

Appendix I A summary of the 241 hymenopteran species that were contained in our dataset. Species are grouped according to the taxonomic family and genus they belong to. Column 1 states which one of the five taxonomic groups that species were allocated to, and it follows the order of the cladogram shown in Fig. 1. The reference(s) that the CHC profile of a species was based on is provided in column 5 and a full reference list of all 170 studies is given in Appendix II.

Taxonomic group	Family	Genus	Species	References
Parasitica	Braconidae	Cotesia	<i>Cotesia glomerata</i>	Ruf et al. (2010)
		Ascogaster	<i>Ascogaster quadridentata</i>	Espelie and Brown (1990)
		Cardiochiles	<i>Cardiochiles nigriceps</i>	Syvertsen et al. (1995)
		Venturia	<i>Habrobracon hebetor</i>	Howard and Baker (2003a)
Symphyta	Ichneumonidae	Habrobracon	<i>Venturia canescens</i>	Marris et al. (1996)
	Cepidae	Sirex	<i>Cephus cinctus</i>	Bartelt et al. (2002)
	Siricidae	Cephus	<i>Sirex noctilio</i>	Boroczky et al. (2009)
Parasitica	Eupelmidae	Eupelmus	<i>Eupelmus vuilleti</i>	Darrouzet et al. (2010)
	Eurytomidae	Eurytoma	<i>Eurytoma amygdali</i>	Krokos et al. (2001)
	Pteromalidae	Dibrachys	<i>Dibrachys cavus</i>	Ruther et al. (2011)
		Lariophagus	<i>Lariophagus distinguendus</i>	Steiner et al. (2007) Kuhbandner et al. (2012)
Acuate wasps		Pteromalus	<i>Pteromalus cerealellae</i>	Howard (2001)
		Muscidifurax	<i>Muscidifurax uniraptor</i>	Bernier et al. (1998)
			<i>Muscidifurax raptor</i>	Bernier et al. (1998)
			<i>Muscidifurax zaraptor</i>	Bernier et al. (1998)
			<i>Muscidifurax raptorellus</i>	Bernier et al. (1998)
		Nasonia	<i>Nasonia vitripennis</i>	Steiner et al. (2006)
		Anisopteromalus	<i>Anisopteromalus calandrae</i>	Howard and Baker (2003b)
		Roptrocercus	<i>Roptrocercus xylophagorum</i>	Sullivan (2002)
		Rhopalicus	<i>Rhopalicus pulchripennis</i>	Espelie et al. (1990)
		Kapala	<i>Kapala sulcifacies</i>	Howard et al. (2001)
	Eucharitidae	Diglyphus	<i>Perilampus fulvicornis</i>	Espelie and Brown (1990)
	Perilampidae	Perilampus	<i>Diglyphus isaea</i>	Finidori-Logli et al. (1996)
	Eulophidae	Ampulex	<i>Ampulex compressa</i>	Herzner et al. 2011
	Ampulicidae	Trachypus	<i>Trachypus boharti</i>	Koedam et al. (2011)
	Crabronidae	Liris	<i>Liris niger</i>	Gnatzy et al. (2004)
		Bembix	<i>Bembix pruinosa</i>	Hadley et al. (1981)
		Eucerceris	<i>Eucerceris sp.</i>	Clarke et al. (2001)
		Cerceris	<i>Cerceris arenaria</i>	Strohm et al. (2008b)
		Philanthus	<i>Philanthus triangulum</i>	Strohm et al. (2008)
				Kroiss et al. (2009)
				Cane (1983)
Bees	Melittidae	Macropis	<i>Macropis nuda</i>	Cane (1983)
	Colletidae	Hesperapis	<i>Hesperapis carinata</i>	Cane (1983)
		Colletes	<i>Colletes cunicularius</i>	Mant et al. (2005)
	Halictidae	Sphecodes	<i>Sphecodes sp</i>	Vereecken et al. (2007)
				Tengo et al. (1992)
				Sick et al. (1994)
		Halictus	<i>Halictus sp</i>	Hefetz et al. (1986)
				Hefetz and Graur (1988)
				Sick et al. (1994)
			<i>Vestitohalictus pollinosus</i>	Hefetz and Graur (1988)
		Lasioglossum	<i>Lasioglossum malachurum</i>	Hefetz et al. (1986)
				Sick et al. (1994)
				Ayasse et al. (1999)
				Soro et al. (2011)
		Nomia	<i>Nomia nevadensis bakeri</i>	Hadley et al. (1981)
		Dufourea	<i>Dufourea marginata</i>	Cane (1983)
	Megachilidae	Megachile	<i>Megachile rotundata</i>	Paulmier et al. (1999)
				Buckner et al. (2009)
	Apidae	Osmia	<i>Osmia lignaria</i>	Guedot et al. (2006)
				Buckner et al. (2009)
		Eucera	<i>Eucera palestinae Friese</i>	Shimron et al. (1985)
		Habropoda	<i>Habropoda pallida</i>	Saul-Gershenz and Millar (2006)
		Amegilla	<i>Amegilla dawsoni</i>	Simmons et al. (2003)
		Apis	<i>Apis mellifera</i>	Blomquist et al. (1980)
				Dani et al. 2004
				Strohm et al. (2008)
				del Piccolo et al. (2010)
				Carlson et al. (1989)
			<i>Apis dorsata</i>	Carlson et al. (1991)

