

Scenario 1 - Colony cage egg production

Score sheet

Name of scorer: Expert 4

Welfare principles	Welfare criteria	1st round score	90% certain		1st round score	90% certain	
			lower bound	upper bound		lower bound	upper bound
Good feeding	1. Provision and access to food. Animals should have appropriate access to the quantity and quality of appropriate foodstuffs for health and wellbeing.	65	50	75	65	50	75
	2. Provision and access to water. Animals should have appropriate access to the quantity and quality of water for health and wellbeing.	80	70	90	80	70	90
	3. Animals should have comfort when resting.	60	35	65	65	35	65
Good housing	4. Animals should have thermal comfort being neither too hot nor too cold.	65	50	75	65	50	75
	5. Animals should have sufficient space to move freely.	30	15	45	30	15	45
	6. Animals should be free from injuries and diseases (e.g. skin conditions, lameness, bone fractures etc.).	50	40	60	50	40	60
Good health	7. Animals should be free from disease, including metabolic conditions, with high standards of health care and hygiene.	55	30	65	60	40	40
	8. Animals should not suffer pain - for example as a result of poor management, handling, surgical or other procedures, slaughter etc.	40	30	50	40	30	50
	9. Animals should be able to express normal, non-harmful social behaviours (such as grooming and social bonding).	25	15	35	25	15	35
Appropriate behaviour	10. Animals should be able to express other normal behaviours (e.g. foraging, exploring).	20	10	30	20	10	30
	11. Animals should be handled well with positive and/or negative animal human relationships.	30	15	50	30	15	50
	12. Additional aspects not already adequately covered above in relation to the balance between positive and negative affective states for animals.	25	15	45	25	15	45

Scenario 2 - Barn egg production

Score sheet

Name of scorer: Expert 4

Welfare principles	Welfare criteria	1st round score	90% certain		1st round score	90% certain	
			lower bound	upper bound		lower bound	upper bound
Good feeding	1. Provision and access to food. Animals should have appropriate access to the quantity and quality of appropriate foodstuffs for health and wellbeing.	65	50	75	65	50	75
	2. Provision and access to water. Animals should have appropriate access to the quantity and quality of water for health and wellbeing.	80	70	90	80	70	90
	3. Animals should have comfort when resting.	60	50	70	60	50	70
Good housing	4. Animals should have thermal comfort being neither too hot nor too cold.	70	50	80	70	50	80
	5. Animals should have sufficient space to move freely.	55	40	65	55	40	65
	6. Animals should be free from injuries and diseases (e.g. skin conditions, lameness, bone fractures etc.).	55	40	70	55	40	70
Good health	7. Animals should be free from disease, including metabolic conditions, with high standards of health care and hygiene.	45	30	65	40	30	65
	8. Animals should not suffer pain - for example as a result of poor management, handling, surgical or other procedures, slaughter etc.	40	30	50	35	25	35
	9. Animals should be able to express normal, non-harmful social behaviours (such as grooming and social bonding).	30	15	45	35	15	45
Appropriate behaviour	10. Animals should be able to express other normal behaviours (e.g. foraging, exploring).	40	30	50	40	30	50
	11. Animals should be handled well with positive and/or negative animal human relationships.	30	15	50	30	15	50
	12. Additional aspects not already adequately covered above in relation to the balance between positive and negative affective states for animals.	50	35	65	50	35	65

Free-range egg production (not including organic)

Score sheet

Name of scorer: Expert 4

Welfare principles	Welfare criteria	1st round score	90% certain		1st round score	90% certain	
			lower bound	upper bound		lower bound	upper bound
Good feeding	1. Provision and access to food. Animals should have appropriate access to the quantity and quality of appropriate foodstuffs for health and wellbeing.	70	55	80	75	60	85
	2. Provision and access to water. Animals should have appropriate access to the quantity and quality of water for health and wellbeing.	80	70	90	80	70	90
	3. Animals should have comfort when resting.	60	50	70	60	50	70
Good housing	4. Animals should have thermal comfort being neither too hot nor too cold.	65	50	75	60	50	75
	5. Animals should have sufficient space to move freely.	70	50	80	70	50	80
	6. Animals should be free from injuries and diseases (e.g. skin conditions, lameness, bone fractures etc.).	55	40	70	55	40	70
Good health	7. Animals should be free from disease, including metabolic conditions, with high standards of health care and hygiene.	50	30	65	50	30	65
	8. Animals should not suffer pain - for example as a result of poor management, handling, surgical or other procedures, slaughter etc.	40	30	50	37	30	50
	9. Animals should be able to express normal, non-harmful social behaviours (such as grooming and social bonding).	45	25	55	45	25	55
Appropriate behaviour	10. Animals should be able to express other normal behaviours (e.g. foraging, exploring).	60	45	75	60	45	75
	11. Animals should be handled well with positive and/or negative animal human relationships.	60	45	75	60	45	75
	12. Additional aspects not already adequately covered above in relation to the balance between positive and negative affective states for animals.	50	35	60	50	35	60

