Veterinary Parasitology
Arthropod Parasites

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Arthropod Parasites

1. Arachnids
   - Ticks
   - Mites

2. Insects
   - Fleas
   - Lice
   - Flies
1. Arachnids – Ticks and Mites

**DEER TICKS**
(Ixodes scapularis)

**DOG TICKS**
(Dermacentor variabilis)

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One grain of table salt (NaCl): 0.3 mm on a side.

Follicle Mite (Demodex)
1. Arachnids – Ticks and Mites

**Ticks**
- Blood-feeding ectoparasites
- Dorsoventrally flattened
- Haller’s organ = present
- Hypostome is toothed, exposed
  - Tick’s anchor to host
- Adults = macroscopic

**Mites**
- Feed on cellular debris or blood
- Globose to cigar-shaped
- Haller’s organ is absent
- Hypostome is unarmed, hidden
  - Are not anchored to host
- Adults = microscopic (usually)
Ticks vs. Mites

Hypostome exposed + armed
(See palps, chelicera, and hypostome)

Hypostome unarmed + hidden
(Can only see palps and chelicera)
Mites

Life history:
• Egg, 6-legged larvae, nymph, adult
  – Hemimetabolous (no pupa stage)
• 1 to 3 nymphaal instars
• Most ectoparasitic mites spend their entire lives in intimate contact with their hosts

Acariasis = mite infestation (+/-normal fauna)
Mange = severe dermatitis due to mite infestation

Mechanisms of disease:
• Direct damage to epidermis
  → inflammation & crusting
• Cutaneous hypersensitivity reactions
• Loss of blood & other fluids
• Transmission of pathogens
Mites

• Order Sarcoptiformes (Astigmata)
  – Fur and feather mange mites
  – Dust and human itch mites

• Order Prostigmata
  – Cheyletiella dandruff/mange mites
  – Demodectic mange mites
  – Harvest mites = Chiggers

• Order Mesostigmata
  – Bird mites (300-3000 μm)

Stigmata= spiracles of terrestrial arthropods = external openings of the tracheal system
Mites – Important Genera

Genera of Mange Mites

1. Sarcoptes
2. Notoedres
3. Knemidocoptes
4. Psoroptes
5. Chorioptes
6. Otodectes
7. Cheyletiella
8. Demodex
Mites – Important Genera

Genera of Mange Mites

1. *Sarcoptes*
2. *Notoedres*
3. *Knemidocoptes*
4. *Psoroptes*
5. *Chorioptes*
6. *Otodectes*
7. *Cheyletiella*
8. *Demodex*
1. *Sarcoptes scabiei*

- **Disease:** Sarcoptic mange
- **Hosts:** dogs, foxes, pigs, cattle, sheep, goats, horses, camelids, rabbits, & humans
- **Morphology:**
  - Microscopic (200-400 μm)
  - Round-globose shaped
  - Triangular spines
  - Posterior pair of legs do not extend beyond body margin
  - Short legs with pretarsi having long unsegmented pedicels
1. *Sarcoptes scabiei*

**Epizootics in wildlife (FYI)**

- North America – coyotes, foxes, grey wolves
- Europe – arctic foxes, red foxes, grey wolves, lynx, chamois, ibex, wild boars
- Australia – red foxes, dingoes, wombats
- Africa – lions, cheetahs, mountain gorillas, chimpanzees, impala, hartebeest, wildebeest, buffalo, eland, kudu, gazelles, sable antelope

*Classes of sarcoptic mange in canids:*

- Class I (top), initial infection involving fore and hind limbs, hips/base of tail, and base of ears with ≤5% of the body affected;
- Class II (middle); more advanced lesions involving ≤ 50% total body surface;
- Class III (bottom) involving > 50% total body surface.
1. *Sarcoptes scabiei*

**Life cycle**

- ~10-21 days
- Female burrows into the skin feeding on cellular debris & laying eggs behind her
- Adult mites live about 4 weeks on the host
  - Only survive a few days off the host
- Highly contagious
- Transmission occurs through direct contact or fomites
1. *Sarcoptes scabiei*

**Life cycle**

- **Egg:** 0.10–0.15 mm in length
- **Larva:** 2–3 days
- **Nymph Stages:** 3–4 days, 4–7 days
- **Adult Female:** 1–2 months, 0.30–0.45 mm in length

- **Adults lay eggs.** After the female mates, she lays 40–50 eggs in tunnels carved into the upper two-thirds of the epidermis. Eggs hatch in 3–5 days and the female dies after about 1 month.