Appendix I Table 1 (continued).

Taxonomic group	Family	Genus	Species	References
Bees	Apidae	Bombus	<i>Bombus appositus</i>	Hadley et al. (1981)
			<i>Bombus occidentalis</i>	Hadley et al. (1981)
			<i>Bombus lapidarius</i>	Tengo et al. (1991)
				Oldham et al. (1994)
				Martin et al. (2010)
			<i>Bombus hortorum</i>	Martin et al. (2010)
			<i>Bombus muscorum</i>	Martin et al. (2010)
			<i>Bombus jonellus</i>	Martin et al. (2010)
			<i>Bombus lucorum</i>	Tengo et al. (1991)
				Martin et al. (2010)
			<i>Bombus pascuorum</i>	Oldham et al. (1994)
				Martin et al. (2010)
				Tengo et al. (1991)
			<i>Bombus hypnorum</i>	Tengo et al. (1991)
				Hefetz et al. (1993)
			<i>Bombus cryptarum</i>	Tengo et al. (1991)
			<i>Bombus magnus</i>	Tengo et al. (1991)
			<i>Bombus ruderarius</i>	Tengo et al. (1991)
			<i>Bombus pratorum</i>	Tengo et al. (1991)
				Oldham et al. (1994)
			<i>Bombus vorticosus</i>	Tengo et al. (1991)
			<i>Bombus (Psithyrus) campestris</i>	Martin et al. (2010)
			<i>Bombus (Psithyrus) rupestris</i>	Martin et al. (2010)
			<i>Bombus (Psithyrus) vestalis</i>	Martin et al. (2010)
			<i>Bombus (Psithyrus) sylvestris</i>	Martin et al. (2010)
			<i>Bombus (Psithyrus) bohemicus</i>	Martin et al. (2010)
Bees	Apidae	Tetragonilla	<i>Tetragonilla collina</i>	Leonhardt et al. (2009)
		Tetragonula	<i>Tetragonula sp.</i>	Leonhardt et al. (2009)
		Pariotrigona	<i>Pariotrigona pendleburyi</i>	Leonhardt et al. (2009)
		Lepidotrigona	<i>Lepidotrigona terminata</i>	Leonhardt et al. (2009)
		Nannotrigona	<i>Nannotrigona testaceicornis</i>	Pianaro et al. (2009)
			<i>Nannotrigona perilampoides</i>	Quezada-Euan et al. (2013)
		Melipona	<i>Melipona asilvai</i>	Nascimento and Nascimento (2012)
			<i>Melipona beecheii</i>	Quezada-Euan et al. (2013)
			<i>Melipona bicolor</i>	Abdalla et al. (2003)
			<i>Melipona marginata</i>	Ferreira-Caliman et al. (2010)
			<i>Melipona scutellaris</i>	Kerr et al. (2004)
				Pianaro et al. (2007)
			<i>Melipona rufiventris</i>	Pianaro et al. (2007)
		Scaptotrigona	<i>Scaptotrigona bipunctata</i>	Jungnickel et al. (2004)
			<i>Scaptotrigona postica</i>	Koedam et al. (2011)
			<i>Scaptotrigona pectoralis</i>	Quezada-Euan et al. (2013)
		Frieseomelitta	<i>Frieseomelitta varia</i>	Nunes et al. (2008)
				Nunes et al. (2009b)
			<i>Frieseomelitta nigra</i>	Quezada-Euan et al. (2013)
		Friesella	<i>Friesella schrottkyi</i>	Nunes et al. (2010)
		Lestrimelitta	<i>Lestrimelitta limao</i>	Nunes et al. (2008)
			<i>Lestrimelitta niitkib</i>	Quezada-Euan et al. (2013)
		Schwarziana	<i>Schwarziana quadripunctata</i>	Nunes et al. (2009a)
		Plebeia	<i>Plebeia frontalis</i>	Quezada-Euan et al. (2013)
			<i>Plebeia remota</i>	Francisco et al. (2008)
			<i>Plebeia droryana</i>	Pianaro et al. (2009)
		Xylocopa	<i>Xylocopa sulcatipes</i>	Kronenberg and Hefetz (1984)
			<i>Proxylocopa olivieri</i>	Kronenberg and Hefetz (1984)
	Andrenidae	Manuelia	<i>Manuelia postica</i>	Flores-Prado et al. (2008)
		Calliopsis	<i>Calliopsis sp.</i>	Hefetz et al. (1982)
				Cane (1983)
			<i>Hypomacrotera sp.</i>	Cane (1983)
			<i>Nomadopsis helianthi</i>	Cane (1983)
		Perdita	<i>Perdita albipennis</i>	Cane (1983)
			<i>Perdita coreopsidis</i>	Cane (1983)

