

Pluto rufibasis (Malloch) (Hymenoptera, Sphecidae, Psenini)

by

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ABSTRACT. A redescription of the North American Psenine wasp *Pluto rufibasis* (Malloch) and figures of the male genitalia are given. The erythrization in populations from Georgia and various parts of Florida is shown in a few tables. *Psenia marginata* Malloch, 1933, is considered to be identical with the darkest form of *Pluto rufibasis*, and is suppressed as a synonym of the latter.

Since Malloch (1933) described *Psenia rufibasis*, further information on this subtropical wasp has remained scarce. Pate (1937) published *Pluto* as a new name for *Psenia* Malloch, 1933, nec Kirby, 1829. The type-localities of *rufibasis* are Jekyl Island (female, holotype) and Tifton (male, allotype), both situated in southern Georgia, U.S.A. No further records are given in the Catalog of Hymenoptera of America north of Mexico (1951, 1958, 1967). Krombein (1964) published a small note on the behaviour of a female caught at Lake Placid, Florida.

Recently Dr. E. E. Grissell sent me a series of over seventy specimens belonging to the Florida State Collection of Arthropods, Gainesville, Florida. Most of these were collected in or near Gainesville. They vary considerably in the colour of the petiole, the first and second gastral tergites and the legs. I further received from Dr. W. Pulawski, Wroclaw, a series consisting of one female and seven males captured at Lake Placid, Florida. My thanks are due to Dr. Grissell and Dr. Pulawski for their kind assistance.

In the original description the considerable structural differences between the sexes are insufficiently indicated. Therefore a redescription of both sexes is given.

Female. — Length about 8—9 mm. Head black; mandibles and labrum reddish, in some females also fore margin of clypeus. Upper side of antennae black or brown, underside of flagellum reddish, in pale specimens also underside of scape. Thorax black, pronotal tubercles

Table 1. Coloration of females of *Pluto rufibasis* (Malloch)

number	petiole		first tergite			second tergite			hind femora		all femora
	red	dark	red	dark $\leq \frac{1}{2}$	dark $> \frac{1}{2}$	red	dark $\leq \frac{1}{2}$	dark $> \frac{1}{2}$	red	+ dark	+ dark
Georgia:											
1 ♀	+		+			+			+		
Miami and Lake Placid, Florida:											
2 ♀	+		+			+			+		
Alachua County, Florida:											
8 ♀	+		+			+			+		
11 ♀	+			+		+			+		
2 ♀	+			+		+				+	
4 ♀		+		+		+			+		
1 ♀		+			+	+				+	
1 ♀		+			+	+				+	+
7 ♀		+			+		+			+	+
3 ♀		+			+			+		+	+
Liberty County, Florida:											
1 ♀		+			+		+			+	+
Coloration of females of <u>Pluto rufibasis</u> Malloch (= <u>Psenia marginata</u> Malloch) from Louisiana											
2 ♀		+			+			+		+	+

and tegulae yellowish-red. Legs including trochanters yellowish-red, or trochanters darkened or trochanters and hind femora, or trochanters and all femora more or less, or trochanters, all femora largely and also hind tibiae more or less brown or black, rarely mid tibiae darkened. Base of hind tibiae and all tarsi whitish-yellow. Petiole reddish, chestnut to brown, or shining black. First and second tergites and sternites entirely orange (southern specimens) or reddish, or more or less darkened, darkening of first tergite varying from two small antero-lateral marks to completely black except for a narrow posterior margin. Second tergite with less tendency to darkening. Remaining tergites and sternites black with reddish apical margin, in some specimens margin half as broad as visible length of segment. Pygidial area entirely reddish or nearly so. Wings somewhat fuscous, veins dark brown, paler in southern specimens.

