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SPHECIDAE (HYMENOPTERA) COLLECTED IN AQUITAINE, FRANCE

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RESUME

Une liste a été composée des Hyménoptères Sphécidés de l'Aquitaine (départements français des Landes, de la Gironde et une partie du Lot-et-Garonne), collectionnés de 1965 jusqu'à 1971. Leur présence et leur abondance ont été comparées avec des données concernant le Périgord Noir (Dordogne) et les Pyrénées.

The study of the mechanism of action and the chemical structure of paralyzing wasp venoms performed in our laboratory requires great numbers of females of *Philanthus triangulum* (Fabricius) (Sphecidae, Hymenoptera). Therefore, collecting trips were made in search of areas and biotopes where *Philanthus triangulum* occurs in great numbers. The greatest number of individuals of this species was found in the sandy area in south-western France limited by the Atlantic Ocean in the west, the rivers Gironde, Garonne and Baïse in the north and the east and the river Adour in the south, consisting of the departments Landes, Gironde south of the rivers Gironde and Garonne, and the south-western part of Lot-et-Garonne (fig. 1). In this paper this region will be indicated with the name Aquitaine (the name of this area in former days). Not all parts of this area were studied equally closely. Most of the time was spent in those sites where *Philanthus triangulum* occurs abundantly or could be expected to live.

The soil of Aquitaine consists of calciferous fine-grained sand mixed with some humus and blackened by resin dust. Ever since the marshes were drained drastically, the area became predominantly dry in the summer. Only some places are still marshy, especially in winter and in very wet summers, and these are recognizable by the vegetation, for instance with *Molinia coerulea* Mönch, and *Drosera intermedia* Drev. & Hay.

Numerous other Sphecidae were collected while looking for *Philanthus triangulum*. This article deals with the Sphecidae collected from 1965 through 1971. Collecting was done within the period in which *Philanthus triangulum* is on the wing, which means from the second half of June until the middle of September. The collecting stations and dates are listed in table L. The position of these stations is indicated in figure 1.

The density of every species in Aquitaine is compared with that in the adjacent areas Périgord Noir (Steiner, 1954), situated in the Dordogne, and the Pyrenees (Nouvel & Ribaut, 1953), respectively.

Most Sphecidae collected were identified using De Beaumont, 1964, and Berland, 1925. The species of the genera *Cerceris* and *Sphex* were also identified using the articles of De Beaumont (1952) and Berland & Bernard (1947). Dr. J. Leclercq (Liège, Belgium) kindly identified the specimens of the Crabroninae except the genus *Oxybelus* which were identified by Mr. P.M.F. Verhoeff (Utrecht). I am very grateful for this help.

All specimens mentioned in this article have been deposited in the collection of the Institute of Taxonomic Zoology (Zoölogisch Museum) of the University of Amsterdam.

SYSTEMATIC LIST OF SPECIES COLLECTED

Genus *Ammophila* Kirby

Ammophila sabulosa (Linnaeus) - This species is very common in the whole area. It can be found on every sandy track. The males were mostly found flying along the sandy places where the females dig their breeding holes.

At Lévignacq females digging their holes were observed several times. The entrance is round and the sand which had been dug from this hole is carried by the wasps to a number of places one metre away by a short flight. After a paralysed caterpillar has been dragged into the hole, the entrance is carefully closed and covered with sand particles until it is hidden.

The species is also common in the Périgord Noir and the Pyrenees.

Data.- GIRONDE: Arès 1 ♂, 1 ♀, Bourideys 1 ♂, Vendays-Montalivet 1 ♂, Villandraut 1 ♂, 2 ♀. LANDES: Arengosse 1 ♂, Arjuzanx 1 ♂, Escourse 1 ♂, Laluque 1 ♀, Lévignacq 14 ♂, 9 ♀, Linxe 20 ♂, 4 ♀, Losse 1 ♂, Onesse 1 ♂, 4 ♀, Rion-des-Landes 1 ♀, Souprosse 1 ♀, Trensacq 1 ♀. LOT-ET-GARONNE: Damazan 1 ♂, Durance 1 ♂, 4 ♀.

Ammophila apicalis Brullé - This species is less common in Aquitaine than the preceding one and has not been observed in the Périgord Noir. In some places, however, it can be found in quite large numbers.

Data.- GIRONDE: Arès 9 ♀, La Hume 1 ♂, Montalivet-les-Bains 1 ♂. LANDES: Escourse 1 ♀, Lespéron 1 ♂, Lévignacq 1 ♀, Linxe 9 ♂, 1 ♀, Onesse 1 ♂, 6 ♀, Rion-des-Landes 1 ♀. LOT-ET-GARONNE: Bousses 1 ♀, Durance 9 ♂, 14 ♀.

Ammophila heydeni Dahlbom - This species is not very abundant in the Périgord Noir but in Aquitaine it is the most common species of the genus.

Data.- GIRONDE: Arès 5 ♂, 12 ♀, Blagon 1 ♀, La Hume 1 ♀, Vendays-Montalivet 1 ♂, Villandraut 3 ♂, 9 ♀. LANDES: Arjuzanx 1 ♀, Boos 1 ♀, Castets 2 ♂, 1 ♀, Escourse 1 ♀, Laluque 2 ♀, Lespéron 1 ♂, 2 ♀, Lévigacq 5 ♂, 9 ♀, Linxe 16 ♂, 11 ♀, Onesse 5 ♂, 6 ♀, Rion-des-Landes 1 ♂, 2 ♀, Trensacq 2 ♂, 2 ♀. LOT-ET-GARONNE: Allons 1 ♀, Bousses 1 ♀, Durance 4 ♂, 12 ♀.

Ammophila campestris Latreille - Only three specimens of this species were found in Aquitaine. Steiner (1954) states that it is regularly distributed in the Périgord Noir. It has only been found at two places in the Pyrenees.

Data.- LANDES: Rion-des-Landes 1 ♀. LOT-ET-GARONNE: Bousses 1 ♂, Durance 1 ♂.

Genus *Podalonia* Kirby

Pulawski (1965) states that *Podalonia* should have generic rank.

Podalonia hirsuta (Scopoli) - Only one male and five females were collected. Steiner (1954) found this species mostly in spring and early summer. Possibly my collecting was late in the season for this species. The species is common in the high Pyrenees.

