

# On the life history of *Chyliza annulipes* Macquart, 1835 (Diptera: Psilidae)

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*Chyliza annulipes* Macq. has been repeatedly reared from pieces of bark of *Picea* and *Pinus* infested by tortricid moths of the genus *Cydia* Hb. which live in resin-exuding wounds on the trunks.

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There is published evidence that the larvae of the moderate-sized psilid genus *Chyliza* Fallén, 1820, all are primary feeders on fresh plant tissue. Teskey (1976) presented records of three species found in association with trees in North America. The Holarctic *Chyliza annulipes* Macquart, 1835, was reared from a pitch mass (exuded sap) on *Pinus virginianus*. Puparia of *Chyliza erudita* Melander, 1920, were found in sap exuding from the edge of wounds on the trunk of *Pinus strobus*. Finally, *Chyliza notata* Loew, 1869, was reared from wounds of elm trees; eggs were laid at the wound edges; larvae tunnelled between the bark and wood into the healthy tissues around the wound; pupation took place beneath the bark.

In the Old World, any association of *Chyliza* with wounds on tree trunks had never been noticed (Chandler 1975, Ferrar 1987), despite the fact that the earlier mentioned *Chyliza annulipes* occurs in all parts of Europe as well as in the northern and central parts of the European part of the USSR. It was therefore surprising to receive from Mr. O. Buhl of Stige, Funen, Denmark, a male of *annulipes* which was stated to have been reared from a sample of bark of Norway spruce (*Picea abies*). The case was followed up with the kind assistance of Mr. Buhl, and

the following information can now be presented.

In recent years several Danish microlepidopterists have managed to collect and rear the tortricid moth *Cydia indivisa* Danilevsky, 1963. The main host tree is in Denmark *Picea abies*, but also Sitka spruce (*Picea sitchensis*) is being infested. The *Picea* trees utilized by *indivisa* are usually 15-40 years old, those 20-30 years old apparently being preferred. The larvae infest resin-producing wounds on the sun-exposed side of the trunks. Therefore it is easiest to find the species in plantings that have been thinned out recently, or on trunks facing roads and glades. The infestations are recognizable by frass pile coming out from the margins of the wounds.

It is difficult to bring the *Cydia* larvae safely home for rearing, because they easily get smeared with resin when the galleries are disturbed. They are best collected from late April until early May. The pupae of the moth can be found from early May until early June, and are located in a white web in the area of resin.

The *indivisa* larvae are heavily parasitized by several species of Hymenoptera, as reported on by Buhl *et al.* (1984). These authors found *indivisa* to be abundant on *Picea* in

woods and plantations on the island of Funen (Denmark). In their paper are presented several photographs showing the habitat and the resinous exudations on *Picea* trunks. In the same area of Funen, *Cydia coniferana* Saxesen, 1840, occurs on pines (*Pinus contorta* and *P. mugo*). At several occasions, material of bark and resin from *Picea* and *Pinus* was brought home for rearing, and the following material of *Chyliza annulipes* is now available (arranged in a chronological order):

Ørsbjerg Skov, 1 ♂, ex bark and resin from *Picea abies* 11.v.1982 (O. Buhl).

Mesinge, 2 ♀♀, ex bark and resin from *Pinus contorta* 10.iii.1985 (E. Munk Andersen).

Hverringe Mølleskov, 3 ♀♀, ex bark and resin from *Picea abies* 17.v.1986 (O. Buhl).

Ørsbjerg Skov, 1 ?, ex bark and resin from *Picea abies* 19.v.1986 (O. Buhl).

Mesinge, 1 puparium, in bark and resin from *Pinus mugo* 6.xii.1986, kept at 15-20°C, 1 ♀ reared 5.ii.1987 (O. Buhl).

From the material in the Zoological Museum, Copenhagen, it is obvious that *Chyliza annulipes* is the most widespread of the four Danish species of *Chyliza*, but the above listed specimens are the first specimens collected since 1928, and the records also represent the first available information on the biology of this species in Europe. The collection contains specimens from SJ (Madeskov and Sønderborg), EJ (Ry), NEJ (Skørping and Svinkløv), F (Odense), LFM (Merrits Skov and Bangs Have), NWZ (Jyderup), and NEZ (Geel Skov, Bidstrup Hegn, Bagsværd, Bøllemosen, and Tisvilde). All these specimens have probably been netted by their collectors, as there are no rearing records on any of the labels. The dates range between 31 May and 31 July (both in 1925),

and the collectors are H.J. Hansen, R.W. Schlick, W. Wüstnei, and W. Lundbeck.

To summarize it can be stated that the flying period of *Chyliza annulipes* in Denmark is June and July. The female fly oviposits during this period in cracks in the bark and/or along the edges of established wounds on trunks of *Picea* and *Pinus*. The larvae certainly immediately starts tunnelling into the healthy tissue between the bark and the sapwood. The time of pupation seems to be in the autumn or early winter. A description of the larva is given by Teskey (1976), and the adult is keyed and illustrated by Lyneborg (1964).

