

LEGENDS TO THE TABLE

- * Pheromone component, chemically identified in the pheromone gland.
- () Optimized blend for attraction in a field or a flight tunnel.
- [] The ratio identified in a pheromone extract.
- E Pheromone candidate estimated by the EAG study.
- N No field attraction data, or no field attractancy.

The chemical formulae are symbolized by

- 1) the number before the hyphen giving the position of double bond [$Z = (Z)$ -configuration, $E = (E)$ -configuration, $\Delta =$ terminal] or the following functional groups in the chain,
≡ = triple bond
epo = *cis*-epoxy ring
Me = branched methyl group
- 2) the number before the colon giving the carbon atoms in the straight chain,
- 3) the words after the colon giving the functional groups as follows,
H = hydrocarbon
OH = primary alcohol
OFo = formate of alcohol
OAc = acetate of alcohol
OPr = propionate of alcohol
OBu = butyrate of alcohol
OisoBu = isobutyrate of alcohol
OisoVa = isovalerate (3-methylbutanoate) of alcohol
ONO₂ = nitrate
Ald = aldehyde
one = ketone
CN = nitrile
Ate = ester of a long chain acid

(In the case of secondary alcohols and ketones, the position of the functional group is indicated by inserting the number before its symbol, such as 2-one for a carbonyl group at the 2-position. Terminal functional groups are indicated by the symbols without the number.)

Distribution information in Japan.

- A This species is distributed in Japan, and Japanese common name is shown in < >.
- B Sub-species is distributed in Japan.
- C Species in the same genus is distributed in Japan.
- D Species in this genus is not distributed in Japan.

Number of Species Counted in the List of Lepidopterous Sex Pheromones and Attractants
Revised on 2024. 4. 6

(Pheromones produced by male moths are not counted.)
 Number in parenthesis indicates the species distributed in Japan.

[Superfamily] Family Subfamily		Number of species			
		Sex pheromone		Sex attractant	
[Eriocranioidea]	スイコバネガ上科				
Eriocraniidae	スイコバネガ科	3	(1)	1	(1)
[Nepticuloidea]	モグリチビ上科				
Nepticulidae	モグリチビガ科	1	(0)	2	(0)
[Incurvarioidea]	マガリガ上科				
Heliozelidae	ツヤコガ科	3	(0)	1	(0)
Prodoxidae	ホソヒゲマガリガ科	1	(0)	0	(0)
[Tischerioidea]	ムモンハモグリガ上科				
Tischeriidae	ムモンハモグリガ科	1	(0)	0	(0)
[Tineoidea]	ヒロズコガ上科				
Tineidae	ヒロズコガ科	4	(2)	22	(1)
Psychidae	ミノガ科	5	(1)	1	(0)
[Gracillarioidea]	ホソガ上科				
Bucculatricidae	チビガ科	1	(0)	0	(0)
Gracillariidae	ホソガ科	18	(5)	31	(8)
[Yponomeutoidea]	スガ上科				
Yponomeutidae	スガ科	14	(4)	26	(11)
Ypsolophidae	クチブサガ科	0	(0)	5	(1)
Plutellidae	コナガ科	1	(1)	1	(1)
Acrolepiidae	アトヒゲコガ科	3	(2)	3	(3)
Glyphipterigidae	ホソハマキモドキガ科	0	(0)	3	(2)
Lyonetiidae	ハモグリガ科	5	(1)	0	(0)
[Gelechioidea]	キバガ上科				
Ethmiidae	スヒロキバガ科	0	(0)	2	(0)
Elachistidae	クサモグリガ科	2	(0)	1	(0)
Oecophoridae	マルハキバガ科	3	(0)	20	(6)
Stathmopodidae	ニセマイコガ科	2	(2)	1	(1)
Lecithoceridae	ヒゲナガキバガ科	0	(0)	2	(2)
Batrachedridae	ホソキバガ科	1	(0)	1	(1)
Coleophoridae	ツツミノガ科	1	(0)	45	(3)
Momphidae	アカバナキバガ科	0	(0)	1	(0)
Cosmopterigidae	カザリバガ科	1	(1)	13	(11)
Gelechiidae	キバガ科	15	(5)	56	(8)
[Zygaenoidea]	マダラガ上科				

Limacodidae	イラガ科	7	(2)	3	(2)
Himantopteridae	リボンマダラガ科	0	(0)	2	(0)
Zygaenidae	マダラガ科	3	(1)	46	(2)
[Sesioidea]	スカシバガ上科				
Sesiidae	スカシバガ科	28	(8)	86	(4)
Brachodidae	ヒロハマキモドキガ科	0	(0)	1	(0)
[Cossoidea]	ボクトウガ上科				
Cossidae	ボクトウガ科	11	(1)	4	(0)
[Tortricoidea]	ハマキガ上科				
Tortricidae	ハマキガ科				
Tortricinae	ハマキガ亜科	114	(10)	132	(46)
Olethreutinae	ノコメハマキガ亜科	64	(22)	230	(52)
Chlidanotinae	マダラハマキガ亜科	0	(0)	3	(0)
[Choreutoidea]	ハマキモドキガ上科				
Choreutidae	ハマキモドキガ科	1	(1)	3	(3)
[Schreckensteinoidea]	ホソマイコガ上科				
Schreckensteiniidae	ホソマイコガ科	0	(0)	1	(1)
[Pterophoroidea]	トリバガ上科				
Pterophoridae	トリバガ科	2	(1)	22	(8)
[Copromorphoidea]	マルバシンクイガ上科				
Carposinidae	シンクイガ科	3	(1)	4	(4)
[Thyridoidea]	マドガ上科				
Thyrididae	マドガ科	0	(0)	2	(1)
[Pyraloidea]	メイガ上科				
Pyralidae	メイガ科				
Galleriinae	ツヅリガ亜科	2	(0)	0	(0)
Pyralinae	シマメイガ亜科	1	(1)	3	(2)
Epipaschiinae	フトメイガ亜科	1	(0)	0	(0)
Phycitinae	マダラメイガ亜科	37	(11)	11	(1)
Crambidae	ツトガ科				
Schoenobiinae	オオメイガ亜科	3	(3)	0	(0)
Scopariinae	ヤマメイガ亜科	0	(0)	4	(1)
Crambinae	ツトガ亜科	19	(5)	8	(3)
Cybalomiinae	モンメイガ亜科	1	(1)	0	(0)
Acentropinae	ミズメイガ亜科	0	(0)	2	(1)
Glaphyriinae	ニセノメイガ亜科	2	(2)	4	(2)
Spilomelinae	ヒゲナガノメイガ亜科	26	(17)	7	(4)
Pyraustinae	ノメイガ亜科	12	(8)	20	(8)
[Lasiocampoidea]	カレハガ上科				
Lasiocampidae	カレハガ科	13	(3)	0	(0)
[Drepanoidea]	カギバガ上科				
Drepanidae	カギバガ科	0	(0)	6	(3)
[Geometroidea]	シャクガ上科				

Geometridae	シヤクガ科	55	(14)	82	(33)
Uraniidae	ツバメガ科	0	(0)	2	(2)
[Bombycoidea] カイコガ上科					
Endromidae		1	(0)	0	(0)
Bombycidae	カイコガ科	4	(2)	0	(0)
Saturniidae	ヤママユガ科	21	(4)	1	(0)
Sphingidae	スズメガ科	11	(7)	11	(3)
[Noctuoidea] ヤガ上科					
Notodontidae	シヤチホコガ科	10	(0)	1	(0)
Noctuidae	ヤガ科				
Dilobinae		0	(0)	1	(0)
Acronictinae	ケンモンヤガ亜科	0	(0)	5	(0)
Heliolithinae	タバコガ亜科	11	(3)	7	(2)
Noctuinae	モンヤガ亜科	18	(5)	83	(7)
Hadeninae	ヨトウガ亜科	41	(9)	146	(37)
Cuculliinae	セダカモクメ亜科	4	(0)	44	(11)
Amphipyrynae	カラスヨトウガ亜科	6	(6)	24	(5)
Sarothripinae	キノカワガ亜科	0	(0)	1	(1)
Chloephorinae	リングガ亜科	2	(1)	1	(0)
Acontiinae	コヤガ亜科	1	(1)	9	(5)
Plusinae	キンウワバ亜科	24	(16)	26	(5)
Metoponiinae		1	(0)	0	(0)
Nolidae	コブガ科	1	(0)	1	(1)
Erebidae	トモエガ科				
Calpinae	エグリバ亜科	1	(1)	0	(0)
Catocalinae	シタバガ亜科	9	(1)	18	(4)
Ophiderinae	クチバ亜科	9	(3)	9	(6)
Hypeninae	アツバ亜科	0	(0)	4	(0)
Herminiinae	クルマアツバ亜科	1	(0)	9	(3)
Lymantriinae	ドクガ亜科	29	(16)	8	(1)
Arctiinae	ヒトリガ亜科				
Lithosiini	コケガ族	5	(4)	1	(1)
Synthomini	カノコガ族	3	(1)	2	(0)
Arctiini	ヒトリガ族	26	(4)	9	(0)
Total		726	(217)	1347	(334)

LIST OF SEX PHEROMONES AND ATTRACTANTS

[Super-family]

(Family; Sub-family)

Species Common name <Japanese common name>	Sex pheromone and sex attractant	Reference	Distribution in Japan
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(1) [Micropterigoidea] コバネガ上科

no species

(2) [Eriocranioidea] スイコバネガ上科
(Eriocraniidae) スイコバネガ科

<i>Eriocrania cicatricella</i> Zett. phe.	*Z4-7:2-OH (2R)-isomer + *7:2-OH (2R)-isomer (20:3) + another component	Zhu, 1995(a)	C
<i>Eriocrania sangii</i> Wood phe.	*Z6-9:2-OH (2S)-isomer + other components	Kozlov, 1996 Lassance, 2019	C
<i>Eriocrania semipurpurella</i> Stephens <oo-suikobane> phe.	*Z6-9:2-OH (2R)-isomer + other components	Kozlov, 1996 Lassance, 2019	A
<i>Eriocrania sparrmannella</i> Bosc <kinmadara-suikobane> att.	Z4-7:2-OH (2S)-isomer + 7:2-OH (2S)-isomer (20:3)	Zhu, 1995(a)	A

(3) [Hepialoidea] コウモリガ上科

no species

(4) [Nepticuloidea] モグリチビガ上科
(Nepticulidae) モグリチビガ科

<i>Stigmella crataegella</i> Klimesch att.	Z6,8-9:2-OH (2 <i>S</i>)-isomer + E6,8-9:2-OH (2 <i>S</i>)-isomer (1:1)	Tóth, 1995	C
<i>Stigmella malella</i> Stainton Klimesch banded apple pigmy phe.	*Z6,8-9:2-OH (2 <i>S</i>)-isomer + *E6,8-9:2-OH (2 <i>S</i>)-isomer (10:3)	Tóth, 1995	C
<i>Trifurcula melanoptera</i> att.	Z6,8-9:2-OH (2 <i>R</i>)-isomer + E6,8-9:2-OH (2 <i>R</i>)-isomer (1:1)	Tóth, 1995	C

(5) [Incurvarioidea] マガリガ上科
(Heliozelidae) ツヤコガ科

<i>Antispila oinophylla</i> van Nieukerken & Wagner phe.	*Z7-14:Ald + *Z5-14:Ald (20:3)	Wang, 2019	C
<i>Antispila treitschkiella</i> Fr. att.	Z7-14:Ald	Tóth, 1992(d)	C
<i>Holocacista capensis</i> van Nieukerken & Greertsema phe.	*Z7-14:Ald + *Z5-14:Ald (3:1) + another component	Wang, 2015(b)	D
<i>Holocacista rivillei</i> Stainton phe.	*Z5-12:Ald + *Z7-14:Ald (50:3)	Wang, 2019	D

(Prodoxidae) ホソヒゲマガリガ科

<i>Lampronia capitella</i> Litner phe.	Z11-14:OAc	Löfstedt, in Arn, 1997	C
	*Z9,Z11-14:OH + *Z9,Z11-14:OAc + *Z9,Z11-14:Ald (100:26:13)	Löfstedt, 2004	

(6) [Tischerioidea] ムモンモグリガ上科
(Tischeriidae) ムモンモグリガ科

<i>Tischeria ekebladella</i> Bjerkander oak leafminer phe.	*Z3,Z6,Z9,Z19-23:H + another component	Molnár, 2012	C
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(7) [Tineoidea] ヒロズコガ上科
(Tineidae) ヒロズコガ科

<i>Archimeessia</i> sp. att.	E3,Z13-18:OAc + E2,Z13-18:OH (1:1)	Bûda, 1993	D
<i>Celestica angustipennis</i> att.	E3,Z13-18:OAc + E3,Z13-18:OH (1:1)	Bûda, 1993	D
<i>Ereunetis</i> (= <i>Decadarchis</i>) <i>simulans</i> Butler att.	Z3,Z13-18:OAc	Brennan, 1977	D
<i>Infurcitinea albicomella</i> HS. att.	Z11-16:OH + Z11-16:Ald (1:1)	Tóth, 1992(d)	D
<i>Infurcitinea finalis</i> Gozm. att.	Z11-16:OH	Tóth, 1992(d)	D
<i>Kermania pistaciella</i> Amsel Klimesch pistachio twig borer Phe.	*Z12-17:2-OAc (2 <i>S</i>)-isomer + other components	Gries, 2006(b)	D
<i>Matratinea rufulicaput</i> att.	Z3,Z13-18:OH	Sziráki in Arn, 1992	D
<i>Monopsis monachella</i> Hübner att.	E2,Z13-18:OH + Z3,Z13-18:OH (9:1)	Karalius, 2001	C
<i>Monopsis palidella</i> Zagulajev att.	E2,Z13-18:Ald	Karalius, 2005	C
<i>Monopsis rusticella</i> Hübner att.	E2,Z13-18:OH + Z3,Z13-18:Ald (10:1–1:1)	Szöcs, 1989	C
<i>Nemapogon albipunctellus</i> Haworth att.	E3,Z13-18:OAc + Z3,Z13-18:OAc	Voerman, 1983	C
<i>Nemapogon apicisignalellus</i> Dietz att.	Z9-14:OAc	Roelofs, 1971(a)	C

<i>Nemapogon clematella</i> F. att.	Z3,Z13-18:OAc		Fassotte in Arn, 1986(a) Bûda, 1993	C
<i>Nemapogon falstriellus</i> Bang-Haas. att.	Z3,Z13-18:OAc + Z3,Z13-18:Ald (10:1–1:1)		Szöcs, 1989	C
<i>Nemapogon flavifrons</i> Pt. att.	Z3,Z13-18:OAc + Z3,Z13-18:OH (9:1)		Bûda, 1993	C
<i>Nemapogon granellus</i> L. European grain moth <kokuga> phe.	*Z3,Z13-18:OAc	N	Ohshima, 1993	A
<i>Nemapogon heydeni</i> Peterson att.	E3,Z13-18:OAc + Z3,Z13-18:OAc (19:1)		Voerman, 1983	C
<i>Nemapogon personellus</i> P. & M. att.	Z3,Z13-18:OH		Szöcs, 1989	C
<i>Nemapogon variatella</i> Clemens phe.	*Z3,Z13-18:OH	N	Radžiutė, 2023	C
<i>Nemaxera betulinella</i> F. att.	E2,Z13-18:OAc + E2,Z13-18:OH (9:1)		Bûda, 1993 Karalius, 2001	D
<i>Opogona sacchari</i> Bojer att.	Z11-16:Ald	E	Rotundo, 1982	C
<i>Opogona</i> sp. att.	Z8-12:OAc + E8-12:OAc (99:1)		Hall, 1984	
<i>Tinea nonimella</i> Zagulajev att.	E2,Z13-18:OH + E3,Z13-18:OH (9:1)		Karalius, 2001	C
<i>Tinea pellionella</i> L. (= <i>translucens</i> Meyrick) case-making cloth moth <iga> att.	E2-18:Ald		Yamaoka, 1990	A
<i>Tineola bisselliella</i> Hummel webbing clothes moth <koiga>	* E2,Z13-18:Ald + *E2-18:Ald	N	Yamaoka, 1985	A

phe.	+ *E2,Z13-18:OH (2:1)	Takács, 2001	
<i>Triaxomera fulvimitrella</i> Sod. att.	Z3,Z13-18:OAc	Mäeorg in Arn, 1992 Bûda, 1993	C
	+ Z3,Z13-18:OH (9:1) or + E3,Z13-18:OH (5:5)	Karalius, 2005	

(Psychidae) ミノガ科

<i>Clania</i> (= <i>Eumeta</i>) <i>variegata</i> Snell. Paulownia bagworm <oo-minoga> phe.	* (S)-1-ethyl-2-methylpropyl Me3,Me13-15:Ate (3R,13R,1'S)-isomer	Gries, 2006(a) Mori, 2010	A
<i>Diplodoma laichartingella</i> Goeze att.	E11-14:Ald + Z11-14:Ald (20:1)	Ostrauskas, 2010(a)	C
<i>Megalophanes viciella</i> Denis & Schiffermüller phe.	* isopropyl 8:Ate	Subchev, 2000(a)	D
<i>Oiketicus kirbyi</i> Guilding bagworm phe.	* (R)-1-methylbutyl 10:Ate + other components	Rhains, 1994	D
<i>Thyridopteryx ephemeraeformis</i> Haworth bagworm moth phe.	* (R)-1-methylbutyl 10:Ate (R)-1-methylpentyl 10:Ate	Leonhardt, 1983 Warthen, 1996	D
<i>Whittleia retiella</i> Newman phe.	* (S)-sec-butyl Z5-10:Ate + * isopropyl Z5-10:Ate (1:2)	Rahmani, 2020	D

(8) [Gracillarioidea] ホソガ上科
(Bucculatrigenidae) チビガ科

<i>Bucculatrix thurberiella</i> Busck. cotton leafperforator phe.	* Z9-14:ONO₂ + * Z8-13:ONO₂ (20:1)	Hall, 1992	C
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(Gracillariidae) ホソガ科

a: Gracillariinae ホソガ亜科, b: Lithocolletinae キンモンホソガ亜科,
c: Phyllocnistinae コハモグリガ亜科, d: Oecophyllembiinae オビギンホソガ亜科

<i>Acrocercops</i> ^a sp. 1 att.	E8,E10-14:Ald	Ando, 1987	A
<i>Acrocercops</i> sp. 2 att.	E8,E10-14:Ald	Ando, 1987	A
<i>Aspilapteryx</i> ^a <i>tringipennella</i> Zeller att.	Z11-14:OAc + E11-14:OAc (1:1)	Heikinheimo, 1978	D
<i>Caloptilia</i> ^a <i>fraxinella</i> Fly att.	Z11-16:Ald + Z11-16:OH (10:1)	Lemmen, 2009	C
<i>Caloptilia porphyretica</i> Braun blueberry leafminer phe.	*E11-16:Ald	Zhang, 2004	C
<i>Caloptilia theivora</i> Walsingham tea leafroller <chanohamaki-hosoga> phe.	E11-16:Ald *E11-16:Ald + Z11-16:Ald (9:1-7:3)	Ando, 1981 Ando, 1985(a)	A
<i>Calybites</i> ^a <i>auroguttella</i> Stephens att.	Z11-14:OAc + Z9-14:OAc + Z11-14:OH (18:1:1)	Hrdý, 1989	C
<i>Cameraria</i> ^b <i>ohridella</i> Deschka et Dimic horse-chestnut leafminer phe.	*E8,Z10-14:Ald	Svatos, 1999 Francke, 2002 Kalinová, 2003	C
<i>Conopomorpha</i> ^a <i>cramerella</i> Snellen cocoa pod borer moth phe.	*E4,E6,Z10-16:OAc + *E4,Z6,Z10-16:OAc + *E4,E6,Z10-16:OH + *E4,Z6,Z10-16:OH (30:20:3:2)	Beevor, 1986	D
	(55:40:6:4)	Niogret, 2022	
<i>Conopomorpha sinensis</i> Bradley litchi fruit borer att.	E4,E6,Z10-16:OAc + E4,Z6,Z10-16:OAc (3:2)	Hwang, 1996(b)	D

	+ E4,E6,Z10-16:OH + E4,Z6,Z10-16:OH	Hung, 2006	
<i>Gracillaria</i> ^a <i>elongella</i> att.	Z10,E12-16:Ald	Priesner in Arn, 1986(a)	C
<i>Gracillaria syringella</i> F. <ibota-hosoga> att.	E11-14:Ald + Z11-14:Ald (9:1)	Ando, 1981	A
	E11-14:Ald	Knauf in Arn, 1986(a) Booij, 1985 Frerot, 1985	
<i>Marmara</i> ^a <i>gulosa</i> Guillen & Davis citrus peelminer phe.	*E8,E10-14:OFo + other components	McElfresh, 2009	D
<i>Phyllocnistis</i> ^c <i>citrella</i> Stainton citrus leafminer moth <mikan-kohamoguri> phe. Japanese strain	Z7,Z11-16:Ald	Ando, 1985(b)	A
	*Z7,Z11-16:Ald	Mafi, 2005	
Brazil & USA strain	*Z7,Z11,E13-16:Ald + *Z7,Z11-16:Ald (3:1) + another component	Leal, 2006; Moreira, 2006 Lapointe, 2006	
Vietnam strain	Z7,Z11,E13-16:Ald + Z7,Z11-16:Ald (3:1)	Vang, 2008	
<i>Phyllocnistis insignis</i> Frey & Boll att.	Z7,Z11,E13-16:Ald + Z7,Z11-16:Ald (3:1)	Keathley, 2013 Kawahara, 2013	C
<i>Phyllocnistis vitegenella</i> Clemens att.	Z7,Z11,E13-16:Ald + Z7,Z11-16:Ald (3:1)	Kawahara, 2013	C
<i>Phyllocnistis wampella</i> Liu & Zeng. att.	Z7,Z11-16:Ald	Du, 1989	C
<i>Phyllocnistis</i> sp. att.	Z7,E11-16:Ald	Ando, 1985(b)	A

<i>Phyllonorycter</i> ^b <i>blancardella</i> F. spotted tentiform leafminer phe.	E10-12:OAc	Roelofs, 1977(b) Voerman, 1978(a) El-Sayed, 2004(b)	C
	E4,E10-12:OAc	Gries, 1993(d)	
	*E10-12:OAc + other components	Mozūraitis, 1999(b) El-Sayed, 2005(b)	
<i>Phyllonorycter crataegella</i> Clemens apple blotch leafminer phe.	*Z10,Z12-14:OAc + *E10,E12-14:OAc (10:1)	Ferrao, 1998	C
<i>Phyllonorycter coryli</i> att.	E9-14:OAc + Z10-14:OAc (10:1)	Mozūraitis, 1998	C
<i>Phyllonorycter</i> (= <i>Lithocolletis</i>) <i>corylifoliella</i> Hübner att.	E4,Z7-13:OAc	Voerman, 1978(a)	C
	E4-12:OAc	Voerman, 1991	
<i>Phyllonorycter cydoniella</i> Den. & Schiff. att.	E10-12:OAc	Mozūraitis, 1998	C
<i>Phyllonorycter dubitella</i> att.	E9-14:OAc + Z10-14:OAc (10:1)	Mozūraitis, 1998	C
<i>Phyllonorycter elmaella</i> Doganlar & Mutuura att.	E10-12:OAc	Shearer, 1994	C
<i>Phyllonorycter emberizaepenella</i> Z. phe.	*E8,E10-14:OAc + *E8,E10-14:OH (minor) N	Mozūraitis, 2002	C
<i>Phyllonorycter harrisella</i> att.	E9-14:OAc + Z10-14:OAc (10:1)	Mozūraitis, 1998	C
<i>Phyllonorycter heegerella</i> Z. phe.	*Z8-14:OAc + *Z8-14:OH + *14:OAc (10:1:2)	Mozūraitis, 2000	C
<i>Phyllonorycter insignitella</i> Zeller phe.	*Z8,E10-14:OAc + *Z8,E10-14:OH + *E8,Z10-14:OAc (176:24:0.2)	Mozūraitis, 2008	C
<i>Phyllonorycter junoniella</i> Z.	Z10-12:OAc	Mozūraitis, 1998	C

<i>Phyllonorycter kleemanella</i> F. att.	Z10-14:OAc + E11-14:OAc (1:0–1:3)	Booij, 1984(a)	C
<i>Phyllonorycter mespilellus</i> Hübner tentiform leafminer phe.	E10-12:OAc *E4,E10-12:OAc + another component	Hrdý, 1989 Gries, 1993	C
<i>Phyllonorycter nigrescentella</i> Logan phe.	*Z8,E10-14:OAc + other components	Mozūraitis, 2008	C
<i>Phyllonorycter orientalis</i> Kumata <kaedekinmon-hosoga> att.	Z10-14:OAc	Ando, 1977	A
<i>Phyllonorycter oxyacanthae</i> Frey. att.	E10-12:OAc + E10-12:OH (10:1)	Mozūraitis, 1998	C
<i>Phyllonorycter platani</i> Staudinger phe.	*Z10-14:OAc	Subchev, 2003	C
<i>Phyllonorycter pulchra</i> Kumata <nakagurokinmon-hosoga> att.	E8,E10-14:OAc	Ando, 1987	A
<i>Phyllonorycter pygmaea</i> Kumata <himekinmon-hosoga> att.	Z8-14:OH	Ando, 1977	A
<i>Phyllonorycter pyrifoliella</i> att.	E10-12:OAc	Laanmaa in Arn, 1992	C
<i>Phyllonorycter ringoniella</i> Matsumura apple leafminer moth <kinmon-hosoga> phe.	*Z10-14:OAc + *E4,Z10-14:OAc	Ujiye, 1986 Sugie, 1986	A
	Japan (10:1)		
	Korea (2:3)	Boo, 1998(a)	
	China (0.5:10–0:10)	Du, 2013	
	epoxyfarnesol	Nagaki, 2009	

<i>Phyllonorycter saportella</i> Dup. att.	E8-14:OAc + E10-14:OAc (1:1)	Voerman, 1988	C
<i>Phyllonorycter sorbi</i> Frey. att.	E10-12:OH	Mozūraitis, 1998	C
<i>Phyllonorycter sylvella</i> Hübner (= <i>acerifoliella</i> Z.) phe.	*Z10-14:OAc + *Z8-14:OAc + *E10-14:OAc (46:3:1) N (10:1:0)	Borg-Karlson, 1996 Mozūraitis, 2000	C
	E9-14:OAc + Z10-14:OAc (10:1)	Mozūraitis, 1998	
<i>Phyllonorycter ulmifoliella</i> Hübner <tsumasujikinmon-hosoga> phe.	Z10-14:OAc *Z10-14:OAc	Voerman, 1988 Mozūraitis, 1997	A
<i>Phyllonorycter watanabei</i> Kumata <watanabekinmon-hosoga> att.	Z10-13:OAc	Ando, 1977	A
<i>Phyllonorycter</i> sp. 1 att.	E8,E10-14:OAc or E8,E10-14:Ald	Reed, 1985(b)	
<i>Phyllonorycter</i> sp. 2 att.	E10-12:OAc	Reed, 1985(b)	
<i>Phyllonorycter</i> sp. 3 att.	E8-14:OAc	Priesner in Arn, 1986(a)	
<i>Spulerina</i> ^a <i>astaurotata</i> Meyrick pear barkminer moth <nashikawa-hosoga> phe.	*Z9,Z11-14:OH + *Z9,Z11-14:OAc (7:3) + another component	Do, 2011	A

(9) [Yponomeutoidea] スガ上科
(Yponomeutidae) スガ科
a: Yponomeutinae スガ亜科, b: Praydinae ニセスガ亜科, c: Argyresthiinae メムシガ亜科

<i>Argyresthia</i> ^c <i>albistria</i> Haworth att.	Z7-12:OAc + Z7-12:OH	Tóth, 1992(d)	C
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	+ Z9-14:OAc (20:1:1)		
<i>Argyresthia beta</i> Friese & Moriuti <mochitsutsuji-memushiga> att.	Z11-14:OH Z7,E11-16:OH	Ando, 1981 Ando, 1985(b)	A
<i>Argyresthia chamaecypariae</i> Moriuti <hinoki-hamoguriga> att.	E11-16:Ald	Ando, 1981	A
<i>Argyresthia conjugella</i> Zeller apple fruitle moth <ringohime-shinkui> phe.	Z11-16:OAc + Z13-18:OAc (3:1-1:3) *Z11-16:OAc + other components	Booij, 1984(a) Jaastad, 2002	A
<i>Argyresthia cornella</i> F. att.	Z11-16:OAc or + Z13-18:OAc (1:1)	Booij, 1984(a)	C
<i>Argyresthia fundella</i> Fischer von Röslerstamm att.	Z11-16:Ald	Booij, 1984(a)	C
<i>Argyresthia goedartella</i> L. att.	Z11-16:OAc + Z11-16:Ald (3:1)	Booij, 1984(a)	C
<i>Argyresthia mendica</i> att.	Z11-16:Ald	Subchev in Arn, 1992	C
<i>Argyresthia nemorivaga</i> Moriuti <todomatsu-memushiga> att.	Z11-16:Ald	Ando, 1981	A
<i>Argyresthia pruniella</i> Clerck att.	Z8-12:OAc or E8,E10-12:OH Z11-16:Ald	Alford, 1978 Booij, 1984(a)	C
<i>Argyresthia retinella</i> Zeller <amimeshiro-memushiga> att.	Z11-16:Ald	Tóth, 1992(d)	A
<i>Argyresthia semifusca</i> Haworth att.	Z7-12:OAc	Tóth, 1992(d)	C
<i>Argyresthia semitestacella</i>	Z11-16:OAc	Priesner	C

			in Arn, 1986(a)	
<i>Argyresthia sorbiella</i> Tr. att.	Z7-12:OAc + Z9-12:OAc (20:1)		Tóth, 1992(d)	C
<i>Argyresthia thuiella</i> Packard att.	Z11-16:Ald		Booij, 1984(a)	C
<i>Euhyponomeutoides</i> ^a <i>albithoracellus</i> Gaj currant bud moth phe.	*Z11-14:OAc + *E11-14:OAc (3:1)		Svensson, 2023	C
<i>Euhyponomeutoides rufella</i> att.	Z11-14:OAc + E11-14:OAc		Peltotalo, 1986	C
<i>Euhyponomeutoides trachydeltus</i> Meyrick <hoso-suga> att.	Z11-14:OAc		Ando, 1981	A
<i>Ocnerostoma</i> ^a <i>friesei</i> Svensson <akamatsuhmoguri-suga> att.	E6-13:OAc		Willemse, 1987	A
<i>Paraargyresthia</i> ^c <i>japonica</i> Moriuti <nihonnise-memushiga> att.	E11-16:OAc		Ando, 1981	A
<i>Paraswammerdamia</i> ^a <i>lutarea</i> Hw. att.	Z7-14:OAc		Mozūraitis, 1998	C
<i>Prays</i> ^b <i>citri</i> Mill. citrus flower moth phe.	*Z7-14:Ald		Nesbitt, 1977 Sternlicht, 1978	C
<i>Prays endocarpa</i> Meyrick citrus pock caterpillar phe.	*Z7-14:Ald + other components		Vang, 2011	C
<i>Prays nephelomima</i> Meyrick citrus flower moth phe.	*Z7-14:Ald		Gibb, 2005	C

<i>Prays oleae</i> Bern. olive moth phe.	*Z7-14:Ald	Campion, 1979 Renou, 1979 Sakin, 2023	C
<i>Swammerdamia</i> ^a <i>compunctella</i> H. S. att.	Z11-14:OAc + Z11-14:OH (9:1)	Novotný, 1990	C
<i>Swammerdamia pyrella</i> Villers <usugurohime-suga> att.	Z5-14:OAc + Z7-14:OAc (1:1)	Tóth, 1991(b)	A
<i>Swammerdamia</i> sp. att.	Z11-14:OAc + Z7-14:OAc (3:2)	Szöcs, 1981	
<i>Thecobathra</i> ^a (= <i>Niphonympha</i>) <i>anas</i> Stringer <maruginbane-suga> att.	E11-14:OAc + E11-14:Ald (9:1)	Ando, 1981	A
<i>Xyrosaris</i> ^a <i>lichneuta</i> Meyrick <hosobako-suga> att.	Z11-14:OAc Z9,E11-14:OH	Ando, 1981 Ando, 1987	A
<i>Yponomeuta</i> ^a <i>cagnagellus</i> Hübner phe.	Z11-14:OAc *Z11-14:OAc + *E11-14:OAc + *Z11-14:OH (200:3:40) + other components	Hendrikse, 1982 Löfstedt, 1985(a)	C
	(200:5:74)	Löfstedt, 1988	
	+ Z11-14:Ald (100:2:0.75:1)	Ostrauskas, 2010(b)	
<i>Yponomeuta evonymellus</i> L. <sakura-suga> phe.	Z12-15:OAc + E12-15:OAc (3:1) *Z11-14:OAc + *E11-14:OAc + *Z11-14:OH + *14:OAc + *14:OH (10:2:2:6:1)	Ritter, 1975 Löfstedt, 1985(a)	A

	+ Z11-14:Ald (100:2:0.75:1)	Ostrauskas, 2010(b)	
<i>Yponomeuta irrorellus</i> Hübner phe.	*Z11-14:OAc + *E11-14:OAc + *Z11-14:OH + *E11-14:OH (100:60:3:1.8) + other components	Löfstedt, 1988	C
<i>Yponomeuta malinellus</i> Zeller apple ermine moth <ringo-suga> phe.	Z11-14:OAc + E11-14:OAc (97:3)	Stockel, 1981	A
	Z11-14:OAc	Hendrikse, 1982	
	*Z11-14:OH + *Z9-12:OAc (500:3) + other components	McDonough, 1990(b)	
<i>Yponomeuta padellus</i> L. phe.	Z11-14:OAc + E11-14:OAc (4:1) or Z12-15:OAc + E12-15:OAc (1:3)	Herrebout, 1978 Hendrikse, 1982	B
	*Z11-16:OAc + *Z11-14:OAc + *E11-14:OAc (200:50:17) + other components	Löfstedt, 1985(a) Du, 1987(a)	
	+ Z9-14:OAc (400:100:34:5)	Löfstedt in Arn, 1986(a)	
<i>Yponomeuta padellus</i> Malinellus att.	Z11-14:OAc	Arn, 1974	B
<i>Yponomeuta plumbellus</i> Denis & Schiffermüller phe.	E12-15:OAc + Z12-15:OAc (3:1)	Ritter, 1975	C
	*E11-14:OAc + *Z11-14:OAc (3:2) + other components	Löfstedt, 1988	
<i>Yponomeuta rorellus</i> Hübner small ermine moth phe.	E12-14:OAc or Z12-14:OAc or E6-14:OAc	Hendrikse, 1982 Löfstedt, 1990	C
	*14:OAc	Löfstedt, 1986(a)	

	+ other components	Du, 1987(a)	
<i>Yponomeuta vigintipunctatus</i> Retzius <benkeisou-suga> phe.	*Z11-14:OAc + *E11-14:OAc + *Z11-14:OH (10:2:1) + other components	Löfstedt, 1985(a)	A
<i>Yponomeuta yanagawanus</i> Matsumura <tsumagurohai-suga> att.	Z11-14:OAc	Ando, 1977	A

(Ypsolophidae) クチブサガ科

<i>Ypsolopha dentella</i> att.	Z7-12:OAc or Z7-12:OH + Z7-12:OH (1:1)	Roelofs, 1971(a) Priesner in Arn, 1986(a)	C
<i>Ypsolopha falcella</i> att.	Z5-14:OAc or Z7-14:OAc	Priesner in Arn, 1986(a)	C
<i>Ypsolopha longus</i> Moriuti <mayumiookuchibusu-suga> att.	Z7-12:OAc	Ando, 1981	A
<i>Ypsolopha lucella</i> F. att.	Z11-16:OAc + Z11-16:Ald (20:1)	Tóth, 1992(d)	C
<i>Ypsolopha nemorella</i> att.	Z7-12:OAc + Z5-12:OAc (1:1)	Priesner in Arn, 1986(a)	C

(Plutellidae) コナガ科

<i>Leuroperna sera</i> Meyrick <hiroba-konaga> att.	Z11-16:Ald + Z9-16:Ald (19:1)	Kohno, 2014	A
<i>Plutella xylostella</i> L. diamondback moth <konaga> phe.	*Z11-16:OAc + *Z11-16:Ald (2:3–3:2) (1:1)	Tamaki, 1977(b) Koshihara, 1978 Chow, 1977	A

	(3:2)	Zilahi-Balogh, 1995
+ Z11-16:OH	(10:10:1)	Ando, 1979
	(50:50:1)	Lin, 1982
+ Z9-14:OAc	(30:70:1:0.01)	Chisholm, 1983
or + Z9-14:OH	(30:70:1:10)	
+ *Z11-16:OH	(3:6:1)	Suckling, 2002
	[3:8:2]	Lee, 2005
	(10:90:1)	Yang, 2007
	(5:5:1)	Chi, 2024

(Acrolepiidae) アトヒゲコガ科

<i>Acrolepiopsis assectella</i> Zeller leek moth phe.	Z11-16:Ald *Z11-16:Ald + Z11-16:OAc (10:1)	Rahn, 1979 Renou, 1981(a) Minks, 1994	C
<i>Acrolepiopsis issikiella</i> Moriuti <tokoromi-koga> att.	Z11-16:Ald	Ando, 1981	A
<i>Acrolepiopsis nagaimo</i> Yasuda <nagaimo-koga> phe.	*Z11-16:OAc + *Z11-16:Ald + *Z11-16:OH (25:25:1)	Wakamura, 2001(b) Tanaka, 2001	A
<i>Acrolepiopsis sapporensis</i> Matsumura (= <i>alliella</i> Semenov & Kuznetsov) stone leek moth (allium leafminer) <negi-koga> phe.	Z11-16:Ald + Z11-16:OAc + Z11-16:OH (9:9:2) (5:5:1) (3:1:1)	Sato, 1979 Yamada, 1980 Ando, 1981	A
Korea strain	*Z11-16:OAc + *Z11-16:Ald + *Z11-16:OH (13:5:2)	Yang, 2008	

Japanese strain	(1:7:2)	Shimizu, 2009	
<i>Acrolepiopsis suzukiella</i> Matsumura <yamanoimo-koga> <i>att.</i>	Z11-16:Ald + Z11-16:OAc (9:1)	Ando, 1981	A
<i>Acrolepiopsis</i> sp. <i>att.</i>	Z11-16:OAc + Z11-16:OH (9:1)	Ando, 1981	A

(Glyphipterigidae) ホソハマキモドキガ科

<i>Glyphipterix eulucotoma</i> Diakonoff & Arita <atofutamom- hosohamakimodoki> <i>att.</i>	Z11-16:OAc + Z11-16:Ald (1:1)	Ando, 1981	A
<i>Glyphipterix nigromarginata</i> Issiki <heriguro-hosohamakimodoki> <i>att.</i>	Z11-16:OAc + Z11-16:Ald (1:1)	Ando, 1981	A
<i>Glyphipterix simplicella</i> Stephens <i>att.</i>	Z11-16:OAc + Z11-16:Ald (3:1)	Booij, 1984(a)	C

(Lyonetiidae) ハモグリガ科

<i>Leucoptera malifoliella</i> Costa (= <i>scitella</i> Zeller) mountain-ash bentwing <i>phe.</i>	*Me5,Me9-17:H (major) + *Me5,Me9-16:H Me5,Me9-17:H (5 <i>S</i> ,9 <i>S</i>)-isomer	Francke, 1987; 1988 Tóth, 1989(c)	C
	*Me5,Me9-17:H + *Me5,Me9-18:H (100:0.1–100:5)	Riba, 1990	
<i>Leucoptera sinuella</i> Reutti	*Me3,Me7-15:H + *Me3,Me7-14:H + *Me7-15:H (95:2:3)	Barros-Parada, 2020	C
<i>Lyonetia clerkella</i> L. peach leafminer moth <momo-hamoguriga>	*Me14,Δ1-18:H (<i>S</i>)-isomer	Sugie, 1984(a) Sato, 1985,1986	A

phe.

<i>Lyonetia prunifoliella</i> Hübner apple leafminer moth <ringo-hamoguriga> <ginmon-hamoguriga> phe.	*Me10,Me14,Δ1-18:H + Me5,Me9-18:H + Me5,Me9-17:H (1:1:1)	Gries, 1997(b)	B
in Korea in Japan	Me10,Me14,Δ1-18:H (10S,14S)-isomer	Park, 2002 Taguri, 2014	
<i>Perileucoptera</i> (= <i>Leucoptera</i>) <i>coffeella</i> Guér.-Ménev. coffee leafminer moth phe.	*Me5,Me9-15:H (major) + *Me5,Me9-16:H *Me5,Me9-15:H (5S,9R)-isomer	Francke, 1988 Malo, 2009	D

(10) [Gelechioidea] キバガ上科
(Ethmiidae) スヒロキバガ科

<i>Ethmia monticola</i> Walsingham att.	E11-14:OAc	Daterman, 1977	C
<i>Ethmia punctella</i> F. att.	E11-14:OAc	Löfstedt, 1988	C

(Elachistidae) クサモグリガ科

<i>Elachista consortella</i> Stainton att.	E11-14:Ald + Z11-14:Ald (20:1)	Ostrauskas, 2010(a)	C
<i>Stenoma catenifer</i> Walsingham avocado seed moth phe.	*Z9,=11,Δ13-14:Ald + other components	Millar, 2008 Hoddle, 2009	D
<i>Stenoma cecropia</i> Meyrick phe.	*Z9,E11,Δ13-14:Ald + *Z9,E11-14:Ald (83:17) + other components	Zagatti, 1996	D

(Oecophoridae) マルハキバガ科

a: *Depressariinae* ヒラタマルハキバガ亜科, b: *Oecophoriinae* マルハキバガ亜科,
c: *Chimabachinae* メスコバネマルハキバガ亜科, d: *Amphisbatinae*,
e: *Autostichinae* ホシマルハキバガ亜科

<i>Acria</i> ^a <i>ceramitis</i> Meyrick <nezumiegurihirata- maruhakibaga> <i>att.</i>	E8,Z10-12:Ald + E8,Z10-12:OAc (1:1)	Ando, 1987	A
<i>Agonopterix</i> ^a <i>alstroemeriana</i> Cl. <i>att.</i>	Z7-12:OAc + Z9-14:OAc (1:1)	Szöcs. 1981	C
<i>Agonopterix assimilella</i> <i>att.</i>	Z7-14:OAc + Z9-14:OAc	Priesner in Arn, 1986(a)	C
<i>Agonopterix encentra</i> Meyrick <yamaukogihirata- maruhakibaga> <i>att.</i>	Z7-12:OH + Z7-12:OAc (9:1)	Ando, 1981	A
<i>Agonopterix liturella</i> Denis & Schiffermüller <i>att.</i>	Z7-12:OAc + Z7-12:OH + Z9-14:OAc (1:1:1)	Tóth, 1992(d)	C
<i>Agonopterix ulicetella</i> gorse soft shoot moth <i>att.</i>	Z5-10:OAc + Z7-12:OH (1:1)	Suckling, 2000	C
<i>Agonopterix yeatiana</i> F. <i>att.</i>	Z3-10:OAc + Z5-10:OAc (1:1)	Priesner, 1988(b)	C
<i>Agonopterix</i> sp. 1 <i>att.</i>	Z7-10:OAc	Ando, 1977	A
<i>Agonopterix</i> sp. 2 <i>att.</i>	Z7-12:OAc + Z9-14:OAc (1:1)	Ando, 1981	A
<i>Bisigna</i> ^b <i>procerella</i> Denis & Schiffermüller <i>att.</i>	E5-16:OAc	Willemse, 1987	D
<i>Cerconota</i> ^a <i>anonella</i> Sepp. <i>phe.</i>	*Z9-18:OH + *Z9-18:Ald + *Z9-18:OAc (5:3:1)	Pires, 2016	D
<i>Cheimophila</i> ^c <i>salicella</i> Hübner <i>phe.</i>	*E11-14:OAc + *E11-14:OH + *14:OAc	Gillespie, 1984	C

	+ *E11-14:Ald (100:15:10:2)		
<i>Cheimophila</i> sp. att.	E11-14:OAc	Ando, 1977	A
<i>Depressaria</i> ^a <i>depressana</i> att.	Z3-10:OAc	Sziráki in Arn,1997	C
<i>Depressaria olerella</i> Zeller att.	Z3-10:OAc	Priesner, 1988(b)	C
<i>Depressaria sordidatella</i> Tengström att.	E11-14:Ald + Z11-14:Ald (20:1)	Ostrauskas, 2010(a)	C
<i>Diurnea</i> ^c (= <i>Xenomicta</i>) <i>cupreifera</i> Butler <mesukobane- maruhakibaga> att.	Z11-14:OAc	Ando, 1977	A
<i>Diurnea phryganella</i> Hübner att.	Z11-14:OAc + E11-14:OAc (10:1)	Tóth, 1979 Priesner in Arn, 1986(a)	C
<i>Donaspastus</i> ^e <i>pannonicus</i> Gozm att.	Z8-13:OAc	Subchev, 1999	D
<i>Opisina arenosella</i> Walker phe.	*Z3,Z6,Z9-23:H N	Bhanu, 2018	D
<i>Pseudatemelia</i> ^d <i>josephinae</i> Toll. att.	Z10-14:OAc + E9-14:OAc (10:1)	Mozūraitis, 1998	D
<i>Pseudatemelia</i> sp. 1 att.	Z9-13:OAc	Willemse, 1987	D
<i>Pseudatemelia</i> sp. 2 att.	Z10-13:OAc	Willemse, 1987	D

(Stathmopodidae) ニセマイコガ科

<i>Oedematopoda</i> (= <i>Atkinsonia</i>) <i>ignipicta</i> Butler	E4,Z6-16:OAc	Kim, 2014(a)	A
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<segurobenitogeashiga>
att.

<i>Stathmopoda auriferella</i> Walker (= <i>theoris</i> Meyrick) <kiiro-maikoga> phe.	Z7-16:OAc or Z7,Z11-16:OAc + Z7,E11-16:OAc *E5-16:OAc + another component	Nagano, 1979 Yang, 2013	A
<i>Stathmopoda masinissa</i> Meyrick persimmon fruit moth <kakinohetamushiga> Japanese strain phe. Korean strain	*E4,Z6-16:OAc + other components *E4,Z6-16:OAc + *E4,Z6-16:OH (1:1)	Naka, 2003 Kim, 2014(a)	A

(Lecithoceridae) ヒゲナガキバガ科

<i>Odites</i> (= <i>Protobathra</i>) <i>leucostola</i> Meyrick <gomafushiro-kibaga> att.	Z7-12:OH	Ando, 1977	A
<i>Rhizosthenes falciformis</i> Meyrick <maechao- hirobakibaga> att.	Z7-12:OAc + Z7-12:Ald (9:1)	Ando, 1981	A

(Batrachedridae) ホソキバガ科

<i>Batrachedra amydraula</i> Lesser date moth phe.	*Z4,Z7-10:OAc + *Z5-10:OAc + *Z4-10:OAc (1:2:1) + other components + *Z5-10:OH (1:2:2) + other components	Levi-Zada, 2011(a); Levi-Zada, 2013	C
<i>Batrachedra pinicolella</i> Zeller <usujiro-hosokibaga> att.	Z5-10:OAc + Z5-10:OH (1:1)	Willemse, 1987 Priesner, 1989(a)	A

(Coleophoridae) ツツミノガ科

<i>Augasma aeratellum</i> Zeller att.	Z7-12:OAc	Tóth, 1992(d)	D
<i>Coleophora albidella</i> Denis & Schiffermüller <yanagipisutoru-minoga> att.	E5-10:OAc + E5-10:OH (17:3)	Sziráki, 1980	A
<i>Coleophora alticolella</i> Zeller att.	Z5-10:OH	Priesner, 1987(a)	C
<i>Coleophora amellivora</i> Bald. att.	Z5-10:OH or Z5-10:OAc	Priesner, 1987(a)	C
<i>Coleophora anatipennella</i> Hübner att.	E5-10:OAc + E5-10:OH (17:3)	Sziráki, 1980	C
<i>Coleophora arbitarsella</i> att.	Z5-10:OAc + Z7-12:OAc (1:1)	Subchev, 1990	C
<i>Coleophora artemisicolella</i> Bruand <yomogihana-tsutsuminoga> att.	E5-10:OAc + E5-10:OH (17:3)	Sziráki, 1980	A
	Z9-14:OAc + Z7-12:OAc	Ostrauskas, 2003	
<i>Coleophora auricella</i> F. att.	Z3-10:OAc	Priesner, 1988(b)	C
<i>Coleophora binderella</i> Koll. att.	Z5-10:OAc	Priesner, 1987(a)	C
<i>Coleophora clypeiferrella</i> Hofm. att.	Z5-10:OAc	Priesner, 1987(a)	C
<i>Coleophora coracipennella</i> Hübner att.	Z5-10:OH or Z5-10:OAc	Priesner, 1987(a)	C
	+ Z5-10:OAc + Z7-12:OAc (1:1:1)	Tóth, 1992(d)	
<i>Coleophora dahurica</i> Flkv.	Z5-10:OH	Priesner, 1991	C

<i>Coleophora deauratella</i> Zeller red clover casebearer att. phe.	Z5-10:OAc + Z5-10:Ald + Z7-12:OAc (1:1:1) *Z7-12:OAc + *Z5-12:OAc (10:1) + another component	Tóth, 1992(d) Evenden, 2010	C
<i>Coleophora flavipennella</i> Dup. att.	Z5-10:OH	Priesner, 1987(a)	C
<i>Coleophora frischella</i> L. att.	Z5-12:OAc + Z7-12:OAc (1:1)	Willemse, 1987	C
<i>Coleophora glaucicolella</i> Wood att.	Z5-10:OAc	Priesner, 1987(a)	C
<i>Coleophora glitzella</i> Hofm. att.	Z5-10:OH	Priesner, 1987(a)	C
<i>Coleophora gryhipennella</i> Hübner att.	Z5-10:OAc	Priesner, 1987(a)	C
<i>Coleophora hemerobiella</i> Sc. att.	Z5-10:OH + Z7-12:OH (1:1)	Tóth, 1992(d)	C
<i>Coleophora juncicolella</i> Staint att.	Z5-10:OH or Z5-10:OAc	Priesner, 1987(a)	C
<i>Coleophora laricella</i> Hübner European larch casebearer moth att.	Z5-10:OH	Priesner, 1982(b)	B
<i>Coleophora laripennella</i> Zeller att.	E5-10:OAc + E5-10:OH (17:3)	Sziráki, 1980	C
<i>Coleophora lineolea</i> Haw. att.	Z5-10:OH or Z5-10:OAc	Priesner, 1987(a)	C
<i>Coleophora lithargyrinella</i> Zeller att.	Z5-10:OH or Z5-10:OAc	Priesner, 1987(a)	C
<i>Coleophora mayrella</i> Hübner att.	Z5-10:OAc	Priesner, 1987(a)	C

<i>Coleophora millefolii</i> Zeller <i>att.</i>	E5-10:OAc + E5-10:OH (17:3)	Sziráki, 1980	C
<i>Coleophora obscenella</i> Herrich-Schäffer <i>att.</i>	Z9-14:OAc + Z7-12:OAc	Ostrauskas, 2003	C
<i>Coleophora ochripennella</i> Zeller <i>att.</i>	Z5-10:OH or Z5-10:OAc	Priesner, 1987(a)	C
<i>Coleophora orbitella</i> Zeller <i>att.</i>	Z5-10:OAc	Priesner, 1987(a)	C
<i>Coleophora ornatipennella</i> Hübner <i>att.</i>	Z5-10:OAc	Priesner, 1987(a)	C
<i>Coleophora palliatella</i> Zink. <i>att.</i>	E5-10:OH + E5-10:OAc (17:3)	Hrdý, 1989	C
<i>Coleophora peissoniella</i> Kasy <i>att.</i>	E5-10:OAc + E5-10:OH (17:3)	Sziráki, 1980	C
<i>Coleophora prunifoliae</i> Doets <i>att.</i>	Z5-10:OH or Z5-10:OAc	Priesner, 1987(a)	C
<i>Coleophora serpylletorum</i> E. Her. <i>att.</i>	Z3-10:OAc	Priesner, 1988(b)	C
<i>Coleophora serratella</i> L. <ringo-tsutsuminoga> <i>att.</i>	Z5-10:OH	Priesner, 1987(a)	A
<i>Coleophora sinensis</i> Yang Chinese larch casebearer <i>att.</i>	Z5-10:OH	Zhang, 1993	C
<i>Coleophora sternipennella</i> Zett. <i>att.</i>	Z3-10:OAc	Priesner, 1988(b)	C
<i>Coleophora trigeminella</i> Fuchs <i>att.</i>	Z5-10:OH Z7-12:OAc + Z7-12:OH + Z5-10:OAc (20:20:1)	Priesner, 1987(a) Tóth, 1992(d)	C

<i>Coleophora unipunctella</i> Zeller <i>att.</i>	Z7-12:OAc + Z7-12:OH (1:1)	Tóth, 1992(d)	C
<i>Coleophora vacciniella</i> Herrich-Schäffer <i>att.</i>	Z5-10:OAc	Priesner, 1987(a) Willemse, 1987	C
<i>Coleophora versurella</i> <i>att.</i>	Z3-10:OAc	Capizzi in Arn, 1986(a)	C
<i>Coleophora viminetella</i> Zeller <i>att.</i>	Z5-10:OAc + Z3-10:OAc (1:1)	Priesner, 1988(b)	C
<i>Coleophora virgaureae</i> Staint <i>att.</i>	Z5-10:OAc	Priesner, 1987(a)	C
<i>Oecogonia decuratella</i> Herrich-Schaffer <i>att.</i>	Z8-13:OAc + Z10-15:OAc (10:1)	Subchev, 1999	D
<i>Oegoconia quadripuncta</i> Haworth <i>att.</i>	Z8-12:OAc + E8-12:OAc (24:1) or + E8,E10-12:OAc + 12:OAc (8:12:25)	Hrdý, 1989	D

(Momphidae) アカバナキバガ科

<i>Mompha sturnipennella</i> Treitschke <i>att.</i>	E11-14:Ald + Z11-14:Ald (20:1)	Ostrauskas, 2010(a)	C
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(Cosmopterigidae) カザリバガ科

<i>Anatrachyntis</i> (= <i>Sathrobrotia</i>) sp. 1 <i>att.</i>	E11-14:OAc	Ando, 1975	A
<i>Anatrachyntis</i> (= <i>Sathrobrotia</i>) sp. 2 <i>att.</i>	E11-14:OH	Ando, 1977	A
<i>Anatrachyntis</i> sp. 3 <i>att.</i>	E11,Δ13-14:OAc	Ando, 1987	A
<i>Chrysochrista</i> sp.	Z8-13:OAc	Ando, 1977	A

	att.	or E8-13:OAc		
<i>Cosmopterix fulminella</i> Stringer <kazariba>		Z7-12:OAc	Ando, 1977	A
	att.	Z11-14:OAc + Z9-12:OAc + Δ11-12:OAc (30:3:1)	Shry, 1985	
<i>Cosmopterix gemmiferella</i> Clemens	att.	Z9,Δ11-12:OAc + E9,Δ11-12:OAc (2:1)	Chisholm, 1985(b)	C
<i>Cosmopterix victor</i> Stringer <usuiro-kazariba>		Z10-12:OAc or Z10-13:OAc	Ando, 1977	A
	att.			
<i>Cosmopterix</i> sp. 1-4	att.	Z9-12:OAc	Ando, 1975;1977	A
<i>Labdia citracma</i> Meyrick <tsumaki-togarihosoga>		E11-14:Ald	Ando, 1981	A
	att.			
<i>Labdia issikii</i> Kuroko <sejiro-togarihosoga>		Z11-16:Ald + Z9-16:Ald (19:1)	Kohno, 2014	A
	att.			
<i>Labdia semicoccinea</i> Stainton <benimon-togarihosoga>		E11-14:Ald	Ando, 1981	A
	att.			
<i>Limnaecia phragmitella</i> Stainton <gama-togarihosoga>		E11-14:OAc + Z11-14:OAc (10:1)	Struble, 1977(a)	A
	phe.	*E11-14:OAc + *Z11-14:OAc (19:1)	Bestmann, 1993(c)	
<i>Pancalia leuwenhoeckella</i> L.		Z8-13:OAc	Subchev, 1999	C
	att.			
<i>Stigmatophora niphosticta</i> Meyrick <ginsuji-togarihosoga>		E11-14:OAc + Z11-14:OAc (7:3)	Ando, 1981	A
	att.			

