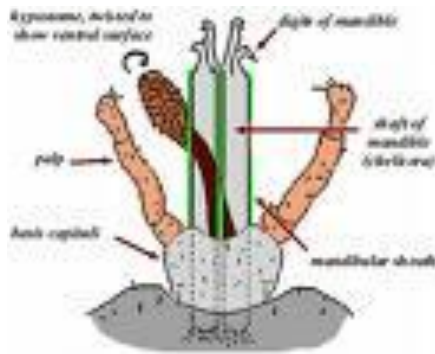
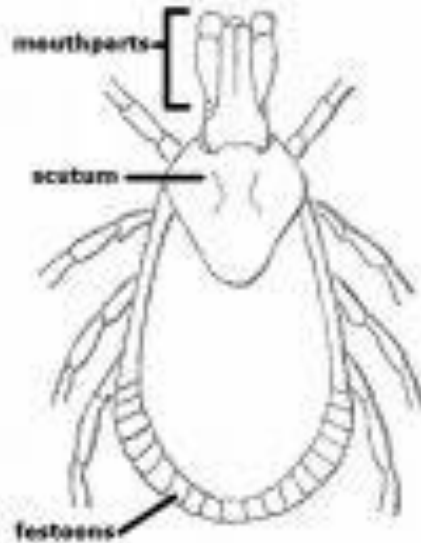
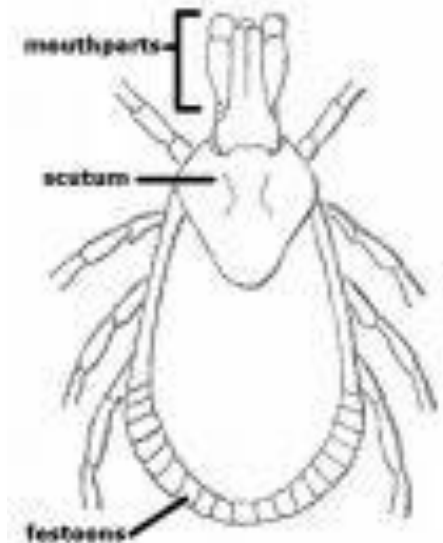
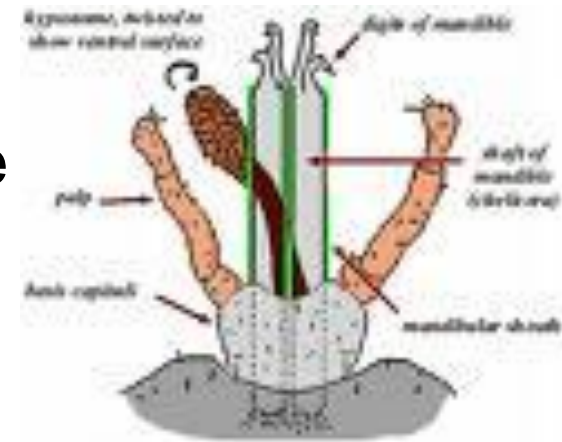


# CLASS - ARACHNIDA



1. This class includes scorpions, spiders, ticks and mites.
2. Antennae, wings and compound eyes are absent.
3. The first and second pair of appendages is modified to help in feeding, the first pair being called the **chelicerae** and the second pair the **pedipalps**.
4. Body divided into two parts **prosoma** and **opisthosoma**. Prosoma again divided into two parts **gnathosoma** (bears the chelicerae and pedipalps) and **podosoma** (bears four pairs of walking legs)



5. Body divided into two parts -

(i) An anterior **gnathosoma**, which bears the chelicerae, pedipalps and the median hypostome.

