



Poultry Extension Collaborative newsletter

A collaboration between Purdue University, University of Maryland,
University of Georgia, and Virginia Tech

Poultry parasites: Northern fowl mites



Northern fowl mite. Photo credit: [Lee Townsend](#)

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Northern fowl mites (*Ornithonyssus sylviarum*) are one of the more common ectoparasites (external parasites) that can be present in a flock. These mites live on their host throughout their life and feed on poultry blood. They are most commonly found around the vent, tail, and breast of the birds. Although these mites prefer poultry as a host, they will move onto humans and will bite if trapped (for instance in tight clothing) (Wakenell, 2016). Transmission can come from equipment, wild birds (sparrows and starlings), pet birds (passerines), and people. These mites can be a severe pest in poultry flocks.

Biology of the Northern fowl mite



Adult Northern fowl mite.
Photo credit: [Gregory S. Archer](#)

Mites are gray/black in color, but after a blood meal, mites may appear red. Mites move slowly and cannot fly.

Mites are between 0.5 mm - 1 mm in size (0.02 -0.04 in), thus visible to the naked eye as small specks.

Mites spend their complete lifecycle (5-12 days) on their host but can live in the environment without a host for 2-3 weeks.



Northern fowl mite larva
Photo credit: [Phillips et al., 2004](#)

Five live stages:

- <2 days → 1. Egg: whitish clusters of eggs can be found on the feather shaft
- 9 hours → 2. Larva (6 legs)
- 1-2 days → 3. Protonymph (8 legs): feed on blood
- 4. Deutonymph (8 legs)
- <1 day → 5. Adult (8 legs): feed on blood

Mites will infest (but not feed from) humans so appropriate biosecurity measures (designated clothing and shoes) may reduce the risk of spread.

Reproduction

An adult female will produce 1-3 eggs after a single feeding. An infestation can begin with a single adult female. The female can lay male (unfertilized) eggs and will mate with the male offspring. The life cycle is short which will result in a quick rise in mite numbers within a few weeks' time (Murillo & Mullens, 2013).

Signs and consequences of infestation

Northern fowl mites are visible to the naked eye. Early infestations may be difficult to notice. Infestations will reach their peak after 4-5 weeks, and mites can then be easily spotted in feathers and on birds' skin. At peak infestation, a single bird may host over 100,000 mites. When infestations are severe, you may see blood stains and/or mites on the chickens' eggs. At infestations of >50,000 mites/bird, birds can lose 6 percent of their blood daily.

Tip: inspect birds' feathers and skin around the breast, tail, vent and cloaca. Part feathers to view the skin and use a flashlight if needed.



Close-ups of a heavy Northern fowl mite infestation (mites, eggs, debris) on the feathers and skin of a white hen. Photo credit: Leonie Jacobs

Signs of Northern fowl mite infestation

- Black crusted skin and feathers
- Thickening of skin and possible lesions and scabs
- Agitated birds with frequent preening, especially when birds are perching/roosting
- Blood spots or mites on chicken eggs
- Pale comb



Northern fowl mites on an egg. Photo credit: Brad Mullens

Some consequences of severe infestation are:

- Anemia and mortality
- Inflammation and irritation at the site of the bite
- Reduced egg production (-10 to -15%)
- Reduced egg size
- Poor feed conversion (more feed needed for the same or worse production)

(Murillo & Mullens, 2013; Kaufman et al 2000)

Pest management

Pest control should ideally involve the monitoring and management of ectoparasites, and should include a rotation of approaches to avoid the mites developing resistance to a specific treatment.

Tip: Prevention is better than any treatment. The best way to prevent infestation is through biosecurity measures. More on biosecurity can be found [here](#).

CHEMICAL (PoultryDVM)

Ivermectin
 Spinosad
 Fluralaner
 Organophosphate
 Pyrethrum
 Permethrin
 Methyl bromide

NON-CHEMICAL

Sulfur
 Azadirachtin (neem)
 Kaolin clay
 Diatomaceous Earth (DE)
 Garlic spray (10%)
 Heat (49°C or 120°F for 1 h)
 Cold (-20°C or -4°F for 5 days)

Consult a pest control specialist or veterinarian when considering any chemical treatment as pest management, especially for off-label use of products. Sprays are less effective for birds housed on the floor (rather than in commercial cages). Treatments work most effectively when mite abundance is low; less than 50 mites per bird. Dusts have inhalation risks, and sulfur can be combustible in confined spaces. Do not use carbaryl powder either on the bird or on the premises (Wakenell, 2016). Carbaryl is a possible carcinogen and product residues can be detected in eggs 56 days after treatment at 0.5% and 1% doses (Ivey et al., 1984). **Always read product labels carefully before applying any pesticide; mix and apply as directed, do not overdose, do not treat too often, and follow all precautions exactly.**

Sulfur (>0.9% concentration) eliminated mite infestations for 4-8 weeks in caged laying hens (Mullens et al., 2012). Garlic spray (Birrenkott et al., 2000), kaolin (12%), DE (12%), and azadirachtin (at 0.06%) reduced but not eliminated mite infestations (Mullens et al., 2012).

- For more pest management approaches, please see our previous newsletter on bed bugs [here](#).
- More information on integrated pest monitoring and management (Murillo and Mullens) can be found [here](#).

Key messages

- Northern fowl mites live on birds, but can transfer to the environment or people
- Infestations can reach huge numbers, with 100,000 mites per bird
- Infestations can cause discomfort and distress in birds and can impact the bottom line (production)
- Early detection is key to manage infestations
- Biosecurity measures are the best approach to PREVENT infestation

References and additional sources

Jacobs, L. and Persia, M.E. 2021. Maintaining the health of your home flock.
<https://www.youtube.com/watch?v=PMEIWUIC8hw>

Murillo, A. and Mullens, B.. 2013. Northern Fowl Mite (*Ornithonyssus sylviarum* [Canestrini and Fanzago]). <https://www.veterinaryentomology.org/northern-fowl-mite>

PoultryDVM. Northern Fowl Mites. <http://www.poultrydvm.com/condition/northern-fowl-mites>

Devaney, J.A. 1984. Progress on control of northern fowl mites on caged laying hens.
<https://www.sciencedirect.com/science/article/pii/030440178590055X>

Dorrestein, G.M. 2009. Passerines. In: Handbook of Avian Medicine.
<https://www.sciencedirect.com/book/9780702028748/handbook-of-avian-medicine>

Ivey, M.C. et al. 1984. Residues of carbaryl and two of its metabolites in eggs of laying hens treated with Sevin® for northern fowl mite control by dipping. *Poult. Sci.*, 63 (1984), pp. 61-65

Kaufman et al. 2000. Pest Management Recommendations for Poultry.
<https://ecommons.cornell.edu/handle/1813/42385>

Mullens et al. 2012. Northern fowl mite (*Ornithonyssus sylviarum*) control evaluations using liquid formulations of diatomaceous earth, kaolin, sulfur, azadirachtin, and *Beauveria bassiana* on caged laying hens.
<https://www.sciencedirect.com/science/article/pii/S1056617119305975>

Wakenell, P. 2016. Management and medicine of backyard poultry. In: *Current Therapy in Avian Medicine and Surgery*. <https://www.sciencedirect.com/book/9781455746712/current-therapy-in-avian-medicine-and-surgery>

