

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, Δ = terminal] or the following functional groups in the chain,
≡ = triple bond
epo = *cis*-epoxy ring
tepo = *trans*-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 2026. 1. 31

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

[Superfamily]	Number of species				
Family	Sex		Sex		
Subfamily	pheromone		attractant		
[Eriocranioidea]	Suikobanega-joka				
Eriocraniidae	Suikobanega-ka	3	(1)	1	(1)
[Nepticuloidea]	Mogurichibi-joka				
Nepticulidae	Mogurichibi-ka	1	(0)	2	(0)
[Incurvarioidea]	Magariga-joka				
Heliozelidae	Tsuyakoga-ka	3	(0)	1	(0)
Prodoxidae	Hosohigemagariga-ka	1	(0)	0	(0)
[Tischerioidea]	Mumonhamoguriga-joka				
Tischeriidae	Mumonhamoguriga-ka	1	(0)	0	(0)
[Tineoidea]	Hirozukoga-joka				
Tineidae	Hirozukoga-ka	4	(2)	22	(1)
Psychidae	Minoga-ka	5	(1)	1	(0)
[Gracillarioidea]	Hosoga-joka				
Bucculatricidae	Chibiga-ka	1	(0)	0	(0)
Gracillariidae	Hosoga-ka	18	(5)	31	(8)
[Yponomeutoidea]	Suga-joka				
Yponomeutidae	Suga-ka	14	(4)	26	(11)
Ypsolophidae	Kuchibusaga-ka	0		5	(1)
Plutellidae	Konaga-ka	1	(1)	1	(1)
Acrolepiidae	Atohigekoga-ka	3	(2)	3	(3)
Glyphipterigidae	Hosohamakimodoki-ka	0		3	(2)
Lyonetiidae	Hamoguriga-ka	6	(1)	0	(0)
[Gelechioidea]	Kibaga-joka				
Ethmiidae	Suhirokibaga-ka	0	(0)	2	(0)
Elachistidae	Kusamoguriga-ka	2	(0)	1	(0)
Xyloryctidae	Hirobakibaga-ka	1	(0)	0	(0)
Oecophoridae	Maruhakibaga-ka	1	(0)	8	(2)
Depressariidae	Hiratamaruhakibaga-ka	2	(0)	12	(4)
Stathmopodidae	Nisemaikoga-ka	2	(2)	1	(1)
Lecithoceridae	Higenagakibaga-ka	0	(0)	2	(2)
Batrachedridae	Hosokibaga-ka	1	(0)	1	(1)
Coleophoridae	Tsutsuminoga-ka	1	(0)	45	(3)
Momphidae	Akabanakibaga-ka	0	(0)	1	(0)
Cosmopterigidae	Kazaribaga-ka	1	(1)	13	(11)

Gelechiidae	Kibaga-ka	16	(6)	55	(7)
[Zygaenoidea]	Madara-joka				
Limacodidae	Iraga-ka	7	(2)	3	(2)
Himantopteridae	Ribonmadaraga-ka	0	(0)	2	(0)
Zygaenidae	Madaraga-ka	3	(1)	46	(2)
[Sesioidea]	Sukashiba-joka				
Sesiidae	Sukashiba-ka	28	(8)	86	(4)
Brachodidae	Hirohamakimodokiga-ka	0	(0)	1	(0)
[Cossoidea]	Bokutouga-joka				
Cossidae	Bokutouga-ka	12	(1)	4	(0)
[Tortricidea]	Hamakiga-joka				
Tortricidae	Hamakiga-ka				
Tortricinae	Hamakiga-aka	114	(10)	133	(46)
Olethreutinae	Nokomehamakiga-aka	65	(22)	230	(52)
Chlidanotinae	Madarahamakiga-aka	0	(0)	3	(0)
[Choreutoidea]	Hamakimodokiga-joka				
Choreutidae	Hamakimodokiga-ka	1	(1)	3	(3)
[Schreckensteinoidea]	Hosomaikoga-joka				
Schreckensteiniidae	Hosomaikoga-ka	0	(0)	1	(1)
[Pterophoroidea]	Toribaga-joka				
Pterophoridae	Toribaga-ka	2	(1)	22	(8)
[Copromorphoidea]	Marubashinkuiga-joka				
Carposinidae	Shinkuiga-ka	3	(1)	4	(4)
[Thyridoidea]	Madoga-joka				
Thyrididae	Madoga-ka	0	(0)	2	(1)
[Pyraloidea]	Meiga-joka				
Pyralidae	Meiga-ka				
Galleriinae	Tsuduriga-aka	2	(0)	0	(0)
Pyralinae	Shimameiga-aka	1	(1)	3	(2)
Epipaschiinae	Futomeiga-aka	1	(0)	0	(0)
Phycitinae	Madarameiga-aka	37	(11)	11	(1)
Crambidae	Tsutoga-ka				
Schoenobiinae	Oomeiga-aka	3	(3)	0	(0)
Scopariinae	Tsuyameiga-aka	0	(0)	4	(1)
Crambinae	Tsutoga-aka	19	(5)	8	(3)
Cybalomiinae	Monmeiga-aka	1	(1)	0	(0)
Acentropinae	Mizumeiga-aka	0	(0)	2	(1)
Glaphyriinae	Nisenomeiga-aka	2	(2)	4	(2)
Spilomelinae	Higenaganomeiga-aka	26	(17)	7	(4)
Pyraustinae	Nomeiga-aka	14	(8)	20	(8)
[Lasiocampoidea]	Karehaga-joka				
Lasiocampidae	Karehaga-ka	14	(3)	0	(0)
[Drepanoidea]	Kagibaga-joka				

Drepanidae	Kagibaga-ka	0	(0)	6	(3)
[Geometroidea]	Shakuga-joka				
Geometridae	Shakuga-ka	56	(14)	82	(33)
Uraniidae	Tsubamega-ka	0	(0)	2	(2)
[Bombycoidea]	Kaikoga-joka				
Endromidae		1	(0)	0	(0)
Bombycidae	Kaikoga-ka	4	(2)	0	(0)
Saturniidae	Yamamayuga-ka	22	(4)	1	(0)
Sphingidae	Suzumega-ka	11	(7)	11	(3)
[Noctuoidea]	Yaga-joka				
Notodontidae	Shachihokoga-ka	11	(0)	1	(0)
Noctuidae	Yaga-ka				
Dilobinae		0	(0)	1	(0)
Acronictinae	Kenmonyaga-aka	0	(0)	5	(0)
Heliothinae	Tabakoga-aka	11	(3)	7	(2)
Noctuinae	Monyaga-aka	18	(5)	83	(7)
Hadeninae	Yotouga-aka	41	(9)	146	(37)
Cuculliinae	Sedakamokume-aka	4	(0)	44	(11)
Amphipyridae	Karasuyotouga-aka	6	(1)	24	(5)
Sarothripinae	Kinokawaga-aka	0	(0)	1	(1)
Chloephorinae	Ringa-aka	2	(1)	1	(0)
Acontiinae	Koyaga-aka	1	(1)	9	(5)
Plusiinae	Kinuwaba-aka	24	(16)	26	(5)
Metoponiinae		1	(0)	0	(0)
Nolidae	Kobuga-ka	1	(0)	1	(1)
Erebidae	Tomoega-ka				
Calpinae	Eguriba-aka	1	(1)	0	(0)
Catocalinae	Shitaba-aka	11	(3)	18	(4)
Ophiderinae	Kuchiba-aka	6	(3)	9	(6)
Hypeninae	Atsuba-aka	0	(0)	4	(0)
Herminiinae	Kurumaatsuba-aka	1	(0)	9	(3)
Lymantriinae	Dokuga-aka	29	(16)	8	(1)
Arctiinae	Hitoriga-aka				
Lithosiini	Kokega-zoku	5	(4)	1	(1)
Synthomini	Kanokoga-zoku	3	(1)	2	(0)
Arctiini	Hitoriga-zoku	26	(4)	9	(0)
Total		739	(220)	1347	(333)

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] Kobanega-joka

no species

(2) [Eriocranioidea] Suikobanega-joka
(Eriocraniidae) Suikobanega-ka

<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] Koumoriga-joka

no species

(4) [Nepticuloidea] Mogurichibiga-joka
(Nepticulidae) Mogurichibiga-ka

<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] Magariga-joka
(Heliozelidae) Tsuyakoga-ka

<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) Hosohigemagariga-ka

<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 Svensson, 2025	

(6) [Tischerioidea] Mumonmoguriga-joka
(Tischeriidae) Mumonhamoguriga-ka

<i>Tischeria ekebladella</i> Bjerkander oak leafminer	*Z3,Z6,Z9,Z19-23:H + another component	Molnár, 2012	C
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phe.

(7) [Tineoidea] Hirozukoga-joka
(Tineidae) Hirozukoga-ka

<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)	C

		Bûda, 1993	
<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> phe.	* E2,Z13-18:Ald + *E2-18:Ald N + *E2,Z13-18:OH (2:1)	Yamaoka, 1985 Takács, 2001	A
<i>Triaxomera fulvimitrella</i> Sod.	Z3,Z13-18:OAc	Măeorg in Arn, 1992	C

att.			Bûda, 1993	
		+ Z3,Z13-18:OH (9:1) or + E3,Z13-18:OH (5:5)	Karalius, 2005	
(Psychidae) Minoga-ka				
<i>Clania</i> (= <i>Eumeta</i>) <i>variegata</i> Snell. Paulownia bagworm <oo-minoga> phe.	* <i>(S)</i> -1-ethyl-2-methylpropyl Me3,Me13-15:Ate (3 <i>R</i> ,13 <i>R</i> ,3' <i>S</i>)-isomer	Gries, 2006(a)	A	
<i>Diplodoma</i> <i>laichartingella</i> Goeze att.	E11-14:Ald + Z11-14:Ald (20:1)	Ostrauskas, 2010(a)	C	
<i>Megalophanes</i> <i>viciella</i> Denis & Schiffermüller phe.	* <i>isopropyl</i> 8:Ate	Subchev, 2000(a)	D	
<i>Oiketicus</i> <i>kirbyi</i> Guilding bagworm phe.	* <i>(R)</i> -1-methylbutyl 10:Ate + other components	Rhainds, 1994	D	
<i>Thyridopteryx</i> <i>ephemeraeformis</i> Haworth bagworm moth phe.	* <i>(R)</i> -1-methylbutyl 10:Ate <i>(R)</i> -1-methylpentyl 10:Ate	Leonhardt, 1983 Warthen, 1996	D	
<i>Whittleia</i> <i>retiella</i> Newman phe.	* <i>(S)</i> -sec-butyl Z5-10:Ate + * <i>isopropyl</i> Z5-10:Ate (1:2)	Rahmani,2020	D	
(8) [Gracillarioidea] Hosoga-joka (Bucculatrigenidae) Chibiga-ka				
<i>Bucculatrix</i> <i>thurberiella</i> Busck. cotton leafperforator phe.	*Z9-14:ONO ₂ + *Z8-13:ONO ₂ (20:1)	Hall, 1992	C	
(Gracillariidae) Hosoga-ka a: Gracillariinae Hosoga-aka, b: Lithocolletinae Ginmonhosoga-aka, c: Phyllocnistinae Kohamoguriga-aka, d: Oecophyllembiinae Obiginhosoga-aka				
<i>Acrocercops</i> ^a sp. 1	E8,E10-14:Ald	Ando, 1987	A	

<i>att.</i> <i>Acrocercops</i> sp. 2	E8,E10-14:Ald	Ando, 1987	A
<i>att.</i> <i>Aspilapteryx</i> ^a <i>tringipennella</i> Zeller	Z11-14:OAc + E11-14:OAc (1:1)	Heikinheimo, 1978	D
<i>att.</i> <i>Caloptilia</i> ^a <i>fraxinella</i> Fly	Z11-16:Ald + Z11-16:OH (10:1)	Lemmen, 2009	C
<i>Caloptilia porphyretica</i> Braun blueberry leafminer <i>phe.</i>	*E11-16:Ald	Zhang, 2004	C
<i>Caloptilia theivora</i> Walsingham tea leafroller <chanohamaki-hosoga> <i>phe.</i>	E11-16:Ald *E11-16:Ald + Z11-16:Ald (9:1–7:3)	Ando, 1981 Ando, 1985(a)	A
<i>att.</i> <i>Calybites</i> ^a <i>auroguttella</i> Stephens	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 <i>phe.</i>	*E8,Z10-14:Ald	Svatos, 1999 Francke, 2002 Kalinová, 2003	C
<i>Conopomorpha</i> ^a <i>cramerella</i> Snellen cocoa pod borer moth <i>phe.</i>	*E4,E6,Z10-16:OAc + *E4,Z6,Z10-16:OAc + *E4,E6,Z10-16:OH + *E4,Z6,Z10-16:OH (30:20:3:2) (55:40:6:4)	Beevor, 1986 Niogret, 2022	D
<i>att.</i> <i>Conopomorpha sinensis</i> Bradley litchi fruit borer	E4,E6,Z10-16:OAc + E4,Z6,Z10-16:OAc (3:2) + E4,E6,Z10-16:OH + E4,Z6,Z10-16:OH	Hwang, 1996(b) Hung, 2006	D
<i>att.</i> <i>Gracillaria</i> ^a <i>elongella</i>	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 E4-12:OAc	Voerman, 1978(a) Voerman, 1991	C
<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. att.	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	E10-12:OAc	Hrdý, 1989	C

phe.	*E4,E10-12:OAc + another component	Gries, 1993	
<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.)	*Z10-14:OAc + *Z8-14:OAc	Borg-Karlson, 1996	C

phe.	+ *E10-14:OAc (46:3:1) N		
	(10:1:0)	Mozūraitis, 2000	
	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>asturota</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] Suga-joka (Yponomeutidae) Suga-ka a: Yponomeutinae Suga-aka, b: Praydinae Nisesuga-aka, c: Argyrethiinae Memushiga-aka			
<i>Argyrethia</i> ^c <i>albistria</i> Haworth att.	Z7-12:OAc + Z7-12:OH + Z9-14:OAc (20:1:1)	Tóth, 1992(d)	C
<i>Argyrethia beta</i> Friese & Moriuti <mochitsutsuji-memushiga> att.	Z11-14:OH Z7,E11-16:OH	Ando, 1981 Ando, 1985(b)	A
<i>Argyrethia 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)	Booij, 1984(a)	A
	*Z11-16:OAc + other components	Jaastad, 2002	
<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	Alford, 1978	C
	Z11-16:Ald	Booij, 1984(a)	
<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> att.	Z11-16:OAc	Priesner in Arn, 1986(a)	C
<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>	*Z11-14:OAc	Svensson, 2023	C

	Gaj	+ *E11-14:OAc (3:1)		
currant bud moth				
phe.		(1:1)	Svensson, 2025	
<i>Euhyponomeutoides rufella</i>		Z11-14:OAc	Peltotalo, 1986	C
att.		+ E11-14:OAc		
<i>Euhyponomeutoides trachydeltus</i>		Z11-14:OAc	Ando, 1981	A
Meyrick				
<hoso-suga>				
att.				
<i>Ocnerostoma</i> ^a <i>friesei</i> Svensson		E6-13:OAc	Willemse, 1987	A
<akamatsuhamoguri-suga>				
att.				
<i>Paraargyresthia</i> ^c <i>japonica</i> Moriuti		E11-16:OAc	Ando, 1981	A
<nihonnise-memushiga>				
att.				
<i>Paraswammerdamia</i> ^a <i>lutarea</i> Hw.		Z7-14:OAc	Mozūraitis, 1998	C
att.				
<i>Prays</i> ^b <i>citri</i> Mill.		*Z7-14:Ald	Nesbitt, 1977	C
citrus flower moth			Sternlicht, 1978	
phe.				
<i>Prays endocarpa</i> Meyrick		*Z7-14:Ald	Vang, 2011	C
citrus pock caterpillar		+ other components		
phe.				
<i>Prays nephelomima</i> Meyrick		*Z7-14:Ald	Gibb, 2005	C
citrus flower moth				
phe.				
<i>Prays oleae</i> Bern.		*Z7-14:Ald	Campion, 1979	C
olive moth			Renou, 1979	
phe.				
			Sakin, 2023	
<i>Swammerdamia</i> ^a <i>compunctella</i> H. S.		Z11-14:OAc	Novotný, 1990	C
att.		+ Z11-14:OH (9:1)		
<i>Swammerdamia pyrella</i> Villers		Z5-14:OAc	Tóth, 1991(b)	A
<usugurohime-suga>		+ Z7-14:OAc (1:1)		

att. Swammerdamia 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 (200:5:74) + Z11-14:Ald (100:2:0.75:1)	Hendrikse, 1982 Löfstedt, 1985(a) Löfstedt, 1988 Ostrauskas, 2010(b)	C
<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) + Z11-14:Ald (100:2:0.75:1)	Ritter, 1975 Löfstedt, 1985(a) Ostrauskas, 2010(b)	A
<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>	Z11-14:OAc + E11-14:OAc (97:3)	Stockel, 1981	A

phe.	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 + other components	Löfstedt, 1986(a) 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) Kuchibusaga-ka

<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 <mayumiookuchibusa-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) Konaga-ka

<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) (3:2) + Z11-16:OH (10:10:1) (50:50:1) + Z9-14:OAc (30:70:1:0.01) or + Z9-14:OH (30:70:1:10) + *Z11-16:OH (3:6:1) [3:8:2]	Tamaki, 1977(b) Koshihara, 1978 Chow, 1977 Zilahi-Balogh, 1995 Ando, 1979 Lin, 1982 Chisholm, 1983 Suckling, 2002 Lee, 2005	A

(10:90:1)

Yang, 2007

(5:5:1)

Chi, 2024

(Acrolepiidae) Atohigekoga-ka

<i>Acrolepiopsis assectella</i> Zeller leek moth phe.	*Z11-16:Ald + Z11-16:OAc (10:1)	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> att.	Z11-16:Ald + Z11-16:OAc (9:1)	Ando, 1981	A
<i>Acrolepiopsis</i> sp. att.	Z11-16:OAc + Z11-16:OH (9:1)	Ando, 1981	A

(Glyphipterigidae) Hosohamakimodokiga-ka

<i>Glyphipte rix eulucotoma</i> Diakonoff & Arita <atofutamon-	Z11-16:OAc + Z11-16:Ald (1:1)	Ando, 1981	A
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	hosohamakimodoki>			
	att.			
<i>Glyphipterix nigromarginata</i> Issiki <heriguro-hosohamakimodoki> att.	Z11-16:OAc + Z11-16:Ald (1:1)	Ando, 1981	A	
<i>Glyphipterix simpliciella</i> Stephens att.	Z11-16:OAc + Z11-16:Ald (3:1)	Booij, 1984(a)	C	
(Lyonetiidae) Hamoguriga-ka				
<i>Leucoptera malifoliella</i> Costa (= <i>scitella</i> Zeller) mountain-ash bentwing phe.	*Me5,Me9-17:H (major) + *Me5,Me9-16:H Me5,Me9-17:H (5 <i>S</i> ,9 <i>S</i>)-isomer *Me5,Me9-17:H + *Me5,Me9-18:H (100:0.1–100:5)	Francke, 1987; 1988 Tóth, 1989(c) Riba, 1990	C	
<i>Leucoptera sinuella</i> Reutti phe.	*Me3,Me7-15:H + *Me3,Me7-14:H + *Me7-15:H (95:2:3)	Barros-Parada, 2020	C	
<i>Leucoptera spartifoliella</i> Hübner broom twig miner phe.	*Me5-17:H	El-Sayed, 2024	C	
<i>Lyonetia clerkella</i> L. peach leafminer moth <momo-hamoguriga> phe.	*Δ1,Me14-18:H (<i>S</i>)-isomer	Sugie, 1984(a) Sato, 1985,1986	A	
<i>Lyonetia prunifoliella</i> Hübner apple leafminer moth <ringo-hamoguriga> <ginmon-hamoguriga> phe. in Korea in Japan	*Δ1,Me10,Me14-18:H + Me5,Me9-18:H + Me5,Me9-17:H (1:1:1) Δ1,Me10,Me14-18:H (10 <i>S</i> ,14 <i>S</i>)-isomer	Gries, 1997(b) Park, 2002 Taguri, 2014	B	
<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 (5 <i>S</i> ,9 <i>R</i>)-isomer	Francke, 1988 Malo, 2009	D	

