

# Radar Tracking of Butterfly Flight Paths

Or

## It's Not Such a Fancy Free Flutter!

by Lizzie Cant

**Ever wondered** where that butterfly that flies by you is going? Ever managed to keep up with one for more than 50 yards?

Recently, for the first time ever, scientists in the UK have developed a technique that can follow the flight path of a butterfly from more than half a mile away.



*Above: Professional driver and satellite equipment — don't try this in your backyard!  
Opposite page: A European peacock is fitted with a tiny transponder.*

The harmonic radar technique was originally designed to track the flight of tsetse flies in Africa and has also been used to observe the orientation, navigation and foraging behavior of bees. Now it has been shown to work for butterflies too, opening a new window on the flight behavior of these important pollinating insects.

Usually, to study butterfly movement we have to rely on indirect mark-release-re-sight experiments or need to carefully follow individuals visually, which can get tricky for distances greater than about 600 feet. Using the second technique two recent studies (Dover & Fry, 2001, *Entomologia Experimentalis et Applicata* **100**, 221-233 and Conradt *et al.*, 2000, *Proc. R. Soc. Lond. B* **267**, 1505-1510 & 2001 *OIKOS* **95**, 416-424) suggested that some butterflies could recognize and respond to landscape features, rather than just dispersing at random. Dover & Fry found butterflies to be more affected by

the presence of a physical (three dimensional) feature rather than a merely visual (two dimensional) feature. Conradt *et al.* provided convincing evidence of the recognition of favorable or familiar habitats by meadow browns (*Maniola jurtina*) and gatekeepers (*Pyronia tithonus*), suggesting that these butterflies had a perceptual range of twice their usual dispersal distance within a favorable habitat (between 300-500 feet). Using the harmonic radar to track butterfly foraging behavior extended the previous studies by providing more accurate measurements of butterflies' behavioral responses to landscape geometry over a larger scale, and provided direct evidence of certain linear landscape features acting as barriers to movement.

#### *Minute backpacks*

The technique involves attaching a minute transponder to the butterfly. This is a device which contains a diode and a 0.6 inch antenna,