levels. <input type="checkbox"/> Define the experimental unit and decide upon animal numbers. <input type="checkbox"/> Choose methods of randomisation, prevent observer bias, and decide upon inclusion and exclusion criteria.

Topic	Recommendation
(B) Dialogue between scientists and the animal facility	
5. Objectives and timescale, funding and division of labour	<input type="checkbox"/> Arrange meetings with all relevant staff when early plans for the project exist. <input type="checkbox"/> Construct an approximate timescale for the project, indicating the need for assistance with preparation, animal care, procedures and waste disposal/decontamination. <input type="checkbox"/> Discuss and disclose all expected and potential costs. <input type="checkbox"/> Construct a detailed plan for division of labour and expenses at all stages of the study.
6. Facility evaluation	<input type="checkbox"/> Conduct a physical inspection of the facilities, to evaluate building and equipment standards and needs. <input type="checkbox"/> Discuss staffing levels at times of extra risk.
7. Education and training	<input type="checkbox"/> Assess the current competence of staff members and the need for further education or training prior to the study.
8. Health risks, waste disposal and decontamination	<input type="checkbox"/> Perform a risk assessment, in collaboration with the animal facility, for all persons and animals affected directly or indirectly by the study. <input type="checkbox"/> Assess, and if necessary produce, specific guidance for all stages of the project. <input type="checkbox"/> Discuss means for containment, decontamination, and disposal of all items in the study.
(C) Quality control of the components in the study	
9. Test substances and procedures	<input type="checkbox"/> Provide as much information as possible about test substances. <input type="checkbox"/> Consider the feasibility and validity of test procedures and the skills needed to perform them.
10. Experimental animals	<input type="checkbox"/> Decide upon the characteristics of the animals that are essential for the study and for reporting. <input type="checkbox"/> Avoid generation of surplus animals.
11. Quarantine and health monitoring	<input type="checkbox"/> Discuss the animals' likely health status, any needs for transport, quarantine and isolation, health monitoring and consequences for the personnel.
12. Housing and husbandry	<input type="checkbox"/> Attend to the animals' specific instincts and needs, in collaboration with expert staff. <input type="checkbox"/> Discuss acclimatization, optimal housing conditions and procedures, environmental factors and any experimental limitations on these (e.g. food deprivation, solitary housing).
13. Experimental procedures	<input type="checkbox"/> Develop refined procedures for capture, immobilisation, marking, and release or rehoming. <input type="checkbox"/> Develop refined procedures for substance administration, sampling, sedation and anaesthesia, surgery and other techniques.
14. Humane killing, release, reuse or rehoming	<input type="checkbox"/> Consult relevant legislation and guidelines well in advance of the study. <input type="checkbox"/> Define primary and emergency methods for humane killing. <input type="checkbox"/> Assess the competence of those who may have to perform these tasks.
15. Necropsy	<input type="checkbox"/> Construct a systematic plan for all stages of necropsy, including location, and identification of all animals and samples.

References

1. Smith AJ, Clutton RE, Lilley E, Hanssen KEA & Brattelid T. PREPARE: Guidelines for Planning Animal Research and Testing. *Laboratory Animals*, 2017. DOI: 10.1177/0023677217724823.
2. Kilkenny C, Browne WJ, Cuthill IC et al. Improving Bioscience Research Reporting: The ARRIVE Guidelines for Reporting Animal Research. *PLoS Biology*, 2010; DOI: 10.1371/journal.pbio.1000412.

Further information
<https://norecopa.no/PREPARE> | post@norecopa.no | [@norecopa](https://twitter.com/norecopa)



The screenshot shows the top navigation bar of the norecopa website. It features the norecopa logo on the left, the text 'norecopa' in the center, and language options 'NORSK' and 'ENGLISH' on the right. Below the logo is a search bar with the text 'Search: Q'. A horizontal menu contains the following items: 'About Norecopa', 'Alternatives', 'Databases & Guidelines', 'Education', 'Legislation', 'Meetings', 'More resources', 'News', 'PREPARE', 'Species', and 'Wiki'.

