



An Explanation of Damaging Pecking Behavior in Poultry and Captive Birds

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Introduction

Injurious pecking is a major animal welfare concern for poultry and other captive birds. Injurious pecking includes feather pecking, cannibalism, and aggressive pecking. These behaviors may cause pain to the pecked bird, damage to the feathers and skin, and, in extreme cases, death. Feather loss caused by injurious pecking can affect the pecked bird's ability to maintain its body temperature, which leads to a need for more feed and increased economic costs. Production efficiency can be dramatically reduced, and birds that are pecked may experience increased levels of stress and fear. Table

1 summarizes the different types of injurious pecking and which species are more likely to perform each type.

Feather pecking and feather picking

Feather pecking and feather picking are often used interchangeably but they are not the same behavior. Feather pecking is mainly used to describe the behavior when a bird pecks and/or pulls at the feathers of other birds, which usually occurs in chickens, ducks, turkeys, pheasants, and quail. Feather picking is mainly used to describe a form of damaging behavior or auto-mutilation (self-harming) behavior where a bird

is pecking at its own feathers, mostly in ducks and psittacine species such as parrots.

Feather pecking was first described in research as “damaging pecking” or “destructive pecking.” There are two major forms of feather pecking: gentle and severe. Gentle feather pecking is usually directed at the tail, wings, back and neck of a bird. Gentle feather pecks are typically light and repeated without removal of the feathers. Severe feather pecking is mainly directed at the tail, back, vent and neck of a bird; severe feather pecks are usually hard, fast, and singular, with pulling and sometimes removal of feathers. Contrary to what some people believe, feather pecking is an abnormal behavior that has not been linked to aggression and aggressive birds are no more likely to perform feather pecking than less aggressive birds.

Unlike feather pecking, feather picking is mainly used to describe a form of damaging, self-harming pecking behavior, specifically in psittacine species such as parrots. In captive parrots, feather picking behavior is exhibited when the parrot chews, bites and/or plucks its own feathers with its beak. Similar to feather pecking, feather picking can result in damage to the feathers and/or skin and may prevent normal regrowth of the feathers. Some scientists have proposed that feather picking in pet birds is a psychopathology that is analogous to trichotillomania (compulsive hair pulling) in humans. Feather picking also occurs in commercially-farmed Pekin ducks and is described and referred to as auto-mutilation (self-harming) behavior. In ducks, feather picking can begin when down feathers are lost and adult feathers begin to grow, which can then trigger feather pecking between conspecifics (birds of the same species).

Cannibalism

The relationship between feather pecking and cannibalism in poultry and captive birds is unclear. Sometimes, cannibalism occurs independently of feather pecking, and at other times cannibalism is preceded by feather pecking. Cannibalism can be categorized into two major types: tissue pecking and vent pecking. Tissue pecking can occur after severe feather pecking causes feather damage or feather loss, leading to bald patches of skin. Continued pecking of the exposed skin can then lead to cannibalism. Tissue pecking can eventually lead to the death of the pecked bird due to excessive blood loss and underlying tissue damage. Vent pecking, on the other hand, is specifically directed at the vent and the surrounding tissues of a recipient bird, and may begin as a form of

investigatory pecking that can lead to death from loss of blood. Vent pecking may also continue as “pick-out,” in which organs such as the reproductive organs can be pulled out of the bird’s body.

Aggressive pecking

Although aggressive pecking is a form of injurious pecking, aggressive pecking is different than feather pecking because aggression is not believed to be a cause of feather pecking behavior. Many social species of animals establish a dominance hierarchy, or pecking order, to determine when certain animals get access to resources such as food. Aggression is a normal part of establishing and maintaining the dominance hierarchy. However, in some situations aggressive pecking can become abnormally severe or occur more often than what is typical. Aggressive pecks are usually forceful and mainly directed at the recipient bird’s head. This behavior is sometimes seen in groups of male turkeys and can be severe enough to lead to death.

Causes of injurious pecking in different species

Different theories have been proposed to explain why injurious pecking occurs, but the causes are not yet fully understood for many species.

1) Chickens

There are two main hypotheses about the cause of feather pecking in chickens: redirected dustbathing and redirected foraging. Birds in the wild spend a large amount of time foraging. Birds also spend time performing dustbathing behavior, which helps to maintain the condition of their feathers. When birds are housed in farm or captive environments, they are still motivated to perform these same behaviors, but the behaviors are directed at other birds instead of being directed at appropriate substrates.

According to the redirected dustbathing hypothesis, feather pecking in captivity is a modification of dustbathing behavior that typically occurs in the wild, such that some aspects of dustbathing are misdirected at the feathers of conspecifics when birds are not kept on suitable dustbathing substrate from an early age. Some research has demonstrated that birds that were raised with loose feathers as dustbathing substrate showed more feather pecking behavior than birds raised with sand. When a bird dustbathes, another bird may be attracted to the particles on that bird’s feathers, or may be attracted to that bird because the feathers are ruffled or look different, which can also lead to feather pecking.