Comments Round 1

- 75 Suitable food generally available but may be some competition for access. Food lacks interest, diversity and complexity and delivered to birds in a way that doesn't really replicate normal feeding behaviour.
- 10 Clean fresh water available, may be some competition to access. No choice or diversity in water supply and birds do not drink in a naturalistic way.
- 60 Able to use perches in cage and evidence that they do. Not clear if these are available at all rearing stages? Do perches truly meet birds needs for security - better than perching on the floor but not means of space and not very high, is it just better 'less nothing'?
- 75 Ability for thermal environment to be controlled but individual birds cannot make thermal choices. Birds with low feather cover may still be cold compared to fully feathered birds, or too hot if forced to perch in close contact with one another.
- 45 Very limited space, able to make some choices in terms of environment but not much, may have more space as chicks/pullets. Not enough space to stretch wings, preen, wing flip.
- 60 Risks of bone breakage, foot problems, feather pecking injuries in normal housing and high risk of bone breakage at de-population. Incidence considered medium across FAWC report for enriched cages. Maybe less likely in early rearing stages, some data suggest 157 days (25%) in hurtful pain in furnished cages and 68% in enmeshing pain (able to ignore hence less severe).
- 68 Burnt/dust, dermatitis and red mites can be common but maybe more treatable in cages. Medium risk considered in FAWC report. Risks of prolapse, gout, fatty liver and osteoarthritis (calcium depletion, common in caged birds).
- 30 Risk of pain from multiple sources, including at depopulation, estimates of 68% of life in enmeshing pain and 35% in hurtful pain, risk of pain at depopulation. Beak trimming still common. Meta-analysis suggests that mortality is not lower in these systems compared to cage-free.
- 20 Chicks reared without their mothers, no opportunity for any meaningful maternal care. Limited opportunity for play and positive social contact in chicks and pullets. Extremely close contact and limited opportunity for positive social behaviours such as communal dustbathing. Feather pecking and cannibalism suggest no meaningful positive social contact end.
- 30 Almost no opportunities to show these behaviours, maybe some limited foraging and exploration as chicks/pullets.
- 50 Limited opportunity for any meaningful human animal relationships. Arrival of food automatically or no association. Relationships at best neutral but negative around depopulation and other contacts.
- 45 Possibility of sensory load from noise (farm etc), ammonia build up, poor air quality and limited positive experiences in all cases. Very restricted choice and high competition for resources.