- **Nymphs feed and molt twice to become adults.**

- **Eggs hatch to larvae in 3–5 days; larvae molt to nymphs.**

- **Female mites burrow into the skin and form tunnels. It is in these tunnels that the eggs are laid.**

- **Mites cause an intense inflammatory reaction, itching and self-trauma. Secondary bacterial infections are common.**

- **Larvae and nymphs grow in the tunnels.**
1. *Sarcoptes scabiei*

Pathogenesis

- **Tunnelling & feeding** activities of the mites cause irritation → inflammation, exudation, crusting, alopecia, and hyperkeratosis
- **Intense pruritus** → self-trauma (excoriations) → ↑ dermatitis
- Hypersensitivity reactions to the mite secretory & excretory products
- Lots of foreign antigenic material
  - Dead mites, molted skins of various stages, egg shells...

Skin biopsy of crusted scabies showing mites in the epidermis with hyperkeratosis and inflammation
1. *Sarcoptes scabiei*

Host specificity:
- Varieties appear relatively host specific
  - Dogs: *Sarcoptes scabiei var canis*
  - Pigs: *Sarcoptes scabiei var suis*
  - Cattle: *Sarcoptes scabiei var bovis*
- *Sarcoptes* can readily transfer from canine to human skin if there is close contact
- Although mites from dogs can survive and burrow in human skin, they seem unable to breed on the abnormal host
- Repeated close contact with the infested dog is necessary to maintain human infestation.
- Records of transfer from fox to wolf and dog, rabbit to monkey, goat to man, dog to man, etc.
1. *Sarcoptes scabiei*

Dogs (*S. scabiei var canis*)
- Lesions on the lateral margins of ear, head, elbows, & inguinal regions
- Self-mutilation & secondary bacterial infections common
- Infested dogs will usually die without treatment

Pigs (*S. scabiei var suis*)
- Lesions first appear on the head, progressing to the hind legs, then rest of body
- Reduced growth rate & lower feed efficiency
1. *Sarcoptes scabiei*

**Cattle (S. scabiei var bovis)**

- Most important mange mite of dairy cattle & confined beef herds
- Lesions occur where hair is thin (base of tail, brisket, inner thigh, scrotum & udder)
- Weight loss and poor growth in severely affected
- Very contagious
- Reportable disease
1. *Sarcoptes scabiei*

**Diagnosis**

- Clinical signs & history
- Pinna-femoral reflex is very suggestive
  - Rub the dog's ear and it elicits a violent scratch response with the hindlimb

- Multiple skin scrapings
  - Deep scrapings (should induce capillary hemorrhage)
  - 10-20+ scrapings may be required
  - Demonstration of **ONE** mite is diagnostic
  - Papular lesions on household members (humans can become infected with a transient scabies from contact with pets - infection is self-limiting)

*Sarcoptes scabiei* with long unsegmented pretarsi on front legs and characteristic triangular spines.
1. *Sarcoptes scabiei*

**Control & Treatment**

- Treatment should be initiated if mange is suspected *despite* negative scrapes
- All animals in household should be treated (*S. scabiei* has been reported on cats rarely)

**Dogs**

- Systemic: macrocyclic lactones (avermectins and milbemycins), Topical or spay (fipronil), Topical (selamectin, imidocloprid + moxidectin)
- Acaricidal dips (e.g. 2% lime sulfur) every week until lesions resolve
- Environment should be treated (bedding, kennels, combs ...)

**Livestock**

- Treat entire herd with pesticide dips, repeat in 10-12 days
- Ivermectin & milbemycin
2. *Notoedres cati*

- **Notoedric Mange** in cats  
  (Head Mange or Feline Scabies)
- Burrowing mite of cats (short legs)  
  - Occasionally affects dogs & humans
- Occurs in cats and other members of the Felidae throughout the world  
  - Ocelots, Florida panthers, tigers, bobcats, lynx, snow leopards, and cheetahs.
- Other species of *Notoedres* are found as parasites of lagomorphs, rodents, and bats.
- Morphology & life cycle similar to *Sarcoptes*  
  - Scales (spines) are less angular  
  - Is slightly smaller  
  - Anus is on dorsal surface instead of on the posterior body margin
2. *Notoedres cati*

