Reports and Comments

Welfare implications of breeding and breeding technologies in commercial agriculture

In the wild, selection for evolutionary fitness and good welfare tend to go hand-in-hand. It is plausible that pleasant and unpleasant feelings are carrots and sticks that arose to help prompt the behaviours found by evolution to be successful in this or that circumstance. We feel bad when our evolutionary fitness is under threat and, conversely, actions that improve fitness, from the evolutionary perspective, feel good. We suppose this system guides other animals too. Thus, as argued by Duncan and Petherick (1991), an animal's welfare is largely about its wants and if these — its cognitive needs — are met, physical health will generally be safeguarded. (However, we should note in passing that the system easily breaks down when animals are placed in an environment other than that in which they evolved and in which there are harms they have no sensory equipment to detect or which have not become labelled to them, through natural selection, as aversive.)

In contrast, in our domesticated animals or any of the other animals that we manage, there is very much less evolutionary pressure for good welfare and evolutionary fitness (the production of viable offspring) to remain coupled. The survival and breeding of these animals have been under human control and characters have often been selected for regardless of, or in complete unawareness of, their impact on welfare — how the animals feel. Welfare problems can arise in two ways in these circumstances: (i) by resulting in predisposition to, for example, painful conditions such as lameness, or (ii) through altering the sensitivity of the affect systems such that, for example, animals experience aversive feelings (such as fear) more intensely or more frequently than appropriate. Controlled breeding has huge potential to affect welfare, positively or negatively. Although this is independent of the technology involved — whether traditional selection for particular traits or use of modern biotechnology — it is concerns about the latter that have especially prompted some recent reviews (eg APC 2001; AEBC 2002).

The Farm Animal Welfare Council (FAWC) published a valuable and timely review of the potential impacts of breeding on welfare of farmed livestock in June 2004 (see details below). This includes, in Part II of the Report, a useful round-up of existing codes and regulations relating to breeding and the use of breeding technologies relevant to farmed livestock. European Directive 98/58/EC concerning the protection of animals for farming purposes provides specific legislation in the EU on farm animal breeding. This is implemented in England through The Welfare of Farmed Animals (England) Regulations 2000 which state that "natural or artificial breeding procedures which cause or are likely to cause, suffering or injury to any of the animals concerned shall not be practised', and that "no animal shall be kept for farming purposes unless it can reasonably be expected, on the basis of their genotype or phenotype, that they can be kept without detrimental effect on their health and welfare". FAWC concludes that "the lack of an adequate framework … for the detailed consideration of how European Directive 98/58/EC may be interpreted and enforced is a significant gap in the welfare controls."

Welfare considerations are discussed in Part III of the Report. This deals with welfare consequences of animal breeding, genotype and environment interactions, welfare surveillance, genetic modification, cloning, and ethical considerations. Accurate information on the prevalence of particular problems and on whether they are increasing or decreasing is crucial, and in FAWC's view there is an urgent need for the development of appropriate on-farm surveillance systems in the UK.

The final part of the Report consists of a proposal for a standing committee to consider animal breeding in agriculture. This would oversee the establishment of specific surveillance systems for the detection and monitoring of welfare problems with a genetic origin, advise how problems may be tackled, and address the broad range of ethical and welfare issues that relate to breeding farm livestock. An Appendix lists comments and recommendations on matters related to welfare and breeding from previous FAWC Reports.

This FAWC report highlights a subject of immense importance to animal welfare. Changes arising through breeding, by traditional or modern technological means, have the potential to affect the welfare of animals, throughout their lives, for the better or for the worse. The creation of a body to address and keep under review these issues would help ensure the subject is given the priority it requires.

AEBC (Agriculture and Environment Biotechnology Commission) 2002 Animals and Biotechnology. AEBC: London, UK

APC (The Animal Procedures Committee) 2001 Report on Biotechnology. Available at: http://www.apc.gov.uk/reference/biorec.pdf

Duncan IJH and Petherick JC 1991 The implications of cognitive processes for animal welfare. *Journal of Animal Science 69*: 5017-5022

FAWC (Farm Animal Welfare Council) FAWC Report on the Welfare Implications of Animal Breeding and Breeding Technologies in Commercial Agriculture (June 2004). 43 pp A4 paperback. Published by and available free of charge from the Farm Animal Welfare Council, 1A Page Street, London SW1P 4PQ, UK. Also available at: www.fawc.org.uk/pdf/breedingreport.pdf

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Veterinary health plan for farmed salmon

The Royal Society for the Prevention of Cruelty to Animals (RSPCA) has, with the assistance of Pete Southgate of the Fish Vet Group and Dr Steve Kestin of Bristol University, produced a set of guidance notes for fish farmers and their

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veterinarians on the development of written veterinary health plans for farmed salmon. This booklet (see details below) provides complimentary notes to the RSPCA's welfare standards for farmed salmon and is designed for use in the Freedom Food Scheme — the RSPCA's welfare assurance scheme based in the UK.

