

TURKISH SPECIES OF *TORYMUS* DALMAN, 1820 (HYMENOPTERA: TORIYIDAE: TORIYMINI), WITH DESCRIPTIONS OF NEW SPECIES

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[Doğanlar, M. 2017. Turkish species of *Torymus* Dalman, 1820 (Hymenoptera: Toryidae: Torymini), with descriptions of new species. *Munis Entomology & Zoology*, 12 (1): 5-22]

ABSTRACT: Turkish species of *Torymus* Dalman, 1820 (Hymenoptera: Torymidae), collected from several parts of Turkey, were studied in the last 30 years. Totally 32 species of *Torymus*, were obtained, such as: the known species are *T. nitidulus* (Walker), *T. cyaneus* Walker, *T. pygmaeus* Mayr, *T. ramicola* Ruschka, *T. igniceps* Mayr, *T. fastuosus* Boheman, *T. longicalcar* Graham, *T. flavipes* (Walker), *T. erucarum* (Schrank), *T. phillyreae* Ruschka, *T. apiomyiae* Boucek & Mihajlovic, *T. bedeguaris* (Linnaeus), *T. geranii* (Walker), *T. auratus* (Müller), *T. arcella* Graham & Gijswijt, *T. cultriventris* Ratzeburg, *T. verbasci* Ruschka, *T. cultratus* Graham & Gijswijt, *T. rubi* (Schrank), the newly recorded species are *T. pulchellus* Thomson, *T. quercinus* Boheman, *T. poae* (Hoffmeyer), *T. nobilis* Boheman, *T. micrurus* Boucek, *T. nigratarsus* (Walker), *T. artemisiae* Mayr, *T. monticola* Graham & Gijswijt, *T. hornigi* Ruschka, *T. tipulariarum* Zetterstedt, *T. millefolii* Ruschka, and 2 new species are *T. basarani* sp. nov. and *T. bingoelensis* sp. nov. In order to identify the parasitoid species, an identification key for the known Turkish species, was provided. The new species were described, their diagnostic characters were illustrated and compared with the similar species of the genus.

KEY WORDS: *Torymus* spp., Hymenoptera, Torymidae, Turkey

The genus *Torymus* was described by Dalman (1820) having type species *Ichneumon bedeguaris* Linnaeus, designated by Curtis 1835:552. Grissell (1995) gave the synonyms of genus, including *Diamorus* Walker 1834, and of species, and recorded 317 world species. Noyes (2015) gave 417 species from all over the world. From Turkey, Stonova et al. (2012) listed 15 species and Noyes (2015) 12 species. Doğanlar (2016) stated *Diamorus* as a distinct genus by giving diagnostic characters of hypopigium, and listed 2 species from Turkey. Diagnostic characters of the genus, *Torymus*, host records and distributions of the known species were given by Grissell (1995) and Noyes (2015), and the known Turkish species of *Torymus* were listed by Doğanlar (2016).

By this work 32 species, 2 of them new and 11 of them new record for Turkey, were found. The new species were described, and a new identification key for the Turkish species was provided by using the characters were given by Graham & Gijswijt (1998).

MATERIAL AND METHOD

This study is based upon examination and identification of the specimens collected from some parts of Turkey in the last 30 years. The examined specimens and types of the new species were deposited in Insect Museum of Biological Control Station, Yüreğir, Adana, Turkey (IMBC). Specimens, associated with galls were reared from galls which were kept in the cages (50x50x80 cm) under laboratory conditions (20-25° C and 50-60% relative humidity). The adults emerged from the galls were collected, killed, mounted on card and kept in the

museum. Some specimens were collected by sweeping net and putting the whole contents of the swept materials directly in 96 % ethanol. After sorting the material, individuals were mounted on cards for further morphological studies. The species were identified by following the keys of Grissell (1995), Graham & Gijswijt (1998), Zerova & Seryogina (2003). Wings and antennae of holotypes of the new species were slide-mounted in Canada balsam. Photographs of diagnostic characters of the genera were taken by using of Leica DM 500 microscopes with a digital Leica ICC 50 camera attached to it.

Terminology and abbreviations

Morphological terminology follows Gibson (1997). Abbreviations used in the key and descriptions are: OOL= shorter distance between ocello-ocular line, POL= distance between posterior ocelli, F1-6 = funicular segments.

RESULTS AND DISCUSSION

Key to the Turkish species of *Torymus* Dalman based on characters were given by Graham & Gijswijt (1998)

- 1-Hind tibia with one distinct spur. Posterior third of scutellum mainly smooth, without setae; Scutellar frenum indicated by an area devoid of setae but not delimited anteriorly by an impressed line. Mesoscutum and scutellum very shiny, with distinct transverse striae, with fine reticulations between striae. Antennal flagellum pale brown or testaceous beneath.....2
- Hind tibia with two distinct spurs; scutellar frenum present or not; other characters variable.....3
- 2-Antenna with F1 anelliform, distinctly broader than long, usually lacking sensilla; some of the following segments broader than long. Ovipositor sheaths as long as or very slightly longer than metasoma plus mesosoma. Dorsal surface of hind coxa bare in basal half. Body bright blue, green, or golden green. Fore coxae at least yellow apically, sometimes about half yellow. Scape yellow beneath, or almost wholly so. Very small species: length 1.2-1.8 mm..... ***T. nitidulus* (Walker)**
- Antenna with F1 distinctly longer than broad, with two long sensillae; segments of flagellum distinctly longer than broad. Ovipositor sheaths as long as or very slightly longer than metasoma. Dorsal surface of hind coxa bare, in almost whole length. Body bright blue- green, legs yellow, except base of mid coxae with basal half metallic. Scape and pedicel yellow wholly so. Length of body+ovipositor: 2.88+1.5 mm..... ***T. basarani* sp. nov.**
- 3-- Antenna with F1 slightly to quite distinctly shorter than F2, seen in profile with only one sensillum or two sensilla. Ovipositor sheaths somewhat longer than the body, index 3.5-4.5. Dorsal surface of hind coxa bare in basal half. Antenna with anellus broader than long; scape nearly 4 times as long as broad; F2 distinctly longer than broad. Body rather dark bluegreen to blue, gaster sometimes more or less violet. Antennal scape testaceous except dorsally. Head with temples converging strongly ***T. ramicola* Ruschka**
- Antenna with F1 as long as or longer than F2 and provided with sensilla (usually more than 2 visible in profile); if F1 is somewhat shorter than F2 (*T. pygmaeus*, *pulchellus*) then the ovipositor sheaths are much shorter than the body. Dorsal surface of hind coxa often pilose in basal half..... 4
- 4- Posterior 0.25 to 0.45 of scutellum ("frenal area") differentiated in some way from the rest: either extensively or wholly polished and smooth, and delimited anteriorly by a weak to strong impressed line. Hind femur without tooth..... 5
- Scutellum without any such differentiated area posteriorly, wholly reticulate (though occasionally the sculpture becomes gradually weaker towards the posterior edge of the scutellum) and with some piliferous punctures in the posterior part..... 6
- 5- Ovipositor sheaths 1.66x longer than the body; index 6.0. Posterior ocelli smaller, OD 0.71x OOL. POL 2.5x OOL. Distance between lateral ocellus and occipital carina 1.44x OOL. Upper surface of costal cell with some setae. Mesoscutum, axillae, and scutellum