**Clinical signs**

- Tunnelling & feeding activities of the mites cause irritation → inflammation, exudation, crusting, alopecia, and hyperkeratosis
- **Intense pruritus** → self-trauma → ↑ dermatitis
- Ears, head, & neck usually affected initially
2. *Notoedres cati*

**Diagnosis**
- Clinical signs
- Skin scrapings
  - Easier than in sarcoptic mange as a single "nest" in a scraping may yield many mites

**Control & Treatment**
- Treat all cats in household
- Acarcidal dips (as in canine scabies)
- Ivermectin, selamectin
  - Be sure to use products approved for cats!

- Burrowing mites of birds (short legs)
- Morphologically similar to *Sarcoptes*
  - No scales and spines on dorsal surface
  - Tarsal segments have claw-like structures and tactile hairs
    (No suckers borne on stalks)
- Tends to occur in small barnyard flocks with transmission by bird-bird contact (spreads slowly)

**Clinical Signs**

- Not all infections of *Knemidocoptes* mite result in clinical signs, some may lay dormant for until the animal is stressed or is otherwise immunocompromised.

- Signs are dependent on which mite is present:

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<th>Species</th>
<th>Disease</th>
<th>Hosts</th>
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<td><em>Knemidocoptes mutans</em></td>
<td>Scaly leg and face</td>
<td>Domestic fowl</td>
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<td><em>K. gallinae</em></td>
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<td><em>K. jamaicensis</em></td>
<td>Scaly leg</td>
<td>Passerines (canaries)</td>
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<td><em>K. pilae</em></td>
<td>Scaly face/beak</td>
<td>Psittacines (budgies)</td>
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</table>

Clinical Signs

3.1 *Knemidocoptes mutans*

Scaly leg and face in domestic fowl

- **Chickens, turkeys**, pheasants, and other gallinaceous birds
- Several raptor species
- Mite burrows beneath leg scales and causes them to loosen and rise → hyperkeratosis

3.2 *Knemidocoptes gallinae*

Depluming itch

- **Chickens**, pigeons, and pheasants
- Mites burrow into the feather shafts → intense pruritus and pain → bird will pull out its feathers.
3. **Knemidocoptes spp.**

**Clinical Signs**

3.3 **Knemidocoptes jamaicensis**

Scaly leg in passerines

- Primarily in *canaries*, Gouldian finches, and mynahs
- Mite burrows beneath leg scales and causes them to loosen and rise → hyperkeratosis
- Clinical signs will include the bird having distorted legs and claws and may appear lame. The bird may also be paying particular attention to their legs and may show signs of pruritus.

3.4 **Knemidocoptes pilae**

Scaly beak/ Scaly face in psittacine birds

- Mostly *budgerigars*
- Mites burrow into feathered parts of the beak and into the lightly feathered areas of the face (+/- body) → loss of feathers & hyperkeratosis
- +/- mild pruritus (not as severe as other forms in the genus)

**Diagnosis**
- Scrape scabs to find mites
- Can loosen scabs first by using emollients (be careful not to plug nares)
  - Vegetable oil, aloe vera gel
- [http://www.youtube.com/watch?v=UqdCqNLQ6Yo](http://www.youtube.com/watch?v=UqdCqNLQ6Yo)

**Control & Treatment**
- Ivermectin is the drug of choice and may be given orally, topically, or by injection. Topical or oral dosing is recommended for small birds.
  - Ivermectin may be toxic if given intramuscularly, especially in small birds, and death may occur.\(^{28}\)
  - Two large-animal injectable propylene-glycol–based formulations of ivermectin (Ivomec—Merial) are available for extralabel use in birds in 1% (10 mg/ml) and 0.27% (2.7 mg/ml) concentrations.
- Pour-on or injectable moxidectin (Cydectin—Fort Dodge Animal Health) is also effective and available in 0.5% and 1% preparations, respectively.
Mites – Important Genera

Genera of Mange Mites

1. *Sarcoptes*
2. *Notoedres*
3. *Knemidocoptes*
4. *Psoroptes*
5. *Chorioptes*
6. *Otodectes*
7. *Cheyletiella*
8. *Demodex*

- “Scab” or *Psoroptic Mange* in sheep (Eliminated from NA)
- “Scab” or *Psoroptic Mange* in cattle (South-West USA)
- Ear canker in rabbits
- Mild *otic mange* in goats
- Mane mange in horses
  (Mane, forelock, & base of tail = thickly haired areas; rare, eradicated in NA)

**Morphology**
- Long legs with segmented pedicels
  (long legs = non-burrowing surface mite)

- **Outbreaks of Sheep Scab**
  
  *P. ovis*

- Eradicated in New Zealand, Canada, and USA
  
  - Reintroduction through the importation of infested sheep is a permanent risk

- In winter months the mites become active → symptoms of sheep scab become apparent.

