

# A NEW SUBSPECIES OF *Orthotylus junipericola* LINNAVUORI, 1965 (INSECTA, HETEROPTERA) FROM THE AZORES

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*Orthotylus (Parapachylops) junipericola atilioi* n.ssp. is described from Terceira (Azores), based on a single male specimen collected in the Azorean endemic tree *Juniperus brevifolia*. *O. (Parapachylops) junipericola* Linnavuori, 1965 is a "Rassenkreis" with seven known geographic races with an Atlanto-mediterranean distribution. *O. (Parapachylops) junipericola atilioi* n.ssp. is the eighth subspecies described from this species, being the most occidental *taxon*. The new subspecies, *O. (Parapachylops) junipericola atilioi* n.ssp., was sampled in a biodiversity hotspot from the Azores, Biscoito da Ferraria Natural Forest Reserve of "climax pattern of indigenous forest".

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## INTRODUCTION

During the ecological and entomological expeditions of project BALA (Biodiversity of arthropods from the laurisilva of the Azores), one single male specimen of *Orthotylus (Parapachylops) junipericola* Linnavuori, 1965 was sampled in the Azorean endemic tree *Juniperus brevifolia* at the Biscoito da Ferraria Natural Forest Reserve (Terceira, Azores).

*Orthotylus (Parapachylops) junipericola* Linnavuori, 1965 is a "Rassenkreis" with seven known *taxa* so far (LINNAVUORI 1965; JOSIFOV 1974; RIBES 1978; ÉHANNO & MATOCQ 1990): *O. (P.) j. armoricanus* Éhanno and Matocq, 1990, from west France and north Spain; *O. (P.) j. castellanus* Ribes, 1978, from north and northwest Spain; *O. (P.) j. balcanicus* Josifov, 1974, from Bulgaria; *O. (P.) j. terminalis* Linnavuori, 1965, from the Asiatic Turkey; *O. (P.) j. regularis* Linnavuori, 1965, from northern Tunisia; *O. (P.) j. junipericola* Linnavuori, 1965, from Central Tunisia; and *O. (P.) j. contractulus* Linnavuori, 1965, from Libya.

With one exception, *O. (P.) j. armoricanus* that lives on *Thuja* (also a Cupressaceae) (see

ÉHANNO & MATOCQ 1990), all the remaining six *taxa* have been recorded from different species of *Juniperus*. The same applies to the new subspecies here described from the Azores, also found associated with the genus *Juniperus (J. brevifolia)* in a climax forest dominated by this Azorean endemic tree.

This contribution is the description of the eighth and the most occidental (Atlanto-mediterranean) subspecies of the group.

## MATERIAL AND METHODS

The study area is located at Serra do Labaçal (approx. 600 m) in the Biscoito da Ferraria Natural Forest Reserve (Terceira, Azores). Terceira is located in the Central group (38.7° N, 27.2° W) and it is the third in size (402 km<sup>2</sup>) of the nine islands forming the archipelago of the Azores. The island is formed by four main volcanic complexes (Serra de Santa Bárbara, Serra do Morião, Pico Alto and Serra do Cume). Terceira is also the third oldest Azorean island (3.5 Ma B.P.) (AZEVEDO et al. 1991) and the climate is temperate-oceanic with an average annual temperature of 17.5° C in the low altitudes

(max. in August, min. in February). The average annual precipitation is at Angra do Heroísmo (47 m a. s. l.) 969 mm year (140 mm in January and 40 mm in July) and at Serra de S. Bárbara (1023 m a. s. l.) 3000 mm year.

Two transects of 150 metres each were performed within the native forest at Biscoito da Ferraria Natural Forest Reserve, Terceira. Sampling of the arthropod species associated with the canopy was conducted in the following plant species: *Juniperus brevifolia* (40 samples), *Ilex perado azorica* (20 samples), *Laurus azorica* (20 samples), *Vaccinium cylindraceum* (20 samples) and *Myrsine africana* (20 samples). The single male specimen of the new subspecies was collected by means of a special beating tray in which the sample is retained in a plastic bag (see BASSET 1998). For more details on the sampling procedure see BORGES et al. (1999).

## RESULTS

### *Orthotylus (Parapachylops) junipericola attilioi* n.ssp. (Figs. 1-5)

Type locality: Serra do Lapaçal (Terceira, Azores).

Type material: Holotype: male, Serra do Lapaçal (600 m a. s. l.), Terceira, Azores, 19.VI.1999, fragment of native forest (C. GASPAS and P. A. V. BORGES leg.), sampled with a beating tray on *Juniperus brevifolia*, sample 14 in Transect T2 – 1999. Deposited at the University of Azores in Terceira (“Arruda Furtado collection”).

#### Description:

##### Male

Length: 3.6 mm.

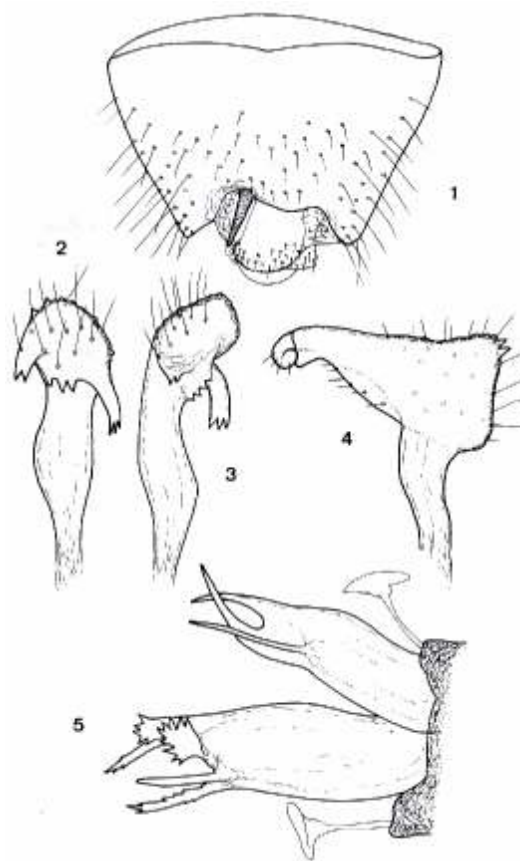
Habitus as in all the other taxa from the “Rassenkreis”. The specimen had been conserved in ethanol and had a non-natural yellowish colour.