(10) [Gelechioidea] Kibaga-joka
(Ethmiidae) Suhirokibaga-ka

<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) Kusamoguriga-ka

<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

(Xyloryctidae) Hirobakibaga-ka

<i>Opisina arenosella</i> Walker phe.	*Z3,Z6,Z9-23:H N	Bhanu, 2018	D
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(Oecophoridae) Maruhahibaga-ka

a: Oecophoriinae Maruhakibaga-aka, b: Chimabachinae Mesukobanemaruhakibaga-aka,
c: Amphisbatinae, d: Autostichinae Hoshimaruhakibaga-aka

<i>Bisigna^a procerella</i> Denis & Schiffermüller att.	E5-16:OAc	Willemse, 1987	D
<i>Cheimophila^b salicella</i> Hübner phe.	*E11-14:OAc + *E11-14:OH + *14:OAc + *E11-14:Ald (100:15:10:2)	Gillespie, 1984	C

<i>Cheimophila</i> sp. att.	E11-14:OAc	Ando, 1977	A
<i>Diurnea</i> ^b (= <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> ^d <i>pannonicus</i> Gozm att.	Z8-13:OAc	Subchev, 1999	D
<i>Pseudatemelia</i> ^c <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

(*Depressariidae*) ヒラタマルハキバガ科

<i>Acria ceramitis</i> Meyrick <nezumiegurihirata- maruhakibaga> att.	E8,Z10-12:Ald + E8,Z10-12:OAc (1:1)	Ando, 1987	A
<i>Agonopterix alstroemeriana</i> Cl. att.	Z7-12:OAc + Z9-14:OAc (1:1)	Szöcs. 1981	C
<i>Agonopterix assimilella</i> att.	Z7-14:OAc + Z9-14:OAc	Priesner in Arn, 1986(a)	C
<i>Agonopterix encentra</i> Meyrick <yamaukogihirata- maruhakibaga> att.	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>Agriophara rhombata</i> Meyr. tea grain moth <i>phe.</i>	*E5,Z7-12:OAc + *Z12-18:OAc N	Qu, 2024	C
<i>Cerconota anonella</i> Sepp. <i>phe.</i>	*Z9-18:OH + *Z9-18:Ald + *Z9-18:OAc (5:3:1)	Pires, 2016	D
<i>Depressaria depressana</i> <i>att.</i>	Z3-10:OAc	Sziráki in Arn,1997	C
<i>Depressaria olerella</i> Zeller <i>att.</i>	Z3-10:OAc	Priesner, 1988(b)	C
<i>Depressaria sordidatella</i> Tengström <i>att.</i>	E11-14:Ald + Z11-14:Ald (20:1)	Ostrauskas, 2010(a)	C

(*Stathmopodidae*) *Nisemaikoga-ka*

<i>Oedematopoda</i> (= <i>Atkinsonia</i>) <i>ignipicta</i> Butler <segurobenitogeashiga> <i>att.</i>	E4,Z6-16:OAc	Kim, 2014(a)	A
<i>Stathmopoda auriferella</i> Walker (= <i>theoris</i> Meyrick) <kiiro-maikoga> <i>phe.</i>	Z7-16:OAc or Z7,Z11-16:OAc + Z7,E11-16:OAc	Nagano, 1979	A

	*E5-16:OAc + another component	Yang, 2013	
<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) Higenagakibaga-ka			
<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) Hosokibaga-ka			
<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) Tsutsuminoga-ka			
<i>Augasma aeratellum</i> Zeller att.	Z7-12:OAc	Tóth, 1992(d)	D
<i>Coleophora albidella</i> Denis & Schiffermüller	E5-10:OAc + E5-10:OH (17:3)	Sziráki, 1980	A

<yanagipisutoru-minoga> att.			
<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. att.	Z5-10:OH	Priesner, 1991	C
<i>Coleophora deauratella</i> Zeller red clover casebearer phe.	Z5-10:OAc + Z5-10:Ald + Z7-12:OAc (1:1:1)	Tóth, 1992(d)	C
	*Z7-12:OAc + *Z5-12:OAc (10:1) + another comp.	Evenden, 2010	

<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 att.	E5-10:OAc + E5-10:OH (17:3)	Sziráki, 1980	C
<i>Coleophora obscenella</i> Herrich-Schäffer att.	Z9-14:OAc + Z7-12:OAc	Ostrauskas, 2003	C
<i>Coleophora ochripennella</i> Zeller att.	Z5-10:OH or Z5-10:OAc	Priesner, 1987(a)	C

<i>Coleophora orbitella</i> Zeller att.	Z5-10:OAc	Priesner, 1987(a)	C
<i>Coleophora ornatipennella</i> Hübner att.	Z5-10:OAc	Priesner, 1987(a)	C
<i>Coleophora palliatella</i> Zink. att.	E5-10:OH + E5-10:OAc (17:3)	Hrdý, 1989	C
<i>Coleophora peissoniella</i> Kasy att.	E5-10:OAc + E5-10:OH (17:3)	Sziráki, 1980	C
<i>Coleophora prunifoliae</i> Doets att.	Z5-10:OH or Z5-10:OAc	Priesner, 1987(a)	C
<i>Coleophora serpylletorum</i> E. Her. att.	Z3-10:OAc	Priesner, 1988(b)	C
<i>Coleophora serratella</i> L. <ringo-tsutsuminoga> att.	Z5-10:OH	Priesner, 1987(a)	A
<i>Coleophora sinensis</i> Yang Chinese larch casebearer att.	Z5-10:OH	Zhang, 1993	C
<i>Coleophora sternipennella</i> Zett. att.	Z3-10:OAc	Priesner, 1988(b)	C
<i>Coleophora trigeminella</i> Fuchs att.	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 att.	Z7-12:OAc + Z7-12:OH (1:1)	Tóth, 1992(d)	C
<i>Coleophora vacciniella</i> Herrich-Schäffer att.	Z5-10:OAc	Priesner, 1987(a) Willemse, 1987	C
<i>Coleophora versurella</i> att.	Z3-10:OAc	Capizzi in Arn, 1986(a)	C
<i>Coleophora viminetella</i> Zeller	Z5-10:OAc	Priesner, 1988(b)	C

att.	+ Z3-10:OAc (1:1)		
<i>Coleophora virgaureae</i> Staint att.	Z5-10:OAc	Priesner, 1987(a)	C
<i>Oecogonia decuratella</i> Herrich-Schaffer att.	Z8-13:OAc + Z10-15:OAc (10:1)	Subchev, 1999	D
<i>Oegoconia quadripuncta</i> Haworth att.	Z8-12:OAc + E8-12:OAc (24:1) or + E8,E10-12:OAc + 12:OAc (8:12:25)	Hrdý, 1989	D

(Momphidae) Akabanakibaga-ka

<i>Mompha sturnipennella</i> Treitschke att.	E11-14:Ald + Z11-14:Ald (20:1)	Ostrauskas, 2010(a)	C
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(Cosmopterigidae) Kazaribaga-ka

<i>Anatrachyntis</i> (= <i>Sathrobrotia</i>) sp. 1 att.	E11-14:OAc	Ando, 1975	A
<i>Anatrachyntis</i> (= <i>Sathrobrotia</i>) sp. 2 att.	E11-14:OH	Ando, 1977	A
<i>Anatrachyntis</i> sp. 3 att.	E11,Δ13-14:OAc	Ando, 1987	A
<i>Chrysochresta</i> sp. att.	Z8-13:OAc or E8-13:OAc	Ando, 1977	A
<i>Cosmopterix fulminella</i> Stringer <kazariba> att.	Z7-12:OAc Z11-14:OAc + Z9-12:OAc + Δ11-12:OAc (30:3:1)	Ando, 1977 Shry, 1985	A
<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> att.	Z10-12:OAc or Z10-13:OAc	Ando, 1977	A
<i>Cosmopterix</i> sp. 1-4 att.	Z9-12:OAc	Ando, 1975;1977	A
<i>Labdia citracma</i> Meyrick <tsumaki-togarihosoga> att.	E11-14:Ald	Ando, 1981	A
<i>Labdia issikii</i> Kuroko <sejiro-togarihosoga> att.	Z11-16:Ald + Z9-16:Ald (19:1)	Kohno, 2014	A
<i>Labdia semicoccinea</i> Stainton <benimon-togarihosoga> att.	E11-14:Ald	Ando, 1981	A
<i>Limnaecia phragmitella</i> Stainton <gama-togarihosoga> phe.	E11-14:OAc + Z11-14:OAc (10:1) *E11-14:OAc + *Z11-14:OAc (19:1)	Struble, 1977(a) Bestmann, 1993(c)	A
<i>Pancalia leuwenhoeckella</i> L. att.	Z8-13:OAc	Subchev, 1999	C
<i>Stagmatophora niphosticta</i> Meyrick <ginsuji-togarihosoga> att.	E11-14:OAc + Z11-14:OAc (7:3)	Ando, 1981	A

(Gelechiidae) Kibaga-ka
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	Roelofs, 1975(b) Rice, 1975 Millar, 1992(b)	C

	+ *Me11-23:H + *18:OAc (body scale)	Schlamp, 2005	
<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 att.	E9-13:OAc or E8-13:OAc	Willemse, 1987	C
<i>Brachmia</i> <i>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</i> <i>galbanella</i> Zeller	E9-13:OAc	Willemese, 1987	C

<i>att.</i>	E9-14:OAc + Z10-14:OAc (1:1)	Mozūraitis, 1998	
<i>Bryotropha senectella</i> Zeller	Z9-14:OAc	Kovaleva, 1975	C
<i>att.</i>	E8-13:OAc	Willemse, 1987	
	E11-14:Ald + Z11-14:Ald (20:1)	Ostrauskas, 2010(a)	
<i>B Bryotropha similis</i> Stain		Roelofs, 1969(b); 1970(a)	C
<i>att.</i> gray-race	Z9-14:OAc		
yellow-race	E9-14:OAc		
<i>Bryotropha terrella</i> Denis & Schiffermüller	E9-14:OAc	Arn, 1974	C
<i>att.</i>			
<i>Bryotropha</i> sp.	E9-14:OAc	Roelofs, 1970(a)	
<i>att.</i>			
<i>Caryocolum</i> ^a <i>alsinellum</i>	Z5-12:OAc	Sziráki in Arn, 1997	C
<i>att.</i>			
<i>Caryocolum marmoreum</i> Haworth	Z5-12:OAc	Tóth, 1992(d)	C
<i>att.</i>			
<i>Caryocolum proximum</i> Haworth	Z5-12:OAc + Z7-12:OAc (1:1)	Tóth, 1992(d)	C
<i>att.</i>			
<i>Catelaphris</i> sp.	Z7,Z11-16:OAc + Z7,E11-16:OAc (1:1)	Marks, 1976	D
<i>att.</i>			
<i>Chionodes</i> ^a <i>electella</i> Zeller	Z3-14:OAc	Willemse, 1987 Priesner, 1987(b)	C
<i>att.</i>			
<i>Chionodes fuscomaculella</i> Chambers	Z5-12:OAc	Roelofs, 1970(a)	C
<i>att.</i>			
<i>Chionodes holosericella</i> H. Sch.	E3-12:OAc	Priesner, 1987(b)	C
<i>att.</i>			
<i>Chionodes luctuella</i> Hübner	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	Dateman, 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 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 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 + Z4-13:OAc (39:11)	Charlton, 1991 Hobosyan, 2025	D
<i>Lixodessa 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 <ayame-kibaga> phe.	*Z3-12:OAc + *Z5-14:OAc (20:3)	Tabata, 2017	A
<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

		+ other components	Zhu, 1981	
	In Malawi	(11:9)	Marks, 1976	
	In the world	(1:1)	Flint, 1979	
	In India	(1:1)	Tamhankar, 1993	
<i>Pectinophora scutigera</i> Holdaway pink-spotted bollworm <i>att.</i>		Z7,Z11-16:OAc	Rothschild, 1975	C
<i>Pexicopia malvella</i> Hübner <i>att.</i>		Z7,E11-16:OAc + Z7,Z11-16:OAc (5:1–1:1)	Tóth, 1986(a)	D
<i>Pexicopia</i> sp. <i>att.</i>		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> <i>phe.</i>				A
	U.S.A.	Z7,Z11-13:OAc	Fouda, 1975	
	U.S.A.	*E4,Z7-13:OAc	Roelofs, 1975(c) Bacon, 1976	
	Japan	*4,7,10-13:OAc	Yamaoka, 1976	
	Cyprus	*E4,Z7,Z10-13:OAc + *E4,Z7-13:OAc (1:1)	Persoons, 1976(a,b)	
	Australia, Cyprus	E4,Z7,Z10-13:OAc + E4,Z7-13:OAc (1:1)	Voerman, 1978(c)	
	Peru	(3:2)	Raman, 1982	
	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.		Z5-12:OAc	Steck, 1979(c)	

<i>att.</i>				
<i>Platyedra subcinerea</i> Haworth <i>att.</i>	Z7,Z11-16:OAc	Tóth, 1986(a)	D	
<i>Recurvaria</i> ^a <i>leucatella</i> Clerck white-barred groundling moth <i>att.</i>	E3,Z5-14:OAc	Tóth, 1992(b)	C	
<i>Recurvaria nanella</i> Hübner lesser bud moth <i>att.</i>	E3-14:OAc	Tóth, 1992(b)	C	
<i>Rhynchopacha</i> sp. <i>att.</i>	E5-14:OAc	Subchev, 1974	D	
<i>Scrobipalpa</i> ^a <i>atriplicella</i> Fischer von Röslevstamm <hamaakaza-kibaga> <i>phe.</i>	Z5-12:OAc *Z5-12:OAc + *E5-12:OAc (19:1)	Roelofs, 1970(a) Hussain, 2023	A	
<i>Scrobipalpa heliopa</i> Lower tobacco stem borer <i>phe.</i>	*E3-13:OAc	Baker, 1985	C	
<i>Scrobipalpa ocellatella</i> Boyd. sugar beet moth <i>phe.</i>	*E3-12:OAc	Renou, 1980	C	
<i>Scrobipalpa salinella</i> Zeller <i>phe.</i>	*Z3-12:OAc + *Z5-12:OAc (20:1) + other components	Yang, 2011(c)	C	
<i>Scrobipalpa</i> sp. <i>att.</i>	Z7,Z11-16:OAc + Z7,E11-16:OAc	Nagano, 1979		
<i>Scrobipalpuloides</i> ^a (= <i>Scrobipalpula</i> , = <i>Tuta</i>) <i>absoluta</i> Meyrick tomato leafminer <i>phe.</i>	*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	*Z7,E11-16:OAc	Vick, 1974	A	

<bakuga> phe.	+ Z7,E11-16:Ald (9:1)	Ando, 1985(b)	
<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] Madaraga-joka (Limacodidae) Iraga-ka			
<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 phe.	*butyl E7,Δ9-10:Ate + other components	Siderhurst, 2007	D
<i>Darna trima</i> phe.	*(E)-2-hexenyl E7,Δ9-10:Ate + *(S)-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) Ribonmadaraga-ka

<i>Doratomyx 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) Madaraga-ka

<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 (R)-sec-butyl 2-12:Ate	Subchev, 2010 Razov, 2017 Efetov, 2020(b)	D
<i>Adscita obscura</i> Zeller att.	(R)-sec-butyl 2-12:Ate	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> Guénee att.	(R)-sec-butyl Z7-14:Ate	Landolt, 1986(a)	D
<i>Harrisina brillians</i> Barnes & McDunnough western grapeleaf skeletonizer phe.	*sec-butyl Z7-14:Ate (S)-(+)-isomer	Myerson, 1982 Soderstrom, 1985 Curtis, 1989	D
<i>Harrisina coracina</i> Clemens att.	(S)-sec-butyl Z7-14:Ate	Landolt, 1991	D
<i>Harrisina guatemalena</i> Druce att.	(S)-sec-butyl Z7-14:Ate	Landolt, 1991	D
<i>Illiberis pruni</i> Dyar <ringohamaki-kuroba> att.	(R)-sec-butyl Z7-12:Ate + (R)-sec-butyl Z9-14:Ate (10:1) sec-butyl Z7-12:Ate + sec-butyl Z9-14:Ate (1:1)	Subchev, 2013 Liu, 2021(b)	A

<i>Illiberis rotundata</i> Jordan plum moth <umesukashi-kuroba> phe.	*(<i>R</i>)-sec-butyl Z7-12:Ate + *(<i>R</i>)-sec-butyl Z9-14:Ate (1:1)	Subchev, 2009	A
<i>Illiberis ulmivora</i> Graeser att.	(<i>S</i>)-sec-butyl Z7-12:Ate + (<i>S</i>)-sec-butyl Z9-14:Ate + (<i>S</i>)-sec-butyl Z5-10:Ate (8:4:1)	Liu, 2022	C
<i>Jordanita anatolica</i> Naufock att.	(<i>S</i>)-sec-butyl Z7-12:Ate + (<i>R</i>)-sec-butyl Z7-12:Ate (1:1)	Efetov, 2010	D
	sec-butyl 2-12:Ate	Can, 2019	
<i>Jordanita globulariae</i> Hübner att.	sec-butyl 2-12:Ate (<i>R</i>)-sec-butyl 2-12:Ate	Efetov, 2016 Efetov, 2021	D
<i>Jordanita graeca</i> Jordan att.	sec-butyl 2-12:Ate (<i>R</i>)-sec-butyl 2-12:Ate	Efetov, 2014; 2016 Efetov, 2021	D
<i>Jordanita horni</i> Alberti att.	(<i>S</i>)-sec-butyl Z7-12:Ate + (<i>R</i>)-sec-butyl Z7-12:Ate	Efetov in Subchev, 2014	D
<i>Jordanita notate</i> Zeller att.	(<i>R</i>)-sec-butyl Z7-12:Ate + (<i>S</i>)-sec-butyl Z7-12:Ate	Subchev, 2010 Razov, 2017	D
	sec-butyl 2-12:Ate (<i>R</i>)-sec-butyl 2-12:Ate	Efetov, 2016 Efetov, 2021	
<i>Jordanita rietzsehi</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.	(<i>R</i>)-sec-butyl 2-12:Ate	Can, 2019 Efetov, 2020(b) Efetov, 2021	D
<i>Neoalbertia constans</i> Edwards att.	(<i>S</i>)-sec-butyl Z9-14:Ate	Tarmann in Subchev, 2014	D