(Gelechiidae) キバガ科

a: Gelechiinae, b: Teleiodinae, c: Metzneriinae, d: Anacampsinae, e: Aristotelinae,

f: Dichomeridinae

<i>Acompsia</i> ^f <i>tripunctella</i> Denis & Schiffermüller att.	E11-14:OAc	Liska, 1990	D
<i>Anarsia</i> ^f <i>lineatella</i> Zeller peach twing borer phe.	*E5-10:OAc + *E5-10:OH (17:3) (5:1) + other components + *Me11-23:H + *18:OAc (body scale)	Roelofs, 1975(b) Rice, 1975 Millar, 1992(b) Schlamp, 2005	C
<i>Anthistarcha</i> ^d <i>binocularis</i> Meyrick cashew stem borer phe.	*E6-12:OAc + *E6-12:OH (5:2)	Soares, 2020	D
<i>Aproaerema</i> ^d <i>anthyllidella</i> <kurochibi-kibaga> att.	Z3-12:OAc + Z3-14:OAc (1:1)	Priesner, 1987(b)	A
<i>Aproaerema</i> <i>modicella</i> phe.	*Z7,Δ9-10:OAc + *E7-10:OAc (5:1) + another component	Hall in Arn, 1997	C
<i>Argolamprotes</i> ^c <i>micella</i> Denis & Schiffermüller <ginboshiakagane- kibaga> att.	Z3-14:OAc	Priesner, 1987(b)	A
<i>Battaristis</i> ^d sp. att.	Z7-10:OAc	Roelofs, 1970(a)	D
<i>Brachmia</i> ^f <i>arotraea</i> Meyrick <tatejima-kibaga> att.	E7-14:OAc	Ando, 1977	A
<i>Brachmia</i> <i>blandella</i> F. att.	E9-13:OAc	Willemse, 1987	C
<i>Brachmia</i> <i>inornatella</i> Douglas	E9-13:OAc	Willemse, 1987	C

	att.	or E8-13:OAc		
<i>Brachmia triannulella macroscopa</i> Meyrick sweet potato leaf folder worm <imo-kibaga> phe.		*E11-16:OAc	Hirano, 1976	A
<i>Bryotropha</i> ^d <i>dryadella</i> Zeller att.		Z11-14:OAc	Tóth, 1992(d)	C
<i>Bryotropha galbanella</i> Zeller att.		E9-13:OAc	Willemse, 1987	C
		E9-14:OAc + Z10-14:OAc (1:1)	Mozūraitis, 1998	
<i>Bryotropha senectella</i> Zeller att.		Z9-14:OAc	Kovaleva, 1975	C
		E8-13:OAc	Willemse, 1987	
		E11-14:Ald + Z11-14:Ald (20:1)	Ostrauskas, 2010(a)	
<i>Bryotropha similis</i> Stain att. gray-race yellow-race		Z9-14:OAc E9-14:OAc	Roelofs, 1971(a)	C
<i>Bryotropha terrella</i> Denis & Schiffermüller att.		E9-14:OAc	Arn, 1974	C
<i>Bryotropha</i> sp. att.		E9-14:OAc	Roelofs, 1970(a)	
<i>Caryocolum</i> ^a <i>alsinellum</i> att.		Z5-12:OAc	Sziráki in Arn, 1997	C
<i>Caryocolum marmoreum</i> Haworth att.		Z5-12:OAc	Tóth, 1992(d)	C
<i>Caryocolum proximum</i> Haworth att.		Z5-12:OAc + Z7-12:OAc (1:1)	Tóth, 1992(d)	C

<i>Catelaphris</i> sp. att.	Z7,Z11-16:OAc + Z7,E11-16:OAc (1:1)	Marks, 1976	D
<i>Chionodes</i> ^a <i>electella</i> Zeller att.	Z3-14:OAc	Willemse, 1987 Priesner, 1987(b)	C
<i>Chionodes fuscomaculella</i> Chambers att.	Z5-12:OAc	Roelofs, 1970(a)	C
<i>Chionodes holosericella</i> H. Sch. att.	E3-12:OAc	Priesner, 1987(b)	C
<i>Chionodes luctuella</i> Hübner att.	Z3-14:OAc	Priesner, 1987(b)	C
<i>Chionodes lugubrella</i> F. att.	E3,Z5-12:OAc + Z3,E5-12:OAc (10:1)	Reed, 1985(b)	C
<i>Chionodes nebulosella</i> Hein. att.	Z3-14:OAc	Priesner, 1987(b)	C
<i>Chionodes perpetuella</i> H. Sch. att.	E3-14:OAc	Priesner, 1987(b)	C
<i>Chionodes psiloptera</i> Barnes & Busck att.	Z7,E11-16:OAc	Oetting, 1977	C
<i>Chionodes</i> sp. 1 att.	E11-14:OAc	Daterman, 1977	
<i>Chionodes</i> sp. 2 att.	E3-12:OAc	Reed, 1985(b)	
<i>Dactylethrella</i> ^f (= <i>Dactylethra</i> , <i>Ethmiopsis</i>) <i>tegulifera</i> Meyrick <kurokumoshiro-kibaga> att.	E7-12:OAc	Ando, 1981	A
<i>Dichomeris</i> ^f <i>ligulella</i> att.	E11-14:OAc	Roelofs, 1971(a)	C
<i>Dichomeris oceanis</i> Meyrick <fujifusa-kibaga> att.	Z7,E11-16:OAc	Ando, 1985(b)	A

<i>Evippe</i> ^e <i>prunifoliella</i> att.	Z3-12:OAc	Reed, 1985(b)	C
<i>Filatima</i> ^a sp. att.	Z7-12:OAc	Roelofs, 1970(a)	D
<i>Gaesa</i> ^f <i>sparsella</i> Christoph <kurumioofusa-kibaga> att.	Z8-11:OAc	Ando, 1977	A
<i>Gelechia</i> ^a <i>betulae</i> Haworth att.	E9-14:OAc	Priesner, 1980(a)	C
<i>Gelechia</i> <i>sororculella</i> Hübner att.	Z7-14:OAc + Z5-14:OAc	Priesner in Arn, 1986(a)	C
	Z5-12:OAc	Willemse, 1987	
<i>Gnorimoschemini</i> sp. att.	Z5-12:OAc	Ando, 1977	A
<i>Hypatima</i> ^f <i>rhomboidella</i> L. att.	E7-12:OAc	Booij, 1984(a)	C
<i>Isophrictis</i> <i>similiella</i> Chambers att.	Z7-12:OAc + Z5-12:OAc (10:1)	Underhill, 1987(b)	D
<i>Isophrictis</i> sp. att.	Z5-12:OAc	Tóth, 1992(d)	D
<i>Keiferia</i> ^a <i>lycopersicella</i> Walsingham tomato pinworm phe.	*E4-13:OAc	Charlton, 1991	D
<i>Lixodessa</i> <i>ochrofasciella</i> Toll. att.	Z7-10:OAc	Kovaleva, 1975	D
<i>Metzneria</i> ^c sp. att.	E3-12:OAc	Renou, 1980	
<i>Monochroa</i> ^c <i>divisella</i> Douglas Iris gelechiid moth	*Z3-12:OAc + *Z5-14:OAc (20:3)	Tabata, 2017	A

<ayame-kibaga>

phe.

<i>Monochroa tenebrella</i> Hübner att.	Z3-14:OAc	Willemse, 1987 Priesner, 1987(b)	D
<i>Pectinophora</i> ^f <i>endema</i> Common att.	Z7,Z11-16:OAc + Z7,E11-16:OAc (2:1)	Rothschild, 1975	C
<i>Pectinophora gossypiella</i> Saunders pink bollworm moth <wataakamimushiga> phe.	Z7-16:OAc *Z7,Z11-16:OAc + *Z7,E11-16:OAc (1:1)	Green, 1969 Hummel, 1973 Bierl, 1974	A
	In Malawi (11:9) In the world (1:1) In India (1:1)	Marks, 1976 Flint, 1979 Tamhankar, 1993	
<i>Pectinophora scutigera</i> Holdaway pink-spotted bollworm att.	Z7,Z11-16:OAc	Rothschild, 1975	C
<i>Pexicopia malvella</i> Hübner att.	Z7,E11-16:OAc + Z7,Z11-16:OAc (5:1-1:1)	Tóth, 1986(a)	D
<i>Pexicopia</i> sp. att.	Z7,E11-16:OAc + Z7,Z11-16:OAc (4:1)	Flint, 1979	D
<i>Phthorimaea</i> ^a <i>operculella</i> Zeller potato tuberworm <jagaimo-kibaga> phe.	U.S.A. Z7,Z11-13:OAc U.S.A. *E4,Z7-13:OAc Japan *4,7,10-13:OAc Cyprus *E4,Z7,Z10-13:OAc + *E4,Z7-13:OAc (1:1) Australia, Cyprus E4,Z7,Z10-13:OAc + E4,Z7-13:OAc (1:1) Peru (3:2)	Fouda, 1975 Roelofs, 1975(c) Bacon, 1976 Yamaoka, 1976 Persoons, 1976(a,b) Voerman, 1978(c) Raman, 1982	A

	Australia	*E4,Z7,Z10-13:OAc + *E4,Z7-13:OAc (1:1)	Tóth, 1984	
	U.S.A.	[88:12 – 27:73]	Ono, 1990	
	Japan	[71:29 – 16:84]		
	Thailand	[36:64]	Ono, 1997	
	China	poteto field (7:1–4:1) tobacco field (1:8–1:4)	Yan, 2022	
<i>Phthorimaea</i> sp. att.		Z5-12:OAc	Steck, 1979(c)	
<i>Platyedra subcinerea</i> Haworth att.		Z7,Z11-16:OAc	Tóth, 1986(a)	D
<i>Recurvaria</i> ^a <i>leucatella</i> Clerck white-barred groundling moth att.		E3,Z5-14:OAc	Tóth, 1992(b)	C
<i>Recurvaria nanella</i> Hübner lesser bud moth att.		E3-14:OAc	Tóth, 1992(b)	C
<i>Rhynchopacha</i> sp. att.		E5-14:OAc	Subchev, 1974	D
<i>Scrobipalpa</i> ^a <i>atriplicella</i> Fischer von Röslevstamm att.		Z5-12:OAc	Roelofs, 1970(a)	A
<i>Scrobipalpa heliopa</i> Lower tobacco stem borer phe.		*E3-13:OAc	Baker, 1985	C
<i>Scrobipalpa ocellatella</i> Boyd. sugar beet moth phe.		*E3-12:OAc	Renou, 1980	C
<i>Scrobipalpa salinella</i> Zeller phe.		*Z3-12:OAc + *Z5-12:OAc (20:1) + other components	Yang, 2011(c)	C

<i>Scrobipalpa</i> sp. att.	Z7,Z11-16:OAc + Z7,E11-16:OAc	Nagano, 1979	
<i>Scrobipalpuloides</i> ^a (= <i>Scrobipalpa</i> , = <i>Tuta</i>) <i>absoluta</i> Meyrick tomato leafminer phe.	*E3,Z8,Z11-14:OAc + *E3,Z8-14:OAc (9:1)	Attygalle, 1995; 1996 Filho, 2000 Ferrara, 2001 Svatos, 1996 Griepink, 1996	D
<i>Sitotroga</i> ^c <i>cerealella</i> Oliver Angoumois grain moth <bakuga> phe.	*Z7,E11-16:OAc + Z7,E11-16:Ald (9:1)	Vick, 1974 Ando, 1985(b)	A
<i>Sophronia</i> ^d <i>semicostella</i> Hübner att.	Z4-13:OAc	Willemse, 1987	C
<i>Symmetrischema</i> ^a <i>tangolias</i> Gyen South American potato tuber moth phe.	*E3,Z7-14:OAc + *E3-14:OAc (2:1) + other components	Griepink, 1995	D
<i>Syncopacma</i> ^d <i>vorticella</i> Scopoli att.	Z7-10:OAc or Z7-11:OAc	Kovaleva, 1975	D
<i>Tecia</i> ^a (= <i>Scrobipalopsis</i>) <i>solanivora</i> Povolny Guatemalan potato moth phe.	*E3-12:OAc + *Z3-12:OAc (49:1) + *12:OAc (100:1:20)	Nesbitt, 1985 Bosa, 2005	D
<i>Teleiodes</i> ^b <i>decorella</i> Haworth att.	E10-12:OAc	Hrdý, 1989	C

(11)[Zygaenoidea] マダラガ上科
(Limacodidae) イラガ科

<i>Darna bradleyi</i> phe.	*isobutyl E7,Δ9-10:Ate + *metyl E7,Δ9-10:Ate (10:1)	Sasaerila, 2000(a)	D
<i>Darna pallivitta</i> Moore	*butyl E7,Δ9-10:Ate	Siderhurst, 2007	D

	phe.	+ other components		
<i>Darna trima</i>	phe.	*(<i>E</i>)-2-hexenyl E7,Δ9-10:Ate + *(<i>S</i>)-2-methylbutyl E7,Δ9-10:Ate (1:1–2:1)	Sasaerila, 2000(a)	D
<i>Heterogenea asella</i> Denis & Schiffermüller <kagiba-iraga>	att.	Z9,E11-14:Ald	Priesner in Arn, 1986(a)	A
<i>Microleon longipalpis</i> Butler <tengu-iraga>	att.	Z7-12:Ald	Ando, 1981	A
<i>Monema flavescens</i> Walker Oriental moth <iraga>	phe.	*E8-10:OH + *E7,Δ9-10:OH (9:1)	Shibasaki, 2013	A
<i>Parasa lepida</i> Cramer blue-striped nettle grub moth <hiroheriao-iraga>	phe.	*Z7,Δ9-10:OH	Wakamura, 2007(a) Islam, 2009	A
<i>Setora nitens</i>	phe.	*Z9-12:Ald + *Z9,Δ11-12:Ald (1:1) + other components	Sasaerila, 2000(b)	D
<i>Setothosea asigna</i> Van Eecke nettle caperpillar	phe.	*E9,Δ11-12:Ald + *E9-12:Ald (1:1) + other components	Sasaerila, 1997	D
<i>Tortricidia testacea</i> Packard	att.	Z9,Δ11-12:Ald + E9,Δ11-12:Ald (10:1)	Chisholm, 1985(b)	D

(Himantopteridae) リボンマダラガ科

<i>Doratopteryx plumigera</i> Butler	att.	Z11-14:OAc + E11-14:OAc (3:1)	Hall, 1979	D
<i>Staphylinochrous whytei</i> Butler	att.	Z11-14:OAc or + Z11-14:OH (4:1)	Hall, 1979	D

(Zygaenidae) マダラガ科

<i>Acoloithus falsarius</i> Clemens att.	(R)-sec-butyl Z7-14:Ate	Landolt, 1986(a)	D
<i>Acoloithus novaricus</i> Barnes & McDunough att.	(S)-sec-butyl Z7-14:Ate	Landolt, 1991	D
<i>Acoloithus rectarius</i> Dyar att.	(R)-sec-butyl Z9-14:Ate	Tarmann in Subchev, 2014	D
<i>Adscita alpina</i> Alberti att.	(R)-sec-butyl 2-12:Ate	Efetov, 2020(b)	D
<i>Adscita bolivari</i> Agenjo att.	sec-butyl 2-12:Ate	Efetov, 2019	D
<i>Adscita geryon</i> Hübner att.	(S)-sec-butyl Z7-12:Ate	Subchev, 2010	D
<i>Adscita italica</i> Alberti att.	(R)-sec-butyl 2-12:Ate or (S)-sec-butyl 2-12:Ate	Efetov, 2020(b)	D
<i>Adscita mannii</i> Lederer att.	(S)-sec-butyl Z7-12:Ate + (S)-sec-butyl Z9-14:Ate	Subchev, 2010 Razov, 2017	D
<i>Adscita obscura</i> Zeller att.	(R)-sec-butyl 2-12:Ate (R)-sec-butyl 2-12:Ate	Efetov, 2020(b) Can, 2019	D
<i>Adscita statices</i> att.	(R)-sec-butyl 2-12:Ate	Efetov, 2020(a)	D
<i>Adscita subtristis</i> Staudinger att.	sec-butyl 2-12:Ate	Efetov, 2020(a)	D
<i>Goazrea lao</i> Mollet att.	sec-butyl 2-12:Ate	Efetov, 2020(a)	D
<i>Harrisina americana</i> Guéneé att.	(R)-sec-butyl Z7-14:Ate	Landolt, 1986(a)	D
<i>Harrisina brillians</i> Barnes & McDunnough	*sec-butyl Z7-14:Ate	Myerson, 1982	D

western grapeleaf skeletonizer <i>phe.</i>	(S)-(+)-isomer	Soderstrom, 1985 Curtis, 1989	
<i>Harrisina coracina</i> Clemens <i>att.</i>	(S)-sec-butyl Z7-14:Ate	Landolt, 1991	D
<i>Harrisina guatemalena</i> Druce <i>att.</i>	(S)-sec-butyl Z7-14:Ate	Landolt, 1991	D
<i>Illiberis pruni</i> Dyar <ringohamaki-kuroba> <i>att.</i>	(R)-sec-butyl Z7-12:Ate + (R)-sec-butyl Z9-14:Ate (10:1)	Subchev, 2013	A
<i>Illiberis rotundata</i> Jordan plum moth <umesukashi-kuroba> <i>phe.</i>	* (R)-sec-butyl Z7-12:Ate + * (R)-sec-butyl Z9-14:Ate (1:1)	Subchev, 2009	A
<i>Illiberis ulmivora</i> Graeser <i>att.</i>	(S)-sec-butyl Z7-12:Ate + (S)-sec-butyl Z9-14:Ate + (S)-sec-butyl Z5-10:Ate (8:4:1)	Liu, 2022	C
<i>Jordanita anatolica</i> Naufock <i>att.</i>	(S)-sec-butyl Z7-12:Ate + (R)-sec-butyl Z7-12:Ate (1:1)	Efetov, 2010	D
	sec-butyl 2-12:Ate	Can, 2019	
<i>Jordanita globulariae</i> <i>att.</i>	sec-butyl 2-12:Ate (R)-sec-butyl 2-12:Ate	Efetov, 2016 Efetov, 2021	D
<i>Jordanita graeca</i> <i>att.</i>	sec-butyl 2-12:Ate (R)-sec-butyl 2-12:Ate	Efetov, 2014; 2016 Efetov, 2021	D
<i>Jordanita horni</i> <i>att.</i>	(S)-sec-butyl Z7-12:Ate + (R)-sec-butyl Z7-12:Ate	Efetov in Subchev, 2014	D
<i>Jordanita notate</i> Zeller <i>att.</i>	(R)-sec-butyl Z7-12:Ate + (S)-sec-butyl Z7-12:Ate sec-butyl 2-12:Ate (R)-sec-butyl 2-12:Ate	Subchev, 2010 Razov, 2017 Efetov, 2016 Efetov, 2021	D

<i>Jordanita rietzehi</i> Keil att.	sec-butyl 2-12:Ate	Keil in Efetov, 2020(a)	D
<i>Jordanita splendens</i> Staudinger att.	sec-butyl 2-12:Ate	Efetov, 2020(a)	D
<i>Jordanita subsolana</i> Staudinger att.	(R)-sec-butyl 2-12:Ate	Can, 2019 Efetov, 2020(b) Efetov, 2021	D
<i>Neoalbertia constans</i> att.	(S)-sec-butyl Z9-14:Ate	Tarmann in Subchev, 2014	D
<i>Neoilliberis fusca</i> att.	(R)-sec-butyl Z9-14:Ate	Tarmann in Subchev, 2014	D
<i>Neoprocris aversa</i> att.	(R)-sec-butyl Z9-14:Ate	Tarmann in Subchev, 2014	D
<i>Pyromorpha dyari</i> att.	(S)-sec-butyl Z7-12:Ate	Tarmann in Subchev, 2014	D
<i>Rhagades amasina</i> Herrich-Schäffer att.	(S)-sec-butyl 2-12:Ate	Can, 2019	D
<i>Rhagades predotae</i> att.	(S)-sec-butyl 2-12:Ate	Efetov, 2019	D
<i>Rhagades pruni</i> Denis & Schiffermüller att.	(R)-sec-butyl Z7-12:Ate (S)-sec-butyl 2-12:Ate	Subchev, 2010; 2014 Efetov, 2021	D
<i>Theresimima ampellophaga</i> Bayle-Barella vine bud moth phe.	*(S)-sec-butyl Z7-14:Ate sec-butyl 2-12:Ate (R)-sec-butyl 2-12:Ate	Subchev, 1998 Efetov, 2014 Efetov, 2021	D
<i>Tripocris cyanea</i> att.	(S)-sec-butyl Z9-14:Ate	Tarmann in Subchev, 2014	D
<i>Zygaena carniolica</i> Scopoli att.	Z7-12:OAc + Z9-14:OAc + Z11-16:OAc (100:30:3)	Priesner, 1984(a)	C
<i>Zygaena ephialtes</i> L.	Z11-14:OAc	Hrdý, 1979	C

	att.	+ E11-14:OAc + 12:OAc (7:3:40)		
		Z11-14:OAc + E11-14:OAc (1:1)	Konyukhov in Arn, 1986(a)	
		Z11-14:OAc	Decamps, 1981	
<i>Zygaena filipendulae</i> L.	att.	Z7-12:OAc + Z9-14:OAc + Z5-12:OAc (100:10:3)	Priesner, 1984(a)	C
<i>Zygaena hippocrepidis</i> Hübner	att.	Z11-14:OAc	Decamps, 1981	C
<i>Zygaena niphona</i> Butler <benimon-madara>	att.	Z7-12:OAc + Z9-14:OAc	Toshova in Efetov, 2020(a)	A
<i>Zygaena purpuralis</i> Brunn	att.	Z7-12:OAc + Z9-14:OAc + Z7-14:OAc (10:10:1)	Priesner, 1984(a)	C
<i>Zygaena scabiosae</i> Scheven	att.	Z8-12:OAc + E8-12:OAc (24:1)	Hrdý, 1989	C
<i>Zygaena transalpina</i> Esper	att.	Z11-14:OAc or Z11-14:OH	Benz, 1973	C
<i>Zygaena trifolii</i> Esper	att.	Z7-12:OAc + Z5-12:OAc + Z9-14:OAc (10:10:3)	Priesner, 1984(a)	C
<i>Zygaena viciae</i> Denis & Schiffermüller	att.	Z7-12:OAc + Z9-14:OAc + Z5-12:OAc (10:1:1)	Priesner, 1984(a)	C
<i>Zygaenoprocis chalcochlora</i>	att.	(R)-sec-butyl Z7-12:Ate or + (R)-sec-butyl Z9-14:Ate	Hofmann in Subchev, 2014	D
<i>Zygaenoprocis eberti</i>	att.	(R)-sec-butyl Z7-12:Ate or + (R)-sec-butyl Z9-14:Ate	Hofmann in Subchev, 2014	D
<i>Zygaenoprocis taftana</i>		(R)-sec-butyl Z7-12:Ate	Efetov	D

(12) [Sesioidea] スカシバガ上科
(Sesiidae; Sesiinae) スカシバガ科 ; スカシバガ亜科

<i>Aegeria apiformis</i> hornet clearwing moth phe.	*Z3,Z13-18:OH	Kovalev, 1988	C
<i>Albuna fraxini</i> Henry Edwards att.	Z3,Z13-18:OH + Z3,Z13-18:OAc (3:1)	Greenfield, 1979 Nielsen, 1979	D
<i>Albuna pyramidalis</i> Walker att.	E3,Z13-18:OH	Cambell in Arn, 1986(a)	D
<i>Alcathoe carolinensis</i> Engelhardt att.	E3,Z13-18:OAc + Z3,Z13-18:OAc (3:1) (1:1) E3,Z13-18:OAc	Sharp, 1978 Snow, 1985 Brown, 1985(b)	D
<i>Bembecia chalciformis</i> Esp. att.	Z3,Z13-18:OH + Z3,Z13-18:OAc or + E3,Z13-18:OAc	Bûda, 1993	C
<i>Bembecia ichneumoniformis</i> Denis & Schiffermüller att.	Z3,Z13-18:OH + E3,Z13-18:OAc (9:1)	Bûda, 1993	C
<i>Bembecia parthica</i> Led. att.	Z3,Z13-18:OAc + Z3,Z13-18:OH (9:1)	Bûda, 1993	C
<i>Bembecia puella</i> Lastuvka att.	Z3,Z13-18:OAc + Z3,Z13-18:OH (9:1)	Bûda, 1993	C
<i>Bembecia romanovi</i> Bartell att.	Z3,Z13-18:OAc + E3,Z13-18:OAc (9:1)	Bûda, 1993	C
<i>Bembecia scopigera</i> Scopoli att.	Z3,Z13-18:OH Z3,Z13-18:OAc or	Szöcs, 1989 Bûda, 1993	C

	+ E2,Z13-18:OH (9:1)		
<i>Bembecia</i> (= <i>Synansphecica</i>) <i>triannuliformis</i> Freyer	Z3,Z13-18:OH	Szöcs, 1989	C
att.	+ E3,Z13-18:OH (9:1)	Bûda, 1993	
<i>Bembecia zuwandica</i> Gorbunov	Z3,Z13-18:OAc	Bûda, 1993	C
att.	+ E3,Z13-18:OAc (9:1)		
<i>Carmenta anthracipennis</i> Boisduval	Z3,Z13-18:OAc	Leeuw, 1983	D
att.	+ E3,Z13-18:OAc (1:1)	Snow, 1985	
<i>Carmenta bassiformis</i> Walker	Z3,Z13-18:OA	Sharp, 1978	D
att.	+ Z3,Z13-18:OH		
	+ E3,Z13-18:OAc (20:3:1)	Neal, 1983	
	Z3,Z13-18:OAc	Greenfield, 1979	
<i>Carmenta ithacae</i> Bentenmüller	E3,Z13-18:OAc	Greenfield, 1979	D
att.			
<i>Carmenta laurelae</i>	Z3,Z13-18:OAc	Brown, 1985(c)	D
att.			
<i>Carmenta mimosa</i> Eichlin & Passoa	Z3,Z13-18:OAc	Eichlin, 1983	D
phe.	*Z3,Z13-18:OAc	Vang, 2012	
<i>Carmenta mimuli</i>	Z3,Z13-18:OAc	Meyer, 1988	D
att.			
<i>Carmenta odda</i> Duckworth & Eichlin	Z3,Z13-18:OAc	Duckworth, 1977(b)	D
att.		Brown, 1986(a)	
<i>Carmenta pyralidiformis</i> Walker	E3,Z13-18:OH	Solomon, 1982	D
att.			
<i>Carmenta suffusata</i> Engelhardt	E3,Z13-18:OH	Sharp, 1978	D
att.			
<i>Carmenta teta</i>	Z3,Z13-18:OAc	Nielsen	D
att.		in Arn, 1986(a)	
<i>Carmenta texana</i> Hy. Edwards	Z3,Z13-18:OAc	Sharp, 1978	D

att.				
<i>Carmenta welchellorum</i> Duckworth & Eichlin	Z3,Z13-18:OAc		Duckworth, 1977(a)	D
att.				
<i>Chamaesphecia</i> (= <i>Synansphecia</i>) <i>affinis</i> Staud.	E3,Z13-18:OAc + Z13-18:OH (1:1)		Bûda, 1993	D
att.				
<i>Chamaesphecia bibioniformis</i> Esper	Z3,Z13-18:OAc + E3,Z13-18:OAc (9:1)		Karalius, 2001	D
att.				
<i>Chamaesphecia chalciformis</i> Esper	Z3,Z13-18:OH + E2,Z13-18:OAc (1:1)		Mozûraitis, 1999(a)	D
att.				
<i>Chamaesphecia empiformis</i> Esper	Z3,Z13-18:OH		Szöcs, 1989	D
att.				
<i>Chamaesphecia mezentzevi</i> Gorbunov	Z3,Z13-18:OAc + Z3,Z13-18:OH (9:1)		Mozûraitis, 1999(a)	D
att.				
<i>Chamaesphecia schmidtiformis</i> Frr.	Z3,Z13-18:OAc + Z3,Z13-18:OH (9:1)		Mozûraitis, 1999(a)	D
att.				
<i>Chamaesphecia speia nova</i> Gorbunov	Z3,Z13-18:OH + E3,Z13-18:OAc (1:1)		Mozûraitis, 1999(a)	D
att.				
<i>Chamaesphecia tenthrediniformis</i> Denis & Schiffermüller (and/or <i>empiformis</i> Esper)	E3,Z13-18:OAc		Voerman, 1983	D
att.				
<i>Chamaesphecia zimmermanni</i> Lederer	E3,Z13-18:OH + Z3,Z13-18:OAc (9:1)		Mozûraitis, 1999(a)	D
att.				
<i>Chamaesphecia</i> sp.	E3,Z13-18:OAc + E2,Z13-18:OAc (1:1)		Bûda, 1993	D
att.				
<i>Glossosphecia</i> (= <i>Toleria</i>) <i>romanovi</i> Leech <kubiaka-sukashiba> phe. in Korea	*Z3,Z13-18:OH + *Z3,Z13-18:OAc (8:1) + other components (9:1)		Arakawa, 2009 Naka, 2010 Yang, 2011(b)	A
<i>Macroscelesia japona</i> Hampson	*E2,Z13-18:Ald		Naka, 2007	A

<momobuto-sukashiba> phe.	+ *E2,Z13-18:OH (10:1)	Islam, 2007	
<i>Macroscelesia longipes</i> Moore <ashinagamobuto-sukashiba> phe.	*E2,Z13-18:OH + *E2,Z13-18:Ald (20:1)	Naka, 2007	A
<i>Melittia cucurbitae</i> Harris squash vine bore phe.	E2,Z13-18:OAc + Z3,Z13-18:OAc (99:1)	Alm, 1989 Snow, 1991	C
	*E2,Z13-18:OAc + *Z3,Z13-18:OAc (68.5:0.1) + other componets	Klun, 1990	
<i>Melittia satyriniformis</i> Hübner squash vine borer phe.	*E2,Z13-18:OAc	Schwarz, 1983(b)	C
<i>Nokona feralis</i> Leech <kikubi-sukashiba> phe.	*E3,Z13-18:OAc + *E3,Z13-18:OH (7:3)	Naka, 2018	A
<i>Nokona pernix</i> Leech <himeato-sukashiba> phe.	*E3,Z13-18:OH + *Z3,Z13-18:OH (9:1)	Naka, 2006	A
<i>Nokona</i> (= <i>Paranthrene</i>) <i>regalis</i> Butler vine tree borer <budou-sukashiba> phe.	*E3,Z13-18:OH E3,Z13-18:OH	Guo, 1990(b) Zhou, 1995 Shoji, 2009	A
<i>Osminia ruficornis</i> Henry Edwards att.	E2,Z13-18:OH or + E2,Z13-18:OAc (1:1)	Snow, 1989	D
<i>Paranthrene asilipennis</i> Boisdural att.	Z3,Z13-18:OAc E2,Z13-18:OAc + Z13-18:OAc (24:1)	Sharp, 1978 Snow, 1989	C
<i>Paranthrene dollii</i> Neumoegen att.	E3,Z13-18:OH + Z3,Z13-18:OH (3:1)	Nielsen, 1979	C
	(1:1)	Greenfield, 1979	
<i>Paranthrene pellucida</i> Greenfield & Karandinos	E3,Z13-18:OAc + Z3,Z13-18:OAc (4:1)	Greenfield, 1979	C

<i>Paranthrene robiniae</i> Hy. Edwards western poplar clearwing phe. att.	*E3,Z13-18:OH + *Z3,Z13-18:OH (4:1)	Cowles, 1996	C
<i>Paranthrene simulans</i> Grote oak borer att.	Z3,Z13-18:OAc + E2,Z13-18:OAc (1:1)	Nielsen, 1975 Snow, 1989	C
<i>Paranthrene tabaniformis</i> Rottemburg poplar twig clearwing moth phe.	E3,Z13-18:OH + Z3,Z13-18:OAc (9:1) + Z3,Z13-18:OH (9:1) *E3,Z13-18:OH + *Z3,Z13-18:OH + *E2,Z13-18:OH N + other components	Greenfield, 1979 Brown, 1986(b) Du in Arn, 1997 Nielsen, 1979 Karalius, 2001 Zhang, 1986 Mozūraitis, 2007	C
<i>Podosesia aureocincta</i> Purrington & Nielsen banded ash clearwing moth att.	Z3,Z13-18:OAc + E3,Z13-18:OAc + Z3,Z13-18:OH (20:1:3) Z3,Z13-18:OAc + Z3,Z13-18:OH (1:1) or + E3,Z13-18:OH (1:1)	Nielsen, 1978(b) Snow, 1985	D
<i>Podosesia syringae</i> Harris lilac borer att.	Z3,Z13-18:OAc	Nielsen, 1975 Adler, 1983	D
<i>Pyropteron</i> sp. att.	Z3,Z13-18:OH + Z3,Z13-18:OAc (9:1)	Bûda, 1993	D
<i>Sannina uroceriformis</i> Walker persimmon borer att.	E3,Z13-18:OH + Z3,Z13-18:OH (4:1) + Z3,Z13-18:OAc (9:1) E3,Z13-18:OH	Nielsen, 1979 Solomon, 1982 Snow, 1985	D

<i>Sesia apiformis</i> Cl. hornet moth phe.	*E2,Z13-18:Ald + *Z3,Z13-18:OH (3:2) + other components	Francke, 2004	C
<i>Sesia</i> (= <i>Aegeria</i>) <i>rhynchioides</i> Butler <kashiwa-sukashiba> att.	E3,Z13-18:OAc + Z3,Z13-18:OAc (1:1)	Tamaki, 1977(c)	A
<i>Sesia tibialis</i> Harris cottonwood crown borer att.	Z3,Z13-18:OAc + Z3,Z13-18:OH (4:1)	Underhill, 1978	C
<i>Sesia yezoensis</i> Hampson <kita-sukashiba> att.	Z3,Z13-18:OAc + Z3,Z13-18:OH (9:1)	Bûda, 1993	A
<i>Sphecia</i> (= <i>Sesia</i>) <i>siningenis</i> Hsu poplar pole clearwing moth phe.	*Z3,Z13-18:OH	Guo, 1990(a)	C
<i>Synanthedon acerni</i> Clemens maple callus borer att.	Z3,Z13-18:OAc + E3,Z13-18:OH (9:1) + Z3,Z13-18:OH (1:1)	Nielsen, 1979 Snow, 1985	C
<i>Synanthedon acerrubi</i> Engelhardt att.	E2,Z13-18:OAc + Z3,Z13-18:OAc (100:1)	Schwarz, 1983(b) Alm, 1989 Snow, 1991	C
<i>Synanthedon alleri</i> Engelhardt att.	E3,Z13-18:OAc + E3,Z13-18:OH (1:1)	Sharp, 1978 Snow, 1985	C
<i>Synanthedon andrenaeformis</i> Lasp. att.	E3,Z13-18:OAc + E2,Z13-18:OAc (10:1)	Priesner, 1986(a)	C
<i>Synanthedon arkansasensis</i> Duckworth & Eichlin att.	E3,Z13-18:OAc E3,Z13-18:OH	Sharp, 1978 Solomon, 1982	C
<i>Synanthedon bibionipennis</i> Boisduval strawberry crown moth att.	E3,Z13-18:OAc + E3,Z13-18:OH (2:1)	Nielsen, 1978(a)	C

<i>Synanthedon bicingulata</i> Staudinger phe.	*Z3,Z13-18:OAc + *E3,Z13-18:OAc (3:2)	Yang, 2011(a)	C
<i>Synanthedon bolteri</i> Hy. Edwards att.	E2,Z13-18:OAc + Z3,Z13-18:OAc (99:1)	Taft, 2005	C
<i>Synanthedon castaneae</i> Busck clearwing chestnut moth att.	E3,Z13-18:OH	Brown, 1986(b) Anagnostakis, 1994	C
<i>Synanthedon castanerora</i> att.	E3,Z13-18:OH	Lin, 1993	C
<i>Synanthedon caucasicum</i> Gorbunov att.	E3,Z13-18:OAc + Z3,Z13-18:OAc (9:1)	Mäeorg in Arn, 1992 Bûda, 1993	C
<i>Synanthedon conopiformis</i> Esp. att.	E3,Z13-18:OH	Bûda, 1993	C
<i>Synanthedon culiciformis</i> L. att.	Z3,Z13-18:OAc	Fassotte in Arn, 1986(a)	C
<i>Synanthedon decipiens</i> Henry Edwards att.	E3,Z13-18:OAc + Z3,Z13-18:OAc (7:3) Z3,Z13-18:OAc + Z2,Z13-18:OAc (1:1)	Sharp, 1978 Greenfield, 1979 Snow, 1985 Snow, 1989	C
<i>Synanthedon dominicki</i> Duckworth att.	E2,Z13-18:OAc	Brown, 1985(d)	C
<i>Synanthedon exitiosa</i> Say peachtree borer phe.	*Z3,Z13-18:OAc + E3,Z13-18:OAc (24:1)	Tumlinson, 1974 Barry, 1978	C
<i>Synanthedon fatifera</i> Hodges viburnum borer att.	Z3,Z13-18:OAc + E3,Z13-18:OAc (9:1)	Nielsen, 1975 Adler, 1983 Greenfield, 1979	C
<i>Synanthedon flaviventris</i> Staudinger att.	E2,Z13-18:OAc + Z3,Z13-18:OAc (49:1)	Karalius, 2006	C

<i>Synanthedon formicaeformis</i> Esp. att.	E2,Z13-18:OAc + E3,Z13-18:OAc (1:1)	Priesner, 1986(a)	C
<i>Synanthedon fulvipes</i> Harris att.	Z3,Z13-18:OAc + other isomers	Nielsen, 1979	C
<i>Synanthedon haitangvora</i> Yang phe.	*Z3,Z13-18:OAc + *E2,Z13-18:OAc (1:1) + other components	Yang, 2009(b)	B
<i>Synanthedon hector</i> Butler cherry tree borer <ko-sukashiba> phe.	E3,Z13-18:OAc + Z3,Z13-18:OAc (1:1) *E3,Z13-18:OAc + *Z3,Z13-18:OAc (1:1) + another component	Yaginuma, 1976 Naka, 2008	A
<i>Synanthedon kathyae</i> Duckworth & Eichlin att.	Z3,Z13-18:OAc or E3,Z13-18:OAc	Duckworth, 1977(b)	C
<i>Synanthedon mesiaeformis</i> att. Herrich-Schäffer	E2,Z13-18:OAc + Z3,Z13-18:OAc (1:1)	Karalius, 2006	C
<i>Synanthedon myopaeformis</i> Borkhausen apple clearwing moth phe.	Z3,Z13-18:OAc + Z3,E13-18:OAc + E3,Z13-18:OAc + E3,E13-18:OAc (95:2:2:1) *Z3,Z13-18:OAc + other components	Voerman, 1978(b) Judd, 2011	C
<i>Synanthedon novaroensis</i> Henry Edwards Douglas-fir pitch moth att.	Z3,Z13-18:OAc	Rocchini, 2003	C
<i>Synanthedon pictipes</i> Grote & Robinson lesser peachtree borer phe.	*E3,Z13-18:OAc + Z3,E13-18:OAc (1:1) Z3,Z13-18:OAc	Tumlinson, 1974 Karandinos, 1977 Adler, 1983	C
<i>Synanthedon proxima</i> Henry Edwards att.	Z3,Z13-18:OAc	Nielsen in Arn, 1986(a)	C

	+ E3,Z13-18:OAc (3:7)	Greenfield, 1979	
	E3,Z13-18:OAc	Brown, 1986(b)	
<i>Synanthedon pyri</i> Harris <i>att.</i>	E2,Z13-18:OAc + Z3,Z13-18:OAc (99:1)	Alm, 1989 Snow, 1991	C
<i>Synanthedon quercus</i> Matsumura <kashiko-sukashiba> <i>att.</i>	Z3,E13-18:OAc + E3,E13-18:OAc (1:1)	Tamaki, 1977(c)	A
<i>Synanthedon refulgens</i> Henry Edwards <i>att.</i>	E2,Z13-18:OAc + Z3,Z13-18:OAc (100:1)	Snow, 1991	C
<i>Synanthedon rhododendri</i> Beutenmüller rhododendron borer <i>att.</i>	Z3,Z13-18:OAc + E3,Z13-18:OAc (49:1) Z3,Z13-18:OAc	Nielsen, 1979 Neal, 1981 Adler, 1983	C
<i>Synanthedon rileyana</i> Henry Edwards horse nettle borer <i>att.</i>	E3,Z13-18:OH + E3,Z13-18:OAc (3:1) + Z3,Z13-18:OAc (1:1) E2,Z13-18:OAc	Nielsen, 1979 Williams, 1999 Snow, 1985 Snow, 1989	C
<i>Synanthedon rubrofascia</i> Henry Edwards <i>att.</i>	Z3,Z13-18:OAc + E3,Z13-18:OAc (3:1) (1:3)	Brown, 1986(a) Nielsen, 1975 Brown in Arn, 1992	C
<i>Synanthedon sapygaeformis</i> Walker <i>att.</i>	Z3,Z13-18:OAc	Sharp, 1978 Brown, 1986(a)	C
<i>Synanthedon scitula</i> Harris dogwood borer <i>phe.</i>	Z3,Z13-18:OAc + E2,Z13-18:OAc (1:100) *Z3,Z13-18:OAc + *Z3,E13-18:OAc + *E2,Z13-18:OAc (44:3:3)	Nielsen, 1975 Adler, 1983 Alm, 1989 Snow, 1991 Zhang, 2005 Leskey, 2006	C

<i>Synanthedon scoliaeformis</i> Borkh Welsh clearwing phe.	E2,Z13-18:OAc *E2,Z13-18:OAc + other components	Bûda, 1993 Mozūraitis, 2013	C
<i>Synanthedon sequoiae</i> Henry Edwards sequoia pitch moth att.	Z3,Z13-18:OH	Nielsen, 1978(a)	C
<i>Synanthedon serica</i> Alpheraky att.	E2,Z13-18:OAc + E3,Z13-18:OAc (1:1)	Karalius, 2001	C
<i>Synanthedon soffneri</i> Spatenka att.	E2,Z13-18:OAc + Z3,Z13-18:OAc (10:1)	Priesner, 1993	C
<i>Synanthedon spuleri</i> Fuchs att.	E3,Z13-18:OAc + E2,Z13-18:OAc (10:1)	Priesner, 1986(a)	C
<i>Synanthedon tenuis</i> Butler <hime-sukashiba> phe. Korean strain	Z3,Z13-18:OAc *Z3,Z13-18:OAc *Z3,Z13-18:OH	Tamaki, 1977(c) Naka, 2013 Yang, 2012	A
<i>Synanthedon tipuliformis</i> Clerck currant borer phe.	E2,Z13-18:OAc + E3,Z13-18:OAc (100:3–100:10) + Z3,Z13-18:OAc (99:1) *E2,Z13-18:OAc + *Z13-18:OAc (93:7) + *E3,Z13-18:OAc (97:3) + *E3,Z13-18:OAc (100:0.7) + other components	Voerman, 1984 Priesner, 1986(a) Meyer, 1994 Szöcs, 1985 James, 2001 Mozūraitis, 2006	C
In Tasmania, Hungary	E2,Z13-18:OAc	Szöcs, 1990	
In New Zealand	+ E3,Z13-18:OAc (100:3) (100:0)	Szöcs, 1990 Suckling, 2005(a)	
In Europe	+ E3,Z13-18:OAc (100:3)	Szöcs, 1991	

<i>Synanthedon typhiaeformis</i> att.	Z3,Z13-18:OAc + Z3,E13-18:OAc + E3,Z13-18:OAc + E3,E13-18:OAc (95:2:2:1)	Maini in Arn, 1986(a)	C
<i>Synanthedon vespiformis</i> L. yellow-legged clearwing phe.	E3,Z13-18:OAc + Z3,Z13-18:OAc (9:1) *E3,Z13-18:OAc + *Z3,Z13-18:OAc (4:1)	Voerman, 1983 Levi-Zada, 2011(b)	C
<i>Synanthedon viburni</i> Engelhardt att.	E3,Z13-18:OAc + Z3,Z13-18:OAc (9:1)	Greenfield, 1979	C
<i>Vitacea polistiformis</i> Harris grape root borer phe.	*E2,Z13-18:OAc + Z3,Z13-18:OAc (99:1)	Schwarz, 1983(b) Snow, 1987	D
<i>Vitacea scepiformis</i> Henry Edwards att.	E3,Z13-18:OAc + Z3,Z13-18:OAc (3:1–9:1)	Sharp, 1978	D

(Sesiidae; Tinthiinae) スカシバガ科 ; ヒメスカシバ亜科

<i>Microsphecia</i> (= <i>Tinthia</i>) <i>brosiformis</i> Hübner att.	E3,Z13-18:OAc	Bûda, 1993	D
<i>Paradoxecia pieli</i> L. (= <i>Paradoxes prelle</i> L.) mulberry clearwing moth phe.	*E3,Z13-18:OAc + another component	Tan, 1992 Lin, 1993	D
<i>Pennisetia bohemica</i> Kralicek & Povolny att.	E3,Z13-18:OH + E3,Z13-18:OAc (100:1)	Priesner, 1990	C
<i>Pennisetia hylaeiformis</i> Laspeyres raspberry clearwing moth <karafuto-sukashiba> att.	E3,Z13-18:OAc + E3,Z13-18:OH (1:1)	Priesner, 1986(b)	A
<i>Pennisetia marginata</i> Harris blackberry clearwing borer phe.	E3,Z13-18:OH	Solomon, 1982 Brown, 1985(a)	C

	*E3,Z13-18:Ald	Judd, 2012 Teasdale, 2013	
<i>Similipepsis takizawai</i> Arita et Spatenka att.	E3,Z13-18:OH + E2,Z13-18:OAc (1:1)	Bûda, 1993	D
<i>Zenodoxus</i> (= <i>Tinthia</i>) <i>hoplisiformis</i> Mann. att.	E3,Z13-18:OAc + E2,Z13-18:OAc (1:1)	Bûda, 1993	C
<i>Zenodoxus tineiformis</i> Esper att.	E3,Z13-18:OAc	Nielsen, 1979	C

(Brachodidae) ヒロハマキモドキガ科

<i>Brachodes appendiculata</i> Esper att.	E3,Z13-18:OAc	Karalius, 2005	D
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(13) [Cossoidea] ボクトウガ上科
(Cossidae) ボクトウガ科

<i>Acosus centerensis</i> Litner aspen carpenterworm att.	E3,E5-14:OAc	Doolittle, 1976(a)	D
<i>Chilecomadia valdiviana</i> Philippi phe.	*Z7,Z10-16:Ald + other components	Herrera, 2016 Lapointe, 2017	D
<i>Coryphodema tristis</i> Drury quince borer phe.	*Z9-14:OAc + *Z9-14:OH (47:3) + another component + 14:OAc (38:1:1)	Bouwer, 2015 Bouwer, 2017	D
<i>Cossus cossus</i> L. European goat moth <oobokutou> phe.	Z5-12:OAc + Z3-10:OAc (4:1) + Z5-14:OAc (4:1:1) *Z5-12:OAc + Z3-12:OAc (4:1) + other components	Pasqualini in Arn, 1992 Sziráki in Arn, 1997 Capizzi, 1983	B

<i>Cossus insularis</i> Staudinger carpenterworm moth <hime-bokutou> phe.	*E3-14:OAc + other components	Chen, 2006	A
<i>Cossus mongolicus</i> att.	Z5-12:OAc	Qi in Arn, 1992	C
<i>Holcocerus arenicola</i> Staudinger sand <i>Salix</i> carpenterworm phe.	*Z7-14:OAc + *Z5-14:OAc + *Z7-14:OH (20:8:5) + another component	Jing, 2010	D
<i>Holcocerus artemisiae</i> Chou & Hua sand sagebrush carpenterworm phe.	*Z5-12:OAc + *Z5-14:OAc (5:3) + other components	Zhang, 2009	D
<i>Holcocerus hippophaecolus</i> Hua sandthorn carpenterworm phe.	*E3-14:OAc + *Z7-14:OAc (1:1) + other components + *E7-14:OAc (10:10:1)	Fang, 2005 Cheng, 2007	D
<i>Holcocerus insularis</i> Staudinger carpenterworm moth phe.	*Z3-14:OAc + other components	Zhang, 2001	D
<i>Holcocerus vicarius</i> Walker carpenterworm moth phe.	*Z7-14:OAc + *E3-14:OAc + *Z3,E5-14:OAc + *Z7-14:OH (50:22:17:10)	Yang, 2015	D
<i>Isoceras sibirica</i> Alpheraky phe.	*Z9-14:OAc + *Z7-14:OAc + *Z9-16:OAc (10:5:1) + other components	Zhang, 2011	D
<i>Prionoxystus piger</i> att.	Z3,E5-14:OAc	Landolt, 1985	D
<i>Prionoxystus robiniae</i> Peck carpenterworm att.	Z3,E5-14:OAc + E3,E5-14:OAc (9:1-3:7)	Doolittle, 1976 (a,b) Solomon, 1978 Doolittle, 1986	D

	+ E3-14:OAc (9:1)	Doolittle, 1986	
<i>Zeuzera pyrina</i> L. leopard moth phe.	*E2,Z13-18:OAc + *Z13-18:OAc + *18:OAc N	Tonini, 1986	C
	+ *Z2,Z13-18:OAc (97:1:2) N	Frérot, 1986	
	+ *E3,Z13-18:OAc (39:9:2) N	Malosse, 1993	
	E2,Z13-18:OAc + E2-18:OAc (19:1)	Castellari in Arn, 1992	
	+ E3,Z13-18:OAc (19:1)	Pasqualini in Arn, 1992,1997	
	+ Z2,Z13-18:OAc (19:1:1)	Pasqualini in Arn, 1997	

- (14) [Tortricoidea] ハマキガ上科
(Tortricidae; Tortricinae) ハマキガ科 ; ハマキガ亜科
a: Archipini (カクモンハマキガ族) b: Cnephasiini (ハイイロハマキガ族),
c: Tortricini (ハマキガ族), d: Epitymbiini,* e: Phricanthini,* f: Schoenotenini*
g: Cochylini (ホソハマキガ族), h: Sparganothini (テングハマキガ族)
* Species in this tribe is not distributed in Japan.