It should be mentioned that along with the first listed male of *annulipes* was also reared a male of the very rare muscid *Phaonia czernyi* Hennig, 1963 (V. Michelsen det., Buhl *et al.* 1984). The larva of the latter may well be a predator on the *Chyliza* larvae.

## Sammen drag

De fire danske arter af rodflue-slægten *Chyliza* Fall. er behandlet af Lyneborg (1964). *C. annulipes* Macq. er en udbredt art i Danmark, kendt fra distrikterne SJ, EJ, NEJ, F, LFM, NWZ, og NEZ, men artens biologi var helt ukendt, indtil Teskey (1976) beskrev en klækning fra saftudflåd af *Pinus virginianus* i Nordamerika.

I de seneste år har hr. Otto Buhl, Stige på Fyn, gentagne gange klækket arten fra materiale bestående af brak og saft/harpiksudflåd indsamlet fra nåletræer på forskellige fynske lokaliteter med det formål at fremskaffe eksemplarer af den sjældne vikler *Cydia indivisa* Dan. Lokaliteterne, hvor *C. annulipes* har vist sig at forekomme, er: Ørsbjerg Skov, Mesinge og Hverringe Mølleskov, og de benyttede værtstræer har været rødgran, bjergfyr og contorta-fyr.

Livscyklus for *C. annulipes* kan derfor nu skitseres som følger: Imago flyver i juni-juli. Hunfluen lægger æg langs kanten af sår på stammer af gran og fyr, muligvis også i barkrevner. Larven klækker sikkert umiddelbart og lever i gange, som den borer i det sunde væv mellem bark og ved. Forpupning sker om efteråret eller i den tidlige vinter.

Hr. Otto Buhl bringes stor tak for fremskaffelsen af materialet af *C. annulipes* og for viderebringerelse af egne observationer.

## References

- Buhl, O. *et al.*, 1984: Fund af småsommerfugle fra Danmark i 1983 (Lepidoptera). - Ent. Meddr 52: 1-21.
- Chandler, P.J., 1975: Observations on plant associations of the Psilidae (Diptera). - Entomologist's Rec. J. Var. 87: 13-17.
- Ferrar, P., 1987: A Guide to the Breeding Habits and Immature Stages of Diptera Cyclorrhapha. - Entomograph 8. Leiden & Copenhagen.
- Lyneborg, L., 1964: Danske acalyprate fluer. 2. - Ent. Meddr 32: 367-388.
- Teskey, H.J., 1976: Diptera larvae associated with trees in North America. - Mem. ent. Soc. Canada 100: 1-53.

## Mindre meddelelse

### *Dytiscus latissimus* L. – en truet vandkalv (Coleoptera: Dytiscidae)

I 1986 blev 78 invertebrater inkluderet i en liste over plante- og dyrearter, der er truet i lande tilsluttet Bern-konventionen, og som i disse lande bør beskyttes mod en uhensigtsmæssig udnyttelse af bestandene (Collins & Wells 1986). Danmark er tilsluttet Bern-konventionen ligesom næsten alle andre vesteuropæiske lande.

Blandt listens arter findes to vandbiller, nemlig vandkalvene *Dytiscus latissimus* L. og *Graphoderus bilineatus* (De Geer). Disse to arter blev udvalgt gennem en rundspørge til vandbilleinteresserede i 1986 (Foster 1986). Begge arter findes i Danmark, men har været i stærk tilbagegang i dette århundrede og er nu meget sjældne.

*Dytiscus latissimus* hører til de største vandkalve i verden, og den voksne bille er let kendelig på den brede kropsform (Fig. 1). Larven kan kendes fra andre store vandkalvelarver i Europa på bag-

kropsspidsens to vedhæng, som kun er 0.3-0.4 gange længden af det 8. bagkropsled, i forbindelse med hovedets forrand, der set fra oven er næsten lige mellem kindbaggerne (ikke tydeligt fremad-buet eller tandet).

Arten findes især i oligotrofe eller svagt dystrofe søer og moser med rent, ret klart og ofte surt vand. Den voksne bille kan leve i flere år og er i stand til at flyve. Den er et rovdyr med et tilsyneladende ret ukritisk fødevalg, og synes ikke særlig følsom overfor påvirkninger af sit miljø. Den findes forholdsvis sjældent ved almindelig ketsjerfangst, mens fangst med fiskeruser og krebsbrikker i en del tilfælde har været anvendt med succes (Schaefflein 1971; Palm in litt.). Dette kunne skyldes, at arten som voksen fortrinsvis lever på dybere vand end de øvrige *Dytiscus*-arter.

Larven findes i april-juli, og den kravler i højere grad end larverne af de øvrige danske *Dytiscus*-arter (*D. semisulcatus* undtaget) rundt mellem vegetationen nær bredden. Den synes at kræve særdeles rent vand, også når den holdes i akvarium. Forsøg med larvens fødepræferens blev gjort i akvarium med en enkelt fuldvoksen larve i 1987. Ligesom larver af *D. semisulcatus* var denne larve