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### G86-789 Human Lice and Their Control

Shripat T. Kamble

*University of Nebraska--Lincoln*, [skamble1@unl.edu](mailto:skamble1@unl.edu)

David L. Keith

*University of Nebraska--Lincoln*, [dkeith1@unl.edu](mailto:dkeith1@unl.edu)

Wayne L. Kramer

*State of Nebraska Medical Entomology*

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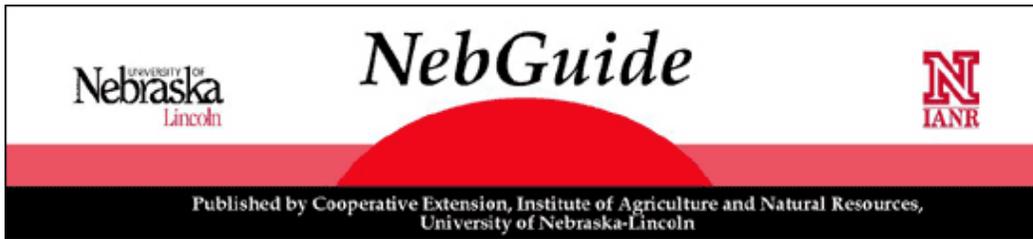


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## Human Lice and Their Control

This NebGuide includes information on biology and control of three species of lice that infest humans.

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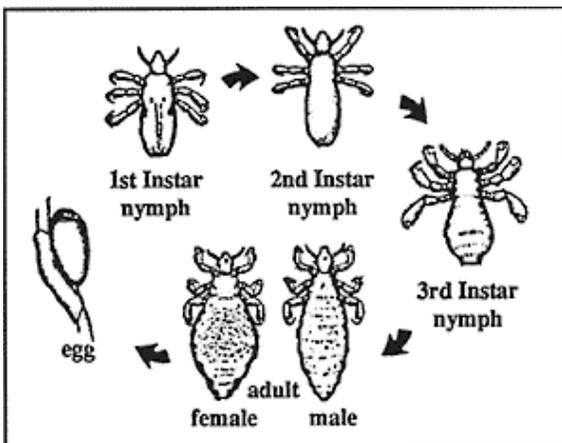
*Shripat T. Kamble, Extension Specialist-Pesticide Impact Assessment*  
*David L. Keith, Extension Entomologist*  
*Wayne L. Kramer, State Medical Entomologist*

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Pediculosis (lice infestation) in humans has been known since ancient times. Three types of lice that infest humans: 1) **head lice**, 2) **body lice**, and 3) **crab** or **pubic lice**.

Lice are small, flat, dirty white to grayish black, wingless insects. Their legs are short and stout, with a large claw on each leg for grasping and holding onto hair. Lice have piercing and sucking mouth parts. These insects are blood feeders and require close contact with human hosts.



**Figure 1. Life cycle stages of the human louse.**

Lice have three stages in their life cycle: egg, nymph (young), and adult. The newly hatched nymphs are identical in appearance to their parents except for their smaller size and undeveloped reproductive organs. Nymphs gradually develop into adults, periodically shedding their skin (molting) during the process. The life cycle (egg to egg) takes approximately 15 to 35 days (*Figure 1*). Lice spend their entire life as ectoparasites on humans and, unlike other insects, they have a relatively consistent environment. Their close contact with human skin ensures favorable temperatures of 82 to 86 F, and an abundant food supply.

Lice do not abandon their hosts unless the body temperature substantially changes due to death or high fever. Once dislodged from a person's body or clothing, they will infest a new human host in the immediate proximity. If a new host is not found within one to eight days, the lice will starve to death.

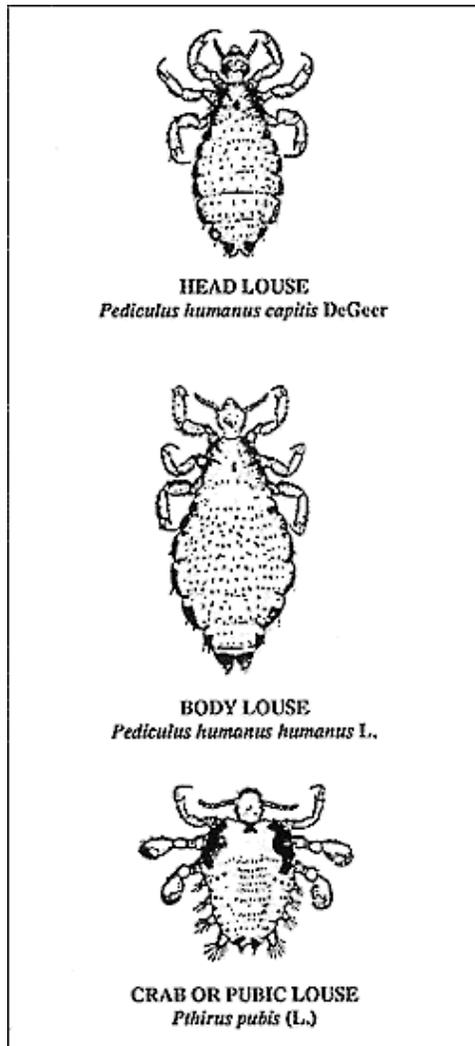
Lice infestations are common throughout the world. In the United States alone an estimated ten million cases