<i>Acleris</i> ^c <i>affinitana</i> Snellen <puraiya-hamaki> att.	E11,Δ13-14:Ald	Ando, 1987	A
<i>Acleris chalybeana</i> Fernald att.	E11-14:Ald + Z11-14:Ald (19:1)	Sanders, 1993	C
<i>Acleris comariana</i> Lienig & Zeller strawberry tortrix <baremone-hamaki> phe.	*E11,Δ13-14:Ald	Svensson, 2019	A
<i>Acleris emargana</i> F. <eguri-hamaki> att.	E11-14:Ald	Weatherston, 1974(a)	A
<i>Acleris enitescens</i> Meyrick <seusuiro-hamaki>	E11-14:OAc + E11-14:Ald (1:1)	Ando, 1981	A

<i>Acleris ferrugana</i> Denis & Schiffermüller	E11-14:Ald + Z11-14:Ald (9:1)	Frerot, 1985	B
<i>Acleris filipjevi</i> Obraztsov <kousuao-hamaki>	E11-14:Ald + E11-14:OAc (9:1)	Ando, 1981	A
<i>Acleris fimbriana</i> Thunberg & Becklin yellow tortrix	*E11,Δ13-14:Ald + *E11,Δ13-14:OAc + *E11-14:OAc (6:4:1) + another component	Liu, 2002(a); 2002(b); 2003	C
<i>Acleris fuscana</i> Barnes & Busck	E11-14:Ald + Z11-14:Ald (19:1)	Sanders, 1993	C
<i>Acleris gloverana</i> Walsingham western blackheaded budworm	*E11,Δ13-14:Ald + *Z11,Δ13-14:Ald (20:1) + other components	Gray, 1996	C
<i>Acleris hispidana</i> Christoph <haimidaremon-hamaki>	E11,Δ13-14:Ald + E11-14:Ald (1:1)	Ando, 1987	A
<i>Acleris japonica</i> Walsingham <nakajiro-hamaki>	E11,Δ13-14:Ald + E11-14:Ald (9:1)	Ando, 1987	A
<i>Acleris maccana</i> Tr.	E11-14:Ald + Z11-14:Ald (19:1)	Sanders, 1993	C
<i>Acleris maximana</i> Barnes & Busck	E11-14:Ald + Z11-14:Ald (19:1)	Sanders, 1993	C
<i>Acleris minuta</i> Robinson yellowheaded fireworm	*E11,Δ13-14:Ald + other components	Schwarz, 1983(a)	C
<i>Acleris nigrilineana</i> Kawabe <suji-guro-hamaki>	E11,Δ13-14:Ald + E11-14:Ald (1:1)	Ando, 1987	A

<i>Acleris paradiseana</i> Walsingham <tsumamon-eguri-hamaki> att.	E11-14:OAc	Ando, 1978	A
<i>Acleris perfundana</i> Kuznetsov <narako-hamaki> att.	Z11-14:Ald + E11-14:Ald (1:1)	Ando, 1981	A
<i>Acleris rhombana</i> Denis & Shiffermüller att.	E11-14:OAc + Z11-14:OAc (4:1)	Frerot, 1979(b)	C
<i>Acleris scabrana</i> Denis & Shiffermüller att.	E11-14:Ald	Tagestad, 1975	C
<i>Acleris sparsana</i> Denis & Shiffermüller att.	E11-14:Ald + Z11-14:Ald (24:1) (9:1)	Knauf in Arn, 1986(a) Booij, 1985 Frerot, 1985	C
<i>Acleris tripunctata</i> Hübner att.	E11-14:Ald + Z11-14:Ald (1:1)	Booij, 1985	C
<i>Acleris variana</i> Fern. eastern blackheaded budworm phe.	*E11,Δ13-14:Ald	Gries, 1994(a)	C
<i>Acropolitis</i> ^a <i>ergophora</i> Meyrick phe.	*Z11-14:OAc E	Horak, 1988	D
<i>Acropolitis hedista</i> Turner phe.	*E11-14:OAc + *14:OAc (7:13) N	Horak, 1988	D
<i>Acropolitis rudisana</i> Walker phe.	*Z11-14:OAc + *E11-14:OAc (97:3) E	Horak, 1988	D
<i>Acropolitis xuthobapta</i> Turner phe.	*Z11-14:OAc + *E11-14:OAc (89:11)	Horak, 1988	D
<i>Adoxophyes</i> ^a <i>honmai</i> Yasuda smaller tea tortrix <chanokokakumon-hamaki> phe.	*Z9-14:OAc + *Z11-14:OAc (7:4) + *E11-14:OAc + *Me10-12:OAc (63:31:4:2)	Tamaki, 1971(b) Tamaki, 1979; 1980	A

	R:S = 19:1	Tamaki, 1983	
	+ other components	Noguchi, 1985	
Chaineese strain	(47:50:1:2)	Hsiao, 1990	
Taiwanese strain	*Z9-14:OAc + *Z11-14:OAc (9:16)	Kou, 1990; 1992(c)	
Korean strain	(1:2) + other components	Yang, 2009(a)	
	Z9,E12-14:OAc + Me11,Z9,Δ12-13:OAc + Z11-14:OAc (7:3:3)	Negishi, 1979	
<i>Adoxophyes orana</i> Fisher von Röslerstamm summerfruit tortrix phe.	*Z9-14:OAc + *Z11-14:OAc (3:1) (9:1)	Meijer, 1972 Minks, 1973(a)	B
In Romania	(4:1)	Ghizdavu in Arn, 1997	
	+ *Z9-14:OH + *Z11-14:OH (155:27:4:0.4) + other components	Guerin, 1986(a)	
Korea strain	(4:1) + other components	Yang, 2009(a)	
<i>Adoxophyes orana fasciata</i> Walsingham <ringonokokakumon-hamaki> phe.	*Z9-14:OAc + *Z11-14:OAc (13:4) + other components	Tamaki, 1971(a) Sugie, 1984(b) Noguchi, 1985	A
<i>Adoxophyes privatana</i> Walker phe.	Z9-14:OAc + Z11-14:OAc + E11-14:OAc + Me10-12:OAc (63:31:4:2) Z11-14:OAc + Z9-14:OAc (9:1)	Shry, 1985 Hai, 2002	C

	*Z11-14:OAc + *Z9-14:OAc (9:1)	Vang, 2013	
<i>Adoxophyes privatara</i> att.	Z9-14:OAc + Z11-14:OAc + E11-14:OAc + Me10-12:OAc (63:31:4:2)	Shi in Arn, 1992	C
<i>Adoxophyes reticulana</i> Hübner att.	Z9-14:OAc + Z11-14:OAc (1:1)	Chambon, 1974	C
<i>Adoxophyes</i> sp. Korean strain phe.	*Z9-14:OAc + *Z11-14:OAc (1:40) + other components	Yang, 2009(a)	C
<i>Aethes</i> ^g <i>margarotana</i> Dup. att.	Z11-14:OAc + E11-14:OAc (3:2)	Frerot, 1982(a)	C
<i>Aethes rubigana</i> Treitschke <edaobi-hosohamaki> att.	Z11-14:OAc + Z11-14:OH (9:1)	Frerot, 1979(b)	A
	Z11-14:OAc + E11-14:OAc (1:1)	Ando, 1981	
<i>Agapeta</i> ^g <i>hamana</i> L. att.	Z11-14:OAc + Z11-14:OH (50:1) or + 12:OAc (50:1)	Tóth, 1985	D
<i>Agapeta zoegana</i> phe.	Z11-14:OAc	Maini in Arn, 1986(a)	D
	*Z11-14:OAc + other components	Tóth, 1985	
<i>Aleimma</i> ^c <i>loeflingiana</i> L. att.	E11-14:OAc + Z11-14:OAc	Frerot, 1979(b)	D
	E11-14:OAc + E11-14:Ald (1:1)	Booij, 1985	
<i>Amorbia</i> ^h <i>cuneana</i> Walsingham western avocado leafroller phe.	*E10,Z12-14:OAc + *E10,E12-14:OAc (17:8) + other components	McDonough, 1982(a)	D

	(53:47)	Hoffmann, 1983	
	(63:37–11:89)	Bailey, 1986	
<i>Aphelia</i> ^a <i>paleana</i> Hübner att.	Z11-14:OAc + E11-14:OAc (9:1) + Z11-14:OH + Z11-14:Ald (100:2:0.75:1)	Hrdý, 1979 Booij, 1984(a) Peltotalo, 1986 Ostrauskas, 2010(b)	C
<i>Aphelia viburnana</i> Denis & Shiffermüller att.	Z11-14:Ald	Booij, 1985 Guerin, 1986(c)	C
<i>Archips</i> ^a <i>argyrosphilus</i> Walker fruittree leafroller phe.	*Z11-14:OAc + *E11-14:OAc (7:3) + other components + *Z9-14:OAc + *12:OAc (15:10:1:50) (100:64:2:1)	Roelofs, 1974(d) Cardé, 1977(a) Deland, 1993	C
<i>Archips asiaticus</i> Walsingham (= <i>audax</i> Razowski) <atoki-hamaki> att.	E11-14:OAc + Z11-14:OAc (9:1) (7:3)	Ando, 1978 Mizukoshi, 2006	A
	Z9-14:OAc + Z11-14:OAc (9:1)	Mizukoshi, 2006	
<i>Archips atrolucens</i> Diakonoff phe.	Z11-14:OAc + E11-14:OAc (1:1) *Z11-14:OAc + *E11-14:OAc + *14:OAc (2:1:1)	Hai, 2002 Vang, 2013	C
<i>Archips breviplicanus</i> Walsingham Asiatic leafroller <hosoatoki-hamaki> <ringomon-hamaki> phe.	*E11-14:OAc + *Z11-14:OAc (7:3)	Sugie, 1977	A

<i>Archips capsigeranus</i> Kennel <katakake-hamaki> <i>att.</i>	Z11-14:OAc + E11-14:OAc (1:1) (1:4)	Ando, 1981 Kozaki, 1984	A
<i>Archips cerasivoranus</i> Fitch uglynest caterpillar <i>phe.</i>	*E11-14:OAc + *Z11-14:OAc (83:17)	Roelofs, 1980	C
<i>Archips crataegana</i> Hübner <i>att.</i>	Z11-14:OAc + Z9-14:OAc (3:1) + E11-14:OAc + Z9-14:OH (82:9:9) + Z9-14:OAc + Z11-14:OH (36:15:2)	Ghizdavu, 1987 Ryabchinskaya in Arn, 1992 Kovalev in Arn, 1992	C
<i>Archips fuscocupreanus</i> Walsingham <midarekakumon-hamaki> <i>att.</i>	Z11-14:OAc + E11-14:OAc (4:1)	Ando, 1981	A
<i>Archips griseus</i> Robinson black-shield leafroller <i>att.</i>	Z11-14:Ald + E11-14:Ald (3:1)	Grant, 1983	C
<i>Archips ingentanus</i> Christoph <ooatoki-hamaki> <i>att.</i>	Z11-14:OAc + Z11-14:OH (9:1)	Ando, 1978	A
<i>Archips micaceanus</i> Walker <i>att.</i>	Z11-14:OAc + E11-14:OAc + 12:OAc (7:3:40)	Zeleny, 1982 Spitzer, 1983	C
<i>Archips mortuanus</i> Kearfoot duskyback leafroller <i>att.</i>	Z11-14:OAc + E11-14:OAc + Z9-14:OAc (90:10:1)	Cardé, 1977(a)	C
<i>Archips oporana</i> L. <i>att.</i>	Z11-14:OAc + E11-14:OAc (9:1)	Booij, 1984(a)	B
<i>Archips oporanus</i> (= <i>piceanus</i>) <i>similis</i> Butler <matsuatoki-hamaki>	Z11-14:OAc + E11-14:OAc (4:1)	Ando, 1978	A

		(1:1)	Kozaki, 1984	
<i>Archips peratrata</i> Yasuda <kuroshio-hamaki> att.	Z11-14:OAc + E11-14:OAc	(9:1)	Ando, 1981	A
<i>Archips podana</i> Scopoli fruittree tortrix phe.	*Z11-14:OAc + *E11-14:OAc	(1:1)	Persoons, 1974	C
	+ *Z11-14:OH		Safonkin, 2003	
<i>Archips poraivora</i> Meyrick att.	Z11-14:OAc + E11-14:OAc + Z11-14:OH	(97:3:5)	Bhardwaj, 1987	C
<i>Archips rosana</i> L. European leafroller filbert leafroller phe.	*Z11-14:OAc + *Z11-14:OH	(9:1)	Roelofs, 1976(a)	C
		(87:13)	AliNiazee, 1976	
	+ *E11-14:OAc	(10:1:0.01)	Guerin in Arn, 1986(a)	
	+ Z11-14:Ald	(100:0.75:2:1)	Ostrauskas, 2010(b)	
<i>Archips semiferanus</i> Walker oak leafroller phe.	*Z10-14:OAc + other components		Hendry, 1974 Hendry, 1975	C
	*E11-14:OAc + *Z11-14:OAc	(2:1)	Miller, 1976	
<i>Archips seminubilis</i> Meyrick att.	Z11-14:OAc		Zeleny, 1982 Spitzer, 1983	C
<i>Archips semistructus</i> Meyrick <usuatoki-hamaki> att.	Z11-14:OAc		Ando, 1977	A
<i>Archips strojny</i> Razowski tea tortrix phe.	*Z11-14:OAc + another component		Fu, 2022	C
<i>Archips subrupanus</i> att.	Z11-14:OAc		Song in Arn, 1992	C
<i>Archips tsuganus</i> Powell att.	E11-14:OAc		Daterman, 1977	C

<i>Archips viola</i> Falkovitsh <murasakikakumon- hamaki> att.	E11-14:OAc + Z11-14:OAc (7:3)	Ando, 1981	A
<i>Archips xylosteanus</i> L. <kakumon-hamaki> phe.	Z11-14:OAc + E11-14:OAc (4:1)	Ando, 1978	A
	*Z11-14:OAc + *E11-14:OAc (23:2)	Frerot, 1983	
<i>Argyrotaenia</i> ^a (= <i>Neocalyptis</i>) <i>angustilineata</i> Walsingham <kohosouji-hamaki> att.	Z11-14:OAc + Z9,E12-14:OAc (1:1)	Ando, 1978	A
	Z11-14:OAc + Z9-12:OAc (1:1)	Ando, 1981 Kim, 2014(b)	
	Z9-14:OAc + Z11-14:OAc (9:1)	Mizukoshi, 2006	
<i>Argyrotaenia citrana</i> Fernald orange tortrix phe.	*Z11-14:OAc + *Z11-14:Ald (15:1)	Hill, 1975(b)	C
<i>Argyrotaenia dorsalana</i> Dyar att.	Z11-14:OAc	Steck, 1977(a) Daterman, 1977	C
	+ Z11-14:OH (1:1)	Steck, 1977(a)	
<i>Argyrotaenia liratana</i> Christoph (= <i>tricensa</i> Meyrick) <futamonko-hamaki> att.	Z9-12:OAc	Nagano, 1979	A
<i>Argyrotaenia pomililiana</i> L. phe.	*Z11-14:OAc + *Z11-14:Ald (20:1) + other components	Cichón, 2004	C
<i>Argyrotaenia pulchellana</i> Haworth phe.	Z11-14:OAc	Maini, 1973	C
	+ E11-14:OAc (9:1)	Frerot, 1979(b)	
	*Z11-14:OAc + *E11-14:OAc (76:19) + other components	Frerot, 1984	

<i>Argyrotaenia quadrifasciana</i> att. phe.	Z10-12:OAc	Roelofs in Arn, 1986(a)	C
<i>Argyrotaenia sphaleropa</i> Meyrick phe.	*Z11,Δ13-14:Ald + *Z11-14:Ald (9:1) + *Z11,Δ13-14:OAc + *Z11-14:OAc	Nunez, 2002	C
	*Z11,Δ13-14:Ald + *Z11,Δ13-14:OAc (10:1)	Legrand, 2004	
	Z11,Δ13-14:Ald + Z11,Δ13-14:OAc (9:1-1:9)	Bavaresco, 2005	
<i>Argyrotaenia velutinana</i> Walker redbanded leafroller phe.	*Z11-14:OAc + *E11-14:OAc + *12:OAc (88:12:125) + other components	Roelofs, 1968(a); 1968(b) Roelofs, 1975(a) Bjostad in Arn, 1986(a)	C
<i>Arotrophora</i> ^b <i>arcuatalis</i> Walker phe.	*Z11-14:OAc + *E11-14:OAc (97:3) N	Horak, 1988	D
<i>Asthenoptycha</i> ^d sp. phe.	*Z8-14:OAc + *Z10-14:OAc (9:1) E	Horak, 1988	D
<i>Cacoecimorpha</i> ^a <i>pronubana</i> Hübner European carnation tortrix phe.	Z11-14:OAc + Z9-14:OAc Z11-14:OAc + Z11-14:OH + 14:OAc (18:1:1:20) Z11-14:OAc + E11-14:OAc + Z11-14:OH *Z11-14:OAc + *E11-14:OAc + *Z11-14:OH (87:3:10) + other components	Frerot, 1979(b) Soldán, 1983 Arsura in Arn, 1986(a) Frerot, 1982(b) Descoins, 1985	D

	+ *Z9-14:OAc [82:5:7:1] N (100:3:30:3)	Kovalev, 1985 Witzgall, 1989(a); 1990	
<i>Capnoptycha</i> ^d phe. <i>ipnitis</i> Meyrick	*Z8-14:OAc + *Z10-14:OAc (83:17) N	Horak, 1988	D
<i>Catamacta</i> ^a phe. <i>gavisana</i>	*Z11-14:OAc + *E11-14:OAc (49:51–61:39) N	Foster, 1988	D
<i>Cenopis</i> ^h phe. <i>acerivorana</i> MacKay maple leafroller	Z11-14:Ald + E11-14:Ald (4:1) *Z11-14:Ald + *E11-14:Ald + *Z11-14:OAc (13:7:2) + other components	Weatherston, 1978 Grant, 1983	C
<i>Choristoneura</i> ^a att. <i>biennis</i> Freeman two-year-cycle spruce budworm	E11-14:Ald	Sanders, 1974; 1993	C
<i>Choristoneura</i> att. <i>carnana</i> Barnes & Busck	E11-14:Ald + Z11-14:Ald (23:2)	Liebhold, 1985	C
<i>Choristoneura</i> phe. <i>conflictana</i> Walker large aspen tortrix	Z11-14:Ald *Z11-14:Ald + other components	Weatherston, 1976 Evenden, 2006	C
<i>Choristoneura</i> att. <i>fractivittana</i> Clemens	Z11-14:OH + Z11-14:Ald (19:1)	Roelofs, 1970(a) Weatherston, 1978	C
<i>Choristoneura</i> phe. <i>fumiferana</i> Clemens eastern spruce budworm	*E11-14:Ald + another component E11-14:Ald + Z11-14:Ald (19:1) *E11-14:OAc N	Weatherston, 1971 Weatherston, 1974(b) Sanders, 1976; 1984; 1993, Jennings, 1983 Wiesner, 1979	C

	*E11-14:Ald + *Z11-14:Ald (20:1) + other components	Silk, 1980	
	+ 14:Ald (19:1:1)	Alford, 1983	
	+ Z11-16:Ald (95:5:3.3)	Silk, 1988(b)	
	1,E11-15:H + 1,Z11-15:H (19:1)	Silk, 1985(a)	
<i>Choristoneura hebenstreitella</i> Müller <i>att.</i>	Z11-14:OH + Z11-14:Ald (1:1)	Booij, 1985	C
<i>Choristoneura lafauryana</i> Rag. oblique-banded leafroller <i>att.</i>	Z11-14:OH	Castellari, 1985	C
<i>Choristoneura lambertiana</i> Busck <i>att.</i>	E11-14:OAc or E11-14:Ald	Daterman, 1977	C
<i>Choristoneura lambertiana</i> <i>subretiniana</i> <i>att.</i>	E11-14:OAc + Z11-14:OAc + E11-14:OH + Z11-14:OH (30:20:3:2)	Silk, 1988(b)	C
<i>Choristoneura murinana</i> Hübner European fir budworm silver-fir shoot tortricid <i>phe.</i>	*Z9-12:OAc + Z11-14:OAc (10:1)	Priesner, 1980(a)	C
	*Z9-12:OAc + Z11-13:OAc (10:1)	Priesner, 1982(a)	
	+ *Δ11-12:OAc + *Z11-14:OAc + *E9-12:OAc (100:10:3:3)	Priesner, 1988(a)	
	Z11-14:OAc	Burghardt, 1980	
<i>Choristoneura occidentalis</i> Freeman western spruce budworm <i>phe.</i>	E11-14:Ald *E11-14:Ald + *Z11-14:Ald (10:1) + other components	Weatherston, 1971 Cory, 1982 Silk, 1982; 1988(b) Alford, 1984 Sweeney, 1990	C

<i>Choristoneura orae</i> Freeman phe.	*E11-14:OAc + *Z11-14:OAc + *E11-14:OH (82:9:9) + other components	Gray, 1984(a)	C
<i>Choristoneura parallela</i> Robinson spotted fireworm phe.	* E11-14:OH + *Z11-14:OH + *E11-14:OAc + *14:OH (84:0.7:8:9) (100:5:4) + another component	Neal, 1982 Polavarapu, 1998	C
<i>Choristoneura pinus</i> <i>maritima</i> Freeman att.	E11-14:OAc + Z11-14:OAc + E11-14:OH + Z11-14:OH (153:27:17:3)	Silk, 1988(b) Liebhold, 1991	C
<i>Choristoneura pinus pinus</i> Freeman jack pine budworm phe.	*E11-14:OAc + *Z11-14:OAc + *E11-14:OH + *Z11-14:OH (77:13:9:1) + other components	Silk, 1985(b)	C
<i>Choristoneura retiniana</i> Walsingham modoc budworm phe.	*E11-14:OAc + *Z11-14:OAc + *E11-14:OH + *Z11-14:OH (92:8:9:1)	Daterman, 1984	C
<i>Choristoneura rosaceana</i> Harris obliquebanded leafroller phe. New York strain	*Z11-14:OAc *Z11-14:OAc + *E11-14:OAc + *Z11-14:OH (95:5:0.5–95:5:10)	Roelofs, 1970(b) Hill, 1979(a)	C
Michigan strain	+ E11-14:OAc + *Z11-14:OH (74:5:21)	Huang, 2022	
In Eastern Canada	(96.5:2:1.5)	Delisle, 1992	
Okanagan Valley strains	+ *Z11-14:Ald (96.5:2:1.5:4)	Vakenti, 1988	

British Columbia strains	(100:2:0.75:1)	Thomson, 1991	
In Eastern Canada	(97:2:1.5:1) + other components	El-Sayed, 2001; 2003	
<i>Choristoneura sorbiana</i> Hübner (= <i>C. hebenstreitella</i> ?) <i>att.</i>	Z11-14:OH + E11-14:OH (97:3)	Frerot, 1979(b)	C
<i>Choristoneura viridis</i> Freeman (= <i>C. retiniana</i> ?) green budworm <i>att.</i>	E11-14:OAc	Sanders, 1974	C
<i>Choristoneura n. sp.</i> CPG=Prince George <i>phe.</i>	*E11-14:OAc + * Z11-14:OAc (13:7) + other components	Gray, 1993	C
<i>Clepsis</i> ^a <i>dumicolana</i> Zeller <i>att.</i>	Z11-14:OAc + E11-14:OAc (1:1)	Frerot, 1979(b)	C
<i>Clepsis furcana</i> Walsingham <i>att.</i>	E11-14:OAc	Daterman, 1977	C
<i>Clepsis melaleucana</i> Walker <i>att.</i>	Z11-14:OH + Z11-14:OAc (1:1)	Roelofs, 1971(a)	C
<i>Clepsis rurinana</i> L. <usumon-hamaki> <i>att.</i>	Z11-14:Ald	Capizzi in Arn, 1986(a) Frerot, 1985	A
<i>Clepsis semialbana</i> Cuc. <i>att.</i>	Z11-14:OAc + Z11-14:OH + Z9-14:OAc (17:2:1)	Frerot, 1982(a)	B
<i>Clepsis spectrana</i> Treitschke <i>phe.</i>	*Z11-14:OAc + *Z9-14:OAc (3:1)	Minks, 1973(b)	C
<i>Clepsis strigana</i> Hübner <i>att.</i>	Z11-14:OAc	Maini, 1973	B
<i>Cnephasia</i> ^b <i>alticolana</i> Herrich-Schäffer <i>att.</i>	Z11-14:OAc + E11-14:OAc (1:1)	Olenici, 2007	C

<i>Cnephasia asseclana</i> Denis & Schiffermüller (= <i>interjectana</i> Haworth ?) att.	E9-12:OAc	Hrdý, 1989	C
<i>Cnephasia alternella</i> Stephens att.	Z8-12:OAc + E8-12:OAc (18:7)	Chambon, 1974 Sziráki, 1978(a); (b) Beauvais, 1977	C
<i>Cnephasia communana</i> Herrich & Schäffer att.	Z8-12:OAc + E8-12:OAc	Alford, 1978 Frilli, 1974	C
<i>Cnephasia cupressivorana</i> att.	E9-12:OAc	Tóth in Arn, 1997	C
<i>Cnephasia ecullyana</i> Real. att.	Z9-12:OAc + Z9-12:OH	Nässig, 1991 Tóth, 1992(d)	C
<i>Cnephasia genitalana</i> Pierce & Metcalfe att.	Z9-12:OAc	Sziráki, 1980	C
<i>Cnephasia</i> (= <i>Decodes</i>) <i>horarianus</i> Walsingham att.	Z7-10:OAc	Steck, 1977(a)	C
<i>Cnephasia incertana</i> Treitschke att.	Z10-14:OAc F ₂ 11,11-Z9-12:OAc Z10-12:OAc	Frerot, 1985 Bengtsson, 1990 Witzgall, 1996	C
<i>Cnephasia interjectana</i> att.	E10-12:OAc E9-12:OAc + E9,Δ11-12:OAc (19:1) E9-12:OAc	Booij, 1984(a) Brewer, 1985 Priesner in Arn, 1986(a)	C
<i>Cnephasia jactatana</i> Walker phe.	Z11-14:OAc + Z9-14:OAc (19:1)	Benn in Roelofs 1982(a)	C

	*Z11-14:OAc	Foster, 1993	
<i>Cnephasia longana</i> Haworth phe.	Z9-12:OAc + Z9-12:OH (1:1)	Bathon, 1983 Booij, 1984(a)	C
	*Z9-12:OAc	Bestmann, 1985	
<i>Cnephasia pascuana</i> Hübner att.	Z8-12:OAc + E8-12:OAc (24:1)	Gigon, 1980	C
<i>Cnephasia pasiuana</i> Hübner att.	Z5-10:OAc + Z7-12:OAc (1:1)	Tóth, 1992(c)	C
	Z9-12:OAc + E9-12:OAc (1:1)	Toshova, 2017	
<i>Cnephasia pumicana</i> Zeller cereal tortrix phe.	*Z9-12:OAc + *E9-12:OAc + *12:OAc (3:5:2)	Biwer, 1978(a)	C
<i>Cnephasia stephensiana</i> Doubleday att.	Z8-12:OAc + E8-12:OAc (1:1) + E8-12:OAc (93:7) + 12:OH	Alford, 1978 Peltotalo, 1986 Witzgall, 1996 Hrdý, 1979	C
	E11-14:Ald	Brewer, 1985	
	Z11-14:OAc	Olenici, 2007	
<i>Cnephasia stephensiana</i> <i>stolidana</i> Walker <hosobahaiiro-hamaki> att.	Z8-12:OAc + E8-12:OAc + Z8-12:OH (85.5:5.5:9)	Mizukoshi, 2006	A
<i>Cnephasia</i> sp. att.	E11-14:OAc	Klun, 1972	
<i>Cochylis</i> ^g <i>arthuri</i> Dang phe.	*Z11-14:OAc + *E11-14:OAc (4:1)	Foster, 2003	C
<i>Cochylis dubitana</i> Hübner att.	E11-14:OAc	Frerot, 1985	C

	+ E11-14:OH (10:1)	Mozūraitis, 1998	
<i>Cochylis hospes</i> Walsingham banded sunflower moth phe.	*E11-14:OAc + *Z11-14:OAc (9:1–4:1)	Underhill, 1986	C
<i>Cochylis hybridella</i> Hübner <togari-hosohamaki> att.	Z11-14:Ald + E11-14:OAc (1:1)	Frerot, 1985	A
<i>Cochylis molliculana</i> att.	E11-14:OAc	Maini in Arn, 1986(a)	C
<i>Cochylis posterana</i> Zeller att.	Z8-12:OAc + E8-12:OAc + Z11-14:OAc (25:1:5)	Tóth in Arn, 1986(a)	C
	Z11-14:OAc + Z9-12:OAc (10:1)	Tóth, 1992(d)	
<i>Commophila</i> ^g <i>umbrabsana</i> Kearfott att.	E11-14:OAc	Daterman, 1977	D
<i>Croesia</i> ^c <i>askoldana</i> Christoph <ginsujikaba-hamaki> att.	Z11-14:Ald + Z11-14:OAc (9:1)	Ando, 1978	A
<i>Croesia bergmaniana</i> L. att.	E11-14:OAc	Voerman in Arn, 1986(a)	B
	+ 14:OAc (9:1)	Frerot, 1979(b)	
<i>Croesia conchyloides</i> Walsingham <neusu-hamaki> att.	Z11-14:Ald	Ando, 1978	A
<i>Croesia curvalana</i> Kearfott blueberry leaftier moth phe.	*E11-14:Ald + *Z11-14:Ald + *E11-14:OAc + *Z11-14:OAc (810:90:85:15)	Lonergan, 1989; Ponder, 1991	C
<i>Croesia dealbata</i> Yasuda <shiroobigin-hamaki> att.	E11-14:Ald	Ando, 1981	A

<i>Croesia forskaleana</i> att.	E11-14:Ald + Z11-14:Ald (1:1–1:9)	Frerot, 1985	C
<i>Croesia holmiana</i> L. att.	E11-14:OAc + 14:OAc (9:1) + Z11-14:Ald (1:1) Z6-14:OAc + E6-14:OAc (9:1)	Arn, 1974 Frerot, 1979(b) Frerot, 1985 Minks in Arn, 1986(a)	C
<i>Croesia semipurpurana</i> Kearfott oak leaf shredder phe.	E11-14:Ald + Z11-14:Ald (9:1–8:2) *E11-14:Ald + *Z11-14:Ald (17:3) + other components	Weatherston, 1978 Silk, 1997	C
<i>Croesia tigricolor</i> Walsingham <torafu-hamaki> att.	E11-14:Ald + Z11-14:Ald (9:1)	Ando, 1981	A
<i>Cryptoptila</i> ^a <i>australana</i> Lewin phe.	*Z11-14:OAc + *E11-14:OAc (19:1) E	Horak, 1988	D
<i>Cryptoptila immersana</i> Walker phe.	*Z11-14:OAc + *Z9-14:OAc (91:9) E	Horak, 1988	D
<i>Cryptoptila</i> sp. 1 phe.	*Z9-14:OAc + *Z11-14:OAc + *Z11-16:OAc (50:39:11) N	Horak, 1988	D
<i>Cryptoptila</i> sp.2 phe.	*Z9-14:OAc + *Z11-14:OAc + *E11-14:OAc + *Z11-16:OAc (38:49:7:6) N	Horak, 1988	D
<i>Ctenopseustis</i> ^a <i>herana</i> Felder & Rogenhofer att.	Z5-14:OAc	McLaren, 1993	D
<i>Ctenopseustis obliquana</i> Walker			D

brownheaded leafroller			
<i>phe.</i>			
Auckland strains	*Z8-14:OAc	Young, 1985	
Type I	+ *Z5-14:OAc (4:1)	Clearwater, 1991	
Christchurch strains	*Z5-14:OAc	Foster, 1987(a); 1991	
Type II	+ another component	Clearwater, 1991	
(= <i>C. herana</i>)			
Type III	*Z8-14:OAc	Foster, 1986	
	+ *Z5-14:OAc (9:1)		
Type IV	*Z10-16:OAc	Foster, 1986	
(= <i>C. filicis</i> ?)			
<i>Ctenopseustis servana</i>	*Z7-14:OAc	Foster, 1988; 1990	D
<i>phe.</i>	+ *Z5-14:OAc (4:1–5:3) N		
<i>Decodes</i> ^b <i>stevensi</i> Powell	Z9-12:OAc	Stevens, 1985	D
<i>att.</i>			
<i>Ditula</i> ^a <i>angustiorana</i> Haworth	Z10-14:OAc	Frerot, 1985	C
<i>att.</i>			
<i>Dyceratura</i> ^g <i>ostrinana</i> Guenée	Z11-14:OAc	Frerot, 1982(a)	D
<i>att.</i>	+ E11-14:OAc (3:2)		
<i>Eana</i> ^b <i>argentana</i> Clerck	Z7-12:OAc	Priesner	A
<ginmuji-hamaki>		in Arn, 1986(a)	
<i>att.</i>			
<i>Eana derivana</i> La Harpe	E9-12:OAc	Hrdý, 1989	C
<i>att.</i>	+ Z9-12:OAc (11:9)		
<i>Ecclitica</i> ^a <i>torogramma</i>	*E11-14:OAc	Foster, 1988	D
<i>phe.</i>	+ *Z11-14:OAc (25:0–23:2) N		
<i>Epagoge</i> ^a <i>grotiana</i> F.	Z10-14:OAc	Booij, 1984(a)	D
<i>att.</i>	+ Z11-14:OAc (3:1–1:3)	Frerot, 1985	
	(10:1)	Mozūraitis, 1998	

<i>Epichoristodes</i> ^a <i>acerbella</i> Walker phe.	*Z11-14:OAc + *Z11-14:OH + *Z9-14:OAc (32:13:4) + other components	L.-Cassou, 1980	D
	*Z11-14:OAc + Z9-14:OH (8:1:2:1)	Rossi, 1982 Dalla in Arn, 1992	
<i>Epiphyas</i> ^a <i>postvittana</i> Walker lightbrown apple moth phe.	*E11-14:OAc + *E9,E11-14:OAc (20:1) (9:1)	Bellas, 1983 Muggleston, 1989	D
	+ *E11-14:OH + *E11-16:OAc (200:10:2:1) + other components	El-Sayed, 2011	
<i>Epiphyas xylodes</i> Meyrick phe.	*Z11-14:OAc + *E11-14:OAc (3:2)	Horak, 1988	D
<i>Epitymbia</i> ^d <i>alaudana</i> Meyrick phe.	*Z5-14:OAc + *Z7-14:OAc (2:1) E	Horak, 1988	D
<i>Epitymbia cosmota</i> Meyrick phe.	*Z7-14:OAc + *Z5-14:OAc (4:1) E	Horak, 1988	D
<i>Epitymbia eudrosa</i> Turner phe.	*Z7-14:OAc E	Horak, 1988	D
<i>Eulia</i> ^b <i>ministrana</i> L. <bokashi-hamaki> att.	Z11-14:OAc + Z9-14:OAc (9:1) (10:1)	Booij, 1984(a) Priesner, 1984(c)	A
	Z11-14:OAc + Z11-14:Ald (1:1)	Booij, 1985	
<i>Eupoecilia</i> ^g <i>ambiguella</i> Hübner European grape moth <budou-hosohamaki> phe.	*Z9-12:OAc Z9-12:OAc + 12:OAc (1:1-1:5) or + Z10-13:OAc (5:1-2:1)	Arn, 1976(b) Saglio, 1977(b) Rauscher, 1984	A

	*Z9-12:OAc + *12:OAc + *18:OAc (1:1:2) + other components	Arn, 1986(b),1988	
<i>Eupoecilia angustana</i> Hübner <tsumaobiki-hosohamaki> <i>att.</i>	Z11-14:OAc + E11-14:OAc + 12:OAc (7:3:40)	Hrdý, 1979	A
<i>Eupoecilia kobeana</i> Razowski <akaobi-hosohamaki> <i>att.</i>	Z11-14:OH	Ando, 1977	A
<i>Exapate</i> ^g <i>congelatella</i> Clerck <i>att.</i>	Z11-14:OAc + E11-14:OAc (4:1)	Velcheva, 1990	D
<i>Homona</i> ^a <i>coffearia</i> Neitner tea tortrix <i>phe.</i>	*E9-12:OAc + *12:OAc + *12:OH (1:1:3)	Kochansky, 1978	C
<i>Homona magnanima</i> Diakonoff oriental tea tortrix <cha-hamaki> <i>phe.</i>	*Z11-14:OAc + *Z9-12:OAc + *Δ11-12:OAc (30:3:1)	Noguchi, 1979; 1981	A
	Z11-14:OAc + Z9-12:OAc (9:1)	Ando, 1981 Kim, 2014(b)	
<i>Homona spargotis</i> Meyrick <i>phe.</i>	*E9-12:OAc + *Z9-12:OAc + *E9-12:OH + *Z9-12:OH + *Z11-14:OAc (10:8:7:5:1) + other components	Whittle, 1987	C
<i>Homona tabescens</i> Meyrick <i>phe.</i>	*Z11-14:OAc + *Z9-12:OAc (9:1)	Vang, 2013	C
<i>Homonopsis</i> ^a <i>foederatana</i> Kennel <tsudurimon-hamaki> <i>att.</i>	Z11-14:OAc + E11-14:OAc (1:1)	Ando, 1978	A
	(3:7)	Mizukoshi, 2006	
<i>Homonopsis illotana</i> Kennel <tsuyasuji-hamaki>	Z11-14:OAc + Z11-14:OH (9:1)	Ando, 1978	A

att.				
<i>Hoshinoa</i> ^a <oofutasuji-hamaki> att.	<i>adumbratana</i> Walsingham	Z11-14:Ald	Ando, 1978	A
<i>Hoshinoa</i> common apple leafroller <atoboshi-hamaki> phe.	<i>longicellana</i> Walsingham	Z11-14:OAc *Z11-14:OAc + *E11-14:OAc (5:1)	Ando, 1975 Kozaki, 1984	A
<i>Hysterosia</i> ^g att.	<i>cartwrightana</i> Kearfott	E11-14:OAc	Struble, 1977(a)	C
<i>Hysterosia</i> att.	<i>inopinana</i>	E11-14:OAc + E11-14:Ald (1:1)	Priesner in Arn, 1986(a)	C
<i>Isochorista</i> ^d att.	<i>helota</i> Meyrick	Z5-14:OAc + Z7-14:OAc	Horak, 1988	D
<i>Kawabeia</i> ^b att.	<i>ignavana</i> Christoph <usuobihairofuyu-hamaki> att.	Z7-12:OAc	Ando, 1981	A
<i>Kawabeia</i> att.	<i>razowskii</i> Kawabe <hairofuyu-hamaki> att.	Z5-12:OAc	Ando, 1977	A
<i>Meridemis</i> ^a att.	<i>furtiva</i> Diakonoff	Z11-14:OAc	Hai, 2002	D
<i>Meritastis</i> ^d phe.	<i>laganodes</i> Meyrick	*Z9-14:OAc N	Horak, 1988	D
<i>Meritastis</i> phe.	<i>lythrodana</i> Meyrick	*Z9-14:OAc E	Horak, 1988	D
<i>Meritastis</i> phe.	<i>pyrosemana</i> Meyrick	*Z9-14:OAc N	Horak, 1988	D
<i>Meritastis</i> sp. phe.		*Z9-14:OAc E	Horak, 1988	D

<i>Merophyas</i> ^a <i>divulsana</i> Walker lucerne leafroller moth phe.	E-type Z-type	*E11-14:OAc + *16:OAc + *14:OAc (10:20:7) *Z11-14:OAc + *E11-14:OAc + *14:OAc (25:5:2)	Whittle, 1991	D
<i>Merophyas leucaniana</i> Walker phe.		*Z11-14:OAc + *E11-14:OAc + *Z11-14:OH + *14:OAc (100:5:17:33) + another component	Foster, 1988; 1993	D
<i>Merophyas</i> sp. phe.		*Z11-14:OAc + *E11-14:OAc (83:17) E	Horak, 1988	D
<i>Neosphaleroptera</i> ^b <i>nubilana</i> Stephens att.		Z5-10:OAc	Subchev, 1990 Tóth, 1992(d)	D
<i>Pandemis</i> ^a <i>borealis</i> att.		Z11-14:OAc	Daterman in Arn, 1992	C
<i>Pandemis canadana</i> Kearfott att.		Z11-14:OAc + Z9-14:OAc (9:1)	Steck, 1977(a)	C
<i>Pandemis cerasana</i> Hübner phe.		Z11-14:OAc + E11-14:OAc (1:1) *E11-14:OAc + *Z11-14:OAc (3:1) + other components	Konyukhov in Arn, 1986(a) Tonini, 1982	C
<i>Pandemis chlorograpt</i> Meyrick <usutobi-hamaki> att.		Z11-14:OAc + E11-14:OAc (4:1)	Ando, 1981	A
<i>Pandemis cinnamomeana</i> Treitschke <akatobi-hamaki> att.		Z11-14:OAc + E11-14:OAc (4:1)	Ando, 1978	A

<i>Pandemis heparana</i> Denis & Shiffermüller <tobi-hamaki> phe.	Z11-14:OAc + Z11-14:OH + Z9-14:OAc (17:2:1) (2:1:1)	Frerot, 1979(b) Voerman in Arn, 1986(a)	A
	*Z11-14:OAc + *Z11-14:OH + *Z9-14:OAc (18:1:1) + other components	Frerot, 1982(b)	
<i>Pandemis limitata</i> Robinson threelined leafroller phe.	*Z11-14:OAc + *Z9-14:OAc (91:9)	Roelofs, 1976(b)	C
<i>Pandemis monticolana</i> Yasuda <yamatobi-hamaki> att.	E11-14:OAc + Z11-14:OAc (7:3)	Mizukoshi, 2006	A
<i>Pandemis pyrusana</i> Kearfott phe.	*Z11-14:OAc + *Z9-14:OAc (47:3)	Roelofs, 1977(a)	C
<i>Parapandemis</i> ^a <i>borealis</i> Freeman att.	Z11-14:OAc	Daterman, 1977	D
<i>Parasyndemis</i> ^a (= <i>Dichelia</i>) <i>histrionana</i> Frölich att.	Z11-14:OAc + E11-14:OAc Z11-14:OAc E11-14:Ald + Z11-14:Ald (20:1)	Frerot, 1979(b) Priesner, 1980(a) Olenici, 2007 Ostrauskas, 2010(a)	D
<i>Phalonia</i> ^g sp. att.	E11-14:OAc	Roelofs, 1970(a)	
<i>Phalonidia</i> ^g <i>manniana</i> att.	Z11-14:OAc + Z9,E11-14:OAc (10:1)	Priesner in Arn, 1986(a)	C
<i>Phalonidia minimana</i> Caradja <mini-hosohamaki> att.	Z11-14:OAc	Ando, 1977	A

<i>Phricanthes</i> ^e <i>asperana</i> Meyrick phe.	*Z9-12:OAc N	Horak, 1988	D
<i>Phtheochroa</i> ^g (= <i>Bonagota</i>) <i>cranaodes</i> Meyrick Brazilian apple leafroller phe.	*E3,Z5-12:OAc + *Z9-16:OAc (1:1) + other components (9:1) + *Z5-12:OAc + *E3,Z5-14:OAc (20:20:1:1) (20:1:1:1)	Unelius, 1996 Eiras, 1999 Kovaleski, 2003 Coracini, 2001 Coracini, 2003	D
<i>Phtheochroides</i> ^g <i>clandestina</i> Razowski <yomogioo-hosohamaki> att.	Z11-14:OAc + Z9-14:OAc (1:1)	Ando, 1981	A
<i>Planotortrix</i> ^a <i>clarkei</i> Philpott phe.	*Z11-14:OAc + *E11-14:OAc (23:2) N	Foster, 1988	D
<i>Planotortrix excessana</i> Walker greenheaded leafroller phe. A-race (= <i>P. octo</i> ?) B-race	*Z8-14:OAc + *14:OAc (10:3) *Z5-14:OAc + *Z7-14:OAc (3:2) (3:97 – 71:29) N	Galbreath, 1985 Foster, 1989	D
<i>Planotortrix flammea</i> Salmon phe.	*Z5-14:OAc + *Z7-14:OAc (3:2–1:1) N	Foster, 1990	D
<i>Planotortrix notophaea</i> Turner phe.	*Z7-14:OAc N	Foster, 1990	D
<i>Planotortrix octo</i> Dugdale att.	Z8-14:OAc + 14:OAc	Park, 1998	D

<i>Planotortrix orthrocopa</i> Meyrick phe.	*Z11-14:OAc N	Foster, 1988	D
<i>Planotortrix orthropis</i> Meyrick phe. type 1	*Z11-14:OAc + *E11-14:OAc (87:13) N	Foster, 1988	D
type 2	*Z11-14:OAc + *Z9-14:OAc (95:5–82:18) N		
<i>Planotortrix spatiosa</i> Philpott phe.	*Z11-14:OAc + *E11-14:OAc (3:1–3:2) N	Foster, 1988	D
<i>Planotortrix</i> "MBS" phe.	*Z7-14:OAc + *Z5-14:OAc (50:1–12:1) N	Foster, 1990	D
<i>Planotortrix</i> sp. ("M") phe.	*Z5-14:OAc + *14:OAc (1:1) + *Z7-14:OAc (20:20:1)	Foster, 1987(b) Foster, 1990	D
<i>Platynota</i> ^h <i>flavedana</i> Clemens variegated leafroller phe.	*E11-14:OH + *Z11-14:OH (9:1) + other components	Hill, 1977	D
<i>Platynota idaeusalis</i> Walker tufted apple bud moth phe.	*E11-14:OH + *E11-14:OAc (2:1)	Hill, 1974	D
<i>Platynota stultana</i> Walsingham omnivorous leafroller phe.	*E11-14:OAc + *Z11-14:OAc (22:3) + E & Z11-14:OH (1–0.2%)	Hill, 1975(a) Baker, 1975	D
<i>Proeulia</i> ^a <i>auraria</i> Clarke phe.	*E11-14:OH	Bjostad in Roelofs, 1982(a)	D
<i>Proeulia triquetra</i> Obraztsov phe.	*Z11-14:OAc + *E9-12:OAc (10:1) + another component	Bergmann, 2016	D

<i>Proselena</i> ^f <i>tenella</i> Meyrick phe.	*Z11-14:OAc N	Horak, 1988	D
<i>Pseudargyrotoza</i> ^a <i>conwagana</i> F. <miyamamadaraginsuji-hamaki> att.	Z11-14:OAc + Z11-14:OH (9:1)	Novotný, 1990	A
<i>Ptycholoma</i> ^a <i>lecheana</i> L. phe.	Z11-14:OH + Z11-14:OAc (3:1)	Frerot, 1979(b) Minks in Arn, 1986(a)	B
	*Z11-14:OH	Descoins in Arn, 1986(a)	
<i>Ptycholoma lecheana</i> <i>circumclusana</i> Christoph <ooginsujiaka-hamaki> att.	Z11-14:OH + Z11-14:OAc (9:1)	Ando, 1977 Ando, 1978	A
<i>Pyrgotis</i> ^a <i>chrysomela</i> phe.	*Z9-14:OAc + *Z11-14:OAc (100:0–99:1) N	Foster, 1988	D
<i>Pyrgotis plagiatana</i> phe.	*E11-14:OAc + *Z11-14:OAc (4:1) N	Foster, 1988	D
<i>Sparganothis</i> ^h <i>albicaudana</i> Busck att.	E11-14:OAc	Roelofs, 1971(a)	C
<i>Sparganothis directana</i> Walker chokecherry leafroller phe.	*E9,Δ11-12:OAc + *Z11-14:OAc + *E11-14:OAc (5:4:3) + other components	Bjostad, 1980(a)	C
<i>Sparganothis niveana</i> Walsingham (= <i>groteana</i> Fernald) att.	Z11-14:OH	Roelofs, 1970(a); 1982(a)	C
<i>Sparganothis pilleriana</i> Denis & Schiffermüller <tengu-hamaki> phe.	E9-12:OAc + E9-12:OH (8:2–9:1) E Z11-14:Ald	Saglio, 1977(a) Ando, 1978	A
	*E9-12:OAc + *E9-12:OH + *E11-14:OAc + *Z11-14:OAc (4:1:4:20)	Guerin, 1986(c)	

	+ other components		
	*E9-12:OAc + *E9-12:OH + *E11-14:OAc + *14:OAc (4:1:4:4) + other components	Arn, 1988	
<i>Sparganothis sulfureana</i> Clemens Sparganothis fruitworm phe.	E11-14:OAc	Roelofs, 1970(a)	C
	*E11-14:OAc + *Z11-14:OAc + *Z9-14:OAc (100:1:1) + other components	Zhu, 2009	
<i>Sparganothis tunicana</i> Walsingham att.	E11-14:OAc	Daterman, 1977	C
<i>Sparganothis</i> sp. woodbine leafroller phe.	*E11-14:OH + *Z11-14:OH + *E11-14:OAc (15:11:2) + other components	Bjostad, 1980(c)	
<i>Spatalistis</i> ^c <i>bifasciana</i> Hübner <ginsujikuro-hamaki> att.	Z11-14:OAc + Z9-14:OAc (1:1) or + Z9,E12-14:OAc (1:1)	Ando, 1978	A
	Z11-14:OAc + Z9-14:OAc + Z11-14:OH (18:1:1)	Hrdý, 1989	
<i>Sperchia</i> ^a <i>intractana</i> Walker phe.	E11-14:OAc + Z11-14:OAc (2:1)	Benn, 1981	D
	*E11-14:OAc + *Z11-14:OAc (69:31) E	Horak, 1988	
<i>Stenodes</i> ^g <i>alternana</i> att.	Z9-14:OAc + Z11-14:OAc + E11-14:OAc (10:9:1)	Safonkin, 1988	C
<i>Syllomatia</i> ^b <i>pertinax</i> Meyrick phe.	*Z9-14:OAc E	Horak, 1988	D

<i>Syndemis</i> ^a <i>musculana</i> Hübner phe.	E11-14:OAc + Z11-14:OAc	Frerot, 1979(b)	B
	*E11-14:OAc + *Z11-14:OAc (9:1)	Persoons, 1984	
<i>Taeniarchis</i> ^b <i>catenata</i> Meyrick phe.	*Z11-14:OAc + *E11-14:OAc (14:11) N	Horak, 1988	D
<i>Terricola</i> ^a <i>violetana</i> Kawabe <kushihigemurasaki-hamaki> att.	Z11-14:OAc + Z9,E12-14:OAc (1:1) or + Z9-14:OAc (1:1)	Ando, 1978	A
<i>Tortrix</i> ^c <i>sinapina</i> Butler <usuamime-hamaki> att.	Z11-14:OAc	Ando, 1978	A
<i>Tortrix viridana</i> L. phe.	Z11-14:OAc	Hrdý, 1979 Knauf, 1979	C
	Z11-13:OAc or E11-13:OAc	Arn, 1979	
	*Z11-14:OAc	Arn, 1979	
	+ Z11-14:OH (9:1)	Novotný, 1990	
" <i>Tortrix</i> " <i>constrictana</i> Walker phe.	*Z11-14:OAc + *Z9-14:OAc (22:3) E	Horak, 1988	C

(*Tortricidae*; *Olethreutinae*) ハマキガ科 ; ノコメハマキガ亜科

a: *Eucosmini* (モグリヒメハマキ族), b: *Grapholitini* (シンクイヒメハマキ族)

c: *Microcorsini* (ハラブトヒメハマキ族), d: *Olethreutini* (ヒメハマキガ族)

<i>Acanthoclit</i> ^b (= <i>Cydia</i>) <i>phaulomorpha</i> Meyrick att.	Z8-12:OAc + E8-12:OAc (1:1)	Bourdouxhe, 1982	C
<i>Ancylis</i> ^a <i>achatana</i> F.	Z9-12:OAc	Biwer, 1978(a)	C

<i>att.</i>	+ E9-12:OAc (7:3)		
<i>Ancylis albafasciana</i> Heinrich <i>att.</i>	Z9-12:OAc	Stevens, 1985	C
<i>Ancylis apicella</i> Denis & Schiffermüller <i>att.</i>	Z8-12:OAc + Z9-12:OAc (1:1)	Booij, 1984(a)	C
<i>Ancylis burgessiana</i> Zeller <i>att.</i>	E9-12:OAc	Reed, 1985(b)	C
<i>Ancylis columbiana</i> McDunnough <i>att.</i>	Z9-12:OAc	Stevens, 1985	C
<i>Ancylis geminana</i> Donovan <shiroobi-himehamaki> <i>att.</i>	Z9-12:OH	Booij, 1984(a)	A
<i>Ancylis mediofasciana</i> Clemens <i>att.</i>	E9-12:OAc	Stevens, 1985	C
<i>Ancylis nubeculana</i> Clemens <i>att.</i>	Z9-12:OAc	Reed, 1985(b)	C
<i>Ancylis pacificana</i> Walsingham <i>att.</i>	Z9-12:OAc	Stevens, 1985	C
<i>Ancylis sativa</i> Liu jujube leafroller <i>phe.</i>	*E9-12:OAc + *Z9-12:OAc (4:1) + other components	Lin, 1984 Han, 1999	C
<i>Ancylis selenana</i> Guenée <futaboshi-himehamaki> <i>att.</i>	Z9,E11-14:OAc	Nagano, 1979	A
<i>Ancylis simuloides</i> McDunnough <i>att.</i>	Z9-12:OAc	Stevens, 1985	C
<i>Ancylis uncella</i> Denis & Schiffermüller <usubenikagiba-himehamaki> <i>att.</i>	Z9-12:OH	Booij, 1984(a)	A
<i>Ancylis</i> sp. <i>att.</i>	Z9,Δ11-12:OAc + Z9,Δ11-12:OH (10:1)	Chisholm, 1985(b)	C

<i>Aphania</i> ^a <i>infida</i> Heinrich <i>att.</i>	Z8-12:OAc	Roelofs, 1971(a)	C
<i>Apotomis</i> ^d <i>betuletana</i> Haworth <tumajiro-himehamaki> <i>att.</i>	Z10-14:OAc	Booij, 1984(a)	A
<i>Apotomis capreana</i> Hübner <yanagitsumajiro-himehamaki> <i>att.</i>	Z11-14:OAc + E11-14:OAc	Bûda, 1987	A
<i>Apotomis corticana</i> Hübner <i>att.</i>	Z10-14:OAc + E8,E10-12:OH ?	Arn, 1974	C
<i>Apotomis lineata</i> Schiffermüller <i>att.</i>	Z8-12:OAc	Sziráki, 1978(a)	C
<i>Apotomis moestana</i> Wocke <i>att.</i>	Z8-12:OAc	Linnaluoto, 1983	C
<i>Apotomis turbidana</i> Hübner <i>att.</i>	Z10-14:OAc Z8-14:OAc	Roelofs, 1982(a) Fassotte in Arn, 1986(a)	C
<i>Apotomis</i> sp. <i>att.</i>	Z8-12:OH or Z8-12:OAc	Ando, 1977	A
<i>Argyroploce</i> ^d <i>aurofasciana</i> Haworth <kokekiobi-himehamaki> <i>att.</i>	E10-12:OAc	Arn, 1974	A
<i>Argyroploce lacunana</i> Denis & Schiffermüller <miyamaunmon-himehamaki> <i>att.</i>	Z8-12:OAc	Sziráki, 1978(a)	A
<i>Argyroploce schistaceana</i> Snellen <i>phe.</i>	*9-12:OAc	China, 1978	C
<i>Aterpia</i> ^d <i>issikii</i> Kawabe <issihiki-himehamaki> <i>att.</i>	Z8,Z10-12:OH	Ando, 1987	A

