

HUMAN LICE (ANOPLURA: PEDICULIDAE), THEIR DETECTION AND CONTROL<sup>1/</sup>

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**INTRODUCTION:** Lice, particularly head lice, are becoming a common problem once again. In Florida, the problem of head louse control has arisen in several communities. Millions of American school children may have head lice sometime this year, probably more than at any time in the past 20 years. The increasing incidence of louse infestations throughout the United States affects people on all social and economic levels. Before World War II, head lice were fairly common in the United States, body and crab lice much less so, except among the "less respectable" segments of the population. After World War II and the emergence of DDT as a louse control agent, outbreaks of lice were much less common. Now lice again are intruding into the environment of the average American. Lice or their eggs are easily transmitted from person to person on shared hats, coats, scarves, combs, brushes, towels, bedding, upholstered seats in public places, and by personal contact. Head lice are most prevalent among children, whereas body and pubic (crab) lice are more frequently encountered among young adults and middle-aged persons. When one becomes infested with lice, it is likely that the entire family will become infested. Human louse infestation, called pediculosis, can spread rapidly and may reach epidemic proportions if left unchecked. In a group of people, such factors as age, race (blacks rarely are infested with head lice (Slonka et al, 1975)), sex, crowding at home, family size, the method of closeting clothes, and socioeconomic status influence the course and distribution of the disease. The length of the hair does not appear to be a significant factor.

Three types of lice infest humans--body lice (*Pediculus humanus humanus* Linnaeus, also known as *Pediculus humanus corporis*), head lice (*Pediculus humanus capitis* De Geer) (fig. 1), and crab lice or pubic lice (*Pthirus pubis* (Linnaeus)) (fig. 2). Head lice and body lice are morphologically indistinguishable. Head lice and pubic lice are highly dependent upon human body warmth and will die if separated from their host for 24 hours. Body lice are more hardy since they live on clothing and can survive if separated from human contact for up to a week without feeding.

**DISEASE TRANSMISSION:** The body louse is the vector of 3 human diseases--epidemic or louse-borne typhus, caused by *Rickettsia prowazeki* de Rocha-Lima; trench fever, caused by *Rochalimaea quintana* (Schmincke) Krieg (long known as *Rickettsia quintana*); and louse-borne relapsing fever, caused by *Borrelia recurrentis* (Lebert) Bergy et al (PAHO, 1973). These diseases are not presently being reported from the United States, but their introduction at some future time is not impossible if body louse infestations should become sufficiently prevalent. Although head lice have been experimentally infected with *Rickettsia prowazeki*, neither head lice nor pubic lice have been implicated directly in active disease transmission (Roy and Brown, 1954). Although body lice may pose the most serious health threat in many countries, head lice appear to be the greatest nuisance, particularly among school children in highly developed countries where their presence is considered intolerable.

**SYMPTOMS OF HEAD LOUSE INFESTATION:** Head lice should be suspected when there is intense itching and scratching of the scalp and the back of the neck or when there is known infestation in the community. Close examination of the scalp will reveal small, whitish eggs (nits, fig. 3), firmly attached to hair shafts, especially at the nape of the neck and above the ears. Inspection may reveal active lice and many itchy, red marks resulting from irritation caused by the saliva of the louse. Although dandruff may resemble eggs, it can be removed easily from hair, whereas louse eggs are attached firmly to the hair with cement secreted by the louse and cannot be removed easily by pulling. When an infestation becomes known, it is advisable to examine all members of the family, especially other children, and others who have been in contact with the infested person within recent weeks to be sure that they have not become infested.

**BIOLOGY:** Life cycles of all 3 types of lice are very similar--each goes through an egg stage, 3 nymphal stages, and the adult stage. Female body lice attach their eggs to clothing, particularly to seams and other protected places, and especially on underwear. Head lice cement their eggs to hair, and crab lice fasten theirs to coarse hairs in the pubic region, or sometimes in the arm pits or to eye lashes. Each female may lay 5 or 6 eggs a day, occasionally as many as 10, for a total of 50-100 eggs, sometimes as many as 300. Body lice usually are more prolific than head or crab lice. The eggs hatch in about 6-9 days. The nymphal period may last about 8-11 days for body lice, or as long as 3 weeks for head lice. Adults ordinarily live 2-4 weeks, and body lice usually live longer than head lice. Both the immature or nymphal forms and adult lice feed on human blood. To feed, the louse bites through the skin and injects saliva which prevents blood from clotting; it then sucks blood into its digestive tract. Bloodsucking may continue for a long period if the louse is not disturbed. While feeding, lice may excrete dark red feces onto the skin.

**CONTROL:** Adequate sanitation, including frequent changes of clothing, and laundering the clothing and bedding in hot water, or dry cleaning, ordinarily is enough to prevent permanent infestations of body lice, since they remain on the clothing and are killed by the cleaning process. However, head lice and crab lice cannot be controlled in this way; once a few lice are picked up they remain in the hair and are not killed by ordinary shampoos or bathing. Insecticides are therefore necessary to control these species, and to control body lice also when war, catastrophe, economic conditions, or traditional customs prevent adequate laundering. The insecticides currently accepted by the Environmental Protection Agency (EPA) for use against all types of human lice are pyrethrin synergized with piperonyl butoxide, lindane, malathion, isobornyl thiocyanate (Thanite), and carbaryl. Only specific formulations containing these compounds are accepted for registration; a publication by the U. S. Public Health Service (Slonka et al, 1975) listed

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23 registered formulations and the addresses of the suppliers. Some of the lindane formulations in this list are available only on prescription, and other available products are not listed.

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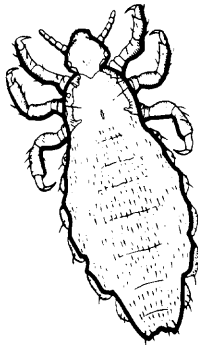


Fig. 1. Head louse, Pediculus humanus capitis De Geer

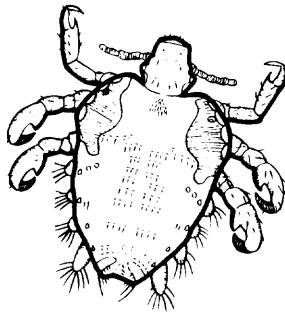


Fig. 2. Pubic or crab louse, Pthirus pubis (Linnaeus)

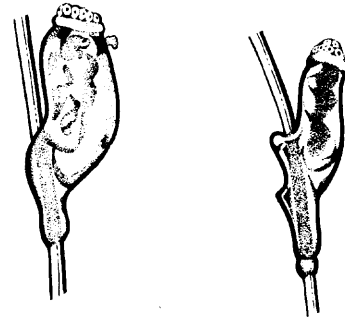


Fig. 3. Louse eggs (nits) on hair strands