The idea of the veterinary health plan is to establish protocols for best practice for the maintenance and improvement of the health status and welfare of the stock. The guidelines are divided into three parts: Part A covers guidelines on fish health, Part B provides guidelines on ensuring fish welfare at slaughter, and Part C concerns the development of a programme for monitoring physical injury and deformity.

The guidelines require that the health plan must cover six key areas: biosecurity, general management, disease and physical injury (control and monitoring), training, major common diseases, and classification of causes of death. Each of these subjects is described in its own section in the booklet, in which the relevant RSPCA welfare standards are also listed. The section on welfare at slaughter covers some basic principles, including handling fish during pre-slaughter crowding, methods on conveying fish to the slaughter table, managing a good stunning operation, assessing the effectiveness of stunning, and exsanguination. To help with the development of a programme for monitoring and scoring injuries and deformities, photographs are provided of a variety of conditions (eg snout injury, jaw deformity, fin damage) in which mild and severe cases are depicted alongside normal animals.

This is a clear and logically presented booklet that provides a helpful checklist on the key elements of a health and welfare plan for farmed salmon.

RSPCA Veterinary Health Plan: Farmed Atlantic Salmon (2003). Royal Society for the Prevention of Cruelty to Animals (RSPCA). Publication number FA15 2.04. 31 pp A5 paperback. Published by and available from the RSPCA, Wilberforce Way, Southwater, Horsham, West Sussex RH13 9RS, UK; website www.rspca.org.uk

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Ramifications of the reproductive management of animals in zoos

Article 17 of the German Animal Protection Act forbids the killing of vertebrate animals unless there is a "reasonable motive". The latter term is not, however, defined. The German Parliament's Committee for Nutrition, Agriculture and Forests concluded, after public discussions on the subject, that "… in principle, reproduction in zoo animals should only be enabled when the young can be guaranteed humane living conditions". There is some pressure therefore in Germany for zoo animals to be prevented from breeding where a surplus might result, rather than for them to be allowed to breed and surplus offspring culled. As Peter Dollinger of the World Association of Zoos and Aquariums (WAZA) puts it, "this criminalises those who, for example, in the interests of an ex-situ breeding programme or of maintaining group sizes and structures that accommodate the species' natural behaviour, do not prevent reproduction even though, at the time of birth, they are unable to predict whether the young will find a final, adequate home two years later".

It was the emergence of such dilemmas that prompted thirty experts (including ethologists, conservationists, veterinarians, ethicists and philosophers) from Switzerland, Austria and Germany to meet at ZOOSchweiz in Central Switzerland from 27th February to 1st March 2003 to discuss practical, ethical, legal and public relations aspects of managing the reproduction of animals in zoos. The proceedings of this meeting have been published recently by WAZA (see details below).

The proceedings comprise some brief introductory essays, papers based on 17 oral presentations delivered at the meeting, various relevant appendix material such as excerpts from Swiss and German animal protection legislation, and a consensus document. The papers cover a very interesting range of subjects relating to zoo animal breeding management. They include 'The tasks of modern zoological gardens and aquariums' (A Rübel), 'On the intrinsic moral value of animals' (P Kampits), 'Proposals for the responsible reproductive management of animals in zoos' (M Stauffacher), 'Childlessness makes zoo animals sick' (T Hildebrandt), 'Interpretation of German law with regard to culling of surplus zoo animals' (J Luy), 'Reproductive management from the animal protection perspective' (C Lerch and P Schlup), and 'Results of a (zoo) visitor survey on the issue of culling zoo animals and their use as food' (M Martys).

The result of the meeting was the production of a consensus document entitled 'Responsible reproductive management: guiding principles'. The abstract is reproduced below.

"In keeping with the requirements of animal welfare standards, the adaptive capacity of wild animals in zoos must not be compromised, nor their functional capabilities allowed to atrophy. Reproductive behaviour is central to this consideration. Therefore, generally speaking zoo animals should not be prevented from breeding. However, whilst this principle is valid for all species irrespective of the emotional value they hold in human eyes, it is not applicable to each and every individual. In the implementation of this principle, it may be necessary to humanely put down ("no pain, no fear") individual animals at times that approximate certain critical events they would encounter in the wild state. Such action should be openly communicated to both zoo staff and the public."

This is a well-produced, valuable and wide-ranging review of an important and topical issue in the conservation management of animals in zoos.

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