- anterior to frenal area alutaceous between the piliferous punctures. Mesepimeron broad and almost twice higher than broad; Vertex without a suture between lateral ocelli and eyes. Head 2x as broad as long; Eyes separated almost by their own length; distance between eyes 2.75x frontal width of eye; temple 0.3x length of eye; Dorsal surface of hind coxae bare in basal half, often with a longitudinal curved carina. Hind coxa stouter, its posterior edge distinctly curved. The hind femur is 5 times as long as broad and the scutellum has the frenal area marked off by distinct transverse impressed line. Ovipositor sheaths 1.66x longer than the body; index 6.0. Gaster not compressed, dorsally flat; basal sternite extremely long, about twice length of hind coxa and reaching nearly to tip of hypopygium; hind margin of tergite 4 deeply triangularly emarginate. Propodeum very weakly alutaceous-reticulate, without striae, hind coxa with a dorsal carina. Antenna with anellus 2.5 times as broad as long. Head in dorsal view twice as broad as long..... ***T. bingoelensis* sp. nov.**
- Ovipositor sheaths slightly shorter than the body. Ovipositor index 1.7-2.1. Posterior ocelli large, OD greater than OOL. Posterior 0.25-0.3 of mesoscutum, axillae partly, and scutellum anterior to frenal area smooth and polished between the very distinct piliferous punctures. Eyes separated by somewhat less than their length. Head and thorax green to blue; gaster sometimes with slight violet tinge in places. Body-length 2.1-4.0 mm..... ***T. cyaneus* Walker**
- 6- Antenna with F1 lacking sensilla, a little shorter than F2. Antennal flagellum proximally not or only just as stout as pedicellus, but thickening obviously distad so that the clava is about twice as broad as F1, which is sometimes slightly shorter than F2; pedicellus 1.8-2.0 times length of F1; distal segments of funicle usually slightly broader than long. Forewing with lower surface normally with one row of setae, or none, below the cubital vein; Hind coxa nearly bare dorsally, only 2-3 setae in basal half; Gaster strongly compressed, ovipositor sheaths about as long as gaster. body bluegreen to greenish-blue; antennal scape black, or paler below, the radicle always pale; legs with femora mainly black, tibiae sometimes more or less infuscate; gaster often partly or mainly bronze. Body length 1.2-2.1 mm parasite of *Contarinia subulifex* in galls on *Quercus cerris*..... ***T. pygmaeus* Mayr**
- Antenna with F1 having sensilla, as long as or longer than F2; other characters variable.. 7
- 7- Propodeum sloping at only about 30 degrees relative to longitudinal axis of body, relatively dull, with distinct, more or less raised reticulation, often also with some irregular wrinkles or rugosity. Mesoscutum and scutellum shiny, with large though widely spaced piliferous punctures. Hind coxa with dorsal surface bare. Antenna: F4-F7 each with a stripe of micropilosity beneath. Ovipositor sheaths much shorter than the body. Thorax green to blue; vertex often coppery or crimson. Legs, except mid and hind coxae, red..... ***T. igniceps* Mayr**
- Propodeum sloping more steeply, in most species shiny with some engraved or sculptured. Mesoscutum and scutellum usually less shiny, if with large punctures then these are closer together. A very few species in which the propodeal sculpture sometimes approaches. Antennal flagellum without areas of micropilosity beneath; hind coxa bare and ovipositor sheaths shorter than the body..... 8
- 8- Ovipositor index 1.5-1.55. Ovipositor sheaths shorter than the body; antennal flagellum very stout, tending to be cylindrical; sensilla rather short, in 2 (occasionally 3) rows on each funicular segment; scape extensively to wholly testaceous; Propodeum with at least some weak longitudinal stria, often 23 longitudinal striae, on each side of median line. Forewing with M 68.5 times length of ST; stigma distinctly petiolate; speculum not reaching ST. Species associated with *Quercus*..... ***T. fastuosus* Boheman**
- Not having the above combination of characters..... 9
- 9- Shorter spur of hind tibia only half as long as the longer spur, length of the latter only equal to maximum breadth of the tibia. Gaster tending to appear triangular in profile, the tip of the hypopygium situated only slightly beyond the apex of the basal sternite. Hind coxa normally bare dorsally in basal half. Malar space 0.3-0.36 length of eye. Mesoscutum and scutellum shiny; scutellum, except at the sides, with very sparse piliferous punctures. Facial pilosity composed of thicker and slightly flattened setae, which tend to hide the surface somewhat. Ovipositor sheaths 0.65-0.75 length of gaster, index 1.15-1.6. Antenna with F1 1.5 times as long as the anellus and sometimes lacking sensilla. Species associated with *Salix* but host unknown..... ***T. pulchellus* Thomson**

- Shorter spur of hind tibia in most species more than half as long as the longer spur; if only half (*T. longicalcar*, *flavipes*) then length of longer spur is much greater than the breadth of the tibia. Gaster nearly always with tip of hypopygium situated more distad. Hind coxa either bare, or more or less pilose, dorsally in basal half..... 10
- 10- Longer spur of hind tibia 0.6-0.65 length of basitarsus and 1.65-2.0 times the breadth of the tibia. Hind coxa bare dorsally in basal half; basitarsus of hind legs nearly or quite half as long as tibia..... 11
- Longer spur of hind tibia 0.3-0.5 length of basitarsus and usually less than 1.65 times the breadth of the tibia but if as much as 1.65 then hind coxa pilose dorsally in basal half. Basitarsus of hind legs usually relatively shorter..... 12
- 11 - Gaster with tip of hypopygium very near or level with apex of gaster; ovipositor sheaths usually a little longer than the body, o.i. 3.3-3.5. Thorax slender, 1.9-2.2 times as long as broad. Legs very slender, hind coxa more than 2.5 times as long as broad. Gaster reddish-yellow ventrally in at least basal half, sometimes whole gaster except the dorsal surface pale..... ***T. longicalcar* Graham**
- Gaster with tip of hypopygium situated at about 0.75 its length; ovipositor sheaths shorter than body, o.i. about 3.0. Thorax more squat, 1.75-1.8 times as long as broad. Legs stouter; hind coxa about twice as long as broad. Gaster normally without pale area, rarely obscurely reddish at extreme base..... ***T. flavipes* (Walker)**
- 12- Ovipositor sheaths at most as long as metasoma plus mesosoma, which has numerous and moderately close piliferous punctures on mesoscutum and scutellum, antennal scape reaching level of vertex and 0.9 length of eye, flagellum usually with F I stouter than pedicellus and at most 1.5 times as long as broad; F I most often distinctly broader at base than the anellus, from which it is separated by a distinct constriction; anellus sometimes broader than long; clava ventrally with a small area of micropilosity on C3 only; . Propodeum with fine, superficial or engraved sculpture, sometimes partly smooth; head and thorax partly purplish or coppery, gaster with a reddish subbasal ring or band..... 13
- Ovipositor sheaths fully as long as, or a little longer than, the body; index 3.5-4.8. Mesoscutum and scutellum (especially the latter) with sparse piliferous punctures. Antennal scape shorter than transverse diameter of eye, only 0.7 length of eye and reaching only to lower edge of anterior ocellus, pedicellus plus flagellum 1.25-1.35 times breadth of head; anellus distinctly transverse; F I slightly shorter than, or as long as pedicellus. Legs with femora black; hind tibiae sometimes more or less infuscate medially. Head and thorax blue-green to blue, or with violet parts; gaster blue-green, blue, or mainly violet..... 14
- 13- Host on *Populus*. Malar space 0.42-0.47 length of eye..... ***T. quercinus* Boheman**
- Host on *Poa*. Malar space about 0.35 length of eye..... ***T. poae* (Hoffmeyer)**
- 14-- Vertex with punctures minute and generally not well visible amongst the reticulation, if rather more distinct than F I slightly shorter than pedicellus and propodeum, weakly alutaceous. PM twice as long as ST. Head in dorsal view 2.05-2.15 times as broad as long, with temples converging strongly and 0.15-0.25 length of eyes. Ovipositor index 1.95-2.25. Mouth 2.2-2.35 times as long as malar space. Mesosoma rather stout, as broad as head. Hosts: *Rabdophaga salicis* and *R. saliciperda* on *Salix*..... ***T. tipulariarum* (Zetterstedt)**
- Not having the above combination of characters..... 15
- 15- Antennal scape reaching above level of vertex..... 16
- Antennal scape usually not reaching level of vertex..... 17
- 16- Ovipositor sheaths shorter than body but longer than gaster. Ovipositor index 1.8-2.4. Gaster with at least a reddish subbasal ring, often more extensively reddish ventrally. Head and mesosoma mainly to wholly dark blue, or violet. Length of antennal scape 0.8-0.85 length of eye. Malar space 0.31-0.37 length of eye. POL 1.8-2.1 times OOL. on *Quercus*..... ***T. nobilis* Boheman**
- Ovipositor sheaths longer than body, index 3.8-4.1. Head and dorsum of thorax partly to mainly purplish. Forewing often with a dark discal cloud or streak..... ***T. erucarum* (Schrank)**
- 17- Setae of mesoscutum, and those of scutellum mainly, very short, decumbent, dense, only a few in posterior quarter of scutellum are longer and somewhat raised. Notauli shallow. Face below toruli thickly clothed with silvery-white downward pointing setae;