- PREPARE Checklist | 1-Literature searches | 2-Legal issues | 3-Ethical issues, Harm-Benefit Assessment and humane endpoints
- 4-Experimental design and statistical analysis | 5-Objectives and timescale, funding and division of labour | 6-Facility evaluation
- 7-Education and training | 8-Health risks, waste disposal and decontamination | 9-Test substances and procedures

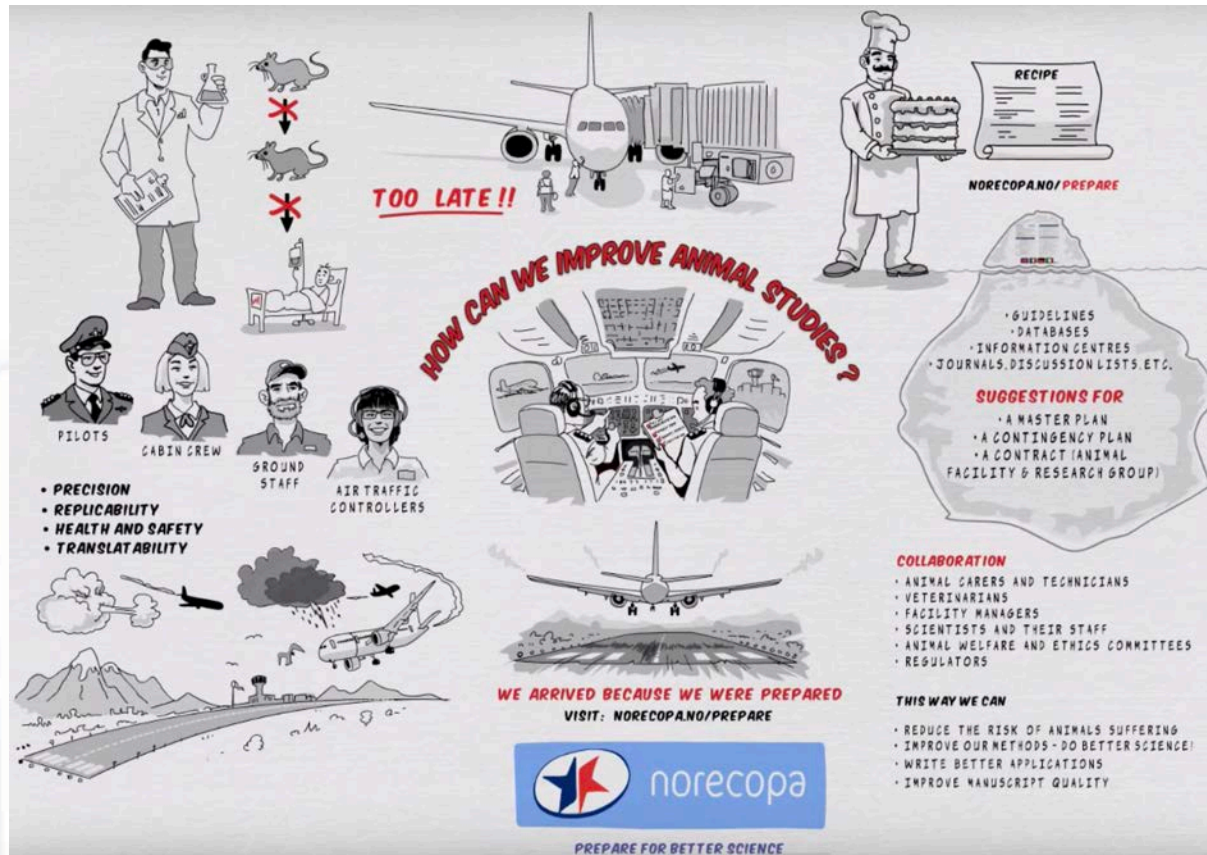
Links to quality guidelines and scientific papers worldwide on e.g. blood sampling, injection volumes, housing and husbandry, analgesia, humane endpoints, experimental design

