

# Insects

## Head Lice

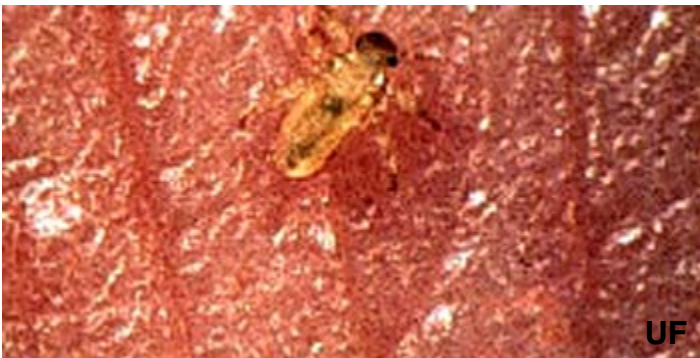
*Karen M. Vail, Associate Professor, Entomology and Plant Pathology*

In the United States, approximately 10 – 12 million people, mostly children, are infested annually with head lice, *Pediculus humanus capitis* DeGeer. The first indication of an infestation is the itching and scratching caused by these bloodsucking insects. Examination of the hair and scalp will usually reveal the white or grayish crawling forms (about the size of a sesame seed) and yellowish-white eggs (nits) attached to the hair shafts close to the scalp.

Lice are usually transferred by the sharing of combs, brushes, hats or bedding, or resting one’s head on upholstered furniture or pillows recently used by an infested person. Head lice are not found on other animals; therefore, pets, livestock or other animals are not responsible for any transfer of head lice to people. Although head lice may

cause irritation and itching, they are not considered serious vectors (carriers) of disease organisms in the United States.

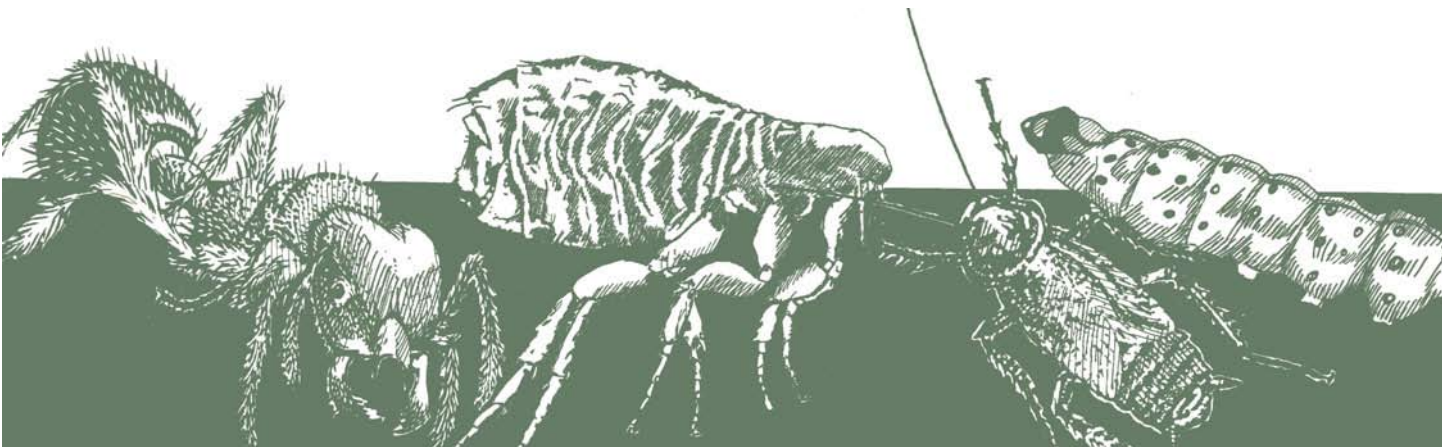
Three lice that can infest humans are head lice, *P. humanus capitis*; body lice, *P. humanus humanus* L.; and pubic or crab lice, *Phthirus pubis* (L.). Body lice, which are similar in size to head lice, live on clothing in close contact with the skin. Pubic lice, which are crab-shaped and 1/16 inch long with large claws on the middle legs, are found primarily in the pubic region, but may occur in armpits, beards and eyebrows. Because head lice are far more