Anterior margin of clypeus slightly rounded, surface dull. Fine interantennal carina ending on

Table 2. Coloration of males of Pluto rufibasis (Malloch)

number	petiole		first tergite			second tergite			hind femora		all femora
	red	dark	red	dark $\leq \frac{1}{2}$	dark $> \frac{1}{2}$	red	dark $\leq \frac{1}{2}$	dark $> \frac{1}{2}$	red	$\pm$ dark	$\pm$ dark
Georgia:											
1 ♂	+			+			+		+		
Lake Placid, Florida:											
5 ♂	+		+				+		+		
1 ♂		+			+		+		+		
Alachua County, Florida:											
6 ♂	+			+		+			+		
5 ♂	+			+			+		+		
2 ♂	+			+			+			+	+
1 ♂	+				+			+	+		
2 ♂		+		+			+		+		
1 ♂		+			+		+		+		
1 ♂		+			+			+	+		
4 ♂		+			+		+			+	
1 ♂		+			+			+	+		
1 ♂		+		+			+		+		+
6 ♂		+			+		+		+		+
1 ♂		+			+			+	+		+
Liberty County, Florida:											
2 ♂		+			+			+	+		+
Gadsden County, Florida:											
1 ♂		+			+		+		+		+
Coloration of males of <u>Pluto rufibasis</u> (= <u>Psenia marginata</u> Malloch)											
Louisiana:											
8 ♂		+			+			+	+		+
South Carolina:											
1 ♂		+			+			+	+		

Table 3. Percentages of red coloration in Pluto rufibasis (Malloch) from Alachua County

	Females (total 37)	Males (total 31)
petiole red	21 = 57%	14 = 45%
first tergite red	8 = 22%	0
second tergite red	27 = 73%	6 = 19%
hind femora red	23 = 62%	16 = 52%



a faintly raised area below the antennae. Frons below anterior ocellus densely coarsely punctate, laterally finer, sparsely; vertex finely transversely striate and sparsely finely punctate. Tempora finely striate. The carina connecting occipital carina below with hypostomal carina shorter than width of first basitarsus. Antennae somewhat clavate, third segment about  $2\frac{1}{2}$  times as long as broad at apex, segment 4 about twice, following segments gradually decreasing in length, segment 11 slightly longer than broad, segment 12 nearly twice as long as broad at base.

Pronotal corners sharp, anterior margin of pronotum with narrow high carina. Median part of scutum coarsely rugoso-punctate, sides with shining interstices, which are partly as large as diameter of punctures. Scutellum longitudinally rugoso-punctate. Metanotum dull. Enclosed area of propodeum triangular, shining, with large hexagonal central area and a few oblique lateral carinae. Back of propodeum coarsely reticulato-carinate, dorso-lateral carinae somewhat oblique and parallel. Sides of thorax shagreened; hypo-epimeral area finely longitudinally striato-punctate; upper part of mesopleura more coarsely, obliquely rugoso-punctate, lower part with finer punctures and interstices partly larger than punctures; mesosternum still finer punctate. Anterior oblique suture broad, coarsely foveolate. Metapleura shining. Mesosternum with high acetabular carina reaching about halfway the backwards directed ends of the epicnemial carina. Metasternum triangularly emarginate. Apical half of mid tibiae with long reddish spines along posterior margin, outer side of hind tibiae with a row of stronger thorns. First recurrent vein of fore wings ending in second submarginal cell, second recurrent vein in third submarginal cell.

Petiole cylindrical in dorsal view, about as long as first tergite. First tergite somewhat longer than broad at apex, following tergites very finely punctate. Pygidial area elliptic, apex blunt, along inner side of apical half of lateral carinae a row of small thorns.

Pubescence of face below antennae brassy or pale golden. Pubescence of rest of body whitish or greyish, on sternites very sparse. Pygidial area with dense, short, golden or dark reddish pubescence.

Male. — Size and coloration like that of female but on the average darker (see tables 2 and 3), first and second tergites rarely entirely red.

Median part of clypeal margin slightly protruding, this part less broad than  $\frac{1}{3}$  of total distance there between the eyes. Frons entirely coarsely punctate. Antennae slender, somewhat flattened, third segment in broadest (dorsal) aspect about twice, segments 4-12 about  $1\frac{1}{2}$  times as long as broad at apex, last segment about twice as long as broad at base. Segments 4-11 or 4-12 with long narrow tyloides, which are highest near apex. Scutum and sides of thorax coarsely rugose, rugae transverse on anterior part of scutum, finer on hypo-epimeral area. First tergite about  $1\frac{1}{2}$  times as long as broad at apex.