Comments Round 2

- Suitable food generally available but may be some competition for access. Food lacks interest, diversity and complexity and delivered to birds in a way that doesn't really replicate normal feeding behaviour.
- Clean fresh water available, may be some competition to access. No choice or diversity in water supply and birds do not drink in a naturalistic way.
- Able to use perches in cage and evidence that they do. Not clear if these are available at all rearing stages? Do perches truly meet birds needs for security - better than perching on the floor but not means of space and not very high, is it just better than nothing?
- Ability for thermal environment to be controlled but individual birds cannot make thermal choices. Birds with low feather cover may still be cold compared to fully feathered birds, or too hot if forced to perch in close contact with one another.
- Very limited space, able to make some choices in terms of environment but not much, may have more space as chicks/pullets. Not enough space to stretch wings, preen, wing flip.
- Risks of bone breakage, foot problems, feather pecking injuries in normal housing and high risk of bone breakage at de-population. Incidence considered medium across FAWC report for enriched cages. Maybe less likely in early rearing stages, some data suggest 157 days (25%) in hurtful pain in furnished cages and 68% in enmeshing pain (able to ignore hence less severe).
- Burnt/dust, dermatitis and red mites can be common but maybe more treatable in cages. Medium risk considered in FAWC report. Risks of prolapse, gout, fatty liver and osteoarthritis (calcium depletion, common in caged birds).
- Risk of pain from multiple sources, including at depopulation, estimates of 68% of life in enmeshing pain and 35% in hurtful pain, risk of pain at depopulation. Beak trimming still common. Meta-analysis suggests that mortality is not lower in these systems compared to cage-free.
- Chicks reared without their mothers, no opportunity for any meaningful maternal care. Limited opportunity for play and positive social contact as chicks and pullets. Extremely close contact and limited opportunity for positive social behaviours such as communal dustbathing. Feather pecking and cannibalism suggest no meaningful positive social contact end.
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- 10 Clean fresh water available, may be some competition to access. No choice or diversity in water supply and birds do not drink in a naturalistic way.
- 70 Able to use perches in cage and evidence that they do. Not clear if these are available at all rearing stages? More variety in perches and may allow greater comfort as birds can make choices, although may be some competition for access to preferred locations.
- 70 Ability for thermal environment to be controlled and individual birds can make some thermal choices. Birds with low feather cover may still be cold compared to fully feathered birds, but some protection from chilling as housed.
- 65 Some space and able to exercise greater choices in terms of environment compared to caged hens, may have more space as chicks/pullets. Should have space to stretch wings, flap and preen, although this may necessitate other birds?
- 40 Risks of bone breakage and foot bone damage maybe higher although reduced, with experience, 82% fractures reported in one study. Foot problems, feather pecking injuries in normal housing and high risk of bone breakage at de-population. Incidence considered medium across FAWC report for enriched cages. Maybe less likely in early rearing stages, some data suggest 157 days (25%) in hurtful pain in furnished cages and 68% in enmeshing pain (able to ignore hence less severe).
- 30 Burnt/dust, dermatitis and red mites can be common (hyperkeratosis=42%, dermatitis=28%, burnt/dust=2% in Belgian study) and maybe higher risk than in cages. High risk considered in FAWC report. Risks of prolapse, gout, fatty liver and osteoarthritis (calcium depletion, common in caged birds, maybe similar in avian).
- 30 Risk of pain from multiple sources, including at depopulation, estimates of 25% of life in enmeshing pain and 32% in hurtful pain, risk of severe pain at depopulation. Beak trimming still likely. Meta-analysis suggests that mortality is not lower in these systems compared to cage-free.
- 40 Chicks reared without their mothers, no opportunity for any meaningful maternal care. Limited opportunity for play and positive social contact in chicks and pullets. Opportunity for positive social behaviours such as communal dustbathing, but still high stocking density, some choice maybe about roosting companions. Feather pecking and cannibalism still occur so suggests issues with meaningful positive social contact still exist.
- 50 Some opportunities to show these behaviours, although actual resources may be limited for this to be meaningful. Some limited foraging and exploration as chicks/pullets.
- 50 Limited opportunity for any meaningful human animal relationships. Arrival of food unlikely to sufficient for positive HAR to develop. Relationships at best neutral but negative around depopulation and other contacts.
- 45 Possibility of sensory load from noise (farm etc), ammonia build up, poor air quality and limited positive experiences, although more choice and variety than enriched cages. Still quite restricted for choice and high competition for resources.

Comments Round 2

- Suitable food generally available but may be some competition for access. Food lacks interest, diversity and complexity and delivered to birds in a way that doesn't really replicate normal feeding behaviour.
- Clean fresh water available, may be some competition to access. No choice or diversity in water supply and birds do not drink in a naturalistic way.
- Able to use perches in cage and evidence that they do. Not clear if these are available at all rearing stages? More variety in perches and may allow greater comfort as birds can make choices, although may be some competition for access to preferred locations.
- Ability for thermal environment to be controlled and individual birds can make some thermal choices. Birds with low feather cover may still be cold compared to fully feathered birds, but some protection from chilling as housed.
- Some space and able to exercise greater choices in terms of environment compared to caged hens, may have more space as chicks/pullets. Should have space to stretch wings, flap and preen, although this may necessitate other birds?
- Risks of bone breakage and foot bone damage maybe higher although reduced, with experience, 82% fractures reported in one study. Foot problems, feather pecking injuries in normal housing and high risk of bone breakage at de-population. Incidence considered medium across FAWC report for enriched cages. Maybe less likely in early rearing stages, some data suggest 157 days (25%) in hurtful pain in furnished cages and 68% in enmeshing pain (able to ignore hence less severe).
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- 30 Risk of pain from multiple sources, including at depopulation, estimates of 25% of life in enmeshing pain and 32% in hurtful pain, risk of severe pain at depopulation. Beak trimming still likely. Meta-analysis suggests that mortality is not lower in these systems compared to cage-free.
- Chicks reared without their mothers, no opportunity for any meaningful maternal care. Limited opportunity for play and positive social contact as chicks and pullets. Opportunity for positive social behaviours such as communal dustbathing, but still high stocking density, some choice maybe about roosting companions. Feather pecking and cannibalism still occur so suggests issues with meaningful positive social contact still exist.
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Comments Round 1

