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# First Record of the Eucalyptus Seed Gall Wasp, *Quadrastichodella nova* Girault, 1922, (Eulophidae: Tetrastichinae) from Turkey

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**Abstract:** The present study was carried out during 2006 and 2007 in a eucalyptus planted area in the Mediterranean region of Turkey. The eulophid species *Quadrastichodella nova* Girault (Hymenoptera: Eulophidae: Tetrastichinae) was collected on *Eucalyptus* spp. seed capsules for the first time in Turkey. This species induces galls on the seeds, attaining low levels of infestation. The plant species *Eucalyptus camaldulensis* L. (Myrtaceae) is reported as new host for *Q. nova*.

Key Words: Eucalyptus, *Quadrastichodella nova*, new record, new host, Turkey

## Türkiye'de yeni bir okaliptüs tohum gal arısı *Quadrastichodella nova* Girault, 1922 (Eulophidae: Tetrastichinae)

**Özet:** Bu çalışma, 2006 ve 2007 yıllarında Akdeniz Bölgesi'nde okaliptüs yetiştirilen alanlarda yürütülmüştür. *Eucalyptus* spp. tohum kapsüllerinde *Quadrastichodella nova* Girault (Hymenoptera: Eulophidae: Tetrastichinae) ülkemizde ilk defa elde edilmiştir. Tohumlar üzerinde gal oluşturan bu türün enfeksiyonunun düşük düzeyde olduğu görülmüştür. *Eucalyptus camaldulensis* L. (Myrtaceae) bitkisinın *Q. nova* için yeni bir konukçu olduğu saptanmıştır.

Anahtar Sözcükler: Okaliptüs, *Quadrastichodella nova*, yeni kayıt, yeni konukçu, Türkiye

## Introduction

The genus *Eucalyptus* is one of the most characteristic genera of the Australian flora and contains about 300 species. These trees have economic value due to their use in many sectors. The export of eucalyptus seed project was started by the Australian government and the FAO (1980) in 1960 and a great deal of eucalyptus seeds were introduced into numerous developing countries without any phytosanitary certificate (Cooper, 1983). It is estimated that about 15,000-20,000 species of phytophagous insects feed on *Eucalyptus* spp. in Australia (Majer et al., 1997). Some of these pests were accidentally introduced into developing countries during this project.

In Turkey, eucalyptus trees were firstly imported by a French railway construction company in 1885 and were used mainly as a foliage plant on the roadbed (Adalı, 1944). Extensive forestation was carried out by importing *Eucalyptus camaldulensis* seeds from New South Wales (Australia) between 1958 and 1961. To date, 2 species (*E. camaldulensis* and *E. grandis*) have adapted well to the ecological conditions of Turkey and more than 20,000 ha have been planted (Başer et al., 1998).

The subfamily Tetrastichinae (Hymenoptera: Eulophidae) can induce galls on several parts of host plants. Several Australian gall-inducing eulophids have been recorded as pests of *Eucalyptus* trees in several countries (Valentine, 1970; Graham, 1987; Boucek, 1988; Doğanlar, 2005).

The eucalyptus seed gall wasp, *Quadrastichodella nova* Girault (Eulophidae: Tetrastichinae, Hymenoptera), was described as a chalcid-wasp of *Eucalyptus* from Pentland Forest, Australia. *Quadrastichodella nova* is known to

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occur in Afrotropical regions, Argentina, Australia (Queensland, Victoria), Canary Islands, Europe (Italy, Sardinia, Sicily, Spain), Israel, Nearctic, Neotropical, New Zealand, South Africa, and the United States of America (California), and its plant hosts are *Eucalyptus* sp., *Eucalyptus resinifera*, and *Eucalyptus umbellatus* (Myrtaceae) (Graham, 1987; La Salle, 1994; Headrick et al., 1995; Başer et al., 1998; Ikeda, 1999; Noyes, 2003). Adult females of *Q. nova* oviposit into young flower buds of *Eucalyptus* species, transforming them into seed-like galls in the seed capsules (Valentine, 1970).