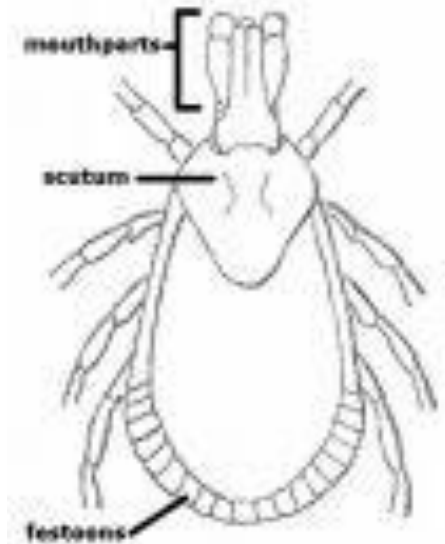
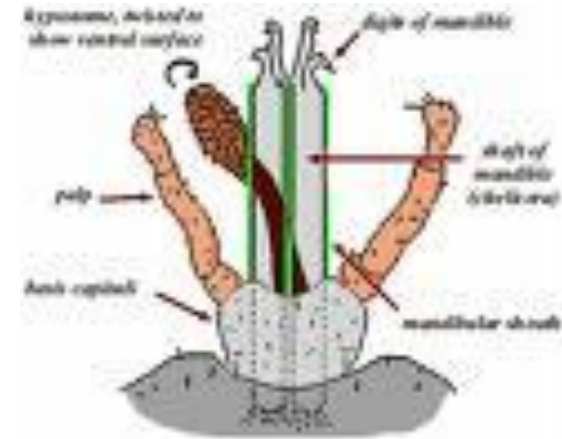
The gnathosoma also called **capitulum**

(ii) A posterior single piece called **idiosoma**.

6. The mouthpart of tick and mites are modified for sucking the blood and tissue fluid of their hosts.

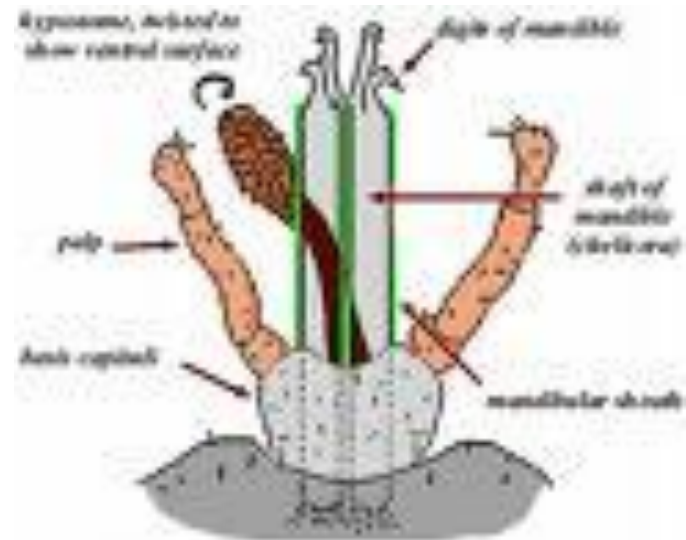
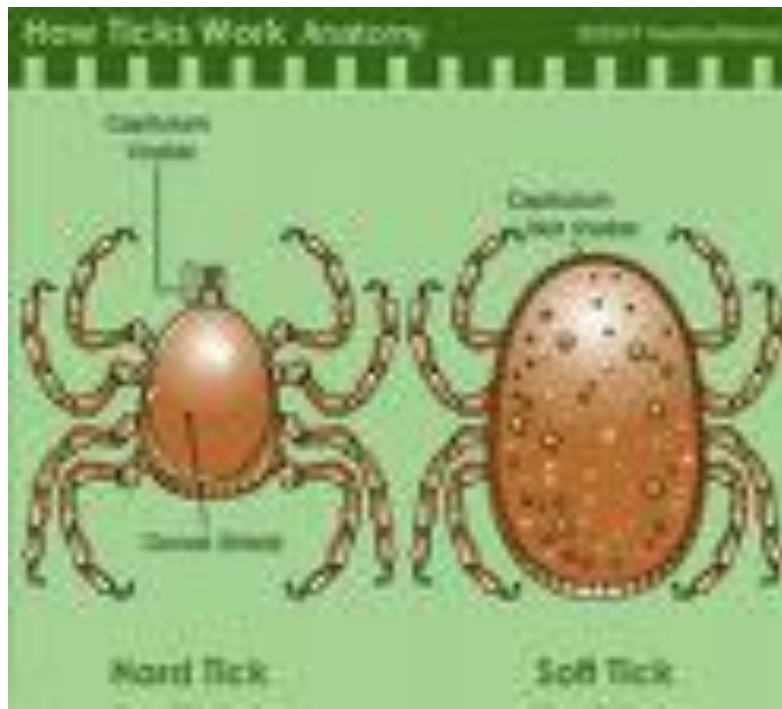
7. Arachnids breathe by means of gill books, lung-book and tracheae. Some mites absorb oxygen through the cuticle.