Data.- GIRONDE: Arès 3 ♀, St.-Jean-d'Ilac 1 ♀. LANDES: Mollets-et-Maâ 1 ♀. LOT-ET-GARONNE: Durance 1 ♂.

Podalonia affinis (Kirby) - Only two males were found. One specimen was collected in the Périgord Noir. The species was also found in the Pyrenees in altitudes between 1500 and 2000 m.

Data.- GIRONDE: Arès 2 ♂.

Podalonia tydei (Le Guillou) - This species was not found in the Périgord Noir, nor in the area where I collected. Nouvel & Ribaut (1953) state that the species replaces *P. luffi* Saunders along the Atlantic coast.

Genus *Sphex* Linnaeus

Although many species of this genus are found in southern France, only three species were collected in Aquitaine.

Sphex (Prionyx) albisectus Lepeletier & Serville - This species was abundant in the whole area as well as in the Périgord Noir. In the Pyrenees it was only common in Saint-Béat.

Four prey animals of this species were collected, 1 ♂ *Calliptamus barbarus* (Costa) (Orthoptera, Catantopidae); 1 ♀ *Sphingonotus coeruleans* (Linnaeus), 1 ♀ nymph of *Acrotylus spec.*, and 1 nymph of the *Chorthippus brunneus* Thunberg group (Orthoptera, Acrididae).

Data.- GIRONDE: Arès 2 ♂, 12 ♀, Beliet 1 ♂, Soulac 1 ♀, St.-Jean-d'Ilac 1 ♀. LANDES: Arenosse 2 ♂, 2 ♀, Arjuzanx 3 ♀, Castets 1 ♂, 9 ♀, Laluque 1 ♂, 1 ♀, Lesgor 1 ♀, Lévigacq 1 ♀, Linxe 4 ♂, 8 ♀, Luxey 5 ♀, Maillas 1 ♀, Onesse 7 ♀, Rion-des-Landes 2 ♀, Trensacq 2 ♀. LOT-ET-GARONNE: Bousses 2 ♀, Durance 20 ♀.

Sphex (Palmodes) occitanicus Lepeletier & Serville - It was not found in the Périgord Noir, nor in the Pyrenees. In Aquitaine the species was very common on the open sandy verges and cart-tracks.

Data.- GIRONDE: Arès 4 ♀, Villandraut 2 ♀. LANDES: Arengosse 1 ♂, Escourse 1 ♀, Lespéron 1 ♂, Lévigacq 5 ♂, 3 ♀, Linxe 9 ♂, 2 ♀, Onesse 1 ♂, 10 ♀, St.-Julien-en-Born 1 ♀. LOT-ET-GARONNE: Durance 3 ♂, 4 ♀.

Sphex (s.s.) maxillosus Fabricius - The species was found in Gironde and Lot-et-Garonne only. It also occurs in the Périgord Noir, and is quite common in the Pyrenees.

Data.- GIRONDE: Arès 13 ♀, Lacanau-Océan 1 ♀. LOT-ET-GARONNE: Durance 1 ♂, 2 ♀.

Genus *Sceliphron* Kluge

Not a single specimen of this genus was found in Aquitaine. The genus is rare in the Périgord Noir and the high Pyrenees.

Genus *Dolichuris* Latreille

No specimens could be collected in Aquitaine. Members of this genus are very rare in the Pyrenees.

Genus *Ampulex* Jurine

No specimens were found in Aquitaine. From the Pyrenees one species is recorded as being rare.

Genus *Philanthus* Fabricius

Two species of this genus were quite rare and one species, *P. triangulum* (Fabricius), was common everywhere.

Philanthus triangulum (Fabricius) - Obtaining females of this species was the main purpose of the trips to this part of France. At places where collecting was carried out for several years in succession, it became clear that the number of females fluctuates widely. The author suspects that a certain critical level of the number of gold wasps, *Hedychrum intermedium* Dahlbom (Chrysididae, Hymenoptera), is of great influence on the populations of *P. triangulum*.

The collecting places of *P. triangulum* are not distributed homogeneously over Aquitaine. Large populations of these wasps were found in three areas, (1) an area in the south-west of the department Landes, (2) an area east of the Basin of Arcachon, and (3) the chain of hills west of the river Garonne. Even within these three areas *P. triangulum* does not occur everywhere.

Most specimens can generally be collected in the verges of paved and dust roads, the tracks of cart-ruts and sometimes the steep slopes of sunken roads (Simon Thomas & Simon Thomas, 1972 and Simon Thomas & Poorter, 1972). Also the females often dig their burrows in the verges of fire breaks which are tilled by rotary hoes. *Philanthus triangulum* usually stays near the spot

where the adult emerges for the first time. This may result in large concentrations of breeding holes, called pseudo-colonies by Olberg (1953).

The vegetation near a pseudo-colony is never dense. Broad roads, fire breaks and a widely dispersed, young forest are most attractive to the wasps. In the environment there should be sufficient flowering plants for the wasps to feed on and to attract honey-bees, which are hunted and paralysed by *Philanthus triangulum* to feed their offspring.

Philanthus triangulum starts flying around the middle of June, in relation to the temperature. At the end of July or in early August the second generation appears (Simon Thomas & Simon Thomas, 1972). At the end of August the greatest number of wasps can be found. Field observations in Landes showed that one female can catch as many as ten honey-bees a day. Populations of 2000 females of *P. triangulum* are no exception. Since the wasp is monophage such a population can paralyse 20.000 bees a day, which means a high toll on the colonies of bees.

Data.- GIRONDE: Arès 1967- 16 ♂, 550 ♀; 1968- 99 ♀; 1970- 3 ♂, 63 ♀; 1971- 9 ♂, 1740 ♀. Berliet 2 ♂, Blagon 1 ♂, 2 ♀, Bourideys 4 ♀, Escaudes 2 ♂, La Hume 9 ♀, Montalivet-les-Bains 1 ♂, St.-Jean-d'illac 1 ♂, Vendays-Montalivet 1 ♀, Villandraut 1967- 4 ♂, 116 ♀; 1968- 8 ♂, 126 ♀; 1969- 2 ♀; 1970- 1 ♂; 1971- 1 ♂, 41 ♀.