<i>Neoilliberis fusca</i> Edwards att.	(R)-sec-butyl Z9-14:Ate	Tarmann in Subchev, 2014	D
<i>Neoprocris aversa</i> Edwards att.	(R)-sec-butyl Z9-14:Ate	Tarmann in Subchev, 2014	D
<i>Pyromorpha dyari</i> Jordan 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> Naufock 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; 2004 Efetov, 2014 Efetov, 2021	D
<i>Triprocris cyanea</i> Barnes & McDunnough 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. att.	Z11-14:OAc + E11-14:OAc + 12:OAc (7:3:40) Z11-14:OAc + E11-14:OAc (1:1) Z11-14:OAc	Hrdý, 1979 Konyukhov in Arn, 1986(a) Decamps, 1981	C
<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	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> Hampson att.	(R)-sec-butyl Z7-12:Ate or + (R)-sec-butyl Z9-14:Ate	Hofmann in Subchev, 2014	D
<i>Zygaenoprocis eberti</i> Alberti att.	(R)-sec-butyl Z7-12:Ate or + (R)-sec-butyl Z9-14:Ate	Hofmann in Subchev, 2014	D
<i>Zygaenoprocis taftiana</i> Alberti	(R)-sec-butyl Z7-12:Ate	Efetov in Subchev, 2014	D

(12) [Sesioidea] Sukasibaga-joka
(Sesiidae; Sesiinae) Sukasibaga-ka; Sukashibaga-aka

<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)	Sharp, 1978 Snow, 1985	D
	E3,Z13-18:OAc	Brown, 1985(b)	
<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 + E2,Z13-18:OH (9:1)	Szöcs, 1989 Bûda, 1993	C
<i>Bembecia</i> (= <i>Synansphecina</i>) <i>triannuliformis</i> Freyer att.	Z3,Z13-18:OH + E3,Z13-18:OH (9:1)	Szöcs, 1989 Bûda, 1993	C
<i>Bembecia zuwandica</i> Gorbunov att.	Z3,Z13-18:OAc + E3,Z13-18:OAc (9:1)	Bûda, 1993	C
<i>Carmenta anthracipennis</i> Boisduval att.	Z3,Z13-18:OAc + E3,Z13-18:OAc (1:1)	Leeuw, 1983 Snow, 1985	D
<i>Carmenta bassiformis</i> Walker att.	Z3,Z13-18:OA + Z3,Z13-18:OH + E3,Z13-18:OAc (20:3:1)	Sharp, 1978 Neal, 1983	D

	Z3,Z13-18:OAc	Greenfield, 1979	
<i>Carmenta ithacae</i> Bentsenmüller <i>att.</i>	E3,Z13-18:OAc	Greenfield,1979	D
<i>Carmenta laurelae</i> <i>att.</i>	Z3,Z13-18:OAc	Brown, 1985(c)	D
<i>Carmenta mimosa</i> Eichlin & Passoa <i>phe.</i>	Z3,Z13-18:OAc	Eichlin, 1983	D
	*Z3,Z13-18:OAc	Vang, 2012	
<i>Carmenta mimuli</i> <i>att.</i>	Z3,Z13-18:OAc	Meyer,1988	D
<i>Carmenta odda</i> Duckworth & Eichlin <i>att.</i>	Z3,Z13-18:OAc	Duckworth, 1977(b) Brown, 1986(a)	D
<i>Carmenta pyralidiformis</i> Walker <i>att.</i>	E3,Z13-18:OH	Solomon,1982	D
<i>Carmenta suffusata</i> Engelhardt <i>att.</i>	E3,Z13-18:OH	Sharp, 1978	D
<i>Carmenta teta</i> <i>att.</i>	Z3,Z13-18:OAc	Nielsen in Arn, 1986(a)	D
<i>Carmenta texana</i> Hy. Edwards <i>att.</i>	Z3,Z13-18:OAc	Sharp, 1978	D
<i>Carmenta welchellorum</i> Duckworth & Eichlin <i>att.</i>	Z3,Z13-18:OAc	Duckworth, 1977(a)	D
<i>Chamaesphecia</i> (= <i>Synansphecia</i>) <i>affinis</i> Staud. <i>att.</i>	E3,Z13-18:OAc + Z13-18:OH (1:1)	Bûda, 1993	D
<i>Chamaesphecia bibioniformis</i> Esper <i>att.</i>	Z3,Z13-18:OAc + E3,Z13-18:OAc (9:1)	Karalius, 2001	D
<i>Chamaesphecia chalciformis</i> Esper <i>att.</i>	Z3,Z13-18:OH + E2,Z13-18:OAc (1:1)	Mozûraitis, 1999(a)	D
<i>Chamaesphecia empiformis</i> Esper <i>att.</i>	Z3,Z13-18:OH	Szöcs, 1989	D

<i>Chamaesphecia mezentzevi</i> Gorbunov att.	Z3,Z13-18:OAc + Z3,Z13-18:OH (9:1)	Mozūraitis, 1999(a)	D
<i>Chamaesphecia schmidtiformis</i> Frr. att.	Z3,Z13-18:OAc + Z3,Z13-18:OH (9:1)	Mozūraitis, 1999(a)	D
<i>Chamaesphecia speia nova</i> Gorbunov att.	Z3,Z13-18:OH + E3,Z13-18:OAc (1:1)	Mozūraitis, 1999(a)	D
<i>Chamaesphecia tenthrediniformis</i> Denis & Schiffermüller (and/or <i>empiformis</i> Esper) att.	E3,Z13-18:OAc	Voerman, 1983	D
<i>Chamaesphecia zimmermanni</i> Lederer att.	E3,Z13-18:OH + Z3,Z13-18:OAc (9:1)	Mozūraitis, 1999(a)	D
<i>Chamaesphecia</i> sp. att.	E3,Z13-18:OAc + E2,Z13-18:OAc (1:1)	Bûda, 1993	D
<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>Macroscelia japona</i> Hampson <momobuto-sukashiba> phe.	*E2,Z13-18:Ald + *E2,Z13-18:OH (10:1)	Naka, 2007 Islam, 2007	A
<i>Macroscelia longipes</i> Moore <ashinagamomobuto-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) *E2,Z13-18:OAc + *Z3,Z13-18:OAc (68.5:0.1) + other componets	Alm, 1989 Snow, 1991 Klun, 1990	C
<i>Melittia satyriniformis</i> Hübner squash vine borer phe.	*E2,Z13-18:OAc	Schwarz, 1983(b)	C
<i>Nokona feralis</i> Leech	*E3,Z13-18:OAc	Naka, 2018	A

<kikubi-sukashiba> phe.	+ *E3,Z13-18:OH (7:3)		
<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) (1:1)	Nielsen, 1979 Greenfield, 1979	C
<i>Paranthrene pellucida</i> Greenfield & Karandinos att.	E3,Z13-18:OAc + Z3,Z13-18:OAc (4:1)	Greenfield, 1979	C
<i>Paranthrene robiniae</i> Hy. Edwards western poplar clearwing phe.	*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 twing clearwing moth phe.	E3,Z13-18:OH + Z3,Z13-18:OAc (9:1) + Z3,Z13-18:OH (9:1) *E3,Z13-18:OH	Greenfield, 1979 Brown, 1986(b) Du in Arn, 1997 Nielsen, 1979 Karalius, 2001 Zhang, 1986	C

	+ *Z3,Z13-18:OH + *E2,Z13-18:OH N + other components	Mozūraitis, 2007	
<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)	Nielsen, 1978(b)	D
	Z3,Z13-18:OAc + Z3,Z13-18:OH (1:1) or + E3,Z13-18:OH (1:1)	Snow, 1985	
<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)	Nielsen, 1979 Solomon, 1982	D
	E3,Z13-18:OH	Snow, 1985	
<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	Z3,Z13-18:OAc	Nielsen, 1979	C

maple callus borer <i>att.</i>	+ E3,Z13-18:OH (9:1)		
	+ Z3,Z13-18:OH (1:1)	Snow, 1985	
<i>Synanthedon acerrubi</i> Engelhardt <i>att.</i>	E2,Z13-18:OAc	Schwarz, 1983(b)	C
	+ Z3,Z13-18:OAc (100:1)	Alm, 1989 Snow, 1991	
<i>Synanthedon alleri</i> Engelhardt <i>att.</i>	E3,Z13-18:OAc	Sharp, 1978	C
	+ E3,Z13-18:OH (1:1)	Snow, 1985	
<i>Synanthedon andrenaeformis</i> Lasp. <i>att.</i>	E3,Z13-18:OAc + E2,Z13-18:OAc (10:1)	Priesner, 1986(a)	C
<i>Synanthedon arkansasensis</i> Duckworth & Eichlin <i>att.</i>	E3,Z13-18:OAc	Sharp, 1978	C
	E3,Z13-18:OH	Solomon, 1982	
<i>Synanthedon bibionipennis</i> Boisduval strawberry crown moth <i>att.</i>	E3,Z13-18:OAc + E3,Z13-18:OH (2:1)	Nielsen, 1978(a)	C
<i>Synanthedon bicingulata</i> Staudinger <i>phe.</i>	*Z3,Z13-18:OAc + *E3,Z13-18:OAc (3:2)	Yang, 2011(a)	C
<i>Synanthedon bolteri</i> Hy. Edwards <i>att.</i>	E2,Z13-18:OAc + Z3,Z13-18:OAc (99:1)	Taft, 2005	C
<i>Synanthedon castaneae</i> Busck clearwing chestnut moth <i>att.</i>	E3,Z13-18:OH	Brown(b), 1992 Anagnostakis, 1994	C
<i>Synanthedon castanerora</i> <i>att.</i>	E3,Z13-18:OH	Lin, 1993	C
<i>Synanthedon caucasicum</i> Gorbunov <i>att.</i>	E3,Z13-18:OAc	Mäeorg in Arn, 1992	C
	+ Z3,Z13-18:OAc (9:1)	Bûda, 1993	
<i>Synanthedon conopiformis</i> Esp. <i>att.</i>	E3,Z13-18:OH	Bûda, 1993	C
<i>Synanthedon culiciformis</i> L. <i>att.</i>	Z3,Z13-18:OAc	Fassotte in Arn, 1986(a)	C

<i>Synanthedon decipiens</i> Henry Edwards <i>att.</i>	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 <i>att.</i>	E2,Z13-18:OAc	Brown, 1985(d)	C
<i>Synanthedon exitiosa</i> Say peachtree borer <i>phe.</i>	*Z3,Z13-18:OAc + E3,Z13-18:OAc (24:1)	Tumlinson, 1974 Barry, 1978	C
<i>Synanthedon fatifera</i> Hodges viburnum borer <i>att.</i>	Z3,Z13-18:OAc + E3,Z13-18:OAc (9:1)	Nielsen, 1975 Adler, 1983 Greenfield, 1979	C
<i>Synanthedon flaviventris</i> Staudinger <i>att.</i>	E2,Z13-18:OAc + Z3,Z13-18:OAc (49:1)	Karalius, 2006	C
<i>Synanthedon formicaeformis</i> Esp. <i>att.</i>	E2,Z13-18:OAc + E3,Z13-18:OAc (1:1)	Priesner, 1986(a)	C
<i>Synanthedon fulvipes</i> Harris <i>att.</i>	Z3,Z13-18:OAc + other isomers	Nielsen, 1979	C
<i>Synanthedon haitangvora</i> Yang <i>phe.</i>	*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> <i>phe.</i>	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 <i>att.</i>	Z3,Z13-18:OAc or E3,Z13-18:OAc	Duckworth, 1977(b)	C
<i>Synanthedon mesiaeformis</i> <i>att.</i> 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)	Voerman, 1978(b)	C
	*Z3,Z13-18:OAc + other components	Judd, 2011	
<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 + E3,Z13-18:OAc (3:7) E3,Z13-18:OAc	Nielsen in Arn, 1986(a) Greenfield, 1979 Brown, 1986(b)	C
<i>Synanthedon pyri</i> Harris att.	E2,Z13-18:OAc + Z3,Z13-18:OAc (99:1)	Alm, 1989 Snow, 1991	C
<i>Synanthedon quercus</i> Matsumura <kashiko-sukashiba> att.	Z3,E13-18:OAc + E3,E13-18:OAc (1:1)	Tamaki, 1977(c)	A
<i>Synanthedon refulgens</i> Henry Edwards att.	E2,Z13-18:OAc + Z3,Z13-18:OAc (100:1)	Snow, 1991	C
<i>Synanthedon rhododendri</i> Beutenmüller rhododendron borer att.	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 att.	E3,Z13-18:OH + E3,Z13-18:OAc (3:1) + Z3,Z13-18:OAc (1:1)	Nielsen, 1979 Williams, 1999 Snow, 1985	C

	E2,Z13-18:OAc	Snow, 1989	
<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 <i>phe.</i>	E2,Z13-18:OAc *E2,Z13-18:OAc + other components	Bûda, 1993 Mozûraitis, 2013	C
<i>Synanthedon sequoiae</i> Henry Edwards sequoia pitch moth <i>att.</i>	Z3,Z13-18:OH	Nielsen, 1978(a)	C
<i>Synanthedon serica</i> Alpheraky <i>att.</i>	E2,Z13-18:OAc + E3,Z13-18:OAc (1:1)	Karalius, 2001	C
<i>Synanthedon soffneri</i> Spatenka <i>att.</i>	E2,Z13-18:OAc + Z3,Z13-18:OAc (10:1)	Priesner, 1993	C
<i>Synanthedon spuleri</i> Fuchs <i>att.</i>	E3,Z13-18:OAc + E2,Z13-18:OAc (10:1)	Priesner, 1986(a)	C
<i>Synanthedon tenuis</i> Butler <hime-sukashiba> <i>phe.</i> 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	E2,Z13-18:OAc	Voerman, 1984	C

phe.	+ E3,Z13-18:OAc (100:3–100:10)	Priesner, 1986(a)	
	+ Z3,Z13-18:OAc (99:1)	Meyer, 1994	
	*E2,Z13-18:OAc + *Z13-18:OAc (93:7)	Szöcs, 1985	
	+ *E3,Z13-18:OAc (97:3)	James, 2001	
	+ *E3,Z13-18:OAc (100:0.7) + other components	Mozūraitis, 2006	
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	
In Finland, Norway, Sweden	+ E3,Z13-18:OAc (97:3)	Svensson, 2025	
<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) Sukashibaga-ka; Himesukashiba-aka

<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 bohémica</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 *E3,Z13-18:Ald	Solomon, 1982 Brown, 1985(a) Judd, 2012 Teasdale, 2013	C
<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*] Bokutouga-joka
(*Cossidae*) Bokutouga-ka

<i>Acossus centerensis</i> Litner	E3,E5-14:OAc	Doolittle, 1976(a)	D
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aspen carpenterworm
att.

<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	*Z3-14:OAc + other components	Zhang, 2001	D

phe.			
<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>Parahypopta caestrum</i> Hübner asparagus moth phe.	*Z9-14:OAc + *Z7-14:OAc + *Z5-14:OAc (85:5:10) + another component	Pistillo, 2024	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) + E3-14:OAc (9:1)	Doolittle, 1976 (a,b) Solomon, 1978 Doolittle, 1986 Doolittle, 1986	D
<i>Zeuzera pyrina</i> L. leopard moth phe.	*E2,Z13-18:OAc + *Z13-18:OAc + *18:OAc N + *Z2,Z13-18:OAc (97:1:2) N + *E3,Z13-18:OAc (39:9:2) N E2,Z13-18:OAc + E2-18:OAc (19:1) + E3,Z13-18:OAc (19:1) + Z2,Z13-18:OAc (19:1:1)	Tonini, 1986 Frérot, 1986 Malosse, 1993 Castellari in Arn, 1992 Pasqualini in Arn, 1992,1997 Pasqualini in Arn, 1997	C

(Tortricidae; Tortricinae) Hamakiga-ka; Hamakiga-aka
a: Archipini (Kakumonhamakiga-zoku), b: Cnephasiini (Haiirohamakiga-zoku),
c: Tortricini (Hamakiga-zoku), d: Epitymbiini,* e: Phricanthini,* f: Schoenotenini,*
g: Cochylini (Hosohamakiga-zoku), 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 <barenone-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> att.	E11-14:OAc + E11-14:Ald (1:1)	Ando, 1981	A
<i>Acleris ferrugana</i> Denis & Schiffermüller att.	E11-14:Ald + Z11-14:Ald (9:1) (20:1)	Frerot, 1985 Ostrauskas, 2010(a)	B
<i>Acleris filipjevi</i> Obraztsov <kousuao-hamaki> att.	E11-14:Ald + E11-14:OAc (9:1)	Ando, 1981	A
<i>Acleris fimbriana</i> Thunberg & Becklin yellow tortrix phe.	*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 att.	E11-14:Ald + Z11-14:Ald (19:1)	Sanders, 1993	C
<i>Acleris hispidana</i> Christoph <haimidaremon-hamaki>	E11,Δ13-14:Ald + E11-14:Ald (1:1)	Ando, 1987	A

<i>Acleris gloverana</i> Walsingham western blackheaded budworm <i>phe.</i> <i>att.</i>	*E11,Δ13-14:Ald + *Z11,Δ13-14:Ald (20:1) + other components	Gray, 1996	C
<i>Acleris japonica</i> Walsingham <nakajiro-hamaki> <i>att.</i>	E11,Δ13-14:Ald + E11-14:Ald (9:1)	Ando, 1987	A
<i>Acleris maccana</i> Tr. <i>att.</i>	E11-14:Ald + Z11-14:Ald (19:1)	Sanders, 1993	C
<i>Acleris maximana</i> Barnes & Busck <i>att.</i>	E11-14:Ald + Z11-14:Ald (19:1)	Sanders, 1993	C
<i>Acleris minuta</i> Robinson yellowheaded fireworm <i>phe.</i>	*E11,Δ13-14:Ald + other components	Schwarz, 1983(a)	C
<i>Acleris nigrilineana</i> Kawabe <sujiguro-hamaki> <i>att.</i>	E11,Δ13-14:Ald + E11-14:Ald (1:1)	Ando, 1987	A
<i>Acleris paradiseana</i> Walsingham <tsumamon-eguri-hamaki> <i>att.</i>	E11-14:OAc	Ando, 1978	A
<i>Acleris perfundana</i> Kuznetsov <narako-hamaki> <i>att.</i>	Z11-14:Ald + E11-14:Ald (1:1)	Ando, 1981	A
<i>Acleris rhombana</i> Denis & Shiffermüller <i>att.</i>	E11-14:OAc + Z11-14:OAc (4:1)	Frerot, 1979(b)	C
<i>Acleris scabrana</i> Denis & Shiffermüller <i>att.</i>	E11-14:Ald	Tagestad, 1975	C
<i>Acleris sparsana</i> Denis & Shiffermüller <i>att.</i>	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	E11-14:Ald	Booij, 1985	C

att.	+ Z11-14:Ald (1:1)		
<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) R:S = 19:1 + other components	Tamaki, 1971(b) Tamaki, 1979; 1980 Tamaki, 1983 Noguchi, 1985	A
Chinese 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) *Z11-14:OAc + *Z9-14:OAc (9:1)	Shry, 1985 Hai, 2002 Vang, 2013	C
<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) Z11-14:OAc	Frerot, 1979(b) Ando, 1981	A

	+ E11-14:OAc (1:1)		
<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 *Z11-14:OAc + other components	Maini in Arn, 1986(a) Tóth, 1985	D
<i>Aleimma</i> ^c <i>loeflingiana</i> L. att.	E11-14:OAc + Z11-14:OAc E11-14:OAc + E11-14:Ald (1:1)	Frerot, 1979(b) Booij, 1985	D
<i>Amorbia</i> ^h <i>cuneana</i> Walsingham western avocado leafroller phe.	*E10,Z12-14:OAc + *E10,E12-14:OAc (17:8) + other components (53:47) (63:37–11:89)	McDonough, 1982(a) Hoffmann, 1983 Bailey, 1986	D
<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>argyrospilus</i> Walker fruittree leafroller phe.	*Z11-14:OAc + *E11-14:OAc (7:3) + other components + *Z9-14:OAc + *12:OAc (15:10:1:50)	Roelofs, 1974(d) Cardé, 1977(a)	C

