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Linnaeus and his several descriptions of the scale insect *Coccus uvaeursi*, now known as *Eriococcus uvaeursi* (Linnaeus) (Hemiptera: Coccoidea: Eriococcidae)

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Linnaeus and his several descriptions of the scale insect *Coccus uvaeursi*, now known as *Eriococcus uvaeursi* (Linnaeus) (Hemiptera: Coccoidea: Eriococcidae)

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Abstract

The felt scale insect *Eriococcus uvaeursi* (Linnaeus) was first described under the valid binomen *Coccus uvaeursi* by Linnaeus (1767), not by Linnaeus (1761) as listed previously in scale insect literature. The name was made valid by a description of the species by Linnaeus (1759), a work originally published in Swedish and translated herein into English.

Keywords: *Coccus uvaeursi*, *Eriococcus uvaeursi*, felt scale insect, *Eriococcidae*, *Linnaeus*

Introduction

In scale insect literature the first description of the felt scale insect, now known as *Eriococcus uvaeursi* (Linnaeus), has been credited to Linnaeus (1761). Linnaeus (1761), however, described this insect as *Coccus uvae ursi* with a short description in Latin and that short account can be translated thus: “*Coccus Uvae Ursi* of the roots of *Arbutus uva ursi*. It lives on the underground stems of *Uva ursi* in rather damp places. Description. Body reddish, with a blood-red juice but covered with a small loose, white oval sack”.

Of the 12 species of *Coccus* that Linnaeus listed at the same time, this is the only species listed as a trinomen. Perhaps this was an oversight by Linnaeus because, in the 12th edition of *Systema Naturae*, Linnaeus (1767) listed the insect correctly as *Coccus Uvaeursi*. Linnaeus never referred to the name as *Coccus uvae-ursi* in these publications, as it is often listed in scale insect literature. The date 1766 usually quoted for this edition is Part I, p 1–532, but the first description under the binomen *Coccus Uvaeursi* appeared on p 742 in Part II of the 12th edition p 533–1327, dated 1767 (see Soulsby 1933). This (1767) entry is short and can be translated thus: “The *Arbutus Uva ursi* root *Coccus*. It lives on the roots of *Arbutus Uva ursi* under moss”. There is no reference to the earlier description and listing in Linnaeus (1761) and, in case the short entry in Linnaeus (1767) might not be

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regarded as sufficient for a valid description, the name is still valid because Linnaeus referred to his even earlier work *Svensk Coccionell*, cited as *L. act. holmens* (Linnaeus 1759), where there is a short description of the insect in Swedish.

Because many scale insect workers have never seen this publication, a translation is given below in English. This translation was made for the first author many years ago by Richard F. Avery, former editor of the *Review of Applied Entomology, Agriculture*. The article was also published in Swedish in a book by Nordenflycht (1759) with minor spelling differences. It is difficult to translate the Swedish words “coccionell” and its plural “coccionellen”. In English, the name cochineal refers to the dye, whereas the insect that produces it is the cochineal insect. In French, the word “cochenilles” in the plural refers to all scale insects and the normal word for cochineal insect is *la cochenille*, *la cochenille à carmin*, *la cochenille du nopal* or *la cochenille mexicaine* (names kindly supplied by Danièle Matile, Muséum national d’Histoire naturelle, Paris). There are similar words in other languages derived from Latin. Linnaeus was probably using the words *coccionell* and *coccionellen* as used in French. There is no English word “cochineals” and, in the translation, the Swedish words “coccionell” and “coccionellen” are translated as scale insect and scale insects, respectively, or even cochineal depending on the sense.

The insect discussed by Linnaeus is now known to occur in much of the Palaearctic Region, excluding the British Isles but as far east as the Kuril Islands (south-east of Sakhalin Island, eastern Russia) and on a wide range of plant species (Miller and Gimpel 2000). For a good modern description and illustration of this scale insect see Danzig (1980).

Works by Linnaeus and publications relating to him are listed in Soulsby (1933). These works are normally given the number listed by Soulsby and are commonly known as Soulsby numbers, which are referred to in the reference section herein.

English translation of *Svensk Coccionell* (Linnaeus, 1759)

Swedish Scale Insect, submitted by Carl Linnaeus

Insects have been almost completely ignored until our time, for some 20 years, so that many even of the most learned considered anyone who sought pleasure for the eye or mind in them to be merely a dreamer, and these creatures were held in utter contempt, as though they were of no use to mankind. For this reason those who sought to find pleasure in them were reproached with the old saying, *Cui bono?* as though the Creator had made insects for no purpose.