<i>Bactra</i> ^d <i>lanceolana</i> Hübner <togariba-himehamaki> att.	E10-14:OAc	Booij, 1984(a)	A
<i>Bactra</i> <i>verutana</i> Zeller phe.	*Z10-14:OAc N	Roelofs, 1984	C
<i>Barbara</i> ^a <i>colfaxiana</i> Kearfott Douglas fir cone moth att.	Z9-12:OH + Z9-12:OAc (3:1) Z9-12:OAc	Weatherston, 1977 Hedlin, 1983 Stevens, 1985	D
<i>Barbara</i> <i>mappana</i> Freeman att.	E9-12:OAc	Reed, 1985(b)	D
<i>Blastesthia</i> ^a <i>posticana</i> Zetterstedt att.	E9-12:OAc + E9-12:OH (9:1)	Booij, 1984(a) Booij, 1986	D
<i>Blastesthia</i> <i>turionella</i> L. att.	E9-12:OAc	Booij, 1984(a)	D
<i>Celypha</i> ^d <i>purpurana</i> Haw. att.	Z8-12:OH	Tóth, 1992(d)	C
<i>Celypha</i> <i>rosaceana</i> Schläger att.	Z8-12:OAc	Alford, 1978	C
<i>Celypha</i> <i>rurestrana</i> Dup. att.	Z8-12:OAc Z8-12:OH	Sziráki, 1978(a) Tóth, 1992(d)	C
<i>Celypha</i> <i>striana</i> Denis & Schiffermüller att.	Z8-12:OH	Arn, 1974	C
<i>Centroxena</i> ^b sp. <mayapushiki-himeshinkui> phe.	*E8,E10-12:OAc + other components	Vang, 2005	A
<i>Cryptasasma</i> ^c sp. phe.	*Z9-14:OAc N	Horak, 1988	C

<i>Cryptophlebia</i> ^b <i>amamiana</i> Komai & Nasu <mehirugiashibuto-himehamaki> phe.	*Z8-12:OAc + other components	Vang, 2005	A
<i>Cryptophlebia horii</i> Kawabe <ohirugiashibuto-himehamaki> phe.	*Z8-12:OH + other components	Vang, 2005	A
<i>Cryptophlebia imicella</i> Zeller att.	Z8-12:OAc	Dix, 1984	C
<i>Cryptophlebia illepada</i> Butler koa seedworm att.	Z8-12:OAc + E8-12:OAc + Z8-12:OH + Z7-12:OAc (93:4:1:2)	Chang, 1995	C
<i>Cryptophlebia ombrodelta</i> Lower macadamia nut borer litchi fruit moth <ashibuto-himehamaki> att.	Z8-12:OAc + E8-12:OAc + Z8-12:OH + Z7-12:OAc (93:4:1:2)	Ando, 1975 Sinclair, 1980 Chang, 1995	A
<i>Cryptophlebia palustris</i> Komai & Nasu <yaeyamahirugiashibuto- himehamaki> phe.	*Z8-12:OAc + other components	Vang, 2005	A
<i>Cryptophlebia peltastica</i> Meyrick litchi moth att.	Z8-12:OAc	Newton, 1993	C
<i>Cydia</i> ^b <i>americana</i> Walsingham att.	E8,E10-12:OAc	Stevens, 1985	C
<i>Cydia blackmoreana</i> Walsingham att.	E8,E10-12:OAc	Witzgall, 1996	C
<i>Cydia bracteatana</i> Fernald att.	Z9-12:OAc	Dix, 1984	C
<i>Cydia caryana</i> Fitch hickory shuckworm phe.	E8,E10-12:OAc or Z9-12:OAc	Smith, 1987	C

	*E8,E10-12:OAc	McDonough, 1990(a)	
<i>Cydia colorana</i> Kearfott <i>att.</i>	E8,E10-12:OAc	Stevens, 1985	C
<i>Cydia coniferana</i> Ratzeburg <i>att.</i>	E8-12:OAc + E10-12:OAc (1:1) (9:1) or + E8-12:OH (9:1)	Booij, 1984(a) Voerman in Arn, 1992	C
<i>Cydia coronilana</i> <i>att.</i>	Z8-12:OAc + E8-12:OAc	Hrudová, 2003	C
<i>Cydia cosmophorana</i> Treitschke <i>att.</i>	E8-12:OAc + E10-12:OAc (1:1)	Booij, 1984(a)	C
	E9-12:OAc	Tóth in Arn, 1997	
<i>Cydia cupressana</i> Kearfott <i>att.</i>	Z9-12:OAc	Stevens, 1985	C
<i>Cydia duplicana</i> Zett. <i>att.</i>	E8,E10-12:OAc	Witzgall, 1996	C
<i>Cydia exquisitana</i> <i>att.</i>	E8,E10-12:OH	Chambon, 1978	C
<i>Cydia fagiglandana</i> Zeller <i>phe.</i>	E8,E10-12:OAc + E8,E10-12:OH (3:1) *E8,E10-12:OAc + other components	Rotundo, 1984 Rotundo, 1988 Witzgall, 1996	A
<i>Cydia fletcherana</i> Kearfott <i>att.</i>	E8-12:OAc	Reed, 1985(b)	C
<i>Cydia flexiloqua</i> Heinrich <i>att.</i>	Z5,E7-12:Ald + Z5,Z7-12:Ald + Z7-12:Ald (10:1:1)	Chisholm, 1985(a)	C
<i>Cydia illutana</i> H.-S. <i>att.</i>	E8,E10-12:OAc	Priesner in Arn, 1986(a) Witzgall, 1996	C

<i>Cydia indivisa</i> Danilevski <i>att.</i>	Z8-12:OH + E8-12:OH (1:1)	Booij, 1984(d)	C
	Z8-12:OAc + E8-12:OAc (1:1)	Witzgall, 1996	
<i>Cydia ingrata</i> Heinrich <i>att.</i>	E8,E10-12:OAc + E8,Z10-12:OAc (10:1)	Chisholm, 1985(a)	C
	(1:1)	Reed, 1985(b)	
<i>Cydia intexta</i> Kuznetsov <i>att.</i>	E8,E10-12:OAc	Witzgall, 1996	C
<i>Cydia latiferreana</i> Walsingham (= <i>Melissopus latiferreanus</i>) filbertworm <i>phe.</i>	E8,E10-12:OAc *E8,Z10-12:OAc + *E8,E10-12:OAc (43:10)	Davis, 1981 Davis, 1984	C
<i>Cydia lautiuscula</i> Heinrich <i>att.</i>	E8,E10-12:OAc	Chisholm, 1985(a)	C
<i>Cydia leucostoma</i> Meyrick <minamitumajiro-himehamaki> <i>att.</i>	Z8,E10-12:OAc	Witzgall, 1996	A
<i>Cydia medicaginis</i> Kuznetsov <i>att.</i>	E8,E10-12:OAc	Frerot, 1979(a) Wall, 1987	C
<i>Cydia millenniana</i> Adamoz. <i>att.</i>	E8,E10-12:OAc + Z8,Z10-12:OAc (1:1)	Witzgall, 1996	C
<i>Cydia nigricana</i> F. pea moth <endou-shinkui> <i>phe.</i>	E8,E10-12:OAc or Z8-12:OAc or E10-12:OAc *E8,E10-12:OAc E10-12:OAc *E8,E10-12:OAc + other components	Lewis, 1975 Wall, 1976 Greenway, 1984 Horák, 1988 Witzgall, 1993; 1996	A
<i>Cydia orobana</i> Treitschke <i>att.</i>	E8,E10-12:OH	Rotundo, 1988	C

<i>Cydia oxytropidis</i> Martini att.	E8,E10-12:OAc	Witzgall, 1996	C
<i>Cydia pactolana</i> Zeller <todomatsumiki-moguriga> att.	Z8-12:OH	Booij, 1984(a)	B
<i>Cydia piperana</i> Kearfott seed worm att.	E9-12:OAc + Z9-12:OAc (7:3) (1:1)	Sartwell, 1985 Stevens, 1985	C
<i>Cydia pomonella</i> L. codling moth phe.	E8,E10-12:OH *E8,E10-12:OH + *12:OH (3:1) + other components + *14:OH (10:5:1) E8,E10-12:OH	Roelofs, 1971(e) Beroza, 1974 McDonough, 1974 Buser, 1975 Einhorn, 1984(b); 1986 Arn, 1985 Bartell, 1988 McDonough, 1993; 1995	C
<i>Cydia populana</i> Busck att.	E8,E10-12:Ald E8,E10-12:OAc	Chisholm, 1985(a) Stevens, 1985	C
<i>Cydia pyrivora</i> Danil. phe.	E8,E10-12:OAc *E8,E10-12:OAc + other components	Priesner in Arn, 1986(a) Witzgall, 1996	C
<i>Cydia servillana</i> Dup. att.	E8,E10-12:OAc	Priesner in Arn, 1986(a) Witzgall, 1996	C
<i>Cydia splendana</i> Hübner chestnut codling moth phe.	E8,E10-12:OAc *E8,E10-12:OAc + E8,E10-12:Ald (9:1)	Rotundo, 1988 Frérot, 1995	C

	+ *E8,Z10-12:OAc (1:1) + other components	Witzgall, 1996	
<i>Cydia strobilella</i> L. spruce seed moth <ezomatsukasaga> phe.	Z8-12:OH E8-12:OAc *E8-12:OAc E8,E10-12:OAc + E8,Z10-12:OAc (1:1) *E8,E10-12:OAc + *E8,Z10-12:OAc (3:2)	Booij, 1984(a) Grant, 1989 Bédard, 2002 Witzgall, 1996 Wang, 2010	A
<i>Cydia</i> (= <i>Grapholita</i>) <i>succedana</i> Denis & Shiffermüller att.	E8,E10-12:OAc + E8,Z10-12:OAc (1:1)	Hrdý, 1989 Witzgall, 1996	C
<i>Cydia toreuta</i> Grote eastern pine seed worm phe.	E8,Z10-12:OAc *E8,Z10-12:OAc	Chisholm, 1985(a) Katovich, 1989	C
<i>Cydia trasi</i> as Meyrick phe.	*E8,E10-12:OAc + *E8,E10-12:OH + *E8,E10-12:Ald (10:9:1)	Fu, 2002	C
<i>Cydia turciana</i> e Chambon att.	E8,E10-12:OAc + E8,Z10-12:OAc (1:1)	Witzgall, 1996 Chambon in Arn, 1997	C
<i>Cydia youngana</i> Kearfott spruce coneworm att.	E7-12:OH	Weatherston, 1977	C
<i>Cydia zebeana</i> Ratzeburg att.	E8-12:OAc + E10-12:OAc (1:1) (9:1)	Booij, 1984(a) Booij, 1986	C
<i>Cydia</i> (= <i>Laspeyresia</i>) sp. att.	Z8-12:OAc	Roelofs, 1971(a)	
<i>Cymolomia</i> ^d <i>hartigiana</i> Saxesen <touhi-himehamaki>	Z10-12:OAc	Witzgall, 1996	A

att.				
<i>Dichrorampha</i>	^b <i>acuminatana</i> Lienig & Zeller	Z9,Δ11-12:OAc	Chisholm, 1985(b)	C
att.		E9,Δ11-12:OAc	Rotundo, 1985(b)	
		+ Z9,Δ11-12:OAc (4:1)	Ulenberg in Arn, 1997	
<i>Dichrorampha</i>	<i>gueneeana</i> Obraztsov <kokiobiherihoshi-himehamaki>	Z9,Δ11-12:OAc	Chisholm, 1985(b)	A
att.		+ E9,Δ11-12:OAc (1:4)	Ulenberg in Arn, 1997	
<i>Dichrorampha</i>	<i>incursana</i> H.-S.	E9-12:OAc	Hrdý, 1989	C
att.		+ Z9-12:OAc (11:9)		
<i>Dichrorampha</i>	<i>petiverella</i> L. <hosokiobiherihoshi- himehamaki>	E9-12:OAc	Priesner in Arn, 1986(a)	A
att.		+ E11-14:OAc (10:1)		
		Z11-14:Ald	Frerot, 1985	
		+ E11-14:Ald (9:1)		
		E11-14:OAc	Mozūraitis, 1998	
		+ E11-14:OH (10:1)		
<i>Dichrorampha</i>	<i>plumbana</i> Scopoli	E9-12:OAc	Booij, 1984(a)	C
att.		+ Z9-12:OAc (9:1)		
<i>Dichrorampha</i>	<i>sedatana</i> (= <i>sedetana</i> ?) Busck	E8,E10-12:OAc	Stevens, 1985	C
att.				
<i>Dichrorampha</i>	<i>simpliciana</i> Haworth	E9-12:OAc	Brewer, 1985	C
att.		+ E9,Δ11-12:OAc (19:1)		
<i>Dichrorampha</i>	<i>simulana</i> Clemens	E9,Δ11-12:OAc	Chisholm, 1985(b)	C
att.		+ E9,Δ11-12:OH (10:1)		
<i>Dichrorampha</i> sp.		E9-12:OAc	Roelofs, 1971(a)	
att.		+ E9-12:OH		
<i>Ecdytolopha</i>	^b <i>aurantiana</i> citrus borer moth	*E8-12:OAc	Leal, 2001	D
phe.		+ *E8-12:OH (100:1 - 10:1)	Ono, 2001	
<i>Ecdytolopha</i>	<i>insiticiana</i> Zeller	E8-12:OAc	Roelofs, 1971(a)	D

<i>Ecdytolopha torticornis</i> Meyrick macadamia nut borer <i>att.</i> <i>phe.</i>	*E8-12:OAc + other components	Chamberlain, 2003	D
<i>Enarmonia</i> ^a <i>formosana</i> Scopoli cherry bark tortrix <i>att.</i> <i>phe.</i>	Z9-12:OAc + E9-12:OAc (1:1) Z8-12:OAc *Z9-12:OAc + *E9-12:OAc (6:4-5:5) + other components Z9-12:OAc + Z11-14:OAc + E11-14:OAc + 12:OAc + 14:OAc (5:3:2:3:1)	Minks, 1976 Toshova, 2017 Hrdý, 1979 McNair, 1999 Olenici, 2007	C
<i>Endopiza</i> ^d <i>caraduana</i> Busck <i>att.</i>	Z9-12:OAc	Dix, 1984	D
<i>Endothenia</i> ^d <i>benausopsis</i> Meyrick <i>att.</i>	Z10-14:OAc	Ando, 1977	A
<i>Endothenia ericetana</i> Humpr. & Westw. <i>att.</i>	Z10-14:OAc + E10-14:OAc (1:1) E10-14:OAc	Priesner in Arn, 1986(a) Mozūraitis, 1998	C
<i>Endothenia gentianaeana</i> Hübner <i>att.</i>	Z10-14:OAc	Frerot, 1985	A
<i>Endothenia nigricostana</i> Haworth <kuromadara-shinmushiga> <i>att.</i>	Z11-14:OAc + E11-14:OAc	Frerot, 1979(b)	A
<i>Endothenia quadrimaculana</i> Haworth <i>att.</i>	E10-14:OAc + Z10-14:OAc (3:1) (9:1)	Booij, 1984(a) Capizzi in Arn, 1992	C
<i>Endothenia ustulana</i>	Z10-14:OAc	Arn, 1974	C

	(= <i>carbonana</i>) Haworth			
	<i>att.</i>			
<i>Epiblema</i> ^a	<i>confusana</i> H.-S.	E8,Z10-12:OAc + Z8,Z10-12:OAc (1:1)	Witzgall, 1996	C
	<i>att.</i>			
<i>Epiblema</i>	<i>desertana</i> Zeller	Z8-12:OAc	Roelofs, 1971(a)	C
	<i>att.</i>			
<i>Epiblema</i>	<i>foenella</i> L.	Z8-12:OAc	Ando, 1977	A
	<yomogi-nemushiga>			
	<i>phe.</i>	+ E8-12:OAc (18:7)	Beauvais, 1977	
		*Z8,Z10-12:OAc + E8,Z10-12:OAc (1:1) or + *E8,E10-12:OAc (1:1) + other components	Witzgall, 1996	
<i>Epiblema</i>	<i>fuchsiana</i> Rössl.	Z8,Z10-12:OAc	Witzgall, 1996	C
	<i>att.</i>			
<i>Epiblema</i>	<i>resumptana</i> Walker	Z9-12:OAc + E9-12:OAc (1:1)	Stevens, 1985	C
	<i>att.</i>			
<i>Epiblema</i>	<i>scudderiana</i> Clemens	Z8-12:OH	Roelofs, 1971(a)	C
	<i>att.</i>			
<i>Epiblema</i>	<i>scutulana</i>	Z8-12:OAc	Chambon, 1974	C
	Denis & Schiffermüller		Sziráki, 1978(a)	
	<i>att.</i>		Hrdý, 1979	
			Tóth, 1992(d)	
		Z8-12:OAc + E8-12:OAc + 12:OH (97:3:300)	Olenici, 2007	
<i>Epiblema</i> sp.		E11-14:OAc	Daterman, 1977	
	<i>att.</i>			
<i>Epinotia</i> ^a	<i>aporema</i> Walsingham	*Z7,Z9-12:OH + *Z7,Z9-12:OAc (15:1)	Altesor, 2009	C
	<i>phe.</i>			
<i>Epinotia</i> ^a	<i>atistriga</i>	Z7-12:OAc	Roelofs, 1971(a)	C
	(= <i>atistriga</i> ?) Clarke			
	<i>att.</i>			

<i>Epinotia columbia</i> Kearfott <i>att.</i>	Z9-12:OAc + E9-12:OAc (1:1)	Stevens, 1985	C
<i>Epinotia criddleana</i> <i>att.</i>	E9-12:OAc	Reed, 1985(a)	C
<i>Epinotia leucantha</i> Meyrick <hanaudo-moguriga> <i>att.</i>	Z9-12:OH	Ando, 1981	A
<i>Epinotia miscana</i> Kearfott <i>att.</i>	E9-12:OAc	Stevens, 1985	C
<i>Epinotia nanana</i> Treitschke <i>att.</i>	E8-12:OAc + E10-12:OAc (1:1)	Booij, 1984(a)	C
<i>Epinotia rubiginosana</i> Herr. & Schaffer <matsunokuromadara- himehaamaki> <i>att.</i>	Z9-12:OAc + Z7-12:OAc (1:1) Z8-12:OAc + Z10-12:OAc (1:1)	Booij, 1984(a) Witzgall, 1996	A
<i>Epinotia silvertoniensis</i> Kearfott <i>att.</i>	Z7,Z9-12:OAc	Reed, 1985(a)	C
<i>Epinotia solicitana</i> <i>att.</i>	E8-12:OAc	Miller in Arn, 1992	C
<i>Epinotia tedella</i> Clerck European spruce budmoth <i>phe.</i>	E9-12:OAc + Z9-12:OAc (9:1) *Z7,Z9-12:OAc + another component	Booij, 1984(a) Priesner, 1989(b)	C
<i>Epinotia tenerana</i> Denis & Shiffermüller <hanno-memushiga> <i>att.</i>	E10,E12-14:OAc + Z10,Z12-14:OAc (1:1)	Witzgall, 1996	A
<i>Epinotia zandana</i> Kearfott <i>att.</i>	Z7-12:OAc	Roelofs, 1971(a)	C
<i>Epinotia</i> sp. 1 (<i>zandana</i> ?) <i>att.</i>	Z7,Z9-12:OAc	Reed, 1985(a)	

<i>Epinotia</i> sp. 2 (<i>removana</i> ?) <i>att.</i>	Z7,Z9-12:OAc or Z7,Z9-12:OH	Reed, 1985(a)	
<i>Epinotia</i> sp. 3 <i>att.</i>	E8,E10-12:OAc	Stevens, 1985	
<i>Episimus</i> ^d <i>argutanus</i> Clemens <i>att.</i>	Z9-12:OAc + Z11-14:OAc (11:2)	Roelofs, 1971(a) Jordan, 2013	D
<i>Eucosma</i> ^a <i>aemulana</i> Schläger <shirozusosomon-himehamaki> <i>att.</i>	E8,E10-12:OAc + Z8,Z10-12:OAc (1:1)	Rotundo, 1985(b) Witzgall, 1996	A
<i>Eucosma bobana</i> Kearfott <i>att.</i>	Z9-12:OAc	Stevens, 1985 Rotundo in Arn, 1992	C
<i>Eucosma campoliliana</i> Denis & Shiffermüller <nisemonshirosusomon- himehamaki> <i>att.</i>	E8,E10-12:OH Z8,E10-12:OAc	Fassotte in Arn, 1986(a) Olenici, 2007 Priesner in Arn, 1986(a)	A
<i>Eucosma cana</i> Haworth <azamisusomon- himehamaki> <i>att.</i>	Z8,E10-12:OAc E8,E10-12:OAc + Z8-12:OAc + E8-12:OAc + 12:OAc (44:30:10:18)	Priesner in Arn, 1986(a) Witzgall, 1996 Fassotte in Arn, 1992	A
<i>Eucosma coniogramma</i> Clarke <ohirugi-himeshinkui> <i>phe.</i>	*E9-12:OAc	Vang, 2005	A
<i>Eucosma delericta</i> Heinrich <i>att.</i>	E7,E9-12:OAc + Z7,E9-12:OAc (1:1)	Chisholm, 1985(a)	C
<i>Eucosma giganteana</i> Riley <i>att.</i>	E8-12:OAc	Ruiz, 2022	C
<i>Eucosma gloriola</i> Heinrich	Z9-12:OAc	Grant, 1985	C

<i>att.</i>	+ E9-12:OAc (9:1) (10:3)	Grant, 2002	
<i>Eucosma hohenwartiana</i> Denis & Shiffermüller <hosobaunmon-himehamaki> <i>att.</i>	E8,E10-12:OAc E8,Z10-12:OAc + Z8,Z10-12:OAc (1:1)	Rotundo, 1985(b) Witzgall, 1996	A
<i>Eucosma monitorana</i> Heinrich <i>att.</i>	Z9-12:OAc + E9-12:OAc + Z9-12:OH (20:1:3)	Grant, 2002	C
<i>Eucosma nigromaculana</i> (= <i>campoliliana</i> ?) <i>att.</i>	E8,E10-12:OH	Chambon, 1974	C
<i>Eucosma notanthes</i> Meyrick carambola fruit borer <i>phe.</i>	Z8-12:OAc *Z8-12:OAc + *Z8-12:OH (1:1)	Hwang, 1996(a) Hung, 2001	C
<i>Eucosma ponderosa</i> Powell <i>att.</i>	Z9-12:OAc	Stevens, 1985	C
<i>Eucosma recissoriana</i> (complex) <i>att.</i>	Z9-12:OAc	Stevens, 1985	C
<i>Eucosma sonomana</i> Kearfott Western pine shoot borer <i>att.</i>	Z9-12:OAc + E9-12:OAc (2:1)	Sower, 1979	C
<i>Eucosma tocullionana</i> Heinrich <i>att.</i>	Z9-12:OAc + E9-12:OAc (2:1)	Grant, 2002	C
<i>Eucosma womonana</i> Kearfott <i>phe.</i>	*Z7-12:OAc + *Z7,Z9-12:OAc + *Z7,E9-12:OAc + *Z5-12:OAc + *12:OAc (10:4:1:1:4) + other components	Underhill, 1987(b)	C
<i>Eucosmomorpha</i> ^a <i>albersana</i> Hübner <i>att.</i>	E9-12:OAc + Z9-12:OAc (9:1)	Booij, 1984(a)	C

<i>Eudemis</i> ^d <i>att.</i> <i>porphyrana</i> Hübner	Z10-14:OAc + E10-14:OAc (10:1)	Mozūraitis, 1998	C
<i>Exartema</i> ^d <i>att.</i> (= <i>Olethreutes</i>) <i>appendiceum</i> Zeller	E9-14:OAc	Steck, 1977(a)	C
<i>Exartema</i> <i>att.</i> <i>fusticanum</i> McDunnough	Z7-12:OH	Weatherston, 1974(a)	C
<i>Grapholita</i> ^b <i>att.</i> <i>caeruleana</i> Walsingham	E8,E10-12:OAc	Stevens, 1985	C
<i>Grapholita</i> <i>att.</i> <i>compositella</i> F.	E8,E10-12:OAc	Witzgall, 1996	C
<i>Grapholita</i> <i>att.</i> <i>conversana</i> Walsingham	E8,E10-12:OAc	Stevens, 1985	C
<i>Grapholita</i> <i>phe.</i> <i>dimorpha</i> Komai <sumomohime-shinkui> <bokehime-shinkui>	Z8-12:OAc + E8-12:OAc (4:1–2:3) *Z8-12:OAc + *E8-12:OAc (17:3) + other components	Mochizuki, 2003 Murakami, 2005	A
<i>Grapholita</i> <i>att.</i> <i>endrosias</i> Meyrick <sehimofuri-himehamaki>	E7-12:OAc	Ando, 1981	A
<i>Grapholita</i> <i>phe.</i> <i>funebrana</i> Treitschke plum fruit moth	Z8-12:OAc Z10-12:OAc + codling moth Z8-12:OAc + E8-12:OAc (25:1) + E10-12:OAc (1:1) *Z8-12:OAc + *E8-12:OAc (10:1) + other components	Granges, 1971 Arn, 1974 Arn, 1976(a) Biwer, 1978(b) Witzgall, 1996 Guerin, 1986(b)	B
<i>Grapholita</i> (= <i>Cydia</i>) <i>gemmaferana</i>	E8,E10-12:OAc	Hrdý, 1989	C

	Treichke			Tóth, 1992(d) Witzgall, 1996	
<i>Grapholita inopinata</i> Heinrich <ringoko-shinkui>		Z8-12:OAc		Ando, 1977	A
<i>Grapholita inopinata</i> Heinrich <ringoko-shinkui>		*Z8-12:OAc + other components		Tanaka, 2007	
<i>Grapholita janthinana</i> Duponchel		Z8-12:OAc + E8-12:OAc (7:3–8:2)		Beauvais, 1977 Biwer, 1978(b)	C
			(1:1)	Witzgall, 1996	
<i>Grapholita (= Cydia) jungiella</i> Clerck		E8,Z10-12:OAc		Priesner in Arn, 1986(a) Wang, 2010	C
		+ Z8,E10-12:OAc (1:1)		Witzgall, 1996	
<i>Grapholita libertina</i> Heinrich		E8-12:OAc + Z8-12:OAc + Z8-12:OH (17:2:1)		Hillier, 2002	C
<i>Grapholita lobarzewskii</i>		E8-12:OAc + Z8-12:OAc (9:1)		Biwer, 1978(b)	C
		*E8-12:OAc + *Z8-12:OAc (9:1) + other components		Witzgall, 1989(b)	
<i>Grapholita lunatana</i> Walsingham		E8,E10-12:OAc		Chisholm, 1985(a)	C
<i>Grapholita molesta</i> Busck Oriental fruit moth <nashihime-shinkui>	U.S.A.	*Z8-12:OAc		Roelofs, 1969	A
	Australia	+ *E8-12:OAc [25:1]		Lacey, 1992	
	U.S.A.	+ 12:OH (93:7:100)		Cardé, 1975(b)	
	U.S.A.	+ Z8-12:OH (311:22:1)		Cardé, 1975(c)	
	France	+ *Z8-12:OH (46:4:1)		Biwer, 1978(b)	
	U.S.A.	(50:3:50)		Linn, 1983	
	Korea	(95:5:1)		Han, 2001	

	U.S.A.	+ *12:OH [100:7:30:6]	Cardé, 1979	
		F ₂ -7,7-Z8-12:OAc	Masnyk, 1989	
<i>Grapholita packardii</i> Zeller cherry fruitworm att.		E8-12:OAc	Roelofs, 1970(a)	C
<i>Grapholita prunivora</i> Walsingham lesser appleworm att.		Z8-12:OAc	Roelofs, 1970(a)	C
		+ E8-12:OAc (49:1)	Roelofs, 1974(a)	
		(40:1)	Chisholm, 1985(a)	
<i>Grapholita tenebrosana</i> Duponchel <ibara-himeshinkui> att.		Z8-12:OAc	Chambon, 1974 Alford, 1978 Hrdý, 1979	A
		E8,E10-12:OAc	Peltotalo, 1986	
		+ E8-12:OAc	Mizukoshi, 2006	
		+ Z8-12:OH (85.5:5.5:9)		
		Z8-12:OAc	Olenici, 2007	
		+ E8-12:OAc		
		+ 12:OH (97:3:300)		
<i>Grapholita</i> sp. 1 att.		Z8-12:OAc	Ando, 1981	A
<i>Grapholita</i> sp. 2 att.		E8,E10-12:Ald	Chisholm, 1985(a)	
		+ E8,E10-12:OAc (10:1)		
<i>Grapholita</i> sp. 3 att.		E8-12:OAc	Chisholm, 1985(a)	
<i>Gravitar^amata^a margarotana</i> Heinemann <matsutobi-himehamaki> phe.		*Z9-12:OAc	Löfstedt in Arn, 1992	A
		+ *E9-12:OAc		
		+ *12:OAc (5:1:3)		
		+ other components		
<i>Gretchen^aa bolliana</i> Slingerland pecan bud moth att.		Z8-12:OAc	Gentry, 1975	D
		+ E8-12:OAc		
		+ 12:OH (100:7:1000)		

<i>Gretchena semialba</i> McD. <i>att.</i>	E11-14:Ald + Z11-14:Ald (19:1)	Sanders, 1993	D
<i>Griselda</i> ^a <i>myrtilana</i> Hump. & Westw. <i>att.</i>	Z11-14:OH	Booij, 1984(a)	C
<i>Gypsonoma</i> ^a <i>aceriana</i> Duponchel poplar shoot-borer <i>att.</i>	E10-12:OAc + E10-12:OH (3:1) (7:3)	Booij, 1984(a) Booij, 1984(d)	C
<i>Gypsonoma dealbana</i> Frölich <i>att.</i>	Z11-14:OAc + E11-14:OAc (3:2) (1:10)	Frerot, 1982(a) Mozūraitis, 1998	C
	E11-14:OAc	Möttus in Arn, 1992	
	E10-12:OAc + E8-12:OAc (1:1)	Booij, 1984(a) Witzgall, 1996	
<i>Gypsonoma minutana</i> Hübner <popura-himehamaki> <i>att.</i>	Z11-14:OAc + E11-14:OAc + 12:OAc (9:1:10) E10-14:OAc + Z11-14:OAc (10:1)	Safonkin, 1988 Mozūraitis, 1998	A
<i>Gypsonoma sociana</i> Haworth <i>att.</i>	E10-12:OAc E9-12:OAc + Z9-12:OAc (9:1)	Booij, 1984(a) Safonkin, 1988	C
<i>Hedya</i> ^d (= <i>Aphania</i>) <i>auricristana</i> Walsingham <gumioousutsuma-himehamaki> <i>att.</i>	Z9-14:OAc + Z11-14:OAc (9:1-7:3)	Ando, 1975 Nagano, 1979	A
<i>Hedya chionosema</i> Zeller <i>att.</i>	E8-12:OAc + E8-12:OH	Roelofs, 1971(a)	C

	E8,E10-12:OAc + Z8-12:OAc + E8-12:OAc (100:35:3)	Roelofs, 1982(a)	
<i>Hedya dimidiana</i> Clerck <shikommon-himehamaki> <i>att.</i>	E8,E10-12:OAc + E8-12:OAc (10:1) + Z8,Z10-12:OAc (1:1) Z8-12:OAc + E8-12:OAc + 12:OH (97:3:300)	Ando, 1987 Priesner in Arn, 1992 Witzgall, 1996 Olenici, 2007	A
<i>Hedya dimidioalba</i> Retz. <i>att.</i>	E8,E10-12:OAc + Z8,E10-12:OAc (1:1)	Witzgall, 1996	C
<i>Hedya nubiferana</i> Haworth green budworm moth <i>phe.</i>	E8,E10-12:OH *E8,E10-12:OAc + *Z8-12:OAc + *12:OAc (48:32:100) + *E8-12:OAc (55:32:9:5) + Z8-12:OAc (2:1)	Arn, 1974 Chambon, 1974 Frerot, 1979(a) Roelofs, 1982(a) Rotundo, 1988	C
<i>Hedya ochroleucana</i> Frölich <shibechatsumajiro- himehamaki> <i>att.</i>	Z8,E10-12:OAc + Z8,Z10-12:OAc (10:1)	Frerot, 1979(a) Chisholm, 1985(a)	A
<i>Hedya pruniana</i> Hübner <i>att.</i>	Z8,E10-12:OAc	Witzgall, 1996	C
<i>Hedya salicella</i> L. <i>att.</i>	E8,E10-12:OH	Olenici, 2007	A
<i>Hedya separatana</i> Kearfott <i>att.</i>	Z10-12:OAc	Reed, 1985(b)	C
<i>Latronympha</i> ^b <i>strigana</i> F. <i>att.</i>	Z8,Z10-12:OAc	Witzgall, 1996	C

<i>Leguminivora</i> ^b <i>glycinivorella</i> Matsumura soybean pod borer <mame-shinkuiga> phe. in China	*E8,E10-12:OAc + other components	Vang, 2006	A
<i>Lobesia</i> ^d <i>aeolopa</i> Meyrick <hosobachibi-himehamaki> att.	Z7-10:OAc	Ando, 1975	A
<i>Lobesia bicinctana</i> (= <i>bicineta</i> ?) Dup. phe.	*Z9-12:OAc + another component	Frérot, 1990(b)	C
<i>Lobesia botrana</i> Denis & Shiffermüller European grapevine moth phe.	*E7,Z9-12:OAc + Z9-12:OAc + E9-12:OAc + 12:OAc + *E7,Z9-12:OH + *Z9-12:OAc (100:20:5–100:5:1) + other components ≡7,Z9-12:OAc + *E7-12:OAc + *E7,E9,Δ11-12:OAc + *Z7,E9,Δ11-12:OAc N	Roelofs, 1973 Buser, 1974; 1975 Guerin in Arn, 1992 Arn, 1988 El-Sayed, 1999 Brückner, 1988 Witzgall, 2005	C
<i>Lobesia</i> sp. att.	Z9-12:OH	Ando, 1977	A
<i>Matsumuraeses</i> ^b <i>falcana</i> Walsingham podborer <nisemamesaya- himehamaki> phe.	*E8,E10-12:OAc + *E8-12:OAc (15:17) + other components + *E7,Z9-12:OAc (1:1:1)	Wakamura, 1985 Wakamura, 1986(b)	A
<i>Matsumuraeses ussuriensis</i> Caradja <niseazukisaya- himehamaki>	E8-12:OAc	Ando, 1981	A

<i>Metendothenia</i> ^d <i>atropunctana</i> Zetterstedt <kurotentumaki- himehamaki> <i>att.</i>	Z10-12:OAc + E10-12:OAc (1:1)	Booij, 1984(a) Voerman in Arn, 1986(a) Rotundo, 1985(b)	A
<i>Microcorses</i> ^c sp. <i>att.</i>	Z7-12:OAc + Z9-14:OAc (1:1)	Ando, 1981	A
<i>Notocelia</i> ^a <i>incarnatana</i> Hübner <i>att.</i>	E10,E12-14:OAc + E10,Z12-14:OAc (1:1)	Witzgall, 1996	C
<i>Notocelia purpurissatana</i> Heinrich <i>att.</i>	Z10,Z12-14:OAc or Z10,Z12-14:OH	Reed, 1985(b)	C
<i>Notocelia roborana</i> Denis & Shiffermüller <i>phe.</i>	*Z10-14:OAc + *Z8,Z10-12:OAc [19:5] + other components N	Witzgall, 1996	C
<i>Notocelia rosaecolana</i> Doubleday <barashiro-himehamaki> <i>att.</i>	E8,E10-12:OAc E8,Z10-12:OAc + Z8,E10-12:OAc (1:1) Z8-12:OAc + E8-12:OAc	Booij, 1984(a) Witzgall, 1996 Hrudová, 2003	A
<i>Notocelia trimaculana</i> Haworth <i>att.</i>	Z10,Z12-14:OAc	Witzgall, 1996	C
<i>Notocelia uddmanniana</i> L. <i>phe.</i>	Z10,E12-14:OAc *Z10,Z12-14:OAc + other components	Priesner in Arn, 1986(a) Witzgall, 1991(b)	C
<i>Olethreutes</i> ^d <i>bifasciana</i> Haworth <i>att.</i>	E10-14:OAc + Z10-14:OAc (3:1)	Booij, 1986	C
<i>Olethreutes bipunctana</i> F. <shiromadara-himehamaki> <i>att.</i>	Z8-14:OAc + Z10-14:OAc (1:1)	Booij, 1986	B

<i>Olethreutes decrepitana</i> att.	E10-14:OAc + Z10-14:OAc (3:1)	Voerman in Arn, 1986(a)	C
<i>Olethreutes humeralis</i> Walsingham <kiobikimadara-himehamaki> att.	Z8-12:OAc + Z8-12:OH (1:1)	Ando, 1981	A
<i>Olethreutes siderana</i> Treitchke <ginboshimotoki-himehamaki> att.	Z8-12:OAc	Booij, 1984(a)	A
<i>Pammene</i> ^b <i>albuginana</i> Guenée att.	Z8-12:OAc	Chambon, 1974 Sziráki, 1978(a); (b) Witzgall, 1996	C
<i>Pammene amygdalana</i> Duponchel att.	E8-12:OAc + Z8-12:OAc (9:1)	Biwer, 1978(b)	C
<i>Pammene argyrana</i> Hübner att.	Z8-12:OAc	Chambon, 1974 Sziráki, 1978(b) Witzgall, 1996	C
	+ E8-12:OAc (18:7)	Beauvais, 1977	
<i>Pammene</i> (= <i>Cydia</i>) <i>aurana</i> F. att.	Z8-12:OAc	Alford, 1978 Hrdý, 1979	C
	Z9-12:OAc	Voerman in Arn, 1992	
	Z8-12:OAc + Z10-12:OAc (1:1)	Witzgall, 1996	
<i>Pammene aurita</i> (= <i>aurantiana</i>) Staudinger att.	Z8-12:OAc + E8,E10-12:OAc (100:3) + E8-12:OAc (1:1)	Sziráki, 1978(a) Priesner in Arn, 1986(a) Witzgall, 1996	C
<i>Pammene fasciana</i> L. att.	Z8-12:OAc + Z8-12:OH + 12:OAc (15:5:8)	Chambon, 1974 Sziráki, 1978(b) Rotundo, 1984 Rotundo, 1991	C

<i>Pammene</i> (= <i>Cydia</i>) <i>gallicana</i> Guenée <i>att.</i>	Z8-12:OAc + E8-12:OAc (1:1)	Sziráki, 1978(a) Witzgall, 1996	C
<i>Pammene gallicolana</i> Lienig & Zeller <i>att.</i>	Z8-12:OAc	Sziráki, 1978(a); (b)	C
<i>Pammene giganteana</i> (= <i>inquilina</i>) Fletcher <i>att.</i>	Z8-12:OAc	Chambon, 1974	C
<i>Pammene insulana</i> Guenée <i>att.</i>	Z8-12:OAc	Sziráki, 1978(a)	C
<i>Pammene juniperana</i> <i>att.</i>	Z8-12:OAc + E8-12:OAc + Z8-12:OH + 12:OH	Mariani in Arn, 1986(a)	C
<i>Pammene nemorosa</i> Kuznetzov <nemorosa-himehamaki> <i>att.</i>	Z8-12:OAc	Ando, 1975	A
<i>Pammene obscurana</i> Stephens <usuguro-himehamaki> <i>att.</i>	Z8-12:OAc + Z8-12:OH (1:1)	Booij, 1984(a)	A
<i>Pammene populana</i> F. <i>att.</i>	Z8-12:OH	Booij, 1984(a)	C
<i>Pammene querceti</i> Gozmany <i>att.</i>	Z8-12:OAc	Sziráki, 1978(a); (b)	C
<i>Pammene regiana</i> Z. <i>att.</i>	Z8-12:OAc	Witzgall, 1996	C
<i>Pammene rhediella</i> Clerck <i>att.</i>	E8,E10-12:OH Z8,E10-12:OH	Brakefield in Arn, 1986(a) Guerin, 1983	C
<i>Pammene spiniana</i> Duponchel <i>att.</i>	Z8-12:OAc + E10-12:OAc (1:1)	Sziráki, 1978(a) Witzgall, 1996	C

<i>Pammene splendidulana</i> Guenée att.	Z8-12:OAc	Sziráki, 1978(a)	C
<i>Pammene suspectana</i> Lienig & Zeller att.	Z8-12:OAc Z9-12:OAc + Z11-14:OAc + E11-14:OAc + 12:OAc + 14:OAc (5:3:2:3:1)	Sziráki, 1978(a) Olenici, 2007	C
<i>Pammene</i> sp. att.	Z8-12:OAc	Ando, 1977	A
<i>Paralobesia</i> ^d (= <i>Endopiza</i>) <i>viteana</i> Clemens grape berry moth phe.	*Z9-12:OAc + *Z11-14:OAc (20:1) + other components Z9-12:OAc + E9-12:OAc (24:1)	Roelofs, 1971(c) Witzgall, 2000 Taschenberg, 1974	D
<i>Pelochrista</i> ^a <i>scintillana</i> <i>randana</i> Kearfott att.	E8,E10-12:OAc + Z8-12:OAc + E8-12:OAc (2:40:1)	Chisholm, 1985(a)	C
<i>Petrova</i> ^a <i>albicapitana</i> Busck att.	Z7,E9-12:OAc	Wong, 1985(a)	C
<i>Petrova burkeana</i> Kearfott att.	E8,E10-12:OAc	Chisholm, 1985(a)	C
<i>Petrova luculentana</i> Heinrich att.	Z7-12:OH + Z7-12:OAc + E9-12:OAc	Dix in Arn, 1986(a)	C
<i>Petrova</i> (= <i>Retinia</i>) <i>metallica</i> Busck metallic pitch nodule moth phe.	Z7-12:OH + Z7-12:OAc E9-12:OAc Z7,E9-12:OAc *Z7,E9-12:OAc + other components	Dix in Arn, 1986(a) Stevens, 1985 Wong, 1985(a) Dix, 1988	C

<i>Petrova piciolana</i> Dyar att.	Z9-12:OAc + E9-12:OAc (1:1)	Stevens, 1985	C
<i>Petrova</i> (= <i>Retinia</i>) <i>resinella</i> L. att.	Z9-12:OAc + E9-12:OAc (1:1)	Booij, 1984(a) Toshova, 2017	C
	Z9-12:OAc + Z11-14:OAc + E11-14:OAc + 12:OAc + 14:OAc (5:3:2:3:1)	Olenici, 2007	
<i>Phaneta</i> ^a <i>alterana</i> Heinrich att.	E8,E10-12:OAc + E10-12:OAc (10:1)	Reed, 1985(b)	C
<i>Phaneta columbiana</i> Walsingham att.	E8,E10-12:OAc	Stevens, 1985	C
<i>Phaneta latens</i> Heinrich att.	E8,E10-12:OH	Hathaway, 1981	C
<i>Phaneta ochroterminana</i> Kearfott att.	Z8,Z10-12:OAc + E8,E10-12:OAc (10:1)	Chisholm, 1985(b)	C
<i>Phaneta roseoterminana</i> Kearfott att.	Z8,Z10-12:OH	Chisholm, 1985(b)	C
<i>Proschistis</i> ^d <i>marmaropa</i> Meyrick <hirobakuro-himehamaki> att.	Z8,Z10-12:OH	Ando, 1987	A
<i>Proteoteras</i> ^a <i>crescentana</i> Kearfott phe.	*Z8-12:OAc + *Z8-12:OH (4:1)	Underhill in Roelofs, 1982(a)	D
<i>Proteoteras willingana</i> Kearfott phe.	*Z8-12:OH + *Z8-12:OAc (9:1)	Underhill in Roelofs, 1982(a)	D
<i>Pseudexentera</i> ^a <i>mali</i> Freeman pale apple budworm phe.	*Z8,Z10-16:OAc Z8,Z10-16:OAc	Hill in Roelofs, 1982(a) Grant, 1991	D

<i>Pseudexentera maracana</i> Kearfott <i>att.</i>	Z8-12:OAc	Roelofs, 1971(a)	D
<i>Pseudexentera oregonana</i> Walsingham aspen leafroller <i>phe.</i>	*Z8-14:OAc + other components	Grant, 1991	D
<i>Pseudexentera spoliata</i> Clemens oak olethreutid leafroller <i>phe.</i>	Z8-14:OAc *Z10-16:OAc + other components	Hill in Roelofs, 1982(a) Grant, 1991	D
<i>Pseudohermenias</i> ^d <i>clausthaliana</i> Saxesen <amimemon-himehamaki> <i>att.</i>	Z8-14:OAc + Z10-14:OAc (1:1)	Voerman in Arn, 1986(a) Booij, 1986	A
<i>Pseudosciaphila</i> ^d <i>brandneriana</i> L. <doro-himehamaki> <i>att.</i>	Z8,E10-12:OAc	Witzgall, 1996	A
<i>Pseudosciaphila duplex</i> Walsingham <i>att.</i>	Z8,E10-12:OAc + Z8,E10-12:Ald (1:1)	Chisholm, 1985(a)	C
<i>Retinia</i> ^a <i>perangustana</i> Snellen <i>att.</i>	Z8-12:OAc + E8-12:OAc + 12:OH (93:7:300)	Olenici, 2007	C
<i>Rhadinocolops</i> ^a <i>koenigianus</i> F. <sendan-himehamaki> <i>att.</i>	E8,E10-12:OAc	Vang, 2005	A
<i>Rhopobota</i> ^a <i>naevana</i> Hübner blackheaded fireworm <kuronehaiiro-himehamaki> <i>phe.</i>	Z9-12:OAc E8,E10-12:OH *Z11-14:OAc + *Z11-14:OH + Z9-12:OAc (9:3:1) (0:49:1)	Ando, 1977 Guerin in Arn, 1986(a) Slessor, 1987 McDonough, 1987	A

		(69:23:8)	Fitzpatrick, 1992	
<i>Rhopobota ustomaculana</i> Curtis <seshiro-himehamaki> att.	Z9-12:OH		Booij, 1984(a)	A
<i>Rhyacionia</i> ^a <i>adana</i> Heinrich att.	E9-12:OAc + E9-12:OH (9:1)		Grant, 1985	C
<i>Rhyacionia buoliana</i> Denis & Schiffermüller European pine shoot moth phe.	*E9-12:OAc + *E9-12:OH (10:1)		Smith, 1974 Gray, 1984(b)	C
<i>Rhyacionia busckana</i> Heinrich att.	E8,E10-12:OAc E9-12:OAc + E9-12:OH (9:1)		Stevens, 1980 Grant, 1985	C
<i>Rhyacionia bushnelli</i> Busck att.	Δ 9-10:OAc or Z9-12:OAc		Dix, 1984	C
<i>Rhyacionia duplana</i> Hübner att.	E9-12:OAc		Tóth in Arn, 1986(a)	B
<i>Rhyacionia duplana</i> <i>simulata</i> Heinrich <matsutsumaaka-shinmushi> att.	Z8,E10-12:OAc		Ando, 1987	A
<i>Rhyacionia frustrana</i> Comstock nantucket pine tip moth phe.	*E9-12:OAc + *E9, Δ 11-12:OAc (24:1) + other components		Hill, 1981(a)	C
		[17:1 – 23:1]	Asaro, 2001	
<i>Rhyacionia fumosana</i> Powell att.	E8,E10-12:OAc		Stevens, 1980	C
<i>Rhyacionia granti</i> Miller att.	E8,E10-12:OAc		Grant, 1985	C
<i>Rhyacionia jenningsi</i> att.	E9-12:OAc + Z9-12:OAc (1:1)		Stevens, 1980	C
<i>Rhyacionia monophylliana</i> Kearfott	E9-12:OAc		Stevens, 1980	C

<i>Rhyacionia multilineata</i> att.	E9-12:OAc	Stevens, 1980	C
<i>Rhyacionia neomexicana</i> Dyar southwestern pine tip moth phe.	E9-12:OAc + Z9-12:OAc (1:1) *E9-12:OAc + *Z9-12:OAc (4:1) + other components	Jacobson, 1978 Stevens, 1980 Niwa, 1992	C
<i>Rhyacionia rigidana</i> Fernald pitch pine tip moth phe.	*E8,E10-12:OAc	Hill, 1976	C
<i>Rhyacionia salmonicolor</i> Powell att.	Z9-12:OAc	Stevens, 1980	C
<i>Rhyacionia subtropica</i> Miller subtropical pine tip moth phe.	*E9-12:OAc	Roelofs, 1979	C
<i>Rhyacionia zozana</i> Kearfott phe.	E9-12:OAc + Z9-12:OAc (1:1) *E9-12:OAc + *E9-12:OH (19:1–14:6)	Sower, 1979 Stevens, 1980 Niwa, 1987	C
<i>Sereda</i> ^b <i>tautana</i> Clemens att.	E8,E10-12:OAc	Stevens, 1985	C
<i>Spilonota</i> ^a <i>laricana</i> Hein. phe.	Z8-14:OAc E *Z8-14:OAc + *Z8-14:OH (10:1–1:1) + another component	Priesner in Arn, 1986(a) Witzgall, 1991(a)	B
<i>Spilonota ocellana</i> Denis & Shiffermüller eyespotted bud moth <ringoshiro-himehamaki>	Z8-14:OAc *Z8-14:OAc	Arn, 1974 Arn, 1975	A

phe.	Z8-12:OAc + E8-12:OAc (9:1)	Minks in Arn, 1986(a)	
	*Z8-14:OAc + *Z8-14:OH (10:1–1:1) + another component	Witzgall, 1991(a)	
	(99:1–95:5)	McBrien, 1992; 1994	
<i>Statherotis</i> ^d <i>discana</i> Felder & Rogenhofer <reishi-himehamaki> phe.	*E8-14:OAc + *E8-12:OAc (4:1)	Wakamura, 1997	A
<i>Strepsicrates</i> ^a <i>semicanella</i> Walker <banjiroutsunoeguri- himehamaki> phe.	*Z7-12:OAc + *Z7-12:OH (9:1)	Wakamura, 2005(b)	A
<i>Strophedra</i> ^b <i>nitidana</i> F. <kashiwaginobi- himehamaki> att.	E8-12:OH or E8-12:OAc	Ando, 1977	A
<i>Strophedra quercivora</i> Meyrick (= <i>S.</i> sp. 2) att.	E8-12:OAc	Ando, 1977 Komai, 1999	A
<i>Strophedra weirana</i> F. att.	E8-12:OAc + E8-12:OH (1:1)	Booij, 1984(a)	C
	E8-12:OAc	Witzgall, 1996	
<i>Strophedra</i> sp. 1 att.	E8-12:OH	Ando, 1977	A
<i>Tetramoera</i> ^a <i>schistaceana</i> Snellen sugarcane shoot borer <kanshanoshinkui-hamaki> phe.	*Z9-12:OAc + *E9,Δ11-12:OAc + E7,Δ9-10:OAc (100:10:1)	Kinjo, 1996	A
<i>Thaumatotibia</i> ^b (= <i>Cryptophlebia</i>) <i>batrachopa</i> Meyrick phe.	*Z8-12:OAc	Hall, 1984 La Croix, 1985	C

<i>Thaumatotibia</i> (= <i>Cryptophlebia</i>) <i>leucotreta</i> Meyrick false codling moth phe.	*E7-12:OAc	Read, 1974	C
	*Z8-12:OAc	Persoons, 1976(c); 1977	
	+ E8-12:OAc (1:1)	Bourdouxhe, 1982	
	+ *E8-12:OAc (3:7–7:3)	Hall, 1984 La Croix, 1985	
	(1:8)	Newton, 1993	
	+ *12:OAc	Zagatti, 1983(a)	
	+ other components	Attygalle, 1986 Bestmann, 1988(b)	
<i>Thiodia</i> ^a <i>alterana</i> Heinrich att.	E10-12:OAc	Roelofs, 1974(b)	C
<i>Thiodia</i> sp. att.	E8,E10-12:OH	Roelofs, 1974(b)	
<i>Zeiraphera</i> ^a <i>canadensis</i> Mutuura & Freeman spruce budmoth phe.	E9-14:OAc	Turgeon, 1988	C
	*E9-14:OAc + another component	Silk, 1989	
<i>Zeiraphera</i> <i>diniana</i> Guenée grey larch bud moth phe. (cembran pine-race) (larch-race) (cembran pine-race) (spruce-race) (= <i>griseana</i> Hübner ?) <haiiroamime-himehamaki> att.	E11-14:OAc	Roelofs, 1971(d)	B
	E9-12:OAc	Baltensweiler, 1978	
	*E11-14:OAc + other components	Guerin, 1984 Baltensweiler, 1988	
	*E9-12:OAc	Guerin, 1984 Baltensweiler, 1988	
	E9-12:OAc	Vrkoc in Arn, 1992	
	E11-14:OAc or E9-12:OAc	Liska, 1990	A

<i>Zeiraphera isertana</i> F. att.	Z9-14:OAc + Z11-14:OAc (9:1)	Hrdý, 1989	C
<i>Zeiraphera unfortunana</i> Powell purplestriped shootworm phe.	*E9-12:OAc	Silk, 1988(a)	C

(Tortricidae; Chlidanotinae) ハマキガ科 ; マダラハマキガ亜科

<i>Isotrias hybridana</i> Hübner att.	Z9-14:OAc + Z11-16:OAc (1:1)	Szöcs, 1981; 1983	D
<i>Isotrias rectifasciana</i> Haworth att.	Z9-14:OAc + Z11-16:OAc (1:1)	Priesner, 1984(c)	D
<i>Olindia schumacherana</i> L. att.	Z11-16:OAc	Priesner, 1984(c)	D

(15) [Galacticoidea] ネムスガ上科

no species

(16) [Choreutoidea] ハマキモドキガ上科
(Choreutidae) ハマキモドキガ科

<i>Homadaula anisocentra</i> Meyrick mimosa webworm <nemusuga> phe.	E11-14:OAc + E11-14:OH (1:1) *E11-14:OAc + other components	Song, 1978 Kuenen, 1990	A
<i>Prochoreutis myllerana</i> F. <shiroheri-hamakimodoki> att.	E2,Z13-18:OH	Karalius, 2005	A
<i>Prochoreutis sehestediana</i> F. <atoshirosuji-hamakimodoki> att.	E3,Z13-18:OAc + E2,Z13-18:OH (1:1) E2,Z13-18:OH + E2,Z13-18:Ald + Z3,Z13-18:OH (1:1:1)	Bûda, 1993 Karalius, 2005	A

Prochoreutis ultimana Krulikovsky E2,Z13-18:OH Karalius, 2005 A
 <ginsuji-hamakimodoki>
 att.

(17) [Schreckenseinoidea] ホソマイコガ上科
 (Schreckensteiniidae) ホソマイコガ科

Schreckensteiniella festaliella Hübner E10,E12-16:Ald Priesner A
 <tatejima-hosomaikoga> in Arn, 1986(a)
 att.