Appendix I Table 1 (continued).

Taxonomic group	Family	Genus	Species	References
Bees	Apidae	Bombus	<i>Bombus terrestris</i>	Tengo et al. (1991) Oldham et al. (1994) Amsalem et al. (2009) Martin et al. (2010)
		Perdita	<i>Perdita utahensis</i>	Cane (1983)
			<i>Perdita callicerata</i>	Cane (1983)
			<i>Perdita mentzeliae</i>	Cane (1983)
			<i>Perdita sphaeralceae</i>	Cane (1983)
			<i>Perdita latior</i>	Cane (1983)
		Pseudopanurg	<i>Pseudopanurgus aethiops</i>	Cane (1983)
		Protandrena	<i>Protandrena sp.</i>	Cane (1983)
		Andrena	<i>Andrena accepta</i>	Cane (1983)
			<i>Andrena nigroaenea</i>	Schiestl and Ayasse (2000)
Ants	Formicidae	Dinoponera	<i>Dinoponera quadriceps</i>	Monnin et al. (1998)
		Pachycondyla	<i>Pachycondyla apicalis</i>	Hefetz et al. (2001)
			<i>Pachycondyla goeldi</i>	Denis et al. (2006)
			<i>Pachycondyla inversa</i>	Tentschert et al. (2001)
			<i>Pachycondyla villosa</i>	Lucas et al. (2004) D'Ettore and Heinze (2005)
		Odontomachus	<i>Odontomachus brunneus</i>	Smith et al. (2012)
		Diacamma	<i>Diacamma ceylonese</i>	Cuvillier-Hot et al. (2001)
		Harpegnathos	<i>Harpegnathos saltator</i>	Liebig et al. (2000)
		Platythyrea	<i>Platythyrea punctata</i>	Hartmann et al. (2005)
		Pachycondyla	<i>Pachycondyla verenae</i>	Evison et al. (2012)
		Nothomyrmecia	<i>Nothomyrmecia macrops</i>	Brown et al. (1990)
		Ectatomma	<i>Ectatomma ruidum</i>	Howard et al. (2001)
		Gnamptogenys	<i>Gnamptogenys striatula</i>	Lommelen et al. (2006)
		Linepithema	<i>Linepithema humile</i>	Liang et al. (2001)
		Tapinoma	<i>Tapinoma madeirense</i>	Berville et al. (2013)
			<i>Tapinoma israele</i>	Berville et al. (2013)
			<i>Tapinoma nigerinum</i>	Berville et al. (2013)
			<i>Tapinoma erraticum</i>	Berville et al. (2013)
			<i>Tapinoma simrothi</i>	Berville et al. (2013)
		Acromyrmex	<i>Acromyrmex subterraneanus</i>	Richard et al. (2004)
		Iridomyrmex	<i>Iridomyrmex nitidiceps</i>	Brophy et al. (1983)
			<i>Iridomyrmex purpureus</i>	Brophy et al. (1973) van Wilgenburg et al. (2006)
		Myrmecia	<i>Myrmecia gulosa</i>	Dietemann et al. (2003)
		Atta	<i>Atta columbica</i>	Martin and MacConnell (1970) Errard et al. (2005)
		Wasmannia	<i>Wasmannia auropunctata</i>	Kaib et al. (1993)
		Harpagoxenus	<i>Harpagoxenus sublaevis</i>	Bagnères et al. (1991)
		Manica	<i>Manica rubida</i>	Bagnères and Morgan (1990)
		Myrmica	<i>Myrmica rubra</i>	Lenoir et al. (1997)
			<i>Myrmica incompleta</i>	Lohman et al. (2006)
			<i>Myrmica alaskensis</i>	Lenoir et al. (1997) Lohman et al. (2006)
		Tetramorium	<i>Myrmica sabuleti</i>	Guillem et al. (2012)
			<i>Myrmica scabrinodis</i>	Guillem et al. (2012)
			<i>Tetramorium bicarinatum</i>	Astruc et al. (2001)
			<i>Myrmecaria eumenoides</i>	Kaib et al. (2000)
		Myrmecaria		Obin (1986)
		Solenopsis	<i>Solenopsis invicta</i>	VanderMeer et al. (1989)
			<i>Solenopsis saevissima A</i> <i>Solenopsis saevissima B</i>	Fox et al. (2012) Fox et al. (2012)
		Aphaenogaster	<i>Aphaenogaster senilis</i>	Lenoir et al. (2001)
		Messor	<i>Messor barbarus</i>	Provost et al. (1994)
		Pogonomyrmex	<i>Pogonomyrmex barbatus</i>	Wagner et al. (1998) Nelson et al. (2001)
		Leptothorax	<i>Leptothorax kutteri</i>	Franks et al. (1990)
			<i>Leptothorax acervorum</i>	Kaib et al. (1993)
			<i>Leptothorax gredleri</i> <i>Leptothorax muscorum</i>	Tentschert et al. (2002) Tentschert et al. (2002) Kaib et al. (1993)