8. Adults have four pairs of legs.

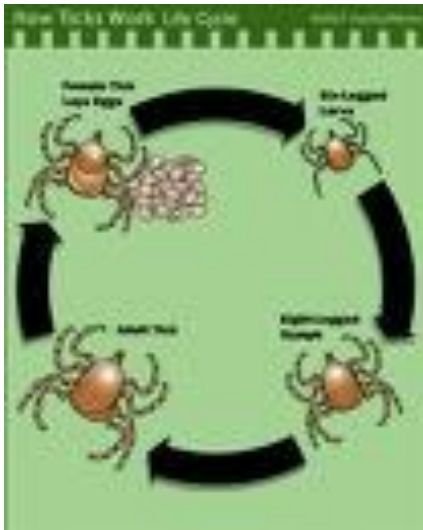


# ORDER: ACARINA

1. The species of this order are the **soft** and **hard ticks** and their numerous small or minute relatives called **mites**.
2. The mouthpart consist of a pair of chelicerae, a pair of pedipalps and between these a median toothed structure called the hypostome. They are borne on the gnathosoma, which consists of a plate called the **capitulum**.



3. The life history of acarina begins with the eggs from which emerge larvae, having 3 pairs of legs. The larvae moult to become the nymph, resemble the adult but have no sexual organs. One or more nymph instars, sometimes called the protonymphs, deutonymph and tritonymph precede the appearance of the adult phase.
4. The ticks differ from the mites in their large size, leathery skin, armed hypostome and the presence of a pair of spiracles behind the coxae of the third or fourth pair of legs.



Sub-order - 6 but 4 are important

Sub-order: **MESOSTIGMATA**

- Dermanyssus gallinae* - Red mite of poultry.
- Ornithonyssus bursa* - Tropical fowl mite.
- O. sylviarum* - Northern mite of poultry

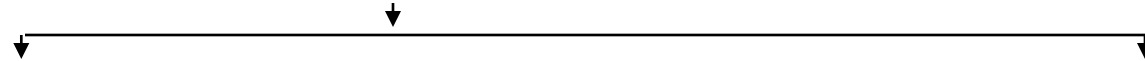
Sub-order: **TROMBIDIFORMES**

- Demodex* - Demodectic mange
- Trombicula* - Larvae suck the tissue fluids of man and animals and may be important vector of diseases such as scrub (mite) typhus.