Harm-Benefit Assessment

An evaluation of the likely sources and level of suffering of a planned procedure, followed by an assessment of the potential benefits of the research weighed against these harms, lies at the heart of [legislation in the EU](#) and elsewhere. Advice on how to conduct a harm-benefit analysis is available here. [A framework for severity assessment and severity classification](#) must be established and justified. The likely adverse effects of each procedure should be described, along with their likely incidence and methods of recognising them, with indications of how these effects can be mitigated by implementing refinement. This necessitates the involvement of personnel with the relevant expertise to recognise, assess and reduce animal suffering, especially severe suffering. [Guidance on this is available on the RSPCA website](#). Specific justification of all unalleviated animal

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Clicker training

Clicker training is an operant conditioning based on positive reinforcement. When the animal offers the desired behavior, a *click* or another distinctive sound (secondary reinforcer) is delivered and within the following few seconds the reward is presented (primary reinforcer)^[1]. The *click* bridges the time between the desired behavior and the presentation of the reward^[1]. A target stick providing a visual guide for the animal can be used for the training.

Animals are usually trained individually, though it is also possible to perform clicker training in a groups, e.g. in mice, rats, and rabbits. For rats, it was demonstrated that they learned tasks by observing the clicker training of their cage mates^[2].

Clicker training can be used to train animals in a stress-free way. The following behaviours are examples for what this technique can be used for:

Mice: entering a tunnel, following a target stick, climbing on the palm of the hand^[3]

Rats: following a target stick, voluntarily change cages

Rabbits: touching a target stick

Pigs: Pig training with clicker and desired behavior is reinforced with corn or treats and apple juice^[4].



Left: A mouse is following the target stick on the experimenter's hand. If the hand is lifted, the mouse will remain on the palm of the hand. Right: The mice are trained in a group. Two mice are following the target stick on the palm of the experimenter's hand.

1. ↑ 1.0 1.1 Feng, Lynna C.; Howell, Tiffani J.; Bennett, Pauleen C. (1 August 2016). "How clicker training works: Comparing Reinforcing, Marking, and Bridging Hypotheses" [↗](#). *Applied Animal Behaviour Science*. **181**: 34–40. doi:10.1016/j.applanim.2016.05.012 [↗](#). ISSN 0168-1591 [↗](#).
2. ↑ 2.0 2.1 Leidinger, Charlotte Sophie; Kaiser, Nadine; Baumgart, Nadine; Baumgart, Jan (25 October 2018). "Using Clicker Training and Social Observation to Teach Rats to Voluntarily Change Cages" [↗](#). *JoVE (Journal of Visualized Experiments)* (140): e58511. doi:10.3791/58511 [↗](#). ISSN 1940-087X [↗](#). PMC 6235608 [↗](#). PMID 30417890 [↗](#).
3. ↑ Leidinger, Charlotte; Herrmann, Felix; Thöne-Reineke, Christa; Baumgart, Nadine; Baumgart, Jan (6 March 2017). "Introducing Clicker Training as a Cognitive Enrichment for Laboratory Mice" [↗](#). *JoVE (Journal of Visualized Experiments)* (121): e55415. doi:10.3791/55415 [↗](#). ISSN 1940-087X [↗](#). PMC 5408971 [↗](#). PMID 28287586 [↗](#).
4. ↑ "Positive Reinforcement Training in Large Experimental Animals" [↗](#) (PDF).

Experts for clicker training in mice and rats: [TARC](#) [↗](#), Mainz, Germany

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Survey sheds light on the 'crisis' rocking research.

Monya Baker

25 May 2016 | Corrected: 28 July 2016

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John P. A. Ioannidis

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Iain Chalmers, DSc • Prof Paul Glasziou, RACGP

Published: June 15, 2009 • DOI: [https://doi.org/10.1016/S0140-6736\(09\)60329-9](https://doi.org/10.1016/S0140-6736(09)60329-9)

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Foredrag om planlegging av dyreforsøk, f.eks. norecopa.no/CBMR



Summary

1. **PLAN**, in collaboration with animal care staff from day one and consult the guidelines: *be PREPARED*
2. **WRITE** a good manuscript, showing that you have been aware of the potential causes of irreproducibility, and with enough detail that scientists can evaluate the model
3. **FLAG** any advances you have made within the 3Rs, preferably in the title or abstract (or write a separate method paper)



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We continue to update a list of resources related to the Covid-19 pandemic and about preparedness in general: [Be PREPAREd](#)

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