Appendix I Table 1 (continued).

Taxonomic group	Family	Genus	Species	References
Ants	Formicidae	Leptothorax	<i>Leptothorax nylanderi</i>	Trabalon et al. (2000)
		Formicoxenus	<i>Formicoxenus quebecensis</i>	Lenoir et al. (1997)
			<i>Formicoxenus nitidulus</i>	Martin et al. (2007)
			<i>Formicoxenus provancheri</i>	Lenoir et al. (1997)
		Crematogaster	<i>Crematogaster levior A</i>	Emery and Tsutsui (2013)
			<i>Crematogaster levior B</i>	Emery and Tsutsui (2013)
		Lasius	<i>Lasius fuliginosus</i>	Akino (2002)
			<i>Lasius sakagamii</i>	Akino and Yamaoka (1998)
			<i>Lasius niger</i>	Akino and Yamaoka (1998)
		Camponotus	<i>Camponotus aethiops</i>	Boulay et al. (2000)
				Katzav-Godansky (2004)
			<i>Camponotus fellah</i>	Endler et al. (2004)
			<i>Camponotus floridianus</i>	Meskali et al. (1995)
			<i>Camponotus vagus</i>	Akino (2002)
			<i>Camponotus femoratus</i>	Emery and Tsutsui (2013)
			<i>Rossomyrmex minuchae</i>	Errard et al. (2006)
			<i>Proformica longiseta</i>	Errard et al. (2006)
			<i>Formica selysi</i>	Bagneres et al. (1991)
			<i>Formica pratensis</i>	Martin et al. (2008)
			<i>Formica truncorum</i>	Akino (2006)
				Martin et al. (2008)
			<i>Formica occulta</i>	Johnson et al. (2001)
			<i>Formica rufibarbis</i>	Bonavita-Cougordon (1997, 2004)
			<i>Formica cunicularia</i>	Bonavita-Cougordon (1997)
			<i>Formica montana</i>	Henderson et al. (1990)
			<i>Formica fusca</i>	Martin et al. (2008)
				Hannonen et al. (2002)
			<i>Formica gnava</i>	Johnson et al. (2001)
			<i>Formica aquilonia</i>	Martin et al. (2007)
			<i>Formica lugubris</i>	Martin et al. (2007)
			<i>Formica japonica</i>	Akino et al. (2004)
			<i>Formica polycтена</i>	Martin et al. (2007)
			<i>Formica rufa</i>	Martin et al. (2007)
			<i>Formica glacialis</i>	Lohman et al. (2006)
			<i>Formica exsecta</i>	Martin et al. (2007)
			<i>Formica sanguinea</i>	Martin et al. (2007)
			<i>Formica uralensis</i>	Martin et al. (2007)
			<i>Formica cinerea</i>	Martin et al. (2007)
			<i>Formica argentea</i>	Krasnec and Breed (2013)
			<i>Formica yessensis</i>	Kidokoro-Kobayashi et al. (2012)
			<i>Formica lemani</i>	Martin et al. (2008)
			<i>Formica candida</i>	Martin et al. (2008)
		Polyergus	<i>Polyergus breviceps</i>	Johnson et al. (2001)
			<i>Polyergus rufescens</i>	Bonavita-Cougordon (1997, 2004)
		Cataglyphis	<i>Cataglyphis bombycinus</i>	Dahbi et al. (1996)
			<i>Cataglyphis ibericus</i>	Dahbi et al. (1996, 2008)
				Dabhi and Lenoir (1998)
			<i>Cataglyphis cursor</i>	Nowbahari et al. (1990)
			<i>Cataglyphis floricola</i>	Dahbi et al. (1996)
			<i>Cataglyphis hispanicus</i>	Dahbi et al. (1996)
			<i>Cataglyphis humeya</i>	Dahbi et al. (1996)
			<i>Cataglyphis rosenhaueri</i>	Dahbi et al. (1996)
			<i>Cataglyphis iberica</i>	Dahbi et al. (2008)
			<i>Cataglyphis niger</i>	Lahav et al. (2001)
			<i>Cataglyphis velox</i>	Dahbi et al. (1996)
			<i>Mutilla europaea</i>	Uboni et al. (2012)
			<i>Cephalonomia hyalinipennis</i>	Howard and Perez-Lachaud (2002)
Aculeate Wasps	Mutillidae	Cataglyphis		Howard and Baker (2003b)
Parasitoid	Bethylidae	Mutilla		
		Cephalonomia		
			<i>Cephalonomia tarsalis</i>	