	(100:64:2:1)	Deland, 1993	
<i>Archips asiaticus</i> Walsingham (= <i>audax</i> Razowski) <atoki-hamaki> <i>att.</i>	E11-14:OAc + Z11-14:OAc (9:1) (7:3) Z9-14:OAc + Z11-14:OAc (9:1)	Ando, 1978 Mizukoshi, 2006 Mizukoshi, 2006	A
<i>Archips atrolucens</i> Diakonoff <i>phe.</i>	Z11-14:OAc + E11-14:OAc (5:5) *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> <i>phe.</i>	*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	Z11-14:Ald + E11-14:Ald (3:1)	Grant, 1983	C

att.			
<i>Archips ingentanus</i> Christoph <ooatoki-hamaki> att.	Z11-14:OAc + Z11-14:OH (9:1)	Ando, 1978	A
<i>Archips micaceanus</i> Walker att.	Z11-14:OAc + E11-14:OAc + 12:OAc (7:3:40)	Zeleny, 1982 Spitzer, 1983	C
<i>Archips mortuanus</i> Kearfoot duskyback leafroller att.	Z11-14:OAc + E11-14:OAc + Z9-14:OAc (90:10:1)	Cardé, 1977(a)	C
<i>Archips oporana</i> L. att.	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> att.	Z11-14:OAc + E11-14:OAc (4:1) (1:1)	Ando, 1978 Kozaki, 1984	A
<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) + *Z11-14:OH	Persoons, 1974 Safonkin, 2003	C
<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) (87:13) + *E11-14:OAc (10:1:0.01) + Z11-14:Ald (100:0.75:2:1)	Roelofs, 1976(a) AliNiazee, 1976 Guerin in Arn, 1986(a) Ostrauskas, 2010(b)	C
<i>Archips semiferranus</i> Walker	*Z10-14:OAc	Hendry, 1974	C

oak leafroller phe.	+ other components	Hendry, 1975	
	*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>	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 <kohososuji-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 + E11-14:OAc (9:1) *Z11-14:OAc + *E11-14:OAc (76:19) + other components	Maini, 1973 Frerot, 1979(b) Frerot, 1984	C
<i>Argyrotaenia quadrifasciana</i> att.	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 *Z11,Δ13-14:Ald + *Z11,Δ13-14:OAc (10:1)	Nunez, 2002 Legrand, 2004	C
	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 + 12:OAc (2:3) + *E11-14:OAc + *12:OAc (88:12:125) + other components	Roelofs, 1968(a); 1968(b) Hamstead, 1972 Roelofs, 1975(a) Bjostad in Arn, 1986(a)	C
<i>Arotrophora</i> ^b <i>arcuatalis</i> Walker	*Z11-14:OAc	Horak, 1988	D

phe.	+ *E11-14:OAc (97:3) N		
<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 + *Z9-14:OAc [82:5:7:1] N (100:3:30:3)	Frerot, 1979(b) Soldán, 1983 Arsura in Arn, 1986(a) Frerot, 1982(b) Descoins, 1985 Kovalev, 1985 Witzgall, 1989(a); 1990	D
<i>Capnoptycha</i> ^d <i>ipnitis</i> Meyrick phe.	*Z8-14:OAc + *Z10-14:OAc (83:17) N	Horak, 1988	D
<i>Catamacta</i> ^a <i>gavisana</i> phe.	*Z11-14:OAc + *E11-14:OAc (49:51–61:39) N	Foster, 1988	D
<i>Cenopis</i> ^h <i>acerivorana</i> MacKay maple leafroller phe.	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 <i>biennis</i> Freeman two-year-cycle spruce budworm att.	E11-14:Ald	Sanders, 1974; 1993	C

<i>Choristoneura carnana</i> Barnes & Busck <i>att.</i>	E11-14:Ald + Z11-14:Ald (23:2)	Liebhold, 1985	C
<i>Choristoneura conflictana</i> Walker large aspen tortrix <i>phe.</i>	Z11-14:Ald *Z11-14:Ald + other components	Weatherston, 1976 Evenden, 2006	C
<i>Choristoneura fractivittana</i> Clemens <i>att.</i>	Z11-14:OH + Z11-14:Ald (19:1)	Roelofs, 1970(a) Comeau, 1973 Weatherston, 1978	C
<i>Choristoneura fumiferana</i> Clemens eastern spruce budworm <i>phe.</i>	*E11-14:Ald + another component E11-14:Ald + Z11-14:Ald (19:1) *E11-14:OAc N *E11-14:Ald + *Z11-14:Ald (20:1) + other components + 14:Ald (19:1:1) + Z11-16:Ald (95:5:3.3) 1,E11-15:H + 1,Z11-15:H (19:1)	Weatherston, 1971 Weatherston, 1974(b) Sanders, 1976; 1984; 1993, Jennings, 1983 Wiesner, 1979 Silk, 1980 Alford, 1983 Silk, 1988(b) Silk, 1985(a)	C
<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>	E11-14:OAc + Z11-14:OAc	Silk, 1988(b)	C

att.	+ E11-14:OH + Z11-14:OH (30:20:3:2)		
<i>Choristoneura murinana</i> Hübner European fir budworm silver-fir shoot tortricid phe.	*Z9-12:OAc + Z11-14:OAc (10:1) *Z9-12:OAc + Z11-13:OAc (10:1) + *Δ11-12:OAc + *Z11-14:OAc + *E9-12:OAc (100:10:3:3) Z11-14:OAc	Priesner, 1980(a) Priesner, 1982(a) Priesner, 1988(a) Burghardt, 1980	C
<i>Choristoneura occidentalis</i> Freeman western spruce budworm phe.	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 strain	+ *Z11-14:Ald (96.5:2:1.5:4)	Vakenti, 1988	
British Columbia strain	(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> ?) att.	Z11-14:OH + E11-14:OH (97:3)	Frerot, 1979(b)	C
<i>Choristoneura viridis</i> Freeman (= <i>C. retiniana</i> ?) green budworm att.	E11-14:OAc	Sanders, 1974	C
<i>Choristoneura n. sp.</i> CPG=Prince George phe.	*E11-14:OAc + *Z11-14:OAc (13:7) + other components	Gray, 1993	C
<i>Clepsis</i> ^a <i>dumicolana</i> Zeller att.	Z11-14:OAc + E11-14:OAc (1:1)	Frerot, 1979(b)	C
<i>Clepsis furcana</i> Walsingham att.	E11-14:OAc	Daterman, 1977	C
<i>Clepsis melaleucana</i> Walker att.	Z11-14:OH + Z11-14:OAc (1:1)	Roelofs, 1971(a)	C

<i>Clepsis rurinana</i> L. <usumon-hamaki> att.	Z11-14:Ald	Capizzi in Arn, 1986(a) Frerot, 1985	A
<i>Clepsis semialbana</i> Cuc. att.	Z11-14:OAc + Z11-14:OH + Z9-14:OAc (17:2:1)	Frerot, 1982(a)	B
<i>Clepsis spectrana</i> Treitschke phe.	*Z11-14:OAc + *Z9-14:OAc (3:1)	Minks, 1973(b)	C
<i>Clepsis strigana</i> Hübner att.	Z11-14:OAc	Maini, 1973	B
<i>Cnephasia</i> ^b <i>alternella</i> Stephens att.	Z8-12:OAc	Chambon, 1974 Sziráki, 1978(a); (b)	C
	Z8-12:OAc + E8-12:OAc (18:7)	Beauvais, 1977	
<i>Cnephasia alticolana</i> Herrich-Schäffer att.	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 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>)	Z7-10:OAc	Steck, 1977(a)	C

<i>horarianus</i> Walsingham att.			
<i>Cnephasia incertana</i> Treitschke att.	Z10-14:OAc	Frerot, 1985	C
	F ₂ 11,11-Z9-12:OAc	Bengtsson, 1990	
	Z10-12:OAc	Witzgall, 1996	
<i>Cnephasia interjectana</i> att.	E10-12:OAc	Booij, 1984(a)	C
	E9-12:OAc + E9,Δ11-12:OAc (19:1)	Brewer, 1985	
	E9-12:OAc	Priesner in Arn, 1986(a)	
<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	Bathon, 1983	C
	Z9-12:OAc + Z9-12:OH (1:1)	Booij, 1984(a)	
	*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	Alford, 1978 Peltotalo, 1986	C
	+ E8-12:OAc (1:1)	Witzgall, 1996	

	+ E8-12:OAc (93:7) + 12:OH	Hrdý, 1979	
	E11-14:Ald	Brewer, 1985	
	Z11-14:OAc	Olenici, 2007	
<i>Cnephasia stephensiana</i> <i>stolidana</i> Walker <hosobahaiiro-hamaki> <i>att.</i>	Z8-12:OAc + E8-12:OAc + Z8-12:OH (85.5:5.5:9)	Mizukoshi, 2006	A
<i>Cnephasia</i> sp. <i>att.</i>	E11-14:OAc	Klun, 1972	
<i>Cochylis</i> ^g <i>arthuri</i> Dang <i>phe.</i>	*Z11-14:OAc + *E11-14:OAc (4:1)	Foster, 2003	C
<i>Cochylis dubitana</i> Hübner <i>att.</i>	E11-14:OAc + E11-14:OH (10:1)	Frerot, 1985 Mozūraitis, 1998	C
<i>Cochylis hospes</i> Walsingham banded sunflower moth <i>phe.</i>	*E11-14:OAc + *Z11-14:OAc (9:1–4:1)	Underhill, 1986	C
<i>Cochylis hybridella</i> Hübner <togari-hosohamaki> <i>att.</i>	Z11-14:Ald + E11-14:OAc (1:1)	Frerot, 1985	A
<i>Cochylis molliculana</i> <i>att.</i>	E11-14:OAc	Maini in Arn, 1986(a)	C
<i>Cochylis posterana</i> Zeller <i>att.</i>	Z8-12:OAc + E8-12:OAc + Z11-14:OAc (25:1:5) Z11-14:OAc + Z9-12:OAc (10:1)	Tóth in Arn, 1986(a) Tóth, 1992(d)	C
<i>Commophila</i> ^g <i>umbrabsana</i> Kearfott <i>att.</i>	E11-14:OAc	Daterman, 1977	D
<i>Croesia</i> ^c <i>askoldana</i> Christoph <ginsujikaba-hamaki>	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	Arn, 1974	C
	+ 14:OAc (9:1)	Frerot, 1979(b)	
	+ Z11-14:Ald (1:1)	Frerot, 1985	
	Z6-14:OAc + E6-14:OAc (9:1)	Minks in Arn, 1986(a)	
<i>Croesia semipurpurana</i> Kearfott oak leaf shredder phe.	E11-14:Ald + Z11-14:Ald (9:1–8:2)	Weatherston, 1978	C
	*E11-14:Ald + *Z11-14:Ald (17:3) + other components	Silk, 1997	
<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 brownheaded leafroller phe.			D
Auckland strains Type I	*Z8-14:OAc + *Z5-14:OAc (4:1)	Young, 1985 Clearwater, 1991	
Christchurch strains Type II (= <i>C. herana</i>)	*Z5-14:OAc + another component	Foster, 1987(a); 1991 Clearwater, 1991	
Type III	*Z8-14:OAc + *Z5-14:OAc (9:1)	Foster, 1986	
Type IV (= <i>C. filicis</i> ?)	*Z10-16:OAc	Foster, 1986	
<i>Ctenopseustis servana</i> phe.	*Z7-14:OAc + *Z5-14:OAc (4:1–5:3) N	Foster, 1988; 1990	D
<i>Decodes</i> ^b <i>stevensi</i> Powell att.	Z9-12:OAc	Stevens, 1985	D
<i>Ditula</i> ^a <i>angustiorana</i> Haworth att.	Z10-14:OAc	Frerot, 1985	C
<i>Dyceratura</i> ^g <i>ostrinana</i> Guenée att.	Z11-14:OAc + E11-14:OAc (3:2)	Frerot, 1982(a)	D

<i>Eana</i> ^b <i>argentana</i> Clerck <ginmuji-hamaki> att.	Z7-12:OAc	Priesner in Arn, 1986(a)	A
<i>Eana derivana</i> La Harpe att.	E9-12:OAc + Z9-12:OAc (11:9)	Hrdý, 1989	C
<i>Ecclitica</i> ^a <i>torogramma</i> phe.	*E11-14:OAc + *Z11-14:OAc (25:0–23:2) N	Foster, 1988	D
<i>Epagoge</i> ^a <i>grotiana</i> F. att.	Z10-14:OAc + Z11-14:OAc (3:1–1:3) (10:1)	Booij, 1984(a) Frerot, 1985 Mozūraitis, 1998	D
<i>Epichoristodes</i> ^a <i>acerbella</i> Walker phe.	*Z11-14:OAc + *Z11-14:OH + *Z9-14:OAc (32:13:4) + other components *Z11-14:OAc + Z9-14:OH (8:1:2:1)	L.-Cassou, 1980 Rossi, 1982 Dalla in Arn, 1992	D
<i>Epiphyas</i> ^a <i>postvittana</i> Walker lightbrown apple moth phe.	*E11-14:OAc + *E9,E11-14:OAc (20:1) phe. (9:1) att. (19:1) + *E11-14:OH + *E11-16:OAc (200:10:2:1) + other components	Bellas, 1983 Muggleston, 1989 Yazdani, 2024 El-Sayed, 2011	D
<i>Epiphyas pulla</i> Turner att.	E9,E11-14:OAc + E11-14:OAc + 14:OAc + 12:OAc (16:10:10:1)	Yazdani, 2024	
<i>Epiphyas xylodes</i> Meyrick phe.	*Z11-14:OAc + *E11-14:OAc (3:2)	Horak, 1988	D

<i>Epitymbia</i> ^d phe. <i>alaudana</i> Meyrick	*Z5-14:OAc + *Z7-14:OAc (2:1) E	Horak, 1988	D
<i>Epitymbia</i> phe. <i>cosmota</i> Meyrick	*Z7-14:OAc + *Z5-14:OAc (4:1) E	Horak, 1988	D
<i>Epitymbia</i> phe. <i>eudrosa</i> Turner	*Z7-14:OAc E	Horak, 1988	D
<i>Eulia</i> ^b <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 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</i> att. <i>angustana</i> Hübner <tsumaobiki-hosohamaki>	Z11-14:OAc + E11-14:OAc + 12:OAc (7:3:40)	Hrdý, 1979	A
<i>Eupoecilia</i> att. <i>kobeana</i> Razowski <akaobi-hosohamaki>	Z11-14:OH	Ando, 1977	A
<i>Exapate</i> ^g att. <i>congelatella</i> Clerck	Z11-14:OAc + E11-14:OAc (4:1)	Velcheva, 1990	D
<i>Homona</i> ^a tea tortrix phe.	*E9-12:OAc + *12:OAc + *12:OH (1:1:3)	Kochansky, 1978	C

<i>Homona magnanima</i> Diakonoff oriental tea tortrix <cha-hamaki> phe.	*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 phe.	*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 phe.	*Z11-14:OAc + *Z9-12:OAc (9:1)	Vang, 2013	C
<i>Homonopsis</i> ^a <i>foederatana</i> Kennel <tsudurimon-hamaki> att.	Z11-14:OAc + E11-14:OAc (1:1)	Ando, 1978	A
	(3:7)	Mizukoshi, 2006	
<i>Homonopsis illotana</i> Kennel <tsuyasuji-hamaki> att.	Z11-14:OAc + Z11-14:OH (9:1)	Ando, 1978	A
<i>Hoshinoa</i> ^a <i>adumbratana</i> Walsingham <oofutasuji-hamaki> att.	Z11-14:Ald	Ando, 1978	A
<i>Hoshinoa longicellana</i> Walsingham common apple leafroller <atoboshi-hamaki> phe.	Z11-14:OAc *Z11-14:OAc + *E11-14:OAc (5:1)	Ando, 1975 Kozaki, 1984	A
<i>Hysterosia</i> ^g <i>cartwrightana</i> Kearfott att.	E11-14:OAc	Struble, 1977(a)	C
<i>Hysterosia inopinana</i> att.	E11-14:OAc + E11-14:Ald (1:1)	Priesner in Arn, 1986(a)	C
<i>Isochorista</i> ^d <i>helota</i> Meyrick att.	Z5-14:OAc + Z7-14:OAc	Horak, 1988	D

<i>Kawabeia</i> ^b <i>ignavana</i> Christoph <usuobihairofuyu-hamaki> att.	Z7-12:OAc		Ando, 1981	A
<i>Kawabeia razowskii</i> Kawabe <hairofuyu-hamaki> att.	Z5-12:OAc		Ando, 1977	A
<i>Meridemis</i> ^a <i>furtiva</i> Diakonoff att.	Z11-14:OAc		Hai, 2002	D
<i>Meritastis</i> ^d <i>laganodes</i> Meyrick phe.	*Z9-14:OAc	N	Horak, 1988	D
<i>Meritastis lythrodana</i> Meyrick phe.	*Z9-14:OAc	E	Horak, 1988	D
<i>Meritastis pyrosemana</i> Meyrick phe.	*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	Z5-10:OAc		Subchev, 1990	D

att.		Tóth, 1992(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)	Konyukhov in Arn, 1986(a)	C
	*E11-14:OAc + *Z11-14:OAc (3:1) + other components	Tonini, 1982	
<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)	A
	*Z11-14:OAc + *Z11-14:OH + *Z9-14:OAc (18:1:1) + other components	Voerman in Arn, 1986(a)	
		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 <i>att.</i>	Z11-14:OAc	Daterman, 1977	D
<i>Parasyndemis</i> ^a (= <i>Dichelia</i>) <i>histrionana</i> Frölich <i>att.</i>	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. <i>att.</i>	E11-14:OAc	Roelofs, 1970(a)	
<i>Phalonidia</i> ^g <i>manniana</i> <i>att.</i>	Z11-14:OAc + Z9,E11-14:OAc (10:1)	Priesner in Arn, 1986(a)	C
<i>Phalonidia minimana</i> Caradja <mini-hosohamaki> <i>att.</i>	Z11-14:OAc	Ando, 1977	A
<i>Phricanthes</i> ^e <i>asperana</i> Meyrick <i>phe.</i>	*Z9-12:OAc N	Horak, 1988	D
<i>Phtheochroa</i> ^g (= <i>Bonagota</i>) <i>cranaodes</i> Meyrick Brazilian apple leafroller <i>phe.</i>	*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> <i>att.</i>	Z11-14:OAc + Z9-14:OAc (1:1)	Ando, 1981	A
<i>Planotortrix</i> ^a <i>clarkei</i> Philpott <i>phe.</i>	*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> ?)	*Z8-14:OAc + *14:OAc (10:3)	Galbreath, 1985	D
B-race	*Z5-14:OAc + *Z7-14:OAc (3:2)		
	(3:97 – 71:29) N	Foster, 1989	
	+ *Z9-14:OAc N	Foster, 1988	
<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)	Foster, 1987(b)	D
	+ *Z7-14:OAc (20:20:1)	Foster, 1990	
<i>Platynota</i> ^h <i>flavedana</i> Clemens variegated leafroller	*E11-14:OH + *Z11-14:OH (9:1)	Hill, 1977	D

phe.	+ other components		
<i>Platynota idaeusalis</i> Walker tufted apple bud moth phe.	E11-14:OH + E11-14:OAc (1:1)	Bode, 1973	D
	*E11-14:OH + *E11-14:OAc (2:1)	Hill, 1974	
<i>Platynota stultana</i> Walsingham omnivorous leafroller phe.	*E11-14:OAc + *Z11-14:OAc (22:3)	Hill, 1975(a)	D
	+ E & Z11-14:OH (1–0.2%)	Baker, 1975	
<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	E11-14:OAc	Roelofs, 1971(a)	C

att.			
<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 *E9-12:OAc + *E9-12:OH + *E11-14:OAc + *Z11-14:OAc (4:1:4:20) + other components *E9-12:OAc + *E9-12:OH + *E11-14:OAc + *14:OAc (4:1:4:4) + other components	Saglio, 1977(a) Ando, 1978 Guerin, 1986(c) Arn, 1988	A
<i>Sparganothis sulfureana</i> Clemens Sparganothis fruitworm phe.	E11-14:OAc *E11-14:OAc + *Z11-14:OAc + *Z9-14:OAc (100:1:1) + other components	Roelofs, 1970(a) Zhu, 2009	C
<i>Sparganothis tunicana</i> Walsingham att.	E11-14:OAc	Dateman, 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>	Z11-14:OAc + Z9-14:OAc (1:1)	Ando, 1978	A

att.	or + Z9,E12-14:OAc (1:1)		
	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>Terricula</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)	Novotny, 1990	
" <i>Tortrix</i> " <i>constrictana</i> Walker phe.	*Z11-14:OAc + *Z9-14:OAc (22:3) E	Horak, 1988	C

