

## Species of Carabidae (Coleoptera) in which the occurrence of dispersal by flight of individuals has been shown

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ABSTRACT. — A list of carabid species is given in which the occurrence of flight activities could be shown by sampling with window traps around the Biological Station, Wijster. These data, covering 11 years, are supplemented by data available from the literature as far as these concern the Netherlands.

From 1969 onwards window traps (Van Huizen, in press) - together with pitfall traps - have been used at different sites in the province of Drenthe continuously, to learn which carabid species disperse by flight (Den Boer, 1971), and to study the possible effects of dispersal (Den Boer, 1977).

Haeck (1971) and Meijer (1971, 1974) applied the same sampling technique to study the early phases of the immigration of carabids into recently reclaimed polders. Van Huizen (1977, 1979) observed habitat change by means of flight activities in the life cycle of a carabid species, and more generally the morphological and environmental conditions that determine frequency and level of the flight behaviour. As Brakman (1950) proposed, in table 1 a list is given of the species of which individuals have been captured during the act of flying. Note that the species in table 1 are only representative for the northeastern parts of the Netherlands.

Table 1. Carabids caught in window traps in different parts of the Netherlands.

Species	W	L	F	
<i>Acupalpus</i>	<i>brunnipes</i> (Sturm)	+		
	<i>consputus</i> (Duftschmid)	+		
	<i>dorsalis</i> (Fabricius)	+	+	+
	<i>exiguus</i> Dejean	+		
	<i>flavicollis</i> (Sturm)	+		
<i>Agonum</i>	<i>dorsale</i> (Pontoppidan)	+	+	
	<i>fuliginosum</i> (Panzer)	+		
	<i>gracile</i> Sturm	+		
	<i>marginatum</i> (Linnaeus)		+	
	<i>moestum</i> (Duftschmid)	+		
	<i>muelleri</i> (Herbst)	+	+	+
	<i>sexpunctatum</i> (Linnaeus)	+		
	<i>thoreyi</i> Dejean	+		+
	<i>versutum</i> Sturm	+		
	<i>Amara</i>	<i>aenea</i> (Degeer)	+	+
<i>anthobia</i> Villa		+		
<i>apricaria</i> (Paykull)		+	+	
<i>aulica</i> (Panzer)		+		
<i>bifrons</i> (Gyllenhal)		+	+	+
<i>brunnea</i> (Gyllenhal)		+		
<i>communis</i> (Panzer)		+		
<i>consularis</i> (Duftschmid)		+		
<i>convexior</i> Stephens		+		
<i>convexiuscula</i> (Marsham)			+	+
<i>famelica</i> Zimmermann		+		+
<i>familiaris</i> (Duftschmid)		+	+	+

Species	W	L	F
<i>fulva</i> (O.F. Müller)	+		
<i>lunicollis</i> Schödte	+		
<i>majuscula</i> Chandoir	+	+	+
<i>ovata</i> (Fabricius)	+		
<i>plebeja</i> (Gyllenhal)	+		+
<i>similata</i> (Gyllenhal)	+		+
<i>spreti</i> Dejean			+
<i>Anisodactylus binotatus</i> (Fabricius)	+		+
<i>Asaphidion flavipes</i> (Linnaeus)	+		
<i>Badister bipustulatus</i> (Fabricius)	+		
<i>Bembidion aeneum</i> Germar	+	+	
<i>assimile</i> Gyllenhal			+
<i>biguttatum</i> (Fabricius)			+
<i>bipunctatum</i> (Linnaeus)			+
<i>doris</i> (Panzer)	+		
<i>guttata</i> (Fabricius)		+	+
<i>irricolor</i> Bedel		+	+
<i>lampros</i> (Herbst)	+		
<i>lunulatum</i> (Fourcroy)	+	+	
<i>minimum</i> (Fabricius)		+	
<i>normannum</i> Dejean		+	
<i>quadrimaculatum</i> (Linnaeus)	+	+	+
<i>quadripustulatum</i> Serville	+		
<i>rupestre</i> (Linnaeus)	+	+	+
<i>tetracolum</i> Say	+	+	+
<i>varium</i> (Olivier)		+	+
<i>Bradycellus collaris</i> (Paykull)	+		
<i>harpalinus</i> (Serville)	+	+	+
<i>ruficollis</i> (Stephens)	+		
<i>verbasci</i> (Duftschmid)	+		+
<i>Calathus mollis erythroderus</i> Gemminger et Harold	+		
<i>piceus</i> (Marsham)	+		
<i>Cicindela campestris</i> Linnaeus	+		
<i>Clivina fossor</i> (Linnaeus)	+	+	
<i>Demetrias atricapillus</i> (Linnaeus)	+		
<i>Dicheirotichus pubescens</i> (Paykull)		+	
<i>Dromius agilis</i> (Fabricius)	+		
<i>angustus</i> Brullé	+		
<i>melanocephalus</i> Dejean	+		
<i>quadrimaculatus</i> (Linnaeus)	+		
<i>quadrinotatus</i> (Panzer)	+		
<i>Dyschirius luedersi</i> Wagner			+
<i>salinus</i> Schaum		+	
<i>Elaphrus cupreus</i> Duftschmid	+		
<i>riparius</i> (Linnaeus)	+		+
<i>Harpalus aeneus</i> (Fabricius)	+		
<i>brevicollis</i> Serville		+	
<i>distinguendus</i> (Duftschmid)	+		
<i>latus</i> (Linnaeus)	+		
<i>quadripunctatus</i> Dejean	+		
<i>rubripes</i> (Duftschmid)	+		
<i>rufipes</i> (Degeer)	+	+	

Species		W	L	F
	<i>rufitarsis</i> (Duftschmid)	+		
	<i>smaragdinus</i> (Duftschmid)			+
<i>Loricera</i>	<i>pilicornis</i> (Fabricius)	+	+	
<i>Metabletus</i>	<i>foveatus</i> (Fourcroy)	+		
	<i>truncatellus</i> (Linnaeus)	+		
<i>Nebria</i>	<i>brevicollis</i> (Fabricius)	+		
<i>Notiophilus</i>	<i>biguttatus</i> (Fabricius)	+		
	<i>substriatus</i> Waterhouse	+		
<i>Pterostichus</i>	<i>diligens</i> (Sturm)	+		
	<i>minor</i> (Gyllenhal)	+		
	<i>nigrita</i> (Paykull)	+		+
	<i>oblongopunctatus</i> (Fabricius)	+		
	<i>strenuus</i> (Panzer)	+	+	
	<i>vernalis</i> (Panzer)	+		
	<i>versicolor</i> (Sturm)	+		
	<i>vulgaris</i> (Linnaeus)		+	
<i>Stenolophus</i>	<i>mixtus</i> (Herbst)	+		+
	<i>teutonus</i> (Schrank)	+		
<i>Trechus</i>	<i>discus</i> (Fabricius)		+	+
	<i>obtusus</i> Erichson	+		
	<i>quadristriatus</i> (Schrank)	+	+	+
<i>Trichocellus</i>	<i>cognatus</i> (Gyllenhal)	+		
	<i>placidus</i> (Gyllenhal)	+		

W = Wijster: P. J. den Boer, T. H. P. van Huizen, 1969-1979; L = Lauwerszee: J. Meijer, 1969-1972; F = Oost Flevoland: J. Haeck, 1968-1969.

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