The redirected foraging hypothesis proposes that feather pecking is likely to be a form of ground pecking behavior derived from foraging that is redirected at other birds instead of being directed at the ground. In the wild, birds spend a lot of time foraging and scratching in order to find food. According to the redirected foraging hypothesis, laying hens develop feather pecking when they do not have access to a suitable foraging substrate, such as wood shavings, straw or dirt. A bird may be motivated to perform foraging behavior even when the bird has free access to food and does not need to forage to find food. The lack of a suitable foraging substrate in combination with the shorter amount of time it takes to consume readily available feed contribute to the development of feather pecking behavior.

Some other causes of feather pecking include the genetic strain or breed of the bird. Some breeds or genetic lines of chickens are more likely to develop feather pecking than others. Feather pecking may also develop in birds that eat feathers on the floor and when there are no more feathers on the floor, these birds may then peck at feathers on birds.



Figure 1. Feather pecking on the neck of a chicken

2) Turkeys

Injurious pecking is a significant welfare concern for turkeys. It is a major cause of culls and mortality in adult turkeys. The specific causes of injurious pecking of turkeys, like that of laying hens, are unknown; however, injurious pecking in turkeys is considered to be related to redirected foraging. An environment that does not provide enough stimulation, together with turkeys' inherent tendency to peck, may result in both feather pecking and cannibalism. Other factors that contribute to the development of injurious pecking of turkeys include diet, environment and genetics.

3) Pheasants

There has been limited research into feather pecking of pheasants. Unlike other birds, the cause of feather pecking in pheasants is believed to be related to the feeding instinct. Some research demonstrated that feather pecking in pheasants sometimes starts as pecking related to feeding. Instead of pecking at food, however, pheasants peck at the feet, beak, cloaca and wings of their companions. Pheasants sometimes begin feather pecking when other birds in the group develop new feathers, and birds with new feather growth then become targets of pecking.

4) Quail

The two main forms of injurious pecking in quail include feather pecking and cannibalism. Like other poultry and captive birds, the causes of these behavioral problems are unclear. Research does not support the redirected foraging hypothesis as an explanation for feather pecking in Japanese quail, and there do not appear to be any studies investigating injurious pecking in other quail species. Some researchers have attempted to reduce feather pecking by providing quail with environmental enrichment; however, results have been inconclusive, and some types of foraging materials actually increase pecking behavior. This indicates that the type of enrichment provided may be an important consideration for Japanese quail.

5) Ducks

Feather pecking and cannibalism are major problems in ducks, and again the causes are unclear. There are some differences among duck breeds in the type of injurious pecking behavior that is most frequently observed. In Pekin ducks, feather pecking often leads to feather pecking between conspecifics around the time that down feathers are replaced by adult plumage.

Anecdotal reports suggest that feather picking and feather pecking follow a seasonal pattern, occurring more frequently in spring and fall. Unlike in Pekin ducks, cannibalism is a major issue for Muscovy ducks. This cannibalism in Muscovy ducks is not supported by the redirected foraging hypothesis, as it is in chickens. Thus far, research has found that outbreaks of cannibalism in Muscovy ducks can occur as early as 13 days of age and seem to be related to the appearance of new feathers.



Figure 2. Feather pecking of a) the tail feathers and b) wing of a Pekin duck

6) Parrots

Feather picking behavior is a major problem in captive parrots, with no single cause or solution. Based on the research conducted to date, there are different theories and hypotheses proposed to explain why parrots pick their feathers.

- a. **Hormonal changes:** This behavior often develops at the onset of sexual maturity and seasonal changes, and can be related to hormonal changes (e.g. changes in progesterone and estrogen levels).
- b. **Habitual or exaggerated behavior:** Feather picking has been compared to habitual behavior, such as nail-biting in humans. Feather picking has also been compared to exaggerated grooming behavior that occurs because the amount of time that animals spend on various behaviors differs between animals in captivity and animals in the wild. Consequently, captive animals spend more time preening (or grooming) themselves, leading to exaggerated behavior. Sometimes, feather picking in parrots is inadvertently reinforced by well-meaning pet owners who give the parrot attention when the parrot is picking. The attention then serves to increase the likelihood of picking occurring again, because the bird is seeking the positive reinforcement of the attention.
- c. **Coping Strategy:** Parrots may use feather picking behavior to cope with conditions that cause stress or boredom in captivity.
- d. **Redirect foraging hypothesis:** Similar to other species, this hypothesis has been proposed as a possible underlying motivation for feather picking behavior in parrots.
- e. **Brain dysfunction:** Some scientists believe that feather picking may arise as a result of brain dysfunction and changes in neurochemistry.
- f. **Reproductive behavior:** Exaggerated or prolonged reproductive behavior in captivity has been proposed as another possible motivation for feather picking in parrots.

Preventing or reducing injurious pecking behavior

As demonstrated, injurious pecking in poultry and captive birds is affected by multiple factors. Strategies that can help prevent or control injurious pecking in some species of farmed or captive birds include proper feeding management and providing environmental enrichment.