(*Tortricidae*; *Olethreutinae*) Hamakiga-ka; Nokomehamakiga-aka
a: Eucosmini (Mogurihimehamaki-zoku), b: Grapholitini (Shinkuihimehamaki-zoku)
c: Microcorsini (Harabutohimehamaki-zoku), d: Olethreutini (Himehamakiga-zoku)

<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. att.	Z9-12:OAc + E9-12:OAc (7:3)	Biwer, 1978(a)	C
<i>Ancylis alba</i> <i>fasciana</i> Heinrich att.	Z9-12:OAc	Stevens, 1985	C
<i>Ancylis apicella</i> Denis & Schiffermüller att.	Z8-12:OAc + Z9-12:OAc (1:1)	Booij, 1984(a)	C
<i>Ancylis burgessiana</i> Zeller att.	E9-12:OAc	Reed, 1985(b)	C
<i>Ancylis columbiana</i> McDunnough att.	Z9-12:OAc	Stevens, 1985	C
<i>Ancylis geminana</i> Donovan <shiroobi-himehamaki> att.	Z9-12:OH	Booij, 1984(a)	A
<i>Ancylis mediofasciana</i> Clemens att.	E9-12:OAc	Stevens, 1985	C
<i>Ancylis nubeculana</i> Clemens att.	Z9-12:OAc	Reed, 1985(b)	C
<i>Ancylis pacificana</i> Walsingham att.	Z9-12:OAc	Stevens, 1985	C
<i>Ancylis sativa</i> Liu	*E9-12:OAc	Lin, 1984	C

jujube leafroller <i>phe.</i>	+ *Z9-12:OAc (4:1) + other components	Han, 1999	
<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	Linnauto, 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 <koekiobi-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 <isshiki-himehamaki> <i>att.</i>	Z8,Z10-12:OH	Ando, 1987	A
<i>Bactra</i> ^d <i>lanceolana</i> Hübner <togariba-himehamaki> <i>att.</i>	E10-14:OAc	Booij, 1984(a)	A
<i>Bactra verutana</i> Zeller <i>phe.</i>	*Z10-14:OAc N	Roelofs, 1984	C
<i>Barbara</i> ^a <i>colfaxiana</i> Kearfott Douglas fir cone moth <i>att.</i>	Z9-12:OH + Z9-12:OAc (3:1) Z9-12:OAc	Weatherston, 1977 Hedlin, 1983 Stevens, 1985	D
<i>Barbara mappana</i> Freeman <i>att.</i>	E9-12:OAc	Reed, 1985(b)	D
<i>Blastesthia</i> ^a <i>posticana</i> Zetterstedt <i>att.</i>	E9-12:OAc + E9-12:OH (9:1)	Booij, 1984(a) Booij, 1986	D
<i>Blastesthia turionella</i> L. <i>att.</i>	E9-12:OAc	Booij, 1984(a)	D
<i>Celypha</i> ^d <i>purpurana</i> Haw. <i>att.</i>	Z8-12:OH	Tóth, 1992(d)	C
<i>Celypha rosaceana</i> Schläger <i>att.</i>	Z8-12:OAc	Alford, 1978	C

<i>Celypha rurestrana</i> Dup. att.	Z8-12:OAc	Sziráki, 1978(a)	C
	Z8-12:OH	Tóth, 1992(d)	
<i>Celypha 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 illepidia</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	Z8-12:OAc	Newton, 1993	C

litchi moth <i>att.</i>				
<i>Cydia</i> ^b <i>americana</i> Walsingham <i>att.</i>	E8,E10-12:OAc	Stevens, 1985	C	
<i>Cydia blackmoreana</i> Walsingham <i>att.</i>	E8,E10-12:OAc	Witzgall, 1996	C	
<i>Cydia bracteata</i> Fernald <i>att.</i>	Z9-12:OAc	Dix, 1984	C	
<i>Cydia caryana</i> Fitch hickory shuckworm <i>phe.</i>	E8,E10-12:OAc or Z9-12:OAc *E8,E10-12:OAc	Smith, 1987 McDonough, 1990(a)	C	
<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) E9-12:OAc	Booij, 1984(a) Tóth in Arn, 1997	C	
<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)	Rotundo, 1984 Rotundo, 1988	A	

	*E8,E10-12:OAc + other components	Witzgall, 1996	
<i>Cydia fletcherana</i> Kearfott att.	E8-12:OAc	Reed, 1985(b)	C
<i>Cydia flexiloqua</i> Heinrich att.	Z5,E7-12:Ald + Z5,Z7-12:Ald + Z7-12:Ald (10:1:1)	Chisholm, 1985(a)	C
<i>Cydia illutana</i> H.-S. att.	E8,E10-12:OAc	Priesner in Arn, 1986(a) Witzgall, 1996	C
<i>Cydia indivisa</i> Danilevski att.	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 att.	E8,E10-12:OAc + E8,Z10-12:OAc (10:1)	Chisholm, 1985(a)	C
	(1:1)	Reed, 1985(b)	
<i>Cydia intexta</i> Kuznetsov att.	E8,E10-12:OAc	Witzgall, 1996	C
<i>Cydia latiferreana</i> Walsingham (= <i>Melissopus latiferreanus</i>) filbertworm phe.	E8,E10-12:OAc *E8,Z10-12:OAc + *E8,E10-12:OAc (43:10)	Davis, 1981 Davis, 1984	C
<i>Cydia lautiuscula</i> Heinrich att.	E8,E10-12:OAc	Chisholm, 1985(a)	C
<i>Cydia leucostoma</i> Meyrick <minamitumajiro-himehamaki> att.	Z8,E10-12:OAc	Witzgall, 1996	A
<i>Cydia medicaginis</i> Kuznetsov att.	E8,E10-12:OAc	Frerot, 1979(a) Wall, 1987	C
<i>Cydia millenniana</i> Adamoz. att.	E8,E10-12:OAc + Z8,Z10-12:OAc (1:1)	Witzgall, 1996	C

<i>Cydia nigricana</i> F. pea moth <endou-shinkui> phe.	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 att.	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.	E8,E10-12:OAc	Priesner	C

phe.			in Arn, 1986(a)	
	*E8,E10-12:OAc + other components		Witzgall, 1996	
<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		Rotundo, 1988	C
	*E8,E10-12:OAc + E8,E10-12:Ald (9:1)		Frérot, 1995	
	+ *E8,Z10-12:OAc (1:1) + other components		Witzgall, 1996	
<i>Cydia strobilella</i> L. spruce seed moth <ezomatsukasaga> phe.	Z8-12:OH		Booij, 1984(a)	A
	E8-12:OAc		Grant, 1989	
	*E8-12:OAc		Bédard, 2002	
	E8,E10-12:OAc + E8,Z10-12:OAc (1:1)		Witzgall, 1996	
	*E8,E10-12:OAc + *E8,Z10-12:OAc (3:2)		Wang, 2010	
<i>Cydia</i> (= <i>Grapholita</i>) <i>succedana</i> Denis & Shiffermüller att.	E8,E10-12:OAc		Hrdý, 1989	C
	+ E8,Z10-12:OAc (1:1)		Witzgall, 1996	
<i>Cydia toreuta</i> Grote eastern pine seed worm phe.	E8,Z10-12:OAc		Chisholm, 1985(a)	C
	*E8,Z10-12:OAc		Katovich, 1989	
<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	E7-12:OH		Weatherston, 1977	C

<i>Cydia zebeana</i> Ratzeburg <i>att.</i>	E8-12:OAc + E10-12:OAc (1:1) (9:1)	Booij, 1984(a) Booij, 1986	C
<i>Cydia</i> (= <i>Laspeyresia</i>) sp. <i>att.</i>	Z8-12:OAc	Roelofs, 1971(a)	
<i>Cymolomia</i> ^d <i>hartigiana</i> Saxesen <touhi-himehamaki> <i>att.</i>	Z10-12:OAc	Witzgall, 1996	A
<i>Dichrorampha</i> ^b <i>acuminatana</i> Lienig & Zeller <i>att.</i>	Z9,Δ11-12:OAc E9,Δ11-12:OAc + Z9,Δ11-12:OAc (4:1)	Chisholm, 1985(b) Rotundo, 1985(b) Ulenberg in Arn, 1997	C
<i>Dichrorampha gueneana</i> Obraztsov <kokiobiherihoshi-himehamaki> <i>att.</i>	Z9,Δ11-12:OAc + E9,Δ11-12:OAc (1:4)	Chisholm, 1985(b) Ulenberg in Arn, 1997	A
<i>Dichrorampha incursana</i> H.-S. <i>att.</i>	E9-12:OAc + Z9-12:OAc (11:9)	Hrdý, 1989	C
<i>Dichrorampha petiverella</i> L. <hosokiobiherihoshi-himehamaki> <i>att.</i>	E9-12:OAc + E11-14:OAc (10:1) Z11-14:Ald + E11-14:Ald (9:1) E11-14:OAc + E11-14:OH (10:1)	Priesner in Arn, 1986(a) Frerot, 1985 Mozūraitis, 1998	A
<i>Dichrorampha plumbana</i> Scopoli <i>att.</i>	E9-12:OAc + Z9-12:OAc (9:1)	Booij, 1984(a)	C
<i>Dichrorampha sedatana</i> (= <i>sedetana</i> ?) Busck <i>att.</i>	E8,E10-12:OAc	Stevens, 1985	C
<i>Dichrorampha simpliciana</i> Haworth <i>att.</i>	E9-12:OAc + E9,Δ11-12:OAc (19:1)	Brewer, 1985	C

<i>Dichrorampha simulana</i> Clemens <i>att.</i>	E9,Δ11-12:OAc + E9,Δ11-12:OH (10:1)	Chisholm, 1985(b)	C
<i>Dichrorampha</i> sp. <i>att.</i>	E9-12:OAc + E9-12:OH	Roelofs, 1971(a)	
<i>Ecdytolopha</i> ^b <i>aurantiana</i> citrus borer moth <i>phe.</i>	*E8-12:OAc + *E8-12:OH (100:1 - 10:1)	Leal, 2001 Ono, 2001	D
<i>Ecdytolopha insiticihana</i> Zeller <i>att.</i>	E8-12:OAc	Roelofs, 1971(a)	D
<i>Ecdytolopha torticornis</i> Meyrick macadamia nut borer <i>phe.</i>	*E8-12:OAc + other components	Chamberlain, 2003	D
<i>Enarmonia</i> ^a <i>formosana</i> Scopoli cherry bark tortrix <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> att.	Z11-14:OAc + E11-14:OAc	Frerot, 1979(b)	A
<i>Endothenia quadrimaculana</i> Haworth att.	E10-14:OAc + Z10-14:OAc (3:1) (9:1)	Booij, 1984(a) Capizzi in Arn, 1992	C
<i>Endothenia ustulana</i> (= <i>carbonana</i>) Haworth att.	Z10-14:OAc	Arn, 1974	C
<i>Epiblema</i> ^a <i>confusana</i> H.-S. att.	E8,Z10-12:OAc + Z8,Z10-12:OAc (1:1)	Witzgall, 1996	C
<i>Epiblema desertana</i> Zeller att.	Z8-12:OAc	Roelofs, 1971(a)	C
<i>Epiblema foenella</i> L. <yomogi-nemushiga> phe.	Z8-12:OAc + E8-12:OAc (18:7) *Z8,Z10-12:OAc + E8,Z10-12:OAc (1:1) or + *E8,E10-12:OAc (1:1) + other components	Ando, 1977 Beauvais, 1977 Witzgall, 1996	A
<i>Epiblema fuchsiana</i> Rössl. att.	Z8,Z10-12:OAc	Witzgall, 1996	C
<i>Epiblema resumptana</i> Walker att.	Z9-12:OAc + E9-12:OAc (1:1)	Stevens, 1985	C
<i>Epiblema scudderiana</i> Clemens att.	Z8-12:OH	Roelofs, 1971(a)	C
<i>Epiblema scutulana</i> Denis & Schiffermüller att.	Z8-12:OAc Z8-12:OAc + E8-12:OAc + 12:OH (97:3:300)	Chambon, 1974 Sziráki, 1978(a) Hrdý, 1979 Tóth, 1992(d) Olenici, 2007	C

<i>Epiblema</i> sp. att.	E11-14:OAc	Daterman, 1977	
<i>Epinotia</i> ^a <i>aporema</i> Walsingham phe.	*Z7,Z9-12:OH + *Z7,Z9-12:OAc (15:1)	Altesor, 2009	C
<i>Epinotia</i> ^a <i>atistriga</i> (= <i>atristriga</i> ?) Clarke att.	Z7-12:OAc	Roelofs, 1971(a)	C
<i>Epinotia columbia</i> Kearfott att.	Z9-12:OAc + E9-12:OAc (1:1)	Stevens, 1985	C
<i>Epinotia criddleana</i> att.	E9-12:OAc	Reed, 1985(a)	C
<i>Epinotia leucantha</i> Meyrick <hanaudo-moguriga> att.	Z9-12:OH	Ando, 1981	A
<i>Epinotia miscana</i> Kearfott att.	E9-12:OAc	Stevens, 1985	C
<i>Epinotia nanana</i> Treitschke att.	E8-12:OAc + E10-12:OAc (1:1)	Booij, 1984(a)	C
<i>Epinotia rubiginosana</i> Herr. & Schaffer <matsunokuromadara- himehaamaki> att.	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 att.	Z7,Z9-12:OAc	Reed, 1985(a)	C
<i>Epinotia solicitana</i> att.	E8-12:OAc	Miller in Arn, 1992	C
<i>Epinotia tedella</i> Clerck European spruce budmoth phe.	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>	E10,E12-14:OAc	Witzgall, 1996	A

Denis & Shiffermüller <hanno-memushiga> att.	+ Z10,Z12-14:OAc (1:1)		
<i>Epinotia zandana</i> Kearfott att.	Z7-12:OAc	Roelofs, 1971(a)	C
<i>Epinotia</i> sp. 1 (<i>zandana</i> ?) att.	Z7,Z9-12:OAc	Reed, 1985(a)	
<i>Epinotia</i> sp. 2 (<i>removana</i> ?) att.	Z7,Z9-12:OAc or Z7,Z9-12:OH	Reed, 1985(a)	
<i>Epinotia</i> sp. 3 att.	E8,E10-12:OAc	Stevens, 1985	
<i>Episimus</i> ^d <i>argutanus</i> Clemens att.	Z9-12:OAc	Roelofs, 1971(a) Jurb, 1973	D
	+ Z11-14:OAc (11:2)	Jordan, 2013	
<i>Eucosma</i> ^a <i>aemulana</i> Schläger <shirozusosomon-himehamaki> att.	E8,E10-12:OAc + Z8,Z10-12:OAc (1:1)	Rotundo, 1985(b) Witzgall, 1996	A
<i>Eucosma bobana</i> Kearfott att.	Z9-12:OAc	Stevens, 1985 Rotundo in Arn, 1992	C
<i>Eucosma campoliliana</i> Denis & Shiffermüller <nisemonshirosusomon- himehamaki> att.	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> att.	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>	*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 <i>att.</i>	Z9-12:OAc + E9-12:OAc (9:1) (10:3)	Grant, 1985 Grant, 2002	C
<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	Underhill, 1987(b)	C

	+ *Z5-12:OAc + *12:OAc (10:4:1:1:4) + other components		
<i>Eucosmomorpha</i> ^a <i>albersana</i> Hübner att.	E9-12:OAc + Z9-12:OAc (9:1)	Booij, 1984(a)	C
<i>Eudemis</i> ^d <i>porphyra</i> Hübner att.	Z10-14:OAc + E10-14:OAc (10:1)	Mozūraitis, 1998	C
<i>Exartema</i> ^d (= <i>Olethreutes</i>) <i>appendiceum</i> Zeller att.	E9-14:OAc	Steck, 1977(a)	C
<i>Exartema fusticanum</i> McDunnough att.	Z7-12:OH	Weatherston, 1974(a)	C
<i>Grapholita</i> ^b <i>caeruleana</i> Walsingham att.	E8,E10-12:OAc	Stevens, 1985	C
<i>Grapholita compositella</i> F. att.	E8,E10-12:OAc	Witzgall, 1996	C
<i>Grapholita conversana</i> Walsingham att.	E8,E10-12:OAc	Stevens, 1985	C
<i>Grapholita dimorpha</i> Komai <sumomohime-shinkui> <bokehime-shinkui> phe.	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 endrosias</i> Meyrick <seshimofuri-himehamaki> att.	E7-12:OAc	Ando, 1981	A
<i>Grapholita funebrana</i> Treitschke plum fruit moth phe.	Z8-12:OAc Z10-12:OAc + codling moth Z8-12:OAc + E8-12:OAc (25:1)	Granges, 1971 Arn, 1974 Arn, 1976(a) Biwer, 1978(b)	B

		+ E10-12:OAc (1:1)	Witzgall, 1996	
		*Z8-12:OAc + *E8-12:OAc (10:1) + other components	Guerin, 1986(b)	
<i>Grapholita</i> (= <i>Cydia</i>) <i>gemmiferana</i> Treischke att.		E8,E10-12:OAc	Hrdý, 1989 Tóth, 1992(d) Witzgall, 1996	C
<i>Grapholita inopinata</i> Heinrich <ringoko-shinkui> phe.		Z8-12:OAc *Z8-12:OAc + other components	Ando, 1977 Tanaka, 2007	A
<i>Grapholita janthinana</i> Duponchel att.		Z8-12:OAc + E8-12:OAc (7:3–8:2) (1:1)	Beauvais, 1977 Biwer, 1978(b) Witzgall, 1996	C
<i>Grapholita</i> (= <i>Cydia</i>) <i>jungiella</i> Clerck att.		E8,Z10-12:OAc + Z8,E10-12:OAc (1:1)	Priesner in Arn, 1986(a) Wang, 2010 Witzgall, 1996	C
<i>Grapholita libertina</i> Heinrich att.		E8-12:OAc + Z8-12:OAc + Z8-12:OH (17:2:1)	Hillier, 2002	C
<i>Grapholita lobarzewskii</i> phe.		E8-12:OAc + Z8-12:OAc (9:1) *E8-12:OAc + *Z8-12:OAc (9:1) + other components	Biwer, 1978(b) Witzgall, 1989(b)	C
<i>Grapholita lunatana</i> Walsingham att.		E8,E10-12:OAc	Chisholm, 1985(a)	C
<i>Grapholita molesta</i> Busck Oriental fruit moth <nashihime-shinkui> phe.	U.S.A	*Z8-12:OAc	Roelofs, 1969(a)	A
	Australia	+ *E8-12:OAc [25:1]	Lacey, 1992	
	U.S.A.	+ 12:OH (98:2:1000)	Beroza, 1973(c)	
	U.S.A.	+ 12:OH (93:7:100)	Cardé, 1975(b)	

