

Entomologica Austriaca	14	97-100	Linz, 23.2.2007
------------------------	----	--------	-----------------

**A brief note on the biology of *Tenthredo zonula* KLUG
(Hymenoptera, Tenthredinidae)
feeding on St. John's Wort (*Hypericum perforatum* L.)**

G. SCHEIBELREITER

Tenthredo zonula KLUG, a member of the subgenus *Zonuledo* ZHELOCHOVTSEV, is a very common sawfly species widely distributed from northern Spain over most of Europe (with the exception of the British Isles) till the Near East (TAEGER 1991).

A description of its larva is found in LORENZ & KRAUS (1957). The larvae are known to feed on St. John's Wort (*Hypericum perforatum* L.), but their life-history has only been described very briefly by JOHANSSON (1962), based upon material from southern Sweden. There adults have been observed in June and larvae from late June/July to August. They were quite numerous on rocky slopes, sandy ground, and in both dry and wet meadows; the larvae feeding mostly at night and during cloudy weather. Three other species of *Tenthredo* are known from *H. perforatum* (*T. amonea* GRAV., *T. balteata* KLUG und *T. zona* KLUG), but only *T. zona* has been briefly dealt with by WILSON (1943) in his study of the insect enemies of St. John's Wort in southern France.

When eggs of *Tenthredo zonula* were found on *H. perforatum* in Delemont (Swiss Jura) in June 1978, the interest in this sawfly was stimulated so that further eggs and larvae were collected there and also in the Vienna woods (near Neulengbach) with the aim to carry out limited biological studies with the most common of the four species mentioned before.

The adults are on the wing from mid May until the end of July with a peak in the first half of June. Eggs were deposited into the leaves of *H. perforatum*. They were laid singly from the upper side of the leaves so that they came to lay underneath the epidermis of the lower side, where they were easily visible. Eggs were found in the first half of June on almost 50 % of the plants at Delemont (on 80 % of the plants at Neulengbach), with up to 5 eggs per attacked plant (12 at Neulengbach). Up to 4 eggs were found per internode and up to 2 eggs per leaf; however, 1 egg per leaf was the rule.

The young larvae feed preferably on the edge of young leaves. Older larvae consume the leaves totally and leave sometimes only the stalk and tiny base of leaves intact. JOHANSSON (1962) mentioned the complete defoliation of a sparse stand of *H. perforatum* at a sandy, dry slope in Sweden. In our investigation area the damage was negligible. Only at close inspection of the plants, a few leaves were found with feeding marks.

The food consumption of the larvae was investigated in the laboratory (Table 1). Ten

larvae isolated immediately after hatching were kept in single petri-dishes on moist filter paper and fed with leaves of *H. perforatum*. Leaves were daily changed and weighed before and after exposure to the larvae. As the leaves gained weight insignificantly by water absorption after 24 hours, a correction factor was applied, based on the change of weight of the leaves kept in petri-dishes without larvae.

The weight of food consumed per larva ranged from 400 to 500 mg or 14 to 16 leaves (average weight of one leaf 32.25 mg) of which nearly 80 % were consumed by the last feeding instar. Slowly maturing larvae consumed more food than fast-maturing ones. One day of longer feeding increased the total food consumption by about 3 %. The food intake of free living larvae would, therefore, exceed the laboratory results.

The larvae of *T. zonula* were found to have five instars. The feeding instars (L1-4) can easily be distinguished, based on the diameter of their head capsule and their body size (Table 2). The development period of the four feeding instars in days (based on 37 single rearings in the laboratory) was: L-1:3-5 (1 larva 7 days), mean 3,8 days; L-4:5-8, mean 6,4 days. The total length of the feeding period lasted from 15 to 19 days (in three cases 21-22 days) with a mean of 17,4 days. The last larval instar (L-5) remained for a few days on the plant before it entered the soil for cocoon formation. Larvae feed solitarily. They are often found rolled up on the underside of the leaves; being disturbed, they drop to the ground. They overwinter in the pupal stage within their earthen cocoons.

