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Tarachidia candefacta (Lepidoptera: Noctuidae) in the south of European Russia

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Abstract. *Tarachidia candefacta* (Hübner, 1831) was imported from Canada and released in the Krasnodar region in the years 60 of the 20th century in order to control *Ambrosia artemisiifolia* L. The moth species has established itself in small, local populations. Only during recent years, probably because of mild winters, it has enlarged its range in northern direction.

Samenvatting. *Tarachidia candefacta* (Lepidoptera: Noctuidae) in het zuiden van Europees Rusland
Tarachidia candefacta (Hübner, 1831) werd vanuit Canada geïmporteerd in de Krasnodar streek in de jaren 60 van de 20ste eeuw met het doel *Ambrosia artemisiifolia* L. te bestrijden. De mot heeft zich in kleine, lokale populaties weten te handhaven. Pas gedurende de laatste jaren heeft de soort haar areaal sterk naar het noorden uitgebreid, waarschijnlijk onder invloed van erg zachte winters.

Résumé. *Tarachidia candefacta* (Lepidoptera: Noctuidae) dans le Sud de la Russie européenne
Tarachidia candefacta (Hübner, 1813) a été importé du Canada dans la région de Krasnodar dans les années 60 du 20ème siècle afin de contrôler *Ambrosia artemisiifolia* L. Au début, le papillon a pu survivre en petites colonies isolées, mais pendant les dernières années l'espèce a envahi les régions du Nord, probablement parce que les hivers étaient très doux.

Key words: *Tarachidia candefacta* – *Ambrosia artemisifolia* – Russia – faunistics – introduction – *Ambrosia artemisiifolia* – biological control – Common Ragweed.

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Tarachidia candefacta (Hübner, 1831), the "olive shaded bird-dropping moth", was imported from Canada by the former All-Union Institution of plant protection (presently – All-Russian Institution of plant protection, St.-Petersburg) to the region south of Krasnodar in 60's of the 20th century for acclimatization, with the purpose to control a dangerous weed – *Ambrosia*

artemisiifolia L. (Common Ragweed – Asteraceae). The moth expanded slowly in the region and in 1995–1996 it was already regularly recorded during light-trapping.

The first published results of this introduction were presented by the Krasnodar entomologist Vitaliy Shchurov (1978). *T. candefacta* was observed in many stable populations all over the southern part of the Krasnodar region. A few specimens of dropping moth were marked in 1999–2002 in the Lugansk and Donetsk regions of Ukraine (Kljuchko *et al*. 2004), though special actions for moth's introduction into these regions were not ever carried out. Almost simultaneously with catches in Ukraine *T. candefacta* was found for the first time in the northern part of the Rostov-on-Don region (Poltavsky *et al*. 2005) – Tarasovsky district, Efremo-Stepanovka, 10.07.2001, 3 specimens.

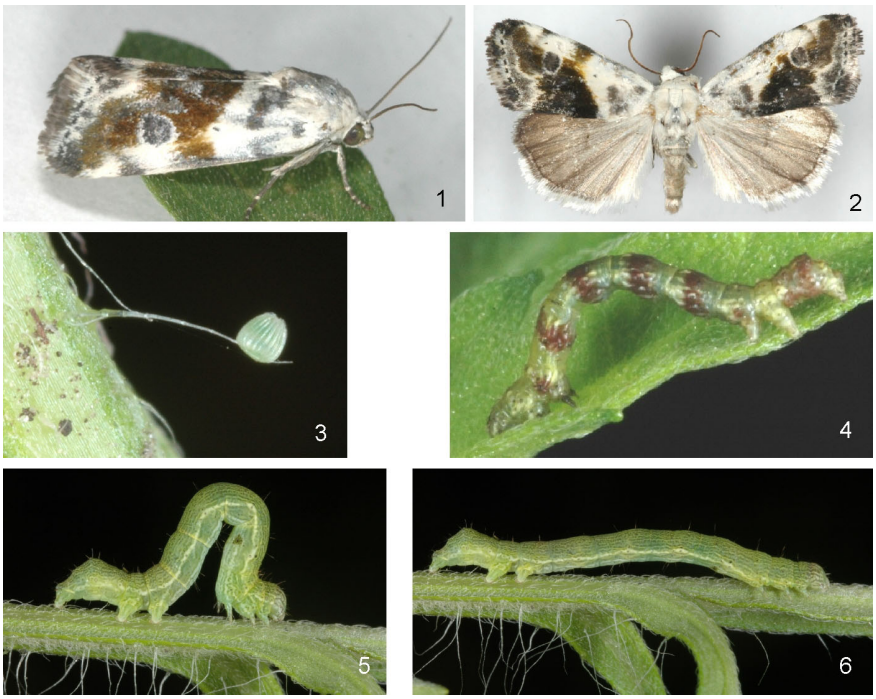
Since 2000 we regularly inspect insect biodiversity in entomological refuges in the territory of the Rostov-on-Don region, and also control the pests in agricultural fields. Therefore unexpected detection of bird-dropping moth in 2005 in a several localities became a pleasant sensation.