	U.S.A.	+ Z8-12:OH (311:22:1)	Cardé, 1975(c)	
	France	(9:1)	Biwer, 1978(b)	
	France	+ *Z8-12:OH [46:4:1]	Biwer, 1979	
	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 + Z8-12:OH (85.5:5.5:9)	Mizukoshi, 2006	
		Z8-12:OAc + E8-12:OAc + 12:OH (97:3:300)	Olenici, 2007	
<i>Grapholita</i> sp. 1 att.		Z8-12:OAc	Ando, 1981	A
<i>Grapholita</i> sp. 2 att.		E8,E10-12:Ald + E8,E10-12:OAc (10:1)	Chisholm, 1985(a)	
<i>Grapholita</i> sp. 3 att.		E8-12:OAc	Chisholm, 1985(a)	

<i>Gravitarmata</i> ^a <i>margarotana</i> Heinemann <matsutobi-himehamaki> phe.	*Z9-12:OAc + *E9-12:OAc + *12:OAc (5:1:3) + other components	Löfstedt in Arn, 1992	A
<i>Gretchena</i> ^a <i>bolliana</i> Slingerland pecan bud moth att.	Z8-12:OAc + E8-12:OAc + 12:OH (100:7:1000)	Gentry, 1975	D
<i>Gretchena semialba</i> McD. att.	E11-14:Ald + Z11-14:Ald (19:1)	Sanders, 1993	D
<i>Griselda</i> ^a <i>myrtillana</i> Hump. & Westw. att.	Z11-14:OH	Booij, 1984(a)	C
<i>Gymnandrosoma</i> ^b <i>aurantianum</i> Lima macadamia nut borer phe.	*E8-12:OAc + other components	Aranda-Arguello, 2022	C
<i>Gypsonoma</i> ^a <i>aceriana</i> Duponchel poplar shoot-borer att.	E10-12:OAc + E10-12:OH (3:1) (7:3)	Booij, 1984(a) Booij, 1984(d)	C
<i>Gypsonoma dealbana</i> Frölich att.	Z11-14:OAc + E11-14:OAc (3:2) (1:10) E11-14:OAc E10-12:OAc + E8-12:OAc (1:1)	Frerot, 1982(a) Mozūraitis, 1998 Möttus in Arn, 1992 Booij, 1984(a) Witzgall, 1996	C
<i>Gypsonoma minutana</i> Hübner <popura-himehamaki> att.	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	Booij, 1984(a)	C
	E9-12:OAc + Z9-12:OAc (9:1)	Safonkin, 1988	
<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 <shiromon-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 att.	Z8,E10-12:OAc	Witzgall, 1996	C
<i>Hedya salicella</i> L. att.	E8,E10-12:OH	Olenici, 2007	A
<i>Hedya separatana</i> Kearfott att.	Z10-12:OAc	Reed, 1985(b)	C
<i>Latronympha</i> ^b <i>strigana</i> F. att.	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 E8,E10-12:OAc + E10-12:OAc (10:1) or + E10-12:Ald (1:1)	Vang, 2006 Hu, 2012	A
<i>Lobesia</i> ^d <i>aeolopa</i> Meyrick <hosobachibi-himehamaki> att.	Z7-10:OAc	Ando, 1975	A
<i>Lobesia bicinctana</i> (= <i>bicincta</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</i> <i>ussuriensis</i> Caradja <niseazukisaya- himehamaki> att.	E8-12:OAc	Ando, 1981	A
<i>Metendothenia</i> ^d <i>atropunctana</i> Zetterstedt <kurotentumaki- himehamaki> att.	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. att.	Z7-12:OAc + Z9-14:OAc (1:1)	Ando, 1981	A
<i>Notocelia</i> ^a <i>incarnatana</i> Hübner att.	E10,E12-14:OAc + E10,Z12-14:OAc (1:1)	Witzgall, 1996	C
<i>Notocelia</i> <i>purpurissatana</i> Heinrich att.	Z10,Z12-14:OAc or Z10,Z12-14:OH	Reed, 1985(b)	C
<i>Notocelia</i> <i>roborana</i> Denis & Shiffermüller phe.	*Z10-14:OAc + *Z8,Z10-12:OAc [19:5] + other components N	Witzgall, 1996	C
<i>Notocelia</i> <i>rosaecolana</i> Doubleday <barashiro-himehamaki> att.	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</i> <i>trimaculana</i> Haworth att.	Z10,Z12-14:OAc	Witzgall, 1996	C
<i>Notocelia</i> <i>uddmanniana</i> L.	Z10,E12-14:OAc	Priesner	C

phe.			in Arn, 1986(a)	
		*Z10,Z12-14:OAc + other components	Witzgall, 1991(b)	
<i>Olethreutes</i> ^d att.	<i>bifasciana</i> Haworth	E10-14:OAc + Z10-14:OAc (3:1)	Booij, 1986	C
<i>Olethreutes</i> att.	<i>bipunctana</i> F. <shiromadara-himehamaki>	Z8-14:OAc + Z10-14:OAc (1:1)	Booij, 1986	B
<i>Olethreutes</i> att.	<i>decrepitana</i>	E10-14:OAc + Z10-14:OAc (3:1)	Voerman in Arn, 1986(a)	C
<i>Olethreutes</i> att.	<i>humeralis</i> Walsingham <kiobikimadara-himehamaki>	Z8-12:OAc + Z8-12:OH (1:1)	Ando, 1981	A
<i>Olethreutes</i> att.	<i>siderana</i> Treitchke <ginboshimotoki-himehamaki>	Z8-12:OAc	Booij, 1984(a)	A
<i>Pammene</i> ^b att.	<i>albuginana</i> Guenée	Z8-12:OAc	Chambon, 1974 Sziráki, 1978(a); (b) Witzgall, 1996	C
<i>Pammene</i> att.	<i>amygdalana</i> Duponchel	E8-12:OAc + Z8-12:OAc (9:1)	Biwer, 1978(b)	C
<i>Pammene</i> att.	<i>argyrana</i> Hübner	Z8-12:OAc	Chambon, 1974 Sziráki, 1978(b) Witzgall, 1996	C
		+ E8-12:OAc (18:7)	Beauvais, 1977	
<i>Pammene</i> (= <i>Cydia</i>) att.	<i>aurana</i> F.	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</i>	<i>aurita</i> (= <i>aurantiana</i>) Staudinger	Z8-12:OAc	Sziráki, 1978(a)	C

<i>att.</i>	+ E8,E10-12:OAc (100:3)	Priesner in Arn, 1986(a)	
	+ E8-12:OAc (1:1)	Witzgall, 1996	
<i>Pammene fasciana</i> L. <i>att.</i>	Z8-12:OAc	Chambon, 1974 Sziráki, 1978(b) Rotundo, 1984	C
	+ Z8-12:OH + 12:OAc (15:5:8)	Rotundo, 1991	
<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 <nemorousa-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 att.	E8,E10-12:OH	Brakefield in Arn, 1986(a)	C
	Z8,E10-12:OH	Guerin, 1983	
<i>Pammene spiniana</i> Duponchel att.	Z8-12:OAc	Sziráki, 1978(a)	C
	+ E10-12:OAc (1:1)	Witzgall, 1996	
<i>Pammene splendidulana</i> Guenée att.	Z8-12:OAc	Sziráki, 1978(a)	C
<i>Pammene suspectana</i> Lienig & Zeller att.	Z8-12:OAc	Sziráki, 1978(a)	C
	Z9-12:OAc + Z11-14:OAc + E11-14:OAc + 12:OAc + 14:OAc (5:3:2:3:1)	Olenici, 2007	
<i>Pammene</i> sp. att.	Z8-12:OAc	Ando, 1977	A
<i>Paralobesia</i> ^d (= <i>Endopiza</i>) viteana Clemens grape berry moth phe.	*Z9-12:OAc + *Z11-14:OAc (20:1) + other components	Roelofs, 1971(c)	D
	Z9-12:OAc + E9-12:OAc (24:1)	Taschenberg, 1974	
<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	Dix in Arn, 1986(a)	C

	+ E9-12:OAc		
<i>Petrova</i> (= <i>Retinia</i>) <i>metallica</i> Busck metallic pitch nodule moth <i>phe.</i>	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 <i>att.</i>	Z9-12:OAc + E9-12:OAc (1:1)	Stevens, 1985	C
<i>Petrova</i> (= <i>Retinia</i>) <i>resinella</i> L. <i>att.</i>	Z9-12:OAc + E9-12:OAc (1:1) Z9-12:OAc + Z11-14:OAc + E11-14:OAc + 12:OAc + 14:OAc (5:3:2:3:1)	Booij, 1984(a) Toshova, 2017 Olenici, 2007	C
<i>Phaneta</i> ^a <i>alterana</i> Heinrich <i>att.</i>	E8,E10-12:OAc + E10-12:OAc (10:1)	Reed, 1985(b)	C
<i>Phaneta columbiana</i> Walsingham <i>att.</i>	E8,E10-12:OAc	Stevens, 1985	C
<i>Phaneta latens</i> Heinrich <i>att.</i>	E8,E10-12:OH	Hathaway, 1981	C
<i>Phaneta ochroterminana</i> Kearfott <i>att.</i>	Z8,Z10-12:OAc + E8,E10-12:OAc (10:1)	Chisholm, 1985(b)	C
<i>Phaneta roseotermianana</i> Kearfott <i>att.</i>	Z8,Z10-12:OH	Chisholm, 1985(b)	C
<i>Proschistis</i> ^d <i>marmaropa</i> Meyrick <hirobakuro-himehamaki> <i>att.</i>	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</i> <i>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</i> <i>maracana</i> Kearfott att.	Z8-12:OAc	Roelofs, 1971(a)	D
<i>Pseudexentera</i> <i>oregonana</i> Walsingham aspen leafroller phe.	*Z8-14:OAc + other components	Grant, 1991	D
<i>Pseudexentera</i> <i>spoliana</i> Clemens oak olethreutid leafroller phe.	Z8-14:OAc *Z10-16:OAc + other components	Hill in Roelofs, 1982(a) Grant, 1991	D
<i>Pseudohermenias</i> ^d <i>clausthaliana</i> Saxesen <aminemon-himehamaki> att.	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> att.	Z8,E10-12:OAc	Witzgall, 1996	A
<i>Pseudosciaphila</i> <i>duplex</i> Walsingham att.	Z8,E10-12:OAc + Z8,E10-12:Ald (1:1)	Chisholm, 1985(a)	C
<i>Retinia</i> ^a <i>perangustana</i> Snellen att.	Z8-12:OAc + E8-12:OAc + 12:OH (93:7:300)	Olenici, 2007	C
<i>Rhadinosclops</i> ^a <i>koenigianus</i> F. <sendan-himehamaki> att.	E8,E10-12:OAc	Vang, 2005	A

<i>Rhopobota</i> ^a <i>naevana</i> Hübner blackheaded fireworm <kuronehaiiro-himehamaki> phe.	Z9-12:OAc E8,E10-12:OH *Z11-14:OAc + *Z11-14:OH + Z9-12:OAc (9:3:1) (0:49:1) (69:23:8)	Ando, 1977 Guerin in Arn, 1986(a) Slessor, 1987 McDonough, 1987 Fitzpatrick, 1992	A
<i>Rhopobota</i> <i>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</i> <i>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</i> <i>busckana</i> Heinrich att.	E8,E10-12:OAc E9-12:OAc + E9-12:OH (9:1)	Stevens, 1980 Grant, 1985	C
<i>Rhyacionia</i> <i>bushnelli</i> Busck att.	Δ9-10:OAc or Z9-12:OAc	Dix, 1984	C
<i>Rhyacionia</i> <i>duplana</i> Hübner att.	E9-12:OAc	Tóth in Arn, 1986(a)	B
<i>Rhyacionia</i> <i>duplana</i> <i>simulata</i> Heinrich <matsutsumaaka-shinmushi> att.	Z8,E10-12:OAc	Ando, 1987	A
<i>Rhyacionia</i> <i>frustrana</i> Comstock nantucket pine tip moth phe.	*E9-12:OAc + *E9,Δ11-12:OAc (24:1) + other components [17:1 – 23:1]	Hill, 1981(a) Asaro, 2001	C

<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 att.	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>Serda</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	Priesner in Arn, 1986(a)	B

	*Z8-14:OAc + *Z8-14:OH (10:1–1:1) + another component	Witzgall, 1991(a)	
<i>Spilonota ocellana</i> Denis & Shiffermüller eyespot bud moth <ringoshiro-himehamaki> phe.	Z8-14:OAc	Arn, 1974	A
	*Z8-14:OAc	Arn, 1975	
	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	*Z9-12:OAc	Kinjo, 1996	A

sugarcane shoot borer <kanshanoshinkui-hamaki> phe.	+ *E9,Δ11-12:OAc + E7,Δ9-10:OAc (100:10:1)		
<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 *Z8-12:OAc	Read, 1974 Persoons, 1976(c); 1977	C
	+ 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 *E9-14:OAc + another component	Turgeon, 1988 Silk, 1989	C
<i>Zeiraphera</i> <i>diniana</i> Guenée grey larch bud moth phe. (cembran pine-race)	E11-14:OAc E9-12:OAc	Roelofs, 1971(d) Baltensweiler, 1978	B
(larch-race)	*E11-14:OAc + other components	Guerin, 1984 Baltensweiler, 1988	
(cembran pine-race)	*E9-12:OAc	Guerin, 1984	

		Baltensweiler, 1988	
(spruce-race)	E9-12:OAc	Vrkoc in Arn, 1992	
(= <i>griseana</i> Hübner ?) <haiiroamime-himehamaki> <i>att.</i>	E11-14:OAc or E9-12:OAc	Liska, 1990	A
<i>Zeiraphera isertana</i> F. <i>att.</i>	Z9-14:OAc + Z11-14:OAc (9:1)	Hrdý, 1989	C
<i>Zeiraphera unfortunana</i> Powell purplestriped shootworm <i>phe.</i>	*E9-12:OAc	Silk, 1988(a)	C

(*Tortricidae*; *Chlidanotinae*) Hamakiga-ka; Madarahamakiga-aka

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

(15) [*Galacticoidea*] Nemusuga-joka

no species

(16) [*Choreutoidea*] Hamakimodokiga-joka
(*Choreutidae*) Hamakimodokiga-ka

<i>Homadaula anisocentra</i> Meyrick mimosa webworm <nemusuga> <i>phe.</i>	E11-14:OAc + E11-14:OH (1:1) *E11-14:OAc + other components	Song, 1978 Kuenen, 1990	A
<i>Prochoreutis myllerana</i> F.	E2,Z13-18:OH	Karalius, 2005	A

<shiroheri-hamakimodoki>

att.

<i>Prochoreutis sehestediana</i> F. <atoshirosuji-hamakimodoki> att.	E3,Z13-18:OAc + E2,Z13-18:OH (1:1)	Bûda, 1993	A
	E2,Z13-18:OH + E2,Z13-18:Ald + Z3,Z13-18:OH (1:1:1)	Karalius, 2005	
<i>Prochoreutis ultimana</i> Krulikovsky <ginsuji-hamakimodoki> att.	E2,Z13-18:OH	Karalius, 2005	A

(17) [Schreckenseinoidea] Hosomaikoga-joka
(Schreckensteiniidae) Hosomaikoga-ka

<i>Schreckensteinia festaliella</i> Hübner <tatejima-hosomaikoga> att.	E10,E12-16:Ald	Priesner in Arn, 1986(a)	A
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(18) [Epermeinoidea] Sasaberiga-joka

no species

(19) [Alucitoidea] Nijutoribaga-joka

no species

(20) [Pterophoroidea] Toribaga-joka
(Pterophoridae) Toribaga-ka

<i>Amblyptilia acantodactyla</i> Hübner (= <i>Amblyptilia acanthadactyla</i> ?) att.	Z11-16:OAc	Subchev, 1981	D
<i>Buckleria</i> (= <i>Trichoptilus</i>) <i>wahlbergi</i> Zeller <kinbanechibi-toriba> att.	Z7-12:Ald + Z7-12:OH (9:1)	Ando, 1981	A
<i>Emmelina</i> (= <i>Pterophorus</i>)	Z9-12:Ald	Ando, 1981	A

<i>jezonica</i> Matsumura <hirugao-toriba> att.			
<i>Emmelina monodactyla</i> att.	Z9-12:Ald + Z9-12:OH (20:1)	Tóth, 1992(d)	C
<i>Merrifieldia leucodactyla</i> Denis & Schiffermüller att.	E11-14:Ald + Z11-14:Ald (20:1)	Ostrauskas, 2010(a)	D
<i>Nippoptilia issikii</i> Yano <iss hikibudou-toriba> att.	Z7-12:OAc	Ando, 1975	A
<i>Nippoptilia vitis</i> Sasaki <budou-toriba> att.	Z7-12:OAc	Ando, 1977	A
<i>Ochyrotica concursa</i> Walsingham <satsumaimo-toriba> att.	Z9-12:OAc + E9,Δ11-12:OAc + E7,Δ9-10:OAc (100:10:1)	Kinjo, 1996	A
<i>Oidaematophorus guttatus</i> Walsingham att.	E11-14:Ald	Daterman, 1977	C
<i>Oidaematophorus homodactylus</i> Walker att.	E11-14:Ald	Daterman, 1977	C
<i>Oidaematophorus mathewianus</i> Zeller att.	E11-14:OAc	Daterman, 1977	C
<i>Oidaematophorus monodactylus</i> L. att.	Z9-12:Ald	Kamm, 1979(a)	C
<i>Oidaematophorus</i> sp. 1 att.	E11-14:Ald	Daterman, 1977	
<i>Oidaematophorus</i> sp. 2 (<i>O. cretidactylus</i> Fitch or <i>O. rileyi</i> Fern. ?) att.	E11-14:OAc	Daterman, 1977	
<i>Oxyptilus tristis</i> Zeller att.	Z7-12:OAc + Z7-12:OH (1:1)	Tóth, 1992(d)	D

<i>Platyptilia carduidactyla</i> Riley artichoke plume moth phe.	*Z11-16:Ald	Klun, 1981	C
<i>Platyptilia ignifera</i> Meyrick <budouuo-toriba> phe.	*Z7-12:OAc + *Z9-12:OAc + another component	Fujii, 2010(a)	A
<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>Stenuptilia 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] Marubashinkuiga-joka
(Carposinidae) Shinkuiga-ka

<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>	Z7-20:11-one	Nasu, 2010	A

<i>att.</i> <i>Carposina niponensis</i> Walsingham <nipponshiro-shinkui> <i>att.</i>	<i>Z7-20:11-one</i>	Nasu, 2010	A
<i>Carposina sasakii</i> Matsumura (= <i>niponensis</i>) peach fruit moth <momonohime-shinkui> <i>phe.</i>	<i>*Z7-20:11-one</i> (=Z13-20:10-one) + <i>*Z7-19:11-one</i> (=Z12-19:9-one) (20:1) + another component	Tamaki, 1977(a) Honma, 1978	A
in Korea	<i>*Z7-20:11-one</i> + another component	Han, 2000	
<i>Coscinoptycha improbana</i> Meyrick Australian guava moth <i>phe.</i>	<i>*Z7-18:11-one</i> (=Z11-18:8-one) + <i>*Z7-19:11-one</i> (=Z12-19:9-one) + <i>*Z7-23:11-one</i> + <i>*Z7-23:H</i> (235:15:100:650)	Gibb, 2006(a)	D
<i>Heterocrossa rubophaga</i> Dugdale New Zealand raspberry bud moth <i>Phe.</i>	<i>*Z7-19:11-one</i> + <i>*Z7-23:H</i> (1:1)	Foster, 2000 Twidle, 2020	D
<i>Meridarchis excisa</i> Walsingham <kobushiro-shinkui> <i>Att.</i>	<i>Z7-20:11-one</i>	Mizukoshi, 2006	A

(22) [Hyblaeoidea] *Seserimodokiga-joka*

no species

(23) [Thyridoidea] *Madoga-joka*
(Thyrididae) *Madoga-ka*

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

att.

