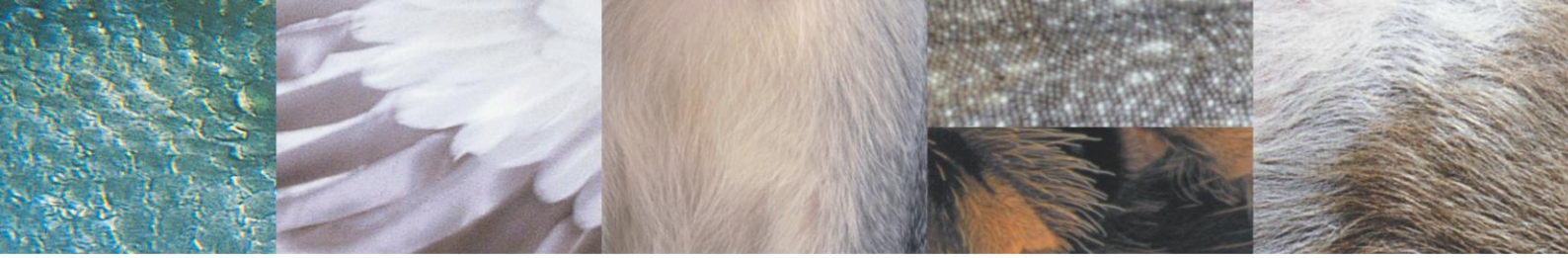

Supplementary resources for members of local ethical review processes

Quail: Good practice for housing and care

Research Animals Department, RSPCA
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Before using these guidance notes, please read the introductory sheet that accompanies this series:
Supplementary resources for lay members: an introduction

Natural history

Species of quail used in the laboratory include the Japanese quail (*Coturnix japonica),* European quail (*Coturnix coturnix*), bobwhite quail (*Colinus virginianus),* California quail (*Lophortyx californica*) and Chinese painted quail (*Excalfactoria chinensis*). This guide focuses on the Japanese quail, as it is most widely used.

Wild quail live in pairs or small social groups and, in the case of European and Japanese quail, form larger groups during migration. Not all species migrate, but most are capable of extremely rapid, upward flight to escape from danger. This can lead to serious head injuries in captivity unless housing and care are appropriate and take account of the needs and behaviour of the species. All quail devote much of their time to scratching and foraging for seeds and invertebrates on the ground. Typical habitats are dense vegetation such as grasslands, bushes alongside rivers and cereal fields.

Domestication does not appear to have significantly altered quail behaviour so it is important to design housing that caters for their most high priority needs which are litter for scratching, pecking and dust bathing; next boxes, and cover. The justification for housing quail in cages should always be questioned, and birds should be housed in pens or aviaries wherever possible.

What quail need

The following list of requirements is based on animal welfare science that has evaluated birds' preferences and motivation for resources, and on the ecology and behaviour of wild birds. More information on quail welfare, housing and care can be found in the references listed at the end of this document.

- **Social housing**

Quail are social animals and should not be singly housed without compelling veterinary or scientific justification. They will form stable 'pecking order' hierarchies in captivity, but adding new individuals to established groups or mixing groups will lead to aggression and should not be attempted. Females can be housed in stable, single sex groups but males should only be pair housed. In mixed sex groups, the ratio of males:females should never be more than 1:4. Breeding birds can be housed in pairs or trios comprising one male and two females.

Aggression can largely be prevented by forming groups before sexual maturity and providing sufficient space and environmental enrichment. If aggression does occur, it should be dealt with by removing the aggressor (if this is just one individual) and reviewing husbandry. If this does not work and injurious pecking is causing acute welfare problems, removing the very tip of the beak (using appropriate equipment with anaesthesia and analgesia) can be undertaken *as a last resort.* Full debeaking causes acute and chronic pain and metal anti-pecking rings cause distress, so neither of these methods should be used. Single housing is also distressing for quail and should only be done with incompatible birds.

- **Solid floor with sand, softwood shaving or straw litter**

Foraging is an extremely important behaviour for quail, and is of course impossible on a wire floor. Behavioural tests have shown that a variety of species, including domestic fowl, strongly prefer a solid floor with litter to a wire floor and this is highly likely to be the case for quail. Birds are prone to foot problems on any kind of flooring and where solid floors with litter are used, careful and regular examination of the feet is necessary to prevent the build-up of hardened food, litter and faeces. If there is compelling scientific justification for a grid area of floor, *e.g.* for faecal collection, at least a third of the floor should be solid with litter.

- **Cover**

Quail have a strong preference for cover, and they show less flight behaviour if they are frightened while under cover. Either natural or artificial cover should always be provided to reduce stress and encourage natural behaviour. Ideas for cover include: horizontal screens, artificial plants, old Christmas trees, potted grass, stacked hay or straw (bales can be made into L-shaped barriers to provide refuge for subordinates), shrubs in outdoor aviaries.

- **Roofs designed to minimise head injuries**

The vertical flight response in quail can lead to serious head injuries if roofs are too low and made of hard materials. Cage or pen height should be at least 30 cm and it is a good idea to construct roofs from flexible material, which will not cause head injuries.