Dorsal part covered with long dark semi-erected hairs and others white scale-like and slightly decumbent.

Body parallel sided. Hemelytra long, largely surpassing the abdomen. Head large with globose eyes, 0.76 x as broad as basal width of pronotum.

Ocular index (synthlipsis / eye) = 1.25. Pronotum trapezoid-like shaped, 2.12 x as broad as the median part. Antennae long and thin; length of antennal joints I-II-III-IV = 0.35 – 1.22 – 0.5 – 0.3 mm. The antennomere II is cylindrical and 1.22 x as long as the basal width of pronotum. Rostrum slightly exceeding the middle coxae; its joints III and IV enlarged in its articulation. Tibiae with long spines, semi erected and dark. Metatarsal joints I-II-III = 0.09 – 0.2 – 0.25 mm.

Male genitalia: Pygophore has a truncated cone, with only one chitinized spur (= horn-like sclerotized process), long and robust (Fig. 1), similar to most specimens of *O. (P.) j. castellanus* (RIBES 1990).



Figs. 1-5. *Orthotylus (Parapachylops) junipericola attilioi* n.ssp.: Pygophore, dorsal aspect (1); right paramere in two views (2 and 3); left paramere (4); vesical appendages (5).

Right and left paramere as in the subspecies *O. (P.) j. armoricanus*, *O. (P.) j. castellanus* and *O. (P.) j. balcanicus*. The left paramere has some teeth in the sensory lobe and the extremity of the hypophysis is coiled (Figs. 2-4).

Vesica with two robust appendages, ramified and leaned one against the other. The left one presents three ramifications of different form, smooth and long. The right one has five ramifications, one smooth and long, two denticulate and long and the remaining two palm-like shaped, with robust teeth (Fig. 5).

*Derivatio nominis*. Named after our friend and colleague Attilio Carapezza, in honour of his valuable study on this "Rassenkreis" (CARAPEZZA 1997).

*Bionomics*. The only known specimen so far was collected on a branch of *Juniperus brevifolia* Antoine (Azorean endemic tree) by means of a beating tray. There is no evidence on its feeding preferences, but it is probably phytophagous, feeding on *Juniperus brevifolia*.

*Distribution*. Presently endemic to Terceira Island, but probably also occurs in other Azorean islands.

## DISCUSSION

The Azorean fauna is not as diverse as other Macaronesian archipelagos, but much of its apparent poverty is probably a consequence of the poor sampling effort, which has been comparatively much higher in Madeira and the Canaries (BORGES 1992).

In a recent literature survey of the endemic arthropod species from the Azores (BORGES et al. 2000), only one endemic species of Heteroptera was listed, *Pinalitus oromii* Ribes (Heteroptera, Miridae), with a restricted distribution (island of Pico). BORGES & BROWN (1999) suggested the need for performing standardized sampling protocols in the native forests of the Azorean archipelago. As a result, a project financed by the Azorean Government - BALA ("Biodiversity of arthropods from the laurisilva of the Azores") - is currently (1998-2001) performing standardized sampling in 15 Natural Forest Reserves in seven Azorean islands (see BORGES et al. 1999, 2000). *Orthotylus (Parapachylops) junipericola attilioi*

n.ssp. is the first *taxon* to be described as new to science as a result of that effort.

Several plant species were sampled in the Biscoito da Ferrara Natural Forest Reserve (NFR), Terceira (see Methods) and also in Terceira another NFR was surveyed (Serra de Sta. Bárbara, Mistérios Negros). Altogether a total of 142 *Juniperus* samples from Terceira and also 80 *Juniperus* samples from Flores were already sorted into species under the BALA project. As a result, only one male specimen of *Orthotylus (Parapachylops) junipericola attilioi* n.ssp. was collected. This may imply that this is a very rare species. However, it should not be excluded that *O. (P.) junipericola attilioi* n.ssp. was not sampled in its main habitat or in the right period of the year. This was the case of another endemic Azorean Mirid heteropteran, *Pinalitus oromii*, that was recorded initially only from Pico (RIBES 1992; BORGES 1997) and considered rare (BORGES et al. 2000), but later was found very abundant in the canopies of several trees of the islands of Flores, Terceira, Pico and Sta. Maria (BALA, unpublished data).

Concerning its taxonomic relationships, *O. (P.) junipericola attilioi* is clearly separated from *O. (P.) junipericola armoricanus* and *O. (P.) junipericola castellanus*, the most closely distributed subspecies, by a very distinct ocular index (1.25): 2.08 in *armoricanus* and 1.45-1.65 in *castellanus*. Moreover, the male genitalia is different from all remaining subspecies, in particular by the peculiar ramifications of the vesical appendages (LINNAVUORI 1965; JOSIFOV 1974; RIBES 1978, 1990; ÉHANNO & MATOCQ 1990; CARAPEZZA 1997).

The fauna of the Azorean native forest received little attention in the past despite its importance as a potential reservoir of endemic *taxa*. The present discovery of *O. (P.) junipericola attilioi* n.ssp. is a good example of the results that can be obtained after a systematic sampling of different habitats in a poorly studied region (see also BLAS & BORGES 1999).

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