

A NEW SPECIES OF *FELICOLA*
(PHTHIRAPTERA: TRICHODECTIDAE) FROM A
COSTA RICAN JAGUAR, *PANTHERA ONCA*
(CARNIVORA: FELIDAE)

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Abstract.—A new species of chewing louse, *Felicola* (*Lorisicola*) *oncae* (Phthiraptera: Trichodectidae), is described and illustrated from a jaguar, *Panthera onca* (Carnivora: Felidae), taken in Costa Rica. Although this louse is based only on a single male specimen, its morphological distinctiveness and occurrence on a big cat of the genus *Panthera* make its discovery and description of special significance. The genus *Felicola* Ewing now contains 55 species, which can be grouped into four subgenera: *Felicola*, *Lorisicola*, *Paradoxuroecus*, and *Suricatoecus*.

Resumen.—Se describe e ilustra una nueva especie de piojo, *Felicola* (*Lorisicola*) *oncae* (Phthiraptera: Trichodectidae), de un jaguar, *Panthera onca* (Carnivora: Felidae), capturado en Costa Rica. Aunque este piojo se basa solamente en un único ejemplar macho, su distintividad morfológica y ocurrencia en un gran felino del género *Panthera* le confieren a su descubrimiento y descripción una significancia especial. El género *Felicola* Ewing contiene ahora 55 especies, las cuales pueden agruparse en cuatro subgéneros: *Felicola*, *Lorisicola*, *Paradoxuroecus*, y *Suricatoecus*.

Fifty-four species of chewing lice of the genus *Felicola* Ewing currently are recognized. Of these, 48 species occur on the felid carnivores, the families Felidae, Herpestidae, and Viverridae, 5 occur on the Canidae (Carnivora), and 1 is found on the Lorisidae (Primates). Eleven of these species occur on the cats of the family Felidae.

The trichodectid chewing louse of the genus *Felicola*, subgenus *Lorisicola* Bedford, that we describe herein was obtained from an adult male jaguar, *Panthera onca* (Linnaeus), that was shot on the night of 10 June 1988 north of Delicias de Upala, about 1 km from the Nicaraguan border in extreme northern Costa Rica. The next day, the intact jaguar was hauled in the back of the truck to Universidad Nacional in Heredia where it was skinned. The skin was frozen

and stored in a freezer for four years. We were then able to thaw and wash the skin in an attempt to recover ectoparasites and obtained the single specimen of *Felicola* and a single tick. This is the first louse to be reported from a free-ranging jaguar. Although we do not generally believe that new species should be described on the basis of a single individual, in this case we feel it is warranted. The unlikelihood of our obtaining additional specimens of lice from jaguars, coupled with the extremely fortuitous collection of the type specimen, places us in the position of documenting, based upon a single individual, that a unique species of chewing louse occurs on one of the most endangered species of Neotropical mammals. Because of the significant unique characters that this louse possesses, especially

its unusual genitalia and extremely large body size, we are confident that it deserves recognition as a distinct species.

Felicola (Lorisicola) oncae,
new species
Figs. 1, 2

Type host.—*Panthera onca* (Linnaeus).

Male.—As in Fig. 1. Head with preantennal margin straight, with shallow narrow medioanterior indentation; sparse scattered dorsal setae; antennal scape enlarged. Each side of pronotum with few short lateral setae, single median marginal seta. Pteronotum with row of short setae laterally. Abdomen with two short setae on tergum I and single row of short setae on terga and sterna II–VIII. Pleura III–VIII with single row of short setae, with those on III somewhat longer and stouter than those on V. With six pairs of large abdominal spiracles. Chaetotaxy of terminalia as shown. Genitalia (Fig. 2) with straight parallel basal apodeme lateral struts associated with large spinose sac; parameres apically tapered, blunt, and basally fused, with flat basal margin lacking indentation; mesomeral arch with prominent broad blunt apical process.

Female.—Unknown.

Dimensions of male (in mm).—Temple width, 0.59; head length, 0.52; prothorax width, 0.46; pterothorax width, 0.56; abdomen width at IV, 0.92; total length, 2.04; genitalia width, 0.22; genitalia length, 0.55; genitalia paramere length, 0.18.

Type material.—Holotype male, ex *Panthera onca*, Costa Rica: Alajuela Province, Upala Canton, 2 km north of Delicias de Upala, 10 June 1988; in collection of Snow Entomology Museum, University of Kansas, Lawrence.