- sides of face above toruli with similar setae which tend to point obliquely outwards. Malar space 0.4-0.46 length of eye. Mouth only 1.55-1.75 malar space.....18
- Setae of mesoscutum at least slightly raised, usually longer; setae of scutellum more or less raised, very long in posterior part. Notauli usually deeper but if approaching the condition seen in *T. phillyreae* then malar space shorter. Setae of face usually sparser..... 20
- 18- Tip of hypopygium at most at 0.8 length of gaster. Ovipositor index 1.5-1.8, sheaths 1.0-1.15 length of gaster. Hind coxa dorsally with at most seven setae in a single or slightly irregular row. Hair row on underside costal cell complete. Head with temples converging very strongly and weakly curved. Gena wholly alutaceous, the sculpture extending to or virtually to the malar sulcus on its posterior side Setae of mesoscutum, and those of scutellum mainly, very short, decumbent, dense, only a few in posterior quarter of scutellum are longer and somewhat raised. Notauli shallow. Face below toruli thickly clothed with silvery-white downward pointing setae; sides of face above toruli with similar setae which tend to point obliquely outwards. Malar space 0.40.46 length of eye. Mouth only 1.55-1.75 malar space. Legs mainly testaceous, including fore coxae more or less; at most hind femora and tibiae infusate Hosts on different plants, as far as known not on *Artemisia* in Europe..... ***T. phillyreae* Ruschka**
- Tip of hypopygium nearly level with apex of gaster. Ovipositor index at most 0.85. Hind coxa about in most species at most 2.5 times as long as broad and with their posterior edge distinctly curved. Other characters variable..... 19
- 19- Ovipositor index 0.85. Base of scutellum broad, nearly truncate..... ***T. triangularis* Thomson**
- Ovipositor index about 0.6. Base of scutellum rounded..... ***T. micrurus* Boucek**
- 20-- Legs black, with only knees and extreme base of tarsi obscurely testaceous, or almost wholly black, only hind tarsi more or less pale at base..... 21
- Legs relatively paler, yellow, at most some parts of femora and tarsi black..... 22
- 21- Forewing: speculum very small, not extending under the parastigma; basal and costal cells wholly pilose. Legs short and stout; hind femur about 3.3 times as long as broad; spur of hind tibia about 0.45 length of basitarsus. Ovipositor sheaths about 1.4 times length of gaster; index about 2.0..... ***T. apiomyia* Boucek & Mihajlovic**
- Forewing: speculum always extending under the parastigma; basal cell. Basal cell of forewing extensively pilose..... ***T. nigritarsus* (Walker)**
- 22- Species either with less conspicuous or more widely spaced piliferous punctures on mesoscutum and scutellum; or with shorter ovipositor sheaths; or with temples converging less strongly and often curved; lateral ocelli usually smaller, often with OOL at least a little greater than OD..... 23
- Mesoscutum and scutellum with relatively conspicuous piliferous punctures, which on mesoscutum and basal part of scutellum are mostly separated by less than twice their diameter; ovipositor sheaths at least as long as gaster plus thorax, sometimes slightly longer than whole body; index at least 2.85; temples converging strongly, straight or very weakly curved; lateral ocelli large, OOL equal to OD; genae, in front view of head straight..... 25
- 23 - Gaster not pale marked but mainly coppery or fiery over at least posterior half weakly in some dwarfs. Malar space 0.32-0.36 length of eye. Forewing sometimes more or less infumate discally. Hosts in *Rosa* galls..... ***T. bedeguaris* (Linnaeus)**
- Gaster either with a reddish or testaceous subbasal band at least on the sides; or else without coppery or fiery colour except sometimes on the middle segments. Malar space 0.23-0.30 length of eye. Forewing hyaline. Hosts in *Quercus* galls..... 24
- 24- Ovipositor index 2.65-3.3, sheaths usually as long as gaster plus thorax, rarely as long as body. Gaster normally with pale subbasal band, at least at sides. Legs tending to be more reddish-testaceous, especially the femora which are rarely dark marked..... ***T. geranii* (Walker)**
- Ovipositor index 3.4-4.3, sheaths as long as or very slightly longer than body. Gaster immaculate, bluegreen, green or goldengreen, with sometimes a little coppery tinge on middle segments. Legs paler testaceous or yellow, with hind femora often brown or broadly black medially. Mesoscutum and scutellum with relatively conspicuous piliferous punctures, which on mesoscutum and basal part of scutellum are mostly separated by less than twice their diameter; temples very weakly curved; lateral ocelli

- large, OOL 0.9 OD, genae, in front view of head straight. Malar space 0.30 length of eye. Forewing hyaline. Ovipositor index 3.52; sheaths very slightly longer than body;. Gaster immaculate, bluegreen, green or goldengreen, with sometimes a little coppery tinge on middle segments. Legs yellow. Hosts in *Quercus* galls.... ***T. auratus* (Müller)**
- 25- Ovipositor index 2.7-3.55, sheaths about as long as metasoma plus three quarters to whole of mesosoma. Longer spur of hind tibia 0.4-0.45 length of basitarsus. OOL 1.0-1.3 times OD. Genae, in front view of head, straight. Anterior margin of clypeus truncate, or curved slightly forwards..... 26
- Ovipositor index 0.5-2.6, sheaths at most as long as metasoma plus two thirds of mesosoma but often shorter than this..... 27
- 26- Tip of hypopygium very nearly level with apex of gaster Legs, including fore coxae mainly yellow..... ***T. arcella* Graham & Gijswijt**
- Tip of hypopygium more remote from apex of gaster; At least hind femora broadly black medially, hind tibiae and fore coxae most often mainly to wholly dark. Head with temples 0.2-0.32 apparent length of eyes. Anterior margin of clypeus broadly truncate. Mouth about 2.0 malar space. Pedicellus plus flagellum 1.17-1.25 breadth of head. POL slightly less than 1.9 times OOL. Host: on *Artemisia* Length 1.5-2.6 mm.....
- ***T. artemisiae* Mayr**
- 27- Genae, in front view of head appearing distinctly curved; head tending towards a circular shape. Antennal anellus quadrate or only very slightly broader than long. Head 2.05-2.15 times as broad as long; temples converging rather strongly, weakly curved. Mesoscutum, axillae and scutellum shiny, with minute, sparsely distributed piliferous punctures (especially the scutellum)..... ***T. cultriventris* Ratzeburg**
- Genae, in front view of head, straight or nearly so; head more trapeziform. Antennal anellus sometimes distinctly broader than long..... 28
- 28- Mouth 1.5-1.8 malar space; legs dark: all femora, and at least mid and hind tibiae, more or less infusate. Mouth 1.75-1.8 malar space, the latter 0.37-0.4 length of eye. Antenna with flagellum proximally not or only just as stout as pedicellus, but thickening distinctly distad, Fl quadrate Ovipositor index 1.7-1.9.....
- ***T. monticola* Graham & Gijswijt**
- Mouth 2.0-2.6 malar space..... 29
- 29- Mouth 2.0-2.2 malar space..... 30
- Mouth 2.3-2.6 malar space..... 31
- 30- Ovipositor index 2.5-2.6. Sides of upper face with several small but distinct punctures. OOL 1.0-1.2 times OD. Piliferous punctures of mesoscutum and scutellum smaller or minute, usually less close together, on scutellum usually widely separated. Host on *Verbascum*..... ***T. verbasci* Ruschka**
- Ovipositor index 1.15-1.9 and at most slightly longer than gaster. Antennal flagellum moderately clavate. OOL 1.0-1.2 times OD. Piliferous punctures of mesoscutum and scutellum smaller or minute, usually less close together, on scutellum usually widely separated. Host on *Origanum*..... ***T. hornigi* Ruschka**
- 31- Sculpture of mesonotum over anterior two-thirds, tending to be transversely rippled-scaly, without piliferous punctures. Ovipositor index 2.65, sheaths as long as metasoma plus half mesosoma. Temples slightly longer 0.25 length of eyes. Malar space slightly longer, 0.4 length of eye. Body bright green, more golden-green on genae and parts of mesosomal pleuron. All coxae dark. Hind femur mainly black; fore femur with black dorsal stripe, mid femur with dark median ring. Gaster with tip of hypopygium nearly level with apex of gaster, Length 2.75 mm..... ***T. cultratus* Graham & Gijswijt**
- Mesonotum with distinct piliferous punctures on mesoscutum and scutellum..... 32
- 32-- Piliferous punctures of mesoscutum and scutellum moderate sized, rather close, especially on anterior part of scutellum where they are separated by at most twice their diameter. Ovipositor index 2.1-2.4. Head with temples converging very strongly. Malar space 0.26-0.29 length of eye. Mouth 2.3-2.6 malar space. Ocelli larger: OOL at most 1.05 times OD. Hypopygium with a number of setae along its length. All legs, including coxae, yellow. Host usually on *Rubus*, occasionally on *Rosa*, rarely on *Pteridium*.....
- ***T. rubi* (Schrank)**
- Piliferous punctures of mesoscutum and scutellum smaller or minute, usually less close together, on scutellum usually widely separated. Gaster with tip of hypopygium situated at about 0.8 length of gaster. Ovipositor sheaths as long as metasoma plus half to two

thirds of mesosoma. Ovipositor index 2.05-2.6. Genae, in front view of head, straight or nearly so; Mouth at least 1.75 malar space, the latter at most 0.37 length of eye. POL 2.1-2.55 times OOL. Antenna with outer surface of antennal scape, except at extreme base, with minute reticulation; Antennal flagellum short and notably stout; more clavate distal segments of funicle distinctly transverse, relatively slender proximally but the clava at least 1.5 times as broad as Fl. Body blue-green. Very small to small species, length 1.5-2.2 mm. Host on *Achillea*..... ***T. millefolii* Ruschka**

***Torymus apiomyiae* Boucek & Mihajlovic, 1986**

Torymus apiomyiae Boucek & Mihajlovic, 1986: 447-449; Grissell, 1995: 275.

