

## Control of the Blandford Fly using *Bti*

### Notes prepared by CEH Dorset

Blandford fly larvae are aquatic and live in fast flowing reaches of the Dorset Stour. They filter small particles of organic matter from the water using head fans held out in the current.

*Bti* (***Bacillus thuringiensis*** var. *israelensis*) is a naturally occurring bacterium. It is introduced into the water as inert spores (ie it will not develop into living bacteria) at a concentration of 0.8 ppm for 10 minutes. These spores are caught in the head fans of the larvae and ingested. Blandford fly larvae and other related species are unique in having an alkaline gut and under these conditions, a protein in the bacterial spore becomes toxic and dissolves the gut killing the larva. All other creatures in the river have acid guts and thus, if they ingest the *Bti*, they digest the protein as for any other food item.

Even though there are many species of blackfly (of which the Blandford Fly is one) living in the river, in early April there is a window of opportunity when all other species are occurring only as adults and the Blandford Fly larvae are the only blackflies present in the river. Thus this species is the only one killed by the treatment.

This is one of the best examples of environmentally friendly pest control in the world.

The highest concentration of larvae are found at Blandford as the banks of the river through Bryanston woods are the most suitable for egg laying – steep muddy banks with cracks where eggs are laid. This black fly is not unique to the Stour but occurs in other Northern European countries. However, the River Stour provides ideal conditions as the many weirs in effect provide a series of lakes with fast flowing out flowing rivers – the preferred conditions. *Bti* is used to control blackfly in Canada and at higher doses can be used for mosquitoes.