(18) [Epermeinoidea] ササベリガ上科

no species

(19) [Alucitoidea] ニジュウトリバガ上科

no species

(20) [Pterophoroidea] トリバガ上科
 (Pterophoridae) トリバガ科

Amblyptilia acantodactyla Hübner Z11-16:OAc Subchev, 1981 D
 (= *Amblyptilia acanthadactyla* ?)
 att.

Buckleria (= *Trichoptilus*) Z7-12:Ald Ando, 1981 A
wahlbergi Zeller + Z7-12:OH (9:1)
 <kinbanechibi-toriba>
 att.

Emmelina (= *Pterophorus*) Z9-12:Ald Ando, 1981 A
jezonica Matsumura
 <hirugao-toriba>
 att.

Emmelina monodactyla Z9-12:Ald Tóth, 1992(d) C
 att. + Z9-12:OH (20:1)

Merrifieldia leucodactyla E11-14:Ald Ostrauskas, 2010(a) D

	Denis & Schiffermüller	+ Z11-14:Ald (20:1)		
	<i>att.</i>			
	<i>Nippopectia issikii</i> Yano	Z7-12:OAc	Ando, 1975	A
	<issshikibudou-toriba>			
	<i>att.</i>			
	<i>Nippopectia vitis</i> Sasaki	Z7-12:OAc	Ando, 1977	A
	<budou-toriba>			
	<i>att.</i>			
	<i>Ochyrotica concursa</i> Walsingham	Z9-12:OAc	Kinjo, 1996	A
	<satsumaimo-toriba>	+ E9,Δ11-12:OAc		
	<i>att.</i>	+ E7,Δ9-10:OAc (100:10:1)		
	<i>Oidaematophorus guttatus</i>	E11-14:Ald	Daterman, 1977	C
	Walsingham			
	<i>att.</i>			
	<i>Oidaematophorus homodactylus</i>	E11-14:Ald	Daterman, 1977	C
	Walker			
	<i>att.</i>			
	<i>Oidaematophorus mathewianus</i> Zeller	E11-14:OAc	Daterman, 1977	C
	<i>att.</i>			
	<i>Oidaematophorus monodactylus</i> L.	Z9-12:Ald	Kamm, 1979(a)	C
	<i>att.</i>			
	<i>Oidaematophorus</i> sp. 1	E11-14:Ald	Daterman, 1977	
	<i>att.</i>			
	<i>Oidaematophorus</i> sp. 2	E11-14:OAc	Daterman, 1977	
	(<i>O. cretidactylus</i> Fitch			
	or <i>O. rileyi</i> Fern. ?)			
	<i>att.</i>			
	<i>Oxyptilus tristis</i> Zeller	Z7-12:OAc	Tóth, 1992(d)	D
	<i>att.</i>	+ Z7-12:OH (1:1)		
	<i>Platyptilia carduidactyla</i> Riley	*Z11-16:Ald	Klun, 1981	C
	artichoke plume moth			
	<i>phe.</i>			
	<i>Platyptilia ignifera</i> Meyrick	*Z7-12:OAc	Fujii, 2010(a)	A
	<budouoo-toriba>	+ *Z9-12:OAc		

phe.	+ another component		
<i>Platyptilia jezoensis</i> Matsumura <odamaki-toriba> att.	Z11-16:OAc + Z11-16:Ald (9:1)	Ando, 1981	A
<i>Platyptilia</i> (= <i>Cnaemidophorus</i>) <i>rhododactyla</i> Denis & Schiffermüller <chousen-toriba> att.	Z11-14:Ald	Frerot, 1985	A
<i>Platyptilia williamsii</i> Grinnell calendula plume moth att.	Z11-16:Ald	Haynes, 1987	C
<i>Pselnophorus vilis</i> Butler <fuki-toriba> att.	Z9,E11-14:Ald + Z9,E11-14:OAc (9:1)	Ando, 1987	A
<i>Pterophorus tenuidactylus</i> Fitch. att.	Z7-12:OAc	Roelofs, 1971(a)	C
<i>Stenoptilia paludicola</i> att.	Z9-14:OH + Z9-14:Ald (1:1)	Tóth, 1992(d)	C
<i>Trichoptilus lobidactylus</i> Fitch. att.	E11-14:OAc + Z11-14:OAc (19:1)	Sanders, 1993	C

(21) [Copromorphoidea] マルバシンクイガ上科
(Carposinidae) シンクイガ科

<i>Carposina coreana</i> <sanshuyu-shinkui> att.	Z7-20:11-one + Z7-23:H (1:4)	Fujii, 2013(a)	A
<i>Carposina maritima</i> Ponomarenko <kousuguro-shinkui> att.	Z7-20:11-one	Nasu, 2010	A
<i>Carposina niponensis</i> Walsingham <nipponshiro-shinkui> att.	Z7-20:11-one	Nasu, 2010	A
<i>Carposina sasakii</i> Matsumura	*Z7-20:11-one	Tamaki, 1977(a)	A

(= <i>niponensis</i>) peach fruit moth <momonohime-shinkui> phe.	(=Z13-20:10-one) + *Z7-19:11-one (=Z12-19:9-one) (20:1) + another component	Honma, 1978	
in Korea	*Z7-20:11-one + another component	Han, 2000	
<i>Coscinoptycha improbana</i> Meyrick Australian guava moth phe.	*Z7-18:11-one (=Z11-18:8-one) + *Z7-19:11-one + *Z7-23:11-one + *Z7-23:H (235:15:100:650)	Gibb, 2006(a)	D
<i>Heterocrossa rubophaga</i> Dugdale New Zealand raspberry bud moth Phe.	*Z7-19:11-one + *Z7-23:H (1:1)	Foster, 2000 Twidle, 2020	D
<i>Meridarchis excisa</i> Walsingham <kobushiro-shinkui> Att.	Z7-20:11-one	Mizukoshi, 2006	A

(22) [Hyblaeoidea] セセリモドキガ上科

no species

(23) [Thyridoidea] マドガ上科
(Thyrididae) マドガ科

<i>Thyris maculata</i> Harris att.	Z11-14:OAc Z3,Z13-18:OAc	Roelofs, 1971(a) Leeuw, 1983	C
<i>Thyris usitata</i> Butler <madoga> att.	Z11-14:OH	Ando, 1977	A

(24) [Pyraloidea] メイガ上科
(Pyralidae; Galleriinae) メイガ科 ; ツヅリガ亜科

<i>Aphomia sociella</i> L.	*6:OH	Kindl, 2012	C
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bumble bee wax moth phe.	+ *Me6,Me10,Me14-15:2-OH + *Me6,Me10,Me14-15:2-one (5:5:1) <ultrasonic signaling>		
	*Me6,Me10,Me14-15:2-OH (2R,6R,10R)-isomer	Wallin, 2020	
<i>Corcyra cephalonica</i> Stainton rice moth phe.	*Me6,Me10,Me14-15:2-OH <short-range attraction> (2R,6R,10R)-isomer	Hall, 1987 Mori, 1991	D

(Pyralidae; Pyralinae) メイガ科 ; シマメイガ亜科

<i>Endotricha flammealis</i> Denis & Schiffermüller att.	E5-14:OH	Voerman, 1988	C
<i>Orthopygia</i> (= <i>Herculia</i>) <i>glaucinalis</i> L. <futasuji-shimameiga> att.	Z7-12:OAc	Nagano, 1979	A
<i>Pyralis farinalis</i> L. meal moth <kashino-shimameiga> phe.	Z11,Z13-16:Ald + Z3,Z6,Z9,Z12,Z15-23:H + Z3,Z6,Z9,Z12,Z15-25:H + other components	Landolt, 1982 Leal, 2005	A
	*Z11,Z13-16:Ald + *Z3,Z6,Z9,Z12,Z15-23:H + other components	Kuenen, 2010	
<i>Tegulifera bicoloralis</i> Leech <maemon-shimameiga> att.	E11,Δ13-14:Ald + E11-14:Ald (9:1)	Ando, 1987	A

(Pyralidae; Epipaschiinae) メイガ科 ; フトメイガ亜科

<i>Orthaga achatina</i> Butler <nakatobi-futomeiga> phe.	*Z11-16:OAc + *Z3,Z6,Z9,Z12,Z15-23:H (2:1)	He, 2016 Yan, 2018(b)	B
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+ another component

(Pyralidae; Phycitinae) メイガ科 ; マダラメイガ亜科

<i>Acrobasis nuxvorella</i> Neunzig pecan nut casebearer phe. Mexico strain	*E9,Z11-16:Ald + E9,Z11-16:OAc	Millar, 1996 Harris, 2008	C
<i>Acrobasis pyrivorella</i> Matsumura pear fruit moth <nashi-madaramaiga> phe.	*Z9-15:OAc + *15:OAc (100:7)	Tabata, 2009	A
<i>Acrobasis rufilimbalis</i> Wileman <himetobine-madaramaiga> att.	Z9-15:OAc	Ando, 1977	A
<i>Acrobasis vaccinii</i> Riley cranberry fruitworm phe.	*E8,Z10-15:OAc + *E9-15:OAc (25:1) + other components	McDonough, 1994	C
<i>Amyelois transitella</i> Walker navel orangeworm phe.	*Z11,Z13-16:Ald + *Z3,Z6,Z9,Z12,Z15-23:H + *Z3,Z6,Z9,Z12,Z15-25:H + other components	Coffelt, 1979 Leal, 2005	D
	*Z11,Z13-16:Ald + *Z11,Z13-16:OH + *Z11,E13-16:OH + *Z3,Z6,Z9,Z12,Z15-23:H (20:20:3:1) + other components	Kuenen, 2010 Kanno, 2010	
<i>Cactoblastis cactorum</i> Berg cactus moth phe.	*Z9,E12-14:OAc + *Z9,E12-14:OH + *Z9-14:OAc (27:21:2)	Heath, 2006	D
<i>Cadra calidella</i> Guenée att.	Z9,E12-14:OAc	Boughdad in Arn, 1997	C
<i>Cadra</i> (= <i>Ephestia</i>) <i>cautella</i> Walker almond moth	*Z9,E12-14:OAc	Kuwahara, 1971(a) Brady, 1971(a)	A

<suji-madaramaiga> phe.	att.	Zeleny, 1982	
	+ *Z9-14:OAc (minor) + another component	Brady, 1973 Kuwahara, 1973 Read, 1976,1979 Allison, 2006	
	[22:3]	Barrer, 1987	
	(2:1)	Quartey, 1993	
<i>Cadra figulilella</i> Gregson raisin moth <hoshibudou-madaramaiga> phe.	*Z9,E12-14:OAc N Z9,E12-14:OAc	Brady, 1972(b) Soldán, 1983 Kehat, 1992	A?
<i>Citripestis sagittiferella</i> Moore citrus fruit borer phe.	*E11-14:OAc (main) + *Z11-14:OAc + *Z9,E11-14:OAc N	Dung, 2021	A
<i>Cryptoblabes gnidiella</i> Miller honeydew moth phe.	*Z11-16:Ald + *Z13-18:Ald + E11-16:Ald + E13-18:Ald (10:10:1:1) (5:1:5:1)	Bjostad, 1981 Anshelevich, 1993 Gurevitz in Arn, 1986(a)	C
<i>Dioryctria abietella</i> Denis & Schiffermüller spruce coneworm <matsuno-madaramaiga> phe.	*Z9,E11-14:OAc + another component + *Z3,Z6,Z9,Z12,Z15-25:H (1:10–1:30)	Löfstedt, 1983 Löfstedt, 2012 Lee, 2022	A
<i>Dioryctria abietivorella</i> Grote fir coneworm phe.	*Z9,E11-14:OAc + *Z3,Z6,Z9,Z12,Z15-25:H (1:5–1:10)	Millar, 2005 Strong, 2008	C
<i>Dioryctria amatella</i> Hulst southern pine coneworm phe.	Z11-16:OAc *Z11-16:OAc + Z3,Z6,Z9,Z12,Z15-25:H (1:10)	Hanula, 1984 Meyer, 1986 Miller, 2010	C
<i>Dioryctria aurantiella</i> Grote	Z9-14:OAc	Pasek, 1989	C

ponderosa pine coneworm <i>att.</i>			
<i>Dioryctria clarioralis</i> Walker blister coneworm <i>phe.</i>	Z9-14:OAc *Z9-14:OAc + *E9-14:OAc + Z11-16:OAc (44:6:5)	Hanula, 1984 Meyer, 1984	C
<i>Dioryctria disclusa</i> Heinrich webbing coneworm <i>phe.</i>	*Z9-14:OAc Z9-14:OAc	Meyer, 1982 DeBarr, 1982 Hanula, 1984	C
<i>Dioryctria mendacella</i> Staudinger cone moth <i>phe.</i>	*Z9,E11-14:OAc + *Z3,Z6,Z9,Z12,Z15-25:H (1:10)	Hall, 2017	C
<i>Dioryctria merkei</i> Mutuura & Munroe <i>att.</i>	Z9-14:OAc + E9-14:OAc (20:3)	Hanula, 1984 Meyer, 1984	C
<i>Dioryctria reniculelloides</i> Mutuura & Munroe spruce coneworm <i>phe.</i>	*Z9-14:OAc + Z7-12:OAc (20:1)	Grant, 1987(a)	C
<i>Dioryctria resinosella</i> Mutuura red pine shoot moth <i>phe.</i>	*Z9-14:OAc + *Z9-14:OH + E9-14:OAc + Z9-12:OAc (60:10:3:20)	Grant, 1993	C
<i>Dioryctria rubella</i> Hampson pine tip moth <i>att.</i>	Z11-16:Ald + Z11-16:OAc + Z9,E11-14:OAc (7:1:2)	Wu, 1986(b)	C
<i>Ectomyelois ceratoniae</i> Zeller carob moth <i>phe.</i>	*Z9,E11,Δ13-14:Ald + *Z9,E11-14:Ald + *Z9-14:Ald (8:1:1)	Baker, 1989; 1991	C
<i>Elasmopalpus lignosellus</i> Zeller lesser cornstalk borer <i>phe.</i>	*Z11-16:OAc + *Z7-14:OAc + *Z9-14:OAc + *Z9-14:OH (8:8:4:1) + other components	Lynch, 1984	C

Brazil strain	*Z11-16:OAc + other components E	Jham, 2005; 2007	
<i>Ephestia elutella</i> Hübner tobacco moth (cacao moth, chocolate moth) <cha-madaramaiga> phe.	*Z9,E12-14:OAc + *Z9,E12-14:OH (19:5) (5:1–1:1) Z9,E12-14:OAc	Brady, 1971(b) Kuwahara, 1973 Krasnoff, 1984 Soldán, 1983	A
<i>Ephestia</i> (= <i>Anagasta</i>) <i>kuehniella</i> Zeller Mediterranean flour moth <sujikona-madaramaiga> phe.	*Z9,E12-14:OAc + *Z9,E12-14:OH (14:3)	Kuwahara, 1971(b) Kuwahara, 1973	A
<i>Ephestiodes infimella</i> Ragonot att.	Z9,E12-14:OAc	Adler, 1976	D
<i>Episcythrastris</i> (= <i>Myelopsis</i>) <i>tetricella</i> Denis & Schiffermüller att.	Z9,E11-14:OAc	Tóth, 1992(d)	D
<i>Etiella behrii</i> Zeller pod borer phe.	*Z11-14:OAc + *E9-12:OAc + *E11-14:OAc + *12:OAc (90:10:6.3:0.7) + another component	Wakamura, 1999 Hattori, 2001	C
<i>Etiella zinckenella</i> Treitschke lima-bean pod borer <shiroichimonji-madaramaiga> phe.	*Z11-14:OAc + *E11-14:OAc + *Z9-14:OAc (10:1:1) + other components (100:0:3)	Tóth, 1989(a) Hattori, 2001 Tóth, 1996	A
Japanese strain	*Z11-14:OAc + *Z9-14:OAc + *Z9-12:OAc (120:40:1) + other components	Tabata, 2008(a)	
<i>Eurhodope advenella</i> Zck. att.	Z7-14:OAc + Z10-16:OAc (1:1)	Kovalev, 1987	C
<i>Eurythmia hospitella</i> Zeller att.	Z9,E12-14:OAc	Steck, 1977(a)	D

<i>Euzophera batangensis</i> Caradja persimmon bark borer <kurofutamon-madaramaiga> phe.	*Z9,E12-14:OH (major) + *Z9-14:OH E *Z9,E12-14:OH + another component	Kalinová, 2006 Wen, 2009	A
<i>Euzophera bigella</i> att.	Z9-14:OH + Z9-14:OAc (3:1)	Maini in Arn, 1986(a)	C
<i>Euzophera punicaella</i> M. phe.	*Z9,E12-14:OH + *Z9,E12-14:OAc (4:1) E	Bestmann, 1993(b)	C
<i>Euzophera pyriella</i> Yang phe.	*Z9,E12-14:OH + another component	Ma, 2014	C
<i>Euzophera semifuneralis</i> Walker American plum borer phe.	*Z9,E12-14:Ald + *Z9,E12-14:OH + *Z9-14:Ald + *Z9-14:OH (2:2:1:1)	Biddinger, 1994	C
<i>Glyptoteles leucacrinella</i> Zeller att.	Z9-14:Ald + Z9-14:OH (20:1)	Tóth, 1992(d)	D
<i>Homoeosoma electellum</i> Hulst sunflower moth phe.	*Z9-14:OH + *Z9,E12-14:OH (10:1) Z9,E12-14:OH	Underhill, 1979 Underhill, 1982	C
<i>Homoeosoma nebulellum</i> Denis & Schiffermüller European sunflower moth phe.	*Z11-16:Ald + *Z13-18:Ald + *Z9-14:Ald + *Z9,E12-14:Ald (10:7:2:1)	Zagatti, 1991	C
<i>Hulstia undulatella</i> Clemens sugar beet crown borer phe.	*Z9-14:OAc + *Z11-16:OAc + *Z9-14:OH (100:21:8)	Davis, 1993	D
<i>Hypsipyra grandella</i> Walker phe.	*Z9,E12-14:OH E + other components	Borek, 1991 Pineda-Rios, 2016	D
<i>Hypsipyra robusta</i> Moore mahogany shoot borer phe.	*Z9,E12-14:OAc + *Z9-14:OAc + *Z11-16:OAc (5:3:2) N	Bosson, 1982	D

	+ *Z9-14:OH (2:3:3:2)	Ma, 2015	
<i>Maliarpha separatella separatella</i> African white rice stem borer phe.	*Z9,E12-14:OH + *E9,E12-14:OH (9:1) + other components	Cork, 1991	D
<i>Maliarpha separatella vectiferella</i> phe.	Z9,E12-14:Ald	Guerin in Arn, 1986(a)	D
	*Z9,E12-14:Ald + *Z9,E12-14:OH (5:1)	Arn, 1992	
<i>Myelois cribrella</i> Hübner <goma-madaramaiga> phe.	Z11-16:OAc	Subchev, 1981	A
	*Z9,E12-14:OAc + *Z9-14:OAc + *Z11-16:OAc (2:1:1)	Attygalle, 1988(b)	
<i>Plodia interpunctella</i> Hübner Indian meal moth <noshime-madaramaiga> phe.	*Z9,E12-14:OAc	Kuwahara, 1971(a) Brady, 1971(a) Dahm, 1971	A
	Z9,E12-14:OAc	Soldán, 1983	
	+ *Z9,E12-14:OH (8:3)	Kuwahara, 1973	
	+ *Z9,E12-14:Ald N	Teal, 1995	
	+ *Z9-14:OAc (100:18:11:12) + another component	Zhu, 1999	
	(8:2:1:0.8)	Hu, 2005	
<i>Vitula edmandsae serratilineella</i> Ragonot driedfruit moth phe.	*Z9,E12-14:OH + *Z9,E12-14:Ald (100:1) + other components	Struble, 1983(b)	D
	+ *Z11-16:OH (20:1)	Scott, 1984	

(Crambidae; Schoenobiinae) ツトガ科 ; オオメイガ亜科

<i>Scirpophaga excerptalis</i> Walker sugarcane tip borer <shiro-oomeiga> phe.	*E11-16:Ald + *Z11-16:Ald (4:1)	Wu, 1990(b)	A
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	India	(7:3)	Mukunthan, 2005	
<i>Scirpophaga incertulas</i> Walker		*Z11-16:Ald	Cork, 1985(a)	A
yellow stem borer		+ *Z9-16:Ald (3:1)		
<itten-oomeiga>				
<sankameichuu>		+ *Z9-18:Ald (20:5:2)	Tatsuki, 1985	
phe.		+ other components		
		+ *16:Ald (6:3:2)	Du, 1987(b)	
<i>Scirpophaga nivella</i> F.		*E11-16:Ald	Wu in Arn, 1992	A
<tsumaki-oomeiga>		+ *Z11-16:Ald (39:11)		
phe.				

(Crambidae; Scopariinae) ツトガ科 ; ヤマメイガ亜科

<i>Eudonia</i> sp.		Z11-16:OAc	Clearwater, 1986	
att.				
<i>Scoparia biplagiata</i>		Z11-16:OAc	Davis in Arn, 1992	C
att.				
<i>Scoparia</i> sp.		Z11-16:OAc	Ando, 1980(a)	A
att.		+ Z9-16:OAc (4:1)		
<i>Witlesia crataegella</i> Hübner		Z11-16:OAc	Subchev, 1981	C
(= <i>Dipleurina lacustrata</i>)				
att.				

(Crambidae; Crambinae) ツトガ科 ; ツトガ亜科

<i>Agriphila aeneociliella</i> Eversmann		*Z9,Z12,Z15-18:Ald	Zhan, 2023	A
eastern grass veneer		+ *Z9-16:OAc (16:1)		
<shirofutasuji-tutoga>				
phe.				
<i>Agriphila straminella</i>		Z11-16:Ald	Booij, 1984(c)	C
Denis & Schiffermüller				
att.				
<i>Catoptria permutatella</i>		Z11-16:Ald	Booij, 1984(c)	C

Herrich-Schäfer

att.

<i>Chilo auricilius</i> Dudgeon sugarcane stalk borer phe.	*Z7-12:OAc + *Z8-13:OAc + *Z9-14:OAc + *Z10-15:OAc (4:8:4:1)	David, 1985	C
	*Z8-13:OAc + *Z9-14:OAc + *Z10-15:OAc (8:4:1) + another component	Nesbitt, 1986	C
<i>Chilo hyrax</i> Bleszynski reed stalk borer <nikameigamodoki> att.	Z9-16:Ald	Wu, 1993	A
<i>Chilo influscatellus</i> Snellen sugarcane stem borer phe.	*Z11-16:OH	Wu, 1984	C
<i>Chilo partellus</i> Swinhoe spotted stalk borer corn stem borer phe.	*Z11-16:Ald + another component + Z11-16:OH (1:1)	Nesbitt, 1979(a) Hansson, 1995 Guleria, 2023	C
<i>Chilo sacchariphagus</i> Bojer sugarcane internode borer <suji-tsutoga> phe.	*Z13-18:OAc + *Z13-18:OH (7:1)	Nesbitt, 1980(a)	A
<i>Chilo sacchariphagus indicus</i> Kapur phe.	*Z13-18:OAc + *Z13-18:OH (5:1)	David, 1985	B
<i>Chilo suppressalis</i> Walker rice stem borer <nika-meiga> <nikameichiu> phe.	*Z11-16:Ald + *Z13-18:Ald (5:1) (9:2) + *Z9-16:Ald (50:6:5) + other components	Nesbitt, 1975(b) Ohta, 1976 Beever, 1977 Tatsuki, 1983 Mochida, 1984	A
<i>Chilo</i> (= <i>Proceras</i>) <i>venosatus</i> Walker (= <i>C. sacchariphagus</i> ?) sugarcane striped borer	Z13-18:OAc + Z11-16:OAc + Z13-18:OH (2:2:1)	Wu, 1982	A

phe.	*Z13-18:OAc + *Z11-16:OAc + *Z13-18:OH (7:8:42)	Wu, 1990(a)	
<i>Chilo zacconius</i> Blesz. African rice borer phe.	*Z11-16:OH + *16:OH + Z13-18:OH (7:2:1)	Zagatti, 1983(b)	C
<i>Chrysoteuchia topiaria</i> Zeller cranberry girdler phe.	*Z11-16:Ald + Z9-16:Ald (40:1–100:1) Z11-16:CN + Z9-16:CN (100:3)	McDonough, 1979 Kamm, 1979(b) Kamm, 1980; 1989 Ujváry, 1993	C
<i>Chrysoteuchia</i> sp. att.	Me2,epo7-18:H	Nagano, 1979	A
<i>Coniesta</i> (= <i>Acigona</i>) <i>ignefusalis</i> Hampson millet stem borer phe.	Z7-12:OH + Z5-10:OH + Z7-12:Ald (500:25:17) *Z7-12:OH + *Z5-10:OH + *Z7-12:Ald (100:5:3.3) + other components	Youm, 1995 Beevor, 1999	D
<i>Crambus cypridalis</i> Hulst att.	Z11-16:OAc + Z11-16:Ald (10:1)	Landolt, 2012	C
<i>Crambus nemorella</i> Hübner att.	Z11-16:OAc	Booij, 1984(c)	C
<i>Deanolis sublimbalis</i> Snellen red banded mango caterpillar phe.	*Z11-16:Ald + *Z3,Z6,Z9-23:H (1:1) + other components	Gibb, 2007(a)	D
<i>Diatraea considerata</i> Heinrich phe.	*Z11-16:Ald + *Z7-16:Ald + *Z13-18:Ald (100:30:4) + other components	Gries, 1998	D
<i>Diatraea flavipennella</i> Box sugarcane borer	*Z11-16:Ald + *Z9-16:Ald (3:1)	Kalinová, 2012	D

	phe.	+ other components		
<i>Diatraea grandiosella</i> Dyar		*Z11-16:Ald	Hedin, 1986	D
southwestern corn borer		+ *Z9-16:Ald		
	phe.	+ *Z13-18:Ald (71:22:8)		
		+ other components		
		+ Z9-18:Ald (33:10:4:3)	Davis, 1986	
<i>Diatraea indigenella</i> Dyar & Heinrich		*Z9,E11-16:Ald	Palacio-Cortes, 2014	D
	phe.	+ another component		
<i>Diatraea saccharalis</i>		* Z9,E11-16:Ald	Carney, 1982	D
sugar cane borer		+ other components	Santangelo, 2002	
	phe.		Batista-Pereira, 2002	
		+ * Z11-16:Ald (10:1)	Kalinová, 2005	
Brazilian and		+ *Z11-16:Ald (9:1–3:1) N	Cortés, 2010	
Columbian strains		+ *Z9-16:Ald	Silva, 2021	
		+ *16:Ald (10:1:1:1)		
<i>Eoreuma</i> (= <i>Chilo</i> or <i>Acigona</i>)		*Z13-18:OAc	Shaver, 1988; 1990	D
<i>loftini</i> Dyar		+ *Z13-18:Ald	Robacker, 1989	
Mexican rice borer		+ *Z11-16:OAc (8:1.3:1)		
	phe.			
<i>Parapediasia teterella</i> Zincken		Z11-16:Ald	Clark, 1990	A
bluegrass webworm		+ Z9-16:Ald (20:1)		
<shiba-tsutoga>				
	phe.	*Z11-16:Ald	Sugie, 1994	
		+ *Z9-16:Ald		
		+ *Z11-16:OH (20:1:0.002)		
		+ another component		
<i>Pareromene exsectella</i> Christoph		Z11-16:OAc	Ando, 1977	A
<shiroeguri-tsutoga>				
	att.			
<i>Tehama bonifatella</i> Hulst		Z11-16:Ald	McDonough, 1982(c)	D
western lawn moth		+ Z13-18:Ald (1:1)		
	att.			

(Crambidae; Cybalomiinae) ツトガ科 ; モンメイガ亞科

<i>Trichophysetis cretacea</i> Butler jasmine bud borer <futaobi-nomeiga> phe.	*Z11-16:OAc + *Z11-16:Ald + *Z11-16:OH (10:10:1) (5:2:1)	Peng, 2012 Gu, 2013	A
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(Crambidae; Acentropinae) ツトガ科 ; ミズメイガ亞科

<i>Nymphicula mesorphna</i> Meyrick <koatomon-mizunomeiga> att.	Z11-16:OAc + Z11-16:OH (8:1)	Peng, 2012	A
<i>Parapoynx</i> sp.	Z7-12:OAc	Zeleny, 1982	C

(Crambidae; Glaphyriinae) ツトガ科 ; ニセノメイガ亞科

<i>Crocidolomia binotalis</i> Zeller (= <i>pavonana</i> F.) cabbage-heart caterpillar <kebuka-nomeiga> phe. Indonesia strain	*Z11-16:OAc + *Z9-14:OAc (20:1) (10:1)	Usui, 1987 Adati, 2013	A
<i>Evergestis aenealis</i> att.	Z7-12:OAc + Z9-14:OAc (1:1)	Tóth, 1994(b)	C
<i>Evergestis extimalis</i> Scopoli <usubeni-nomeiga> att.	Z9-14:OAc + Z7-12:OAc (1:1)	Konstantin in Arn, 1986(a) Tóth, 1994(b)	A
<i>Evergestis forficalis</i> L. garden pebble moth <na-nomeiga> att.	E11-14:OAc	Lester in Hall, 1979 Priesner, 1980(a) Arn in Arn, 1986(a) Voerman in Arn, 1986(a)	A
<i>Evergestis frumentalis</i> att.	Z11-16:Ald + Z9-14:Ald (20:1)	Tóth, 1994(b)	C

<i>Hellula undalis</i> F. cabbage webworm <haimadara-nomeiga> phe.	*E11,E13-16:Ald + Z11-16:Ald (100:3) + *Z11-14:OAc + *E11-16:Ald + *Z3,Z6,Z9-23:H (7:3:3:1)	Arai, 1982 Sugie, 2003 Vang, 2020	A
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(Crambidae; Spilomelinae) ツトガ科 ; ヒゲナガメノメイガ亜科

<i>Agathodes ostentalis</i> Geyer <benimon-nomeiga> phe.	*E10,E12-16:Ald + *E11-16:Ald (1:1)	Wakamura, 2004	A
<i>Bradina</i> sp. att.	E11-16:Ald	Ando, 1981	A
<i>Cnaphalocrocis medinalis</i> Guenée rice leaffolder moth <kobu-nomeiga> phe.	Z13-18:OAc	Kang, 1985	A
Indian	*Z11-16:OAc + *Z13-18:OAc (49:1) E	Ramachandran, 1990	
Philippine	(1:10) (1:10–20) + another component	Raina in Arn, 1997 Rao, 1993: 1995	
Japanese	*Z13-18:Ald + *Z13-18:OH + *Z11-18:Ald + *Z11-18:OH (100:36:11:24)	Kawazu, 2000; 2002	
Indonesia	(100:37:10:26)	Kawazu, 2009	
<i>Cnaphalocrocis pilosa</i> (= <i>Marasmia latimarginalis</i>) <hanenagakobu-nomeiga> att.	Z11-16:OAc + Z13-18:OAc (50:1)	Kawazu, 2001	A
<i>Conogethes pluto</i> Butler Alpinia stem borer	*E10-16:Ald + *E10,E12-16:Ald	El-Sayed, 2013	C

phe.	+ *Z3,Z6,Z9-23:H (100:2:3) + othre components		
<i>Conogethes</i> (= <i>Dichocrocis</i>) <i>punctiferalis</i> Guenée yellow peach moth <momonogomadara-nomeiga> phe.	*E10-16:Ald + Z10-16:Ald (9:1) + *Z3,Z6,Z9-23:H + * Z9-27:H N (9:1:10:100)	Konno, 1982 Xiao, 2012 Nam, 2022	A
<i>Cydalima</i> (= <i>Glyphodes</i>) <i>perspectalis</i> Walker box tree pyralid <tsuge-nomeiga> phe. In Korea	*Z11-16:Ald + *E11-16:Ald (4:1) + another component (5:1, 7:1)	Kawazu, 2007 Kim, 2013	A
<i>Desmia funeralis</i> Hübner grape leaffolder phe.	*Z11,Z13-16:Ald + *≡11-16:Ald + *Z11-16:Ald (3:1:1) + another component	Millar, 2002	D
<i>Diaphania angustalis</i> Snellen phe.	*E10,E12-16:Ald + *E10,E12-16:OH (9:1)	Ma, 2017	C
<i>Diaphania glauculalis</i> att.	E11-16:Ald + E10,E12-16:Ald	Wen, 2014	C
<i>Diaphania hyalinata</i> L. melonworm phe.	*E11-16:Ald + *E10,E12-16:Ald (5:4) + other components	Raina, 1986(a)	C
<i>Diaphania</i> (= <i>Palpita</i>) <i>indica</i> Saunders cotton caterpillar moth <wataherikuro- nomeiga> <uri-nomeiga> phe. In Korea	*E11-16:Ald + *E10,E12-16:Ald (2:1) + another component (7:3)	Wakamura, 1998 Choi, 2009(a)	A
<i>Diaphania nitidalis</i> Stoll pickleworm phe.	*E11-16:Ald + *Z11-16:Ald + *E10,Z12-16:Ald (75:3.3:0.2) + other components	Klun, 1986	C
<i>Diasemia litterata</i> Scopoli	E11-16:OAc	Ando, 1977	A

<shiroayahime-nomeiga>
att.

<i>Duponchelia fovealis</i> Zeller European pepper moth phe.	*E13-18:Ald + *Z13-18:Ald + *Z11-16:Ald (100:10:1)	Molnár, 2018	D
<i>Glyphodes pyloalis</i> Walker mulberry pyralid <chibisukashi-nomeiga> <kuwa-nomeiga> phe.	*10,12,14-16:OAc *E10,E12,Z14-16:OAc + *E10,E12,E14-16:OAc (7:1)	Seol, 1987 Honda, 1990 Guo, 2022	A
<i>Haritalodes</i> (=Notarcha) <i>Basipunctalis</i> Brem. phe.	*E10,Z12-16:Ald + *E10,E12-16:Ald (4:1)	Honda, 1994	A
<i>Haritalodes</i> (=Notarcha) <i>derogata</i> F. cotton leaf-roller <wata-nomeiga> phe.	*E10,Z12-16:Ald + *E10,E12-16:Ald (3:1) + other components *E10,Z12-16:Ald	Himeno, 1992 Honda, 1994	A
<i>Herpetogramma licarsisalis</i> Walker grass webworm <kuroobikuro-nomeiga> phe.	*Z11,E13-16:OAc + other components	Gibb, 2007(b)	A
<i>Herpetogramma submarginale</i> Swinhoe <herigurokiiro-nomeiga> phe.	*Z13-16:OAc + other components	Yan, 2015(b)	A
<i>Leucinodes orbonalis</i> Guenée eggplant borer <nasu-nomeiga> phe.	*E11-16:OAc + another component + *E11-16:OH (100:1) + *Z3,Z6,Z9-23:H (10:1) + another component	Zhu, 1987(a) Kong, 1990 Attygalle, 1988(a) Cork, 2001 Vang, 2018	A
<i>Maruca vitrata</i> (= <i>testulalis</i>) F. legume pod borer <mame-nomeiga>	*E10,E12-16:Ald + *E10,E12-16:OH	Adati, 1999 Downham, 2003	A

phe.	+ E10-16:Ald (20:1:1)	Schläger, 2015	
China (Wuhan strain)	*E10,E12-16:Ald + *E10,E12-16:OH + *E10-16:Ald (10:1:8)	Lu, 2013	
(Huazhou strain)	(10:1:1)		
<i>Mnesictena flavidalis</i> att.	E11-16:OAc + Z11-16:OAc (10:1)	Clearwater, 1986	D
<i>Neoleucinodes elegantalis</i> tomato fruit borer phe.	*E11-16:OH + *Z3,Z6,Z9-23:H (20:1) + other components	Cabrera, 2001	D
<i>Omphisa anastomosalis</i> Guenée sweetpotato vine borer moth <satsumaimo-nomeiga> phe.	*E10,E14-16:Ald + other components + *Z3,Z6,Z9-23:H (1:2) + other components + *Z3,Z6,Z9-23:H (1:2 – 1:5)	Wakamura, 2010 Yan, 2014 McQuate, 2019	A
<i>Palpita nigropunctalis</i> Bremer <maeakasukashi-nomeiga> phe.	*E11-16:Ald + *E11-16:OAc + *E11-16:OH (100:20:1) N	Yan, 2018(c)	A
<i>Palpita unionalis</i> Hübner jasmine moth phe.	*E11-16:OAc + *E11-16:Ald (7:3)	Mazomenos, 1994	C
<i>Patania</i> (= <i>Pleuroptya</i> , <i>Dichocrocis</i>) <i>chlorophanta</i> Butler <hosomisuji-nomeiga> att.	E10-16:Ald	Konno, 1982 Honda, 2004	A
<i>Patania</i> (= <i>Pleuroptya</i>) <i>ruralis</i> Scopoli bean webworm <ukon-nomeiga> phe.	*E10-16:Ald + *Z10-16:Ald (21:4)	Mochizuki, 2009(a); (b)	A
<i>Rehimena surusalis</i> Walker hibiscus flower-bud borer <kakumon-nomeiga> phe.	*E10,Z12-16:OAc + *E10,Z12-16:Ald + *Z3,Z6,Z9-23:H (5:1:14)	Honda, 2015	A
<i>Sceliodes cordalis</i> Doubleday	*E11-16:OAc	Clearwater, 1986	D

	phe.	+ *E11-16:OH (1:1)		
<i>Terastia subjectalis</i> Lederer		*E10,E12-16:Ald	Wakamura, 2004	A
<ooeguri-nomeiga>		+ *E11-16:Ald (19:1)		
	phe.			
<i>Udea lutealis</i>		Z11-16:OAc	Myttus	C
	att.		in Arn, 1986(a)	

(Crambidae; Pyraustinae) ツトガ科 ; ノメイガ亜科

<i>Achyra rantalis</i> Guenée		Z7-12:OAc	Keaster, 1996	D
	att.	+ Z9-14:OAc (3:1)		
<i>Anania verbascalis</i>		Z9,E12-14:OAc	Tóth, 1992(d)	B
Denis & Schiffermüller		+ Z9,E12-14:OH (100:1)		
<himetogari-nomeiga>				
	att.			
<i>Fumibotys fumalis</i> Guenée		*E10,E12-14:OAc	Davis, 1991	D
mint root borer		+ *Z11-14:OAc		
	phe.	+ *Z9-14:OAc (50:9:2)		
		+ another component		
<i>Loxostege</i> (= <i>Sitochroa</i>)		E9-12:OAc	Roelofs, 1971(a)	C
<i>chortalis</i> Grote			Steck, 1977(a)	
	att.			
		+ Z9-12:OAc (1000:1)	Steck, 1980(a)	
<i>Loxostege neoblitalis</i> Capps		E9-14:OAc	Roelofs, 1970(a)	C
	att.			
<i>Loxostege sticticalis</i> L.		E11-14:OAc	Struble, 1977(a)	C
beet webworm				
	att.			
<i>Marasmia patnalis</i>		*Z13-18:OAc	Ramachandran, 1990	C
rice leaffolder		+ *Z11-16:OAc (24:1)		E
	phe.			
<i>Mutuuraia mysippusalis</i> Walker		Z7-10:OAc	Steck, 1977(a)	C
	att.	+ Z7-12:OAc (1:1)		
<i>Mutuuraia</i> (= <i>Phlyctaenia</i>)		Z7-12:OAc	Roelofs, 1970(a)	A

terrealis Treitschke
 <sujiimagari-nomeiga>
 att.

<i>Ostrinia furnacalis</i> Guenée oriental (Asian) corn borer <ajiaawa-nomeiga> phe. Japan	*Z12-14:OAc + *E12-14:OAc + another component (3:2)	Ando, 1980(b) Huang, 1998(a)	A
Philippines	(1:1)	Klun, 1980(a)	
China	(1:1)	Cheng, 1981 Cheng, 1989	
Taiwan	(3:1)	Yeh, 1989	
	(1:1)	Kou, 1992(a)	
Korea	(2:1)	Boo, 1998(b)	
China	+ * 14:OAc (21:16:13) (13:7:10)	Du, 1986 Deng, 2023	
<i>Ostrinia latipennis</i> Warren <usujiroki-nomeiga> phe.	*E11-14:OH	Ishikawa, 1999(b) Takanashi, 2000	A
<i>Ostrinia nubilalis</i> Hübner European corn borer <awa-nomeiga> "Z"-race phe.	*Z11-14:OAc + *E11-14:OAc (97:3) + other components	Klun, 1970 Klun, 1973 Cheng, 1989 Klun, 1977 Attygalle, 1987 Struble, 1987(a) Kalinová, 1994	C
"E"-race	E11-14:OAc *E11-14:OAc	Roelofs, 1972 Cardé, 1975(a) Klun, 1975 Kochansky, 1975(a)	

	+ *Z11-14:OAc (24:1)		
	+ other components	Peña, 1988	
hybrid	Z11-14:OAc + E11-14:OAc (1:1–7:13)	Klun, 1975 Anglade, 1984 Maini in Arn, 1986(a)	
	*E11-14:OAc + *Z11-14:OAc (13:7)	Klun, 1979(a) Buechi, 1982	
maize race mugwort and hop races	*Z11-14:OAc *E11-14:OAc	Pelozuelo, 2004	
<i>Ostrinia obumbratalis</i> Lederer <i>att.</i>	Z11-14:OAc + E11-14:OAc (1:1)	Klun, 1972	C
<i>Ostrinia orientalis</i> Mutuura & Munroe <onamomi-nomeiga> <i>phe.</i>	*Z11-14:OAc + *E11-14:OAc (98:2) + another component	Ishikawa, 1999(b) Fu, 2004	A
<i>Ostrinia palustralis</i> Hübner <yuugumo-nomeiga> <i>phe.</i>	*E11-14:OAc + *Z11-14:OAc (99:1) + another component	Huang, 1998(b)	A
<i>Ostrinia scapulalis</i> Walker adzuki bean borer <azuki-nomeiga> <i>phe.</i> Z-type	*Z11-14:OAc + *E11-14:OAc (97:3) + another component	Huang, 1997	A
E-type	(1:99)	Huang, 2002 Tabata, 2003	
I-type	(36:64)		
<i>Ostrinia zaguliaevi</i> Mutuura & Munroe butterbur borer <fuki-nomeiga> <i>phe.</i>	*Z11-14:OAc + *Z9-14:OAc + *E11-14:OAc (10:9:1) + another component	Huang, 1998(c) Tabata, 2006	A
<i>Ostrinia zealis</i> Guenée burdock borer <gobou-nomeiga>	*Z9-14:OAc + *E11-14:OAc + *Z11-14:OAc (70:24:6)	Ishikawa, 1999(a)	A

	phe.	+ another component		
<i>Ostrinia</i> sp.	phe.	*Z11-14:OAc + *Z9-14:OAc + *E11-14:OAc (76:18:6) + other components	Tabata, 2008(b)	A
<i>Pagyda arbiter</i> Butler <futamata-nomeiga>	att.	Z11-14:Ald + Z11-14:OAc (9:1)	Ando, 1981	A
<i>Paliga minnehaha</i> Pryer <maebeni-nomeiga>	att.	E11-14:OAc	Ando, 1981	A
<i>Phlyctaenia coronata tertialis</i> Guenée	att.	Z9-12:OAc	Reed, 1985(b)	C
<i>Pyrausta aurata</i> Scopoli <hakka-nomeiga>	att.	E11-14:OAc	Maini in Arn, 1986(a) Stockel, 1977 Mozūraitis, 1998	A
<i>Pyrausta cingulata</i>	att.	E11-14:OAc + Z11-14:OAc (1:1)	Arn in Arn, 1986(a)	C
<i>Pyrausta fodinalis</i> Lederer	att.	E10,E12-14:OAc	Reed, 1985(b)	C
<i>Pyrausta ochosalis</i>	att.	E11-14:OAc	Roelofs, 1971(a)	C
<i>Pyrausta ostrinalis</i> Hübner	att.	E11-14:OAc	Bûda, 1987	C
<i>Pyrausta panopealis</i> Walker perilla leaf pyralid moth <benifuki-nomeiga>	phe.	*E11-14:OAc + *Z11-14:OAc N	Kang, 1995	A
<i>Pyrausta purpuralis</i> L.	att.	E11-14:OAc + Z11-14:OAc (3:2)	Anglade in Arn, 1986(a) Frerot, 1982(a)	C
<i>Pyrausta</i> (= <i>Ecpyrrhorrhoe</i>) <i>rubiginalis</i> Hübner <akamyaku-nomeiga>		Z11-14:OAc + E11-14:OAc + 12:OAc (7:3:40)	Hrdý, 1979	A

<i>Sitochroa verticalis</i> L. <kuromyaku-nomeiga> att.	E9-12:OAc + E9-12:OH	Tóth, 1994(b) Roehrich in Arn, 1986(a)	A
<i>Sufetula sunidesalis</i> Walker <shirosujieguri-nomeiga> att.	Z11-16:Ald + Z9-16:Ald (19:1)	Kohno, 2014	A

(25) [Calliduloidea] イカリモンガ上科

no species

(26) [Lasiocampoidea] カレハガ上科
(Lasiocampidae) カレハガ科

<i>Dendrolimus houi</i> Lajonquiere Yunnan pine caterpillar phe.	*E5,Z7-12:OH + *E5,Z7-12:OAc + *E5,Z7-12:Ald (20:1:1) + other components	Kong, 2007(a)	C
<i>Dendrolimus kikuchii</i> Matsumura phe.	*Z5,E7-12:OAc + *Z5,E7-12:OH + *Z5-12:OH (20:4:5)	Kong, 2005; 2011	C
<i>Dendrolimus pini</i> L. European pine moth phe.	*Z5,E7-12:Ald + *Z5,E7-12:OH (3:2) + other components	Bestmann, 1982(b) Priesner, 1984(d) Kovalev, 1993 Rudziński, 2022	C
<i>Dendrolimus punctatus</i> Walker pine-caterpillar moth masson pine moth phe.	*Z5,E7-12:OH + *Z5,E7-12:OAc + Z5,E7-12:OPr (28:25:10) + *Z5,E7-12:OPr + *Z5-12:OH	China, 1979 Meng, 1983(a) Zhang, 2003(a) Zhao, 1993	C

	+ *Z5-12:OAc (19:15:7:7:3)		
<i>Dendrolimus spectabilis</i> Butler pine moth <matsu-kareha> phe.	*Z5,E7-12:OH	Vu, 1980 Ando, 1982	A
<i>Dendrolimus superans</i> Butler larch caterpillar moth <tuga-kareha> phe.	*Z5,E7-12:Ald + other components	Kong, 2007(b)	A
<i>Dendrolimus superans</i> <i>sibiricus</i> Butler Siberian moth phe.	Z5,E7-12:Ald + Z5,E7-12:OH + other components	Klun, 2000	B
	*Z5,E7-12:Ald + *Z5,E7-12:OH (1:1) + other components	Pletnev, 2000	
<i>Dendrolimus tabulaeformis</i> Tsai & Liu Chinese pine caterpillar phe.	Z5,E7-12:OH + Z5,E7-12:OAc + Z5,E7-12:OPr (1:1:1)	Meng, 1983(b)	C
	*Z5,E7-12:OH + *Z5,E7-12:OAc + *Z5,E7-12:OPr (20:20:1)	Kong, 2012(a)	
<i>Gastropacha quercifolia</i> L. lappet moth <birodo-kareha> phe.	*Z5-12:Ald + *Z5-12:OH + another component E	Bestmann, 1993(d)	B
<i>Malacosoma americanum</i> F. eastern tent caterpillar phe.	*E5,Z7-12:Ald + *Z5,E7-12:OH	Roelofs in Arn, 1986(a)	C
	+ *E5,Z7-12:OH (10:1–1:1)	Kochansky, 1996	
<i>Malacosoma californicum</i> Packard western tent caterpillar phe.	*Z5,E7-12:Ald	Underhill, 1980	C
<i>Malacosoma disstria</i> Hübner forest tent caterpillar phe.	*Z5,E7-12:OH + *Z5,E7-12:Ald (10:1)	Chisholm, 1980(a)	C

	Z5,E7-12:Ald + Z5,Z7-12:Ald + Z7-12:Ald (10:1:1)	Chisholm, 1982	
	(100:1:10)	Schmidt, 2003	
<i>Malacosoma neustria</i> L. lackey moth <obi-kareha> phe.	*E5,Z7-12:Ald + *E5,Z7-12:OH (8:5) + other components	Konyukhov, 1988 Rotundo, 2004	A

(27) [Drepanoidea] カギバガ上科
(Drepanidae) カギバガ科 + (Thyatiridae) トガリバガ科

<i>Cilix glaucata</i> Scopoli att.	E11-14:OAc + E11-14:Ald (9:1)	Booij, 1985	C
	(1:1)	Frerot, 1985	
	+ E11-14:OH (1:1)	Capizzi in Arn, 1986(a)	
<i>Epipsestis perornata</i> Inoue <usumurasaki-togariba> att.	Z9-14:Ald	Ando, 1981	A
<i>Drepana bilineata</i> Packard att.	Z9,E11-14:Ald	Reed, 1985(b)	C
<i>Drepana lacertinaria</i> att.	Z9,E11-14:Ald	Priesner in Arn, 1986(a)	C
<i>Macrauzata maxima</i> Inoue <sukashi-kagiba> att.	Z9,E11-14:Ald	Ando, 1987	A
<i>Tethea or</i> Denis & Schiffermüller <akan-togariba> att.	Z9-14:Ald	Capizzi in Arn, 1986(a)	A

(28) [Geometroidea] シャクガ上科
(Geometridae) シャクガ科
a: Alsophilinae; フユシヤク亜科, b: Geometrinae; アオシヤク亜科,

c: Sterrhinae; ヒメシヤク亜科, d: Larentiinae; ナミシヤク亜科,
e: Ennominae; エダシヤク亜科, f: Orthostixinae; ホシシヤク亜科

<i>Abraxas</i> ^e <i>grossulariata</i> L. currant moth <sugurishiro-edashaku> phe.	* <i>epo3,Z6,Z9-17:H</i> (3 <i>S</i> ,4 <i>R</i>)-isomer + * <i>Z3,Z6,Z9-17:H</i> (10:1)	Tóth, 1992(a); 1994(a)	B
<i>Abraxas niphonibia</i> Wehrli <himemadara-edashaku> att.	<i>epo3,Z6,Z9-18:H</i>	Ando, 1995(a)	A
<i>Abraxas sylvata</i> Scop. <kimadara-edashaku> att.	<i>epo3,Z6,Z9-17:H</i> (3 <i>R</i> ,4 <i>S</i>)-isomer	Tóth, 1994(a)	A
<i>Agathia</i> ^b <i>carissima</i> Butler <chizumon-aoshaku> att.	<i>Z3,Z6,Z9-20:H</i>	Ando, 1993	A
<i>Agathia visenda visenda</i> Prout <ashibutochizumon-aoshaku> att.	<i>Z6,Z9-20:H</i> or <i>Z6,Z9-21:H</i>	Ando, 1993	A
<i>Agriopis</i> ^e <i>aurantiaria</i> Hübner phe.	* <i>epo3,Z6,Z9-19:H</i> (3 <i>S</i> ,4 <i>R</i>)-isomer	Szöcs, 1993(b)	C
<i>Agriopis</i> (= <i>Erannis</i>) <i>bajaria</i> Schiff. phe.	* <i>Z3,Z6,Z9-18:H</i> + * <i>Z3,Z6,Z9-19:H</i>	Szöcs in Arn, 1997	C
	(1:1–1:5)	Lecheva, 1999	
<i>Agriopis leucophearia</i> Denis & Schiffermüller <shirofufuyu-edashaku> att.	<i>epo3,Z6,Z9-19:H</i> (3 <i>S</i> ,4 <i>R</i>)-isomer	Szöcs, 1993(b)	B
<i>Agriopis marginaria</i> F. att.	<i>Z3,epo6,Z9-19:H</i> + <i>Z3,Z6,Z9-19:H</i> (10:3)	Hansson, 1990(b)	C
	<i>Z3,epo6,Z9-19:H</i> (6 <i>S</i> ,7 <i>R</i>)-isomer + <i>Z3,Z6,Z9-19:H</i> (10:3)	Szöcs, 1993(b)	

<i>Alcis</i> ^e <i>angulifera</i> Butler <nakausu-edashaku> att.	epo3,Z6,Z9-19:H (3 <i>S</i> ,4 <i>R</i>)-isomer	Ando, 1993 Ando, 1997	A
<i>Alcis</i> (= <i>Boarmia</i>) <i>repandata</i> L. att.	Z6,Z9-19:H + Z3,Z6,Z9-19:H (2:1-1:1) or + Δ1,Z3,Z6,Z9-19:H (2:1-1:1)	Bogenschütz, 1985 Subchev, 1986(a)	C
<i>Alsophila</i> ^a <i>japonensis</i> Warren <shiroobi-fuyushaku> att.	Z3,Z6,Z9-19:H	Ando, 1993	A
<i>Alsophila pometaria</i> Harris fall cankerworm moth phe.	*Z3,Z6,Z9-19:H + *Z3,Z6,Z9,E11-19:H (1:2) or + *Z3,Z6,Z9,Z11-19:H (1:6)	Wong, 1984(a); (b)	C
<i>Alsophila quadripunctata</i> Esper att.	Z3,Z6,Z9-19:H + Z6,Z9-19:H (1:1)	Szöcs, 1984	C
<i>Anacamptodes</i> ^e <i>humaria</i> Guenée phe.	*epo6,Z9-19:H (6 <i>R</i> ,7 <i>S</i>)-isomer	Millar, 1991(a)	D
<i>Anavitrinella</i> ^e <i>pampinaria</i> Guenée att.	epo3,Z6,Z9-19:H + Z3,epo6,Z9-19:H (19:1) (6 <i>S</i> ,7 <i>R</i>)-isomer	Millar, 1990(c)	D
<i>Anisodes</i> ^c sp. att.	E11-16:OAc + E11-16:Ald (7:3)	Mazomenos, 1994	C
<i>Anticlea</i> ^d <i>vasiliata</i> Guenée att.	Z3,Z6,Z9-21:H	Millar, 1991(c)	D
<i>Ascotis</i> ^e (= <i>Boarmia</i>) <i>selenaria</i> Denis & Schiffermüller giant looper phe.	*Z3,Z6,Z9-19:H E epo3,Z6,Z9-19:H + Z3,epo6,Z9-19:H + Z3,Z6,epo9-19:H (1:1:1)	Becker, 1983 Becker in Arn, 1986(a)	B
	*epo3,Z6,Z9-19:H (3 <i>S</i> ,4 <i>R</i>)-isomer + another component	Becker, 1990 Cossé, 1992	