Type material: Holotype, fem. (BMNH): Yugoslavia "Macedonia, Bistrica nr. Bitolj, l.iv.1983, M. Postolovski". Paratypes: 33 females, 14 males (BMNH, FFB): same origin as holotype, l.iv.1983, 14 & 23.iii.1984, and 1985.

Biology: Parasite of *Apiomyia bergenstammii* (Wachtl) (Dipt. Cecidomyiidae) on *Pirus*.

Distribution: Macedonia (Boucek & Mihajlovic, 1986).

Distribution in Turkey: Hatay, Yayladağ, Altınözü (Doğanlar & Yiğit, 2005).

Materials studied: 4 females, 1 male, Hatay, Belen, Kömürçukuru, 11.iii.2004, reared from galls of *Apiomyia bergenstammii* on *Pyrus malus* L., M.Doğanlar; 1 female, same data, except 12.iii.2004.

***Torymus arcella* Graham & Gijswijt, 1998**

Torymus arcella Graham & Gijswijt, 1998: 53-54, fem.

Type material: Holotype, fem, (BMNH): "Turkey, Kars. Ararat below Serdarbulak 4.iv.1969 5.000" "Guichard & Harvey B.M. 1960-364" "Torymus arcella spec. nov. M. de V. Graham det. & M.J. Gijswijt". Paratypes: 2 females, (BMNH): same data as holotype.

Biology: unknown.

Distribution: Kars (Graham & Gijswijt, 1998).

Distribution in Turkey: Kars. Ararat below Serdarbulak (Graham & Gijswijt, 1998; Zerova & Seryogina, 2003).

***Torymus artemisiae* Mayr, 1874**

Torymus artemisiae Mayr, 1874:105, fem ; Grissell, 1995: 275.

Type material: In NHMW five specimens exist under this name, 2 ♂♂ (not described) and 3 ♀♀, on minutien pins mounted on two blocks. The female on the first block is here designated lectotype. It is labelled (1) "Collect. G. Mayr" (2) "*Tor. artemisiae* G. Mayr, Type" (3) "*Artem. scop.* Tułtscha [unreadable] Mai 75".

Biology: Reared from galls of *Rhopalomyia artemisiae* (Low) (Dipt. Cecidomyiidae) (Graham & Gijswijt, 1998).

Distribution: Romania (Graham & Gijswijt, 1998).

Distribution in Turkey: Tokat. **New record for Turkey.**

Materials studied: 4 females, 1 male, Tokat, Batmantaş, 17.viii.1972, swept from field of *Medicago sativa* L., M. Doğanlar.

***Torymus auratus* (Müller, 1764)**

Cynips aurata Müller, 1764: 68, no. 598, fem. The conclusion must be that Müller is the first to name the species described and figured by Rösel von Rosenberg (1755). Christ (1791: 388) seems to have used Rösel's descriptions without mentioning the source (Graham & Gijswijt 1998).

Type material: Types of *Cynips aurata* Müller, *Cynipsichneumon nigricornutus* Christ and *Cynipsichneumon rubicornutus* Christ not found. (See under comments below). Lectotypes were designated for *Callimome nitens* Walker, *C. inconstans* Walker and *C. amyrius* Walker by Eady (1959: 265).

Biology: A parasite in many species of cynipid oak galls (Graham & Gijswijt, 1998).

Distribution: All over Europe (Graham & Gijswijt 1998); Japan (Yasumatsu, 1955).

Distribution in Turkey: Askew et al., 2013; by this work: Bingöl; Genç, Hamamlar.

Materials studied: 1 fem., 1 male, Bingöl, Genç, 15.x.1974, reared from galls of Cynipidae on *Quercus*; 1 fem., Bingöl, Hamamlar, 15.10. 1974, same host, M. Doğanlar.

***Torymus basarani* sp. nov.**

(Figs. 1a-g)

Etymology: The species is derived from the name of my friend, Agriculture Enginier, BS, Üstün Başaran, who spend his whole life in several parts of the agriculture of Turkey.

Description:

Female. Body (Fig. 1a) blue green;. Antennae with scape yellow, flagellum pale testaceous. Legs pale yellow, fifth tarsal segments brown. Tegulae yellow. Wings hyaline, venation pale yellow. Length body+ovipositor: 2.88 + 1.5 mm.

Head (Fig. 1b) having ertex with fine reticulation, in dorsal view almost 1.2x as wide as mesoscutum, width to length 45:25; POL 1.8x OOL; OOL 1.25x diameter of lateral ocellus. Head in frontal view 1.1x as wide as high in ratio 45:40; dorsal margin of torulus distinctly above level of lower edge of eyes; Mouth 3.33 times malar space, the latter 0.31 length of eye. face with fine sculpture; Antenna (Fig. 1c) with toruli distinctly above lower eye line; scape not reaching anterior ocellus; pedicellus plus flagellum about 1.22 times breadth of head, flagellum proximally stouter than pedicellus, moderately clavate; pedicellus 1.87 times as long as broad; anellus distinctly transverse, 1.5x as long as broad; F 1-F4 1.2x longer than broad, apparently with only 2-3 sensillae, F5 slightly transverse , F6 1.3x, F7 1.4x as broad as long; clava 1.86 times as long as broad; sensilla sparse, in one row.

Mesosoma (Figs. 1a,d) slightly bulged in profile, propodeum declined, distinctly visible from above; sculpture of pronotum, mesoscutum with transverse striations and with fine reticulation, and scutellum (Fig. 1e) having scutellar frenum indicated by an area devoid of setae but not delimited anteriorly by an impressed line; pronotum 0.37x as long as mesoscutum; propodeum (Fig. 1e) almost smooth, with fine longitudinal striae. Forewing (Fig. 1g) with basal cell bare, speculum open broad; costal cell 1.62x marginal vein; marginal vein about 10.5x stigmal vein, 5.25x postmarginal vein; stigmal vein (Fig. 2e) short, stigma small; Hind coxae dorsally bare, without distinct carina. Hind femora (Fig. 1f) 3.82x as long as width; hind tibia with one apical spur, the latter slightly shorter than breadth of tibia and 0.36x as long as first segment of tarsus.

Metasoma (Figs. 1a,e) hardly compressed, basal sternite extending somewhat beyond coxa; hypopygium extending 0.63x along gaster.. Ovipositor index 1.94, Ovipositor sheaths slightly longer than metasoma (1.16x); excluding ovipositor as long as rest of body.

Male. Unknown.

Material studied: Holotype, female, Turkey: Tokat, 25.vi. 1985, H. Çam, swept from pasture, on card, left antenna slide mounted in Canada balsam, deposited in the Insect collection of Research Station of Biological Control, Adana. Paratype: 1 female, same data as holotype.

Biology: Unknown.

Distribution: Turkey: Tokat.

Comments. The female of *T. basarani* sp. nov. resembles those of *T. nitidulus* (Walker) in having hind tibia with one apical spur and scutellar frenum indicated by an area devoid of setae but not delimited anteriorly by an impressed line. But the new species differs from *T. nitidulus* in having antenna (Fig. 1c) with F1 distinctly longer than broad, with two long sensillae, flagellar segments F1-F4 distinctly longer than broad; Ovipositor sheaths as long as or very slightly longer than metasoma. (in *T. nitidulus* antenna with F1 anelliform, distinctly broader than long, usually lacking sensilla and some of the following segments broader than long; Ovipositor sheaths as long as or very slightly longer than metasoma plus mesosoma.

***Torymus bedeguaris* (Linnaeus, 1758)**

Ichneumon Bedeguaris Linnaeus, 1758: 567, 9 (ex parte); 1761: 408 (ex parte).

Torymus bedeguaris; Mayr, 1874:101-102; Thomson, 1876: 87; Eady, 1959:262; Grissell, 1976:19-21; Boucek, 1977: 24; Nikol'skaya & Zerova, 1978: 371; Sellenschlo & Wall, 1984: 22, 102; Grissell, 1996, 276.

Type material: The lectotype of *Ichneumon bedeguaris* L. fem. (NR) designated by Graham & Gijswijt (1998).

Biology: A common parasite in galls of *Diplolepis* spp. on *Rosa*.

Distribution: Holarctic.

Distribution in Turkey: Ankara (Bayram et al., 1998; Daneshvar et al., 2009); Sivas

(Gençer, 2003); Erzurum (Özbek et al., 1999).