LANDES: Arengosse 1967- 4 ♂, 33 ♀; 1968- 1 ♂, 8 ♀, Arjuzanx 1 ♂, Castets 1967- 6 ♂, 6 ♀; 1968- 57 ♀; 1970- 1 ♀, Escourse 1966- 2 ♀; 1967- 1 ♀; 1968- 7 ♀; 1970- 3 ♀, Herm 2 ♀, Lalouque 1966- 63 ♀; 1967- 24 ♂, 14 ♀; 1968- 4 ♂, Lesgor 1 ♂, 1 ♀, Léspéron 1967- 1 ♂, 2 ♀; 1968- 15 ♂, 64 ♀; 1969- 4 ♀, Lévignacq 1966- 1 ♂; 1967- 14 ♂, 411 ♀; 1968- 7 ♂, 693 ♀; 1969- 5 ♂, 42 ♀; 1970- 4 ♂, 36 ♀; 1971- 8 ♂, 106 ♀, Linxe 1967- 87 ♂, 1420 ♀; 1968- 79 ♂, 682 ♀; 1969- 1 ♂, 281 ♀; 1970- 13 ♂, 29 ♀; 1971- 2 ♀, Lit-et-Mixe 1967- 1 ♀; 1969- 13 ♂, Lubbon 2 ♀, Mézos 1 ♀, Moliets-et-Maâ 8 ♂, 2 ♀, Onesse 1966- 33 ♂, 375 ♀; 1967- 42 ♂, 883 ♀; 1968- 5 ♂, 523 ♀; 1969- 1 ♂, 48 ♀; 1970- 2 ♂, 20 ♀; 1971- 7 ♂, 154 ♀, Rion-des-Landes 2 ♀, Sore 1 ♀, Souprosse 1 ♀, St.-Julien-en-Born 52 ♀, Trensacq 1966- 2 ♀; 1967- 9 ♂, 96 ♀; 1968- 4 ♂, 276 ♀; 1969- 1 ♂; 1970- 2 ♀.

LOT-ET-GARONNE: Allons 2 ♀, Bousses 12 ♂, 232 ♀, Durance 1965- 122 ♂, 467 ♀; 1966- 455 ♂, 283 ♀; 1967- 6 ♂, 2 ♀; 1970- 3 ♂, 5 ♀.

Philanthus coronatus Fabricius - This large species was only found in Lot-et-Garonne. It was neither found in the Périgord Noir nor on the Pyrenees.

Data.- LOT-ET-GARONNE: Durance 5 ♂, 2 ♀.

Philanthus venustus (Rossi) - Only at one place in the dunes some specimens of this species were observed. The species was neither recorded from the Périgord Noir nor from the Pyrenees.

Data.- LANDES: Lit-et-Mixe 1 ♂, 4 ♀.

Genus *Cerceris* Latreille

Cerceris rybyensis (Linnaeus) - This species occurs nearly everywhere, but never in great numbers. It is mentioned as common in the Périgord Noir and in the Pyrenees up to altitudes of 1650 m. One prey animal of this species was collected, viz. a female of *Halictus zonulus* Smith (Apidae, Hymenoptera).

Data.- GIRONDE: Arès 2 ♀, 1 ♂, St.-Jean-d'Illac 1 ♀, Villandraut 2 ♀. LANDES: Arengosse 1 ♂, 2 ♀, Castets 1 ♀, Escourse 1 ♀, Lespéron 2 ♂, Lévigacq 2 ♂, 3 ♀, Linxe 7 ♂, 10 ♀, Maillas 1 ♀, Onesse 6 ♀, Souprosse 1 ♀. LOT-ET-GARONNE: Bousses 2 ♀, Durance 4 ♂, 7 ♀.

Cerceris sabulosa (Panzer) (= *emarginata* Panzer) is much rarer than the preceding species. Only males could be collected which means that we did not discover the breeding areas which must differ from those of *Philanthus triangulum* (Fabricius).

Data.- GIRONDE: Soulac 1 ♂. LANDES: Lespéron 1 ♂, Linxe 13 ♂, Onesse 1 ♂.

Cerceris arenaria (Linnaeus) - This species was the most common of its genus and at several places it occurred abundantly. The species was rare in the Périgord Noir and common in the Pyrenees. It lives in exactly the same biotope as *Philanthus triangulum* (Fabricius). The males were often observed on flowers, Thistle, Menth, and Milfoil.

Data.- GIRONDE: Arès 11 ♂, 13 ♀, Escaudes 2 ♂, La Hume 1 ♂, St.-Jean-d'Illac 1 ♀, Villandraut 1 ♂, 8 ♀. LANDES: Arengosse 9 ♂, 2 ♀, Castets 1 ♂, Laluque 2 ♀, Lespéron 1 ♀, Lévigacq 14 ♂, 8 ♀, Linxe 45 ♂, 20 ♀, Maillas 2 ♂, Onesse 8 ♂, 16 ♀, Rion-des-Landes 1 ♀, Trensacq 1 ♂. LOT-ET-GARONNE: Bousses 1 ♂, 5 ♀, Durance 46 ♂, 7 ♀.

Cerceris quinquefasciata (Rossi) - Only a few specimens were found in the south-western part of Landes. The species was also rare in the Périgord Noir, but abundant in the Pyrenees.

Data.- LANDES: Lespéron 2 ♂, Onesse 1 ♀.

Cerceris flavilabris (Fabricius) (= *ferreri* Van der Linden) - Only one male was found in Landes. The species seems to be quite common in the Périgord Noir and in the Pyrenees.

Data.- LANDES: Lesgor 1 ♂.

Cerceris cunicularia Schrank (= *labiata* Fabricius) - A few specimens were found at places where was collected for several days, so the species cannot be common in Aquitaine. In the Pyrenees it is also rare. It was not found in the Périgord Noir.

Data.- LANDES: Linxe 1 ♂, 1 ♀. LOT-ET-GARONNE: Durance 2 ♂.

Genus *Gorytes* Latreille

In the Périgord Noir and in the Pyrenees eight and seven species have been found, respectively. This genus does not favor Aquitaine, for only two species could be found.

Gorytes (s.s.) *quinquecinctus* (Fabricius) - This species could only be collected at a few places. It is also rare in the Périgord Noir. In the Pyrenees it is common up to an altitude of 1100 m.

Data.- GIRONDE: Bourideys 1 ♀. LANDES: Arengosse 1 ♂, Linxe 1 ♂. LOT-ET-GARONNE: Durance 1 ♂, 4 ♀.

