SIPHONAPTERA

Fleas

The name Siphonaptera is derived from the Greek words "*siphon*" meaning a tube or pipe and "*aptera*" meaning wingless. This is an appropriate appellation for these secondarily wingless insects whose mouthparts are adapted for piercing skin and sucking blood.

Classification	Life History & Ecology	Distribution
Physical Features	Economic Importance	
Major Families	Fact File	Hot Links

Life History & Ecology:

As adults, all fleas are blood-sucking external parasites. Most species feed on mammals, although a few (less than 10%) live on birds. Only adult fleas inhabit the host's body and feed on its blood. They are active insects with a hard exoskeleton, strong hind legs adapted for jumping, and a laterally flattened body that can move easily within the host's fur or feathers. Unlike lice, most fleas spend a considerable amount of time away from their host. Adults may live for a year or more and can survive for weeks or months without a blood meal.

Flea larvae are worm-like (vermiform) in shape with a sparse covering of bristles. They rarely live on the body of their host. Instead, they are usually found in its nest or bedding where they feed as scavengers on organic debris (including adult feces). In general, flea larvae can survive more arid conditions than most fly larvae. After a larval period that includes two molts, fleas pupate within a thin silken cocoon. Under favorable

conditions, the life cycle can be completed in less than a month.

Distribution:

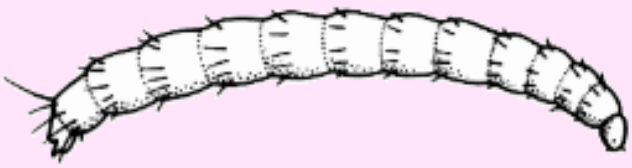
Commonly associated with mammals (and occasionally birds) throughout the world. The greatest diversity occurs in temperate zones.

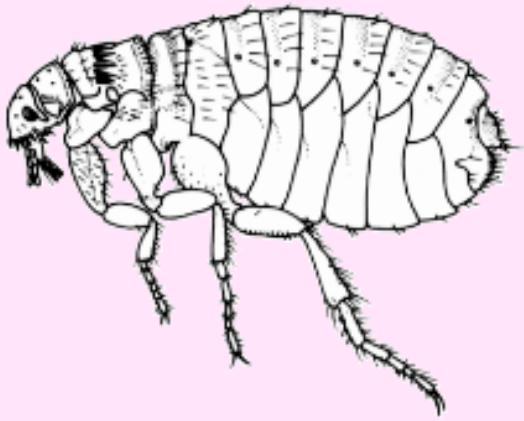
	North America	Worldwide
Number of Families	**7**	**16**
Number of Species	**325**	**~2,380**

Classification:

Holometabola
complete development (egg, larva, pupa, adult)

Physical Features:



	
Immatures	**Adults**
1. Body vermiform (maggot-like), sparsely covered with hairs 2. Head reduced, eyeless, mouthparts mandibulate	1. Body bilaterally flattened 2. Mouthparts suctorial (haustellate) 3. Large bristles (ctenidia) often present on head or thorax (genal and pronotal combs) 4. Hind femur enlarged, adapted for jumping

Economic Importance:

In addition to their irritating bites, fleas may also transmit pathogens that cause disease in humans and other animals. Cat and dog fleas, for example, are intermediate hosts for a tapeworm (*Dipylidium caninum*) that infects dogs, cats, and humans. Rabbit fleas spread a myxomatosis virus within rabbit populations, and the oriental rat flea is the primary vector of *Yersinia (=Pasturella) pestis*, the bacterial pathogen for bubonic plague.

Major Families:

- **Pulicidae** (common fleas) -- This family includes most species with

economic or medical importance: the cat flea (*Ctenocephalides felis*), the dog flea (*C. canis*), the human flea (*Pulex irritans*), the rabbit flea (*Spilopsyllus cuniculi*), and the oriental rat flea (*Xenopsylla cheopis*).

Fact File:

- Cat fleas commonly infest dogs, and dog fleas may infest cats. Both species may bite humans! Cat and dog fleas are similar in appearance, but the dog flea has a rounder head and the first bristle in its genal comb is shorter than the others.

- Travelling flea circuses were a popular form of entertainment in Europe during the 1800's. Mole fleas were used as performers because they are large (up to 5.5 mm in length) and cannot jump as far as most other fleas.

- Since their larvae must mature in the host's nest, fleas only infest animals that have a regular nest site. This explains why most rodents (e.g., rats, mice, etc.) have fleas but most ungulates (e.g., cows, horses, deer, etc.) do not.

- In some species, the reproductive cycle of a female flea is triggered by reproductive hormones in the female host. This ensures that a new generation of fleas will mature before the host's offspring leave the nest.

- The arithmetic flea

  Adds to your misery

  Subtracts your pleasure

  Divides your attention

  And multiplies like
  the devil

Hot Links and Illustrations:

- **Orkin's Flea Page**
- **Gordon Ramel's Siphonaptera Page**
- **Ecowatch Siphonaptera Page**
- **Tree of Life Web Project - Siphonaptera**
- **Discover Life - Siphonaptera**

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