

Siphonaptera

Derivation: (Gk. **siphon** = pipe, tube; **a+petron**= **wingless**, this is an appropriate appellation for these secondarily wingless insects whose mouthparts are adapted for piercing skin and sucking blood)

Common name: (Fleas)

Metamorphosis: Complete - **Distribution:** Worldwide - **Number of families:** 7

The Siphonaptera is an order of some 2500 species, all of which are highly modified, apterous, and laterally compressed ectoparasites. Fleas mainly use mammalian hosts, with relatively few birds having fleas. Some hosts (e.g. bush rat) have been reported to harbor more than 20 different species of flea, and conversely, some fleas have over 30 recorded hosts, so host-specificity is clearly much less than for lice.

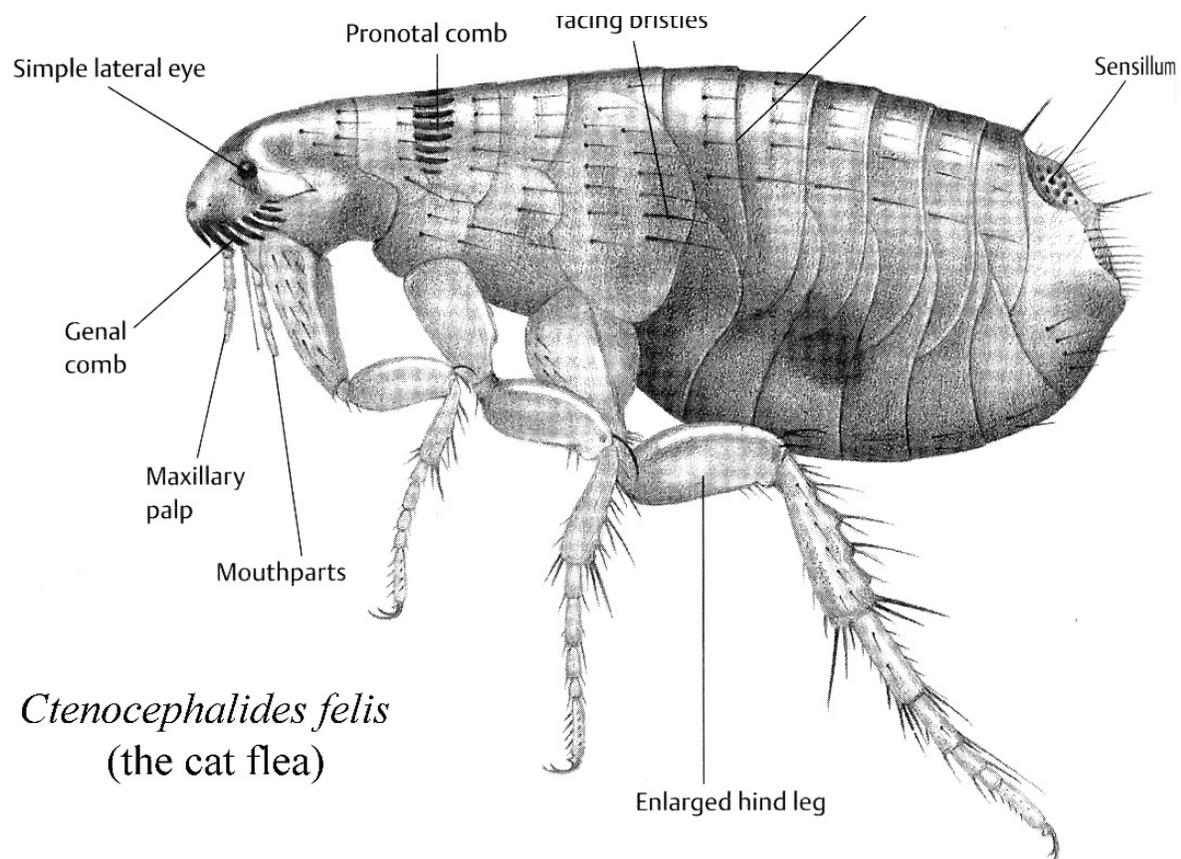
Both sexes (male & female) of adult take blood from a host, some species being **monoxenous** (restricted to one host), but many others being **polyxenous** (occurring on several to many hosts). The oriental rat flea *Xenopsylla chiopsis* belongs to the latter group, with polyxeny facilitating transfer of **plague (Black Death)** from rat to human host. Plague is most commonly transmitted by regurgitating the bacteria into the wound while biting the host. Fleas transmit some other diseases of minor significance from other mammals to humans, including **murine (endemic) typhus** and **tularemia**, but apart from plague, the most common human health threat is from allergic reaction to frequent bites from the fleas of our pets, *Ctenocephalides felis* (cat flea) and *C. canis* (dog flea).

The large flea eggs are laid predominantly into the host's nest, where free-living worm-like larvae develop on material such as shed skin debris from the host. High temperatures and humidity are required for development of many fleas, including those on domestic cats (*C. felis*), dogs (*C. canis*), and humans (*Pulex irritans*).