Gorytes (Dienoplus) concinnus Rossi - Only one female was found in the east part of Aquitaine. The species is lacking both in the Périgord Noir and in the Pyrenees.

Data.- LOT-ET-GARONNE: Durance 1 ♀.

Genus *Argogorytes* Ashmead

Argogorytes mystaceus (Linnaeus) - In Landes only one female was found. The species is rare in the Périgord Noir and in the Pyrenees.

Data.- LANDES: Linxe 1 ♀.

Genus *Stizus* Latreille

Species of this genus were neither found in the Pyrenees nor in the Périgord Noir. In Aquitaine two species were found, but only in a small number of specimens.

Stizus perrisi Dufour - Two specimens in two different places.

Data.- LANDES: Lit-et-Mixe 1 ♀. LOT-ET-GARONNE: Durance 1 ♂.

Stizus distinguendus Handlirsch - At one place near the dunes three specimens were found.

Data.- GIRONDE: Lacanau-Océan 2 ♂, 1 ♀.

Genus *Bembecinus* Costa

Bembecinus tridens was only found in the Périgord Noir and not a single species in the Pyrenees.

Bembecinus tridens (Fabricius) - This species was common throughout the region. At Trensacq a large colony was found in the steep verge of a cart-track.

Data.- GIRONDE: Arès 2 ♀, Vendays-Montalivet 2 ♀, Villandraut 1 ♂, 1 ♀. LANDES: Linxe 1 ♂, 1 ♀, Onesse 1 ♀, Trensacq 11 ♀. LOT-ET-GARONNE: Durance 2 ♂, 7 ♀.

Bembecinus hungaricus (Frivalzky) - Only three females of this species were collected.

Data.- GIRONDE: Villandraut 1 ♀. LANDES: Moliets-et-Maâ 1 ♀. LOT-ET-GARONNE: Durance 1 ♀.

Genus *Bembix* Fabricius

Only the species *B. integra* Panzer was found in the Périgord Noir and in the Pyrenees. In Aquitaine six species were collected. These wasps can especially be found in flat, open, sandy places. Loose sand is no problem for these energetic diggers.

Bembix rostrata (Linnaeus) - This species was found practically everywhere. The males fly all day along sandy tracks in search of females.

Data.- GIRONDE: Arès 9 ♀, Beliet 1 ♀, St.-Jean-d'Ilac 1 ♀, Villandraut 2 ♂, 24 ♀. LANDES: Arengosse 4 ♀, Lалуque 1 ♀, Lévignacq 2 ♂, 3 ♀, Linxe 8 ♂, 27 ♀, Lit-et-Mixe 1 ♂, Luxey 1 ♂, 3 ♀, Onesse 9 ♀, St.-Yaguen 2 ♀, Trensacq 1 ♂, 1 ♀. LOT-ET-GARONNE: Boussets 1 ♀, Durance 17 ♂, 36 ♀.

Bembix oculata Latreille - Not so abundant as the preceding species, but still quite common in Aquitaine.

Data.- GIRONDE: Arès 1 ♂, 1 ♀, Lacanau-Océan 2 ♂, 1 ♀, Montalivet-les-Bains 1 ♀, St.-Magne-de-Belin 1 ♀, Villandraut 3 ♂, 6 ♀. LANDES: Lалуque 1 ♂, Lit-et-Mixe 7 ♂, 5 ♀, Moliets-et-Maâ 4 ♂, 4 ♀, Onesse 1 ♂. LOT-ET-GARONNE: Boussets 1 ♂, Durance 4 ♂, 8 ♀.

Bembix integra Panzer - The only species found in the Périgord Noir and in the Pyrenees as well. Only a single female was found in Aquitaine.

Data.- LOT-ET-GARONNE: Durance 1 ♀.

Bembix bidentata Van der Linden - This species was only found in Landes in the dunes or in wide sandy areas.

Data.- LANDES: Arengosse 2 ♂, 2 ♀, Lit-et-Mixe 4 ♂, Moliets-et-Maâ 4 ♂, 1 ♀, Trensacq 1 ♀.

Bembix sinuata Latreille - Only one female was found on a sandy cart-track.

Data.- LANDES: Arengosse 1 ♀.

Bembix flavescens subsp. *bolivari* Handlirsch - One male was found in the dunes along the coast.

Data.- LANDES: Lit-et-Mixe 1 ♂.

Genera *Nysson* Latreille and *Alysson* Panzer

Although several species from these genera have been recorded from the Périgord Noir and the Pyrenees, none were found in Aquitaine.

Genus *Mellinus* Fabricius

Mellinus arvensis (Linnaeus) - Only one female was found in Gironde, although the species was common in the Périgord Noir and abundant in the high Pyrenees.

Data.- GIRONDE: Villandraut 1 ♀.

Genus *Astata* Latreille

Astata (*s.s.*) *boops* (Schrank) - The species was seldom seen in Aquitaine. In the Périgord Noir it was quite common. In the Pyrenees it was only abundant in the valley of the Garonne.

Data.- GIRONDE: Arès 2 ♀. LANDES: Lévignacq 1 ♀, Linxe 3 ♀.

Astata (s.s.) *costai* Piccioli - Only once a female of this species was captured, in contrast to a considerable number of males caught at various places. It appears to be difficult to discover the breeding and hunting areas of the females.

Data.- GIRONDE: Arès 1 ♂. LANDES: Lévignacq 6 ♂, Linxe 12 ♂, 1 ♀, Onesse 4 ♂. LOT-ET-GARONNE: Durance 1 ♂.

Astata (*Dryudella*) *frey-gessneri* Carl - Only one male was collected in Landes. The species was not mentioned from the Périgord Noir or the Pyrenees.

Data.- LANDES: Linxe 1 ♂.

Genus *Larra* Fabricius

The only known European species (*L. anathema* Rossi) was neither found in Aquitaine nor in the Pyrenees. It was rare in the Périgord Noir.

Genus *Liris* Fabricius

In Aquitaine never a species of this genus was seen, although one species (*L. nigra* Van der Linden) was frequently found in the Périgord Noir and in the surroundings of Toulouse.

Genus *Tachysphex* Kohl

Several species were found in Aquitaine. Most of them hunt various Orthoptera, which are abundant in this area.