Genitalia: Fig. 1—3. Basiparameres and volsellae dark brown, parameres white with black apex, aedeagus including valves white. Eighth sternite (Fig. 4) whitish, apical margin and short spine black (see also Malloch, 1933, Plate 2, Fig. 40).

Pubescence of face silvery-white.

Material examined. — Florida, U.S.A.: Dade County, Miami, 1 ♀, 21 Oct. 1958, L. J. Daigle, det. R. M. Bohart; Alachua County, Gainesville, Pine Hill Estates, 25 ♀ and 6 ♂, 20 Sept. — 14 Oct. 1973, H. V. Weems Jr., Malaise trap; Gainesville, Doyle Corner Building, 1 ♂, 8 June 1970, 2 ♀, 28 Sept. — 4 Oct. 1971, 1 ♀ and 1 ♂, 25 Sept. 1973, H. V. Weems Jr. and C. R. Artaud, Malaise trap; Cypress Dome Project, 2 miles north Gainesville, 1 ♀, 2 May 1974, 1 ♀, 6 June 1974, 7 ♀ and 22 ♂, 20 Sept. — 23 Oct. 1974, H. Davis and Walt Jetter, Ramp trap; Austin Cary Memorial Forest, 1 ♂, April 1975, G. B. Fairchild; Liberty County, Torreya State Park, 1 ♀ and 1 ♂, 9—17 May 1968, 1 ♂, 18 May 1970, H. V. Weems Jr., Malaise trap; Gadsden County, Quincy, 1 ♂, 31 July 1970, W. L. Hasse, Malaise trap in soybean field (Florida State Collection); Highlands County, Lake Placid, 1 ♀ and 7 ♂, May 1967, G. Heinrich (collection W. Pulawski).

Like another Psenine wasp from North America, *Psen (Pseneo) punctatus ferrugineus* (Viereck), *Pluto rufibasis* also shows an erythrization which increases from north to south, although not regularly. In the two females from Miami and Lake Placid and in eight females from Gainesville the petiole, first and second tergites and sternites and the femora are entirely red. In this respect