*Nymph*



*Adult*



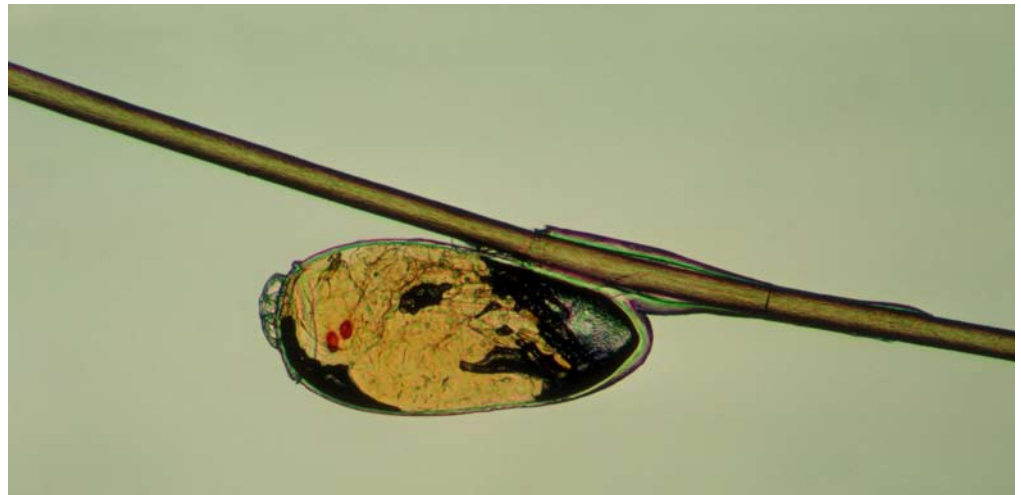
prevalent than the other two types of lice, this publication discusses head lice only.

## Biology and Identification

Head lice are small (1/8 inch), wingless insects with sucking mouthparts, a head narrower than the thorax and legs modified for grasping hairs. These lice prefer to cling to head hair with their claw-like legs, but have been known to wander to hair on other parts of the human body. Head lice do not normally live in rugs, carpets or school buses. Lice do not have jumping legs or wings, so they cannot jump or fly from person to person.

The 1/10 inch eggs (or nits) of head lice are oval, white and cylinder-like and are usually glued to the head hairs near the scalp. Near the ears and back of the head are common places for females to attach the eggs. These nits are sometimes mistaken for dandruff or residues of shampoo but will not wash off or be flicked off with a finger. Usually all life stages can be seen with the naked eye, although a flashlight and hand lens are helpful. Red bite marks or scratch marks are often seen on the scalp or neck. People should be aware that many factors (other than lice) may cause itching and irritation. Dry air alone can cause irritation, producing a condition known as “winter itch.” As skin loses moisture, itching results. A skin moisturizer or home humidifier is often helpful in these situations.

Typically, eggs hatch within seven to 10 days. Newly-hatched lice must feed within 24 hours or die. Before becoming mature, newly-hatched lice will take blood meals and molt three times. The time from hatching to the white, brown or dark gray adult is about 10 to 12 days.



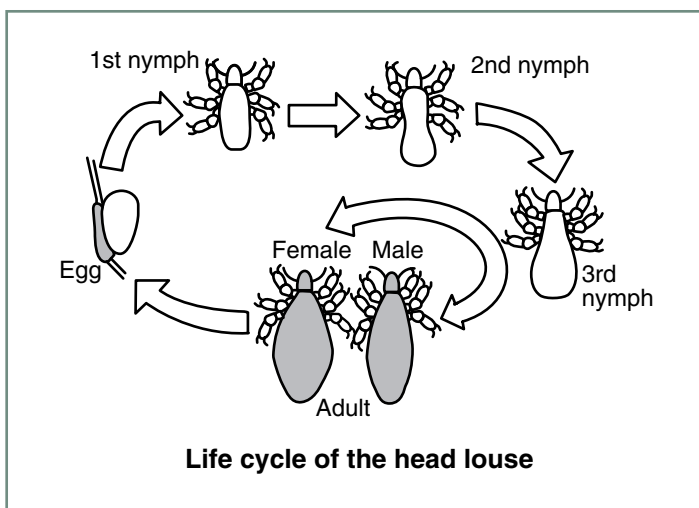
*Unhatched nit of head louse attached to a human hair. Note red eyespots of developing embryo.* (Photo: Centers for Disease Control and Prevention, Dr. Dennis D. Juranek)

Six to seven eggs are laid per day by a female that may lay 50 to 100 eggs in her approximate 40-day lifetime. Blood meals must be taken within one to two days to prevent death in the adult.