Originally the appearance of *T. candefacta* was detected in mid-May 2005 by entomology sack sampling of herbage. Light-trapping between 28.05.2005–09.06.2005 (with a lamp "Osram"-160 W) in a valley of the river Tuzlov (village Bolshekrepinskaja) produced 17 specimens of bird-dropping moth in a total of 288 specimens of 58 Noctuidae species. Later catching 11–28.07.2005 in the same locality gave only 4 specimens of bird-dropping moth in a total of 336 specimens of 64 Noctuidae species. But the greatest density of *T. candefacta* moths was detected in June close to agricultural fields on *Ambrosia* weed association: 4–5 specimens per 300 m².

At the end of June we began to reveal caterpillars of *T. candefacta* by sack sampling of *Ambrosia* associations. The density of the eggs, laid in the Aksay district was about 3 per one plant of *Ambrosia*. The density of hatched caterpillars in the beginning of July was 1 specimen per m².

The second generation of *T. candefacta* flew from mid-August to mid-September and was much more numerous than the first generation: about 50 specimens per night in the light-trap, gradually diminishing in September. We did not catch any moth in the northern part of Rostov-on-Don region, not in June–July, neither in August–September.

It would be desirable to emphasize, that the previous years 2003–2004 we checked Noctuidae moths with the same frequency and in the same localities as in 2005, but we did not find any bird-dropping moth in the south of Rostov-on-Don region. Nevertheless, we are not inclined to regard such unexpected occurrence of this species, as a result of a fast migration from the Krasnodar region. We suppose, that within 38 years which have past from the moment of the release of *T. candefacta* near Krasnodar and at the Black Sea coast, it has slowly migrated to the north and settled down up to Ukraine. Actually, regional entomologists in the south of Russia were not ready to detect *T. candefacta*. Therefore we only had an incomplete information about its distribution.



Figs. 1–6. *Tarachidia candefacta* (Hübner, 1813); **1**.– Imago resting on an *Ambrosia artemisiifolia* leaf; **2**.– Set specimen; **3**.– Egg on a hair of an *Ambrosia artemisiifolia* stem; **4**.– Last instar larva; **5, 6**.– Earlier instars. (Photos by K. S. Artokhin).

Tarachidia candefacta caterpillars show a big similarity with Geometridae larvae. In distinction bird-dropping moth larvae have not 2, but 3 pairs of legs on the rear of a body. The caterpillars of the last instar change their uniform green colour into ringed red-brown on each segment of the body.

Probably, during many years the populations of *T. candefacta* in the Rostov-on-Don region were very small and local. They were maintained mainly in entomological refuges with favorable microclimatic conditions for this species, which prefers a moderate climate. The continental climate of the Rostov-on-Don region is a basic limiting factor as a forage reserve - *Ambrosia artemisifolia* - presented almost everywhere.

The winters of 2002–2003, 2003–2004 and 2004–2005 were very soft in the south of Russia. Practically there were no adverse situations with absence of a snow cover and strong frost (more than 10°C below zero). This circumstance, probably, promoted the best for *Tarachidia candefacta* winter diapause and quick growth of its populations. Further monitoring should show how successfully the species has adapted to the climatic conditions of Southern Russia and whether it could be a significant factor in controlling the spread of the *Ambrosia* weed.

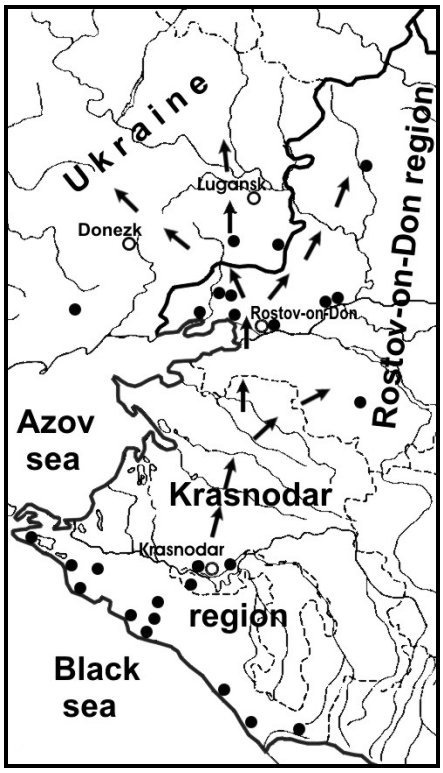


Fig. 7. Supposed directions of the expansion of *Tarachidia candefacta* in the south of European Russia and the localities where the species has been observed.

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