Bewegung auf und Abflug von der Wasseroberfläche bei der Salzfliegen-Art Ephydra flavipes (Diptera: Ephydridae) *

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Standing, passive drifting, active walking as well as take off from and flight over the water surface of the saltfly species Ephydra flavipes (Macquart 1844) are documented by video registrations [at a rate of 50 half-frames per second]. Interactions of the pedes with the water surface and with the propagation of induced surface waves during the movements described are registered via the shadows of the contact regions of the pedes casted on a white sheet located approximately 5 mm below the water surface. They are related to REM documentations of structures on the ventral side of the tarsi. The flies are moving with their normal walking rhythm (pedes-I and pedes-III on one side are in phase with pedes-II on the other side) over the surface without slipping. Different leg positions and therefore tarsal loading result in a different depth of indentation of the surface layer. When taking off, the fly uses its pedes-II in particular to push itself from the water front of the induced surface waves. The propagation speed of this wave (51 cm s⁻¹) and the beating speed of pedes-II harmonise. When landing, pedes-I in particular are used to brake at the wave front of the induced surface wave.

The starting acceleration is only 1.6 g, smaller than for example that of a house fly starting from solid ground. After ≥ 110 ms a constant mean flight speed of 62 cm s⁻¹ is achieved, corresponding to 70 body lengths s⁻¹.

Key words: Ephydra flavipes (Macquart 1844) - water surface - running - feeding - take off jump - insect flight - surface waves - video analysis