Sub-order: **SARCOPTIFORMES**

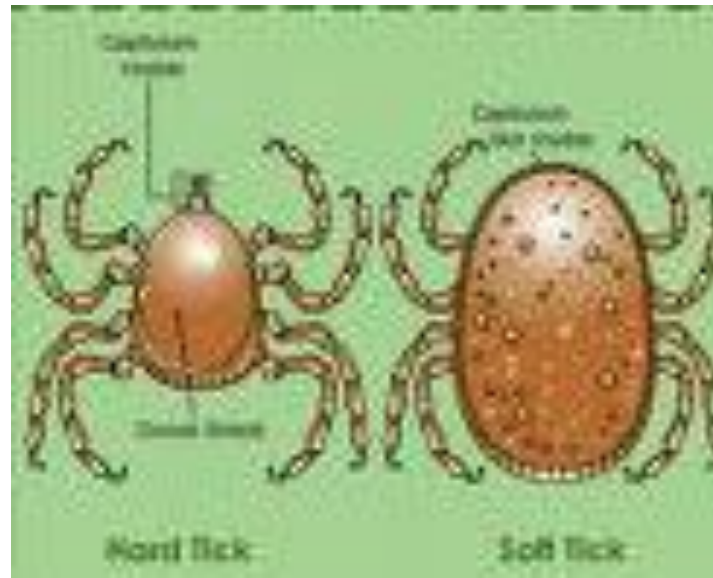
- a. Oribatidae (Oribatid mites) - not parasitic, act as intermediate host.
- b. Acaridae - causes mange (sarcoptic mange)

Sub-order: **IXODOIDEA** (Ixodides)  
Hard and soft ticks

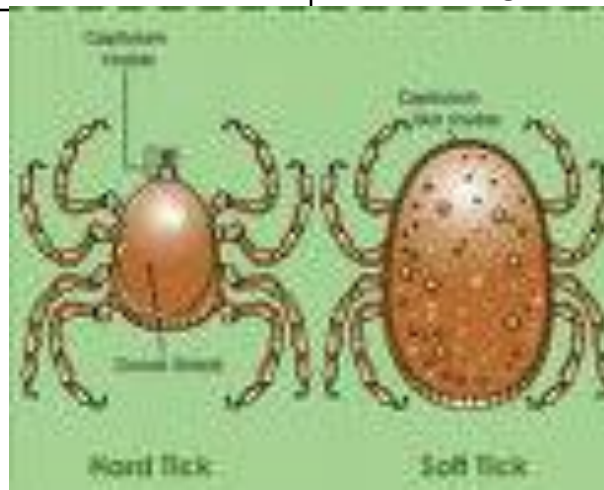


Family: **Ixodidae (Hard ticks)**

**Argasidae (Soft ticks)**

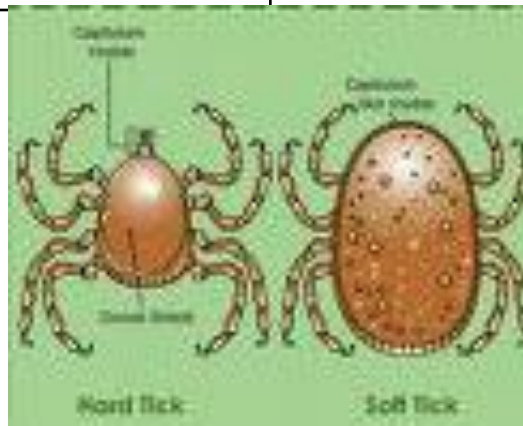


Family: <b>Argasidae (Soft ticks)</b>	Family: <b>Ixodidae (Hard ticks)</b>
1. Scutum is absent	1. Scutum covers the whole back of the male and only a small part anteriorly on the female
2. Capitulum lies ventrally and mouth parts not visible from above.	2. Capitulum is anterior and visible from above.
3. Pedipalps are leg like	3. Pedipalps are not capable of movement like legs
4. Spiracles lies between 3rd and 4th coxa.	4. Spiracles lie behind 4th coxa
5. Nymphal stage more than one	5. Nymphal stage only one <i>i.e.</i> one moulting.