Materials studied: Tokat, 12 females, 10 males, 03-20.iii. 1989, reared from galls of *Diptolepis mayri*, H. Çam; 1 female, 1 male, 13.iv.1989, reared from galls of *Diptolepis rosae*, H. Çam; 1 male, 03.v.1998, swept from leaves of *Prunus mahaleb*, H. Çam; 1 female, 4 males, Fidanlık, 15.iv. 1989, reared from galls of *D. mayri*, H. Çam; 3 females, 1 male, Taşlıçiftlik, 09.ix.-13.xii.1989, reared from galls of *D. mayri*, H. Çam; 3 female, 3 males, Kızılınış, 02.vi.1989, reared from galls of *D. rosae*, H. Çam; 2 females, 5 males, Çamlıbel, 07.v.-02.vi.1989, reared from galls of *D.rosae*, H. Çam; 4 female, 3 males, Artova, 18-27.ix.1989, reared from galls of *D.mayri*, H. Çam; 1 female, 5 males, Çamlıbel, 05.i.-28.ii. 1990, reared from galls of *D. mayri*, H. Çam; Hatay, Altınözü, 1 female, 1 male, 30.i.1999, reared from galls of *D. mayri*; Erzurum, 3 females, 2 males, 28.vi.1976, reared from galls of *D. mayri*, M. Doğanlar; 3 females, 2 males, 12.-21.ii. 1996, reared from galls of *D. mayri*, H. Özbek; Erzurum, Serçeme, 3 males, 28.vi.1976, reared from galls of *D. mayri*, M. Doğanlar.

Torymus bingoelensis sp. nov.

(Figs. 2a-g)

Etymology: The species is derived from the name of Bingöl from which the types were collected.

Description:

Female. Body (Fig. 2a) blue green; antennae brown, pedicel testaceous. Legs tetaceous, fore and mid tibiae medially, hind tibia almost wholly black, tarsi pale yellow, except fifth tarsal segments brown. Tegulae testaceous. Wings hyaline, venation testaceous. Length body+ovipositor: 3.38 + 5.62 mm.

Head (Fig. 2b) having vertex without a suture between lateral ocelli and eyes, with fine reticulation,. Head in frontal view 1.32x as wide as high, in ratio 52:38; Eyes separated almost by their own length; distance between eyes 2.8x frontal width of eye; temple 0.3x length of eye; Posterior ocelli (Fig. 2b) smaller, OD 0.71x OOL. POL 2.5x OOL. Distance between lateral ocellus and occipital carina 1.44x OOL. Vertex in dorsal view almost 1.1x as wide as mesoscutum, width to length 52:24; Mouth 2x times malar space, the latter 0.33 length of eye. Face with fine sculpture; Antenna (Fig. 2c) with toruli distinctly above lower eye line; scape reaching above anterior ocellus; pedicellus plus flagellum about 0.9 times breadth of head, flagellum proximally slightly stouter than pedicellus, almost filiform; pedicellus 1.5 times as long as broad; anellus 2.5 times as broad as long; F1 1.25x wider than broad, apparently with dense 6-7sensillae, F2 quadrate; F3 1.13x; F4-F7 distinctly transverse, about 1.36x as broad as long; clava 1.18 times as long as broad; sensilla dense, in two rows.

Mesosoma (Figs. 2a,d) slightly bulged in profile, propodeum declined, distinctly visible from above; Mesoscutum and scutellum (Fig. 2d) with numerous and closer piliferous punctures, mesoscutum, axillae; scutellum (Fig. 2e) anterior to frenal area aluteous between the piliferous punctures, with the frenal area marked off by distinct transverse impressed line. Mesepimeron broad and almost twice higher than broad; pronotum long, 0.67x as long as mesoscutum; Propodeum (Fig. 2f) very weakly alutaceous-reticulate, without striae. Forewing (Fig. 2g) upper surface of costal cell with some setae, with basal cell bare, speculum open broad; costal cell 1.52x marginal vein; marginal vein about 8.33x stigmal vein, 3.85x postmarginal vein; stigmal vein short, stigma small; hind leg (Fig. 2h) with hind coxae stouter, its dorsal surface bare in basal half, often with a longitudinal curved carina; hind femur is 5 times as long as broad; hind tibia with two apical spur, the longer spur slightly longer than breadth of tibia and 0.66x as long as first segment of tarsus; the shorter spur 0.74x length of second spur.

Metasoma (Fig. 2a) not compressed, dorsally flat; basal sternite extremely long, about twice length of hind coxa and reaching nearly to tip of hypopygium; hind margin of tergite 4 deeply triangularly emarginate.; hypopygium extending 0.83x along gaster. Ovipositor index 6.0, Ovipositor sheaths 1.66x longer than the body; excluding ovipositor 0.75x as long as rest of body.

Male. Similar to female except antenna (Fig. 2i) with flagellum proximally distinctly stouter than pedicellus, almost filiform; pedicellus 1.12 times as long as broad; anellus twice as broad as long; F1 1.2x wider than broad, apparently with dense 4 sensillae, F2-F7 distinctly transverse, about 1.5x as broad as long; clava 1.92 times as long as broad; sensilla dense, in

one row.

Materials examined: Holotype, female, Turkey: Bingöl, 15.iii. 1974, M. Doğanlar, laboratory reared from galls of Cynipidae on *Quercus* spp., collected in August, 1973, on card, left antenna slide mounted in Canada balsam, deposited in the Insect collection of Research Station of Biological Control, Adana. Paratypes: 1 female, same data as holotype. 1 male, same data as holotype, except 20.ii.1974.

Biology: Reared from galls of Cynipidae on *Quercus* spp.

Distribution: Turkey: Bingöl.

Comments: The female of *T. bingoeleensis* sp. nov. resembles those of *T. druparum* (Boheman) and *T. cyaneus* Walker in having posterior 0.25 to 0.45 of scutellum ("frenal area") differentiated in some way from the rest: either extensively or wholly polished and smooth, and delimited anteriorly by a weak to strong impressed line and hind femur without tooth. But it differs from *T. druparum* in having mesepimeron broad and almost twice higher than broad; head 2x as broad as long; distance between eyes 2.75x frontal width of eye; posterior ocelli smaller, OD 0.71x OOL. POL 2.5x OOL; distance between lateral ocellus and occipital carina 1.44x OOL; hind femur is 5 times as long as broad; ovipositor sheaths 1.77x longer than the body; index 6.0; antenna with anellus 2.5 times as broad as long. Species associated with cynipid galls on *Quercus* spp. (in *T. druparum* mesepimeron small and slightly higher than broad; head 1.82x as broad as long; distance between eyes 2.64x frontal width of eye; posterior ocelli smaller, OD 0.83x OOL. POL 2.0x OOL; distance between lateral ocellus and occipital carina equal to OOL; hind femur is not 4 times as long as broad; ovipositor sheaths somewhat longer than the body; index 3.9-4.3; antenna with anellus 1.15-1.3 times as broad as long. Species associated with *Sorbus* and *Malus*). The new species differs from *T. cyaneus* in having ovipositor sheaths 1.66x longer than the body; ovipositor index 6.0; posterior ocelli smaller, OD 0.71x OOL; mesoscutum, axillae, and scutellum anterior to frenal area alutaceous between the piliferous punctures; eyes separated almost by their own length (in *T. cyaneus* ovipositor sheaths slightly shorter than the body; ovipositor index 1.7-2.1; posterior ocelli large, OD greater than OOL; posterior 0.25-0.3 of mesoscutum, axillae partly, and scutellum anterior to frenal area smooth and polished between the very distinct piliferous punctures; eyes separated by somewhat less than their length).

***Torymus cultratus* Graham & Gijswijt, 1998**

Torymus cultratus Graham & Gijswijt, 1998: 79-80.

Type material: Holotype, fem, (BMNH): "Turkey: Kütahya Murat Dağı. 1700 m. 31.vii.1962. Guichard & Harvey. BM 1962-299".

Biology: Unknown.

Distribution: Turkey (Asia Minor) (Graham & Gijswijt, 1998; Zerova & Seryogina, 2003).

Distribution in Turkey: Kütahya, Murat Dağı (Graham & Gijswijt, 1998).

***Torymus cultriventris* Ratzeburg, 1844**

Type material: *Torymus cyaneus* Walker: described from Austrian material sent by Kollar to F.W. Hope. Original material not found.

Biology: reared from galls of *Mikomyia coryli* Kieffer on *Corylus avellana* L.(Ural & Kurt, 1973; Işık et al., 1987).

Distribution: Austria, Belgium, Croatia, Czech Republic, France, Germany, Great Britain, Hungary, Netherlands, Slovakia, Sweden (Graham & Gijswijt, 1998; Popescu, 2006; Noyes, 2015).

Distribution in Turkey: Eastern Black-Sea Region (Ural & Kurt, 1973; Işık et al., 1987; Öncüer, 1991).

***Torymus cyaneus* Walker, 1847**

Torymus cyaneus Walker, 1847: 227, S 9 ; Boucek, 1977: 25; Boucek & Graham, 1978a: 226; Grissell, 1995: 279.

Type material: *Torymus cyaneus* Walker: described from Austrian material sent by Kollar to F.W. Hope. Original material not found.

Biology: Reared from different oak galls. Askew (1961: 184-185) gives an account of the biology of this species.

Distribution: Austria, Belgium, Croatia, Czech Republic, France, Germany, Great Britain, Hungary, Netherlands, Slovakia, Sweden (Graham & Gijswijt, 1998; Popescu, 2006; Askew et al., 2013; Noyes, 2015).

