

## *Colletes halophilus* - A Lincolnshire coast rarity



Photo: Rachael [http://www.flickr.com/photos/rachel\\_s/5303352773/](http://www.flickr.com/photos/rachel_s/5303352773/) Gibraltar Point, Lincolnshire 2010

This is one of Britain's scarcest bees and internationally can only be found along the western and northern coasts of France and the Belgian and Dutch coasts. It can be found along the English coast from Hampshire to Lincolnshire. The one pictured above was at Gibraltar Point but they also nest at Rimac.

They feed almost exclusively on the Sea Aster, *Aster tripolium*, the female storing both pollen and nectar as larval food, to which she adds enzyme secretions. *Aster tripolium* is a salt-marsh plant that looks rather like a Michaelmas-daisy, flowering from July to October, so this bee is seen only in the summer and autumn.

*Colletes halophilus* is a priority species for conservation as its very scarce salt-marsh and dune habitat is threatened by development and sea level rise. They are a 'mining bee' making their nest underground and for this they need bare ground that is not too soft or too hard, close to the salt marsh edge but that does not get flooded at the exceptionally high spring tides. There are few such locations available. Only the mated female digs a hole in firm sandy ground and makes a nest lined with a secreted transparent, cellophane-like membrane that is robust and strongly resists chemical degradation.

This nest material has recently been studied by materials scientists\*. It seems to be produced by a combination of secretions from the abdominal Dufour's gland and salivary secretions licked on to the nest wall by the bee's mouth. The secretions react together, polymerising to produce both a fibre scaffold and plain sheet for a biocomposite material. It is quite possible that this material will serve as a model for non-petroleum derived polymers in the future. A lesson in the importance of biodiversity, this rare bee may turn out to be of great significance and usefulness to mankind.

\*Journal of Materials Science, September 2011 Evidence of biocomposite structure in *Colletes halophilus* nest material. Rebecca A. Belisle, Irene G. Turner, Martin P. Ansell