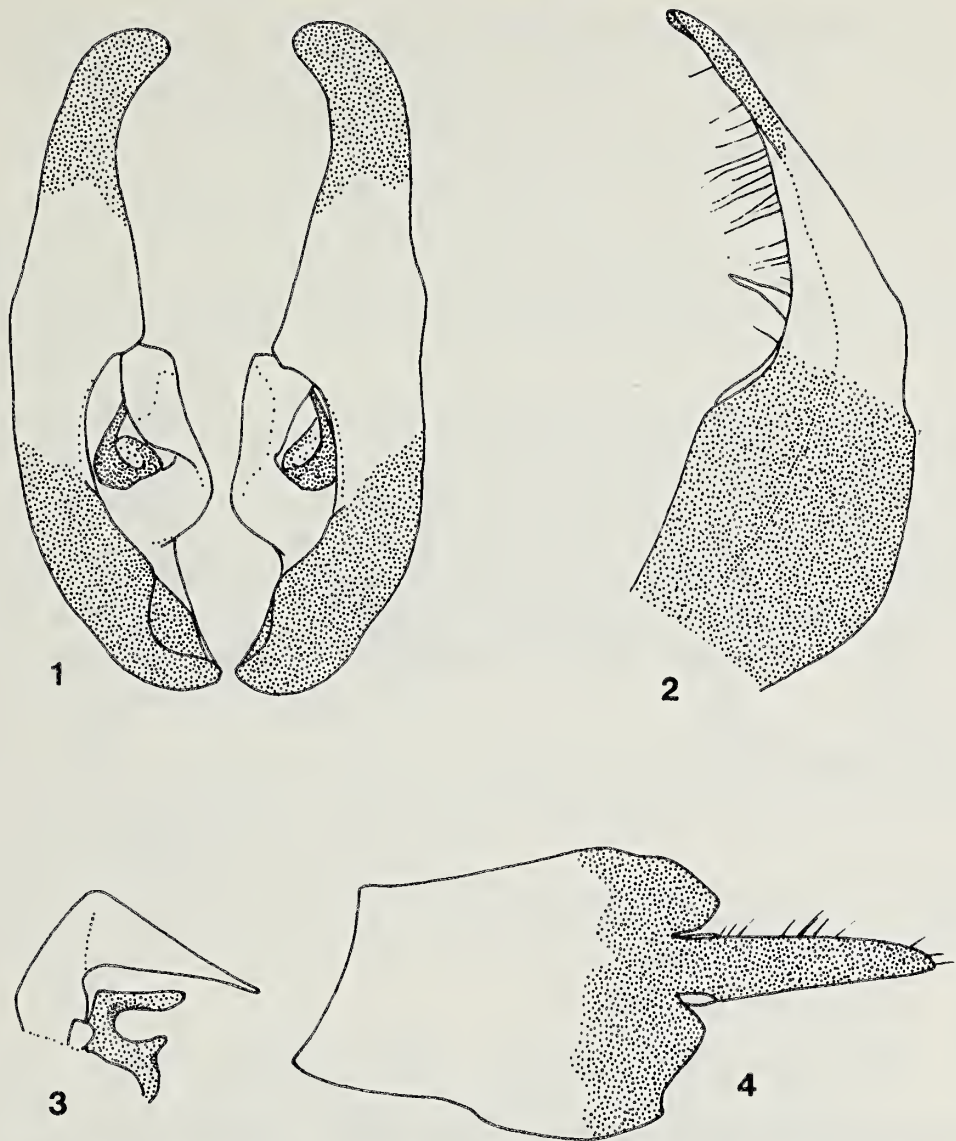


Fig. 1—4. *Pluto rufibasis* (Malloch). 1—2, male genitalia in dorsal and lateral aspect; 3, penis valve and volsella; 4, eighth sternite in ventro-lateral aspect.

they agree with the holotype from Georgia. In 29 females from Alachua County and one female from Liberty County at least one of these parts is more or less brown or black. In five out of six males from Lake Placid the petiole, the first tergite and the hind femora are red. Only six out of the 31 males from Alachua County have an entirely red petiole, hind femora and second tergite. In all males from the counties Alachua, Liberty and Gadsden the first tergite is darkened, as in the allotype from Georgia. A comparison of the red parts is shown in tables 1 and 2. The populations from a limited area (Gainesville and a locality two miles north of Gainesville) have either an entirely red petiole, first and/or second tergites and femora, or they show all intergrades of darkening of these parts to almost entirely black. In the minority of the specimens the fore and mid femora and the hind tibiae are also more or less brown or black. From the percentages in table 3 it appears that the males generally have darker tergites than the females.

Malloch (1933) also described *Psenia marginata*, of which he had a number of females and males from Louisiana and a male from South Carolina before him. According to his description their structure differs very little from that of *Pluto rufibasis* (from Georgia) but they are much darker. Petiole, tergites and all femora are black, at least in the material from Louisiana. The paratype from South Carolina was considered a variety of *marginata* by Malloch. It is the only specimen of *marginata* with all femora red.

Although I have not seen the type-material of *marginata* studied by Malloch I am convinced that it is conspecific with *Pluto rufibasis*. The coloration is like that of the darker forms of *rufibasis* from Alachua County, Gadsden County and Liberty County (see tables 1 and 2). Acting as "first revisor" I herewith invalidate of both synchronous names *marginata* in favour of *rufibasis*.