Ten samples each of 50 plants of *H. perforatum* were investigated for eggs in the Delemont area from mid July to mid August. At this time of the year only two percent of the plants were attacked and 43 eggs were collected from them. A total of 21 eggs (49 %) were parasitized, 19 diseased or dead and only 3 larvae emerged. Three species of egg-parasites were reared. The dominant species was an unidentified Mymarid, parasitizing 15 eggs, followed by another Mymarid and by the Eulophid *Cirrospilus vittatus* WALK. (from one egg only). Old larvae were parasitized by two unknown Ichneumonid species.

Acknowledgements

I am indebted to Prof. Dr. Pschorn-Walcher for kindly help in giving me personal and literature information about the insects concerned and for correcting the manuscript.

Literatur

- JOHANNSON S. (1962): Insects associated with *Hypericum* L.: Part 2. Lepidoptera, Diptera, Hymenoptera, Homoptera and general remarks. — *Opuscula Entomologica* **27**: 127-146.
- LORENZ H. & M. KRAUS (1957): Die Larvalsystematik der Blattwespen (Tenthredinoidea and Megalodontoidea). — Berlin, 339pp..
- TAEGER A. (1991): Vierter Beitrag zur Systematik der Blattwespengattung *Tenthredo* L.: Die Untergattung *Zonuledo* ZHELOCHOVTSEV (Hym.: Tenthredinidae). — *Entomofauna* **12**: 373-400.
- WILSON F. (1943): The entomological control of St. John's Wort (*Hypericum perforatum* L.) with particular reference to the insect enemies of the weed in Southern France. — Bulletin No. 169, Commonwealth of Australia, Council of Scientific and Industrial Research

Author's address: Georg SCHEIBELREITER,
Hauptplatz 5
3040 Neulengbach, Austria

Dr. Georg SCHEIBELREITER, Jahrgang 1938, studierte Biologie und Geographie und verfasste seine Dissertation über "Die Blattwespen der Rose". Als Mitarbeiter des Commonwealth Institute of Biological Control in Delémont (Schweiz) arbeitete er vor allem in Westafrika und Europa als Entomologe an Projekten der Biologischen Schädlings- und Unkrautbekämpfung. Neben seiner derzeitigen Trafikantentätigkeit sind biologische Bekämpfungsprojekte und die Blattwespen sein Arbeits- und Interessensgebiet geblieben.

Tab. 1: Food consumption of larval instars of *Tenthredo zonula* based on ten larvae singly reared on *Hypericum perforatum* in the laboratory at 24-27°C and 82-90 % relative humidity; food was changed and weighed daily.

larval instar	Feeding time in days	Weight of food consumed			Mean number of leaves consumed
		\bar{x}	(in mg) Range	% of total	
I	3-5	7,6	4,4-15,5	1,7	0,2
II	3-4	19,7	12,9-27,2	4,3	0,6
III	3-4	70,1	60,9-101,0	15,4	2,2
IV	6-7	357,4	307,0-412,9	78,6	11,1
Total	16-18	454,8	405-502	100,0	14,1

Tab. 2: Larval instars (L₁₋₅) of *Tenthredo zonula*, the diameter of headcapsules (h) and length of the larvae (l) in mm, based on single rearings of 37 larvae in the laboratory; (L₁₋₄ = feeding instars).

		L ₁		L ₂		L ₃		L ₄		L ₅	
		h	l	h	l	h	l	h	l	h	l
Mean		0,65	4,6	0,97	5,5	1,39	8,0	1,94	12,3	2,08	14,9
range	min	0,58	3,0	0,92	5,0	1,28	6,0	1,81	11,0	1,85	13,0
range	max	0,70	6,0	1,04	7,0	1,48	10,0	2,09	15,0	2,2	17,0
Daily growth factor		1,49		1,43		1,40		1,07		-	

ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Entomologica Austriaca](#)

Jahr/Year: 2007

Band/Volume: [0014](#)

Autor(en)/Author(s): Scheibelreiter Georg

Artikel/Article: [A brief note on the biology of Tenthredo zonula KLUG \(Hymenoptera, Tenthredinidae\) feeding on St. John`s Wort \(Hypericum perforatum L.\) 97-100](#)