Taxonomic group	Family	Genus	Species	References
Parasitoid	Bethylidae	Cephalonomia	<i>Cephalonomia waterstoni</i>	Howard and Baker (2003b)
		Goniozus	<i>Goniozus nephantidis</i>	Khidr et al. (2013)
			<i>Goniozus legneri</i>	Khidr et al. (2013)
Aculeate Wasps	Vespidae	Liostenogaster	<i>Liostenogaster flavolineata</i>	Bernier et al. (1998)
				Cervo et al. (2002)
			<i>Liostenogaster tutua</i>	Sledge et al. (2000)
			<i>Liostenogaster vechti</i>	Turillazzi et al. (2004)
		Eustenogaster	<i>Eustenogaster fraterna</i>	Sledge et al. (2000)
				Turillazzi et al. (2004)
			<i>Eustenogaster hauxwellii</i>	Sledge et al. (2000)
		Parischnogaster	<i>Parischnogaster jacobsoni</i>	Bernier et al. (1998)
				Sledge et al. (2000)
			<i>Parischnogaster striatula</i>	Zanetti et al. (2001)
		Ropalidia	<i>Ropalidia opifex</i>	Dapporto et al. (2006)
			<i>Ropalidia marginata</i>	Bhadra et al. 2010
		Parachartergus	<i>Parachartergus aztecus</i>	Espelie and Hermann (1988)
		Vespa	<i>Vespa dybowskii</i>	Martin et al. (2008)
			<i>Vespa simillima</i>	Martin et al. (2008)
			<i>Vespa crabro</i>	Butts et al. (1991)
				Butts et al. (1995)
				Ruther et al. (1998)
				Ruther et al. (2002)
				Spiewok et al. (2006)
				Martin et al. (2008)
			<i>Vespa analis</i>	Martin et al. (2008)
			<i>Vespa mandarinia</i>	Martin et al. (2008)
			<i>Vespa ducalis</i>	Martin et al. (2008)
			<i>Vespa affinis</i>	Martin et al. (2008)
		Dolichovespula	<i>Dolichovespula maculata</i>	Butts et al. (1991)
			<i>Dolichovespula saxonica</i>	Bonckaert et al. (2011)
		Vespula	<i>Vespula squamosa</i>	Butts et al. (1991)
			<i>Vespula maculifrons</i>	Butts et al. (1991)
		Polistes	<i>Polistes fuscatus</i>	Espelie et al. (1994)
				Panek et al. (2001)
			<i>Polistes annularis</i>	Espelie and Hermann (1990)
			<i>Polistes metricus</i>	Layton et al. (1994)
				Espelie et al. (1990b)
			<i>Polistes exclamans</i>	Singer (1992)
			<i>Polistes dominulus</i>	Bonavita-Cougourdan et al. (1991)
				Dani et al. (1996)
				Sledge et al. (2001)
				Dapporto et al. (2004)
				Lorenzi et al. (2004)
				Sledge et al. (2004)
			<i>Polistes biglumis</i>	Lorenzi et al. (1997)
			<i>Polistes satan</i>	Tannure-Nascimento et al. (2007)
			<i>Polistes semenowi</i>	Lorenzi et al. (2004)
			<i>Polistes atrimandibularis</i>	Uboni et al. (2012)
	Chrysididae	Hedychrum	<i>Hedychrum rutilans</i>	Strohm et al. (2008)
				Kroiss et al. (2009)
			<i>Hedychrum nobile</i>	Strohm et al. (2008)