- Infested sheep will start scratching, biting at the fleece, and plucking out tufts of wool

- Sheep lose weight due to the continual irritation

- Rams may not mate

- Ewes may reject their lambs

**Pathogenesis & Clinical signs**

**Cattle Scab:**

- *P. communis ovis, var. bovis* (*P. ovis*)
- Range and feedlot beef cattle from central and western USA
  - Texas, New Mexico, Oklahoma, Kansas, Colorado, and Nebraska.
- Intense pruritus usually begins on the shoulders and rump;
- Mite feeding activities → pruritus → self mutilation & scab formation
- Papules, crusts, excoriation, and lichenification
- +/- Secondary bacterial infections
- Death in untreated calves, weight loss, decreased milk production, and increased susceptibility to other diseases can occur.

Pathogenesis & Clinical signs

**Cattle Scab**
- *P. communis ovis, var. bovis*
- Mite feeding activities → pruritus → self mutilation & scab formation

**Ear Canker in Rabbits**
- *P. cuniculi*
- Mites in external ears → crusting of car canal
- Can lead to rupture of tympanic membrane

**Diagnosis**
- Superficial skin scraping at margins of lesion & under crusts
- Pedicels are long and jointed (jointed = segmented)

**Treatment & Control**
- Pesticide dips
- Ivermectin
  - Apply pesticide in ear of rabbits
5. *Chorioptes bovis*

- **Non-burrowing mange mite** of cattle, horses, goats & sheep

- **Morphology**
  - Similar to *Psoroptes* except short unsegmented pedicels
5. *Chorioptes bovis*

**Pathogenesis**

**Dairy cows in winter**
- Minor pathogen with lesions on **neck, tail & lower legs** which usually resolve in spring
- Serum exudation and thickening of the skin characteristically at the base of the tail. Infestation may spread to the udder, scrotum and limbs.

**Sheep & Goats**
- In goats signs can start at the **neck then spread to the back, root of the tail,** and rest of the body.
- '**Foot mange**' affects the skin of the pasterns and digital areas.
- Chorioptic mange of the scrotum is suspected to cause infertility in rams.

**Horses**
- Irritation & alopecia can occur on **hocks**
- Horses may act restless

**Treatment & Control**
- Pesticides applied to affected areas when causing a problem
- Note: Lesions in cattle often resolve spontaneously when cattle are turned out to pasture in the spring
Ruminant mange mites

• Sarcotic mites burrow into the skin.
  – Short Legs
• Psorptic and Chorioptic mites are non-burrowing.
  – Long legs
• At the end of the legs of all three types are thin structures called pedicels which have a sucker at the end.
• The appearance of these pedicels is used to identify the type of mite.
  – The pedicels of the Psoroptes type of mite are long and jointed.
  – Sarcoptic mites also have long pedicels but they are not jointed.
  – The pedicels of Chorioptic mites are short.
6. *Otodectes cyanotis*

- Ear mite of dogs, cats, foxes, ferrets, and other carnivores
  - Occasionally humans
- Cause of **Otodectic Mange**
- Most common cause of otitis externa in cats (85% of cases)
- Cause of ~50% of otitis externa cases in dogs

**Life History**
- Live on superficial epidermal debris in the ear canal & skin
  - Long legs = non-burrowing
- Life cycle completed in 3 weeks
- Transmission by direct contact
6. *Otodectes cynotis*

**Pathogenesis & Clinical signs**
- Mechanical irritation & hypersensitivity reactions
- Result in intense irritation, pruritus, scratching of ear & head shaking
- Secondary bacterial infections can occur → discharge

**Diagnosis**
- Black to reddish-black exudate found in ear canal
- Otoscopic examination to visualize mites in ear canal
- Microscopic examination of ear swab
Mites – Important Genera

Genera of Mange Mites

1. *Sarcoptes*
2. *Notoedres*
3. *Knemidocoptes*
4. *Psoroptes*
5. *Chorioptes*
6. *Otodectes*
7. *Cheyletiella*
8. *Demodex*
7. *Cheyletiella* spp.