of pediculosis occurred during 1985. Lice are spread through sharing contaminated clothing, hats, scarves, combs, hair brushes, and other headgear, or as a result of close physical contact with an infested person. Other occasional sources are bedding, furniture, rugs, and floor surfaces where dislodged lice may be present.

Once infested, an individual usually carries a few dozen lice. However, some people have been known to carry several hundred lice, and on rare occasions, one to two thousand lice. Human lice do not normally infest pets.

## Damage

### Irritation



Lice use their piercing-sucking mouth parts to penetrate the skin for a blood meal. During feeding, they inject a saliva which causes irritation and subsequent itching. Children under 12 years are more sensitive to louse feeding than other age groups. Scratching louse bite areas frequently causes an abrasion, which may become infected with other microorganisms. Prolonged louse infestation causes a hardening and pigmentation of the skin known as "vagabond's disease."

Even though people experience unpleasant feelings as a result of louse infestation, they often deny pediculosis because of feelings of disgust and shame.

### Disease Transmission

Of the three species of lice, only body lice have been known to transmit disease organisms. Relapsing fever, typhus, and trench fevers were transmitted by body lice in Europe during World War I and World War II. Fortunately, these diseases aren't found in the United States.

### Life Cycle

The three types of human lice differ considerably in habitat and, to a small degree, in their life cycles.

### Figure 2. Human lice adults.

#### Head Louse

In Nebraska, the head louse (*Figure 2*) is the most widespread and important of the human lice. Although anyone can acquire head lice, infestations are most common in preschool, kindergarten, and elementary school children. Louse outbreaks generally occur from August to May when schools are in session.

The fertilized adult female lays four to six eggs (nits) per day, usually at night. In her lifetime, a female lays approximately 50 to 150 eggs. While depositing eggs, she secretes a glue-like substance for attaching eggs to hair near the scalp. The eggs are cylindrical, yellowish-white, and 1/30 inch long--about the size of a fine sand particle. The eggs hatch into nearly transparent nymphs (young) in 5 to 10 days. Newly hatched nymphs take their first blood meal within hours. Later these nymphs change to a dirty white to light straw color. They

feed at fairly frequent intervals, at least twice daily. In an 8- to 9-day period, nymphs shed their skin (molt) three times and grow into adults. The adult male (1/12 inch long) and female (1/8 inch long) mate within 10 hours, and may mate often during the remainder of their lives.

One to two days after reaching maturity, the female is ready to lay eggs. The life cycle (egg to egg) is completed in 15 to 21 days. The adults are dirty white to grayish black, and live approximately 20 to 30 days. The adult color generally depends on the color of the substrate on which the nymphs develop. Head lice on blond hair appear paler than those on black or brown hair.

All head louse life stages are found in the hair near the scalp. They are prevalent on the back of the neck and behind the ears. Head lice are rarely found on eyelashes or other hairy parts of the body. In severe infestations the hair may become matted as a result of exudates from louse bites. Head lice can survive three to four days once dislodged from the host.

Head lice are transferred from one infested person to another through physical contact and the communal use of combs, hair brushes, head apparel, towels, bedding, and personal clothing.

### ***Body Louse***

The body louse (*Figure 2*), or cootie, is very similar to the head louse in physical appearance except it is 10 percent to 20 percent larger. This insect is generally associated with unclean environments where inadequate bathing occurs or clothes are shared. The body louse lives on clothing that comes in close contact with the human body, such as the waistline and crotch of trousers, shirt armpits and collars, and underwear. This insect visits the human body only to obtain a blood meal.

The life cycle of the body louse is similar to that of the head louse in many aspects. The fertilized female adult lays nine to ten eggs per day, and may lay 270 to 300 eggs in her lifetime. The eggs are preferably glued to fibers of clothing, usually in seams, and occasionally to coarser body hair. Eggs hatch in six to nine days. Newly hatched nymphs begin to suck blood at once and feed frequently during day or night, especially when the host is quiet. Nymphs mature to adults in approximately 16 to 18 days, after three skin sheddings (molts). Newly emerged adult males, 1/11 inch long, and females, 1/6 inch long, mate within a day. The female begins laying eggs one or two days after reaching maturity. The life cycle (egg to egg) is completed in 22 to 28 days. The adults are grayish white, and live approximately 30 to 40 days. After discontinued contact with the host, body lice can survive 8 to 10 days. Body lice are spread through contact with infested persons or their clothing.