Distribution in Turkey: Muğla, Datça, Yazı vill., 27.12.2008, 2 ♀♀. (Stonova et al., 2012; Askew et al., 2013).

Materials studied: 1 female, Tokat, Şenköy, 08.vii.1987, swept from leaves of *Ulmus* sp., M. Doğanlar.

***Torymus erucarum* (Schrank, 1781)**

Ichneumon erucarum Schrank, 1781: 275.

Torymus erucarum; Mayr, 1874: 87; Thomson, 1876: 86-87.

Type material: *Ichneumon erucarum* Schrank, original material lost (Graham & Gijswijt, 1998).

Biology: Reared from galls of *Andricus quercusradicis* (Fabr.) (Hym. Cynipidae) on roots of *Quercus* (Graham & Gijswijt, 1998).

Distribution: Austria, France, Germany, Great Britain, Netherlands, Portugal, Yugoslavia. (Graham & Gijswijt, 1998; Noyes, 2015).

Distribution in Turkey: Ankara (Bayram et al., 1999; Stonova et al., 2012).

Materials studied: 1 female, 1 male, Ankara, Çamlidere, 26.x.1994, reared from galls of *Andricus tinctorius* Behzodi, Ş. Bayram.

***Torymus fastuosus* Boheman, 1834**

Torymus fastuosus Boheman, 1834: 347348, 9; Boucek, 1977: 25; Grissell, 1995: 280.

Type material: No type material has been designated (Graham & Gijswijt, 1998).

Biology: Reared from galls of *Trigonaspis megaptera* (Panzer) on *Quercus* (Graham & Gijswijt, 1998).

Distribution: Croatia, Great Britain, Netherlands, Sweden. (Graham & Gijswijt, 1998; Noyes, 2015).

Distribution in Turkey: Askew et al. (2013).

***Torymus flavipes* (Walker, 1833)**

Callimome flavipes Walker, 1833: 124.

Type material: *Cynips auratus* Geoffroy: original material destroyed. Neotype, 9, (BMNH): France, Seine et Marne, Forêt de Fontainebleau, 12.viii.1981 (Graham) designated by Graham (1992: 1098). Lectotypes were designated for all Walker species by Eady (1959: 266-268) (Graham & Gijswijt, 1998).

Biology: Reared from Cynipid galls in oaks (Graham & Gijswijt, 1998); reared from galls of Chesnut gall-wasp, *Dryocosmus kuriphilus* Yasumatsu in *Castanea sativa* Müller (Doğanlar, 2014).

Distribution: Probably the whole of Europe. (Graham & Gijswijt, 1998; Noyes, 2015).

Distribution in Turkey: Isparta prov., Kasnak meşesi protected area, 26.05.2007, 2 ♀♀ (Malaise trap) (Stonova et al., 2012); Yalova (Doğanlar, 2014).

Materials studied: 1 male, Tokat, 06.v.1986, swept from *Prunus cerasi*, M. Doğanlar; 1 female, Tokat, Korucak, 26.iv. 1992, swept from *Prunus cerasi*, H. Çam; 1 female, Yalova, 21.ix. 1914, reared from galls of *Dryocosmus kuriphilus* Yasumatsu in *Castanea sativa* Müller (Doğanlar, 2014).

***Torymus geranii* (Walker, 1933)**

Callimome geranii (Curtis MS.) Walker, 1833: 121.

Type material: *Callimome geranii* Walker: lectotype, *fem.*, (BMNH): here validated, labelled: "*Call. geranii* Walker, lectotype *fem.* M. de V. Graham + Z. Boucek det. 1976"; paralectotypes: 3 *fem.* (BMNH), labelled as lectotype.

Biology: Reared from cynipid galls on *Quercus*. (Graham & Gijswijt, 1998).

Distribution: Belgium, Croatia, France, Germany, Great Britain, Netherlands, Poland, Slovakia, Yugoslavia (Serbia) (Graham & Gijswijt, 1998; Noyes, 2015).

Distribution in Turkey: Turkey (Askew et al., 2013).

***Torymus hornigi* Ruschka, 1921**

Torymus hornigi Ruschka, 1921: 338, fem.

Type material: Holotype, fem, (NHMW) here designated. It is labelled "Austr. inf. Annaberg 14.4.80 Wachtl; Type [a red bordered circular label]; 26; *Torymus hornigi* Ruschka, Type".

Biology: Reared from galls of *Gisonobasis origani* (Wachtl) (Dipt. Cecidomyiidae) in swollen flowers of *Origanum vulgare*. (Graham & Gijswijt, 1998).

Distribution: Austria (Graham & Gijswijt, 1998).

Distribution in Turkey: Tokat. **New record for Turkey**

Materials studied: 1 female, Tokat, Batmantaş, 17.viii.1992, swept from field of *Medicago sativa* L., M. Doğanlar.

***Torymus igniceps* Mayr, 1874**

Torymus igniceps Mayr, 1874:103-104, 69; Grissell, 1995: 282.

Type material: 5 syntypes of *T. igniceps* are in NHMW. A female, here designated lectotype, is mounted on a minutien pin and labelled: "Aachen Fr; f; 20; Collect. G. Mayr; *Tor. igniceps* Myr det. Forster [sic]". The left antenna is broken off beyond F5. The other syntypes are designated paralecto-types (NHMW) (Graham & Gijswijt, 1998).

Biology: Most probably a parasite of a host on *Carex* in marshy places. (Graham & Gijswijt, 1998); reared from galls of *Rhodites* spp. - Hym.: Cynipidae (Kılınçer, 1983).

Distribution: Czech Republic, Great Britain, Italy, Netherlands, Sweden (Graham & Gijswijt, 1998; Noyes, 2015).

Distribution in Turkey: Ankara (Kılınçer, 1983).

***Torymus longicalcar* Graham, 1994**

Torymus longicalcar Graham, 1994: 122-124, 6 9; Grissell, 1995: 283.

Type material: Holotype of *T. longicalcar*: 9, (NHMW), designated by Graham (1994). Paratypes: 59 9 9, 38 6 6 (NHMW, MJG, TMA), designated by Graham (1994) (Graham & Gijswijt, 1998).

Biology: Reared from galls of *Dryomyia concinna* Mayr and *Pediaspis aceris* (Foerster) on *Acer* spp. and from *Dryomyia circinans* on *Quercus* (Graham & Gijswijt, 1998); reared from galls of Cynipidae on *Quercus* sp. by M. Doğanlar.

Distribution: Austria, Denmark, Germany, Greece, Hungary, Italy, Switzerland, Slovakia. (Graham & Gijswijt, 1998; Noyes, 2015).

Distribution in Turkey: Muğla prov., Yılanlı Mountain, Yemişendere vill., 12.09.2006, 1 ♀ (Stonova et al., 2012); Hatay, Belen, Güzeloluk by this work.

Materials studied: 1 female, Hatay, Belen, Güzeloluk, 08.vi.2004, M. Doğanlar.

***Torymus micrurus* Boucek, 1994**

Torymus micrurus Boucek, 1994:79-80, 9; Grissell, 1995: 284.

Type material: Holotype, fem, (BMNH): Germany, Aken an der Elbe, 9.vi.1940 (H. Koller). Paratypes: (BMNH, ZMHU): 1 fem. topotypic; 1 fem. France, Vaucluse, Mont Ventoux, 22.vii.1978 (Graham).

Biology: Unknown.

Distribution: France, Germany (Graham & Gijswijt, 1998; Noyes, 2015).

Distribution in Turkey: Bingöl. **New record for Turkey.**

Materials studied: 5 females, Bingöl, Bilaloğlu, 11.vii.2003, H. Özbek.

***Torymus millefolii* Ruschka, 1921**

Torymus millefolii Ruschka, 1921:339, male, female.

Type material: Lectotype, fem, (NHMW): here designated, mounted on a minutien pin on a pitch block with a male, labelled: "e *Hormomyia millefolii* Znaim Coll. Wachtl"; "*T. millefolii* Ruschka, Type"; "Type" (red label). Paralectotypes: (here designated), the male aside to the lectotype; also two other females, labelled "*Rhopalomyia millefolii*"; "Jicin Bohmen Baudys"; *millefolii* Ruschka det. Ruschka", "Type" (red label)".

Biology: Reared from galls of *Rhopalomyia millefolii* (Loew).

Distribution: Austria, Czech Republic. (Graham & Gijswijt, 1998; Noyes, 2015).

Distribution in Turkey: Tokat. **New record for Turkey.**

Materials studied: 1 female, Tokat, 21.iv.1989, swept from pasture, H. Çam.

***Torymus monticola* Graham & Gijswijt, 1998**

Torymus monticola Graham & Gijswijt, 1998: 124-125.

Type material: Holotype, fem, (BMNH): France-Lozere "Aigoual Prat Peirot 5.7.1977, M. de V. Graham". Paratypes, 5 females, 7 females, (BMNH, MJG): same data as holotype (one female without head).