Family: <b>Argasidae (Soft ticks)</b>	Family: <b>Ixodidae (Hard ticks)</b>
6. Feed at night and are not to be found on the body of the host	6. Feed both day and night and remain on the body of the hosts for long time.
7. Able to live without any food even a year or more.	7. Cannot resist starvation for long
8. Sexual dimorphism is not prominent.	8. Sexual dimorphism is prominent
9. Eyes are absent or present, two pairs, situated laterally in the supra coxal folds.	9. Eyes may be present or absent
10. Genus: <i>Argas</i> , <i>Otobius</i> & <i>Ornithodoros</i>	10. Genus: <i>Boophilus</i> , <i>Ixodes</i> , <i>Hyalomma</i> , <i>Rhipicephalus</i> , <i>Haemaphysalis</i> , <i>Amblyomma</i> , <i>Dermacentor</i>



**Genus:**

***Argas***

**Species:**

***Argas persicus***

**Common name:**

Fowl tick

and

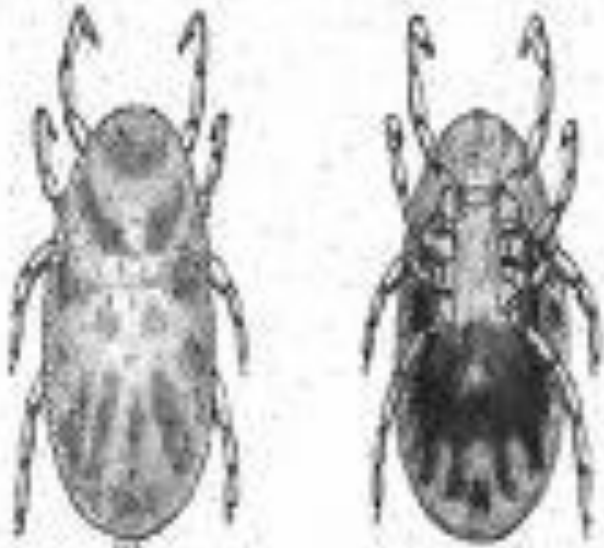
*A. reflexus* - in Pigeon

**Distribution:**

Cosmopolitan

**Host:**

Fowl, turkeys, pigeons, ducks, geese, canaries, ostriches and wild birds. It may also bite man.

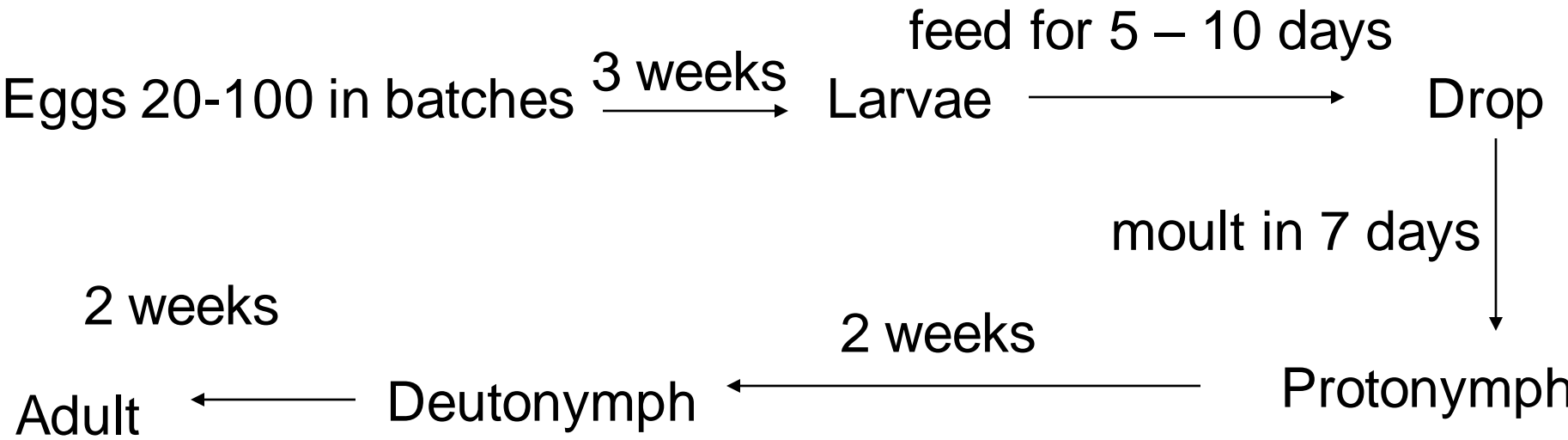


# Morphology:

1. The imago are oval in shape 4 -10 by 2.5 - 6 mm, narrow anteriorly than posteriorly.
2. The edges of the body are sharp.
3. The engorged tick has a slaty blue colour while the starved tick yellowish brown in colour.
4. Sexes can be distinguished only by the shape of the genital opening.