## Steps to Prevent and Control Head Lice

**Once head lice are found, all steps should be conducted at the same time to reduce the chance of reinfestation.**

1. Do not allow children to share combs, brushes, hats and other personal belongings, including head phones.
2. Give children separate storage space for hats and other clothing from home. Coats should be hung on hooks or the back of chairs so they do not touch other coats or children.
3. Regularly inspect children for lice and nits. Early detection of small populations will make control much easier. Weekly inspections are suggested from August through November. Children often spread head lice in the first months back to school, resulting in widespread infestation by the winter. If one family member is infested, inspect all others. The inspection must include a search of the entire head, with an emphasis on the back of the head and neck. Hair should be partitioned into sections. Use a bright light and a partner to aid detection. Remove any lice or nits with tweezers or a fine-toothed lice comb. Nits can also be removed with small safety scissors or picked out with fingernails. If inspecting more than one child, be careful not to spread lice to others.
4. If lice are detected, use a lice medication, which may contain pyrethrin, permethrin or other active ingredient.



Follow the directions on the label. Do not use a creme rinse or combination shampoo/conditioner before using lice medication. Do not wash hair for one to two days after treatment. Remove nits and lice with a fine-toothed lice comb while the hair is still damp. See step 3 for details on manual removal. Combs should be dipped in soapy or hot water (130 degrees F) or rubbing alcohol to remove the nits and lice from the comb. Re-treat according to label directions, usually in seven to 10 days, to kill hatching eggs, as all eggs are not killed with lice medication. All infested family members should be treated within 24 hours to prevent reinfestation. More than 50 percent of lice-infested children have another infested family member. Continue to inspect regularly. Remind children about prevention.

5. Wash all clothing that could have come in contact with the head in hot, soapy water (125 degrees F for 10 minutes) or dryclean. Bedding material such as pillow cases, sheets and blankets should be washed and dried using the high-heat cycle to ensure the lice and eggs are killed. If items such as children's toys cannot be washed, they can be sealed tightly in a plastic bag for seven to 10 days to kill any lice. Car seats, furniture and carpeting contacted by infested individuals should be vacuumed and the vacuum bag discarded. Insecticidal or lice sprays are NOT required or recommended to be applied to rooms (including classrooms), buses, car seats, furniture or other objects because lice cannot live off the host for more than a couple of days.

### **Non-chemical Control**

Use the above steps 1 – 5, except do not use the lice medication mentioned in step 4. **Thorough manual nit and lice removal is required to eradicate a head lice infestation without the use of lice shampoos.** Hair conditioners may make nit removal easier. A short haircut will aid in detection and removal of lice. Wash and dry bedding and clothing as described above. Continue to inspect head daily until no lice or nits are found. Remind children about prevention.

### **Managing Persistent Infestations**

Why do head lice infestations fail to be controlled? Probably the two most likely reasons for failure are improper use of lice medications and insufficient time spent removing nits. Improper use of medication may include leaving the medication on the head for too short a time or failure to apply the medication again after seven to 10 days. Nit removal is very laborious. It may take several hours to do a thorough job, especially when the infested individual has long hair.

In some cases, the lice medication may no longer be effective. Head lice resistance to permethrin, the active ingredient in some lice medications, has been documented in parts of the world including the United States. If you suspect resistance to a head lice medication, consult your physician.

Elimination of a head lice outbreak in a school, nursing home or similar shared facility requires prompt, coordinated action and administrative support to prevent the spread of lice to uninfected individuals. Unless all affected persons are treated, the condition will continue. For a downloadable Powerpoint, HTML or Acrobat presentation on head lice, see the University of Florida's IPM in School's Website at [http://schoolipm.ifas.ufl.edu/newpres\\_pst.html](http://schoolipm.ifas.ufl.edu/newpres_pst.html).

### **Modified from the following sources:**

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Scherer, C.W., P.G. Koehler and F.M. Oi. 2003. Head Lice. ENY-297 Florida Cooperative Extension Service. <http://edis.ifas.ufl.edu/IG142>

Scherer, C. 1999. Head Lice. IPM Integrated Pest Management in Schools. <http://schoolipm.ifas.ufl.edu/doc/liceipm.ppt>

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### **Precautionary Statement**

To protect people and the environment, pesticides should be used safely. This is everyone's responsibility, especially the user. Read and follow label directions carefully before you buy, mix, apply, store, or dispose of a pesticide. According to laws regulating pesticides, they must be used only as directed by the label.

### **Disclaimer**

This publication contains pesticide recommendations that are subject to change at any time. The recommendations in this publication are provided only as a guide. It is always the pesticide applicator's responsibility, by law, to read and follow all current label directions for the specific pesticide being used. The label always takes precedence over the recommendations found in this publication.

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