Biology: Unknown.

Distribution: France (Graham & Gijswijt, 1998; Noyes, 2015).

Distribution in Turkey: Tokat. **New record for Turkey.**

Materials studied: 1 female, Tokat, Artova, Gökdere, 06.v.1988, reared from galls of Cynipidae on *Quercus* sp., M. Doğanlar.

***Torymus nigritarsus* (Walker, 1833)**

Callimome nigritarsus Walker, 1833:135, 6 9.

Torymus nigritarsus; Boucek & Graham, 1978a: 227; Grissell, 1995: 284.

Type material: lectotype, fem, (BMNH): designated by Eady (1959: 261).

Biology: Parasite of *Taxomyia taxi* Inchb. (Dipt. Cecidomyiidae) on *Taxus baccata* (Graham & Gijswijt, 1998).

Distribution: Austria, France, Great Britain, Netherlands, Sweden (Graham & Gijswijt, 1998; Noyes, 2015).

Distribution in Turkey: Tokat. **New record for Turkey.**

Materials studied: 2 females, Tokat, 11.v.1989, swept from pasture, H. Çam.

***Torymus nitidulus* (Walker, 1833)**

Callimome nitidulus Walker, 1833:138, 9. Grissell, 1995: 284.

Type material: *Callimome nitidulus* Walker: lectotype, 9, (BMNH, type Hym. 5.1610): designated by Eady (1959: 260).

Biology: Reared from birch catkins with *Semudobia* spp. (Dipt. Cecidomyiidae) (Graham & Gijswijt, 1998).

Distribution: Holarctic; possibly over whole zone of *Betula* spp. from northern U.S.A., Europe, Asia to Mongolia and China (Graham & Gijswijt, 1998).

Distribution in Turkey: Erzurum (Doğanlar, 1984; Öncüer, 1991 (as *Lioterphus pallidicornis* (Boheman, 1834)); Stonova et al., 2012).

Materials studied: 2 females, Erzurum, 18. viii. 1979, swept from field of *Onobrychis sativa* L., M. Doğanlar.

***Torymus nobilis* Boheman, 1834**

Torymus nobilis Boheman, 1834: 339-340, 8 9; Mayr, 1874: 92-93.

Type material: Lectotype of *Torymus nobilis* Boheman, 9 (NR) and paralectotypes 2 8 8 (NR), all designated by Graham (1994: 53).

Biology: Reared from galls on roots of *Quercus* spp: *Andricus quercusradicis*, *Bio-rhiza pallida* etc. (Graham & Gijswijt, 1998).

Distribution: Croatia, Czech Republic, Denmark, France, Germany, Great Britain, Ireland, Spain, Sweden (Graham & Gijswijt, 1998).

Distribution in Turkey: Hatay. **New record for Turkey.**

Materials studied: 1 female, Hatay, Samandağ, Çevlik, Kale, 09.vi.1994, swept from pasture, M. Doğanlar.

***Torymus phillyreae* Ruschka, 1921**

Torymus phillyreae Ruschka, 1921: 340-341.

Type material: *T. phillyreae* Ruschka: lectotype, 2, (NHMW): here designated, mounted on a minutien pin, stayed with a male on one block, labelled (1) "e *Diplosis phillyr.* Miramare ex coll. Wachtl" (2) "*Torymus phillyreae* Ruschka, Type" (3) red label "Type" (4) NHMW acces. label "no. 321". Paralectotypes: 2 9 9,3 8 8 (NHMW), here designated, the male mounted with the lectotype, a male and a female mounted on one block labelled "Miramare Istria; 3; *Torymus phillyreae* Ruschka Type" and a blue label, (2) one male and one female on a block with same labels as (1) except for "1" instead of "3", one female

(remounted, on card, by Boucek), labelled in Boucek's hand: "Miramare bei Triest ex *Braueriella phillyreae* Wachtl.; 9 *Torymus phillyreae* Rusch. det. Z. Boucek, 1978."

Biology: The species seems to have a whole range of hosts. The abundance in which it occurs in places (see remarks on swarming behaviour in Graham, 1993) suggests very common hosts. Until now it has been reared in Italy from galls of *Braueriella phillyreae* on *Phillyrea*; in Britain from *Asphondylia sarothamni* (Loew): on *Cytisus scoparii*; in Spain from *Stictodiplosis scrophulariae* Kieffer. on *Scrophularia peregrina*. In that country *phillyreae* was rather abundant on *Genista florida* in several places. In France from *Asphondylia sarothamni* on *Calicotome spinosa*. Gijswijt collected in Southern France, near Aix en Provence about 600 galls of *Braueriella phillyreae* from which emerged (besides other non-torymid species) 18 males and 51 females of *T. phillyreae* (Graham & Gijswijt, 1998).

Distribution: France, Great Britain, Greece, Italy, Spain. (Graham & Gijswijt, 1998).

Distribution in Turkey: Hatay, Antakya, Samandağ (Doğanlar, 2011; Doğanlar et al., 2011; Doğanlar, 2012).

Materials studied: 1 female, Tokat, 15.ix.1989, swept from pasture, H. Çam; 3 females, Tokat, 20.v.1986, swept from pasture, H. Çam; 2 females, 1 male, 21.ii.1996, lab reared from galls *Diplolepis mayri* Schld., Ş. Güçlü; 2 males, Hatay, Samandağ, Vakıflı, 15.iv.2007, reared from galls of *Dasineura oleae*, M. Doğanlar; 3 males, 03.v.2012, hyperparasite on *Odinodiplosis amygdali*, M. Doğanlar.

Torymus poae (Hoffmeyer, 1930)

Callimome poae Hoffmeyer, 1930: 26, 82, 1930: 238.

Type material: *Callimome poae* Hoffmeyer: lectotype, fem., (MNHN): here designated, on a minutien pin, stayed with adona pith block, labelled "Museum Paris Coll. Giraud 1877"; "*Callimome poae* Hoffmeyer Type" "type" (in red lettering) (Graham & Gijswijt, 1998).

Biology: Reared from *Poomyia poae* Bosc. (Graham & Gijswijt, 1998).

Distribution: Germany (Graham & Gijswijt, 1998; Noyes, 2015).

Distribution in Turkey: Adana, Tokat. **New record for the Turkish fauna.**

Materials studied: 1 female, Adana, Tufanbeyli, 03.x.1979, A. Beyarslan; 1 female, 1 male, Adana, Feke, 02.x.1979, A. Beyarslan; 2 females, Tokat, Pazar, 28.iv.1988, swept from *Prunus cerasi*, H. Çam.

Torymus pulchellus Thomson, 1876

Torymus pulchellus Thomson, 1876: 98; Eady, 1959: 268; Graham, 1969: 67; Sellenschlo & Wall, 1984: 27.

Type material: *Callimome Aerope* Walker: no trace of Walker's material of male *aerope* had been found in BMNH (Eady, 1959: 268). (Graham & Gijswijt, 1998).

Biology: Unknown. The species is associated with *Salix* (Graham has swept it from foliage of *S. fragilis* and *S. alba* (Graham & Gijswijt, 1998).

Distribution: France, Great Britain, Ireland, Netherlands, Sweden (Graham & Gijswijt, 1998; Noyes, 2015).

Distribution in Turkey: Erzincan. **New record for the Turkish fauna.**

Materials studied: 1 female, Erzincan, 09.v.1982, swept from pasture, M. Doğanlar.

Torymus pygmaeus Mayr, 1874

Torymus pygmaeus Mayr, 1874: 120-121, 8 9; Sellenschlo & Wall, 1984: 27; Grissell, 1995: 286.

Type material: Lectotype, 9, (NHMW): designated by Graham & Gijswijt (1998), mounted on a minutien pin fixed on a pith block with a 8 and labelled: "Collect. G. Mayr; *Torymus pygmaeus* G. Mayr, Type; *subulif.* May 72" [-Mayr's hand]; Graham's lectotype label. Paratypes: (NHMW): the 8 fixed on the same block as the lectotype and a 9 and a 8 plus 9, mounted on two pithblocks and similarly labelled. All designated by Graham & Gijswijt, 1998).

Biology: Reared from galls of *Contarinia subulifex* Mayr (Dipt. Cecidomyiidae) on *Quercus cerris*. (Graham & Gijswijt, 1998).

Distribution: Austria, Sweden, Ukraine (Graham & Gijswijt, 1998; Noyes, 2015).

Distribution in Turkey: Çanakkale, Atkhisar vill., 28.04.2007, 1 ♀ (Stonova et al., 2012).

Materials studied: 1 female, Sivas, Campus of Cumhuriyet Univ., 09.vi.1992, swept from pasture, L. Gençer.

***Torymus quercinus* Boheman, 1834**

Torymus quercinus Boheman, 1834: 373, 9; Mayr, 1874: 101; Thomson, 1876: 84; Eady, 1959: 268, in part.; Boucek, 1977: 26; Boucek & Graham, 1978a: 227; Sellenschlo & Wall 1984: 27; Grissell, 1995: 286.