**Life cycle and habit:**



- The eggs are laid in cracks and crevices of the fowl house and under the bark of trees.
- They are small spherical brown in colour and laid in batches of 20-100.
- Larvae hatch after 3 weeks or more having 3 pairs of legs and circular bodies, which become spherical after engorgement.



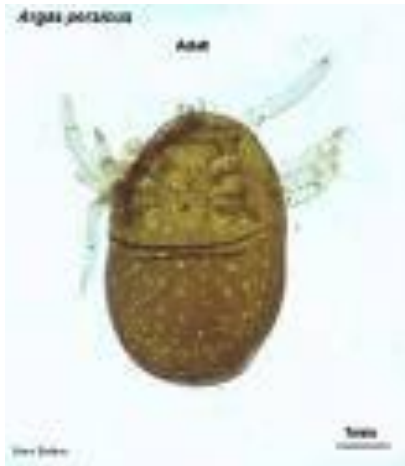
- Larvae feed for 5-10 days under the wings after attachment and after feeding drop off and hide away to moult after about 7 days.
- There are two nymphal stages each of about 2 weeks and engorges once during this time.
- The nymphs and adults hide away in sheltered spots and attack their host at night, feeding for about two hours.
- The adult feed once a month and lay a batch of eggs after each meal.
- Larvae can live without food for 3 months and nymphs and adult for about 5 years.

## Pathogenesis:

1. The fowl tick worries the birds at night so that they sleep restlessly.
2. In heavy infection anaemia occur due to loss of blood.
3. Egg laying decreases or may stop completely.
4. Transmit diseases like *Anaplasama marginale*, *Aegyptianella pullorum*, *Borrelia anserina* causing fowl spirochaetosis.
5. The spirochaete passes through the egg of the off spring of an infected female tick and so can be eradicated only with the ticks.

## Diagnosis:

The ticks will be found in cracks of the woodwork or the wall of the house.





# Control:

1. Birds should be removed from houses / run and are placed in wooden crates.
2. Application of acaricides in the environment *i.e.* poultry houses.
3. Treatment of the birds with acaricides dusting simultaneously.
4. Treatment should be repeated monthly intervals.
5. The poultry house may be burn (if concrete)
6. All cracks and crevices spray with acaricides and the boxes should be painted with solution containing acaricides.
7. Carbamate or Carbaryl @ 5% for house spray Organo phosphorus compound like Permethrin, Decamethrin *etc.* can be used.