## Materials and Methods

Seed capsules of *Eucalyptus camaldulensis* were collected from Hatay: Kırıkhan, Antakya and İskenderun (24.12.2006, 10.2.2007, 30.3.2007; Leg. M. Doğanlar), Adana: City Center (30.12.2006; Leg. M. Doğanlar), İçel: Tarsus (30.12.2006, 25.2.2007; Leg. M. Doğanlar), Muğla (16.12.2006; Leg. O. Doğanlar) and Antalya (16.3.2007; Leg. O. Doğanlar) provinces in 2006 and 2007. All seed capsules collected were placed in groups of ≈ 50 and put in polyethylene bags. The bags were temporarily stored in a cooler with ice during collection and then transported to the laboratory. They were incubated in groups of 10 in a 157-ml vial and maintained at 26 ± 2 °C and 60% ± 10 RH. All capsules were observed until adult emergence, and all wasps were removed soon after emergence and noted. The eucalyptus seed galler wasps were identified by the second author. The specimens were killed in ethanol and subsequently stored in the freezer (–20 °C); some of them were slide-mounted in Canada balsam. The examined specimens were deposited in the collection of the Insect Museum of Plant Protection Department, Agriculture Faculty, Mustafa Kemal University, Antakya, Hatay, Turkey (ICMKU).

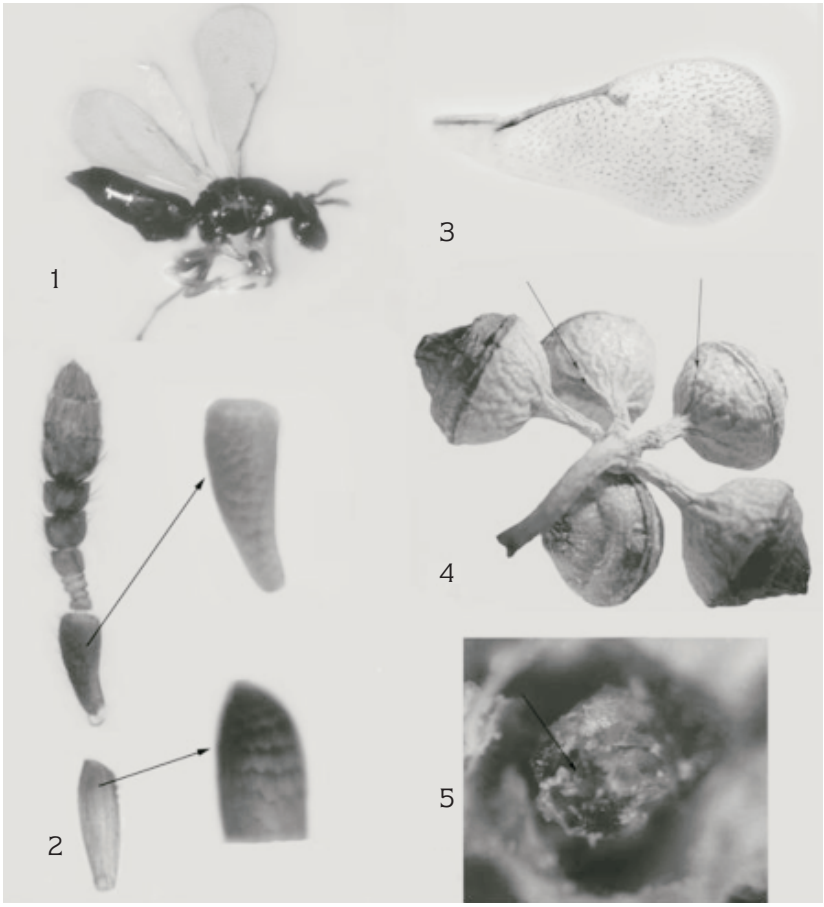


Figure 1-5. 1) *Quadrastichodella nova* on *Eucalyptus camaldulensis*, 2) Antenna, 3) Fore wing, 4) Exit hall in seed capsules, 5) Gall-like structure.

## Results

The examined *Q. nova* specimens were reared from the seed capsules of *E. camaldulensis* collected from Antakya, 36º32´ N; 36º02´ E; 186 m (09.3.2007: 5 ♀; 27.4.2007: 4 ♀) and Muğla, 37º01´ N; 28º29´ E; 557 m (03.3.2007: 1 ♀). *E. camaldulensis* is a new host record for *Quadrastichodella nova,* which is recorded for the first time in Turkey.

The wasp specimens (Figure 1) were identified by comparing them with the description given by Ikeda (1999). The Turkish specimens have all body parts very similar to those in figures 1-7 in Ikeda (1999). The clava without terminal spine, scape and pedicel reticulate (Figure 2); mesoscutum with distinct line; forewing with postmarginal vein only slightly shorter than stigmal vein (Figure 3), speculum open; propodeum almost as long as dorsellum, having weak and indistinct median carina and callus with 2-3 setae; femora predominantly dark brown; metasoma sessile, petiole indistinct.

From each seed capsule 1 or 2 females emerge (Figure 4). The larvae make a gall-like structure by tightly binding 3-4 young seeds (Figure 5). The infection rate is very low, less than 0.1%. Studies on the biology, pest status, and distribution of *Q. nova* are continuing.

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