Type material: *Torymus quercinus* Boheman: lectotype, here designated: a ♀. (NR) labelled "Sm" (Smaland) and "Bhn". (Graham & Gijswijt, 1998).

Biology: Reared from galls of *Harmandia petioli* Kieffer (Dipt. Cecidomyiidae) on *Populus tremula* (Graham & Gijswijt, 1998).

Distribution: Czech Republic, Germany, Great Britain, Sweden, Yugoslavia (Montenegro) (Graham & Gijswijt, 1998; Noyes, 2015).

Distribution in Turkey: Tokat. **New record for the Turkish fauna.**

Materials studied: 1 female, Tokat, 02.v.1986, swept from pasture, H. Çam.

***Torymus ramicola* Ruschka, 1921**

Torymus ramicola Ruschka, 1921: 337, 82; Sellenschlo & Wall, 1984: 27; Grissell, 1995: 286. *Callimome ramicola*; Hoffmeyer, 1930: 238.

Type material: Lectotype, ♀, (NHMW): here designated, a female pinned on a pith block with a male, labels: "e *Diplosis ramicola* coll. Wachtr"; "*T. ramicola* Ruschka, Type"; "Type" (red label) (Graham & Gijswijt, 1998).

Biology: Reared from *Diplosis ramicola* Kieffer (Dipt. Cecidomyiidae) on *Artemisia* (Graham & Gijswijt, 1998); reared from galls of *Dryocosmus kuriphilus* Yasumatsu on *Castanea sativa* Miller (Doğanlar, 2014).

Distribution: Austria (Graham & Gijswijt, 1998).

Distribution in Turkey: Yalova (Doğanlar, 2014).

Materials studied: 1 female, 18.ix. 2014, reared from galls of *D. kuriphilus*, M. Doğanlar.

***Torymus rubi* (Schrank, 1781)**

Cynips Rubi Schrank, 1781: 320-322, fem.

Torymus rubi; Boucek & Graham, 1978: 227; Grissell, 1995: 286-287.

Callimome macropterus Walker, 1833: 124, fem.

Type material.— *Cynips rubi* Schrank: no type material found.

Callimome macropterus Walker: lectotype, fem, (BMNH): designated by Eady (1959: 263) [examined]. It bears the BMNH label Type Hym. 5.1570.

Biology: Reared from galls of *Diastrophus rubi* (Bouche), *Diplolepis rosae* (Linnaeus) (Hym. Cynipoidea), *Perrisia acrophilae* Winnertz, a gall on *Pteridium aquilinum* (Dipt. Cecidomyiidae), *Stereonychus fraxini* on *Fraxinus* (Col. Curculionidae) (Graham & Gijswijt, 1998).

Distribution: Austria, Belgium, Croatia, Czech Republic, France, Germany, Great Britain, Netherlands, Poland, Spain (Graham & Gijswijt, 1998).

Distribution in Turkey: Ankara (Kılınçer, 1983); Sivas (Gençer, 2003).

***Torymus tipulariarum* Zetterstedt, 1838**

Torymus tipulariarum Zetterstedt, 1838: 420, 6 fem; Mayr, 1874: 111-112, in part; Thomson, 1876: 95.

Type material: Lectotype of *T. tipulariarum* fem (ZIL), here designated, mounted with a male on one pin; labelled [in Zetterstedt's hand] "var. b. male, fem. 9"; also "*Torymus tipulariarum* Zett. Type. Ch. Ferriere det". Paratypes of *tipulariarum*: the male mounted with the lectotype and a male and a fem (ZIL) mounted on a pin, with a white pupa-case of a Cecidomyiid fly below, labelled "e tubercul. ramulor *Salix* 26 May 1819".

Biology: Reared from galls of *Rabdophaga salicis* on *Salix* (Graham & Gijswijt, 1998).

Distribution: France, Britain, Netherlands, Sweden (Graham & Gijswijt, 1998).

Distribution in Turkey: Balıkesir. **New record for Turkey.**

Materials studied: 1 female, Balıkesir, 13.viii.1979, swept from leaves of *Olea europea*, B. Hepdurgun.

***Torymus verbasci* Ruschka, 1921**

Torymus verbasci Ruschka, 1921: 339-340, fem. Male.

Type material: *Misocampus nigricornis*: no type material seen. See for details under comments. *Torymus verbasci*: syntypes, 9 males, 10 2 2 in N H M W ; 1 fem in B M N H . The specimens in N H M W are on 19 separate mounts. A 2, here designated lectotype is labelled "*Asph. verbasci* St. Georgen b. Press-burg" [Bratislava]; "*verbasci* n. sp. det. Ruschka". The other specimens are designated paralectotypes, as the female specimen in B M N H , which is labelled "/12/79; *Asph verbasci*; *T. verbasci* R."

Biology: Reared from *Asphodilya verbasci* Vallot. (Dipt. Cecidomyiidae) (Graham & Gijswijt, 1998; Doğanlar & Üremiş, 2014).

Distribution: Austria (Graham & Gijswijt, 1998).

Distribution in Turkey: Hatay, Antakya, Harbiye (Doğanlar & Üremiş, 2014).

Materials studied: 11 females, 7 males, Hatay, Antakya, Harbiye, 12.ix.-24.x.2014, reared from bud galls of *Asphodilya verbasci* (Vallot) on *Verbascum gaillardotti*, M. Doğanlar.

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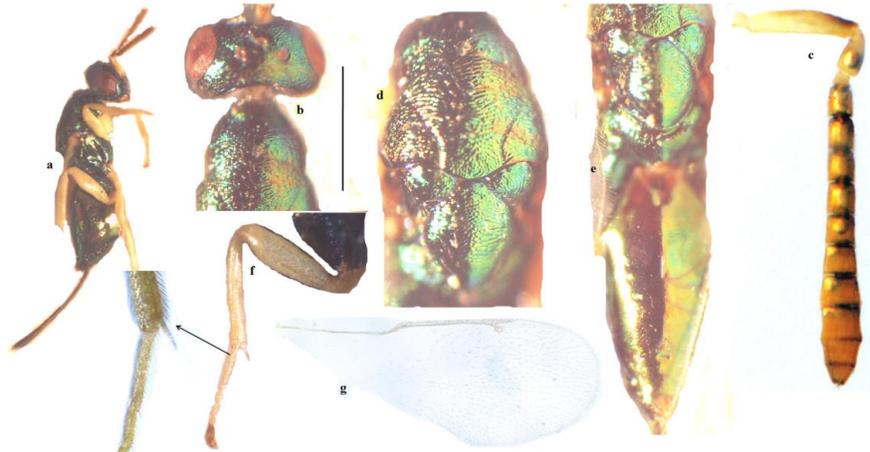


Figure 1. *Torymus basarani* sp. nov., female. (a) body; (b) head and pronotum, in dorsal view; (c) antenna; (d) mesosoma; (e) scutellum and metasoma, in dorsal view; f. hind leg; g. fore wing; (Scale bar for a= 1.75 mm; b =0.8 mm; for c= 0.23 mm; for d,e= 0.46 mm; for f= 0.75 mm; for g= 0.93 mm).

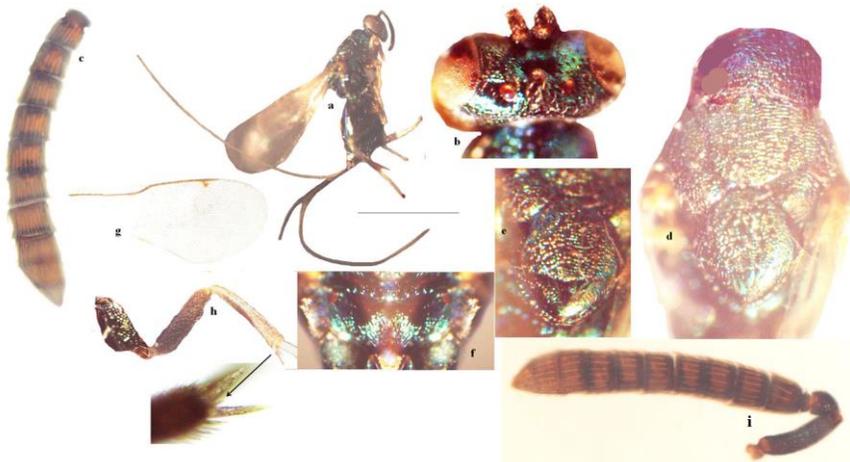


Figure 2. *Torymus bingoelensis* sp. nov., female. (a) body; (b) head, in dorsal view; (c) antenna; (d) mesosoma; (e) scutellum, in dorsal view; f. propodeum; g. fore wing; h. hind leg; i. male antenna. (Scale bar for a= 2.5 mm; for b= 0.55 mm, for c,i=0.3 mm; for d-f= 0.75 mm; for h= 1.4 mm for g= 1.78 mm).