**Genus:** *Otobius*

**Species:** *Otobius megnini*

**Common name:** Spinose ear tick

**Distribution:** America, Southern Africa and India

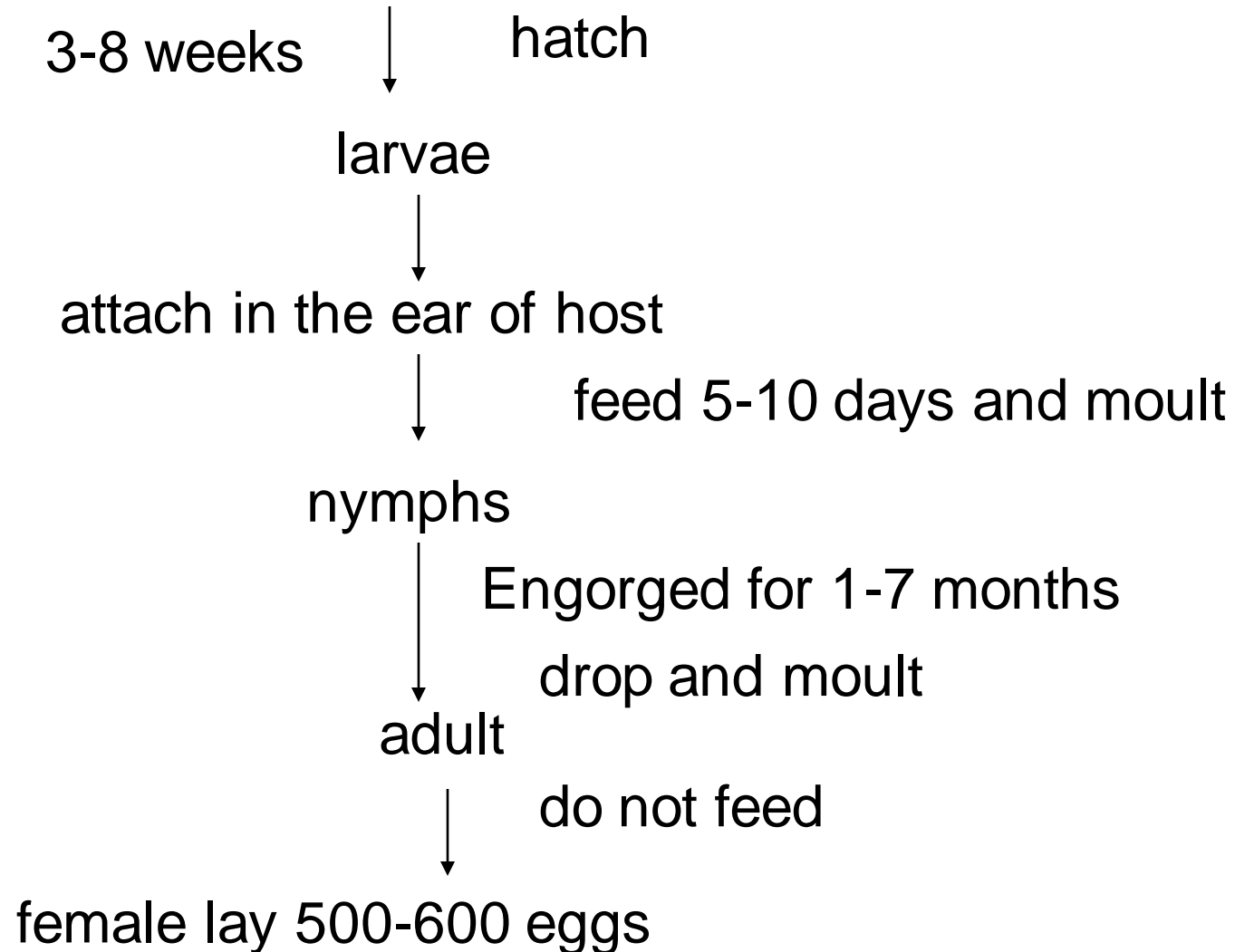
**Host:**

Ear of dogs, sheep, horses and cattle; sometime in goats, pigs, cats and man. Only larvae and nymphs are most often parasitic; adults are not parasitic.