Tachysphex bicolor (Brullé) (= *spoliatus* Giraud, *rufipes* Aichinger) - This species was quite common and could be found on most sand-tracks. It was rare in the Périgord Noir and in the Pyrenees. One prey animal was collected, 1 ♂ *Calliptanus barbarus* (Costa) (Orthoptera, Catantopidae).

Data.- GIRONDE: Arès 3 ♂, 4 ♀, St.-Jean-d'Illac 1 ♂, Vendays-Montalivet 1 ♂, Villandraut 4 ♀. LANDES: Lesgor 1 ♀, Léspéron 3 ♂, Lévignacq 1 ♂, Linxe 2 ♂, 2 ♀, Onesse 3 ♂, 1 ♀. LOT-ET-GARONNE: Durance 1 ♀.

Tachysphex lativalvis (Thomson) - Equally abundant as the preceding species. Also common in the Périgord Noir and in the Pyrenees. Three prey animals were collected, 2 ♀ *Ectobius lividus* (Fabricius), and 1 ♀ *E. vittiventris* (Costa) (Dictyoptera, Ectobiidae).

Data.- GIRONDE: Arès 1 ♂, Blagon 1 ♂, St.-Magne-de-Belin 1 ♀, Villandraut 2 ♀. LANDES: Aren-gosse 2 ♂, 2 ♀, Lévignacq 5 ♂, 5 ♀, Linxe 6 ♂, 12 ♀, Onesse 1 ♂, 2 ♀. LOT-ET-GARONNE: Durance 1 ♀.

Tachysphex lativalvis subsp. *gibba* Kohl - Found at only two places and not recorded from the Périgord Noir or the Pyrenees.

Data.- LANDES: Onesse 1 ♂. LOT-ET-GARONNE: Durance 2 ♀.

Tachysphex pompiliformis (Panzer) (= *pectinipes* auct.) - This species was quite common in Aquitaine, and in the Périgord Noir and the Pyrenees as well.

Data.- GIRONDE: Arès 4 ♀, Soulac 1 ♀, St.-Jean-d'Ilac 2 ♀, Villandraut 1 ♀. LANDES: Arengosse 1 ♀, Castets 2 ♀, Escourse 1 ♀, Lespéron 2 ♀, Lévignacq 2 ♂, 12 ♀, Linxe 3 ♂, 3 ♀, Onesse 3 ♀. LOT-ET-GARONNE: Durance 3 ♀.

Tachysphex psammobius Kohl - Found at one place only, in Landes; common in the Périgord Noir, but not mentioned from the Pyrenees.

Data.- LANDES: Lévignacq 2 ♂, 1 ♀.

Tachysphex nitidus (Spinola) - Rare in Aquitaine, in the Périgord Noir, and in the high Pyrenees.

Data.- LANDES: Linxe 2 ♀, Onesse 1 ♀. LOT-ET-GARONNE: Durance 1 ♂, 2 ♀.

Tachysphex tarsinus (Lepelletier) - Only found in Gironde and Lot-et-Garonne. It does occur in the Périgord Noir, but as far as known not in the Pyrenees.

Data.- GIRONDE: Arès 6 ♀. LOT-ET-GARONNE: Durance 1 ♂, 2 ♀.

Tachysphex filicornis Kohl - Only one female was found in Gironde. The species is not mentioned from the Périgord Noir or the Pyrenees.

Data.- GIRONDE: Vendays-Montalivet 1 ♀.

Tachysphex panzeri Van der Linden - Common in Aquitaine, but not occurring in the Périgord Noir and in the Pyrenees.

Data.- GIRONDE: Arès 1 ♂. LANDES: Arengosse 1 ♂, Lespéron 1 ♀, Linxe 4 ♂, 9 ♀, Moliets-et-Maâ 1 ♂. LOT-ET-GARONNE: Durance 3 ♂, 3 ♀.

Genus *Tachytes* Panzer

Two species from this genus were found in Aquitaine and also in the Périgord Noir. From the Pyrenees no species have been recorded.

Tachytes europaeus Kohl - Only occasionally found. Two prey animals were collected from this species, 1 nymph *Tylopsis* spec. (Orthoptera, Phaneropteridae) and 1 ♂ nymph *Calliptamus* spec. (Catantopidae).

Data.- GIRONDE: Arès 3 ♀. LANDES: Lévignacq 3 ♀, Linxe 2 ♀, Lit-et-Mixe 1 ♀, Onesse 1 ♀. LOT-ET-GARONNE: Durance 9 ♂, 3 ♀.

Tachytes obsoletus (Rossi) - Only a few specimens could be collected. Probably rare in Aquitaine.

Data.- GIRONDE: Arès 1 ♂. LOT-ET-GARONNE: Durance 1 ♂, 1 ♀.

Genus *Miscophus* Latreille

This genus is not mentioned from the Périgord Noir. In the Pyrenees only one species was found, viz. *M. bicolor* Jurine.

Miscophus bicolor Jurine - In Aquitaine this species was very rare but it did occur in the upper valley of the Garonne.

Data.- LANDES: Lévigacq 1 ♀.

Miscophus ater Lepeletier - Occasionally found in Aquitaine.

Data.- GIRONDE: Blagon 6 ♂, 1 ♀, Douence 1 ♀, Montalivet-les-Bains 1 ♀, St.-Jean-d'Ilac 1 ♀. LANDES: Lévigacq 1 ♂. LOT-ET-GARONNE: Durance 1 ♀.

Genus *Solierella* Spinola

No species in Aquitaine nor in the Périgord Noir. Only once a specimen of *Solierella* has been collected in the Pyrenees.

Genus *Nitela* Latreille

No specimens from this genus could be collected, although *N. spinolai* Dahlbom is common in the Pyrenees.

Genus *Palarus* Latreille

Palarus variegatus Fabricius - Only at Durance (Lot-et-Garonne) this species was found several years in succession. In 1968 a large colony was found. Twelve prey animals could be collected, 3 ♂ *Philanthus triangulum* (Fabricius) and 1 ♀ *Oxybelus argentatus* Curtis (Sphecidae); 1 ♀ *Polistes* (s.s.) *nimpha* (Christ) (Vespidae); 1 ♂, 2 ♀ *Trielis* (*Heterelis*) *quincuecincta* Fabricius (Scoliidae); and 3 ♂, 1 ♀ *Halictus sexcinctus* Fabricius (Apidae).