“Walking Dandruff “

- Dogs (*C. yaguri*), cats (*C. blakei*) & rabbits (*C. parasitovorax*)
- All species can transiently infect humans

**Morphology**

- Long legs = non-burrowing mite
- Prominent hook-like accessory mouthparts (palpal claws)
7. *Cheyletiella* spp.

**Life History**
- Surface dwelling parasites
- Feed on surface debris & tissue fluids
- Life cycle completed in 3 weeks with eggs attached to host hair
- Transmitted by direct contact & fomites
- Can transiently infest humans

**Clinical signs**
- Usually affects young animals
- Pruritus
- Severe scaling on dorsal surface
- Exfoliative dermatitis
7. *Cheyletiella* spp.

**Diagnosis**

- Examination of scales & haircoat with a hand lens for “walking dandruff”
- Superficial skin scraping
  
  • [http://www.youtube.com/watch?v=zZPFDSkL5GE](http://www.youtube.com/watch?v=zZPFDSkL5GE)
  • [http://www.youtube.com/watch?v=dH7f1Elrgq0](http://www.youtube.com/watch?v=dH7f1Elrgq0)
- Examination of scales collected with a flea comb
- Detection of mite eggs in fecal flotation
  
  • Pruritus → chewing → ingestion of ectoparasite life stages

**Treatment & Control**

- Sprays, shampoo with pyrethrins dogs
- Topicals (fipronil, imidocloprid+moxidectin)
- Treat all animals in household & treat environment
Mites – Important Genera

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8. *Demodex*

- Cause Demodectic Mange in dogs and cats
  - *Demodex canis*, very common
  - *Demodex cati*, rare

**Morphology**
- Microscopic (100-400um)
- Elongate (cigar-shaped)
- Stout legs ending in blunt claws (vestigial legs)

**Life History**
- Spend life embedded in hair follicles & sebaceous glands
- Unable to survive off host
- Life cycle completed in 18-24 days

- Most *Demodex* spp. are considered normal mammalian fauna
  - Are acquired at birth by direct contact
  - Considered normal inhabitants of the skin (usually non-pathogenic)

- Overgrowth of normal mite fauna → development of patchy hair loss +/- mild to severe dermatitis in dogs and (less commonly) in cats

- Exceptions:
  - *Demodex sp. “cornei”* (dogs) & *D. gatoi* (cats)
    - Small, blunt-ended demodectic mites
    - Disease is thought to be caused by the infestation itself rather than an overgrowth of mites
    - Can be associated with pruritus in the absence of pyoderma
    - **Contagious** (vs. overgrowth)

- **Dogs**
  - *Demodex canis*\(^*\) (180 to 210 µm)
  - *Demodex injai* (330 to 370 µm)
  - *Demodex sp. cornei* (90 to 140 µm)

- **Cats**
  - *Demodex cati*\(^*\) (181 to 219 µm)
  - *Demodex gatoi* (81 to 115 µm)
  - *Demodex sp.* (170-174 µm)

*D. canis* vs. *D. injai*

*D. cati* vs. *D. gatoi*

*Prevalence is virtually 100%*

**Pathogenesis**

- Hereditary predisposition to demodecotic mange
  - More common in purebreds - especially terriers, Great Dane, English Bulldog, Alaskan Malamute, Afghan
- Immunosuppression of T-cells (↓ T-cell function) allows mites to proliferate
- Mites may produce a factor that suppresses T-cell function
- Immunosuppression (e.g., corticosteroid therapy) may predispose dogs to demodecosis

Two forms of canine demodecosis:

1. **Localized demodecosis** (90% of cases)
   - Focal areas of erythema & alopecia
   - Head, neck, & forelegs
   - No secondary problems
   - Most (90%) will resolve spontaneously

2. **Generalized demodecosis** (the other 10%)
   - Onset in dogs due to some underlying factor
   - Lesions spread from head to rest of body
   - Generalized erythema, alopecia, crusting & scaling
   - Secondary infections can occur (i.e., pyoderma) resulting in oozing exudative lesions with severe crusting
   - Severe cases are accompanied by a foul smelling putrid odor & are difficult to cure