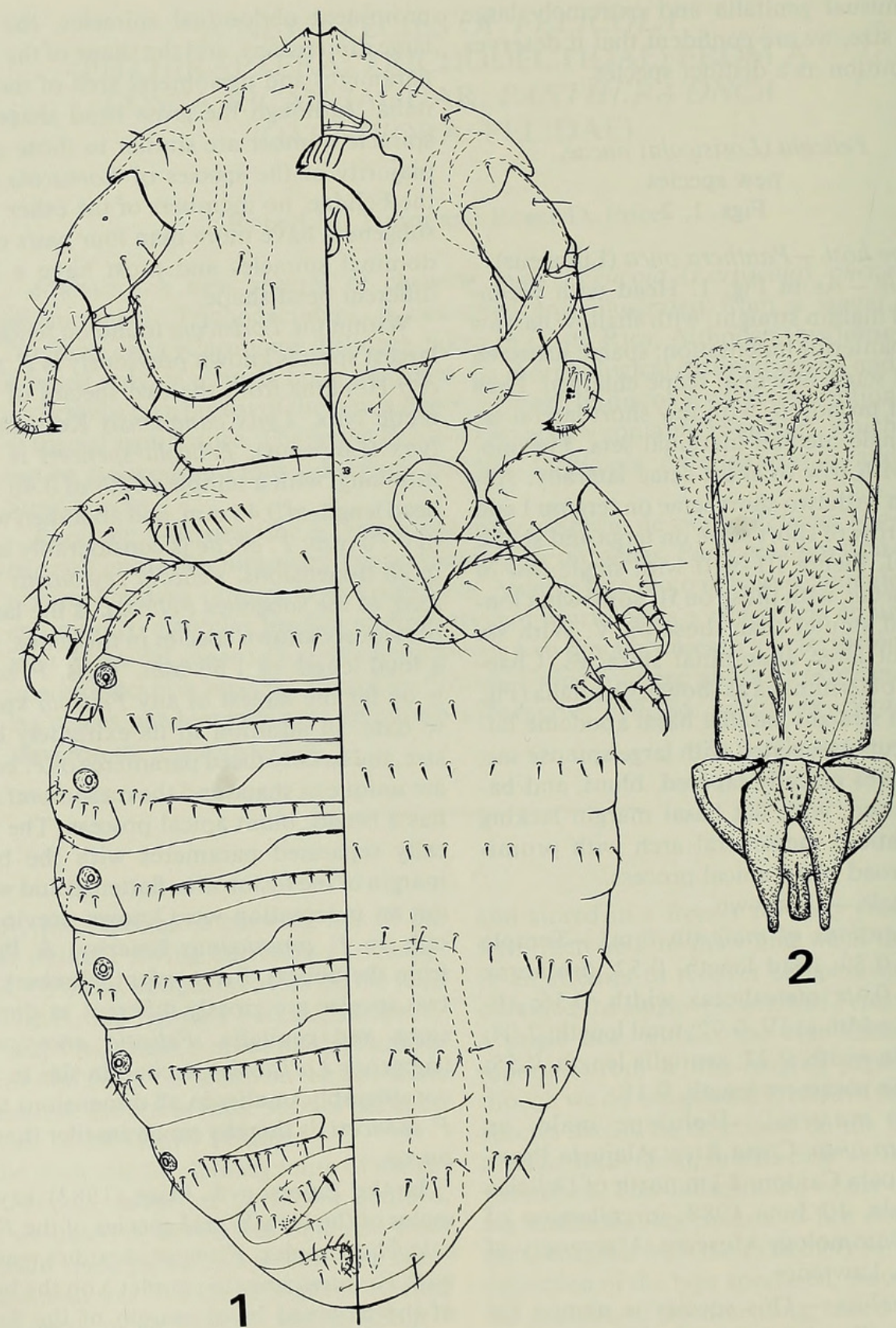
Etymology.—This species is named for the host, *Panthera onca*, the jaguar.

Remarks.—*Felicola oncae* is distinguished from the males of all other known species of the genus by the combination of its head shape, possession of six pairs of

prominent abdominal spiracles, the very large dimensions, and the shape of the fused parameres and mesomeral arch of the genitalia. Although the gross head shape and spiracle number are similar to those of the majority of the species of *Lorisicola* from the Felidae, no members of the other three subgenera have more than four pairs of abdominal spiracles and most have a quite different head shape.

Within the *Lorisicola* found on felids, the largest species known previously is *F. spenceri* Hopkins from the two species of Holarctic lynx, *Lynx canadensis* Kerr and *L. lynx* (Linnaeus). *Felicola spenceri* is 1.51 mm long, with a temple width of 0.46 mm, head length of 0.45 mm, and abdomen width of 0.70 mm; *F. oncae* is considerably larger in all dimensions. *Felicola zeylonicus* Bedford, of the subgenus *Felicola*, is the largest previously known species in the genus, with a total length of 1.66 mm. Thus, *F. oncae* is by far the largest of any *Felicola* known to date. In addition to its extremely large size, the basally fused parameres of *F. oncae* are unique in shape and the mesomeral arch has a broad, blunt apical process. The apically separated parameres with the basal margin of the fusion area flattened and without an indentation were known previously only in *F. americanus* Emerson & Price, from the bobcat, *Lynx rufus* (Schreber); the two species are grossly different in dimensions and genitalia. *Felicola americanus* (subgenus *Lorisicola*), second in size to and considerably smaller in all dimensions than *F. spenceri*, is thereby much smaller than *F. oncae*.