Data.- LOT-ET-GARONNE: Durance 6 ♂, 26 ♀.

Genus *Trypoxylon* Latreille

In Aquitaine all species from this spider hunting genus were rare.

Trypoxylon figulus (Linnaeus) f. *media* Beaumont - Only in the north-eastern part of Aquitaine two females were found. The species is abundant in the Périgord Noir and in the Pyrenees.

Data.- GIRONDE: Villandraut 1 ♀. LOT-ET-GARONNE: Durance 1 ♀.

Trypoxylon attenuatum Smith - Only one female was collected in Landes. The species is widely distributed in the Périgord Noir, but occurs only locally in the Pyrenees.

Data.- LANDES: Linxe 1 ♀.

Trypoxylon clavicerum Lepeletier - Two males were collected in Landes. Common in the Périgord Noir and in the Pyrenees.

Data.- LANDES: Linxe 2 ♂.

Genus *Psen* Latreille

Psen (s.s.) *exaratus* (Eversmann) - Two females were collected in Gironde. The species has also been found in the Périgord Noir, but not in the Pyrenees.

Data.- GIRONDE: Naujac 1 ♀, St.-Jean-d'Illac 1 ♀.

Psen (*Mimesa*) *grandii* Maidl - Rather common in the whole of Aquitaine. It was never found in the Périgord Noir or in the Pyrenees.

Data.- GIRONDE: Arès 13 ♂, 3 ♀, Villandraut 1 ♀. LANDES: Arjuzanx 1 ♀, Lévigacq 1 ♀, Linxe 1 ♀, Onesse 4 ♀. LOT-ET-GARONNE: Durance 2 ♀.

Genus *Psenulus* Kohl

One species was found in Landes, five species occur in the Pyrenees and two in the Périgord Noir.

Psenulus fuscipennis (Dahlbom) - Very rare and only found at two places in Landes. Also recorded from the Périgord Noir and the Pyrenees.

Data.- LANDES: Lévigacq 3 ♀, Linxe 2 ♀.

Genus *Pemphredon* Latreille

In the Pyrenees nine species of this genus have been found, in Aquitaine only three.

Pemphredon beaumonti Hellén - Only one female was collected in Aquitaine. The species is not mentioned for the Périgord Noir nor for the Pyrenees.

Data.- LANDES: St.-Yaguen 1 ♀.

Pemphredon rugifer (Dahlbom) (= *unicolor* Panzer) - One specimen was collected in Gironde. The species is unknown from the Périgord Noir and the Pyrenees.

Data.- GIRONDE: Arès 1 ♀.

Pemphredon lethifer (Shuckard) - In Landes and Gironde only females were collected. The species is known from the Périgord Noir, but has not been found in the Pyrenees.

Data.- GIRONDE: Arès 2 ♀. LANDES: Lévigacq 1 ♀, Linxe 1 ♀, Onesse 1 ♀.

Genus *Passaloeus* Shuckard

In Aquitaine only females of one species could be found.

Passaloeus turionum Dahlbom - This species is quite rare in Aquitaine and it is not found in the Périgord Noir and the Pyrenees, although eight other species from this genus are known from the latter region.

Data.- GIRONDE: Soulac 1 ♀. LANDES: Linxe 4 ♀, Onesse 2 ♀.

Genus *Diodontus* Curtis

Only one species of this genus was found, although from the Périgord Noir and the Pyrenees three species are known.

Diodontus minutus (Fabricius) - This species is rare in Aquitaine and common in the Périgord Noir and the Pyrenees.

Data.- LANDES: Linxe 1 ♂. LOT-ET-GARONNE: Durance 2 ♀.

Genera *Stigmaeus* Panzer, *Spilomena* Shuckard, and *Ammoplanus* Giraud

No specimens of these three genera were collected in Aquitaine, nor are they known from the Périgord Noir. In the Pyrenees species of all three genera have been found.

Genus *Ectemnius* Dahlbom

Ectemnius (*Metacrabro*) *lituratus* (Panzer) - Two males were collected at one place in Landes. This species was not found in the Périgord Noir, but it is quite common in the Pyrenees.

Data.- LANDES: Lesgor 2 ♂.

Ectemnius (*Clytochrysus*) *lapidarius* (Panzer) - One female was collected in Landes. The species also occurs in the Périgord Noir and in the Pyrenees.

Data.- LANDES: Souprosse 1 ♀.

Ectemnius (*Hypocrabro*) *continuus* (Fabricius) - One female was collected from this species in Lot-et-Garonne. It is also known from the Périgord Noir, but not from the Pyrenees.

Data.- LOT-ET-GARONNE: Durance 1 ♀.

Ectemnius (*s.s.*) *guttatus* (Van der Linden) - This species occurs frequently in the west of Aquitaine. It is not found in the Périgord Noir and the Pyrenees.

Data.- GIRONDE: Arès 1 ♀. LANDES: Lesgor 1 ♂, Lé vignacq 1 ♂, 1 ♀, Linxe 1 ♂, 2 ♀, Moliets-et-Maâ 1 ♀.

Genus *Lestica* Billberg

Lestica (*Clypeocrabro*) *clypeata* (Schreber) - One female of this species was collected in Gironde. The species is rare in the Périgord Noir, but abundant in the Pyrenees.

Data.- GIRONDE: Villandraut 1 ♀.

Genus *Crabro* Fabricius

Crabro cribrarius (Linnaeus) - Only a few specimens of this species were collected in Landes and Lot-et-Garonne. It was not found in the Périgord Noir and seems to be rare in the Pyrenees.

Data.- LANDES: Lé vignacq 1 ♂, 1 ♀. LOT-ET-GARONNE: Durance 1 ♀.

Crabro peltarius (Schreber) - Only once a female was found in Lot-et-Garonne. This species was neither found in the Périgord Noir nor in the Pyrenees.

Data.- LOT-ET-GARONNE: Durance 1 ♀.

Genus *Crossocerus* Lapeletier & Brullé

Crossocerus (*Hoplocrabro*) *quadrifasciatus* (Fabricius) - This species is rare and was found in Landes only. It is quite common in the Périgord Noir and the Pyrenees.

Data.- LANDES: Escourse 3 ♀, Onesse 1 ♀.