Korean strain 1	$(3R,4S):(3S,4R) = 9:1$	Choi, 2012	
Korean strain 2	$(3R,4S):(3S,4R) = 5:5$		
<i>Ascotis selenaria cretacea</i> Butler	epo3,Z6,Z9-19:H	Ando, 1993	A
Japanese giant looper			
mugwort looper	*epo3,Z6,Z9-19:H	Ando, 1997	
<yomogi-edashaku>	(3R,4S)-isomer		
phe.	+ another component		
	+ *Z3,Z6,Z9-19:H (100:5–100:1)	Witjaksono, 1999	
<i>Biston^e robustum</i> Butler	*epo6,Z9-19:H	Yamamoto, 2000	A
giant geometrid moth	(6S,7R)-isomer		
<tobimonoo-edashaku>	+ *Z3,epo6,Z9-19:H (9:1)		
phe.	+ other components		
<i>Bupalus^e piniarius</i> L.	Z6,Z9-19:H	Bestmann, 1982(a)	C
phe.			
	*tepo4,Z6,Z9-19:H	Chittamuru	
	(4S,5S)-isomer	in Pherobase	
	+ other components		
<i>Cabera^e erythemaria</i> Guenée	Z3,Z6,epo9-19:H	Wong, 1985(b)	C
att.	(9S,10R)-isomer		
	+ (9R,10S)-isomer (1:1)		
<i>Caripeta^e angustiorata</i> Walker	Z3,Z6,Z9-19:H	Millar, 1990(a)	D
att.	+ Z3,epo6,Z9-19:H (1:1)		
<i>Caustoloma^e flavicaria</i>	Z6,epo9-21:H	Kovalev, 1986	D
att.			
<i>Colotois^e pennaria</i> L.	*Z3,epo6,Z9-19:H	Hansson, 1990(b)	B
phe.	+ Z3,Z6,Z9-19:H (10:3)		
	*Z3,epo6,Z9-19:H	Szöcs, 1993(b)	
	(6R,7S)-isomer		
	+ *Z3,Z6,Z9-19:H		
	+ Z3,Z6,Z9-21:H (10:3:10)		
<i>Colotois pennaria</i>	epo3,Z6,Z9-20:H	Ando, 1993	A
<i>ussuriensis</i> Bang-Haas	or Z3,epo6,Z9-19:H		

<kaba-edashaku> att.	Z3,epo6,Z9-20:H	Ando, 1995(a)	
<i>Costaconvexa</i> ^d <i>polygrammata</i> Bkh. att.	Z3,Z6,Z9-20:H	Szöcs, 1987	C
<i>Culpinia</i> ^b <i>diffusa</i> Walker <akaashi-aoshaku> att.	Z6,Z9,E11-17:H	Yamamoto, 2008	A
<i>Cystidia</i> ^e <i>couaggaria</i> <i>couaggaria</i> Guenée <ume-edashaku> phe.	*Z3,Z6,Z9-23:H + *Z3,Z6,Z9-21:H (3:2) + other componentns	Yamakawa, 2012(a)	A
<i>Dysstroma</i> ^d <i>brunneata ethela</i> Hulst att.	Z3,Z6,epo9-20:H (9 <i>S</i> ,10 <i>R</i>)-isomer	Wong, 1985(b)	C
<i>Dysstroma</i> sp. (<i>citrata</i> ?) att.	Z3,Z6,Z9-20:H or Z3,Z6,Z9-21:H	Wong, 1985(b)	
<i>Ectropis</i> ^e <i>excellens</i> Butler <ootobisuji-edashaku> att.	epo6,Z9-18:H	Ando, 1995(a)	A
<i>Ectropis</i> <i>grisescens</i> Warren phe.	*Z3,epo6,Z9-18:H + *Z3,Z6,Z9-18:H (4:1)	Ma, 2016	C
<i>Ectropis</i> <i>obliqua</i> Prout tea looper <usujiro-edashaku> phe.	*Z3,epo6,Z9-18:H + *Z3,Z6,Z9-18:H + another component N (3:2)	Yao, 1991 Yang, 2016	A
	+ *Z3,epo6,Z9-19:H (2:1:2)	Luo, 2017	
<i>Ennomos</i> ^e <i>subsignaria</i> Hübner elm spanworm phe.	*Z6,epo9-19:H (9 <i>S</i> ,10 <i>R</i>)-isomer + another component	Ryall, 2010	C
<i>Epelis</i> ^e <i>truncataria</i> Walker att.	epo3,Z6,Z9-17:H	Millar, 1990(c)	D

<i>Epirrhoe</i> ^d <i>sperryi</i> Herbulot phe.	Z3,Z6,Z9-19:H *Z3,Z6,Z9-19:H + other components	Wong, 1985(b) Millar, 1992(a)	C
<i>Epirrita</i> ^d <i>autumnata</i> Borkhausen <aki-namishaku> phe.	*Δ1,Z3,Z6,Z9-21:H	Zhu, 1995(b)	A
<i>Epirrita</i> <i>viridipurpurescens</i> Prout <midoriaki-namishaku> att.	Z3,Z6,Z9-21:H	Ando, 1993	A
<i>Erannis</i> ^e <i>defoliaria</i> Clerck mottled umber moth <oochabanefuyu-edashaku> phe.	*Z3,epo6,Z9-19:H + *Z3,Z6,Z9-19:H (10:3) *Z3,epo6,Z9-19:H (6 <i>S</i> ,7 <i>R</i>)-isomer + *Z3,Z6,Z9-19:H (1:1)	Hansson, 1990(b) Szöcs, 1993(b)	B
<i>Erannis</i> <i>golda</i> Djakonov <chabanefuyu-edashaku> att.	Z3,epo6,Z9-18:H	Ando, 1995(a)	A
<i>Esakiopteryx</i> ^d <i>volitans</i> Butler <usubenisuji-namishaku> att.	Z3,Z6,Z9-19:H	Ando, 1993	A
<i>Euchlaena</i> ^e <i>madusaria</i> Walker att.	Z6,epo9-19:H (9 <i>S</i> ,10 <i>R</i>)-isomer + (9 <i>R</i> ,10 <i>S</i>)-isomer (1:1)	Millar, 1991(a)	D
<i>Eufidonia</i> ^e <i>convergaria</i> Walker phe.	*Z3,Z6,Z9-19:H + *Z3,epo6,Z9-19:H (6 <i>S</i> ,7 <i>R</i>)-isomer (1:1)	Millar, 1990(a)	D
<i>Eulithis</i> ^d <i>testata</i> L. <kimadara-namishaku> att.	Z3,Z6,Z9-20:H or Z3,Z6,Z9-21:H + epoxydienes	Wong, 1985(b)	A
<i>Eupithecia</i> ^d <i>abietaria</i> Götze	*Z3,Z6,Z9-19:H	Wang, 2015(a)	B

cloaked pug moth phe.	+ *Z3,Z6,epo9-19:H (9S,10R)-isomer (19:1) + other components		
<i>Eupithecia annulata</i> Hulst att.	epoxydienes of Z3,Z6,Z9-20:H + epoxydienes of Z3,Z6,Z9-19:H or Z3,Z6,Z9-21:H Z3,Z6,epo9-20:H (9S,10R)-isomer	Wong, 1985(b) Millar, 1991(b)	C
<i>Eupithecia assimilata</i> Doubleday currant pug moth phe.	*Z3,Z6,epo9-21:H (9S,10R)-isomer + other components	Campbell, 2007	C
<i>Eupithecia subnotata</i> Hübner att.	Z3,Z6,Z9-19:H	Szöcs, 1987	C
<i>Eupithecia vulgata</i> Haworth att.	Z9,Z12,Z15-18:Ald + Z3,Z6,epo9-21:H + Δ1,Z3,Z6,epo9-21:H (8:1:1)	Ostrauskas, 2004	C
<i>Hemithea</i> ^b <i>tritonaria</i> Walker <herigurohime-aoshaku> phe.	*Z6,Z9,Z12-18:H + *(3E,6E)-β-farnesene	Yamakawa, 2009 Yamakawa, 2011(a)	A
<i>Hydriomena</i> ^d <i>furcata</i> Thunbery <yanagi-namishaku> att.	E9-12:OAc	Liska, 1990	A
<i>Hydriomena ruberata</i> Freyer att.	Z11-16:OAc	Frérot, 1987(a)	C
<i>Hypagyrtis</i> ^e <i>piniata</i> att.	Z3,Z6,Z9-19:H + Z3,epo6,Z9-19:H (6S,7R)-isomer (10:1)	Underhill in Arn, 1986(a)	D
<i>Idaea</i> ^c <i>aversata</i> L. <ezoki-himeshaku> phe.	*Z9,Z11-14:OAc + E9,Z11-14:OAc + *Z7,Z9-12:OAc (100:7:10)	Zhu, 1996	B
<i>Idaea</i> (= <i>Sterrha</i>) <i>biselata</i> Hufnagel	E7,Z9-12:OAc	Biwer, 1975	A

<usuki-himeshaku> phe.		Szöcs, 1987	
	+ E7,Z9-12:Ald (1:1)	Ando, 1987	
	Z7-12:OAc	Priesner in Arn, 1986(a)	
	*Z7,Z9-12:OAc	Zhu, 1996	
<i>Idaea emarginata</i> att.	Z9,Z11-14:OAc + Z7,Z9-12:OAc + Z7,E9-12:OAc (10:10:1)	Zhu, 1996	C
<i>Idaea (= Sterrha) imbecilla</i> Inoue <oosumonki-himeshaku> att.	Z7-12:OAc	Ando, 1977	A
<i>Idaea (= Sterrha) rubraria</i> Stgr. att.	E7,Z9-12:OAc	Szöcs, 1987	C
<i>Idaea straminata</i> Borkhausen phe.	*Z7,Z9-12:OAc + *E7,Z9-12:OAc + *Z9,Z11-14:OAc (10:1:10) + another component	Zhu, 1996	C
<i>Idaea trisetata</i> Prout <mijinki-himeshaku> att.	E7,Z9-12:OH	Ando, 1987	A
<i>Idiochlora</i> ^b <i>ussuriaria</i> Bremer <namisujiko-aoshaku> att.	Z6,Z9,Z12-17:H	Yamakawa, 2011(a)	A
<i>Inurois</i> ^a <i>fletcheri</i> Inoue <usuba-fuyushaku> att.	Z3,Z6,Z9,E11-20:H	Yamamoto, 2008	A
<i>Inurois fumosa</i> Inoue <usumon-fuyushaku> att.	epo3,Z6,Z9-21:H	Ando, 1993	A
<i>Inurois membranaria</i> Christoph <kuroten-fuyushaku> att.	epo3,Z6,Z9-21:H	Ando, 1993	A

<i>Itame</i> ^e <i>argillacearia</i> Packard blueberry spanworm phe.	* <i>epo3,Z6,Z9-17:H</i> (3 <i>R</i> ,4 <i>S</i>)-isomer + * <i>Z3,Z6,Z9-17:H</i> (1:1)	Silva, 2013	D
<i>Itame brunneata</i> Thunberg att.	<i>epo3,Z6,Z9-17:H</i> (3 <i>S</i> ,4 <i>R</i>)-isomer	Millar, 1990(c)	D
<i>Itame occiduaria</i> Packard att.	<i>epo3,Z6,Z9-17:H</i> (3 <i>R</i> ,4 <i>S</i>)-isomer + <i>Z3,Z6,Z9-17:H</i> (9:2)	Millar, 1990(c)	D
<i>Jodis</i> ^b <i>lactearia</i> L. <namigatausuki-aoshaku> att.	Z11-14:OAc + Z9,E11-14:OAc <i>Z3,Z6,Z9,Z12-20:H</i>	Priesner in Arn, 1986(a) Yamakawa, 2011(a)	A
<i>Lambdina</i> ^e <i>athasaria</i> Walker spring hemlock looper phe.	* <i>Me7-17:H</i> + * <i>Me7,Me11-17:H</i> (1:1) + another component (7 <i>S</i>)-isomer + 7,11-meso (25:8)	Gries, 1994(b) Duff, 2001	D
<i>Lambdina fiscellaria</i> <i>fiscellaria</i> Guenée eastern hemlock looper phe.	* <i>Me5,Me11-17:H</i> + * <i>Me2,Me5-17:H</i> (1:1) + other components <i>Me5,Me11-17:H</i> (5 <i>R</i> ,11 <i>S</i>)-isomer <i>Me2,Me5-17:H</i> (5 <i>R</i>)-isomer	Gries, 1991 Li, 1993(a) Silk in Arn, 1997 Silk in Arn, 1997	D
<i>Lambdina fiscellaria</i> <i>lugubrosa</i> Hulst western hemlock looper phe.	* <i>Me5,Me11-17:H</i> + * <i>Me2,Me5-17:H</i> + * <i>Me7-17:H</i> (1:1:1) <i>Me5,Me11-17:H</i> + <i>Me2,Me5-17:H</i> (1:1) <i>Me5,Me11-17:H</i> (5 <i>R</i> ,11 <i>S</i>)-isomer + <i>Me2,Me5-17:H</i> (5 <i>S</i>)-isomer + <i>Me7-17:H</i> (7 <i>S</i>)-isomer	Gries, 1993(b) Evenden, 1995 Li, 1993(a) Li, 1993(b)	D

<i>Lambdina pellucidaria</i> Grote & Robinson pitch pine looper phe.	*Me7-17:H + *Me7,Me11-17:H (1:1) + another component	Maier, 1998	D
	(7S)-isomer + 7,11-meso (25:8)	Duff, 2001	
<i>Leptostales</i> ^c <i>ferruminaria</i> Packard att.	Z9,Z11-14:Ald + Z9,Z11-14:OH (10:1)	Reed, 1985(b)	D
<i>Lobophora</i> ^d <i>nivigerata</i> Walker phe.	Z3,Z6,Z9-21:H + Z6,Z9-21:H (19:1)	Underhill in Arn, 1986(a)	C
	*Z3,Z6,Z9-21:H + Z6,Z9-21:H (19-4:1)	Millar, 1992(a)	
<i>Lomographa</i> ^e <i>semiclarata</i> Walker phe.	*Z3,Z6,Z9-17:H	Millar, 1990(b)	C
<i>Lycia</i> ^e <i>ursaria</i> Walker att.	epo3,Z6,Z9-19:H (3S,4R)-isomer + Z3,Z6,Z9-19:H	Millar, 1990(c)	C
<i>Maxates</i> ^b <i>versicausa</i> <i>microptera</i> Inoue <sakishimatsubame-aoshaku> phe.	*Z6,Z9,Z12-20:H E	Yamakawa, 2009; 2011(a)	A
<i>Menophra</i> ^e (= <i>Hemerophila</i>) <i>atrilineata</i> Butler mulberry looper <kuwa-edashaku> phe.	*Z3,Z6,epo9-18:H + *Z6,epo9-18:H (10:1) (9S,10R)-isomer	Tan, 1996 Pu, 1999	A
<i>Menophra senilis</i> Butler <usukumo-edashaku> att.	epo6,Z9-19:H	Ando, 1995(a)	A
<i>Mesoleuca</i> ^d <i>ruficillata</i> Guenée att.	Z3,Z6,Z9-21:H + Z3,Z6,Z9-22:H (4:1)	Wong, 1985(b)	C
	+ Z3,Z6,Z9-20:H + Z3,epo6,Z9-21:H (5:50:1)	Millar, 1991(c)	

(6*R*,7*S*)-isomer

<i>Metanema</i> ^e <i>inatomaria</i> Guenée <i>att.</i>	Z3,Z6,epo9-19:H + Z3,Z6,epo9-20:H (4:1) (9 <i>R</i> ,10 <i>S</i>)-isomers or + Z3,Z6,Z9,E11-19:H (4:1)	Wong, 1985(b)	D
<i>Milionia</i> ^e <i>basalis pryeri</i> Druce <kiobi-edashaku> <i>phe.</i>	*epo3,Z6,Z9-19:H (3 <i>S</i> ,4 <i>R</i>)-isomer	Yasui, 2005	A
<i>Mnesampela</i> ^e <i>privata</i> Guenée autumn gum moth <i>phe.</i>	*Z3,Z6,Z9-19:H + *Z3,Z6,Z9-21:H (16:1)	Steinbauer, 2004 Walker, 2009	D
<i>Naxa seriaria</i> Motschulsky dotted white geometrid <hoshishaku> <i>phe.</i>	*Z3,Z6,Z9,Z12,Z15-21:H	Lee, 2020	A
<i>Nepytia</i> ^e <i>freemani</i> Munroe western false hemlock looper <i>phe.</i>	*Me3,Me13-17:H (3 <i>S</i> ,13 <i>R</i>)-isomer	Gries, 1993(c) King, 1995	D
<i>Operophtera</i> ^d <i>bruceata</i> Hulst Bruce spanworm <i>phe.</i>	Δ1,Z3,Z6,Z9-19:H *Δ1,Z3,Z6,Z9-19:H	Roelofs, 1982(b) Underhill, 1987(a)	C
<i>Operophtera brumata</i> L. winter moth <i>phe.</i>	*Δ1,Z3,Z6,Z9-19:H	Roelofs, 1982(b) Bestmann, 1982(c) Albert, 1984 Knauf, 1984	C
<i>Operophtera fagata</i> Scharf. northern winter moth <i>phe.</i>	*Z6,Z9-19:H + *Δ1,Z3,Z6,Z9-19:H (10:1) + other components	Szöcs, 2004	C
<i>Operophtera occidentalis</i> <i>att.</i>	Δ1,Z3,Z6,Z9-19:H	Roelofs, 1982(b)	C
<i>Operophtera rectipostmediana</i> Inoue <ichimojifuyu-namishaku> <i>att.</i>	Δ1,Z3,Z6,Z9-19:H	Yamamoto, 2008	A

<i>Operophtera relegata</i> Prout <kuroobifuyu-namishaku> att.	Z3,epo6,Z9-19:H or Z3,Z6,epo9-19:H or epo3,Z6,Z9-19:H	Ando, 1993	A
	Z3,Z6,epo9-19:H (9S,10R):(9R,10S) = 1:1	Qin, 1997	
<i>Ourapteryx</i> ^e <i>sambucaria</i> L. att.	Z3,Z6,Z9-19:H	Subchev, 1986(a)	C
<i>Pachyerannis</i> ^e <i>obliquaria</i> Motschulsky <kurosujifuyu-edashaku> att.	epo3,Z6,Z9-19:H (3R,4S)-isomer	Qin, 1997	A
<i>Pachyligia</i> ^e <i>dolosa</i> Butler <atojiro-edashaku> att.	Z3,Z6,epo9-21:H or Z3,epo6,Z9-21:H	Ando, 1993	A
<i>Pachyodes</i> ^b <i>superans</i> Butler <oo-aoshaku> att.	Z3,Z6,Z9-20:H	Ando, 1993	A
<i>Paleacrita</i> ^e <i>vernata</i> Peck spring cankerworm phe.	*Z3,Z6,Z9-20:H + *Z3,Z6,Z9-19:H + *Z6,Z9-19:H (8:2:1)	Underhill in Arn, 1986(a) Millar, 1990(d)	D
<i>Pamphlebia</i> ^b <i>rubrolimbraria</i> <i>rubrolimbraria</i> Guenée <herigurotogari-aoshaku> phe.	*Z6,Z9,Z12-18:H + other components E	Yamakawa, 2009; 2011(a)	A
<i>Peribatodes</i> ^e <i>rhomboidaria</i> Denis & Schiffermüller phe.	*Z3,Z6,Z9-19:H + *Z6,Z9-19:3-one (5:1) (1:1-1:4)	Buser, 1985 Tóth, 1987	C
<i>Perizoma</i> ^d <i>grandis</i> Hulst att.	E11-14:Ald	Daterman, 1977	C
<i>Plagodis</i> ^e <i>alcoolaria</i> Guenée	Z3,Z6,Z9-20:H	Millar, 1991(c)	C

att.	+ Z3,epo6,Z9-20:H (6R,7S)-isomer (1:1)		
<i>Probole</i> ^e <i>alienaria</i> Herrich-Schäffer att.	Z3,epo6,Z9-19:H (6R,7S):(6S,7R) = 1:1	Landolt, 1996	D
<i>Probole</i> <i>amicaria</i> Herrich-Schäffer phe.	*epo3,Z6,Z9-19:H (3S,4R)-isomer + Z3,epo6,Z9-19:H (6R,7S)-isomer + *Z3,Z6,Z9-19:H (9:1:8)	Millar, 1990(b); (c)	D
<i>Prochoerodes</i> ^e <i>transversata</i> Drury large maple spanworm att.	Z3,Z6,epo9-19:H (9S,10R)-isomer + Z3,Z6,Z9-19:H (4:1)	Wong, 1985(b)	D
<i>Pseudocoremia</i> ^e <i>fenerata</i> Felder & Rogenhofer att.	Z6,epo9-19:H	Gibb, 2006(b)	D
<i>Pseudocoremia</i> <i>leucelaea</i> Meyrick att.	Z6,epo9-19:H	Gibb, 2006(b)	D
<i>Pseudocoremia</i> <i>suavis</i> Butler common forest looper phe.	*Z3,Z6,epo9-19:H + other components	Gibb, 2006(b)	D
<i>Rhynchobapta</i> ^e <i>cervinaria</i> <i>bilineata</i> Leech <futasujio-edashaku> att.	Z6,Z9-17:H	Ando, 1995(a)	A
<i>Sabulodes</i> ^e <i>caberata</i> Guenée omnivorous looper phe.	*Z6,Z9-19:H + other components	McDonough, 1986	D
<i>Scopula</i> ^c <i>personata</i> Prout <namisujichibi-himeshaku> att.	Z9,E11-14:OAc	Nagano, 1979	A
<i>Semiothisa</i> ^e <i>bicolorata</i> F. att.	Z3,Z6,Z9-17:H + Z3,epo6,Z9-17:H (10:1)	Millar, 1987	C

<i>Semiothisa cineraria</i> Bremer & Grey scholar tree looper phe.	*epo3,Z6,Z9-17:H + *Z3,Z6,Z9-17:H (6:1) (3R,4S)-isomer	Li, 1993(c) Kong, 2012(b)	C
<i>Semiothisa</i> (= <i>Chiasmia</i>) <i>clathrata</i> L. <himeamime-edashaku> phe.	*epo3,Z6,Z9-17:H (3R,4S)-isomer + *Z3,Z6,Z9-17:H (3:1)	Tóth, 1991(a); 1994(a)	A
<i>Semiothisa delectata</i> Hulst att.	Z3,epo6,Z9-17:H + Z3,Z6,Z9-17:H (10:1)	Millar, 1987	C
<i>Semiothisa marmorata</i> Ferguson att.	epo3,Z6,Z9-17:H (3R,4S)-isomer + Z3,Z6,Z9-17:H (9:1–1:1)	Gries, 1993(a)	C
<i>Semiothisa neptaria</i> Guenée phe.	*Z3,Z6,Z9-17:H N epo3,Z6,Z9-17:H (3R,4S):(3S,4R) = 2:1	Millar, 1987 Gries, 1993(a)	C
<i>Semiothisa sexmaculata</i> Packard phe.	*epo3,Z6,Z9-17:H (3R,4S)-isomer	Gries, 1993(a)	C
<i>Semiothisa signaria</i> <i>dispuncta</i> Walker phe.	*epo3,Z6,Z9-17:H + *Z3,Z6,Z9-17:H (10:1) or epo3,Z6,Z9-18:H + Z3,Z6,Z9-18:H (9:1)	Millar, 1987	C
<i>Semiothisa ulsterata</i> Pearsall att.	Z3,epo6,Z9-17:H (6S,7R)-isomer	Millar, 1987 Millar, 1990(c)	C
<i>Sibatania</i> ^d <i>mactata</i> Felder & Rogenhofer <birodo-namishaku> att.	Z3,Z6,Z9-21:H	Ando, 1993	A
<i>Sicya</i> ^e <i>macularia</i> Harris att.	epo3,Z6,Z9-19:H (3S,4R)-isomer + Z3,Z6,Z9-19:H (9:1)	Millar, 1990(b), (c)	D
<i>Synaxis</i> ^e <i>jubararia</i> Hulst att.	Z3,Z6,Z9-19:H + Z3,Z6,epo9-19:H (4:1–1:1)	Wong, 1985(b)	D

<i>Synegia</i> ^e <i>esther</i> Butler <kurohaguruma-edashaku> att.	Z6,Z9-21:H	Ando, 1995(a)	A
<i>Tephrina</i> ^e <i>arenacearia</i> Hübner phe.	*epo3,Z6,Z9-17:H (3 <i>S</i> ,4 <i>R</i>)-isomer + Z3,epo6,Z9-17:H	Tóth, 1991(a); 1994(a)	C
<i>Thalassodes</i> ^b <i>immissaria</i> <i>intaminata</i> Inoue <sazanamishiro-aoshaku> phe.	*Z3,Z6,Z9,Z12-20:H	Yamakawa, 2009	A
<i>Theria</i> ^e <i>rupicapraria</i> phe.	*Z6,Z9-20:H + *Z6,Z9-21:H N + other components	Szöcs in Arn, 1997	D
<i>Trichopteryx</i> ^d <i>carpinata</i> Borkhausen att.	Z6,Z9-19:H	Oleander, 2019	C
<i>Trichopteryx polycommata</i> Denis & Schiffermüller barred tooth striped moth <hanenagakobane-namishaku> phe.	*Z6,Z9-19:H	Oleander, 2019	B
<i>Triphosa</i> ^d <i>haesitata</i> <i>affirmata</i> Guenée att.	Z9,Z12,Z15-18:OAc + Z3,Z6,Z9-20:H (1:20) or + Z3,Z6,Z9-21:H (1:20)	Wong, 1985(b)	C
<i>Wilemania</i> ^e <i>nitobei</i> Nitobe <nitobe-edashaku> att.	Z3,Z6,Z9,E11-19:H	Yamamoto, 2008	A
<i>Xanthorhoe</i> ^d <i>abrasaria aquilonaria</i> Herrich-Schiffermüller att.	Z3,Z6,Z9-21:H + its epoxydienes (4:1) Z3,epo6,Z9-21:H (6 <i>S</i> ,7 <i>R</i>)-isomer + Z3,Z6,epo9-21:H (9 <i>S</i> ,10 <i>R</i>)-isomer (10:1)	Wong, 1985(b) Millar, 1991(c)	C

<i>Xanthorhoe ferrugata</i> Clerck att.	Z3,epo6,Z9-21:H (6S,7R)-isomer	Millar, 1991(c)	C
<i>Xanthorhoe iduata</i> Guenée att.	Z3,Z6,Z9-21:H + its epoxydienes (1:1)	Wong, 1985(b)	C
<i>Xanthorhoe munitata</i> Hübner att.	epoxydienes of Z3,Z6,Z9-21:H	Wong, 1985(b)	C
	Z3,epo6,Z9-21:H (6S,7R)-isomer + Z3,Z6,Z9-21:H (10:1)	Millar, 1991(c)	
<i>Xanthotype</i> ^e <i>sospeta</i> Drury att.	Z6,epo9-19:H (9S,10R)-isomer	Millar, 1991(a)	D
<i>Zethenia</i> ^e <i>albonotaria</i> <i>nesiotis</i> Wehrlic <monshirotsamakiri-edashaku> att.	epo3,Z6,Z9-19:H (3S,4R)-isomer	Qin, 1997	A

(Uraniidae) ツバメガ科

<i>Epiplema moza</i> Butler <kurohoshi-futao> att.	E11-16:OAc	Ando, 1975	A
<i>Epiplema plaqifera</i> Butler <kuroobishiro-futao> att.	E9-14:OH	Ando, 1977	A

(29) [Bombycoidea] カイコガ上科
(Endromidae)

<i>Andraca bipunctata</i> Walker tea cluster caterpillar phe.	*E11,E14-18:Ald + other components	Ho, 1996	D
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(Bombycidae) カイコガ科

<i>Bombyx mandarina</i> Moore	*E10,Z12-16:OH	Kuwahara, 1979	A
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<kuwako> phe.		Daimon, 2012(b)	
	+ another component	Kuwahara, 1984	
	*E3,Z13-18:OH	Gao in Arn, 1997	
<i>Bombyx mori</i> L. silkworm moth <kaiko> phe.	*E10,Z12-16:OH	Butenandt, 1959; 1961	A
	+ *E10,Z12-16:Ald	Kaissling, 1978 Kasang, 1978(a)	
	+ another component	Kasang, 1978 (b)	
<i>Rondotia menciata</i> Moore mulberry white caterpillar phe.	*E10,Z12-16:OAc	Dai, 1988	D
<i>Trilocha varians</i> Walker <ichijikukasan> phe.	*E10,Z12-16:Ald + *E10,Z12-16:OAc (5:2)	Daimon, 2012(a)	D

(Saturniidae = Attacidae) ヤママユガ科

<i>Actias luna</i> L. luna moth phe.	*E6,Z11-18:Ald + *E6-18:Ald (4:1) + another component	Millar, 2016	C
<i>Antheraea pernyi</i> Guérin-Méneville <saku-san> phe.	E6,Z11-16:OAc E E6,Z11-16:Ald E *E6,Z11-16:Ald + *E6,Z11-16:OAc + *E4,Z9-14:OAc (5:1:2) E + other components	Kaissling in Arn, 1986(a) Bestmann, 1987	A
<i>Antheraea polyphemus</i> Cramer phe.	*E6,Z11-16:OAc + *E6,Z11-16:Ald (9:1)	Kochansky, 1975(b)	C
<i>Callosamia promethea</i> Drury promethea moth phe.	*E4,E6,Z11,Z13-16:Ald	Gago, 2013	D
<i>Coloradia pandora pandora</i> Blake	*E10,Z12-16:Ald + *E10,Z12-16:OAc	McElfresh, 2000	D

pandora moth phe.	+ *E10,E12-16:OAc (10:5:1) + other components		
<i>Coloradia velda</i> Johnson & Walter common sheep moth phe.	*E10,Z12-16:OAc + *E10,E12-16:OAc + *E10,Z12-16:OH (10:1:0.33) + other components	McElfresh, 1999(c)	D
<i>Graellsia isabellae</i> Spanish moon moth phe.	*E4,E6,Z11-16:Ald	Millar, 2010	D
<i>Hemileuca burnsi</i> Watson phe.	E10,Z12-16:OAc + E10,Z12-16:OH + E10,Z12-16:Ald + other components	McElfresh, 1999(d)	D
	*E10,Z12-16:OAc + *E10,Z12-16:OH + *E10,Z12-16:Ald + *E10,E12-16:OAc + *16:OAc (100:14:0.4:23:232)	McElfresh, 2008	
<i>Hemileuca eglanterina</i> Boisduval common sheep moth phe.	*E10,Z12-16:OAc + *E10,Z12-16:OH + *E10,Z12-16:Ald (100:10:1) + other components	McElfresh, 1999(a)	D
<i>Hemileuca electra electra</i> Wright phe.	*E10,Z12-16:OAc (main) + *E10,Z12-16:OH + *E10,Z12-16:Ald + other components	McElfresh, 1999(d)	D
<i>Hemileuca electra mojavensis</i> Tuskes & McElfresh phe.	*E10,Z12-16:OAc (main) + *E10,Z12-16:OH + *E10,Z12-16:Ald + other components	McElfresh, 1999(d)	D
<i>Hemileuca maia</i> Drury buck moth phe.	*E10,Z12-16:Ald + *E10,Z12-16:OH + *E10,Z12-16:OAc (20:5:2) + other components	McElfresh, 2001(b)	D
<i>Hemileuca nuttalli</i> Strecker Nuttall's sheep moth phe.	*E10,Z12-16:OAc + *E10,E12-16:OAc (2:1-1:2) + other components	McElfresh, 1999(b)	D

<i>Loepa sakaei</i> Inoue <haguruma-yamamayu> phe.	*E4,Z9-14:OAc	Yan, 2015(a)	A
<i>Lonomia obliqua</i> Walker phe.	*E11-16:OAc + *E11-16:OH (20:7)	Zarbin, 2007	D
<i>Nudaurelia cytherea cytherea</i> F. pine tree emperor moth phe.	*Z5-10:OisoVa	Henderson, 1973	D
<i>Rhodinia fugax</i> Butler pellucid silk moth <usutabiga> phe.	*E6,Z11-16:Ald	Yan, 2015(a)	A
<i>Samia cynthia ricini</i> Donovan eri-silkworm moth <eri-san, hima-san> phe.	*E4,E6,Z11-16:OAc (major) + *E4,E6,Z11-16:Ald N	Bestmann, 1989	A
<i>Saturnia albofasciata</i> Johnson phe.	*E4,Z9-14:Ald + another component	McElfresh, 2001(a)	C
<i>Saturnia mendocino</i> Behrens phe.	*E4,Z9-14:Ald + another component	McElfresh, 2001(a)	C
<i>Saturnia</i> (= <i>Eudia</i>) <i>pavonia</i> att.	Z6,Z11-16:OAc	Bestmann, 1982(d)	C
<i>Saturnia walterorum</i> Hogue & Johnson phe.	*E4,Z9-14:Ald + another component	McElfresh, 2001(a)	C

(Sphingidae) スズメガ科

<i>Agrius convolvuli</i> L. sweetpotato hornworm <ebigara-suzume> phe.	*E11,E13-16:Ald	Wakamura, 1996(a)	A
<i>Amphion floridensis</i> Clark att.	E10,Z12-16:Ald	Landolt, 1989(a)	D

<i>Deilephila elpenor</i> L. elephant hawk-moth phe.	*E11-16:Ald + *E10,E12-16:Ald N	Bestmann, 1992(b)	B
<i>Deilephila elpenor lewisii</i> Butler <beni-suzume> phe.	*E11-16:Ald + *E10,E12-16:Ald (17:3)	Uehara, 2012	A
<i>Deilephila porcellus</i> att.	E10,E12-16:Ald	Priesner in Arn, 1986(a)	C
<i>Dolbina tancrei</i> Staudinger <sazanami-suzume> phe.	*E9,Z11-15:Ald + *Z9,Z11-15:Ald (9:1)	Uehara, 2013	A
<i>Hemaris affinis</i> Bremer <kurosukiba-houjaku> phe.	*Z11-16:Ald + *E10,E12-16:Ald + *E10,Z12-16:Ald (9:7:4)	Uehara, 2015	A
<i>Hemaris diffinis</i> Boisduval att.	Z10,E12-16:Ald	Reed, 1987	C
<i>Hemaris fuciformis</i> L. att.	Z10,E12-16:Ald	Priesner in Arn, 1986(a)	C
<i>Hippotion celerio</i> L. silver-striped hawk-moth phe.	*E10,E12-16:Ald N	Bestmann, 1992(b)	C
<i>Hyles gallii</i> Rottenburg <ibuki-suzume> att.	E10,E12-16:Ald E E10,Z12-16:Ald E	Reed, 1987	A
<i>Hyloicus pinastri</i> L. <matsukuro-suzume> att.	E10,E12-16:Ald E E10,Z12-16:Ald E	Priesner in Arn, 1986(a)	A
<i>Manduca sexta</i> L. tobacco hornworm moth phe.	*E10,Z12-16:Ald + *E10,E12,Z14-16:Ald (2:1) + other components	Starratt, 1979 Tumlinson, 1989; 1994	D
<i>Neogurelca himachala sangaica</i> Butler <hoshihime-houjaku> phe.	E10,Z12-16:Ald *E10,Z12-16:Ald	Daimon, 2012(b) Uehara, 2015 Uehara, 2016	A

<i>Pachysphinx modesta</i> Harris att.	Z10,E12-16:OAc	Reed, 1987	D
<i>Proserpinus flavofasciata</i> Walker att.	E10,E12-16:Ald	Reed, 1987	D
<i>Smerinthus cerisyi</i> Kirby att.	Z10,E12-16:OAc + Z10,E12-16:Ald (10:1)	Reed, 1987	C
<i>Smerinthus jamaicensis</i> Drury att.	Z10,E12-16:Ald + Z10,Z12-16:Ald (10:1)	Reed, 1987	C
<i>Smerinthus tokyonis</i> Matsumura <kouchi-suzume> phe.	*Z10,Z12-16:OAc + *E10,Z12-16:OAc + *Z10,E12-16:OAc [87:7:6]	Kosaki, 2021	A
<i>Sphinx drupiferarum</i> J. E. Smith phe.	*E10,Z12-16:Ald N	Reed, 1987	C
<i>Theretra japonica</i> Boisduval <ko-suzume> att.	E10,Z12-16:Ald	Uehara, 2015	A
<i>Theretra oldenlandiae</i> <i>oldenlandiae</i> F. <sesuji-suzume> phe.	*E10,Z12-16:Ald + *E10,E12-16:Ald + *E11-16:Ald (4:3:3)	Uehara, 2012	A

(30) [Noctuoidea] ヤガ上科
(Notodontidae) シャチホコガ科

<i>Micromelalopha siversi</i> Staudinger phe.	*Z13,E15-18:Ald + other component	Liu, 2019; 2021	C
<i>Notodonta dromedarius</i> phe.	*Z11,Z13-16:Ald + other components	Bestmann, 1993(a)	C
<i>Notodonta torva</i> Hübner <tobimadara-shachihoko> phe.	*Z11,Z13-16:OAc + other components	Bestmann, 1991	B
<i>Schizura semirufescens</i> att.	Z7-12:OH	Roelofs, 1971(a)	D

<i>Thaumetopoea bonjeani</i> Powell phe.	*Z11,Z13-16:Ald + *Z11,Z13-16:OH (9:1)	Frérot, 1990	D
<i>Thaumetopoea jordana</i> Stgr. phe.	*≡11,Z13-16:OH + *≡11,Z13-16:Ald + *≡11,Z13-16:OAc [5:4:1] N	Frerot, 1993(c)	D
<i>Thaumetopoea pinivora</i> Treischke phe.	Z11,Z13-16:Ald + Z11,Z13-16:OH (9:1)	Frérot, 1990	D
	*Z11,Z13-16:OH + *Z11,Z13-16:Ald [4:1] N	Frerot, 1993(c)	
<i>Thaumetopoea pityocampa</i> Denis & Schiffermüller processionary moth phe.	*≡11,Z13-16:OAc	Guerrero, 1981 Einhorn, 1983 Quero, 1997	D
	≡11,Z13-16:OAc	Cuevas, 1983 Tiberi, 1984	
	≡11-16:OAc	Quero, 1995	
<i>Thaumetopoea processionea</i> L. oak processionary moth phe.	≡11,Z13-16:OAc	Tiberi, 1984	D
	*Z11,Z13-16:OAc + *Z11,Z13-16:OH [19:1] N	Frerot, 1993(c)	
	*Z11,Z13-16:OAc + other components	Quero, 2003 Breuer, 2003	
	+ *Z11,E13,Δ15-16:OAc (1:1)	Gries, 2004	
<i>Thaumetopoea solitaria</i> Fr. phe.	*Z13,Z15-18:Ald N	Frerot, 1993(c)	D
<i>Thaumetopoea wilkinsoni</i> Tams. phe.	≡11,Z13-16:OAc	Halperin, 1982	D
	*≡11,Z13-16:OAc N	Frerot, 1993(c)	

(Noctuidae) ヤガ科

(Noctuidae; Dilobinae) ヤガ科;

<i>Diloba caeruleocephala</i> L. figure-of-eight moth att.	Z8-13:OAc	Subchev, 2000(b)	D
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(Noctuidae; Acronictinae) ヤガ科; ケンモンヤガ亜科

<i>Acronicta grisea</i> Walker <i>att.</i>	Z7-12:OAc + Z9-12:OAc (1:1)	Steck, 1977(a)	C
<i>Acronicta sperata</i> Grote dagger moth <i>att.</i>	Z7-12:OAc + Z7-12:Ald (9:1)	Underhill, 1977(a)	C
<i>Acronicta tridens</i> <i>att.</i>	Z9-14:Ald	Tóth in Arn, 1986(a)	C
<i>Raphia frater</i> Grote <i>att.</i>	Z7-12:OH + Z7-12:OAc	Weatherston, 1974(a) McLeod, 1982	D
<i>Simyra henrici</i> Grote <i>att.</i>	Z7-14:Ald	Steck, 1982(a)	C

(Noctuidae; Heliothinae) ヤガ科 ; タバコガ亜科

<i>Helicoverpa</i> (= <i>Heliothis</i>) <i>armigera</i> Hübner old world bollworm cotton bollworm <oo-tabakoga> <i>phe.</i>	*Z11-16:Ald + Z11-14:Ald (1:1) + Z9-14:Ald (100:1–100:5) + Z9-16:Ald (25:1) (10:1) + *Z11-14:Ald (1:3) + other components + *Z9-16:Ald (20:1–97:3) + other components	Piccardi, 1977 Gothilf, 1978 Rothschild, 1978 Kehat, 1980 Buleza in Arn, 1992 Konjuchoy, 1983 Nesbitt, 1979(b); 1980(b) Dunkelblum, 1980 Kehat, 1990	A
<i>Helicoverpa</i> (= <i>Heliothis</i>)			A

<i>assulta</i> Guenée			
oriental tobacco budworm			
<tabakoga>			
phe.			
Japan strain	*Z9-16:Ald + *Z9-16:OAc + *Z11-16:Ald + *16:Ald (100:15:3:8) + other components	Sugie, 1991(b)	
Korea strain	+ *Z11-16:OAc (100:30:5:1.5) + other components	Cork, 1992 Park, 1996	
	Z9-16:Ald + Z11-16:Ald (25:1)	Park, 1994	
Thailand strain	+ Z9-16:OAc (7:5:1)	Cork, 1992	
China strain	Z9-16:Ald + Z11-16:Ald (20:1)	Cork, 1992	
	(100:9.5)	Cai in Arn, 1997	
<i>Helicoverpa gelotopoen</i> Dyar	*16:Ald + *Z9-16:Ald (1:1) + another component	Cork, 2003	C
phe.			
<i>Helicoverpa</i> (= <i>Heliothis</i>)	Z11-16:Ald + Z11-16:OAc + Z9-14:Ald (50:50:1)	Rothschild, 1978	C
<i>punctigera</i> Wallengren			
Australian bollworm			
phe.			
	*Z11-16:Ald + *Z11-16:OAc + Z9-14:Ald (20:20:1) + other components	Rothschild, 1982	
<i>Helicoverpa</i> (= <i>Heliothis</i>) <i>zea</i> Boddie	Z9-14:OFo E	Priesner, 1975	C
corn earworm			
phe.			
	*Z11-16:Ald + *Z9-16:Ald (65:1–40:1) + other components	Roelofs, 1974(c) Klun, 1979(b); 1980(b) Pope, 1984 Teal, 1984	
	+ *Z11-16:OH + *16:Ald N	Descoins, 1988	

	+ Z9-16:Ald + Z7-16:Ald + 16:Ald (87:3:2:8)	Lopez, 1990	
<i>Heliothis belladonna</i> Henry & Edwards <i>att.</i>	Z11-16:Ald + Z9-16:Ald + Z7-16:Ald + 16:Ald	Landolt in Pherobase	C
<i>Heliothis maritima</i> Graslin fulvous clover moth <i>phe.</i>	*Z11-16:Ald + other components E + *Z11-16:OH + *16:Ald (100:5:6)	Kovalev, 1991 Szöcs, 1993(a)	B
<i>Heliothis maritima adaucta</i> Butler flax budworm <tsumekusaga> <i>phe.</i>	*Z11-16:Ald + *Z11-16:OH (100:1) + another component	Kakizaki, 2003	A
<i>Heliothis ononis</i> Denis & Schiffermüller <i>att.</i>	Z11-16:Ald	Steck, 1982(a)	C
<i>Heliothis peltigera</i> Denis & Schiffermüller <i>phe.</i>	Z11-16:Ald + Z9-14:Ald (16:1) *Z11-16:Ald + *Z9-14:Ald + *Z11-16:OH (10:5:3) + other components	Nesbitt, 1979(b) Dunkelblum, 1989	C
<i>Heliothis phloxiphaga</i> Grote & Robinson <i>phe.</i>	*Z11-16:Ald + *Z11-16:OH + *Z9-16:Ald (482:15:3)	Raina, 1986(b)	C
<i>Heliothis subflexa</i> Guenée <i>phe.</i>	*Z11-16:Ald + *Z9-16:Ald + *Z7-16:OAc + *Z9-16:OAc + *Z11-16:OAc (41:15:3:6:26) + other components	Teal, 1981 Klun, 1982	C

	+ *Z11-16:OH	Vickers, 2002	
	+ *Z11-16:OAc (10:5:1:1) wind tunnel		
	+ other components	Nojima, 2018	
<i>Heliothis virescens</i> F.	*Z11-16:Ald	Roelofs, 1974(c)	C
tabacco budworm	+ *Z9-14:Ald (16:1)	Tumlinson, 1975	
<p style="color: magenta;">phe.</p>	(15:1)	Hendricks, 1989	
	+ other components	Klun, 1979(b); 1980(c) Pope, 1982 Vetter, 1983 Ramaswamy, 1985 Teal, 1986	
	+ Z11-16:OH (15:1:0.04)	Shaver, 1989	
	+ *Z11-16:OH (100:5:1)	Groot, 2018	
	Z9-14:OFo	Mitchell, 1978	
	+ Z9-14:Ald (32:1-16:1)		
<i>Protoschinia scutosa</i>	Z11-16:OH	Konstantin	A
Denis & Schiffermüller		in Arn, 1986(a)	
<yomogiga>			
<p style="color: cyan;">att.</p>	+ Z7-12:OAc	Li, 1993(d)	
	+ Z9-14:OAc (1:3:1)		
<i>Pyrrhia umbra</i> Hufnagel	Z11-16:OAc	Stan, 1992	A
<ki-tabakoga>			
<p style="color: cyan;">att.</p>			
<i>Schinia bina</i> Guenée	Z11-16:OAc	Underhill, 1977(a)	D
<p style="color: cyan;">att.</p>	+ Z11-16:Ald (7:3)		
<i>Schinia meadi</i> Grote	Z11-16:Ald	Steck, 1982(a)	D
<p style="color: cyan;">att.</p>			
<i>Schinia sueta</i> Grote	Z9-14:OAc	Byers, 1987	D
<p style="color: cyan;">att.</p>	+ Z11-16:OAc		
	+ Z11-16:OH		

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<i>Abagrotis placida</i> <i>att.</i>	Z7-14:OAc + Z11-14:OAc (10000:1)	Steck, 1982(b)	D
<i>Actebia</i> (= <i>Ochropleura</i>) <i>fennica</i> Tauscher black army cutworm <atousu-yaga> <i>phe.</i>	Z11-14:OAc + Z7-12:OAc (1:1) *Z11-14:OAc + *Z7-12:OAc (20:1) + other components	Steck, 1979(c) Struble, 1989	A
<i>Agrotis clavis</i> Hufnagel <i>att.</i>	Z11-14:OAc Z5-10:OAc	Hrdý, 1979 Tóth, 1992(c)	C
<i>Agrotis collaris</i> Wallengren <i>att.</i>	Z7-14:OAc + Z5-14:OAc (20:1)	Steck in Arn, 1986(a)	C
<i>Agrotis confuse</i> Stephens <i>att.</i>	Z7-12:OAc	Il'icheva in Arn, 1992	C
<i>Agrotis</i> (= <i>Scotia</i>) <i>crassa</i> Hübner <i>att.</i>	Z7-12:OAc + Z9-12:OAc (1:1)	Szöcs, 1981	C
<i>Agrotis</i> (= <i>Scotia</i>) <i>exclamationis</i> L. heart-and-dart moth <senmon-yaga> <i>phe.</i>	*Z5-14:OAc + *Z9-14:OAc (19:1) (9:1) (20:3) (25:4) + other components	Bestmann, 1980 Vrkoc, 1983 Priesner, 1985(b) Grodner, 2018 Lebedeva, 2000(b)	B
<i>Agrotis fucosa</i> Butler (= <i>segetum</i> ?) common cutworm moth <kabura-yaga> <i>phe.</i>	*Z5-10:OAc + *Z7-10:OAc (1:9)	Wakamura, 1978; 1980	A
<i>Agrotis ipsilon</i> Hufnagel black cutworm <tamana-yaga> <i>phe.</i>	Z7-12:OAc *Z7-12:OAc + *Z9-14:OAc (3:1)	Steck, 1979(c) Hill, 1979(b)	A

	Z7-12:OH	Tóth, 1991(c)	
(tests in the world)	Z5-10:OAc + Z7-12:OAc + Z9-14:OAc	Tóth, 1992(c)	
<i>Agrotis venerabilis</i> Walker dusky cutworm att.	Z5-10:OAc + Z7-12:OAc (20:1) + Z5-12:OAc (100:10:1) + Z7-12:Ald (100:10:1)	Steck, 1979(d) Steck, 1982(b) Steck, 1982(a)	C
<i>Agrotis vetusta</i> Walker att.	Z11-16:OAc + Z9-14:OAc (50:1)	Steck, 1982(a)	C
<i>Agrotis volubilis</i> Harvey att.	Z5-14:OAc + Z5-14:Ald (1:1) + Z7-14:OAc (100:1)	Underhill, 1977(a) Steck, 1982(a)	C
<i>Chersotis juncta</i> Grote att.	Z11-16:OAc + Z11-16:Ald	Steck, 1982(a)	C
<i>Chersotis multangula</i> Hübner att.	Z11-16:OAc E + Z5-10:OAc (10:1)	Priesner, 1975 Subchev, 1990	C
<i>Cryptocala acadensis</i> Bethune att.	Z9-14:OAc + Z11-16:OAc + Z9-14:Ald	Steck, 1976 Steck, 1982(a)	D
<i>Diarsia brunnea</i> Denis & Schiffermüller <miyamaaka-yaga> att.	Z11-16:OAc + Z11-16:Ald (3:1)	Subchev in Arn, 1992 Priesner in Arn, 1986(a)	A
<i>Diarsia dahlia</i> Hübner barred chestnut moth <ezoohbako-yaga> att.	Z7-14:OAc + Z9-14:OAc + Z5-14:OAc (10:2:1)	Priesner, 1985(a)	A
<i>Diarsia deparca</i> Butler	Z9-14:OAc	Ando, 1977	A

<kousucha-yaga> att.			
<i>Diarsia pseudorosaria</i> Hardwick att.	Z11-16:OAc + Z9-16:OAc (3:1)	Kamm, 1985	C
<i>Diarsia rubi</i> Vieweg att.	Z11-16:OAc	Terytze in Pherobase	C
<i>Euagrotis tepperi</i> Smith att.	Z11-16:OAc + Z9-14:OAc + Z7-12:OAc (10:1:1)	Steck, 1982(a)	D
<i>Eurois astricta</i> Morrison att.	Z11-16:OAc + Z9-14:OAc + Z11-16:Ald (8:2:1)	Underhill, 1977(a)	C
<i>Eurois occulta</i> L. <ooshirahoshi-yaga> att.	Z9-14:OAc + Z11-16:OAc (3:1)	Steck, 1976	A
	or + Z11,E14-16:OAc (3:1)	Chisholm, 1980(b)	
in Canada	+ Z11-16:Ald (100:30:1)	Steck, 1982(b)	
in Europa	Z9-14:OAc + Z11-16:OAc (1:1)	Priesner in Arn, 1986(a)	
<i>Euxoa acornis</i> Smith att.	Z9-14:OAc + Z9-14:Ald + Z11-16:OAc (6:3:2)	Underhill, 1977(a)	C
<i>Euxoa albipennis</i> Grote att.	Z5-10:OAc + Z7-12:OAc + Z7-12:OH (10:1:1)	Steck, 1979(d)	C
<i>Euxoa altera</i> Smith att.	Z11-16:OAc + Z9-14:OAc (5:1)	Steck, 1982(a)	C
<i>Euxoa auxiliaris</i> Grote army cutworm att.	Z5-14:OAc + E7-14:OAc (1:19)	Struble, 1977(b)	C
	+ Z7-14:OAc + Z9-14:OAc (100:1:10)	Struble, 1981(a)	
<i>Euxoa basalis</i> Grote att.	Z7-12:OAc + Z7-12:OH	Steck, 1982(a)	C

	+ Z5-10:OAc (5:5:1) or + Z5-12:OAc (5:5:1)		
<i>Euxoa campestris</i> Grote <i>att.</i>	Z5-10:OAc or + Z5-12:Ald (10:1)	Byers, 1981 Underhill, 1981	C
<i>Euxoa cicatricosa</i> Grote & Robinson <i>att.</i>	Z7-12:OAc	Steck, 1982(a)	C
<i>Euxoa dargo</i> Strecker <i>att.</i>	Z11-16:OAc + Z9-14:OAc (1:9)	Steck, 1979(c) Steck, 1982(a)	C
<i>Euxoa declarata</i> Walker <i>att.</i>	Z5-10:OAc or + Z5-12:Ald (10:1)	Byers, 1981 Underhill, 1981	C
<i>Euxoa distinguenda</i> Lederer <i>att.</i>	Z3-10:OAc	Priesner, 1988(b)	C
<i>Euxoa divergens</i> Walker <i>att.</i>	Z9-12:OAc + Z7-10:OAc + Z7-12:OAc (200:1)	Steck, 1979(c) Steck, 1982(a)	C
<i>Euxoa drewseni</i> Staudinger <i>phe.</i>	*Z5-12:OAc + *Z7-14:OAc + *12:OAc (6:1:2) + other components	Struble, 1983(a)	C
<i>Euxoa eruta</i> Hübner <i>att.</i>	Z3-10:OAc + Z5-10:OAc (1:1)	Priesner, 1988(b)	C
<i>Euxoa flavicollis</i> Smith <i>att.</i>	Z9-14:OAc + Z7-12:OAc (1000:1)	Steck, 1979(c) Steck, 1982(a)	C
<i>Euxoa hastifera</i> Donzel <i>att.</i>	Z5-10:OAc + Z7-12:OAc (1:1) (2:1)	Tóth in Arn, 1986(a) Subchev, 1990 Coroiu, 1986	C
<i>Euxoa idahoensis</i> Grote <i>att.</i>	Z5-10:OAc + Z5-12:OAc + Z7-12:OAc + Z9-12:OAc	Byers, 1987	C