Diagnostic characters:

1. *Small, apterous, laterally compressed insects whose adults are ectoparasites primarily of worm-blooded animals.*

2. The mouthparts are modified for piercing and sucking, without mandibles but with a stylet derived from **the epipharynx** and two elongate, serrate **lacinial blades** within a sheath formed from the labial palps.
3. Compound eyes are absent, and ocelli range from absent to well developed.
4. Antennae are short and stout, lying in a deep lateral groove.
5. The body has many backwardly directed setae and spines; some may be grouped into combs on the gena and thorax (especially the prothorax).
6. Thoracic segments free, the large metathorax houses the hind-leg muscles.
7. The legs are long and strong, terminating in strong claws for grasping host hairs, with coxae very large, tarsi 5-segmented.
8. Larva is elongate, eruciform and apodous.
9. The pupa is exarate in a loose cocoon.
10. Development is holometabolous.



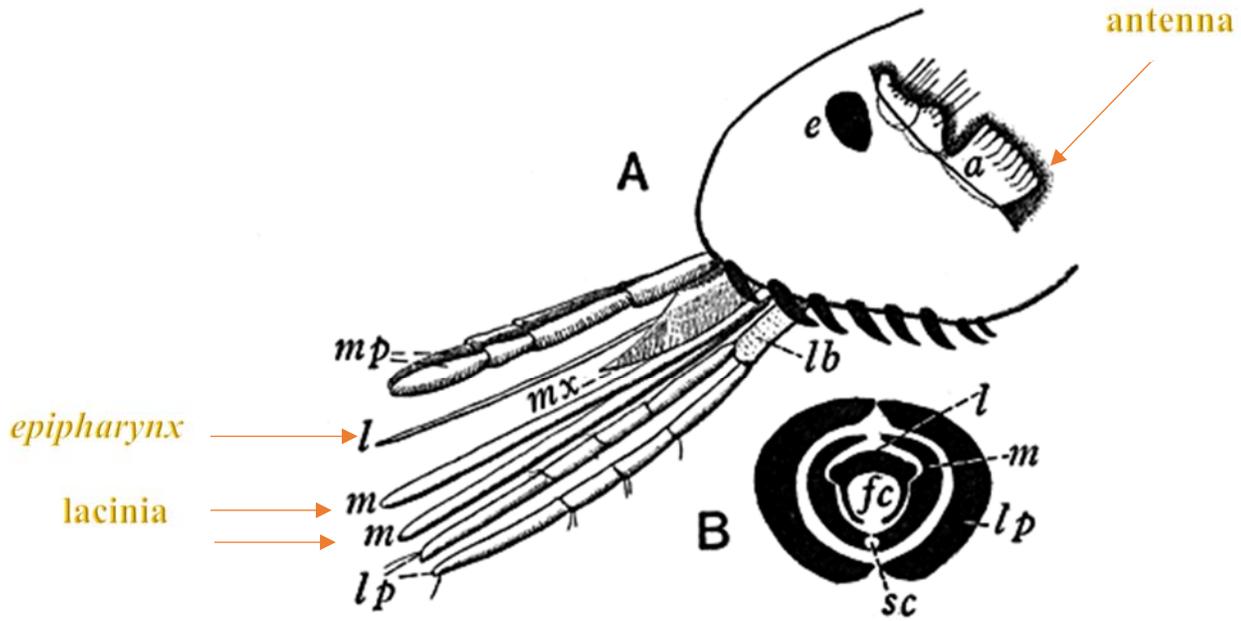


Fig. 85. Siphonaptera

A, head of flea showing mouthparts. B, transverse section of mouthparts.
a, antenna; *f.c.*, food canal; *l*, epipharynx; *lb*, labium; *l.p.*, labial palp; *m*, lacinia;
mx, stipes; *m.p.*, maxillary palp; *s.c.*, salivary canal; *e*, ocellus