Crossocerus (*s.s.*) *wesmaeli* (Van der Linden) - On blue thistles one male and female of this species were collected at the beach of Landes. The species is rare in the Périgord Noir as well and it is not mentioned from the Pyrenees.

Data.- LANDES: Moliets-et-Maâ 1 ♂, 1 ♀.

Crossocerus (*s.s.*) *elongatulus* (Van der Linden) - This species was quite rare in Aquitaine. The species also occurs in the Périgord Noir and is abundant at some places in the Pyrenees.

Data.- GIRONDE: Arès 1 ♂. LANDES: Escourse 2 ♀, Linxe 1 ♀.

Genus *Lindenius* Lapeletier & Brullé

Lindenius panzeri (Van der Linden) - Two females only were collected in Landes. The species also occurs in the Périgord Noir and in the Pyrenees.

Data.- LANDES: Lé vignacq 1 ♀, Onesse 1 ♀.

Lindenius pygmaeus (Van der Linden) - Of this species only two females were collected. It also occurs in the Périgord Noir and the Pyrenees.

Data.- GIRONDE: Arès 1 ♀. LANDES: Lé vignacq 1 ♀.

Genera *Entomognathus* Dahlbom and *Rhopalum* Kirby

In Aquitaine no specimens of these two genera could be found, although both occur in the Périgord Noir and in the Pyrenees.

Genus *Oxybelus* Latreille

Oxybelus lineatus (Fabricius) - One female only was collected in Lot-et-Garonne. Not mentioned from the Périgord Noir or the Pyrenees.

Data.- LOT-ET-GARONNE: Durance 1 ♀.

Oxybelus argentatus Curtis - Males only were collected at two places. Not found in the Périgord Noir or in the Pyrenees.

Data.- GIRONDE: Villandraut 2 ♂. LOT-ET-GARONNE: Durance 5 ♂.

Oxybelus mandibularis Dahlbom - Three males only were collected. The species was absent in the Périgord Noir and the Pyrenees.

Data.- LANDES: Linxe 1 ♂. LOT-ET-GARONNE: Durance 2 ♂.

Oxybelus trispinosus (Fabricius) - In Aquitaine the species is quite rare. It occurs in the Périgord Noir and the Pyrenees.

Data.- GIRONDE: Marcheprime 1 ♀. LANDES: Arengosse 1 ♂, Lévignacq 1 ♀, Linxe 4 ♂.

Oxybelus quatuordecimnotatus Jurine - Rare in Aquitaine; not known from the Périgord Noir but common in the valley of the Garonne in the Pyrenees.

Data.- GIRONDE: Blagon 1 ♂. LANDES: Lesgor 1 ♂, Linxe 20 ♂, 1 ♀.

Oxybelus victor Lepeletier - This species is very common in Aquitaine but is not known from the Périgord Noir and the Pyrenees.

Data.- GIRONDE: Arès 1 ♂, 1 ♀, Blagon 1 ♀. LANDES: Lévignacq 1 ♂, Linxe 4 ♂, 2 ♀. LOT-ET-GARONNE: Durance 1 ♀.

Oxybelus victor var. *melancholicus* Chevreux - This variation is more common than the nominal form and occurs in the same localities. It has not been recorded from the Périgord Noir or from the Pyrenees.

Data.- GIRONDE: Blagon 1 ♂, Soulac 1 ♂. LANDES: Lespéron 1 ♀, Lévignacq 1 ♂, Linxe 26 ♂. LOT-ET-GARONNE: Durance 1 ♂, 2 ♀.

CONCLUSION

The majority of the species being common or abundant in other parts of France (Berland, 1925) are also found in Aquitaine where about 50% of them are very common. A few species which appear to be rare in other parts of France are common in Aquitaine, for instance *Astata costai* Piccioli, *Tachysphex bicolor* (Brullé), and *Ectemnius guttatus* (Van der Linden).

Some species are equally rare in Aquitaine and in other parts of France. Of fourteen genera, found elsewhere in France, no species were collected in Aquitaine.

Some species were rare and often limited to the eastern part of Aquitaine. These species were

common in south-eastern France, for instance *Philanthus coronatus* Fabricius, *Gorytes concinnus* Rossi, *Bembix integra* Panzer, and *Oxybelus lineatus* (Fabricius). These species seem to reach their westernmost limit in Aquitaine and do not attain the Atlantic coast.

It was striking that species digging their burrows in fine, or even loose sand are abundant, for instance seven members of the genus *Bembix*, two species of *Stizus*, and *Philanthus triangulum* (Fabricius), the last one being very abundant at many places. *Philanthus triangulum* needs a thick layer of sand to dig its burrows. It prefers sand without vegetation, so the many fire breaks and dust roads are excellent places for this bee-hunting wasp.

The time of collecting was limited to the summer months, and the collecting period was very short in a number of localities (see table I), the species list, therefore, cannot be qualified as complete. When more time could have been spent in collecting, more species might have been discovered and more detailed data about the distribution of the Sphecidae in Aquitaine obtained.