<i>Euxoa lutulenta</i> Smith att.	Z9-14:OAc + Z11-16:OAc	Steck, 1976	C
<i>Euxoa maimes</i> Smith phe.	*Z9-14:OAc + *Z11-14:OAc + *Z7-14:OAc (200:2:1) + other components	Struble, 1985	C
<i>Euxoa manitobana</i> McDunough att.	Z9-14:OAc + Z7-14:OAc (4:1)	Steck, 1982(a)	C
<i>Euxoa messoria</i> Harris darksided cutworm phe.	Z11-16:OAc + Z7-16:OAc (40:1) or + Z7,Z11-16:OAc (9:1) + Z7-14:OAc Z11,E14-16:OAc + Z7-16:OAc (25:1) Z11-16:OAc + Z7-16:OAc (20:1) *Z11-16:OAc + *Z7-16:OAc + *Z11-16:OH + Z11-16:Ald (1000:25:2:20) + other components	Struble, 1977(c) Steck, 1979(c) Chisholm, 1980(b) Ayre, 1982(b) Struble, 1987(b)	C
<i>Euxoa mimallonis</i> Grote att.	Z5-10:OAc	Steck, 1982(a)	C
<i>Euxoa nigricans</i> L. att.	Z7-12:OAc + Z5-10:OAc (1:1)	Arn, 1983 Szöcs, 1983	C
<i>Euxoa obeliscoides</i> Guenée att.	Z9-14:OAc + Z11-16:Ald (1:1) + Z7-12:OAc (500:1)	Underhill, 1977(a) Steck, 1982(b)	C
<i>Euxoa ochrogaster</i> Guenée redbacked cutworm phe.	Z5-12:OAc + Z8-12:OAc (1:2) + Z5-11:OAc (25:50:1)	Struble, 1978(b) Ayre, 1982(b)	C

	+ Z7-12:OAc (200:1)	Steck, 1980(b)	
	*Z5-12:OAc + *Z7-12:OAc + *Z9-12:OAc + Z5-10:OAc (200:2:1:1) + other components	Struble, 1980(a); 1981(b)	
	(400:4:1:1)	Steck, 1982(b)	
<i>Euxoa olivia</i> Morrison att.	Z5-10:OAc	Underhill, 1981	C
<i>Euxoa perolivalis</i> Smith att.	Z9-14:OAc	Struble, 1987(c)	C
<i>Euxoa pestula</i> Grote att.	Z5-10:OAc + Z7-12:OAc + Z7-12:Ald (100:1:1)	Steck, 1982(a)	C
<i>Euxoa plagigera</i> Morrison att.	Z9-14:OAc + Z9-14:OH (5:1)	Steck, 1982(a)	C
<i>Euxoa pleuritica</i> Grote att.	Z7-12:OAc + Z7-12:OH	Underhill, 1977(a)	C
	+ Z5-12:OAc (5:1:1–5:5:1) or + Z5-10:OAc (25:5:5:2)	Steck, 1978	
<i>Euxoa ridingsiana</i> Grote phe.	Z9-14:OAc + Z7-12:OAc	Steck, 1979(c)	C
	+ Z11-16:OAc (500:1:20)	Steck, 1982(a)	
	*Z9-14:OAc + *Z7-14:OAc + *Z7-12:OAc (40:2:1) + other components	Struble, 1985	
<i>Euxoa rockburnei</i> Hardwick att.	Z5-10:OAc + Z5-12:Ald (10:1)	Byers, 1981 Underhill, 1981	C
<i>Euxoa scandens</i> Riley white cutworm att.	Z7-12:OH	McLeod, 1982	C

<i>Euxoa seliginis</i> Duponchel att.	Z5-10:OAc	Nagy, 2023	C
<i>Euxoa servita</i> Smith att.	Z7-14:OAc + Z7-14:Ald	Steck, 1979(c) Steck, 1982(a)	C
<i>Euxoa siccata</i> Smith att.	Z5-12:OAc + Z7-12:OAc	Byers, 1987	C
<i>Euxoa tessellata</i> Harris striped cutworm att.	Z7-16:OAc + Z5-14:OAc (200:1) or + Z5-16:OAc (1:1)	Roelofs, 1970(a) Struble, 1982	C
<i>Euxoa tritici</i> L. att.	Z5-10:OAc	Nagy, 2023	C
<i>Euxoa tristicula</i> Morrison early cutworm att.	Z9-12:OAc + 12:OAc (1:3) + Z7-12:OAc + Z9-14:OAc (2:5:0.01)	Steck, 1979(a) Steck, 1982(a)	C
<i>Euxoa</i> sp. 1 att.	E11-14:Ald	Daterman, 1977	
<i>Euxoa</i> sp. 2 att.	E11-14:Ald	Daterman, 1977	
<i>Euxoa</i> sp. 3 att.	Z7-16:OAc	Underhill, 1977(a)	
<i>Euxoa</i> sp. 4 att.	Z5-12:OAc	Underhill, 1977(a)	
<i>Feltia ducens</i> Walker att.	Z11-16:OAc + Z9-14:Ald (1:1) + Z7-12:OAc + Z9-14:OAc (2000:1:1)	Underhill, 1977(a) Steck, 1982(a)	D
<i>Feltia jaculifera</i> Guenée dingy cutworm phe.	*Z11-16:OAc + Z9-14:OAc + Z7-12:OAc (1000:1:1)	Steck, 1986	D

species A	+ *Z9-14:OAc	Byers, 1990	
species B	+ *Z7-12:OAc (0:1:10) (2000:1:1)	Gemeno, 1998	
<i>Hermonassa cecilia</i> Butler <kurokumo-yaga> <i>att.</i>	Z9-14:OAc + Z9-14:Ald (9:1)	Ando, 1975 Ando, 1981	A
<i>Loxagrotis albicosta</i> Smith western bean cutworm <i>phe.</i>	*Z5-12:OAc + *Z7-12:OAc + *Δ11-12:OAc (5:1:5)	Klun, 1983	D
<i>Macronoctua onusta</i> Grote iris borer <i>phe.</i>	*Z11-16:Ald + *Z11-16:OH + *Z9-14:Ald (47:2:1) + other components	Klun, 1989	D
<i>Mesogona acetosellae</i> Denis & Schiffermüller <i>att.</i>	Z11-16:OAc	Stan in Arn, 1992	D
<i>Noctua comes</i> Hübner lesser yellow underwing moth <i>att.</i>	Z5-14:OAc	Priesner, 1985(a)	C
<i>Noctua fimbriata</i> Schreber <i>att.</i>	Z11-14:OAc + Z9-14:OAc (9:1)	Konstantin in Arn, 1986(a) Frerot, 1982(a) Ghizdavu, 1985	C
<i>Noctua fissipuncta</i> Haworth <i>att.</i>	Z11-16:Ald	Grichanov in Pherobase	C
<i>Noctua interjecta</i> Hübner <i>att.</i>	Z9-14:OAc + Z11-14:OAc	Priesner in Arn, 1986(a)	C
<i>Noctua janthina</i> Dennis & Schiffermüller <i>att.</i>	Z9-14:OAc + Z11-14:OAc (9:1)	Szöcs, 1983 Frerot, 1982(a) Ghizdavu, 1985	C
<i>Noctua orbona</i> Hufnagel <i>att.</i>	Z7-12:OAc	Subchev, 1990 Coroiu in Arn, 1997	C

<i>Noctua pronuba</i> L. large yellow underwing <i>att.</i>	Z11-14:OAc Z9,Z12,Z15-18:Ald + Z3,Z6,epo9-21:H + Δ1,Z3,Z6,epo9-21:H (8:1:1)	Hrudová, 2003 Ostrauskas, 2004	C C
<i>Ochropleura plecta</i> L. <maejiro-yaga> <i>att.</i>	Z11-16:OAc + E11-16:OAc (1:1) + Z11-16:Ald (20:1) (100:3–100:1)	Subchev, 1981 Voerman in Arn, 1986(a) Priesner in Arn, 1986(a) Tóth, 1986(b) Stan in Arn, 1992	B
<i>Ochropleura signifera</i> Denis & Schiffermüller <i>att.</i>	Z9-14:OAc + Z9-14:OH	Subchev, 1990	C
<i>Ochropleura triangularis</i> Moore <kokimae-yaga> <i>att.</i>	Z9-14:OAc	Ando, 1977	A
<i>Opigena polygona</i> Denis & Schiffermüller <i>att.</i>	Z9-14:OAc + Z11-14:OAc	Peltotalo, 1986	D
<i>Paradiarsia littoralis</i> Packard <i>att.</i>	Z7-12:OAc + Z5-12:OAc (100:1)	Steck, 1982(a); (b)	C
<i>Peridroma saucia</i> Hübner variegated cutworm <nisetamana-yaga> <i>phe.</i>	Z11-16:OAc + Z9-14:OAc (2:1–1:1) (15:2) *Z11-16:OAc + *Z9-14:OAc (3:1)	Struble, 1976 Descoins, 1978 Landolt, 2003 Inomata, 2002	A
In Korea	(2:1)	Choi, 2009(b)	
<i>Rhyacia (=Diarsia) rubi</i> Viewg. <i>att.</i>	Z11-16:OAc	Terytze, 1987	C

<i>Sineugraphe disgnosta</i> Boursin <usuirokabasuji-yaga> att.	Z7-12:OH	Ando, 1981	A
<i>Spaelotis clandestina</i> Harris w-marked cutworm phe.	Z7-14:Ald *Z7-14:Ald + other components	Steck, 1979(c) Steck, 1982(c)	C
<i>Tmetolophota atristriga</i> Walker pink grass worm phe.	strain A *Z11-16:OAc + *Z11-16:Ald (3:1) strain B *Z11-16:OAc + *Z11-16:Ald + *Z3,Z6,Z9-23:H (3:1:0.2) + other components	El-Sayed, 2022	D
<i>Xestia (=Amathes, Rhyacia) baja</i> Schiffermüller dotted clay moth att.	Z9-14:OAc + Z7-12:OAc + Z5-12:OAc (1000:100:1)	Priesner, 1984(b)	C
<i>Xestia (=Amathes) candelarum</i> Staudinger att.	Z7-14:OAc E + Z5-14:OAc	Priesner, 1977 Priesner in Arn, 1986(a)	C
<i>Xestia (=Amathes) c-nigrum</i> L. spotted cutworm <shiromon-yaga> phe.			A
	U.S.A (small sp.) U.S.A (large sp.)	E7-14:OAc Z7-14:OAc	Roelofs, 1970(a)
	Japan	Z7-14:OAc	Fujimura, 1976 Ando, 1977
	Japan	*Z7-14:OAc	Hirai in Arn, 1986(a)
	Germany		Bestmann, 1979
	Canada	+ Z5-14:OAc (100:9–100:1)	Steck, 1982(d)
	U.S.A.	(100:1)	Landolt, 2011

Bulgaria, Romania, Hungary	Z7-14:OAc	Subchev, 1996	
<i>Xestia (=Amathes) collaris</i> Grote & Robinson <i>att.</i>	Z7-14:OAc + Z9-14:OAc (1:1)	Steck, 1979(c)	C
<i>Xestia ditrapezium</i> Denis & Schiffermüller <tanpo-yaga> <i>att.</i>	Z7-14:OAc + Z9-14:OAc + Z5-14:OAc (10:2:1)	Priesner, 1985(a)	B
<i>Xestia dolosa</i> Franclemont <i>phe.</i>	*Z7-14:OAc	Bjostad in Arn, 1986(a)	C
<i>Xestia rhomboidea</i> Esper <i>att.</i>	Z5-14:OAc + Z9-14:OAc (20:1)	Priesner, 1985(a)	C
<i>Xestia triangulum</i> Hufnagel <i>att.</i>	Z5-14:OAc	Priesner, 1985(a)	C
<i>Xestia xanthographa</i> Denis & Schiffermüller <i>att.</i>	Z9-14:OAc + Z11-14:OAc (9:1) Z11-16:OAc + Z11-16:Ald (10:3)	Booij, 198 Priesner in Arn, 1986(a)	C
<i>Xestia</i> sp. <i>att.</i>	E11-14:Ald	Daterman, 1977	

(Noctuidae; Hadeninae) ヤガ科; ヨトウガ亜科

<i>Acantholeucania (= Mythimna)</i> <i>loreyi</i> Duponchel lorey leafworm <kusashiroki-yotou> <i>phe.</i>	Z9-12:OAc *Z9-14:OAc + *Z11-16:OAc + *Z7-12:OAc (20:5:2) (100:20:9) Z9-14:OAc + Z11-14:OAc	Ando, 1977 Takahashi, 1979 Takahashi, 1980; 1983 Sato, 1980 Wang, 2023 Soldán, 1983	A
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	+ Z7-12:OAc (9:1)	Lin, 1982	
	+ other components	Ho, 2002	
<i>Acosmetia caliginosa</i> Hübner att.	E9-14:OAc E	Priesner, 1975	D
<i>Agrochola circellaris</i> Hufnagel att.	Z11-16:OAc	Stan, 1992	C
<i>Agrochola helvola</i> L. att.	Z9-14:Ald + Z11-16:Ald (1:1)	Priesner in Arn, 1986(a)	C
<i>Agrochola humilis</i> Dennis & Shiffermüller att.	Z11-16:Ald + Z9-14:Ald (100:3)	Subchev, 1994	C
<i>Agrochola litura</i> L. att.	Z9-14:Ald + Z11-16:Ald (10:1)	Subchev, 1994 Priesner in Arn, 1986(a)	C
<i>Agrochola lota</i> Clerck att.	Z9-14:OAc	Subchev, 1990	C
<i>Agrochola lychnidis</i> Dennis & Shiffermüller att.	Z9-14:Ald	Subchev, 1994	C
<i>Agrochola macilenta</i> Hübner att.	Z11-16:OAc	Tóth, 1979 Stan in Arn, 1992	C
<i>Aletia oxygala</i> Grote att.	Z11-16:Ald + Z11-16:OAc (20:1)	Chisholm, 1979 Steck, 1982(a)	C
<i>Amphipoea americana</i> Speyer att.	Z9-14:OAc + Z11-14:OAc (5:1)	Struble, 1987(c)	C
<i>Amphipoea fucosa</i> Freyer <kitashoubu-yotou> att.	Z9-14:OAc + Z11-14:OAc (9:1)	Peltotalo, 1986 Mizukoshi, 2006	A
<i>Amphipoea oculea</i> L.	Z9-14:OAc	Priesner	C

att.	+ Z11-14:OAc (10:1)	in Arn, 1986(a)	
<i>Anarta melanopa</i> Thunberg att.	Z11-16:OAc + Z11-16:Ald	Linnaluoto, 1983	D
<i>Anarta myrtilli</i> L. att.	Z9-14:OAc + Z11-14:OAc	Austara in Pherobase	D
<i>Andropolia contacta</i> Walker att.	Z5-12:OAc + Z7-12:OAc (1:1)	Steck, 1977(a)	D
<i>Anhimella contrahens</i> Walker att.	Z11-16:Ald + Z11-16:OH (10:1)	Steck, 1982(a)	D
<i>Apamea anceps</i> Denis & Shiffermüller att.	Z11-16:Ald + Z11-16:OH (1:3)	Grichanov in Arn, 1992 Sorochinskaya in Arn, 1992	C
<i>Apamea indela</i> Smith att.	Z11-16:OAc + Z11-16:OH + Z11-16:Ald (200:50:1)	Steck, 1982(b)	C
<i>Apamea inordinate</i> Morrison att.	Z11-16:OAc + Z11-16:OH	Byers, 1987	C
<i>Apamea</i> (= <i>Amphipoea</i>) <i>interoceanica</i> Smith strawberry cutworm att.	Z9-14:OAc + E11-14:OAc (5:1)	Roelofs, 1970(a) Struble, 1987(c)	C
<i>Apamea monoglypha</i> Hufnagel att.	Z11-16:OAc + Z11-16:Ald (100:1) (1000:1) + Z7-12:OAc (1:1)	Priesner in Arn, 1986(a) Stan in Arn, 1992 Stan in Arn, 1992 Subchev in Arn, 1992	C
<i>Apamea oblonga</i> Haworth <ishikari-yotou> att.	Z11-16:OAc + Z11-16:OH	Stan in Arn, 1992	A
<i>Apamea sordens</i> Hufnagel <shiomimihaiiro-yotou>	Z11-16:OAc + Z11-16:OH	Subchev in Arn, 1992	A

	att.	+ Z11-16:Ald		
<i>Apamea</i> (= <i>Amphipoea</i>) <i>velata</i> Walker	att.	Z11-16:OAc	Roelofs, 1971(a)	C
<i>Axylia</i> (= <i>Rhyathia</i>) <i>putris</i> L.		Z9-14:OAc	Descoins, 1978 Szöcs, 1981 Ando, 1981	A
<mokume-yoto>	att.			
		12,12,12-F ₃ -Z9-12:OAc	Bengtsson, 1990	
<i>Brithys</i> <i>crini</i> F.		*Z11-16:Ald	Kou, 1989; 1991	A
<hamaomoto-yotou>	phe.	N		
<i>Caradrina</i> <i>clavipalpis</i> Scopoli	att.	Z7-12:OAc + Z9-14:OAc (4:1)	Szöcs, 1981	D
<i>Caradrina</i> <i>morpheus</i> Hufnagel	att.	E9-12:OAc + Z9-12:OAc (1:4) Z9-14:OAc + Z11-14:OAc (9:1)	Arn, 1974 Brewer, 1985 Ghizdav, 1985	D
<i>Celaena</i> <i>haworthii</i>	att.	Z11-16:Ald + Z11-16:OAc (3:1)	Bykhovets in Arn, 1992	C
<i>Celaena</i> <i>leucostigma</i> Hübner	att.	Z11-16:OAc + Z11-17:OAc	Krivokhizhin, 1984 Möttus in Arn, 1986(a)	A
<i>Ceramica</i> <i>picta</i> Harris		Z11-14:OAc	Roelofs, 1971(a)	C
zebra caterpillar moth	att.	+ Z11-14:Ald (1:1) + Z11-16:OAc + Z9-14:OAc (200:2:1)	Underhill, 1977(a) Steck, 1982(a)	
<i>Ceramica</i> (= <i>Mamestra</i> , <i>Polia</i>) <i>pisi</i> L.		Z9-14:OAc + Z11-14:OAc (1:1)	Priesner, 1980(b)	B
<mame-yotou>	att.			
		(3:1)	Renou, 1981(b)	

<i>Cerapteryx graminis</i> L. antler moth att.	Z11-16:OAc + Z11-16:Ald (1:1) (6:4–3:7)	Myttus in Arn, 1986(a) Priesner in Arn, 1986(a) Möttus, 1998	D
<i>Cosmia trapezina</i> L. att.	Z11-14:Ald Z11-16:Ald + Z11-16:OAc	Booij, 1985 Subchev in Arn, 1992 Priesner in Arn, 1986(a)	B
<i>Dargida diffusa</i> Walker att.	Z11-16:OAc + Z11-16:Ald	Landolt in Pherobase	D
<i>Dargida terrapictalis</i> Buckett att.	Z11-16:OAc + Z11-16:Ald	Landolt in Pherobase	D
<i>Discestra</i> (=Scotogramma) <i>farnhami</i> Grote att.	Z11-16:Ald + Z9-14:Ald + Z9-16:Ald (100:1:1)	Steck, 1979(c) Steck, 1982(b)	C
<i>Discestra</i> (=Scotogramma) <i>trifolii</i> Hufnagel clover cutworm phe.	Z11-16:OAc + Z11-16:OH (9:1) + Z5-16:OAc (100:1) *Z11-16:OAc + *Z11-16:OH (9:1) Z11-14:OAc Z11,E14-16:OAc + Z11,E14-16:OH (10:1)	Roelofs, 1970(a) Subchev, 1981 Krivokhizhin, 1984 Struble, 1975(a) Subchev, 1987 Underhill, 1976 Ayre, 1982(a) Boness, 1978 Hrdý, 1979 Chisholm, 1980(b)	C
<i>Dypterygia scabriuscula</i> L. att.	Z11-16:OAc + Z9-14:Ald	Stan, 1992	C

<i>Egira pulla</i> Denis & Schiffermüller att.	Z9-14:OAc	Subchev in Arn, 1992	C
<i>Enargia infumata</i> Grote att.	Z11-16:OAc + Z9-14:OAc (500:1)	Steck, 1982(b)	C
<i>Euplexia lucipara</i> L. <akagane-yotou> att.	Z11-16:Ald + Z11-16:OAc (10:1)	Priesner in Arn, 1986(a) Subchev in Arn, 1992	A
<i>Eupsilia quadrilinea</i> Leech <yosujinokome-kiriga> att.	Z11-16:OH or E11-16:OH	Ando, 1977	A
<i>Eupsilia transversa</i> Hufnagel <ezomitsuboshi-kiriga> att.	Z11-16:OH	Priesner in Arn, 1986(a) Subchev in Arn, 1992	A
<i>Eupsilia tripunctata</i> Butler <mitsuboshi-kiriga> att.	Z11-16:OAc + Z11-16:Ald + Z11-16:OH (9:9:2)	Ando, 1981	A
<i>Faronta diffusa</i> Walker wheat head armyworm att.	Z11-16:OAc + Z11-16:Ald (9:1)	Underhill, 1977(a)	D
<i>Graphania bromias</i> Meyrick phe.	*Z9-14:OAc + *Z9-14:OH (2:1) + another component	Frérot, 1993(b)	D
<i>Graphania insignis</i> Walker phe.	*Z7-12:OH + *Z9-14:OH (1:1)	Frérot, 1993(b)	D
<i>Graphania mutans</i> Walker phe. Auckland population	*Z9-14:OH + *Z9-14:OAc + *Z7-14:OH + *Z7-14:OAc (100:50:13:3)	Frérot, 1991	D
Lincoln population	+ *Z9-14:Ald (15:35:14:5:100)		
<i>Graphania plena</i> Walker phe.	*Z7-12:OAc + *Z9-14:OAc (100:33) + other components	Frérot, 1993(b)	D

<i>Graphania ustistriga</i> Walker phe.	*Z7-12:OAc + *Z7-12:OH N	Frérot, 1993(b)	D
<i>Hada</i> (=Polia) <i>nana</i> Hufnagel att.	Z9-14:OAc E	Priesner, 1975	C
<i>Heliophobus reticulata</i> Gze. att.	Z9-14:OAc	Szöcs, 1983	C
<i>Helotropha reniformis</i> Grote att.	Z11-16:OAc + Z7-16:OAc (40:1) + Z11-16:OH (40:1:0.08)	Struble, 1977(c) Struble, 1987(b)	C
<i>Hemiglaea</i> (=Blepharosis) <i>costalis</i> Butler <kimae-kiriga> att.	Z9-14:Ald + Z9-14:OAc (9:1)	Ando, 1981	A
<i>Hoplodrina alsines</i> Brahm att.	Z7-12:OAc + Z9-14:OAc (1:1) + Z11-16:OAc (1:1:1)	Arn, 1983 Szöcs, 1983	C
<i>Hoplodrina ambigua</i> Denis & Schiffermüller att.	Z11-16:OAc + Z11-16:OH	Sherman in Pherobase	C
<i>Hoplodrina blanda</i> Denis & Schiffermüller att.	Z9-14:OAc + Z9,E11-14:OAc + Z9,E12-14:OAc	Arn, 1983 Ostrauskas, 2003	C
<i>Hoplodrina octogenaria</i> Goeze att.	Z11-16:OAc Z9-14:OAc + Z9,E11-14:OAc + Z9,E12-14:OAc	Stan, 1992 Ostrauskas, 2003	C
<i>Hoplodrina superstes</i> Ochsenheimer att.	Z5-10:OAc + Z7-12:OAc (1:1) (1:10)	Szöcs, 1983 Subchev, 1990	C
<i>Hydraecia micacea</i> Esper potato stem borer	*E11-14:OAc + *Z11-14:OAc	Teal, 1983	C

	phe.	+ *Z9-14:OAc + *14:OAc (15:13:3:69)		
		Z11-14:OAc + Z9-14:OAc + 14:OAc (13:3:69)	Burns, 1989	
<i>Hypocoena rufostrigata</i> Packard	att.	Z11-16:Ald + Z11-16:OH + Z9-14:Ald (100:1:1)	Steck, 1982(a)	D
<i>Hyssia cavernosa</i> Eversmann	att.	Z9-14:OAc E	Priesner, 1975	D
<i>Ipimorpha pleonectusa</i> Grote	att.	Z11-16:Ald + Z11-16:OH (100:1)	Steck, 1982(a)	C
<i>Ipimorpha retusa</i> L. <yanagi-kiriga>	att.	Z11-16:OAc + Z11-16:OH (9:1)	Stan in Arn, 1992	A
<i>Ipimorpha subtusa</i> Denis & Schiffermüller <doro-kiriga>	att.	Z11-16:Ald + Z9-16:Ald (19:1)	Grichanov in Pherobase Bulyginskaya in Pherobase	A
<i>Lacanobia subjuncta</i> Grote & Robinson	phe.	*Z11-16:OAc + *Z11-16:Ald + *Z11-16:OH (3:1:0.08)	Landolt, 1998	C
<i>Lacinipolia lorea</i> Guenée	att.	Z7-14:OAc	Roelofs, 1971(a)	D
<i>Lacinipolia renigera</i> Stephens bristly cutworm	phe.	Z9-14:OAc *Z9-14:OAc + *Z9,E12-14:OAc (100:3)	Steck, 1982(a) Haynes, 1990	D
<i>Lacinipolia vicina</i> Grote	att.	Z9-14:OAc + Z11-16:OAc + Z7-14:OAc (5:5:1)	Steck, 1982(a)	D
<i>Leucania anteoclara</i> Smith	phe.	*Z11-16:OAc + *Z11-16:Ald + *Z9-14:OAc (10:4:1)	Byers, 1997	C

	+ other components		
<i>Leucania commoides</i> Guenée phe.	Z9-14:OAc + Z11-16:OAc + Z11-16:OH (5:4:1)	Struble, 1977(d)	C
	*Z9-14:OAc + *Z11-16:OAc + *Z11-16:OH (5:4:1) + other components	Byers, 1997	
<i>Leucania linda</i> Franclemout att.	Z9-14:OAc + Z11-14:OAc (19:1)	Roelofs, 1976(b)	C
<i>Leucania lithargyria</i> Esper att.	Z11-16:Ald	Grichanov in Arn, 1992	C
<i>Leucania multilinea</i> Walker att.	Z9-14:OAc + Z11-16:OAc + Z11-16:OH (4:4:1)	Struble, 1977(d)	C
<i>Leucania phragmitidicola</i> Guenée att.	Z9-14:OAc Z11-16:OAc	Roelofs, 1971(a) Fleischer, 2005	C
<i>Lithomoia solidaginis</i> Hübner <shirosuji-kiriga> att.	Z11-16:Ald	Underhill, 1977(a)	A
<i>Lithophane ornitopus</i> Hufnagel att.	Z9-14:OAc + Z9-14:Ald (10:1–2:1)	Subchev, 1990	C
<i>Lithophane thaxteri</i> Grote att.	Z9-14:OAc	Steck, 1979(c)	C
<i>Lithophane unimoda</i> Lintner att.	Z9-14:OAc	Steck, 1982(a)	C
<i>Mamestra biren</i> Goeze phe.	Z9-14:OAc + Z11-14:OAc (20:1)	Priesner in Arn, 1986(a)	C
	*Z9-14:OAc + *Z7-14:OAc + *14:OAc + *Z9-14:OH [72:11:15:2] N	Frerot, 1987(b)	

<i>Mamestra blenna</i> Hübner <i>att.</i>	Z11-16:OAc + Z11-16:OH + Z11-16:Ald (10:3:1)	Tóth, 1986(b)	C
<i>Mamestra brassicae</i> L. cabbage armyworm <yotouga> <i>phe.</i>	Z11-16:OAc *Z11-16:OAc + other components + Z11-16:Ald (100:0.1) + Z11-16:OFo (100:0.1) + *Z11-17:OAc [19:1] N (8:1) (4:1) + Z7-12:OAc (5:1) or + Z9-14:OAc (1000:1) Z11-14:OAc	Ando, 1977 Bestmann, 1978(b) Descoins, 1978 Hirai, 1978 Struble, 1980(b) Attygalle, 1987 Farine, 1981 Sugie, 1993 Subchev, 1984 Stan in Arn, 1992 Subchev, 1984 Novák, 1979 Van de Veire, 1986 Nedopekina in Arn, 1992 Subchev, 1987 Hrdý, 1979	A
<i>Mamestra cappa</i> Hübner <i>att.</i>	Z7-12:OAc + Z11-16:OAc + Z11-16:OH	Sherman in Pherobase	C
<i>Mamestra configurata</i> Walker bertha armyworm <i>phe.</i>	Z10-16:OAc *Z11-16:OAc + E11-16:OAc (17:3) + *Z9-14:OAc (19:1) (15:2) + *Z7-12:OAc (500:26:0.1)	Struble, 1975(b) Chisholm, 1975 Underhill, 1977(b) Landolt, 2003 Struble, 1984	C

	or + Z11-16:Ald (500:26:1)		
	Z11-16:OAc + Z9-14:OAc + Z7-12:OAc + Z7-12:OH (250:13:20:10)	Byers, 1987	
<i>Mamestra contigua</i> Denis & Schiffermüller <i>att.</i>	Z11-16:OAc + Z11-16:OH (9:1)	Stan in Arn, 1992	C
<i>Mamestra</i> (= <i>Lacanobia</i>) <i>oleracea</i> L. <i>phe.</i>	*Z11-16:OAc + *Z11-16:OH [1:1] N (9:1)	Descoins, 1978 Kovalev in Arn, 1986(a) Sans, 1997	C
<i>Mamestra</i> (= <i>Melanchra</i>) <i>persicariae</i> L. <i>att.</i>	Z11-16:OAc	Möttus in Arn, 1986(a)	C
<i>Mamestra suasa</i> Denis & Schiffermüller <i>phe.</i>	Z11-16:OAc *Z11-16:OAc + Z11-16:Ald (1:1) (10:1) + *Z11-16:Ald (10:1) + other components + Z7-12:OAc (10:3) + Z7-12:OAc + Z11-16:Ald (100:100:1)	Subchev, 1981 Vrkoc, 1981 Szöcs, 1983 Subchev, 1984 Priesner in Arn, 1986(a) Tóth, 1986(b) Frerot, 1988(c) Subchev, 1987 Subchev in Arn, 1997	C
<i>Mamestra thalassina</i> Hufnagel <i>phe.</i>	Z11-16:OAc *Z11-16:OAc + *Z11-16:Ald + *Z11-16:OH E	Möttus in Arn, 1986(a) Renou, 1991	C

<i>Mamestra w-latinum</i> Hufnagel att.	Z11-16:OAc	Subchev, 1981 Szöcs, 1983	C
<i>Mesapamea secalis</i> L. att.	Z11-14:OH + E11-14:OH (97:3)	Fassotte in Arn, 1986(a)	C
	Z11-16:OAc + Z11-16:OH	Subchev in Arn, 1992	
<i>Mniotype versuta</i> Smith att.	Z9-14:OAc + Z11-16:OAc	Byers, 1987	C
<i>Morrisonia confusa</i> Hübner att.	Z11-16:OAc	Roelofs, 1970(a)	D
<i>Mythimna albipuncta</i> Denis & Schiffermüller att.	Z11-16:OH + Z11-16:Ald (1:1)	Tóth in Arn, 1986(a) Subchev in Arn, 1992	C
<i>Mythimna conigera</i> Denis & Schiffermüller att.	Z11-16:Ald	Subchev in Arn, 1992	C
<i>Mythimna farrago</i> F. att.	Z11-16:Ald	Tóth in Arn, 1986(a)	C
<i>Mythimna hamifera</i> Walker <uki-yotou> att.	Z11-16:Ald + Z9-16:Ald (19:1)	Kohno, 2014	A
<i>Mythimna pallens</i> L. att.	Z11-16:OAc + Z11-16:Ald (1:1)	Tóth in Arn, 1986(a) Subchev in Arn, 1992 Stan in Arn, 1992	C
<i>Mythimna turca</i> L. <futaobiki-yotou> att.	Z11-16:OAc + Z11-16:Ald + Z7-16:OAc	Subchev in Pherobase	A
	Z11-16:Ald + Z9-16:Ald (19:1)	Kohno, 2014	
<i>Mythimna vitellina</i> Hübner att.	Z11-16:OAc + Z11-16:Ald	Subchev in Arn, 1992	C
<i>Nedra ramosula</i> Guenée att.	Z11-14:OH	Roelofs, 1970(a)	D

<i>Nephelodes emmedonia</i> Cramer bronze cutworm att.	Z11-16:Ald	Underhill, 1977(a)	D
<i>Nephelodes minians</i> Guenée bronzed cutworm phe.	Z11-16:Ald + Z11-16:OAc *Z11-16:Ald + *Z11-16:OAc (5:1)	Steck, 1977(b) Zhu, 2004	D
<i>Oligia bridghami</i> Grote & Robinson att.	Z11-16:OAc + Z11-16:OH (500:1)	Steck, 1982(a)	C
<i>Oligia egens</i> Walker att.	Z11-16:OAc + Z7-16:OAc	Byers, 1987	C
<i>Oligia fascinucula</i> Haworth att.	Z9-14:OAc + Z11-14:OAc (9:1)	Boness, 1978	C
<i>Oligia furuncula</i> Hw. att.	Z11-16:OAc + Z11-16:Ald (10:1–10:3) + Z11-16:OH	Tóth, 1986(b) Subchev in Arn, 1992	C
<i>Oligia latruncula</i> Denis & Schiffermüller att.	Z9-14:OAc + Z11-16:OAc (1:1) + Z11-14:OAc (17:20:3)	Priesner, Tóth in Arn, 1986(a) Guerin in Arn, 1986(a)	C
<i>Oligia mactata</i> Guenée att.	Z11-16:OAc + Z11-16:OH (500:1)	Steck, 1982(a)	C
<i>Oligia strigilis</i> L. att.	Z11-16:OAc + Z9-14:OAc (9:1)	Szöcs, 1983	C
<i>Oligia versicolor</i> Borkhausen att.	Z9-14:OAc + Z11-14:OAc (10:1)	Priesner in Arn, 1986(a)	C
<i>Orbona fragariae pallidior</i> Warren <ichigo-kiriga> att.	Z11-16:Ald + Z9-16:Ald (19:1)	Kohno, 2014	A
<i>Orthodes crenulata</i> Butler	Z11-16:OAc	Roelofs, 1970(a)	D

<i>Orthodes vecors</i> Guenée att.	Z11-16:OAc	Roelofs, 1970(a)	D
<i>Orthosia angustipennis</i> Matsumura <hosoba-kiriga> att.	Z9,E12-14:OAc	Ando, 1977	A
<i>Orthosia carnipennis</i> Butler <akaba-kiriga> att.	Z9-14:OAc + Z11-16:OAc (1:1) + Z11-14:OAc (9:1)	Ando, 1981 Mizukoshi, 2006	A
<i>Orthosia cruda</i> Denis & Schiffermüller att.	Z11-16:OAc + Z9-14:OAc (9:1) (20:1)	Booij, 1984(b) Tóth, 1993	C
<i>Orthosia ella</i> Butler <yomogi-kiriga> att.	Z11-16:OAc + Z11-16:Ald (1000:1)	Ando, 1977 Kakizaki in Pherobase	A
<i>Orthosia evanida</i> Butler <kaba-kiriga> att.	Z9-14:Ald	Ando, 1981	A
<i>Orthosia gothica</i> L. att.	Z9-14:OAc + Z11-14:OAc (20:1) + Z9-14:OH + Z5-14:OAc (20:1:20:1)	Austara in Arn, 1986(a) Bradshaw, 1983 Tóth, 1992(f)	B
<i>Orthosia gothica</i> <i>askoldensis</i> Staudinger <kashiwa-kiriga> att.	Z9-14:Ald + Z9-14:OAc (9:1)	Ando, 1981	A
<i>Orthosia</i> (= <i>Monima</i>) <i>gracilis</i> Denis & Schiffermüller att.	Z11-16:OAc E Z11-16:OAc	Priesner, 1975 Struble in Arn, 1986(a) Subchev in Arn, 1992	C

<i>Orthosia hibisci</i> Guenée speckled green fruitworm att.	Z9,E12-14:Ald or Z9-14:Ald	Hill, 1978	C
	Z9-14:Ald + Z11-14:Ald (100:1)	Steck, 1982(a)	
<i>Orthosia incerta</i> Hufnagel <miyamakaba-kiriga> att.	Z9-14:Ald + Z11-16:Ald (9:1)	Booij, 1984(b)	A
<i>Orthosia limbata</i> Butler <shiroheri-kiriga> att.	Z9-14:OAc + Z9-14:Ald (9:1)	Ando, 1981	A
<i>Orthosia lizetta</i> Butler <kuromimi-kiriga> att.	Z11-16:OAc + Z11-16:Ald (1:1)	Ando, 1981	A
<i>Orthosia miniosa</i> Denis & Schiffermüller att.	Z9-14:OAc + Z11-14:OAc (20:1)	Priesner in Arn, 1986(a)	C
<i>Orthosia munda</i> Denis & Schiffermüller <sumomo-kiriga> att.	Z11-16:OH + Z11-16:Ald (20:1) + Z11-16:OAc (9:9:2)	Tóth, 1993 Ando, 1981	A
<i>Orthosia odiosa</i> Butler <chairo-kiriga> att.	Z7-12:OAc	Ando, 1977	A
<i>Orthosia paromoea</i> Hampson <buna-kiriga> att.	Z7-14:OAc	Ando, 1977	A
<i>Orthosia stabilis</i> Denis & Schiffermüller att.	Z11-16:Ald + Z9-14:Ald (100:1)	Subchev, 1986(b) Tóth, 1993	C
<i>Pachetra sagittigera</i> (= <i>fulminea</i>) Hufnagel att.	Z7-12:OAc E Z7-12:OAc + Z5-12:OAc	Priesner, 1975 Priesner in Arn, 1986(a)	D
<i>Panolis flammea</i>	Z9-14:OAc	Priesner, 1978	B

Denis & Shiffermüller pine beauty moth <matsu-kiriga> phe.	+ Z11-14:OAc (20:1) or +Z11-16:OAc (20:1) Z9-14:OAc or Z9,E12-14:OAc *Z9-14:OAc + *Z11-16:OAc + *Z11-14:OAc (100:5:1)	Priesner, 1983 Knauf, 1979 Baker, 1982	
<i>Parastichtis discivaria</i> Walker att.	Z11-16:OAc + Z11-16:Ald	Steck, 1982(a)	C
<i>Parastichtis suspecta</i> Hübner <haiiro-yotou> att.	Z11-16:OAc	Myttus in Arn, 1986(a)	A
<i>Polia assimilis</i> Morrison att.	Z11-14:OAc + Z9-14:OAc (100:1)	Steck, 1982(b)	C
<i>Polia</i> (= <i>Lacanobia</i>) <i>atlantica</i> Grote att.	Z11-16:OAc + Z7-12:OAc (9:1) + Z11-16:Ald + Z11-14:Ald (200:1:1)	Steck, 1977(a) Steck, 1980(a)	C
<i>Polia bombycina</i> Hufnagel <oochairo-yotou> att.	Z9-14:OAc + Z9-14:Ald (1:1)	Tóth in Arn, 1986(a)	A
<i>Polia discalis</i> Grote att.	Z9-14:OAc + Z11-14:OAc (10:1)	Steck, 1982(a)	C
<i>Polia grandis</i> Boisduval att.	E9-14:OAc	Roelofs, 1970(a)	C
<i>Polia ingravis</i> Smith att.	Z9-14:OAc + Z11-16:OAc (100:1)	Steck, 1982(b)	C
<i>Polia lilacina</i> Harvey att.	Z7-14:OAc + Z9-14:OAc (10:1)	Steck, 1982(a)	C
<i>Polia nebulosa</i> Hufnagel <ooshirahoshi-yotou> att.	Z11-14:OAc + E11-14:OAc + Z9-14:OAc (100:10:3)	Subchev in Pherobase	A

<i>Polia</i> (= <i>Lacanobia</i>) <i>nevadae</i> Grote <i>att.</i>	Z11-16:OAc + Z11-16:Ald	Steck, 1982(a)	C
<i>Polia purpurissata</i> Grote <i>att.</i>	Z9-14:OAc + Z7-14:OAc (100:1)	Steck, 1982(a)	C
<i>Polia segregata</i> Smith <i>att.</i>	Z7-14:OAc + Z11-14:OAc (10:1)	Steck, 1979(c) Steck, 1982(a)	C
<i>Polia tacoma</i> Strecker <i>att.</i>	Z9-14:OAc + Z9-14:Ald (9:1) (100:1)	Underhill, 1977(a) Steck, 1982(b)	C
<i>Pseudaletia</i> (= <i>Leucania</i> , <i>Mythimna</i>) <i>separata</i> Walker oriental armyworm <awa-yotou> <i>phe.</i>			A
Japan strain	*Z11-16:OAc + *Z11-16:OH (4:1-9:1)	Takahashi, 1979; 1980	
China strain	(4:1) + *16:Ald + *Z11-16:OH (100:10:0.1) *Z11-16:Ald + another component	Lin in Arn, 1992 Zhu, 1987(c) Wei, 1985 Wang, 1997	
Taiwan strain	*Z11-16:OAc + *Z11-16:OH (2:1) + other components	Kou, 1992(b)	
Russian strain	*Z11-16:Ald + *Z11-16:OAc (20:1) + other components	Lebedeva, 2000(a)	
<i>Pseudaletia</i> (= <i>Mythimna</i>) <i>unipuncta</i> Haworth armyworm moth <i>phe.</i>	*Z11-16:OAc + other components Z11-16:OAc	Hill, 1980 McDonough, 1980 Farine in Arn, 1992 Soldán, 1983	C

	+ Z11-16:OH (100:0.2)	Steck, 1980(a)	
	+ Z11-16:Ald + Z9-14:OAc (100:0.2:0.05:0.01)	Steck, 1982(e)	
	+ Z9-14:OAc + 16:OAc (1:5:2:1)	Guerrero, 1986	
	+ Z11-16:Ald + 12:OAc (9:1:1:2)	Rotundo in Arn, 1992	
<i>Rhynchaglaea fuscipennis</i> Sugi <kurochamadara-kiriga> <i>att.</i>	Z7-12:OAc	Ando, 1977	A
	Z9-14:Ald	Ando, 1981	
<i>Rhynchaglaea scitula</i> Butler <chamadara-kiriga> <i>att.</i>	Z9,E12-14:OH	Ando, 1977	A
<i>Sarcopolia</i> (= <i>Mamestra</i>) <i>illoba</i> Butler <shiroshita-yotou> <i>att.</i>	Z11-16:OAc	Ando, 1977	A
<i>Sesamia calamistis</i> Hampson <i>phe.</i>	*Z11-16:OAc + *Z9-14:OAc (3:1) + other components	Zagatti, 1988	C
<i>Sesamia cretica</i> Lederer durra stem borer <i>phe.</i> in Italy	Z9-14:OH + Z9-14:OAc (3:1)	Arsura, 1977	C
	*Z9-14:OH + *Z9-14:OAc + *Z11-16:OH (90:1:9)	Germinara, 2007	
in Iran, Egypt	(8:1:1)	Avand-Faghieh, 2008	
<i>Sesamia grisescens</i> Walker <i>phe.</i>	*Z11-16:OAc + *Z11-16:OH (3:2) + other components	Whittle, 1995	C
<i>Sesamia inferens</i> Walker purple stem borer pink borer <ine-yotou>	*Z11-16:OAc + Z11-16:OH (4:1)	Nesbitt, 1976 Wu, 1986(a)	A

phe. China	+ *Z11-16:OH + *Z11-16:Ald (4:1:0.1)	Zhu, 1987(b)	
Japan	+ *Z11-16:OH (3:1)	Nagayama, 2006	
<i>Sesamia nonagrioides</i> Lefèbvre corn stalk borer phe.	*Z11-16:OAc + *Z11-16:OH (4:1–9:1) (19:1)	Sreng, 1985 Rotundo in Arn, 1986(a)	C
	+ *Z11-16:Ald + *12:OAc (9:1:1:2) + another component (2:3:4:5)	Mazomenos, 1989(a) Krokos, 2002 Mazomenos, 1989(b)	
	(8.5:1:1:2)	Rotundo in Arn, 1992	
	(77:8:10:5)	Sans, 1997	
<i>Sideridis rosea</i> Harvey att.	Z9-14:OAc + Z11-16:OAc (2:1)	Struble, 1976	C
<i>Spodoptera androgea</i> Stoll att.	Z9-14:OAc + Z9,E12-14:OAc	L.-Cassou in Pherobase	C
<i>Spodoptera cilium</i> Guenée <kushinashisujikiri-yotou> att.	Z9,E12-14:OAc Z9-14:OAc (main) + Z9,E11-14:OAc	Soldán, 1983 Campion, 1975	A
<i>Spodoptera cosmioides</i> Walker black armyworm phe.	*Z9-14:OAc + *Z9,E12-14:OAc (10:1) + other components	Blassioli- Moraes, 2016	C
<i>Spodoptera</i> (= <i>Rusidrina</i> , <i>Sidemia</i>) <i>depravata</i> Butler lawn grass cutworm moth <sujikiri-yotou> phe.	Z9,E12-14:OAc *Z9,E12-14:OAc + another component + *Z9-14:OAc (5:5–4:6)	Ando, 1975 Kurihara, 1991 Wei, 2003	A
<i>Spodoptera descoinsi</i> Lalanne-Cassou	*Z9,E12-14:OAc	Monti, 1995	C

	phe.	+ *Z9-14:OAc (1:1) + other components		
<i>Spodoptera dolichos</i> F.	att.	Z9,E12-14:OAc + Z9-14:OAc	Mitchell, 1973 L.-Cassou In Pherobase	C
<i>Spodoptera</i> (= <i>Prodenia</i>) <i>eridania</i> Cramer southern armyworm	phe.	*Z9-14:OAc + *Z9,E12-14:OAc (4:1) + *Z9,E11-14:OAc (7:3:1) + other components + Z11-16:OAc (56:21:9:14)	Jacobson, 1970 Teal, 1985 Mitchell, 1994	C
<i>Spodoptera evanida</i>	att.	Z9-14:OAc + Z9,E12-14:OAc	L.-Cassou in Pherobase	C
<i>Spodoptera exempta</i> Walker African armyworm <afuricashirona-yotou>	phe.	*Z9-14:OAc + *Z9,E12-14:OAc (20:1) + *Z11-16:OAc (20:1:1) + other components	Beevor, 1975 Cork, 1989	A
<i>Spodoptera exigua</i> Hübner beet armyworm <shiroichimoji-yotou>	phe.	*Z9,E12-14:OAc + other componets + *Z9-14:OH (5:4) + other componets att. (10:1) att. (9:1-7:3) + *Z9,E12-14:OH + other componets att. (7:3-3:7) *Z9,E12-14:OAc + *Z9-14:OH + *Z11-16:OAc (87.2:2.5:10.3) + other componets att. (7:3:1-7:3:5)	Brady, 1972(a) Persoons, 1981 Tumlinson, 1981 Mitchell, 1983 Wakamura, 1987 Mochizuki, 1993 Mochizuki, 1994 Tumlinson, 1990 Mitchell, 1994 Jung, 2003	A

	phe. (56:37:7) + other componets	Acin, 2010	
<i>Spodoptera frugiperda</i> J. E. Smith fall armyworm phe.	*Z9-14:OAc + Z9,E12-14:OAc (24:1) + Z9-12:OAc (1:20) + Z9-12:OAc + Z7-12:OAc + Z11-16:OAc (81.61:0.25:0.45:17.69) + *Z7-12:OAc (30:1) + other components + *9:Ald (1000:5.8:10)	Sekul, 1967 Mitchell, 1976 Jones, 1979 Mitchell, 1985 Tumlinson, 1986 Descoins, 1988 Saveer, 2023	C
Brazil strain	+ *Z7-12:OAc + *E7-12:OAc (100:1:1) + other components	Batista-Pereira, 2006	
Invasive strain in Japan	+ *Z7-12:OAc (100:1) + other components + *Z11-16:OAc + *Z9-12:OAc + *Z9,E12-14:OAc (200:2:40;1:1)	Wakamura, 2021 Tabata, 2023	
Chaina strain	(25:1) + other components	Jiang, 2022	
Chaina strain	+ *Z11-16:OAc (88:1:11) + other components	Wang, 2022	
<i>Spodoptera latifascia</i> Walker phe.	*Z9-14:OAc + *Z9,E12-14:OAc N (19:1) + other components	Teixeira, 1989 Monti, 1995	C
<i>Spodoptera littoralis</i> Boisduval cotton leafworm phe.	*Z9,E11-14:OAc + other components	Nesbitt, 1973 Campion, 1974; 1980 Dunkelblum, 1987(b)	C

	+ *Z9,E12-14:OAc (10:1)	Tamaki, 1974 Yushima, 1974	
	(100:1)	Kehat, 1976; 1977 Dunkelblum, 1982	
	+ other components		
	+ *E10,E12-14:OAc N	Navarro, 1997	
<i>Spodoptera litura</i> F. common cutworm <hasumon-yotou> phe.	*Z9,E11-14:OAc + *Z9,E12-14:OAc (9:1)	Tamaki, 1973	A
<i>Spodoptera pectinicornis</i> Hampson <ukikusa-yoto> att.	Z7-12:OAc	Hai, 2002	C
<i>Spodoptera</i> (= <i>Prodenia</i>) <i>praefica</i> Grote western yellow-striped armyworm phe.	Z7-12:OAc *Z7-12:OAc + *Z9-14:OAc (50:1) + other components	Birch, 1977 Landolt, 2003	C
<i>Spodoptera sunia</i> Guenée phe.	*Z9-14:OAc (major) + *Z9-14:OH + *Z11-16:OAc + *Z9,E12-14:OAc N	Bestmann, 1988(a)	C
<i>Spodoptera triturrata</i> Walker att.	Z9-14:OAc (major) + Z9,E12-14:OAc + E9-14:OAc (17:3)	Campion, 1975 Blair, 1978	C
<i>Tholera cespitis</i> Denis & Schiffermüller att.	Z11-16:Ald	Subchev in Pherobase	D
<i>Trachea atriplicis</i> L. <shirosujiao-yotou> att.	Z11-16:OAc + Z11-16:OH (8:1) (4:1) + Z11-16:Ald (10:1:1)	Stan in Arn, 1992 Li, 1993(d) Subchev, 1992	B
<i>Xanthia icteritia</i> Hufnagel	Z11-16:Ald	Grichanov	A

<monki-kiriga> att.		in Pherobase	
	+ Z9-16:Ald (19:1)	Bulyginskaya in Pherobase	
<i>Xanthia lutea</i> Ström att.	Z9,E12-14:Ald	Steck, 1982(a)	C
<i>Xylena exoleta</i> L. att.	Z11-16:Ald	Subchev in Pherobase	C
<i>Xylena formosa</i> Butler <kibaramokume-kiriga> att.	Z11-16:Ald + Z9-16:Ald (19:1)	Ando, 1977 Kohno, 2014	A
<i>Xylena fumosa</i> Butler <ayamokume-kiriga> att.	Z11-16:Ald + Z9-16:Ald (19:1)	Kohno, 2014	A
<i>Xylomyges curialis</i> Grote phe.	*Z11-16:OH	McDonough, 1982(b)	C
<i>Xylomyges dolosa</i> Grote att.	Z7-12:OAc	Steck, 1979(c)	C

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<i>Allophytes oxyacanthae</i> L. att.	Z9-14:OAc + Z9-14:OH (1:1)	Tóth in Arn, 1986(a)	D
<i>Ammoconia caecimacula</i> Denis & Shiffermüller att.	Z9-14:OAc	Tóth, 1979	D
<i>Antivaleria</i> (= <i>Valeriodes</i>) <i>viridimacula</i> Graeser <aobahagata-kiriga> att.	Z11-16:OAc	Ando, 1977	A
<i>Atethmia ambusta</i> F. att.	Z7-14:OAc + Z5-14:OAc (10:1)	Subchev, 1995	D
<i>Blepharita solieri</i> Boisduval phe.	*Z11-16:Ald	Rotundo, 1983	C

<i>Callierges ramosa</i> Esper att.	Z11-16:OAc + Z11-16:Ald	Subchev, 1986(b)	D
<i>Calophasia platyptera</i> Esper att.	Z9-14:OAc + Z9-14:Ald (1:1)	Tóth in Arn, 1986(a)	D
<i>Conistra grisescens</i> Draudt <miyamaobi-kiriga> att.	Z7-12:OAc	Ando, 1977	A
<i>Conistra rubiginea</i> Denis & Schiffermüller att.	Z11-16:OAc + Z11-16:Ald	Subchev in Arn, 1992	C
<i>Conistra torida</i> L. att.	Z11-16:OAc + Z11-16:Ald	Subchev in Pherobase	C
<i>Conistra unimacula</i> Sugi <hoshiobi-kiriga> att.	Z11-16:OAc	Ando, 1977	A
<i>Conistra vaccinii</i> L. att.	Z7-14:OAc	Priesner in Arn, 1986(a)	C
<i>Conistra veronicae</i> Hübner att.	Z7-12:OAc	Subchev, 1990	C
<i>Copitarsia decolora</i> Guenée phe.	*Z9-14:OAc + *Z9-14:OH (100:1 – 4:1)	Rojas, 2006	D
<i>Copitarsia uncilata</i> Burgos & Leiva phe.	*Z9-14:OAc or *E9-14:OAc + other components N	Altamar-Varón, 2016	D
<i>Cucullia argentea</i> Hufnagel <aomonginsedakamokume> att.	Z7-12:OFo	Szöcs, 1981	A
<i>Cucullia chamomilliae</i> Denis & Schiffermüller att.	Z9-14:OAc + Z11-14:OAc (9:1)	Frerot, 1982(a)	C
<i>Cucullia florea</i> Guenée att.	Z9-14:OAc	Steck, 1982(a)	C
<i>Cucullia intermedia</i> Speyer att.	Z9-14:OAc	Roelofs, 1971(a)	C