**Clinical signs in Cats**

- Clinically affected cats are presented with various degrees of pruritus, alopecia, erythema, scaling, excoriation, and crusting
- Head and neck are most commonly affected
- Elbows, trunk, flanks, lower belly, and hind legs can also be affected

**Diagnosis**

**Skin scraping**
- Squeeze skin to exude mite from the hair follicle then scrape skin
- Observing only a few mites is not diagnostic (normal fauna)
- **But** finding **many mites & many life stages** is indicative of demodectic mange

**Trichogram**
- Examination of hair & roots
- Hair plucked from follicle is examined for mites
  (& dermatophytes = ringworm)

**Treatment & Control**

1. **Localized form:** Has good prognosis & likely will self cure in 6-8 weeks (with or without acaricidal treatment)

2. **Generalized form:** Requires supportive care & treatment of pyodermas with antibiotics. Relapses may occur. Look for possible underlying disease condition.

- Acaricidal dips (amitraz) +/- pretreatment with benzoyl peroxide shampoo (removes crusts & debris)
- Extra-label use of macrocyclic lactones (avermectin & milbemycin) - long term & high doses
- Treatment can be costly, time consuming & requires commitment from owners.

- **Horses (FYI)**
  - *Demodex equi*
  - Rare cause of patchy alopecia and scaling
  - Usually eyelids/muzzle (face, neck, shoulders, forelimbs)

- **Hamsters (FYI)**
  - *Demodex aurati*
  - *Demodex criceti*

- **Guinea pigs (FYI)**
  - *Demodex caviae*

Pocket pets: Look for a possible underlying condition (Malnutrition, neoplasia, infection...)
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<th>Pigs</th>
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<td><em>Sarcoptes</em></td>
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</tbody>
</table>
9. *Pneumonyssoides caninum* (FYI)

- *Pneumonyssoides caninum*
  - Parasite of the *nasal sinuses* of dogs
  - May cause acute “reverse sneezing”, chronic sneezing, rhinitis, nasal pruritus, & epistaxis
  - Infrequently encountered but are detected using nasal swabs or rhinoscopy
# Common Fur Mites in Pocket Pets (FYI)

<table>
<thead>
<tr>
<th>Species</th>
<th>Common species of mites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mice</td>
<td>Myocoptes musculinisi, Myobia musculi, Radfordia affinis</td>
</tr>
<tr>
<td>Rats</td>
<td>Ornithonyssus bacoti, Radfordia ensifera</td>
</tr>
<tr>
<td>Guinea Pigs</td>
<td>Chirodiscoides caviae, Trixascarus caviae</td>
</tr>
<tr>
<td>Hamsters</td>
<td>Demodex aurati, Demodex criceti</td>
</tr>
<tr>
<td>Gerbils</td>
<td>(very rare)</td>
</tr>
<tr>
<td>Sarcoptes</td>
<td>Dogs</td>
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<tr>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Notoedres</td>
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<tr>
<td>Knemidocoptes</td>
<td></td>
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<tr>
<td>Psoroptes</td>
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<tr>
<td>Chorioptes</td>
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</tr>
<tr>
<td>Otodectes</td>
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</tr>
<tr>
<td>Cheyletiella</td>
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<tr>
<td>Demodex</td>
<td>✓</td>
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<tr>
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</tr>
<tr>
<td>Dermanyssus gallinae</td>
<td></td>
</tr>
<tr>
<td>Ornithonyssus sylvialum</td>
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</tbody>
</table>
Fowl Mites

3.1 *Knemidocoptes mutans*: Scaly leg and face in domestic fowl

3.2 *Knemidocoptes gallinae*: Depluming itch

10. *Dermanyssus gallinae*: Chicken Mite

11. *Ornithonyssus sylviarum*: Northern Fowl Mite
**Dermanyssus gallinae & Ornithonyssus sylviarum**

*Dermanyssus gallinae* - Chicken Mite (= Red Mite)
- A **blood-sucking mite** of poultry in wood-framed houses
- Mites are **found on birds only when feeding** (at night) otherwise hide in nests, roosts & crevices