- **Dust bath(s)**

Dustbathing is an important natural behaviour for quail, which helps to maintain feather quality. Birds will go through the motions of dustbathing but without any dustbathing materials ('vacuum' dustbathing) if they are not provided with dust baths. Domestic fowl prefer bathing in materials with small particle sizes such as sand (rather than sawdust) and the same may be true for quail.

- **Nest box and nesting material (laying hens)**

Breeding female quail without access to nest boxes show pre-laying restlessness in a similar way to domestic fowl. Nest boxes can be sited inside the birds' enclosure or clipped onto the side and birds should be provided with chaff or hay for nesting (artificial turf is sometimes provided but is not preferred by quail). Cover is highly valued by laying hens.

- **Opportunities to forage**

All quail will take a variety of fruit, grains, small seeds and invertebrates and should be given a choice of foods to forage for wherever possible. Food can be scattered on the floor, hidden in shredded paper in a trough or among soil in a tray. It can also be presented in interesting ways, such as coring fruit or vegetables and stuffing them with seeds or grain. Other options are alfalfa cubes for pecking or hanging fresh vegetation from the pen roof.

- **Pecking materials and/or objects**

Supplementary objects for pecking can be provided in addition to floor litter. This may reduce aggression in groups of adults and, if provided for chicks, has been shown to reduce fear of new

items and humans when the birds reach adulthood. Ideas for pecking objects include: coloured balls, tubing, cylinders and cubes, stones and pine cones.

- **7cm of feeder length per adult bird**

This length will allow all the birds to access their food simultaneously.

- **Plenty of pen space**

Sufficient space should be provided to allow for all of the above resources and for a range of behaviours, including walking and running which are important for quail. Birds also need to be able to retreat from one another if necessary. Cages are not suitable accommodation for any kind of fowl and their use should be strongly questioned. If there is a genuine requirement for caging, such as containment or a study that requires egg or faeces collection from known individuals, then basic cages should be modified. For example, two or more cages can be combined and enrichment items added, ensuring that the cage roof is appropriately constructed and that cage height is at least 30 cm (see above). If cages are to house laying hens, a nest box should be provided for each one.

Potential husbandry related welfare problems and how to resolve them

Aggression can lead to skin lesions, feather loss and more serious injuries. The causes are not always clear, but the risk can be reduced by providing a good quality and quantity of space and by ensuring that established groups are not mixed. Barriers can also help to defuse aggression by breaking visual contact between birds.

Head injuries are due to escape responses and can be fatal. Fear can be reduced by providing cover and enrichment - especially early in life - and making sure that everyone knows to approach birds sympathetically, wearing the same colour clothing if possible. Birds should always have at least 30 cm headroom.

Injuries due to repeated mating attempts can be reduced by establishing stable groups with appropriate sex ratios before sexual maturity.

Foot problems can occur on grid floors (*e.g.* foot swellings) and solid floors (*e.g.* hardened balls of food, litter and faeces on the feet). Husbandry standards should be high and feet should be regularly monitored when birds are housed on any kind of flooring; solid resting areas should always be provided on grid floors.

Behavioural frustration in breeding females can be avoided by providing nest boxes (or good cover in aviaries) and nesting materials.

Quail housing and care: ERP aide-memoire

- ❖ Social housing in stable groups (females, mixed sex) or pairs (males) ❑
- ❖ Adequate pen space to permit a range of activities and the provision of environmental enrichment ❑
- ❖ Solid flooring with litter to allow foraging ❑
- ❖ Appropriate cover ❑
- ❖ Roofs designed to minimise head injuries (at least 30cm high and of flexible material) ❑
- ❖ Dust baths with materials of a small particle size ❑
- ❖ Nest boxes and nesting material for all breeding females ❑
- ❖ Food presented so as to encourage foraging ❑
- ❖ Supplementary objects for pecking ❑
- ❖ Appropriate feeder length (7cm) to allow simultaneous feeding of all birds ❑

Notes

Recommended references

1. Hawkins P, Morton DB, Cameron D, Cuthill I, Francis R, Freir R, Gosler A, Healy S, Hudson A, Inglis I, Jones A, Kirkwood J, Lawton M, Monaghan P, Sherwin C and Townsend P (2001) Laboratory birds: Refinements in husbandry and procedures. *Laboratory Animals* 35 (Suppl. 1) Download at http://tinyurl.com/3aljtmd

2. Cheng KM, Bennett DC & Mills AD (2010) The Japanese quail. Ch. 42 in *The UFAW Handbook on the Care and Management of Laboratory Animals,* 8th edn (ed by R Hubrecht and J Kirkwood), pp 655-673. Oxford: Wiley-Blackwell.

3. FELASA (2007) *Euroguide on the Accommodation and Care of Animals Used for Experimental and Other Scientific Purposes: Based on the Revised Appendix A of the European Convention ETS123.* London: FELASA. Available for purchase at www.rsmpress.co.uk/bkfelasa.htm

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