## Life cycle:

Eggs are laid in cracks of poles, under food boxes & in crevices of walls



# Pathogenesis:

1. Suck blood, marked irritation and inflammation.
2. Secondary bacterial infection.

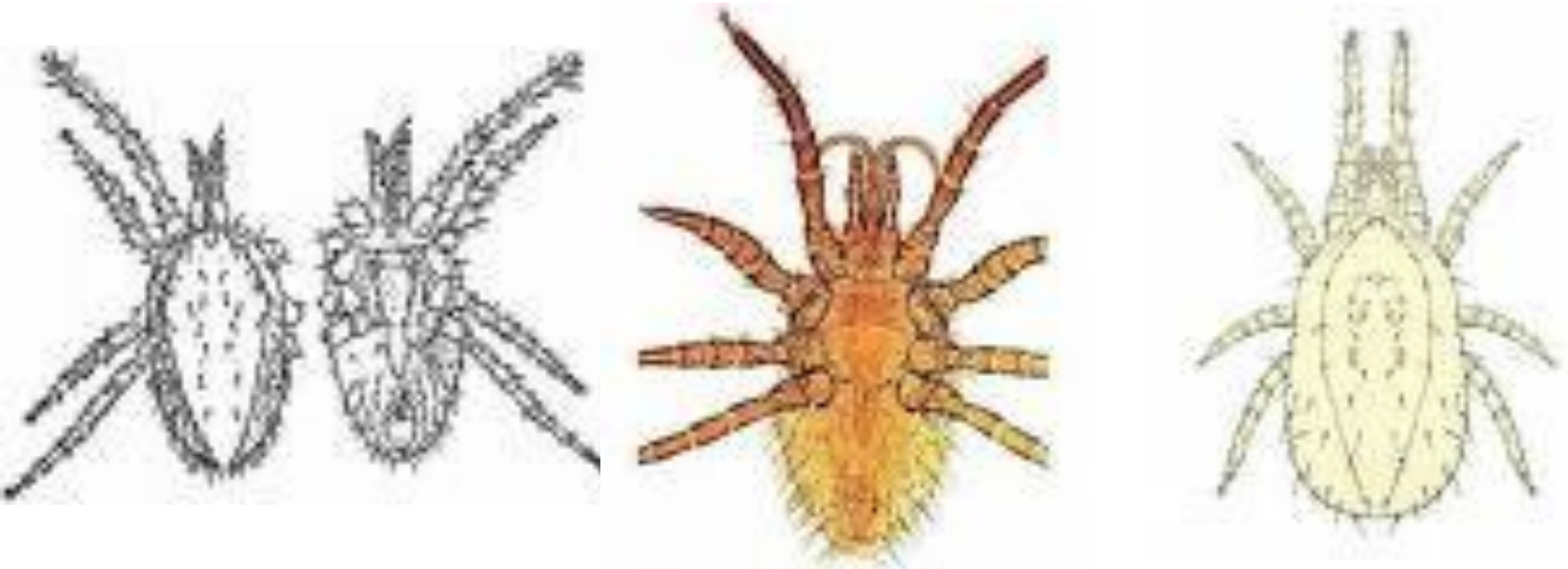
# Control:

- Acaricides treatment in combination with Xylol and Pine oil give good result.



# Genus: *Ornithodoros*

- Species:**
- O. moubata* - Eyeless tampon of Africa
  - O. savignyi* - Processes eyes - Africa, India, near fast
  - O. turicata* - Relapsing fever tick in USA



## Host:

- Man, various domestic animals and wild animals including birds and even tortoises.
- The ticks live in native and in the sand under trees where animals and human beings frequently seek shelter.



# Life cycle

- Female lays batches of about 100 eggs in the sand.
- The female broods over the eggs, which hatch in about 8 days to produce larvae,
- Which after emergence remains quiescent until it has moulted to the nymphal stage.
- Several nymphal instars are passed through and the nymphs like the adults, attack their hosts for short periods only to feed.
- They suck blood of animal, man and birds.

## ***Ornithodoros moubata:***

1. They suck blood.
2. Vector of spirochaete, *Borrelia duttoni* causing African relapsing fever of man.
- 3 Act as reservoir host for the **African swine fever virus**.
4. Vector of Q. fever and transmit *Borrelia anserina* and *Aegyptianella pullorum* of the fowl.

## ***Ornithodoros lahorensis***

- act as a vector of ***Theileria ovis*** and ***Anaplasma ovis*** in goat.

## ***O. turicata***

- acts as vector of Q fever.