<i>Cucullia lucifuga</i> Denis & Schiffermüller <miyamasedakamokume> <i>att.</i>	Z9-14:OAc + Z7-14:OAc + 14:OAc (8:1:1) 12,12,12-F ₃ -Z9-12:OAc	Frérot, 1987(a) Bengtsson, 1990	A
<i>Cucullia lychnitis</i> Rambur <i>att.</i>	Z9-14:OH E	Priesner, 1975	C
<i>Cucullia omissa</i> Dod <i>att.</i>	Z9-14:OAc	Steck, 1982(a)	C
<i>Cucullia postera</i> Guenée <i>att.</i>	Z9-14:OAc + Z9-14:Ald (100:1)	Steck, 1982(a)	C
<i>Cucullia speyeri</i> Lintner <i>att.</i>	Z9-14:OAc	Steck, 1982(a)	C
<i>Cucullia tanaceti</i> Denis & Schiffermüller <i>att.</i>	Z9-14:OAc + Z7-12:OAc (5:1)	Konstantin in Arn, 1986(a)	C
<i>Cucullia umbratica</i> L. <i>att.</i>	Z9-14:OAc E Z9-14:OAc + Z9-14:OH (1:4) + Z7-12:OAc (1:1) or + Z7-14:OAc (1:1) + Z7-12:OAc + Z5-10:OAc (1:1:1) + Z7-12:OAc + Z11-14:OAc + Z7-12:OAc	Priesner, 1975 Platia in Arn, 1986(a) Szöcs, 1983 Coroiu, 1986 Priesner in Arn, 1986(a) Ostrauskas, 2003	C
<i>Epiglaea apiata</i> Grove cranberry blossom worm <i>phe.</i>	*Z9-16:OAc + *Z9-14:OAc + *14:OAc	Zhang, 2003(b)	D
<i>Fishia derelicta</i> Hampson <i>att.</i>	Z7-12:OAc + Z9-14:OAc (3:1)	Steck, 1982(a)	D

	+ Z9-14:Ald (4:8:1)	Underhill, 1977(a)	
<i>Fishia evelina hanhami</i> Grote att.	Z5-14:OAc + Z9-14:OAc (8:1)	Steck, 1979(c)	D
<i>Homoglaea</i> sp. att.	E11-14:OAc	Daterman, 1977	D
<i>Homohadena infixa</i> Walker att.	Z7-14:OAc + Z9-14:OAc (100:1)	Steck, 1982(b)	D
<i>Isopolia strigidisca</i> Moore <himarayahagata-yotou> att.	Z11-14:OAc	Ando, 1981	A
<i>Jodia croceago</i> Denis & Schiffermüller att.	Z11-16:OAc	Subchev, 1990	C
<i>Oncocnemis chandleri</i> Grote att.	E5,Z7-12:OAc	Reed, 1984	C
<i>Oncocnemis cibalis</i> Grote att.	E5,Z7-12:OAc + Z7-12:OAc (1:1)	Reed, 1984	C
<i>Oncocnemis lepipuloides</i> McDunnough att.	Z7-12:OAc + Z9-14:OAc	Steck, 1982(a)	C
<i>Oncocnemis mackiei</i> Barnes & Benjamin att.	E5,Z7-12:OAc	Reed, 1984	C
<i>Oncocnemis piffardi</i> Walker att.	Z9-12:OAc Z9-14:OAc + Z7-12:OAc (500:1)	Underhill, 1977(a) Steck, 1982(b)	C
<i>Polymixis polymita</i> L. att.	Z9-14:OAc + Z11-14:OAc (1:1)	Ghizdavu, 1985	D
<i>Pyreferra citrombra</i> Franclemont att.	Z9-14:OAc + Z7-12:OAc	Roelofs, 1971(a) Steck, 1982(a)	D
<i>Rancora albida</i> Guenée	Z9-14:OAc	Steck, 1982(a)	D

att.				
<i>Sunira bicolorago</i> Guenée att.	Z9-16:OAc + Z11-16:OAc	Steck, 1982(a)	D	
<i>Sutyna profunda</i> Smith att.	Z9-16:OAc + Z11-16:OAc	Steck, 1982(a)	D	
<i>Sympistis heliophila</i> Paykull <takane-yotou> att.	Z7-12:OAc	Linnaluoto, 1983	A	
<i>Telorta acuminata</i> Butler <usukitogari-kiriga> att.	Z11-16:Ald + Z9-16:Ald (19:1)	Ando, 1981 Kohno, 2014	A	
<i>Telorta divergens</i> Butler <nokometogari-kiriga> att.	Z11-16:OAc	Ando, 1975	A	
<i>Telorta edentata</i> Leech <kitogari-kiriga> att.	E11-16:OAc or Z11-16:OAc	Ando, 1975 Ando, 1977	A	
<i>Teratoglaea pacifica</i> Sugi <eguri-kiriga> att.	Z9-14:OAc or Z9,E12-14:OAc	Ando, 1977	A	

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<i>Agroperina cogitata</i> Smith att.	Z11-16:OAc + Z9-14:OAc (20:1)	Steck, 1982(a) Byers, 1987	C
<i>Agroperina dubitans</i> Walker att.	Z11-16:OAc + Z9-14:OAc (20:1)	Underhill, 1977(b)	C
<i>Agroperina indela</i> Smith att.	Z11-16:OAc + Z11-16:OH (9:1)	Ayre, 1982(a)	C
<i>Agroperina popofensis indela</i> Smith att.	Z11-16:OAc + Z11-16:OH	Byers, 1987	C
<i>Amphipyra monolitha</i> Guenée <ooshimakarasu-yotou>	Z11-16:OAc	Ando, 1975	A

<i>Amphipyra pyramidea</i> L att.	Z11-16:OAc	Subchev in Pherobase	B
<i>Athetis dissimilis</i> Hampson <ten-usuiro-yotou> att.	Z9-14:OH Z9,E12-14:OH + Z9-14:OH (9:1)	Ando, 1977 Kim, 2016	A
<i>Athetis hospes</i> Freyer att.	Z9-14:OH	Capizzi, Guerrero in Arn, 1986(a) Albages, 1988 Guerrero, 1986	C
<i>Athetis lepigone</i> Möschler <kousuiro-yotou> phe.	Z7-12:OAc + Z9-14:OAc (1:1) *Z9-14:OAc + *Z7-12:OAc (7:3)	Szöcs, 1981 Li, 1993(d) Yan, 2018(a)	A
<i>Athetis</i> (= <i>Dadica</i>) <i>lineosa</i> Moore <shiromon-obi-yotou> att.	Z9-14:OAc + Z11-14:OAc (1:1)	Ando, 1981	A
<i>Athetis pallustris</i> Hübner att.	Z9-14:OAc + Z7-14:OAc (9:1)	Frérot, 1987(a)	C
<i>Atypha pulmonaris</i> Esper att.	Z11-16:OAc + Z11-16:OH (1:1)	Priesner in Arn, 1986(a)	D
<i>Busseola fusca</i> Fuller maize stalk borer phe.	*Z11-14:OAc + *E11-14:OAc + *Z9-14:OAc (5:1:1) + *Z11-16:OAc (62:15:13:10)	Nesbitt, 1980c Hall, 1981 Félix, 2009	D
<i>Busseola segeta</i> Bowden phe.	*Z11-14:OAc + *E11-14:OAc + *Z11-16:OAc + *Z9-14:OAc + *Z11-14:OH (62:20:10:5:5)	Félix, 2011	D
<i>Busseola</i> sp. phe.	*Z11-14:OAc + *E11-14:OAc + *Z11-16:OAc	Félix, 2011	D

	+ *Z9-14:OAc + *Z11-14:OH (62:20:10:5:5)		
<i>Charanyca trigrammica</i> Hufnagel att.	Z5-10:OAc + Z7-12:OAc + Z9-14:OAc (3:1:1)	Arn, 1983	D
<i>Crymodes devastator</i> Brace glassy cutworm att.	Z11-16:Ald + Z11-16:OAc + Z11-16:OH (100:50:3)	Steck, 1980(c)	C
<i>Dicycla oo</i> L. att.	Z9-14:OAc + Z11-16:OAc (9:1)	Szöcs, 1983	D
<i>Diparopsis castanea</i> Hmpson red bollworm phe.	*E9,Δ11-12:OAc + *Δ11-12:OAc (4:1) + *Z9,Δ11-12:OAc (16:4:5) + other components	Nesbitt, 1973 Nesbitt, 1975(a)	D
<i>Gortyna flavago</i> Schiffermüller att.	Z11-16:Ald + Z9-16:Ald (25:1)	Subchev, 1994	C
<i>Gortyna leucostigma</i> Hübner att.	Z11-16:OAc	Priesner in Arn, 1986(a)	C
<i>Gortyna xanthenes</i> Germar artichoke moth phe.	*Z11-16:Ald + *Z9-16:Ald + *Z11-16:OH + *16:Ald (500:15:12:15)	Rotundo, 1985(a)	C
<i>Oria musculosa</i> Hübner att.	Z11-16:OAc	Subchev, 1981 Tóth, 1992(e)	D
<i>Orthogonia sera</i> Felder & Felder <nokomesedaka-yotou> att.	Z7-12:OAc	Ando, 1975	A
<i>Panemeria tenebrata</i> Scopoli att.	Z9-14:OAc + Z11-14:OAc (9:1)	Szöcs, 1983 Ghizdavu, 1985	D
<i>Platysenta videns</i> Guenée att.	Z11-16:Ald + Z9-14:Ald + 16:Ald + 14:Ald (12:4:3:6)	Teal, 1982	C

<i>Protagrotis niveivenosa</i> Grote att.	Z11-16:Ald + Z9-14:OAc	Steck, 1982(a)	D
<i>Protagrotis obscura</i> Barnes & McDunnough att.	Z11-16:Ald	Kamm, 1982	D
<i>Thalpophila matura</i> Hufnagel att.	Z11-16:OAc	Subchev in Arn, 1992	D

(Noctuidae; Sarrothripinae) ヤガ科 ; キノカワガ亜科

<i>Nolathripa</i> (= <i>Lamprothripa</i>) <i>lactaria</i> Graeser <komabashiro-kinokawaga> att.	Z9,E12-14:OPr	Ando, 1977	A
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(Noctuidae; Chloephorinae) ヤガ科 ; リンガ亜科

<i>Earias biplaga</i> Walker att.	Z11-16:Ald	Nesbitt, 1979(b)	C
<i>Earias insulana</i> Boisduval spiny bollworm phe.	*E10,E12-16:Ald + E10,Z12-16:Ald + Z11-16:Ald (10:1:2)	Hall, 1980 Cork, 1988	C
<i>Earias vittella</i> F. spotted bollworm <kusaobi-ringa> phe.	*E10,E12-16:Ald + *Z11-16:Ald + *Z11-18:Ald (5:1:1) + another component	Cork, 1985(b); 1988	A

(Noctuidae; Acontiinae) ヤガ科 ; コヤガ亜科

<i>Deltotes candidula</i> Denis & Schiffermüller att.	Z9-16:Ald	Capizzi in Arn, 1986(a)	D
<i>Emmelia</i> (= <i>Acontia</i>) <i>trabealis</i> Scopoli	Z5-10:OAc	Arn, 1983	A

<kimadara-koyaga> att.		Szöcs, 1983 Nagy, 2023	
	Z11-16:OAc + Z5-10:OAc (10:1)	Subchev, 1987	
<i>Eustrotia uncula</i> Clerck <suji-koyaga> att.	Z5-10:OAc + Z3-10:OAc (10:1)	Priesner, 1988(b)	A
<i>Lithacodia albidula</i> Guenée att.	Z5-12:OAc + Z7-14:OAc	Steck, 1982(a)	C
<i>Lithacodia deceptor</i> Scopoli att.	Z7-12:OH	Priesner in Arn, 1986(a)	C
<i>Lithacodia pygarga</i> Hufnagel marbled white-spot moth <shirofu-koyaga> att.	Z7-14:OAc + Z5-14:OAc (10:1)	Priesner, 1985(a)	A
<i>Lithacodia signifera</i> Scopoli att.	Z9-14:OAc	Li, 1993(d)	C
<i>Micardia argentata</i> Butler <shirohishimon-koyaga> att.	E7-12:OAc or Z7-12:OAc	Ando, 1977	A
<i>Naranga aenescens</i> Moor rice green caterpillar <futaobi-koyaga> phe.	*Z11-16:OAc + *Z9-16:OAc + *Z9-14:OAc (4:1:1)	Ando, 1980(a)	A
	Korean strain (4:1:2)	Cho, 2014	
<i>Phyllophila obliterata</i> <i>cretacea</i> Butler <yomogi-koyaga> att.	Z9-14:OAc or Z9,E12-14:OAc	Nagano, 1979	A

(Noctuidae; Plusiinae) ヤガ科 ; キンウワバ亜科

<i>Anadevidia peponis</i> F. <urikin-uwaba> phe.	*Z7-12:OAc + *Z5-10:OAc + *Z7-12:OH (10:5:1)	Inomata, 2000	A
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	+ other components		
<i>Anagrapha falcifera</i> Kirby celery looper <i>att.</i>	Z7-12:OAc + Z7-12:OFo (1:1) + Z7-12:OH (10:1)	Roelofs, 1970(a) Butler, 1977 Steck, 1979(b)	D
<i>Argyrogramma signata</i> F. <i>att.</i>	Z5-10:OAc	Hai, 2002	D
<i>Argyrogramma verruca</i> F. <i>phe.</i>	Z7-12:OAc + E7-12:OAc (47:3) *Z5-10:OAc	McLaughlin, 1975 Heath, 1987	D
<i>Autographa aemula</i> Denis & Schiffermüller <i>att.</i>	Z7-12:OH	Priesner in Arn, 1986(a)	C
<i>Autographa ampla</i> Walker <i>att.</i>	Z7-12:OAc	Roelofs, 1970(a)	C
<i>Autographa biloba</i> Stephens <i>phe.</i>	*Z7-12:OAc N	Berger, 1968	C
<i>Autographa bractea</i> Denis & Schiffermüller <i>att.</i>	Z7-12:OH	Priesner in Arn, 1986(a)	C
<i>Autographa californica</i> Speyer alfalfa looper <i>phe.</i>	Z7-12:OAc + Z7-12:OFo (5:1) *Z7-12:OAc + Z7-12:OH (10:1) + Z9-14:OAc + Z11-16:OAc (80:6:2:13)	Shorey, 1965 Butler, 1977 Kaae, 1973(b) Steck, 1979(b) Landolt, 2003	C
<i>Autographa</i> (= <i>Autoplusia</i>) <i>egena</i> Guenée <i>att.</i>	Z5-12:OAc	Kaae, 1973(a)	C
<i>Autographa flagellum</i> Walker	Z7-12:OAc	Steck, 1979(c)	C

	att.	+ Z7-14:OAc		
<i>Autographa gamma</i> L. silver Y moth <gamakin-uwaba> phe.		Z7-12:OAc + Z7-12:OH (20:1) Z7-14:OAc + E7-14:OAc *Z7-12:OAc + *Z7-12:OH (10:1–19:1)		Ghizdavu, 1979 Priesner in Arn, 1986(a) Soldán, 1983 Dunkelblum, 1983 Tóth, 1983 Mazor, 1992
<i>Autographa nigrisigna</i> Walker semi-looper <tamanagin-uwaba> phe.		*Z7-12:OAc + *Z7-12:OH + *Z5-12:OAc + *Z7-14:OAc (100:62:2:4) + other components		Sugie, 1991(a) A
<i>Autographa precatationis</i> Guenée att.		Z7-12:OAc		Roelofs, 1971(a) C
<i>Autographa pulchrina</i> Haworth att.		Z7-12:OAc	E	Priesner, 1977 C
<i>Chrysaspidia bractea</i> Schiffermüller att.		Z11-16:OAc		Bykhovets in Pherobase D
<i>Chrysaspidia contexta</i> Grote att.		Z7-12:OAc		Roelofs, 1970(a) D
<i>Chrysaspidia festucae</i> L. att.		Z11-17:OH		Bykhovets in Pherobase D
<i>Chrysaspidia venusta</i> Walker att.		Z5-12:OAc + Z7-12:OAc (1:1)		Steck, 1977(a) D
<i>Chrysodeixis acuta</i> Walker <hosobanekin-uwaba> att.		Z5-10:OAc + Z7-12:OAc (1:1)		Tóth, 1992(c) A
<i>Chrysodeixis argentifera</i> Guenée att.		Z7-12:OAc		Tóth in Arn, 1986(a) C
<i>Chrysodeixis eriosoma</i> Doubleday		*Z7-12:OAc		Benn, 1982 A

New Zealand silver Y moth <ichijikukin-uwaba> phe.	+ *Z9-12:OAc (50:1) or + Z9-14:OAc (5:1)		
	Z7-12:OAc + Z9-12:OAc (17:3)	Sugie, 1990	
	+ Z9-14:OAc + Z11-16:OAc (10:2:1)	Inomata, 2000	
<i>Cornutiplusia</i> (= <i>Syngrapha</i>) <i>circumflexa</i> L. phe.	Z7-12:OH + Z7-12:OAc (5:1)	Dunkelblum in Arn, 1986(a)	C
	*Z7-12:OH + *Z7-12:OAc (5:1)	Mazor, 1991	
<i>Ctenoplusia</i> (= <i>Acanthoplusia</i>) <i>agnata</i> Staudinger three-spotted plusia <mitsumonkin-uwaba> phe.	*Z7-12:OAc + *Z9-12:OAc (10:1)	Sugie, 1990	A
in Vietnam	Z7-12:OAc	Hai, 2002	
<i>Ctenoplusia albostriata</i> Bremer & Grey <ezogikukin-uwaba> phe.	*Z9,E12-14:OAc N	Boughdad in Arn, 1997	A
in Vietnam	Z7-12:OAc + Z5-10:OAc (2:1)	Inomata, 2000	
	(9:1)	Hai, 2002	
in Japan	*Z7-12:OAc + other components	Inomata, 2005	
<i>Diachrysia chrysitis</i> L. burnished brass moth <ezohisagokin-uwaba> phe.	Z7-10:OAc + Z5-12:OAc (1:9)	Capizzi in Arn, 1986(a)	A
	+ Z5-10:OAc (1:10)	Priesner, 1985(c) Tóth, 1988	
	*Z7-10:OAc + *Z5-10:OAc	Hansson in Arn, 1992 Löfstedt, 1994	
<i>Diachrysia chryson</i> Esper <ookin-uwaba>	Z7-12:OAc + Z7-12:OH (1:1)	Priesner, 1985(c)	A

<i>Diachrysia nadeja</i> Oberthür <kohisagokin-uwaba> att.	Z7-10:OAc + Z5-10:OAc	R.-Reser in Pherobase	A
<i>Diachrysia stenochrysis</i> Warren <oohisagokin-uwaba> phe.	*Z7-10:OAc + other components	Inomata, 2005	A
<i>Diachrysia tutti</i> Kostr. phe.	Z7-10:OAc + Z5-10:OAc (50:1)	Priesner, 1985(c) Tóth, 1988	C
	*Z7-10:OAc + *Z5-10:OAc	Hansson in Arn, 1992 Löfstedt, 1994	
<i>Macdunnoughia confusa</i> Stephens <kikugin-uwaba> phe.	Z7-12:OAc + Z9-14:OAc (1:1)	Booij, 1984(a) Ando, 1981 Li, 1993(d)	A
	+ Z7-14:OAc	Szöcs, 1983	
	*Z7-12:OAc + *Z9-14:OAc (5:1) + other components	Inomata, 2000	
<i>Macdunnoughia crassisigna</i> Warren <ookikugin-uwaba> phe.	*Z7-12:OAc + *Z9-14:OAc (3:1) + another component	Wang, 2024	A
<i>Macdunnoughia purissima</i> Butler <ginmonshiro-uwaba> phe.	Z7-12:OAc + Z5-10:OAc + Z7-12:OH + Z5-12:OAc (10:5:1:1)	Inomata, 2000	A
	*Z7-12:OAc + *Z7-12:OH + *Z5-12:OAc (5:4:1)	Inomata, 2005	
<i>Plusia aereoides</i> Grote att.	Z7-12:OAc	Roelofs, 1970(a)	C
<i>Plusia</i> (= <i>Chrysodeixis</i>) <i>chalcites</i> Esper	*Z7-12:OAc + *Z9-14:OAc (5:1)	Dunkelblum, 1981	C

tomato looper phe.	+ other components + *Z9-12:OAc (10:1:1)	Dunkelblum, 1987(a); 1993	
<i>Plusia festucae</i> L. rice looper <inekin-uwaba> phe.	*Z5-12:OAc + *Z7-14:OAc + *Z5-12:OH (100:15:6) + another component	Ando, 1995(b)	A
<i>Plusia</i> (= <i>Chryspidia</i>) <i>putnami</i> Grote att.	Z5-12:OAc + Z7-12:OAc (100:1)	Steck, 1977(a) Steck, 1982(b)	B
<i>Pseudoplusia includens</i> Walker soybean looper phe.	*Z7-12:OAc + *12:OAc + *Δ11-12:OAc + *Z7-12:OPr + *Z7-12:OBu (93.2:1.2:0.7:0.9:0.2)	Berger, 1968 Tumlinson, 1972 Linn, 1987	D
<i>Rachiplusia ou</i> Guenée phe.	*Z7-12:OAc N	Berger, 1968	D
<i>Sclerogenia</i> (= <i>Autographa</i>) <i>jessica</i> Butler <waiginmon-uwaba> att.	Z7-12:OAc + Z7-12:OH (9:1)	Ando, 1981	A
<i>Syngrapha ain</i> Hochenwarth <kishitagin-uwaba> phe.	Z7-12:OH + Z7-12:OAc (3:1) *Z7-12:OAc + *Z7-12:OH (3:2)	Priesner in Arn, 1986(a) Inomata, 2005	A
<i>Syngrapha epigaea</i> Grote att.	Z7-12:OAc + 14:OAc (20:1)	Steck, 1982(a)	C
<i>Syngrapha parilis</i> Hübner att.	Z7-12:OAc	Linnaluoto, 1983	C
<i>Syngrapha rectangula</i> Kirby att.	Z7-12:OAc	Steck, 1982(a)	C

<i>Syngrapha variabilis</i> att.	Z7-14:OAc E	Priesner, 1977	C
<i>Thysanopluia intermixta</i> Warren chrysanthemum golden plusia <kikukin-uwaba> phe.	*E5,Z7-12:OAc + *E5,Z7-12:OH + *Z7-12:OAc (100:13:18) + another component	Ando, 1998	A
<i>Thysanopluia orichalcea</i> F. <nettaikikukin-uwaba> phe.	*Z7-12:OAc + *E5,Z7-12:OAc (100:11) + other components	Ando, 1998	A
<i>Trichoplusia ni</i> Hübner cabbage looper <irakusagin-uwaba> phe.	*Z7-12:OAc + *12:OAc (9:1) + other components + Z7-14:OAc (200:1)	Berger, 1966 Kaae, 1973(b) Bjostad, 1980(b); 1984 Dunkelblum, 1993 Linn, 1984 Steck, 1980(a)	A
<i>Trichoplusia oxygramma</i> Geyer att.	Z7-12:OAc + E7-12:OAc (47:3) + Z9-14:OAc (10:0.9)	Mitchell, 1972; 1973 McLaughlin, 1975 Landolt, 1986(c)	C
<i>Zonoplusia ochureata</i> Walker <koseakakin-uwaba> att.	Z7-12:OAc + Z5-12:OAc (1:1)	Hai, 2002	A

(Noctuidae; Metoponiinae) ヤガ科 ;

<i>Tyta luctuosa</i> Denis & Schiff. phe.	*Z11-16:Ald + *Z9-14:Ald (5:1) N + other components	Cao, 2002, 2003	D
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(Nolidae) コブガ科

<i>Nola confusalis</i> Herrich-Schäffer <hime-kobuga>	E10,Z12-16:Ald	Priesner in Arn, 1986(a)	A
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att.

<i>Uraba lugens</i> Walker gum leaf skeletonizer phe.	E10,Z12-16:OAc + E10,Z12-16:OH (3:1) *E10,Z12-16:OAc + *E10,Z12-16:OH (3:1) + another component	Suckling, 2005(b) Gibb, 2008	D
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(Erebidae; Calpinae) トモエガ科 ; エグリバ亜科

<i>Rusicada privata</i> Walker hibiscus-leaf caterpillar moth <ooaka-kiriba> phe.	*Me7-17:H	Kim, 2023	A
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(Erebidae; Catocalinae) トモエガ科 ; シタバガ亜科

<i>Achaea janata</i> L. castor semilooper <shirahoshiashibuto- kuchiba> phe.	*Z3,Z6,Z9-21:H + *Z6,Z9-21:H + *21:H + *Z9,Z12-18:Ald (65:1:1:1)	Persoons, 1993 Krishnakumari, 1998	A
<i>Anticarsia gemmatalis</i> Hübner velvetbean caterpillar phe.	*Z3,Z6,Z9-20:H + *Z3,Z6,Z9-21:H (5:3) (39:11)	Heath, 1983 McLaughlin, 1989	C
<i>Caenurgina distincta</i> Neumuller phe.	Z3,Z6,Z9-20:H + Z3,Z6,epo9-20:H (1:1) (9S,10R)-isomer *Z3,Z6,Z9-20:H + *Z3,Z6,epo9-20:H (8:1) + other components	Wong, 1985(b) Millar, 1991(b)	D
<i>Caenurgina erechtea</i> Cramer forage looper phe.	*Z3,Z6,Z9-21:H + *Z3,Z6,Z9-20:H (4:1)	Underhill, 1983	D
<i>Euclidia cuspidata</i> Hübner phe.	Z3,Z6,Z9-21:H + Z3,Z6,epo9-21:H	Wong, 1985(b)	C

	+ Z3,Z6,Z9-20:H (45:1:1)		Underhill in Arn, 1986(a)	
	*Z3,Z6,Z9-21:H + *Z3,Z6,epo9-21:H (10:1) + other components		Millar, 1991(b)	
<i>Eulepidotis addens</i> Walker att.	Z3,Z6,epo9-21:H (9S,10R)-isomer E		Renou, 1988	D
<i>Gonodonta bidens</i> Geyer att.	Z3,Z6,Z9-21:H E		Renou, 1988	D
<i>Gonodonta incurva</i> Sepp att.	Z3,Z6,Z9-21:H E		Renou, 1988	D
<i>Gonodonta parens</i> Guenée att.	Z3,Z6,Z9-21:H E		Renou, 1988	D
<i>Gonodonta sicheas</i> Cramer att.	Z3,Z6,Z9-21:H E		Renou, 1988	D
<i>Hypenomorpha calamina</i> Butler <hirobachibitogari-atsuba> att.	Z6,epo9-20:H		Ando, 1995(a)	A
<i>Lesmone formularis</i> Geyer att.	Z3,Z6,epo9-21:H (9S,10R)-isomer E		Renou, 1988	D
<i>Massala obvertens</i> Walker att.	Z3,Z6,Z9-20:H E		Renou, 1988	D
<i>Melipotes fasciolaris</i> Hübner att.	Z3,Z6,epo9-21:H (9S,10R)-isomer E		Renou, 1988	D
<i>Melipotes januaris</i> Guenée att.	Z3,Z6,Z9-21:H E		Renou, 1988	D
<i>Mocis disseverans</i> Walker phe.	*Z3,Z6,Z9-21:H + *Z3,Z6,Z9-20:H (49:1)		Landolt, 1986(b)	C
	Z3,Z6,Z9-21:H		McLaughlin, 1989	
<i>Mocis latipes</i> Guenée phe.	*Z3,Z6,Z9-21:H + *Z6,Z9-21:H (3:1)		Descoins, 1986	C

	(4:1)	Landolt, 1989(b)	
	+ *Z3,Z6,Z9-20:H (49:1)	Landolt, 1986(b)	
<i>Mocis marcida</i> Guenée phe.	*Z3,Z6,Z9-21:H + *Z3,Z6,Z9-20:H N	Landolt, 1986(b)	C
<i>Mocis megas</i> Guenée phe.	*Z3,Z6,Z9-21:H + *Z3,Z6,epo9-21:H (9S,10R)-isomer E	Descoins, 1990	C
<i>Neachrostia bipuncta</i> Sugi <futatenchibi-atsuba> att.	Z3,Z6,Z9-18:H	Ando, 1995(a)	A
<i>Ophisma tropicalis</i> Guenée att.	Z3,Z6,epo9-21:H (9S,10R)-isomer E	Renou, 1988	C
<i>Pangrapta trimantesalis</i> Walker <unmontsumakiri-atsuba> att.	Z3,Z6,epo9-23:H	Ando, 1995(a)	A
<i>Paragabara flavomacula</i> Oberthür <kiboshi-atsuba> att.	Z3,epo6,Z9-21:H	Ando, 1993	A
<i>Syllectra erycata</i> Cramer att.	Z3,Z6,epo9-21:H E	Renou, 1988	D
<i>Zale duplicata</i> Bethune att.	Z3,Z6,epo9-21:H (9R,10S)-isomer	Wong, 1985(b)	D
<i>Zale fictilis</i> Guenée att.	Z3,Z6,epo9-21:H (9S,10R)-isomer E	Renou, 1988	D
<i>Zale lunifera</i> Hübner att.	Z3,Z6,epo9-21:H (9R,10S)-isomer	Landolt,1996	D

(Erebidae; Ophiderinae) トモエガ科 ; クチバ亜科

<i>Aedia leucomelas</i> L. <nakajiro-shitaba> phe.	*Z3,Z6,Z9-21:H	Tamaki, 1996	A
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<i>Alabama argillacea</i> Hübner phe.	*Me9-19:H (S)-isomer + other components	Hall, 1993	D
<i>Anomis sabulifera</i> Guenée jute semilooper phe.	*Z6,Z9-21:H + *Z3,Z6,Z9-21:H (3:1)	Babu, 2021	C
<i>Anomis texana</i> phe.	*Me7-17:H (S)-isomer + another component	Hall, 1993	C
<i>Hypersynoides submarginata</i> Walker <ooshiroten-kuchiba> att.	epo3,Z6,Z9-19:H + Z3,Z6,Z9-19:H (1:1-1:0.1)	Witjaksono, 1999	A
<i>Hypocala andremona</i> Stoll att.	Z3,Z6,epo9-21:H (9S,10R)-isomer E	Renou, 1988	C
<i>Hypocala rostrata</i> F. <indokishita-kuchiba> att.	Z3,epo6,Z9-21:H (6S,7R)-isomer + epo3,epo6,Z9-21:H (10:1)	Wakamura, 2002	A
<i>Luceria</i> sp. att.	Z3,Z6,epo9-18:H	Hai, 2002	C
<i>Oraesia excavata</i> Butler fruit-piercing moth <akaeguriba> phe.	*Z6,epo9-21:H + *Z3,Z6,epo9-21:H (20:0-17:3) (9S,10R)-isomer	Ohmasa, 1991 Yamamoto, 1999	A
<i>Rivula leucanioides</i> Walker <take-atsuba> att.	Z3,epo6,Z9-18:H	Ando, 1995(a)	A
<i>Rivula propinqualis</i> Guenée att.	epoxydienes of Z3,Z6,Z9-19:H Z3,Z6,Z9-19:H + Z3,epo6,Z9-19:H (6S,7R)-isomer (10:1)	Wong, 1985(b) Millar, 1990(a)	C
<i>Rivula sasaphila</i> Sugi <kuriiro-atsuba> att.	Z3,epo6,Z9-19:H	Ando, 1993	A

<i>Rivula sericealis</i> Scopoli <tenkuro-atsuba> att.	Z3,epo6,Z9-19:H	Ando, 1993	A
<i>Scoliopteryx libatrix</i> L. herald moth <hagata-kiriba> phe.	*Z6,Me13-21:H (S)-isomer	Francke, 2000 Toshova, 2003	A
Gen et sp. att.	Δ 1,Z3,Z6,Z9-19:H	Yamamoto, 2008	A

(Erebidae; Hypeninae) トモエガ科 ; アツバ亜科

<i>Bomolocha palparia</i> Walker (?) att.	Z3,Z6,epo9-20:H (9S,10R)-isomer	Wong, 1985(b)	C
<i>Hypena</i> sp. att.	Z3,Z6,epo9-21:H	Hai, 2002	C
<i>Lomanaltes eductalis</i> Walker att.	Z3,Z6,epo9-21:H (9S,10R)-isomer	Wong, 1985(b)	D
<i>Spargaloma sexpunctata</i> Grote att.	Z3,Z6,epo9-20:H (9S,10R)-isomer	Wong, 1985(b)	D

(Erebidae: Herminiinae) トモエガ科 ; クルマアツバ亜科

<i>Adrapsa notigera</i> Butler <fujiro-atsuba> att.	Z3,epo6,Z9-23:H	Ando, 1995(a)	A
<i>Bleptina caradrinalis</i> Guenée att.	epoxydienes of Z3,Z6,Z9-21:H Z3,epo6,Z9-21:H (6R,7S):(6S,7R) = 4:1 or Z3,epo6,Z9-20:H (6R,7S):(6S,7R) = 1:1	Wong, 1985(b) Millar, 1991(c)	C
<i>Idia aemula</i> Hübner att.	epoxydienes of Z3,Z6,Z9-21:H	Wong, 1985(b)	D

<i>Idia americalis</i> Guenée att.	epoxydienes of Z3,Z6,Z9-20:H	Wong, 1985(b)	D
	Z3,epo6,Z9-20:H (6 <i>S</i> ,7 <i>R</i>)-isomer + Z3,epo6,Z9-21:H (6 <i>S</i> ,7 <i>R</i>)-isomer (1:1)	Millar, 1991(c)	
<i>Palthis angulalis</i> Hübner att.	epo6,Z9-19:H (6 <i>S</i> ,7 <i>R</i>)-isomer	Millar, 1991(a)	D
<i>Paracolax pryeri</i> Butler <shirotenmurasaki-atsuba> att.	Z3,epo6,Z9-20:H	Ando, 1993	A
<i>Renia salusalis</i> Walker att.	Z3,epo6,Z9-19:H (6 <i>S</i> ,7 <i>R</i>)-isomer	Landolt, 1996	D
<i>Tetanolita mynesalis</i> Walker phe.	*Z3,epo6,Z9-21:H (6 <i>S</i> ,7 <i>R</i>)-isomer + *Z3,Z6,Z9-21:H (1:1)	Haynes, 1996	D
<i>Zanclognatha lunaris</i> Scopoli <kobuhige-atsuba> att.	Me2,epo7-18:H	Minyailo, 1977	A
<i>Zanclognatha</i> sp. att.	Z3,epo6,Z9-19:H	Hai, 2002	C

(Erebidae: Lymantriinae) トモエガ科 ; ドクガ亜科

<i>Arna</i> (=Euproctis) <i>pseudoconspersa</i> Strand tea tussock moth <cha-dokuga> phe.	*Me10,Me14-15:OisoBu + *Me14-15:OisoBu (20:1-5:1) + another component (10 <i>R</i> :10 <i>S</i> = 10:0-1:9)	Wakamura, 1994 Ichikawa, 1995 Wakamura, 1996(b) Zhao, 1998 Tsai, 1999	A
<i>Artaxa</i> (=Euproctis) <i>subflava</i> Bremer oriental tussock moth <dokuga> phe.	*Me10,Me14-15:OisoBu (<i>R</i>)-isomer + another component	Wakamura, 2007(b)	A

<i>Dasychira baibarana</i> Matsumura tea black tussock moth phe.	*Z3,Z6,epo9-21:H + *Z3,Z6,epo9,E11-21:H + *Z3,Z6-21:11-one (5:4:11)	Magsi, 2022	C
<i>Dasychira grisefacta ella</i> Bryk. att.	Z6-21:11-one	Daterman, 1976	C
<i>Dasychira plagiata</i> Walker att.	Z6-21:11-one + E6-21:11-one (100:1)	Grant, 1977	C
<i>Dasychira vagans grisea</i> Barnes & McDunnough att.	Z6-21:11-one	Daterman, 1976	C
<i>Euproctis chrysorrhoea</i> L. browntail moth phe.	*Z7,Z13,Z16,Z19-22:OisoBu	Leonhardt, 1991 Khrimian, 2008	C
<i>Euproctis terminalis</i> Walker pine browntail moth phe.	*Z7,Z13,Z16,Z19-22:OisoBu	Bouwer, 2021	C
<i>Gynaephora ginghainensis</i> phe.	*Z3,Z6,Z9-21:H + Z3,Z6,Z9-20:H (100:1)	Chen in Arn, 1986(a)	C
<i>Leucoma salicis</i> L. satin moth <yanagi-dokuga> phe. In Canada In Hungary	*Z3,epo6,epo9-21:H + other components (6S,7R,9S,10R)-isomer (6R,7S,9R,10S)-isomer	Gries, 1997(c) Holden, 2000 Szöcs, 2005	A
<i>Lymantria bantaizana</i> Matsumura <bantai-maimai> phe.	*Me2,Z7,E9-18:H	Gries, 2005(c)	A
<i>Lymantria concolor</i> Walker att.	Me2,epo7-18:H	Bhardwaj, 1987	C
<i>Lymantria</i> (= <i>Porthetria</i>) <i>dispar</i> L. gypsy moth phe.	*Me2,epo7-18:H (7R,8S)-(+)-isomer	Bierl, 1970 Klimetzek, 1976 Cardé, 1977(b) Miller, 1978	B

	+ *Me ₂ ,epo7,Δ17-18:H + other components (EAG active)	Gries, 2005(a)	
<i>Lymantria dispar asiatica</i> Vnukovskij Asian gypsy moth att.	Me ₂ ,epo7-18:H (7R,8S)-isomers + Me ₂ ,epo7,Δ17-18:H (10:1) (7R,8S)-isomers	Wallner, 1984 Park, 2019	B
<i>Lymantria dispar japonica</i> Motschulsky Japanese gypsy moth <maimaiga> att.	Me ₂ ,epo7-18:H (7R,8S)-(+)-isomer	Beroza, 1973(a) Iwaki, 1974	A
<i>Lymantria fumida</i> Butler <haraaka-maimai> phe.	Me ₂ ,epo7-18:H *Me ₂ ,epo7-18:H (7R,8S)-(+)-isomer + *Me ₂ ,Z7-18:H (10:1)	Beroza, 1973(a) Schaefer, 1999	A
<i>Lymantria lucescens</i> Butler phe. <ooyama-maimai>	*Me ₂ ,Z7-18:H	Gries, 2002	A
<i>Lymantria mathura</i> L. rosy (pink) gypsy moth <kashiwa-maimai> phe.	Me ₂ ,epo7-18:H (7R,8S)-(+)-isomer *Z ₃ ,Z ₆ ,epo9-19:H (9S,10R)-isomer + another component (9S,10R):(9R,10S) = (4:1)	Odell, 1992 Oliver, 1999 Gries, 1999(b)	A
<i>Lymantria monacha</i> L. nun moth <nonne-maimai> phe.	Me ₂ ,epo7-18:H *Me ₂ ,epo7-18:H (-):(+) = 9:1 E (+)-isomer + Me ₂ ,Z7-18:H (1:3)	Schönherr, 1972 Klimetzek, 1976 Minyailo, 1976 Bierl, 1975 Hansen, 1984 Grant, 1996	A

	(+)-isomer + * epo7-18:H (7 <i>R</i> ,8 <i>S</i>)-(+)-isomer + * Me2,Z7-18:H (10:10:1)	Gries, 1996; 2001	
<i>Lymantria obfuscata</i> Walker Indian gypsy moth phe.	Me2,epo7-18:H * Me2,epo7-18:H (7 <i>R</i> ,8 <i>S</i>)-(+)-isomer + * Me2,Z7-18:H (2:1)	Beroza, 1973(b) Gries, 2007	C
<i>Lymantria serva</i> phe.	* Me2,Z7-18:H	Gries, 2002	C
<i>Lymantria xyliana</i> Swinhoe Casuarina moth <maeguro-maimai> phe.	* Me2,epo7-20:H	Gries, 1999(c)	A
<i>Orgyia antiqua</i> L. rusty tussock moth att.	Z6-21:11-one	Daterman, 1976	C
<i>Orgyia cana</i> Edwards western tussock moth att.	Z6-21:11-one	Daterman, 1976	C
<i>Orgyia detrita</i> Guérin-Méneville phe.	* Z6,Z9-21:11-OH S:R = 1:1 [S:R = 7:2] + * Z6,Z9-20:11-OH + * Z6,Z9-22:11-OH (10:1:1)	Gries, 2003	C
<i>Orgyia ericae</i> Germar grey-spotted tussock moth phe.	* Z6,Z9-21:H + * Z6-21:11-one (10:1) + another component	Chen, 2010	C
<i>Orgyia gonostigma</i> att.	Z6-21:11-one	Kovalev in Arn, 1992	C
<i>Orgyia leucostigma</i> J. E. Smith white-marked tussock moth phe.	Z6-21:11-one * Z6,Z9-21:11-one + other components	Grant, 1977 Grant, 2003; 2008	C
(scale extract)	* 24:H + * 25:H	Grant, 1987(b)	

	+ other components		
<i>Orgyia postica</i> Walker <koshiromon-dokuga> phe. Okinawa strain Ishigaki strain	*Z6,Z9,tepo11-21:H (11S,12S)-isomer + other components	Wakamura, 2001(a); 2005(a)	A
Taiwan strain	+ *Z6-21:11-one	Chow, 2001	
<i>Orgyia pseudotsugata</i> McDunnough Douglas-fir tussock moth phe.	*Z6-21:11-one + *Δ1,Z6-21:11-one + *Z6,E8-21:11-one (100:1)	Smith, 1975 Smith, 1978 Gries, 1997(a)	C
<i>Orgyia thyellina</i> Butler white-spotted tussock moth <himeshiromon-dokuga> phe.	*Z6-21:11-one + *Z6-21:9-one (20:1)	Gries, 1999(a)	A
<i>Orgyia vetusta</i> Boisduval western tussock moth phe.	*Z6,E8-21:11-one + other components	Gries, 2005(d)	C
<i>Orvasca</i> (=Euproctis) <i>taiwana</i> Shiraki <taiwanki-dokuga> phe.	*Z9,Me16-17:OisoBu + another component	Yasuda, 1995	A
<i>Perina nuda</i> F. clear-winged tussock moth <sukiba-dokuga> phe.	*Z3,epo6,Z9-21:H (6S,7R)-isomer + *epo3,epo6,Z9-21:H (10:1) [(3S,4R,6S,7R): (3R,4S,6S,7R) = 3:2]	Yamazawa, 2001 Wakamura, 2002	A
<i>Somena</i> (=Euproctis) <i>pulverea</i> Leech <gomafuri-dokuga> phe.	*Z11,Z14,Z17-20:OisoBu + *Z11,Z14,Z17-20:O-Me4'Va (2:1) + other components	Wakamura, 2001(c)	A
<i>Sphrageidus</i> (=Euproctis) <i>similis</i> Fuessly browntail moth <monshiro-dokuga>	*Z7-18:O-Me2'Bu (2'S:2'R = 7:2) + *Z7-18:OisoVa + *Z7-18:OBu	Yasuda, 1994	A

phe.	+ *Z7-18:OisoBu (20:12:1:1) + other components		
<i>Sphrageidus</i> (=Euproctis) <i>similis xanthocampa</i> Dyar <monshiro-dokugamodoki> phe.	*Z7-18:OisoVa + other components	Tan, 1984	A
<i>Teia anartoides</i> Walker painted apple moth phe.	*Z6,Z9-21:11-one + *Z6,epo9-21:H (9R,10S)-isomer + *Z6,Z9-21:H + other components	El-Sayed, 2004(a); 2005(a) Gries, 2005(b)	D

(Erebidae: Arctiinae: Lithosiini) トモエガ科 ; ヒトリガ亜科 ; コケガ族			

<i>Barsine aberrans aberrans</i> Butler <hagatabeni-kokega> att.	17:7-OPr (S)-isomer + 17:8-OPr (S)-isomer (1:1)	Fujii, 2013(b)	A
<i>Barsine expressa</i> Inoue <sakishimabeni-kokega> phe.	*17:7-OPr (S)-isomer + *17:8-OPr (S)-isomer (1:1) + other components	Fujii, 2013(b)	A
<i>Eilema japonica</i> Leech <kimae-hosoba> phe.	*Z6,Z9-21:H + *Z3,Z6,Z9-21:H + *Z6,Z9-22:H + *Z3,Z6,Z9-22:H (86:17:59:57) + other components	Fujii, 2010(b)	A
<i>Lyclene dharma dharma</i> Moore <himehoshiki-kokega> phe.	*Me6-18:2-one (S)-isomer + *Me14-18:2-one (S)-isomer + another component	Yamamoto, 2007 Do, 2009 Adachi, 2010	A
<i>Miltochrista calamina</i> Butler <hagataki-kokega> phe.	*Me5-17:7-OH (5R,7R)-isomer	Yamakawa, 2011(b) Muraki, 2014	A
<i>Miltochrista striata</i> Bremer & Grey phe.	*Z3,Z6,epo9-18:H + *Z3,Z6,Z9-18:H (3:2)	Luo, 2019	B

(Erebidae: Arctiinae: Synthomini) トモエガ科 ; ヒトリガ亜科 ; カノコガ族

<i>Amata</i> (= <i>Syntomis</i>) <i>phegea</i> L. att.	Me2,epo7-18:H Z3,Z6,Z9-21:H	Capek, 1979 Szöcs, 1987	C
<i>Dysauxes</i> <i>ancilla</i> L. att.	Δ 1,Z3,Z6,Z9-19:H + Z3,Z6,Z9-19:H (1:1)	Szöcs, 1987	D
<i>Empyreuma</i> <i>mucro</i> Zerny phe.	*Z3,Z6,epo9-21:H (major) + *Z3,Z6,Z9-21:H N	Descoins, 1989	D
<i>Syntomeida</i> <i>epilais</i> Walker phe.	*Z3,Z6,epo9-21:H (major) + *Z3,Z6,Z9-21:H N	Descoins, 1989	D
<i>Syntomoides</i> <i>imaon</i> Cramer <muramatsu-kanoko> phe.	* Δ 1,Z3,Z6,Z9-21:H + *Z3,Z6,Z9-21:H + other components	Matsuoka, 2008	A

(Erebidae: Arctiinae: Arctiini) トモエガ科 ; ヒトリガ亜科 ; ヒトリガ族

<i>Amsacta</i> <i>albistriga</i> Walker	*Z3,Z6,Z9-21:H + *Z9,Z12,Z15-18:Ald + *Z9,Z12-18:Ald + *18:Ald (24:11.5:1:1)	Persoons, 1993	D
<i>Arctia</i> <i>caja</i> L. <hitoriga> phe.	*Z3,Z6,Z9-21:H + *Z3,Z6,epo9-21:H + *Z3,Z6,epo9-20:H N	Bestmann, 1992(a)	B
<i>Arctia</i> <i>plantaginis</i> wood tiger moth <himekishita-hitori> phe.	*Z3,Z6,Z9-21:H + *E4,Z6,Z9-21:H + * Δ 1,Z3,Z6,Z9-21:H + *Z2,E4,Z6,Z9-21:H E [30:3:5:1]	Muraki, 2017	A
<i>Arctia</i> <i>villica</i> phe.	*Z3,Z6,Z9-21:H + * Δ 1,Z3,Z6,Z9-21:H N	Einhorn, 1984(a)	C
<i>Callimorpha</i> <i>dominula</i> L. scarlet tiger moth phe.	*Z3,Z6,epo9-21:H N (9S,10R)-isomer	Clarke, 1996	C
<i>Cretonotos</i> <i>gangis</i> L.	*Z3,Z6,epo9-21:H (major)	Bell, 1986	A

<kurosuji-hitori> phe.	+ *Z3,Z6,Z9-21:H + *Z3,Z6,Z9-23:H	N	Wunderer, 1986	
<i>Cretonotos transiens</i> Walker <haiiro-hitori> phe.	*Z3,Z6,epo9-21:H (major) + *Z3,Z6,Z9-21:H + *Z3,Z6,Z9-23:H	N	Bell, 1986 Wunderer, 1986	A
<i>Cyana</i> sp. att.	Z3,Z6,epo9-18:H		Hai, 2002	C
<i>Cymbalophora pudica</i> Esper phe.	*Z3,Z6,epo9-21:H (9 <i>S</i> ,10 <i>R</i>)-isomer	E	Frerot, 1988(b)	D
<i>Diacrisia oblique</i> Walker Bihar hairy caterpillar phe.	*Z3,Z6,Z9-21:H + *Z3,Z6,epo9-21:H + *Δ1,Z3,Z6,epo9-21:H + *Z9,Z12,Z15-18:Ald + *Z9,Z12-18:Ald (26:10:5:30:10)		Persoons, 1993 Yadav, 2001	C
<i>Estigmene acrea</i> saltmarsh caterpillar moth phe.	*Z3,Z6,epo9-21:H + *Z9,Z12,Z15-18:Ald + *Z9,Z12-18:Ald (27:6:1)		Hill, 1981(b)	D
<i>Euchaetes egle</i> Drury milkweed tussock moth phe.	*Z3,Z6,Z9-21:H + *Δ1,Z3,Z6,Z9-21:H [5:2] + other components	N	Simmons, 1998	D
<i>Eurata patagiata</i> Burmeister phe.	*Z9,Z12,Z15-18:OH + *Z9,Z12,Z15-18:Ald (3:1)		Rodríguez, 2018	D
<i>Halysidota leda</i> Druce neo-tropical tiger moth phe.	*Z3,Z6,epo9-21:H (major) + *Z3,Z6,Z9-21:H + other components	N	Descoins, 1989	D
<i>Halysidota tessellaris</i> Smith att.	Z3,Z6,epo9-21:H (9 <i>R</i> ,10 <i>S</i>)-isomer		Landolt, 1996	D
<i>Holomelina aurantiaca</i> phe.	*Me2-17:H		Roelofs, 1971(b)	D
<i>Holomelina ferruginosa</i> phe.	*Me2-17:H	N	Roelofs, 1971(b)	D
<i>Holomelina fragilis</i>	*Me2-17:H	N	Roelofs, 1971(b)	D

<i>Holomelina immaculata</i> phe.	*Me2-17:H		Roelofs, 1971(b)	D
<i>Holomelina laeta</i> att.	Me2-17:H	E	Roelofs, 1971(b)	D
<i>Holomelina lamae</i> phe.	*Me2-17:H	N	Roelofs, 1971(b)	D
	+ other components		Schal, 1987	
<i>Holomelina nigricans</i> phe.	*Me2-17:H	N	Roelofs, 1971(b)	D
<i>Holomelina rubicundaria</i> att.	Me2-17:H		Roelofs, 1971(b)	D
<i>Holomelina</i> sp. att.	Me2-17:H		Weatherston, 1974(a)	D
<i>Hyphantria cunea</i> Drury fall webworm moth American white moth <amerikashiro-hitori> phe	*Z3,Z6,epo9-21:H + *Z9,Z12,Z15-18:Ald + *Z9,Z12-18:Ald		Hill, 1982	A
	U.S.A.	(27:6:1)		
	U.S.S.R.	[13:6:5]		
	France	[52:41:7]	N	Einhorn, 1982
	+ *Δ1,Z3,Z6,epo9-21:H			Tóth, 1989(b)
	+ *Z3,Z6,epo9-20:H			
	+ *Δ1,Z3,Z6,epo9-20:H			
	Hungary	[60:40:5:8:0.4:0.04]	N	
	+ other components			
	Z3,Z6,epo9-21:H			Senda, 1991
	+ Δ1,Z3,Z6,epo9-21:H			
	+ Z9,Z12,Z15-18:Ald (5:2:2)			
	China	(1:1:8)		Zhang, 1996
	*Z3,Z6,epo9-21:H (9 <i>S</i> ,10 <i>R</i>)-isomer			Yamakawa, 2012(b)
	+ *Δ1,Z3,Z6,epo9-21:H (9 <i>S</i> ,10 <i>R</i>)-isomer			
	+ *Z9,Z12-18:Ald			

		+ *Z9,Z12,Z15-18:Ald (10:2:5:4) N		
	New Zealand	*Z3,Z6,epo9-21:H + *Δ1,Z3,Z6,epo9-21:H + *Z9,Z12,Z15-18:Ald + *Z9,Z12-18:Ald (279:1:66:6)		El-Sayed, 2005(c)
	China		(58:6:34:2)	Su, 2008
<i>Isia</i> (= <i>Pyrrharctia</i>) <i>isabella</i> phe.		*Me2-17:H + other components		Roelofs, 1971(b) D Krasnoff, 1988
<i>Panaxia</i> (= <i>Callimorpha</i>) <i>quadripunctaria</i> phe.		*Z6,Z9-21:H + *Z6,Z9-20:H N		Schneider, 1998 C
<i>Pareuchaetes pseudoinsulata</i> Rego Barros phe.		*Z3,Z6,Z9-21:H N + other components *Δ1,Z3,Z6,Z9-21:H N + other components		Schneider, 1992 D Frérot, 1993(a)
<i>Phragmatobia fuliginosa</i> ruby tiger moth <ama-hitori> phe. Europe strain		*Z3,Z6,epo9-21:H + *Z3,Z6,Z9-21:H + *Z6,epo9-21:H + *Z6,Z9-21:H N + Z9,Z12,Z15-18:Ald + Z9,Z12-18:Ald (21:8:1)		Descoins in Arn, 1992 Kovalev, 1986
	New York strain	*Z3,Z6,Z9-21:H + *Z3,Z6,epo9-21:H (5:1) N		Rule, 1989
<i>Schistophleps</i> sp. 1 att.		Z3,Z6,epo9-19:H		Hai, 2002 C
<i>Schistophleps</i> sp. 2 att.		Z3,Z6,Z9-19:H		Hai, 2002 C
<i>Schistophleps</i> sp. 3		Z3,Z6,Z9-21:H		Hai, 2002 C

<i>Spilosoma lubricipeda</i> L. att.	Z9,Z12,Z15-18:Ald + Z3,Z6,epo9-21:H + Δ 1,Z3,Z6,epo9-21:H (8:1:1)	Ostrauskas, 2004	B
<i>Tyria jacobaeae</i> L. cinnabar moth phe.	*Z3,Z6,epo9-21:H (9 <i>S</i> ,10 <i>R</i>)-isomer + other components N	Frérot, 1988(a) Bestmann, 1994 Clarke, 1996	D
<i>Utetheisa ornatix</i> phe.	*Z3,Z6,Z9-21:H * Δ 1,Z3,Z6,Z9-21:H + *Z6,Z9-21:H + *Z3,Z6,Z9-21:H N	Conner, 1980 Jain, 1983 Choi, 2007	C