- 80 Suitable food generally available but may be some competition for access. Here able to access more natural food sources outdoors and show naturalistic feeding behaviour. More diversity and choice.
- 10 Clean fresh water available, may be some competition to access. More choice and diversity possible outside (puddles/other water sources?) but may also be more restrictive or higher risk of not accessing sufficient water.
- 80 More choice but not clear how many birds make use of these and some likely do so could be impaired in relation to avian systems if they do not go out. Chicks and pullets likely to have similar access to other cage-free systems.
- 70 Lower ability for thermal environment to be controlled, some birds may be a greater risk of chilling if close to drafty gaps holes, but individual birds can make some thermal choices (less likely to go out in poor weather, can use behavioural means of thermoregulation). Birds with low feather cover may still be cold compared to fully feathered birds, but some protection from chilling if able to go inside away from gap holes.
- 60 Access to greater space and able to exercise greater choices in terms of environment but some birds may not choose to use as range and depends on range quality and resources (some estimates of 85% do go out, but others suggest only 25-50% regular access), may have more limited space as chicks/pullets.
- 70 Risks of bone breakage and foot bone damage maybe lower if birds able to exercise and maybe less likely to collide with furnishings if outside, high risk of bone breakage at de-population still. Estimates very very variable so could be more system management specific, but could be 60% keep low bone damage.
- 60 Burnt/dust, dermatitis and red mites can be common and maybe higher risk than in cages/barns. High risk considered in FAWC report. Risks of prolapse, gout, fatty liver and osteoarthritis may be reduced if birds able to forage and eat a more nutritionally diverse diet, also able to exercise more.
- 30 Risk of pain from multiple sources, handling may be an issue, including at depopulation. Beak trimming and predation risks present.
- 55 Chicks reared without their mothers, no opportunity for any meaningful maternal care. Limited opportunity for play and positive social contact as chicks and pullets. Opportunity for positive social behaviours such as communal dustbathing, and other communal behaviours if birds make use of opportunities. Feather pecking and cannibalism still occur so suggests issues with meaningful positive social contact still exist.
- 60 Enhanced opportunities to show these behaviours, although actual resources may be limited and some birds may not make these choices. Some limited foraging and exploration as chicks/pullets.
- 60 More extensive opportunity for meaningful human animal relationships, animal access to outdoors and other opportunities for birds to choose to interact with humans. Arrival of food/access to outdoors may allow positive HAR to develop. Relationships can be positive but negative around depopulation, maybe neutral at best for chicks and pullets.
- 60 Lower risk of exposure to poor air quality and high sensory load as hens choose to go outside at least for 8h per day. Less choice as chicks and pullets. Outdoor environment and risk of predation may reduce fear if not adequately managed.

Comments Round 2

- Suitable food generally available but may be some competition for access. Here able to access more natural food sources outdoors and show naturalistic feeding behaviour. Most diversity and choice.
- Clean fresh water available, may be some competition to access. More choice and diversity possible outside (puddles/other water sources?) but may also be more restrictive or higher risk of not accessing sufficient water.
- More choice but not clear how many birds make use of these and some likely do so could be impaired in relation to avian systems if they do not go out. Chicks and pullets likely to have similar access to other cage-free systems.
- Lower ability for thermal environment to be controlled, some birds may be a greater risk of chilling if close to drafty gaps holes, but individual birds can make some thermal choices (less likely to go out in poor weather, can use behavioural means of thermoregulation). Birds with low feather cover may still be cold compared to fully feathered birds, but some protection from chilling if able to go inside away from gap holes.
- Access to greater space and able to exercise greater choices in terms of environment but some birds may not choose to use range and depends on range quality and resources (some estimates of 85% do go out, but others suggest only 25-50% regular access), may have more limited space as chicks/pullets.
- Risks of bone breakage and foot bone damage maybe lower if birds able to exercise and maybe less likely to collide with furnishings if outside, high risk of bone breakage at de-population still. Estimates very very variable so could be more system management specific, but could be 60% keep low bone damage.
- Burnt/dust, dermatitis and red mites can be common and maybe higher risk than in cages/barns. High risk considered in FAWC report. Risks of prolapse, gout, fatty liver and osteoarthritis may be reduced if birds able to forage and eat a more nutritionally diverse diet, also able to exercise more.
- Risk of pain from multiple sources, handling may be an issue, including at depopulation. Beak trimming and predation risks present.
- Chicks reared without their mothers, no opportunity for any meaningful maternal care. Limited opportunity for play and positive social contact as chicks and pullets. Opportunity for positive social behaviours such as communal dustbathing, and other communal behaviours if birds make use of opportunities. Feather pecking and cannibalism still occur so suggests issues with meaningful positive social contact still exist.
- Enhanced opportunities to show these behaviours, although actual resources may be limited and some birds may not make these choices. Some limited foraging and exploration as chicks/pullets.
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