Now, however, no reasonable person is so foolish as to behold these animals without wonder, and everyone sees that although they are small in size they are great in numbers and are responsible for as much change, good or evil in the world as even the largest animals, so that he who would see the greatest marvels can find them in the smallest creatures.

Not the least of the various advantages that they afford us is that they supply us with the finest colours. The purple of the ancients was the most expensive luxury in the time of the Greeks and Romans. Now, however, purple is so little in demand that it is scarcely known what mollusc was the source of it, since the discovery of the American cochineal, which surpasses all other colours.

Cochineal insects are a sort of insect found in South America, on Cactus or Opuncia, that are cultivated there and are sold every year to Europe and the whole world for many tons of gold. The same Opuncia readily grows in our orangeries, even without light, takes up very little room, since it grows squashed up on one side, so that many thousand of them can be accommodated in a medium sized orangery, and increase so readily that if one only

puts a leaf or a joint in the ground, it takes root at once. So that I believe that no crop would reward our pains better than cochineal insects, particularly if an orangery is situated in a forest region, where 30 loads of wood for its upkeep in winter entail no great outlay. When Mr Rolander went to America, my first and last request to him was that he would get me some living cochineal insects. He did so too, but to my misfortune, when the jar arrived with the Cactus full of cochineal insects I was at the Academy, and the gardener received the plants. He thought they were full of grubs and so he picked them off and killed them, thinking they were some sort of pest, so that I found nothing except a single female, which was unfortunately not pregnant. Thus I was no doubt the first to see living cochineal insects in Europe, but nothing more.

Besides the above mentioned cochineal insect, there is another cochineal insect found in Europe which lives on the roots of a plant called knawel or *Scleranthus*; there are two sorts of this plant, one is annual, or grows yearly from seed, and the other is perennial, or remains with its roots from year to year. The former grows everywhere in our country, but the latter only in Skåne. The cochineal insects occur almost entirely on the latter and are thus quite rare in this country, but their real and principal home is the Ukraine or Poland, and for this reason they are generally called Polish cochineal insects or *Coccus Polonica*.

This *Coccus Polonica* is a little inferior in colour to the true or American cochineal, but as it is collected in too small a number and is in itself so small, one gains nothing by it. It is also known that another one occurs on the roots of a plant that grows commonly in our country and is called Mouse-ear, or *Hieracium Pilosella*, but it is so rare that I have not found it more than once in all my life.

On 26th May 1758, while I was botanising with my students around Uppsala, as I am accustomed to do, so as to instruct the students in the knowledge of plants and animals, even the smallest insects, one of my pupils happened to pick a twig on which there were some insects and asked me their name. I saw at once that they were scale insects, and I therefore squashed some of them on a paper or cloth, whereupon they gave off the most beautiful true colour. An immediate search was made to find out what sort of twig they developed on, and it was found to be our common mealberry, or *Arbutus uva ursi*. The scale insects live on the mealberry stalks low down towards the roots, where they are almost under the soil or moss and they occur on the lowest part of the stalk itself. They are twice as large as the Polish cochineal insect, or about the size of a grain of rice. Externally they are reddish-brown and at first smooth, but finally they become covered all over with white bent hairs, which gradually grow and merge together, like a snow-white membrane or folliculus, and finally the creatures free themselves, so that each and every one seems to lie in a white shell. By these characteristics, nobody can mistake these scale insects.

Since mealberry is as common with us even on the poorest pastureland as it is rare in foreign countries, I think it would be worthwhile to search for this scale insect on the stalks, low down by the roots, principally in places where it grows in less dry or somewhat damp soil, and since I never saw more mealberry than in the northern region round Visby in Gothland, I should prefer this scale insect to be looked for there. When the scale insect is found in some numbers, it should be at once dried in the oven, otherwise it transforms to flying males or pregnant females and becomes useless.

I thought myself obliged to make this generally known, to the advantage of my countrymen and native land, since I suppose that as many scale insects can be found on such a common plant with us as are used annually in the whole kingdom, and this business of collecting might be a useful task for poor young boys who cannot otherwise earn much.

The Royal Academy desires those who have the opportunity to search the roots of mealberry bushes for the insects mentioned here to treat them as prescribed by the Archpriest and Knight and send them in to the Royal Academy of Science.

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