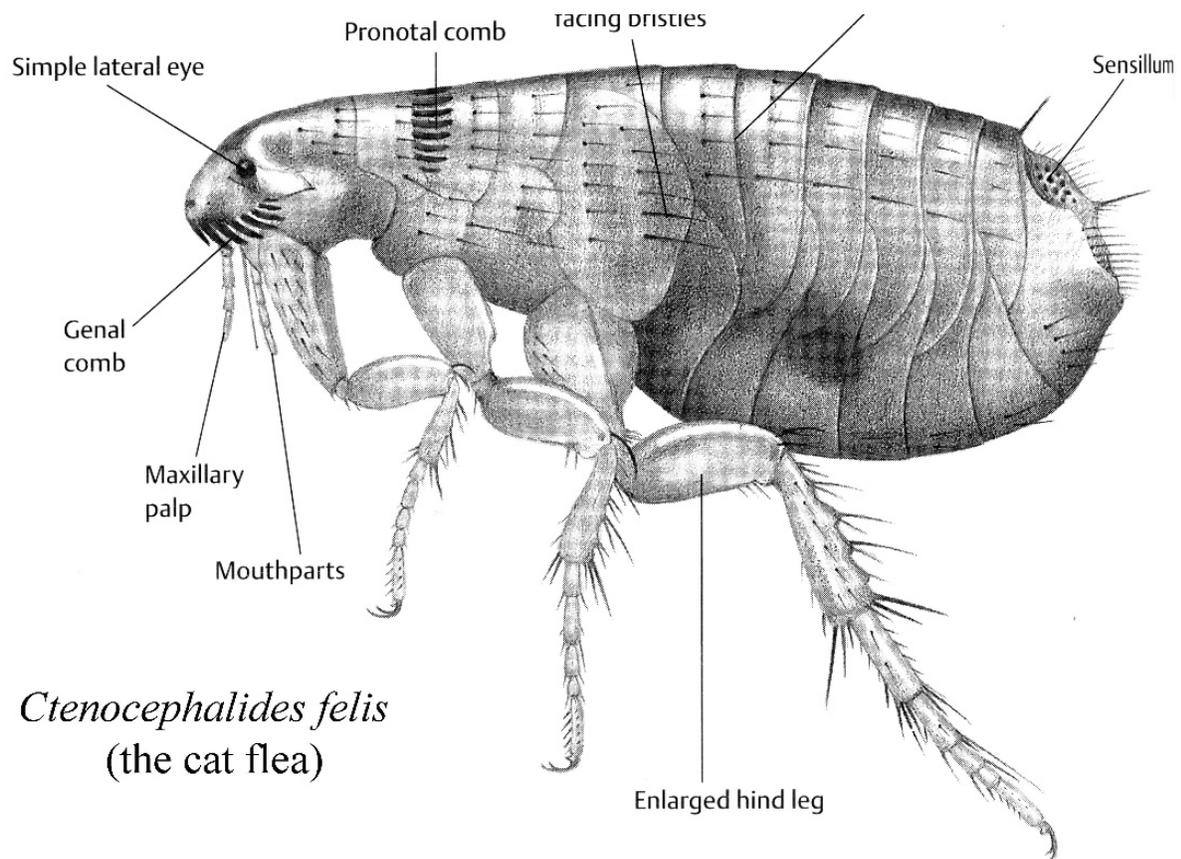
Larva of flea



Pupa of flea

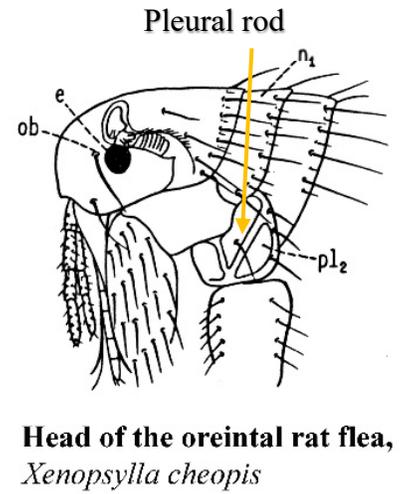
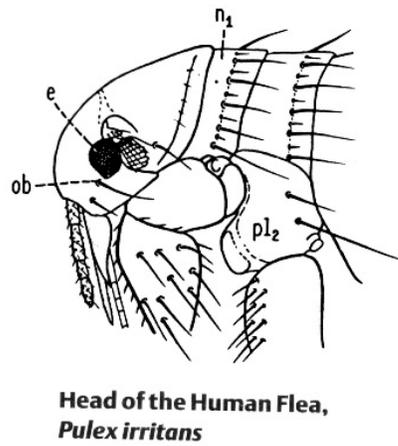
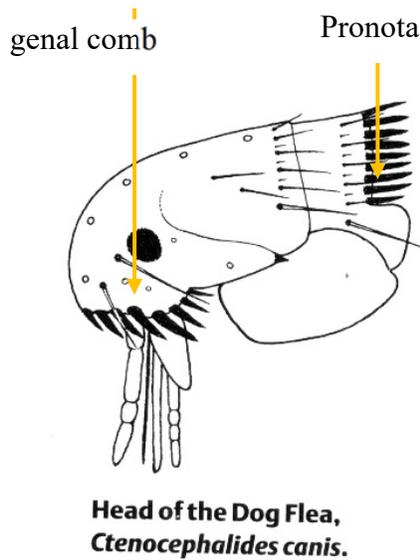
Family Pulicidae

Most of the species that attack man and domestic animals are found in this family. The abdominal terga have one transverse row of bristles and the three thoracic terga combined are longer than the first abdominal tergum.



Key to the Important Studied Species of the Order Siphonaptera

1. Pronotal and genal combs are present (**Pulicidae**)..... *Ctenocephalides canis*
 - Neither pronotal nor genal combs are present2
2. Pleural rod of mesothorax present (**Pulicidae**)*Xenopsylla cheopis*
 - Pleural rod of mesothorax absent (**Pulicidae**)..... *pulex irritans*



Family Pulicidae

Ctenocephalides canis

Dog flea



Family Pulicidae

Xenopsylla cheopis

Oriental rat flea



Family Pulicidae

pulex irritans

Human flea