(24) [Pyraloidea] Meiga-joka
(Pyralidae; Galleriinae) Meiga-ka; Tsuduriga-aka

<i>Aphomia sociella</i> L. bumble bee wax moth phe.	*6:OH + *Me6,Me10,Me14-15:2-OH + *Me6,Me10,Me14-15:2-one (5:5:1) <ultrasonic signaling>	Kindl, 2012	C
	*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) Meiga-ka; Shimameiga-aka

<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 *Z11,Z13-16:Ald + *Z3,Z6,Z9,Z12,Z15-23:H + other components	Landolt, 1982 Leal, 2005 Kuenen, 2010	A
<i>Tegulifera bicoloralis</i> Leech <maemon-shimameiga> att.	E11,Δ13-14:Ald + E11-14:Ald (9:1)	Ando, 1987	A

(Pyralidae; Epipaschiinae) Meiga-ka; Futomeiga-aka			
<i>Orthaga achatina</i> Butler <nakatobi-futomeiga> phe.	*Z11-16:OAc + *Z3,Z6,Z9,Z12,Z15-23:H (2:1) + another component	He, 2016 Yan, 2018(b)	B
(Pyralidae; Phycitinae) Meiga-ka; Madarameiga-aka			
<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-madarameiga> phe.	*Z9-15:OAc + *15:OAc (100:7)	Tabata, 2009	A
<i>Acrobasis rufilimbis</i> Wileman <himetobine-madarameiga> 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 *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	Coffelt, 1979 Leal, 2005 Kuenen, 2010 Kanno, 2010	D
<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 <suji-madaramaiga> phe.	*Z9,E12-14:OAc att. + *Z9-14:OAc (minor) + another component [22:3] (2:1)	Kuwahara, 1971(a) Brady, 1971(a) Zeleny, 1982 Brady, 1973 Kuwahara, 1973 Read, 1976,1979 Allison, 2006 Barrer, 1987 Quartey, 1993	A
<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	Z11-16:OAc	Hanula, 1984	C

phe.	*Z11-16:OAc	Meyer, 1986	
	+ Z3,Z6,Z9,Z12,Z15-25:H (1:10)	Miller, 2010	
<i>Dioryctria aurantiella</i> Grote ponderosa pine coneworm att.	Z9-14:OAc	Pasek, 1989	C
<i>Dioryctria clarioralis</i> Walker blister coneworm phe.	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 phe.	*Z9-14:OAc Z9-14:OAc	Meyer, 1982 DeBarr, 1982 Hanula, 1984	C
<i>Dioryctria mendacella</i> Staudinger cone moth phe.	*Z9,E11-14:OAc + *Z3,Z6,Z9,Z12,Z15-25:H (1:10)	Hall, 2017	C
<i>Dioryctria merkei</i> Mutuura & Munroe att.	Z9-14:OAc + E9-14:OAc (20:3)	Hanula, 1984 Meyer, 1984	C
<i>Dioryctria reniculelloides</i> Mutuura & Munroe spruce coneworm phe.	*Z9-14:OAc + Z7-12:OAc (20:1)	Grant, 1987(a)	C
<i>Dioryctria resinosella</i> Mutuura red pine shoot moth phe.	*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 att.	Z11-16:Ald + Z11-16:OAc + Z9,E11-14:OAc (7:1:2)	Wu, 1986(b)	C
<i>Ectomyelois ceratoniae</i> Zeller carob moth phe.	*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	*Z11-16:OAc + *Z7-14:OAc	Lynch, 1984	C

phe.	+ *Z9-14:OAc + *Z9-14:OH (8:8:4:1) + other components		
Brazil strain	*Z11-16:OAc + other components E	Jham, 2005; 2007	
<i>Ephestia elutella</i> Hübner tabacco moth (cacao moth, chocolate moth) <cha-madaramaiga> phe.	*Z9,E12-14:OAc + *Z9,E12-14:OH (19:5) (5:1–1:1)	Brady, 1971(b) Kuwahara, 1973 Krasnoff, 1984	A
	Z9,E12-14:OAc	Soldán, 1983	
<i>Ephestia</i> (= <i>Anagasta</i>) <i>kuehniella</i> Zeller Midditeranea 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	Z9,E12-14:OAc	Adler, 1976	D
<i>Episcythrastis</i> (= <i>Myelopsis</i>) <i>tetricella</i> Denis & Schiffermüller att. 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>Hypsipyla grandella</i> Zeller phe.	*Z9,E12-14:OH E + other components	Borek, 1991 Pineda-Rios, 2016	D
<i>Hypsipyla 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-madarama> 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-madarama> 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) Tsutoga-ka ; Oomeiga-aka

<i>Scirpophaga excerptalis</i> Walker sugarcane tip borer <shiro-oomeiga>	*E11-16:Ald + *Z11-16:Ald (4:1)	Wu, 1990(b)	A
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phe.	India	(7:3)	Mukunthan, 2005	
<i>Scirpophaga incertulas</i> Walker yellow stem borer <itten-oomeiga> <sankameichuu> phe.		*Z11-16:Ald + *Z9-16:Ald (3:1) + *Z9-18:Ald (20:5:2) + other components + *16:Ald (6:3:2)	Cork, 1985(a) Tatsuki, 1985 Du, 1987(b)	A
<i>Scirpophaga nivella</i> F. <tsumaki-oomeiga> phe.		*E11-16:Ald + *Z11-16:Ald (39:11)	Wu in Arn, 1992	A
(Crambidae; Scopariinae) Tsutoga-ka; Yamameiga-aka				
<i>Eudonia</i> sp. att.		Z11-16:OAc	Clearwater, 1986	
<i>Scoparia biplagialis</i> att.		Z11-16:OAc	Davis in Arn, 1992	C
<i>Scoparia</i> sp. att.		Z11-16:OAc + Z9-16:OAc (4:1)	Ando, 1980(a)	A
<i>Witlesia crataegella</i> Hübner (= <i>Dipleurina lacustrata</i>) att.		Z11-16:OAc	Subchev, 1981	C
(Crambidae; Crambinae) Tsutoga-ka; Tsutoga-aka				
<i>Agriphila aeneociliella</i> Eversmann eastern grass veneer <shirofutasuji-tutoga> phe.		*Z9,Z12,Z15-18:Ald + *Z9-16:OAc (16:1)	Zhan, 2023	A
<i>Agriphila straminella</i> Denis & Schiffermüller att.		Z11-16:Ald	Booij, 1984(c)	C
<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 Beavor, 1977 Tatsuki, 1983 Mochida, 1984	A
<i>Chilo</i> (= <i>Proceras</i>) <i>venosatus</i> Walker (= <i>C. sacchariphagus</i> ?) sugarcane striped borer phe.	Z13-18:OAc + Z11-16:OAc + Z13-18:OH (2:2:1)	Wu, 1982	A

	*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 phe.	*Z11-16:Ald + *Z9-16:Ald (3:1) + other components	Kalinová, 2012	D

<i>Diatraea grandiosella</i> Dyar southwestern corn borer phe.	*Z11-16:Ald + *Z9-16:Ald + *Z13-18:Ald (71:22:8) + other components + Z9-18:Ald (33:10:4:3)	Hedin, 1986 Davis, 1986	D
<i>Diatraea indigenella</i> Dyar & Heinrich phe.	*Z9,E11-16:Ald + another component	Palacio-Cortes, 2014	D
<i>Diatraea saccharalis</i> sugar cane borer phe.	* Z9,E11-16:Ald + other components + * Z11-16:Ald (10:1) + *Z11-16:Ald (9:1–3:1)	Carney, 1982 Svatos, 2001 Santangelo, 2002 Batista-Pereira, 2002 Kalinová, 2005	D
Brazilian and Columbian strains	+ *Z9-16:Ald + *16:Ald (10:1:1:1)	Cortés, 2010 Silva, 2021	N
<i>Eoreuma</i> (= <i>Chilo</i> or <i>Acigona</i>) <i>loftini</i> Dyar Mexican rice borer phe.	*Z13-18:OAc + *Z13-18:Ald + *Z11-16:OAc (8:1.3:1)	Shaver, 1988; 1990 Robacker, 1989	D
<i>Parapediasia teterella</i> Zincken bluegrass webworm <shiba-tsutoga> phe.	Z11-16:Ald + Z9-16:Ald (20:1) *Z11-16:Ald + *Z9-16:Ald + *Z11-16:OH (20:1:0.002) + another component	Clark, 1990 Sugie, 1994	A
<i>Pareromene exsectella</i> Christoph <shiroeguri-tsutoga> att.	Z11-16:OAc	Ando, 1977	A
<i>Tehama bonifatella</i> Hulst western lawn moth att.	Z11-16:Ald + Z13-18:Ald (1:1)	McDonough, 1982(c)	D

(Crambidae; Cybalomiinae) Tsutoga-ka; Monmeiga-aka

<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) Tsutoga-ka; Mizumeiga-aka

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

(Crambidae; Glaphyriinae) Tsutoga-ka; Nisenomeiga-aka

<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.	*E11,E13-16:Ald	Arai, 1982	A

cabbage webworm <haimadara-nomeiga> phe.	+ Z11-16:Ald (100:3)	Sugie, 2003	
	+ *Z11-14:OAc	Vang, 2020	
	+ *E11-16:Ald		
	+ *Z3,Z6,Z9-23:H (7:3:3:1)		

(Crambidae; Spilomelinae) Tsutoga-ka ; Higenaganomeiga-aka

<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)	Raina in Arn, 1997	
	(1:10–20) + another component	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	
China	(100:12:12:12) (100:24:10:18)	Wu, 2013 Lu, 2024	
<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 + *≡1-16: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 <shiroayahime-nomeiga>	E11-16:OAc	Ando, 1977	A

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> phe.	*E10,E12-16:Ald + *E10,E12-16:OH + E10-16:Ald (20:1:1)	Adati, 1999 Downham, 2003 Schläger, 2015	A

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 phe.	*E11-16:OAc + *E11-16:OH (1:1)	Clearwater, 1986	D
<i>Terastia subjectalis</i> Lederer	*E10,E12-16:Ald	Wakamura, 2004	A

<ooeguri-nomeiga> phe.	+ *E11-16:Ald (19:1)		
<i>Udea lutealis</i> att.	Z11-16:OAc	Myttus in Arn, 1986(a)	C
(Crambidae; Pyraustinae) Tsutoga-ka; Nomeiga-aka			
<i>Achyra rantalis</i> Guenée att.	Z7-12:OAc + Z9-14:OAc (3:1)	Keaster, 1996	D
<i>Anania verbascalis</i> Denis & Schiffermüller <himetogari-nomeiga> att.	Z9,E12-14:OAc + Z9,E12-14:OH (100:1)	Tóth, 1992(d)	B
<i>Fumibotys fumalis</i> Guenée mint root borer phe.	*E10,E12-14:OAc + *Z11-14:OAc + *Z9-14:OAc (50:9:2) + another component	Davis, 1991	D
<i>Loxostege</i> (= <i>Sitochroa</i>) <i>chortalis</i> Grote att.	E9-12:OAc + Z9-12:OAc (1000:1)	Roelofs, 1971(a) Steck, 1977(a) Steck, 1980(a)	C
<i>Loxostege neoblitalis</i> Capps att.	E9-14:OAc	Roelofs, 1970(a)	C
<i>Loxostege sticticalis</i> L. beet webworm att.	E11-14:OAc	Struble, 1977(a)	C
<i>Marasmia patnalis</i> rice leaffolder phe.	*Z13-18:OAc + *Z11-16:OAc (24:1)	Ramachandran, 1990	C E
<i>Mutuuraia mysippusalis</i> Walker att.	Z7-10:OAc + Z7-12:OAc (1:1)	Steck, 1977(a)	C
<i>Mutuuraia</i> (= <i>Phlyctaenia</i>) <i>terrealis</i> Treitschke <sujimagari-nomeiga> att.	Z7-12:OAc	Roelofs, 1970(a)	A

<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	Klun, 1970	C
	+ *E11-14:OAc (97:3)	Klun, 1973 Cheng, 1989	
	+ other components	Klun, 1977 Attygalle, 1987 Struble, 1987(a) Kalinová, 1994	
	"E"-race	Roelofs, 1972 Cardé, 1975(a) Klun, 1975	
	*E11-14:OAc + *Z11-14:OAc (24:1)	Kochansky, 1975(a)	
	+ other components	Peña, 1988	
	hybrid Z11-14:OAc	Klun, 1975	

	+ E11-14:OAc (1:1–7:13)	Anglade, 1984 Maini in Arn, 1986(a)	
	*E11-14:OAc + *Z11-14:OAc (13:7)	Klun, 1979(a) Buechi, 1982	
maize race	*Z11-14:OAc	Pelozuelo, 2004	
mugwort and hop races	*E11-14:OAc		
<i>Ostrinia obumbratalis</i> Lederer att.	Z11-14:OAc + E11-14:OAc (1:1)	Klun, 1972	C
<i>Ostrinia orientalis</i> Mutuura & Munroe <onamomi-nomeiga> phe.	*Z11-14:OAc + *E11-14:OAc (98:2) + another component	Ishikawa, 1999(b) Fu, 2004	A
<i>Ostrinia palustralis</i> Hübner <yuugumo-nomeiga> phe.	*E11-14:OAc + *Z11-14:OAc (99:1) + another component	Huang, 1998(b)	A
<i>Ostrinia scapulalis</i> Walker adzuki bean borer <azuki-nomeiga> phe. 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> phe.	*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> phe.	*Z9-14:OAc + *E11-14:OAc + *Z11-14:OAc (70:24:6) + another component	Ishikawa, 1999(a)	A
<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> <i>att.</i>	Z11-14:Ald + Z11-14:OAc (9:1)	Ando, 1981	A
<i>Paliga minnehaha</i> Pryer <maebeni-nomeiga> <i>att.</i>	E11-14:OAc	Ando, 1981	A
<i>Phlyctaenia coronata tertialis</i> Guenée <i>att.</i>	Z9-12:OAc	Reed, 1985(b)	C
<i>Pyrausta aurata</i> Scopoli <hakka-nomeiga> <i>att.</i>	E11-14:OAc	Maini in Arn, 1986(a) Stockel, 1977 Mozūraitis, 1998	A
<i>Pyrausta cingulata</i> <i>att.</i>	E11-14:OAc + Z11-14:OAc (1:1)	Arn in Arn, 1986(a)	C
<i>Pyrausta fodinalis</i> Lederer <i>att.</i>	E10,E12-14:OAc	Reed, 1985(b)	C
<i>Pyrausta machaeralis</i> Walker <i>phe.</i>	*E11-14:OAc + *Z11-14:OAc (24:1)	Qian, 2024	C
<i>Pyrausta ochosalis</i> <i>att.</i>	E11-14:OAc	Roelofs, 1971(a)	C
<i>Pyrausta ostrinalis</i> Hübner <i>att.</i>	E11-14:OAc	Bûda, 1987	C
<i>Pyrausta panopealis</i> Walker perilla leaf pyralid moth <benifuki-nomeiga> <i>phe.</i>	*E11-14:OAc + *Z11-14:OAc N	Kang, 1995	A
<i>Pyrausta purpuralis</i> L. <i>att.</i>	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> <i>att.</i>	Z11-14:OAc + E11-14:OAc + 12:OAc (7:3:40)	Hrdý, 1979	A
<i>Sitochroa verticalis</i> L. <kuromyaku-nomeiga>	E9-12:OAc	Tóth, 1994(b)	A

att.	+ E9-12:OH	Roehrich in Arn, 1986(a)	
<i>Sufetula sunidesalis</i> Walker <shirosujeguri-nomeiga> att.	Z11-16:Ald + Z9-16:Ald (19:1)	Kohno, 2014	A
<i>Uresiphita polygonalis</i> maorialis Felder kōwhai moth <monusubenioo-nomeiga> phe.	*E11-14:OAc + *Z11-14:OAc + *Z11-16:OAc (36:21:18) + another component	El-Sayed, 2025	B

(25) [Calliduloidea] Ikarimonga-joka

no species

(26) [Lasiocampoidea] Karehaga-joka
(Lasiocampidae) karehaga-ka

<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)	China, 1979 Meng, 1983(a) Zhang, 2003(a)	C

	+ *Z5,E7-12:OPr + *Z5-12:OH + *Z5-12:OAc (19:15:7:7:3)	Zhao, 1993	
<i>Dendrolimus spectabilis</i> Butler pine moth <matsu-kareha> phe.	*Z5,E7-12:OH	Vu, 1980 Ando, 1982	A
<i>Dendrolimus suffuscus</i> <i>illustratus</i> De Lajonquière pine caterpillar moth phe.	*Z5,E7-12:OAc + *Z5,E7-12:Ald + *Z5-12:OH (4:1:1) + another component	Jing, 2025	B
<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 *Z5,E7-12:Ald + *Z5,E7-12:OH (1:1) + other components	Klun, 2000 Pletnev, 2000	B
<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) *Z5,E7-12:OH + *Z5,E7-12:OAc + *Z5,E7-12:OPr (20:20:1)	Meng, 1983(b) Kong, 2012(a)	C
<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 + *E5,Z7-12:OH (10:1–1:1)	Roelofs in Arn, 1986(a) Kochansky, 1996	C
<i>Malacosoma californicum</i> Packard western tent caterpillar	*Z5,E7-12:Ald	Underhill, 1980	C

phe.				
<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] (Drepanidae)	Kagibaga-joka Kagibaga-ka + (Thyatiridae)	Togaribaga-ka		
<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</i> or Denis & Schiffermüller <akan-togariba> att.	Z9-14:Ald	Capizzi in Arn, 1986(a)	A	

(28) [Geometroidea] Shakuga-joka
 (Geometridae) Shakuga-ka
 a: Alsophilinae; Fuyushaku-aka, b: Geometrinae; Aoshaku-aka,
 c: Sterrhinae; Himeshaku-aka, d: Larentiinae; Namishaku-aka,
 e: Ennominae; Edashaku-aka, f: Orthostixinae; Hoshishaku-aka

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

	(6 <i>S</i> , 7 <i>R</i>)-isomer + Z3,Z6,Z9-19:H (10:3)		
<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) *epo3,Z6,Z9-19:H (3 <i>S</i> , 4 <i>R</i>)-isomer	Becker, 1983 Becker in Arn, 1986(a) Becker, 1990	B

