Coliguacho (*Scaptia lata*)

by

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Coliguacho, *Scaptia lata* (Guerin-Meneville, 1835), is a species of horse-fly (Diptera: Tabanidae) distributed along southern Chile and Argentina. The species is well known in popular culture because there are high populations of adults during part of the summer and for the disturbing wing sounds and bite of the females.

Description

Scaptia lata is a large (15.5 mm – 19 mm), black fly with hairy orange stripes in the lower sides of its thorax, neck and rear abdomen. As in other families of flies (e.g., Syrphidae), males can be distinguished from females by their eyes, which are joint in the forehead of males (the have *holoptic* eyes) and separated in females (i.e., *dichoptic* eyes). Males also have extra orange fur on the head and have the piercing-sucking mouthparts present in females reduced or absent.

Picture 1: Dorsal view of a female. Note the dichoptic eyes, which do not meet in the forehead. Photo: Tomás Fuenzalida.

Behavior and life cycle

As in most horse-flies, males feed from pollen. Females, however, often need to feed from animal blood prior to the oogenesis. As in other species of Tabanidae, *S. lata* females can lay eggs once without the need for animal blood, but they need it to obtain the proteins for their subsequent reproductive cycles (Pechuman & Teskey, 1981). The mouthparts on females are adapted to piercing through animal skin and suck up their blood, which they prevent from clotting by salivating a compound unique to this family of flies, *tabanin*. This is a thrombin inhibitor.

Gravid females lay eggs in open areas, near decomposing trunks. Larvae are predacious and feed on soft-bodied larvae, especially crane-flies (Diptera: Tipulidae), but they may also feed upon other arthropods and annelids, and even on larvae from the same species. This species is

univoltine (it has only one generation per year), which is why adults can only be seen in the early summer months. Some larvae can take up to 2 years to develop (Coscarón & González, 1989). As with all other tabanids, this species enters diapause (its inactive state) as larvae in response to an environmental cue, which may be temperature and/or photoperiod (McElligott, 1992).

Picture 2: Side view of a larvae of *S. lata*. Larvae are often found isolated due to their cannibal behavior. Adapted from Fundación Chile (www.fundacionchile.com).

After surviving the harsh winter, larvae become active and continue developing until they are ready to pupate. Pupation takes around 3 weeks (Coscarón & González, 1989). Adults emerge in late December to early January, when they are most abundant. Whether females mate before or after feeding from vertebrates is not clear. It is plausible that they do so before feeding since they've been documented to strictly require blood-feeding only for later oogenesis events. Mating behavior remains largely unstudied as males are only rarely seen. It is hypothesized that swarms of males hover over the top of the canopy, where mating occurs (Bascur, 2013). This aggregated mating behavior of males is common in the Tabanidae (Pechuman & Teskey, 1981).

Although females are hematophagous, they also feed on pollen to satisfy their energy requirements. Recent studies have shown the importance of *Caldcluvia paniculata* (Cunoniaceae) on coliguacho's diet, representing close to 80% of the pollen grains found in female's foreguts (Bascur, 2013; Inostroza, 2013).

Trends

Most studies on coliguacho's biology have focused on developing control strategies for this disturbing horse-fly. Nevertheless, not much is known about its ecological role, which cannot be disregarded since they sustain great populations during the early summer months. A recent startup project pretends to control colihuacho's populations by using an entomopathogenic nematode, *Rhabditis pellio* (Nematoda: Rhabditidae), which has been reported to accidentally parasitize *S. lata* (Camino & Stock, 1991). This approach, although promising, as in other types of biological control strategies, is not exempt of risks. In addition, since the ecological role of coliguachos is unknown, it raises the question of how wise would be to significantly reduce the populations.

Picture 3: Female of *S. lata* over a leaf of *Gunnera tinctoria*. Note the piercing-sucking mouthparts. Photo: Tomás Fuenzalida.

Even though the species is well known in popular culture, its life cycle is poorly understood. Is diapause triggered by photoperiod, temperature, or a combination of the two? Do larvae require a cold-conditioning period for pupation? Which environmental factors determine the end of diapause? It is known that the emergence date of adults is quite variable (Bascur, 2013), which suggests that it's regulated by temperature rather than photoperiod. Is this variability in emergence a response to a slower developmental rate due to lower temperatures during the active state of the larvae (i.e., end of diapause is regulated photoperiodically), or is it due to a delay in the end of diapause in response to lower temperatures (i.e., end of diapause is not regulated by photoperiod), or both? These insights could help us better understand the likelihood of this species to become bivoltine (two generations per year) in response to global warming, which would indeed cause an important impact on southern Chile's tourism activity.

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