In the Emerson & Price (1983) key to males of the New World species of the *Felicola felis* complex, *F. oncae* identifies readily with *F. americanus* in couplet 3 on the basis of the flattened basal margin of the fused parameres. If one passes through that couplet, *F. oncae* would identify further with *F. spenceri* in couplet 4. As explained above, gross differences in dimensions and genitalia separate *F. oncae* from both of these



Figs. 1, 2. *Felicola oncae*. 1. Male. 2. Male genitalia.

species, as well as from all other members of the subgenus and genus.

Lyal (1985), in his cladistic classification of the trichodectids, treated what we recognize herein as the genus *Felicola* as two genera, *Felicola* and *Lorisicola*, with each having two subgenera, *Felicola* and *Suricatoecus* Bedford, and *Lorisicola* and *Paradoxuroecus* Conci, respectively. We accept Lyal's placement of 18, 11, 12 (+ our new species), and 13 louse species, respectively, in these four subgenera. However, we believe it more appropriate that all four be recognized as subgenera of *Felicola*. We come to this conclusion because of the difficulties encountered in the key by Lyal (1985:335–338) to genera and subgenera. The longest and most complex couplets are used for *Felicola* sensu lato, character states are nondiscrete and overlapping, and separations are ambiguous. There is simply no clear break between these groups that warrants generic level distinction. This action on our part is not a severe departure from Lyal's classification, and is one that we feel is justified.

Eleven of the 12 *Felicola* now known from felids are in the subgenus *Lorisicola*. The single other species of *Felicola* reported from felids, *F. subrostratus* (Burmeister), is in the subgenus *Felicola*. *Felicola subrostratus* has been reported from the domestic cat complex, *Felix catus-lybica-silvestris*. These cats have been domesticated and transported by humans for at least four millennia. Domestic cats generally are treated as a man-created species, *F. catus*, that was derived from the wild cat of northern Africa and extreme southeastern Asia, *F. silvestris lybica*, although considerable interbreeding with the wild cat of Europe, *F. silvestris silvestris*, has occurred. Because we have been unable to examine lice from truly wild, non-feral cats, we are unable to evaluate the relationship of *Felicola subrostratus* to other *Felicola*.

The family Felidae, or cats, is nearly worldwide in distribution, being found in all zoogeographic regions except for the

Australian and Oceanic regions, Madagascar, and the smaller oceanic islands. The family contains some four or five Recent genera and 37 extant species. Although there is little disagreement in the number of species recognized, there has been considerable debate on the number of genera and the relationships between species (Wilson & Reeder 1993). The number of genera of Recent felids recognized by various authors ranges from 4 to 19 (Ewer 1973, Nowak 1991). Four main lineages of extant cats are recognized: the cheetah (genus *Acinonyx*), the clouded leopard (genus *Neofelis*), the smaller cats (genus *Felis*, with as many as 14 subgenera in the single genus, or as many as 16 genera, including *Lynx*), and the big cats (genus *Panthera*). In *Panthera*, five species are recognized—leopard, *P. pardus* (Linnaeus); lion, *P. leo* (Linnaeus); snow leopard, *P. uncia* (Schreber) (often treated as a monotypic genus *Uncia*); tiger, *P. tigris* (Linnaeus); and jaguar.

Historically, jaguars were found from the southern United States, through Mexico, all of Central America, and much of tropical lowland South America, to central Argentina. We suspect that *Felicola oncae* is a host-specific parasite of jaguars and, as such, occurs on jaguars throughout their range. For well over two centuries, however, jaguar numbers have been declining; populations have been reduced by hunting pressure and habitat destruction and, in recent years, jaguars have been extirpated from much of their former range.

All previous bona fide records of *Felicola* from felids have been from the smaller cats of the genera *Felis* and *Lynx*. However, Ponton (1870) did describe *Trichodectes tigris* supposedly originating from a tiger. Unfortunately, he provided no illustration and the verbal description is so general as to apply to a wide range of generic possibilities. Hopkins (1949:507) suggested that the louse was "... almost certainly from a captive and perhaps a contamination." Hopkins and Clay (1952:354), in referring to *T. tigris*,

tersely state "Type lost, description useless. Unrecognizable." Lyal (1985:247) adopts this approach and relates the name to the category of incertae sedis.

Our discovery of *Felicola oncae* on the jaguar, therefore, is the first verifiable record and recognizable description for any louse from a member of the subfamily Pantherinae and suggests that *Felicola* may be much more widely distributed on the cats than was recognized previously. Including *F. oncae*, 12 species of *Felicola* have been described from 15 species of felids. Where accurate records are available, *Felicola* appears to be quite host specific. Given that chewing lice have been found on only 15 of the 37 extant species of cats, we strongly suspect that numerous new species of *Felicola* await discovery.

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