**Life history differences in dung flies**

A prominent trade-off in life history theory is that between propagule size and number (Smith and Fretwell 1974; Roff 1992; Stearns 1992). Within limits set by morphological, phylogenetic and physiological constraints (Bernardo 1996), a mother can allocate her limited resources into fewer large or more small propagules. The basis for the trade-off is that a greater number of offspring always increases the fitness of the parent, but that producing more propagules (with a given amount of resources) carries a cost, primarily in terms of survivorship to reproduction and age at first reproduction (i.e. longer development; Sibly and Monk 1987). There is a fair amount of evidence from a variety of species that this fitness trade-off holds, although there are also many counter examples (Roff 1992; Stearns 1992; Bernardo 1996). However, examples from insects are relatively rare compared to those from vertebrates (Roff 1992; Stearns 1992; Bernardo 1996; Preziosi et al. 1996).

Dung flies of the genus *Sepsis* are common in Eurasia and Africa (Zuska and Pont 1984). Many species coexist in dung of various animals, some of them being dung specialists and some generalists, but overall little is known about the community ecology of Sepsids (Hammer 1941; Pont 1979; Meier 1996). Species are so similar that they are generally difficult to distinguish, particularly the females (Pont 1979; Meier 1996). In this study, I investigated life history variation in the closely-related dung flies *Sepsis cynipsea* , *S. fulgens,* and *S. bogus* (Schulz 1989; Meier 1996)*. S. cynipsea* is a very abundant fast coloniser specialised on cow dung. The slightly smaller *S. fulgens* is known as a dung generalist which also regularly occurs on cow dung (Meier 1996). *S. bogus* is a rare species about which little is known. I assessed and compared various individual life history components, including egg size, of all species in the laboratory. This may or may not reveal that different species allocate energy into reproduction in different ways.

**Materials and methods**

From a number of females (**INDNR**) of each species (**SPECIES**) I estimated standard life history characters. Randomly picked laboratory-reared pairs were transferred into 50 ml glass vials, capped with a paper prop, containing miniature dishes with fresh dung, water and sugar, where they were held at 25°C until their death. From the females of these pairs I measured, using a binocular microscope: (1) head width upon her death as an estimate of body size (**SIZE**); (2) size of her first full clutch of eggs (considering only clutches >30 eggs as full; Blanckenhorn 1997 (**CLUTCHSZ**)) as well as all subsequent eggs laid; (3) the mean egg volume of 10 eggs of her first clutch, calculated as 4/3\*π\*(egg length (**EGGLEN**)/2)\*(egg width (**EGGWID**)/2)2; (4) her adult longevity (**LONGEV**) in the laboratory; (5) eggs laid per (**EPD**) day was the total number of eggs laid divided by the time between the first and the last eggs laid; (6) pre-adult survivorship of her first clutch of offspring in 5 g dung (number of individuals emerged divided by number of eggs counted (**PHATCH**)); and (7) the modal development time at 18°C of her first clutch of offspring (**DEVTIME**).

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