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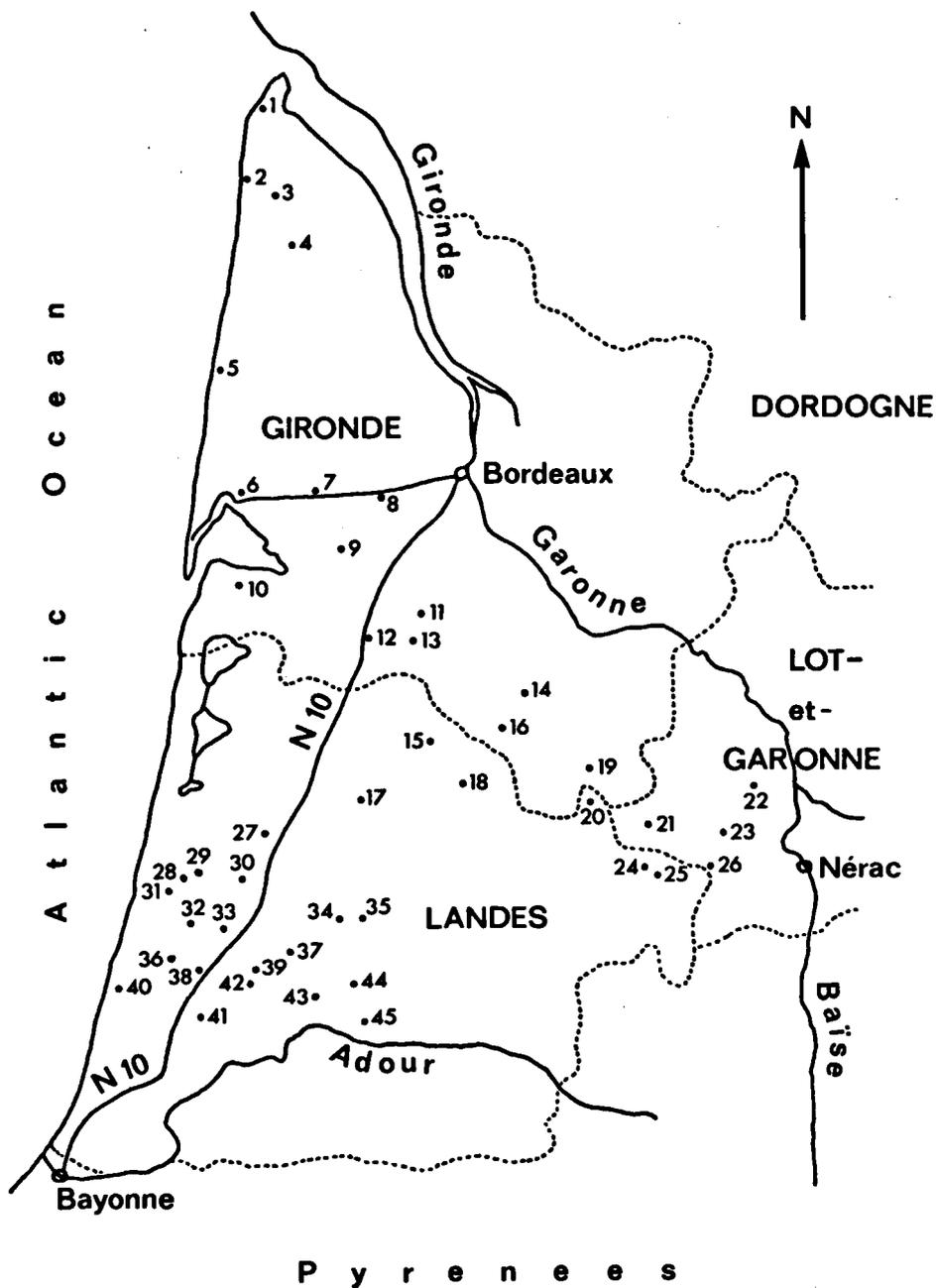


Fig. 1. Map of Aquitaine (south-western France); the numbers indicate the collecting places, the names are given in table I. (N 10 = national highroad 10. The names of the "départements" are printed in capitals; those of rivers and towns in lower case).

LANDES		
35	Arengosse	9.VIII.67; 8,10.VIII.68; 2.IX.71.
34	Arjusanx	15.VIII.70.
39	Boos	10.VIII.68.
38	Castets	17.VIII.67; 12.VIII.68; 7.VIII.69; 12.VIII.70.
27	Escourse	20.VIII.66; 7.VIII.67; 13.VIII.70.
41	Hern	12.VIII.68.
42	Laluque	25.VIII.66; 1.VIII.67; 9.VII.68.
43	Leagor	25.VIII.66; 1.VIII.67; 11.VIII.70.
33	Leaspéron	6.VIII.67; 13,30.VII, 3,21.VIII.68.
32	Lévigacq	20.VIII.66; 6,12,14,18.VIII.67; 10-12,30.VII,1-9.VIII.68; 19-30.VI, 1-27.VII, 1-11,14.VIII.69; 17,21-30.VI, 1-10.VII, 12.VIII.70; 28.VIII.71.
36	Linxe	2-8,17.VIII.67; 12-30.VI, 1-31.VII, 1-21.VIII.68; 19-30.VI, 7-21.VIII.69; 24.VII, 12.VIII.70; 29.VIII.71.
31	Lit-et-Mixe	15.VIII.67; 21,24.VII.69.
24	Losse	20.VIII.66.
25	Lubbon	25.VIII.66.
18	Luxey	9.VII.65.
20	Maillas	23.VIII.66.
29	Mézos	15.VIII.67.
40	Mollets-et-Maâ	8.VIII.67; 31.VII.69.
30	Onesse	20-26.VIII.66; 7,11,15,18.VIII.67; 12,13.VII, 7-20.VIII.68; 6,20.VIII.69; 24.VII.70; 31.VIII.71.
37	Rion-des-Landes	25.VIII.66; 2-8.VIII.67; 9.VII.68.
15	Sore	22.VIII.68.
45	Souprosse	11.VIII.70.
28	St-Julien-en-Born	16.VIII.67; 13.VIII.70.
44	St-Yaguen	11.VIII.70.
17	Trensacq	25.VIII.66; 10.VIII.67; 9.VII, 13-18.VIII.68; 6.VIII.69; 2.IX.71.
GIRONDE		
6	Arès	21-28.VII.67; 23.VIII.68; 17-21.VIII.70; 3-9.IX.71.
12	Beliet	30.VII.67.
7	Blagon	28.VII.67.
16	Bourideys	9.VII.65.
11	Douence	17.VIII.70.
19	Escaudes	31.VII.67.
10	La Hume	29.VII.67.
5	Lacanau-Océan	21.VII.67.
9	Marcheprime	17.VIII.70.
2	Montalivet-les-Bains	20.VII.67.
4	Naujac	21.VII.67.
1	Soulac	20.VII.67.
8	St-Jean-d'Illac	28.VII.67.
13	St-Magne-de-Belin	17.VIII.70.
3	Vendays-Montalivet	21.VII.67.
14	Villandraut	30.VII.67; 22.VIII.68; 18.VIII.69; 16.VIII.70; 2.IX.71.
LOT-et-GARONNE		
21	Allons	9.VII.65.
26	Bousses	23-27.VIII.66.
22	Damasan	8.VII.65.
23	Durance	8,22-30.VII, 15.VIII.65; 26-30.VI, 5-7.VII, 17-22.VIII.66; 31.VII.67; 28.VII.68; 25.VII.70.

Table I. List of collecting places with the dates (day, month, year) of collecting in Aquitaine (Landes, Gironde, and Lot-et-Garonne).