*Ornithonyssus sylviarum* - Northern Fowl Mite
- The **most important & common ectoparasite** of the poultry industry
- Is also a **blood-sucking mite**, and is reddish-brown after a bloodmeal
- Remains on bird throughout life
10. *Dermanyssus gallinae*

**Chicken Mite (= Red Mite)**
- A blood-sucking mite of poultry in wood-framed houses
- Mites are found on birds only when feeding (at night) otherwise hide in nests, roosts & crevices
- One of the most serious parasitic diseases of poultry farms in Europe

**Life History**
- Females produce eggs after each meal
- Generation time of 7 days
- Adults can survive for up to 8 months without feeding

*CHICKEN MITES*
Chicken mites only feed on the birds at night. They can be detected by examining secluded areas of poultry houses. You should look for gray, brown or red mites. There may also be back and white deposits of mite fecal material and cast off skins.
10. *Dermanyssus gallinae*

**Chicken mite**

**Pathogenesis & Clinical signs**
- Heavy infestations → severe anemia & can kill nestlings
- Reduced weight gains & egg production
- Mites will readily attack humans

**Diagnosis**
- Collect mites from birds at night or poultry house bedding
- Mites are nearly 1 mm & red after feeding

**Treatment & Control**
- Prevent transmission to clean houses
- Apply pesticides to premises
11. *Ornithonyssus sylviarum*

**Northern Fowl Mite**
- The most important & common ectoparasite of the poultry industry
- Is also a blood-sucking mite
- Is reddish-brown after a bloodmeal

**Life History**
- Remains on bird throughout life
- Generation time of 5 days
- Mites can survive weeks off the host

*NORTHERN FOWL MITES*
Look for dark patches in the feathers and on the skin around the vent area. Mites appear as fast-moving, white or dark specks in these areas. They also leave behind a lot of mite fecal material.
11. *Ornithonyssus sylviarum*

**Northern Fowl Mite**

**Pathogenesis & Clinical signs**
- Reduces egg production, weight gain & seminal fluid production in roosters
- Birds infested 50,000 mites lose 6% blood volume/day
- May spread Fowl Pox and Newcastle Disease
- Mites readily bite humans

**Diagnosis**
- Mites are about 1mm
- Will be around the vent area of hens

**Treatment & Control**
- Prevent introduction into clean housing
- Pesticide treatment of environment & birds (spray or powder)
Ornithonyssus vs. Dermanyssus

FYI:

• The diagnostic difference between *Ornithonyssus* and *Dermanyssus* is based on the position of the anal opening on the anal plate.
  
  – *Ornithonyssus*: Opening is at the front of the anal plate; the chelicerae are much stouter than in *Dermanyssus*
  
  – *Dermanyssus*: Opening is at the rear of the anal plate; the chelicerae are much less stout than in *Ornithonyssus*
<table>
<thead>
<tr>
<th>Animal Type</th>
<th>Dogs</th>
<th>Cats</th>
<th>Rabbits</th>
<th>Cattle</th>
<th>Sheep &amp; Goats</th>
<th>Horses</th>
<th>Pigs</th>
<th>Avian</th>
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<tbody>
<tr>
<td><em>Sarcoptes</em></td>
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<td>✓</td>
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Trombiculids - Chiggers (FYI)

*Eutrombicula alfreddugesi*
*Neotrombicula autumnalis*

- The larvae of chiggers are parasitic, while the nymphs & adults are free living
- Larvae are bright red to orange colour, 250-300 µm & feed for several days
- Found on the feet, legs, head & ears of dogs & cats in late-summer or early fall
- Can cause an intense pruritus which can continue days to weeks after the chigger is removed
Chiggers = Trombiculid mites

- In North America, they tend to be more prevalent in the hot and humid regions.
  - The southeast, the south, and the midwest US states
  - Has been seen in Nova Scotia
- In the more temperate regions, they are found only during the summer.
- They are not present, or barely found, in far northern areas, in high mountains, and in deserts
Chiggers

• Chiggers are the juvenile (or larval) form of a family of mites called Trombiculidae.
  – Chiggers are less than 1/150th of an inch in diameter.
• They only dine on humans in their juvenile form.
• Their bites are painless, but lesions are very itchy.
• Itching usually peaks a day or two after the bite occurs.
• After a few days of being attached to the skin, chiggers fall off -- leaving itchy red welts.