1) Feeding management

The amount and form of the feed may influence the development of feather pecking. Dietary deficiencies result in a marginal supply of nutrients such as protein, amino acids, or minerals, and this may increase feather pecking behavior and cannibalism. For example, severe feather pecking has been found to occur in birds that were fed a diet too low in minerals; protein; or amino acids (methionine, arginine). Feather pecking occurs when birds are fed a diet with mainly vegetable protein sources. Birds that are restrict-fed sometimes develop feather pecking behavior as well.

In general, feather pecking behavior of laying hens seems to occur less frequently if the amount of time that hens spend foraging and consuming feed is increased. For example, research has shown that feeding hens high-fiber diets, low energy diets, or roughage that take longer to consume can reduce feather pecking. Providing additional grain or straw in the litter during rearing may reduce feather pecking behavior when birds mature.

2) Environmental enrichment

Environmental enrichments are often used to reduce injurious pecking by increasing the opportunities for captive animals to engage in foraging or/and exploratory behaviors. This provides stimulation to animals that are unable to fulfill their inherent motivations due to environmental limitations.

a) Foraging and Dustbathing Enrichments: Because feather pecking is thought to be caused by redirected foraging motivation, providing forages to birds is likely to decrease feather pecking behavior in most poultry species. These forage enrichments are usually most effective at alleviating feather pecking, at least in the short term, and it is important to house birds in environments that allow them to perform foraging behavior. Other types of enrichment, such as providing material for dustbathing and novel (unfamiliar) objects, may be effective in reducing

feather pecking; however, care should be taken when introducing novel objects because some objects can cause fear and stress instead of having a positive effect on the birds.

b) Spatial Configuration: Environmental enrichment can also include changing the spatial configuration of the birds' environment. Changing the space that the birds are kept in can impact the birds' perception, change how they use the space, and may influence their social dynamics. For example, chickens may use a larger area of their environment when provided with vertical barriers. Barriers can create more opportunities for birds to escape from individuals trying to perform injurious pecking behaviors, and they are more likely to use and perform comfort behaviors in areas with cover. Increasing vertical space by providing a hay bale or perches, for example, could provide a comforting space for chickens because they are naturally motivated to perch.

The known benefits of environmental enrichments include better ability to cope with challenging conditions, reduced occurrence of harmful behaviors such as severe feather pecking, decreased level of negative affective state (e.g. fearfulness and depression), improved productivity and health, and enhanced behavioral repertoire. Some environmental enrichments allow the birds to perform behaviors they are strongly motivated to perform without harming their conspecifics. For example, string (that cannot be swallowed) has been shown to be effective in reducing feather pecking in hens. String devices fulfill at least some of the criteria (sustained interest, reduced expression of harmful behaviors) of effective environmental enrichment.

Summary

Injurious pecking is considered to be a major animal welfare and economic concern in poultry and other captive birds because injurious pecking may result in severe damage and death in some cases. In addition to experiencing pain, birds that are targets of injurious pecking may experience increased heat loss and require additional feed to maintain their body temperature. Production efficiency can be dramatically reduced, especially if high rates of pecking result in culling and mortality. Furthermore, birds that are the recipients of pecking may experience increased levels of stress and fear.

Injurious pecking takes different forms depending on the species of bird. Feather pecking is mainly used to describe the behavior when a bird pecks and/or pulls at the feathers of other birds, which usually occurs in chickens, ducks, turkeys, pheasants and quail. Feather picking is mainly used to describe a form of damaging behavior or auto-mutilation (self-harming) behavior where a bird is pecking at its own feathers, mostly in ducks and psittacine species such as parrots. Cannibalism (consumption of tissue or blood) sometimes occurs in chickens, turkeys, pheasants, quail and ducks.

Different theories have been proposed to explain why injurious pecking occurs, but for many species, the causes are not yet fully understood. What we do know is that injurious pecking is influenced by many different factors, such as environment, diet, neurobiology, early experience and management.

To prevent or reduce injurious pecking in poultry and captive birds, strategies such as proper feeding management and providing environmental enrichment can be helpful.

Table 1. Description of injurious pecking behavior and the species of bird in which the behavior occurs

Term	Definition/Description	Species in which occurs
Feather pecking	A bird uses its beak to peck at the feathers of another bird. Can be categorized into two major forms: gentle feather pecking and severe feather pecking.	Chickens, turkeys, pheasants, quail, ducks
Gentle feather pecking	Pecks are usually light and repeated. They are mainly directed at the tail, wings, back and neck area of a bird.	Chickens, turkeys, pheasants, quail, ducks
Severe feather pecking	Pecks are usually hard, fast and singular. They are mainly directed at the tail, back, vent and neck area of a bird.	Chickens, turkeys, pheasants, quail, ducks
Feather picking	An auto-mutilation (self-harming) behavior. In parrots, it refers to a bird chewing, biting and/or plucking its own feathers with its beak.	Ducks, parrots
Aggressive pecking	Pecks are usually forceful and mainly directed at the recipient's head or other part of the body if the head area cannot be accessed.	Turkeys, chickens, quail
Cannibalism	Two types of cannibalism are recognized. Tissue pecking is directed at a bird's skin or tissue; vent pecking is directed at a bird's vent area.	Chickens, ducks, quail

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