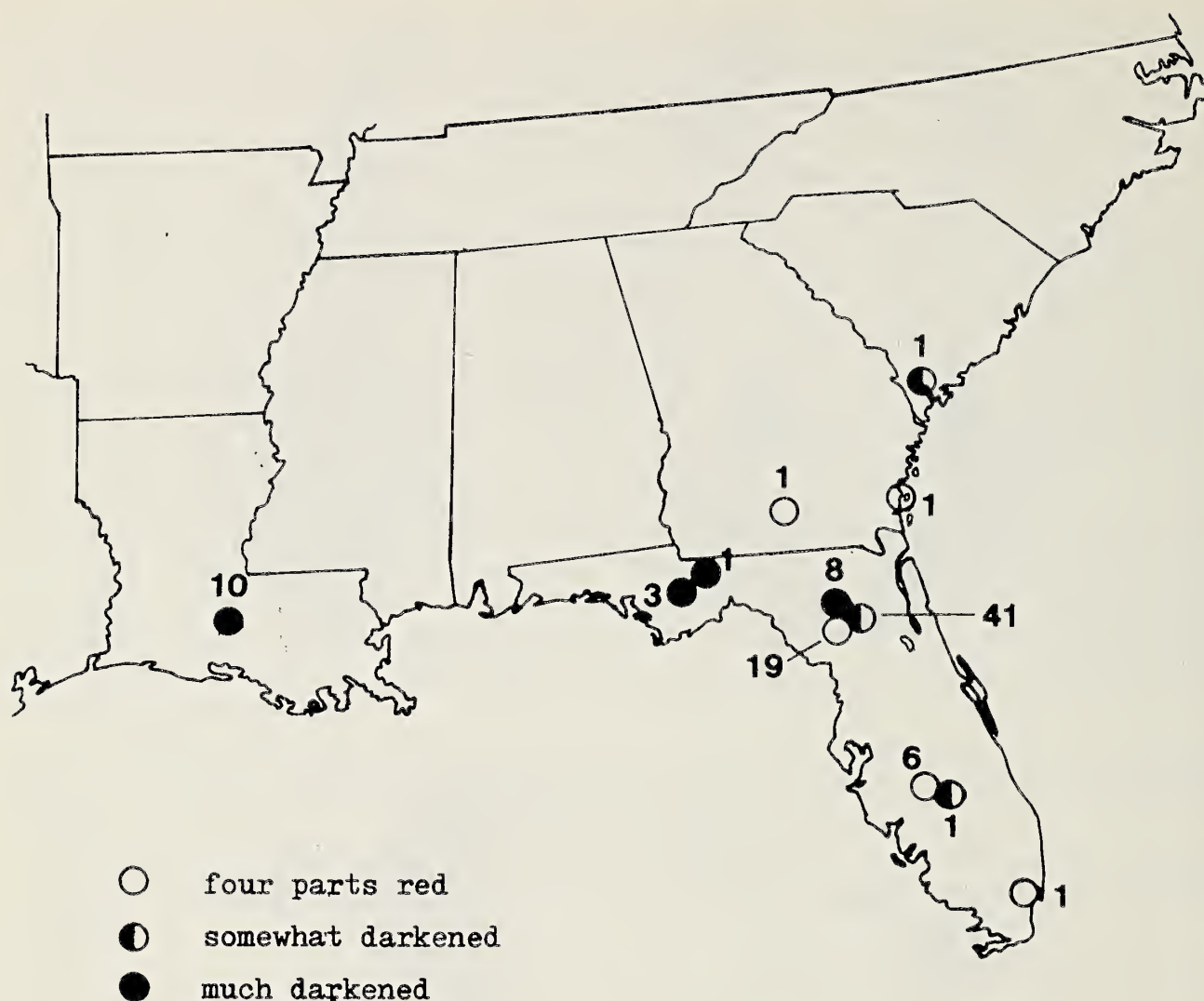


Fig. 5. Map showing distribution of forms of *Pluto rufibasis* Malloch

Fig. 5 shows the distribution of *Pluto rufibasis* and *Psenia marginata* (*Pluto rufibasis*). On this map the numbers of specimens studied from each locality are also indicated. A white circle represents the specimens which have entirely red petiole, first and second tergites and femora. Specimens which have these parts darkened to some extent are represented by a half black half white circle; if fore and mid femora, and sometimes the hind tibiae too, are also marked brown or black, by a black dot.

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**NYMPHALIS POLYCHLOROS (LINNAEUS)** (Lep., Nymphalidae). Op 12 en 14 augustus 1975 zag ik een exemplaar (vermoedelijk hetzelfde) in het C.R.M. object de Hengforder- en Olsterwaarden op de grens van de gemeenten Olst en Diepenveen. Het is zeker 10 jaar geleden, dat ik de Grote Vos hier in Nederland gezien heb. — W. G. Gerritse, Noorder Koeslag 42, Wijhe.