### ***Crab or Pubic Louse***

This louse (*Figure 2*) has a crab-like appearance and is grayish white. It infests the pubic region of the body, but in severe infestations may be found in armpits, mustaches, beards, eyelashes, and eyebrows.

Fertilized adult females lay three eggs per day for a total of 26 eggs in their lifetime. The oval, whitish eggs, 1/50 inch long, are glued to coarser hair near the skin. The eggs hatch after six to eight days. The newly hatched nymphs start sucking blood immediately. The nymphs grow into adults after three skin sheddings (molts) in 15 to 17 days. The life cycle (egg to egg) is completed in 34 to 41 days. The adults are 1/16 inch long and live for a month on human hosts. If they are dislodged, they can survive less than 24 hours.

Both nymphs and adults tend to settle on one spot, and feeding continues intermittently for hours or days. This insect is spread by intimate physical contact, and possibly through infested bedding, clothing and toilet seats.

## **Control**

Human lice can be successfully controlled through:

1. recognition of infestation,
2. inspection,
3. personal hygiene and sanitation, and
4. chemical treatment.

### ***Recognition of Infestation***

Irritation due to constant scratching of the scalp or other body parts may be the first clue of lice infestation. Blood-spotted undergarments or bedding also may be observed.

### ***Inspection***

Once suspected, closely inspect the scalp, head hair, and hair of other body regions to confirm lice infestation. Also inspect clothing and bedding. It is a good idea to inspect individuals with a history of louse infestation every two weeks, and to check all family members or other persons who might have come in contact with an infested person.

### ***Personal Hygiene and Sanitation***

1. Bathing daily with soap and thoroughly washing hair with shampoo is important to prevent and control lice. Once a louse infestation is encountered, apply medicated shampoo and remove lice and eggs by combing the hair with a specially designed nit comb, available at pharmacies. Metal combs are best. Personal hygiene is essential in controlling body lice.
2. Soak all combs, brushes, and other hair care items for one hour in a louse shampoo solution, or in water heated to 130°F for 5 to 10 minutes.
3. Do not share combs, brushes, caps, hair-related items, or clothing with a person suspected of louse infestation. Also, avoid close physical contact with infested persons and their belongings.
4. Machine wash in hot water (over 130°F) or dry clean all clothing, including coats, hats, scarves, pillow cases, towels, and bedding materials, which may have contacted an infested individual.
5. Materials that cannot be washed or dry cleaned should be tightly sealed with plastic and stored at or below room temperature for a minimum of two weeks. This procedure will kill eggs, nymphs and adults by desiccation (drying) and starvation.
6. Use a vacuum cleaner to remove lice from couches, chairs, mattresses, carpeting, rugs, and other furniture if these items came in contact with louse infested persons.

### ***Chemical Treatment***

Several excellent medicated shampoos, lotions, and other products are available for louse control. Some medications require a prescription, but many don't.

Before using insecticides (medications) for louse control, be sure to **read, understand and follow** all label directions and precautions. Keep insecticides in original containers, out of reach of children, and do not contaminate food or water.

- A. Over-the-counter products for **use on humans** and available at pharmacies include:
  - o A-2000® Shampoo Concentrate
  - o Barc® Liquid
  - o End Lice Shampoo
  - o InnoGel® Plus
  - o Lice ENZ® Foam Shampoo

- Lice Treatment® Shampoo
- Nix® Cream Rinse
- Paratol® Shampoo
- Pronto® Concentrate Shampoo
- Pyrinate®
- R & C Shampoo® Lice Treatment
- R & C® Spray
- R & C® Lice Treatment Kit
- Rid® Lice Killing Shampoo
- Triple X®

All of these products contain pyrethrins and piperonyl butoxide as active ingredients. Remember to follow the directions and precautions indicated on the label and any suggestions made by your doctor or pharmacist.

- B. Physician's prescription products:
- Kwell®, 1% lindane (active ingredient)
  - Ovidem®, 0.5% malathion (active ingredient)

Use these products according to directions on the label or as specified by your physician.

- C. Other products for treatment of bedding, clothing and furniture are:
- Lice Treatment Kit (AI: resmethrin 0.5%)
  - R & C Spray (AI: phenothrin 0.382%)
  - Rid® Lice Control Spray (AI: permethrin 0.5%)

These products are registered for louse control in Nebraska, and may be available at various stores.

Use all pesticides safely. Read the pesticide product label completely and comply with all directions given.

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**File G789 under: INSECTS AND PESTS**

**J-4, General**

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