	+ another component	Cossé, 1992	
Korean strain 1	(3 <i>R</i> ,4 <i>S</i>):(3 <i>S</i> ,4 <i>R</i>) = 9:1	Choi, 2012	
Korean strain 2	(3 <i>R</i> ,4 <i>S</i>):(3 <i>S</i> ,4 <i>R</i>) = 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>	(3 <i>R</i> ,4 <i>S</i>)-isomer		
phe.	+ another component		
	+ *Z3,Z6,Z9-19:H (100:5–100:1)	Witjaksono, 1999	
<i>Biston</i> ^e <i>robustum</i> Butler	*epo6,Z9-19:H	Yamamoto, 2000	A
giant geometrid moth	(6 <i>S</i> ,7 <i>R</i>)-isomer		
<tobimonoo-edashaku>	+ *Z3,epo6,Z9-19:H (9:1)		
phe.	+ other components		
<i>Bupalus</i> ^e <i>piniarius</i> L.	Z6,Z9-19:H	Bestmann, 1982(a)	C
phe.			
	*tepo4,Z6,Z9-19:H	Chittamuru	
	(4 <i>S</i> ,5 <i>S</i>)-isomer	in Pherobase	
	+ other components		
<i>Cabera</i> ^e <i>erythemaria</i> Guenée	Z3,Z6,epo9-19:H	Wong, 1985(b)	C
att.	(9 <i>S</i> ,10 <i>R</i>)-isomer		
	+ (9 <i>R</i> ,10 <i>S</i>)-isomer (1:1)		
<i>Caripeta</i> ^e <i>angustiorata</i> Walker	Z3,Z6,Z9-19:H	Millar, 1990(a)	D
att.	+ Z3,epo6,Z9-19:H (1:1)		
<i>Caustoloma</i> ^e <i>flavicaria</i>	Z6,epo9-21:H	Kovalev, 1986	D
att.			
<i>Colotois</i> ^e <i>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)	
	(6 <i>R</i> ,7 <i>S</i>)-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 <kaba-edashaku> att.	or Z3,epo6,Z9-19:H 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) (4:1, 3:2)	Ma, 2016 Han, 2024	C
<i>Ectropis obliqua</i> Prout tea looper <usujiro-edashaku> phe.	*Z3,epo6,Z9-18:H + *Z3,Z6,Z9-18:H + another component N (3:2) (6 <i>S</i> ,7 <i>R</i>)-isomer E + *Z3,epo6,Z9-19:H (2:1:2)	Yao, 1991 Yang, 2016 Yu, 2017 Luo, 2017	A
<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 <oochabane-fuyu-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 <chabane-fuyu-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>	Z3,Z6,Z9-20:H or Z3,Z6,Z9-21:H	Wong, 1985(b)	A

att.	+ epoxydienes		
<i>Eupithecia</i> ^d <i>abietaria</i> Götze cloaked pug moth phe.	*Z3,Z6,Z9-19:H + *Z3,Z6,epo9-19:H (9 <i>S</i> ,10 <i>R</i>)-isomer (19:1) + other components	Wang, 2015(a)	B
<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 (9 <i>S</i> ,10 <i>R</i>)-isomer	Wong, 1985(b)	C
<i>Eupithecia assimilata</i> Doubleday currant pug moth phe.	*Z3,Z6,epo9-21:H (9 <i>S</i> ,10 <i>R</i>)-isomer + other components	Millar, 1991(b)	C
<i>Eupithecia subnotata</i> Hübner att.	Z3,Z6,Z9-19:H	Campbell, 2007	C
<i>Eupithecia vulgata</i> Haworth 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 + *(3 <i>E</i> ,6 <i>E</i>)-β-farnesene	Yamakawa, 2009	A
<i>Hydriomena</i> ^d <i>furcata</i> Thunbery <yanagi-namishaku> att.	E9-12:OAc	Yamakawa, 2011(a)	A
<i>Hydriomena ruberata</i> Freyer att.	Z11-16:OAc	Liska, 1990	A
<i>Hypagyrtis</i> ^e <i>piniata</i> att.	Z3,Z6,Z9-19:H + Z3,epo6,Z9-19:H (6 <i>S</i> ,7 <i>R</i>)-isomer (10:1)	Frérot, 1987(a)	C
<i>Idaea</i> ^c <i>aversata</i> L. <ezoki-himeshaku>	*Z9,Z11-14:OAc + E9,Z11-14:OAc	Underhill in Arn, 1986(a)	D
		Zhu, 1996	B

phe.	+ *Z7,Z9-12:OAc (100:7:10)		
<i>Idaea</i> (= <i>Sterrrha</i>) <i>biselata</i> Hufnagel <usuki-himeshaku> phe.	E7,Z9-12:OAc + E7,Z9-12:Ald (1:1) Z7-12:OAc *Z7,Z9-12:OAc	Biwer, 1975 Szöcs, 1987 Ando, 1987 Priesner in Arn, 1986(a) Zhu, 1996	A
<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</i> (= <i>Sterrrha</i>) <i>imbecilla</i> Inoue <oosumonki-himeshaku> att.	Z7-12:OAc	Ando, 1977	A
<i>Idaea</i> (= <i>Sterrrha</i>) <i>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>	epo3,Z6,Z9-21:H	Ando, 1993	A

att.			
<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	Gries, 1993(b) Evenden, 1995 Li, 1993(a) Li, 1993(b)	D

	+ Me7-17:H (7S)-isomer		
<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) + Z3,Z6,Z9-20:H	Wong, 1985(b) Millar, 1991(c)	C

	+ Z3,epo6,Z9-21:H (5:50:1) (6R,7S)-isomer		
<i>Metanema</i> ^e <i>inatomaria</i> Guenée att.	Z3,Z6,epo9-19:H + Z3,Z6,epo9-20:H (4:1) (9R,10S)-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> phe.	*epo3,Z6,Z9-19:H (3S,4R)-isomer	Yasui, 2005	A
<i>Mnesampela</i> ^e <i>privata</i> Guenée autumn gum moth phe.	*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> phe.	*Z3,Z6,Z9,Z12,Z15-21:H	Lee, 2020	A
<i>Nepytia</i> ^e <i>freemani</i> Munroe western false hemlock looper phe.	*Me3,Me13-17:H (3S,13R)-isomer	Gries, 1993(c) King, 1995	D
<i>Operophtera</i> ^d <i>bruceata</i> Hulst Bruce spanworm phe.	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 phe.	*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 phe.	*Z6,Z9-19:H + *Δ1,Z3,Z6,Z9-19:H (10:1) + other components	Szöcs, 2004	C
<i>Operophtera occidentalis</i> att.	Δ1,Z3,Z6,Z9-19:H	Roelofs, 1982(b)	C
<i>Operophtera rectipostmediana</i> Inoue <ichimojifuyu-namishaku> att.	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 Z3,Z6,epo9-19:H (9 <i>S</i> ,10 <i>R</i>):(9 <i>R</i> ,10 <i>S</i>) = 1:1	Ando, 1993 Qin, 1997	A
<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 (3 <i>R</i> ,4 <i>S</i>)-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>alcoholaria</i> Guenée att.	Z3,Z6,Z9-20:H + Z3,epo6,Z9-20:H (6 <i>R</i> ,7 <i>S</i>)-isomer (1:1)	Millar, 1991(c)	C
<i>Probole</i> ^e <i>alienaria</i> Herrich-Schäffer att.	Z3,epo6,Z9-19:H (6 <i>R</i> ,7 <i>S</i>):(6 <i>S</i> ,7 <i>R</i>) = 1:1	Landolt, 1996	D
<i>Probole</i> <i>amicaria</i> Herrich-Schäffer phe.	*epo3,Z6,Z9-19:H (3 <i>S</i> ,4 <i>R</i>)-isomer + Z3,epo6,Z9-19:H (6 <i>R</i> ,7 <i>S</i>)-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 (9 <i>S</i> ,10 <i>R</i>)-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> ^e <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) (3 <i>R</i> ,4 <i>S</i>)-isomer	Li, 1993 Kong, 2012(b)	C
<i>Semiothisa</i> (= <i>Chiasmia</i>) <i>clathrata</i> L. <himeamime-edashaku> phe.	*epo3,Z6,Z9-17:H (3 <i>R</i> ,4 <i>S</i>)-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 (3 <i>R</i> ,4 <i>S</i>)-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 (3 <i>R</i> ,4 <i>S</i>):(3 <i>S</i> ,4 <i>R</i>) = 2:1	Millar, 1987 Gries, 1993(a)	C
<i>Semiothisa sexmaculata</i> Packard phe.	*epo3,Z6,Z9-17:H (3 <i>R</i> ,4 <i>S</i>)-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 (6 <i>S</i> ,7 <i>R</i>)-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 (3 <i>S</i> ,4 <i>R</i>)-isomer + Z3,Z6,Z9-19:H (9:1)	Millar, 1990(b), (c)	D
<i>Synaxis</i> ^e <i>jubararia</i> Hulst	Z3,Z6,Z9-19:H	Wong, 1985(b)	D

att.	+ Z3,Z6,epo9-19:H (4:1–1:1)		
<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>Thyriniteina</i> ^e <i>arnobia</i> Stoll phe.	*epo3,Z6,Z9-21:H N	Moreira, 2013	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)	Wong, 1985(b)	C

	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)	Millar, 1991(c)	
<i>Xanthorhoe ferrugata</i> Clerck <i>att.</i>	Z3,epo6,Z9-21:H (6 <i>S</i> ,7 <i>R</i>)-isomer	Millar, 1991(c)	C
<i>Xanthorhoe iduata</i> Guenée <i>att.</i>	Z3,Z6,Z9-21:H + its epoxydienes (1:1)	Wong, 1985(b)	C
<i>Xanthorhoe munitata</i> Hübner <i>att.</i>	epoxydienes of Z3,Z6,Z9-21:H	Wong, 1985(b)	C
	Z3,epo6,Z9-21:H (6 <i>S</i> ,7 <i>R</i>)-isomer + Z3,Z6,Z9-21:H (10:1)	Millar, 1991(c)	
<i>Xanthotype</i> ^c <i>sospeta</i> Drury <i>att.</i>	Z6,epo9-19:H (9 <i>S</i> ,10 <i>R</i>)-isomer	Millar, 1991(a)	D
<i>Zethenia</i> ^c <i>albonotaria</i> <i>nesiotis</i> Wehrlic <monshirotsamakiri-edashaku> <i>att.</i>	epo3,Z6,Z9-19:H (3 <i>S</i> ,4 <i>R</i>)-isomer	Qin, 1997	A
(Uraniidae) Tsubamega-ka			
<i>Epilema moza</i> Butler <kurohoshi-futao> <i>att.</i>	E11-16:OAc	Ando, 1975	A
<i>Epilema plaqifera</i> Butler <kuroobishiro-futao> <i>att.</i>	E9-14:OH	Ando, 1977	A
(29) [Bombycoidea] Kaikoga-joka (Endromidae)			
<i>Andraca bipunctata</i> Walker tea cluster caterpillar <i>phe.</i>	*E11,E14-18:Ald + other components	Ho, 1996	D
(Bombycidae) Kaikoga-ka			

<i>Bombyx mandarina</i> Moore <kuwako> phe.	*E10,Z12-16:OH + another component *E3,Z13-18:OH	Kuwahara, 1979 Daimon, 2012(b) Kuwahara, 1984 Gao in Arn, 1997	A
<i>Bombyx mori</i> L. silkworm moth <kaiko> phe.	*E10,Z12-16:OH + other components	Butenandt, 1959; 1961 Kasang, 1978(a); (b)	A
<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) Yamamayuga-ka

<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 pandora moth phe.	*E10,Z12-16:Ald + *E10,Z12-16:OAc + *E10,E12-16:OAc (10:5:1) + other components	McElfresh, 2000	D

<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 mojavenis</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 nevadensis</i> Strecker Nevada buckmoth phe.	*E10,Z12-16:Ald + other components	McElfresh, 2024	D
<i>Hemileuca nuttalli</i> Strecker Nuttall's sheep moth	*E10,Z12-16:OAc + *E10,E12-16:OAc (2:1-1:2)	McElfresh, 1999(b)	D

phe.	+ other components		
<i>Loepa sakaei</i> Inoue <haguruma-yamamay> 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, 1972; 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) Suzumega-ka

<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</i> sangaica 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 <i>att.</i>	Z10,E12-16:OAc	Reed, 1987	D
<i>Proserpinus flavofasciata</i> Walker <i>att.</i>	E10,E12-16:Ald	Reed, 1987	D
<i>Smerinthus cerisyi</i> Kirby <i>att.</i>	Z10,E12-16:OAc + Z10,E12-16:Ald (10:1)	Reed, 1987	C
<i>Smerinthus jamaicensis</i> Drury <i>att.</i>	Z10,E12-16:Ald + Z10,Z12-16:Ald (10:1)	Reed, 1987	C
<i>Smerinthus tokyonis</i> Matsumura <kouchi-suzume> <i>phe.</i>	*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 <i>phe.</i>	*E10,Z12-16:Ald N	Reed, 1987	C
<i>Theretra japonica</i> Boisduval <ko-suzume> <i>att.</i>	E10,Z12-16:Ald	Uehara, 2015	A
<i>Theretra oldenlandiae</i> <i>oldenlandiae</i> F. <sesuji-suzume> <i>phe.</i>	*E10,Z12-16:Ald + *E10,E12-16:Ald + *E11-16:Ald (4:3:3)	Uehara, 2012	A

(30) [Noctuoidea] Yaga-joka
(Notodontidae) Shachihokoga-ka

<i>Heterocampa guttivitta</i> Walker saddled prominent moth <i>phe.</i>	*≡11,Z13-16:Ald + *≡11-16:Ald (9:1) + another component	Silk, 2000	C
<i>Micromelalopha siversi</i> Staudinger <i>phe.</i>	*Z13,E15-18:Ald + other component	Liu, 2019; 2021(a)	C
<i>Notodonta dromedarius</i> <i>phe.</i>	*Z11,Z13-16:Ald + other components	Bestmann, 1993(a)	C
<i>Notodonta torva</i> Hübner <tobimadara-shachihoko> <i>phe.</i>	*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(a)	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(a)	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) Yaga-ka
(Noctuidae; Dilobinae) Yaga-ka;

<i>Diloba caeruleocephala</i> L.	Z8-13:OAc	Subchev, 2000(b)	D
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att.

(Noctuidae; Acronictinae)

att.

(Noctuidae; Heliothinae)

phe.

	+ *Z9-16:Ald + *Z9-14:Ald (98.3:1.4:0.3) + other components	Zhang, 2012	
<i>Helicoverpa</i> (= <i>Heliothis</i>) <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)	A
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 gelatopoen</i> Dyar phe.	*16:Ald + *Z9-16:Ald (1:1) + another component	Cork, 2003	C
<i>Helicoverpa</i> (= <i>Heliothis</i>) <i>punctigera</i> Wallengren Australian bollworm phe.	Z11-16:Ald + Z11-16:OAc + Z9-14:Ald (50:50:1)	Rothschild, 1978	C
	*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 corn earworm phe.	Z9-14:OFo E	Priesner, 1975	C
	*Z11-16:Ald	Roelofs, 1974(c)	
	+ *Z9-16:Ald (65:1–40:1) + other components	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 att.	Z11-16:Ald + Z9-16:Ald + Z7-16:Ald + 16:Ald	Landolt in Pherobase	C
<i>Heliothis maritima</i> Graslin fulvous clover moth phe.	*Z11-16:Ald + other components E + *Z11-16:OH + *16:Ald (100:5:6)	Kovalev, 1991 Szöcs, 1993(a)	B
<i>Heliothis maritima adauca</i> Butler flax budworm <tsumekusaga> phe.	*Z11-16:Ald + *Z11-16:OH (100:1) + another component	Kakizaki, 2003	A
<i>Heliothis ononis</i> Denis & Schiffermüller att.	Z11-16:Ald	Steck, 1982(a)	C
<i>Heliothis peltigera</i> Denis & Schiffermüller phe.	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 phe.	*Z11-16:Ald + *Z11-16:OH + *Z9-16:Ald (482:15:3)	Raina, 1986(b)	C
<i>Heliothis subflexa</i> Guenée phe.	*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 + *Z11-16:OAc (10:5:1:1) wind tunnel	Vickers, 2002	
	+ other components	Nojima, 2018	
<i>Heliothis virescens</i> F. tobacco budworm phe.	*Z11-16:Ald + *Z9-14:Ald (16:1) (15:1) + other components	Roelofs, 1974(c) Tumlinson, 1975 Hendricks, 1989 Klun, 1979(b); 1980(c) Pope, 1982 Vetter, 1983 Ramaswamy, 1985 Teal, 1986	C
	+ Z11-16:OH (15:1:0.04)	Shaver, 1989	
	+ *Z11-16:OH (100:5:1)	Groot, 2018	
	Z9-14:OFo + Z9-14:Ald (32:1–16:1)	Mitchell, 1978	
<i>Protoschinia scutosa</i> Denis & Schiffermüller <yomogiga> att.	Z11-16:OH + Z7-12:OAc + Z9-14:OAc (1:3:1)	Konstantin in Arn, 1986(a) Li, 1993(d)	A
<i>Pyrrhia umbra</i> Hufnagel <ki-tabakoga> att.	Z11-16:OAc	Stan, 1992	A
<i>Schinia bina</i> Guenée att.	Z11-16:OAc + Z11-16:Ald (7:3)	Underhill, 1977(a)	D
<i>Schinia meadi</i> Grote att.	Z11-16:Ald	Steck, 1982(a)	D
<i>Schinia sueta</i> Grote att.	Z9-14:OAc + Z11-16:OAc + Z11-16:OH	Byers, 1987	D

(Noctuidae; Noctuinae) Yaga-ka; Monyaga-aka

<i>Abagrotis placida</i> att.	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> phe.	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 att.	Z11-14:OAc Z5-10:OAc	Hrdý, 1979 Tóth, 1992(c)	C
<i>Agrotis collaris</i> Wallengren att.	Z7-14:OAc + Z5-14:OAc (20:1)	Steck in Arn, 1986(a)	C
<i>Agrotis confuse</i> Stephens att.	Z7-12:OAc	Il'icheva in Arn, 1992	C
<i>Agrotis</i> (= <i>Scotia</i>) <i>crassa</i> Hübner att.	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> phe.	*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> phe.	*Z5-10:OAc + *Z7-10:OAc (1:9)	Wakamura, 1978; 1980	A
<i>Agrotis ipsilon</i> Hufnagel black cutworm <tamana-yaga> phe.	Z7-12:OAc *Z7-12:OAc + *Z9-14:OAc (3:1)	Steck, 1979(c) Hill, 1979(b)	A

	+ *Z11-16:OAc (3:4:2)	Causse in Arn, 1986(a)	
	(3:1:15)	Wakamura, 1986(a)	
	+ Z11-16:OH + 16:OAc (8:4:4:1:2)	Buleza, 1991	
European strain	+ *Z11-16:OAc + other components	Picimbon, 1997	
American strain other strains	+ *Z11-16:OAc (3:1:6)	Gemeno, 1998; 2000	
<i>Agrotis obliqua</i> Smith att.	Z5-14:OAc	Steck, 1982(a)	C
<i>Agrotis orthogonia</i> Morrison pale western cutworm att.	Z7-12:OAc + Z5-12:OAc (2:1)	Struble, 1978(a)	C
<i>Agrotis</i> (= <i>Scotia</i>) <i>segetum</i> Denis & Schiffermüller turnip moth white-line dart moth phe.	*Z5-10:OAc + *Z9-16:OAc *Z7-12:OAc + *Z9-14:OAc (4:1–1:1) *Z7-12:OAc + *Z5-10:OAc (2:1) + other components + Z9-14:OAc (1:1:1) + *Z9-14:OAc (1:1:1) + other components + *Z5-12:OAc (50:10:25:1)	Bestmann, 1978(a) Voronkova in Arn, 1992 Tóth, 1980 Arn, 1980 Arn, 1983 Grodner, 2018 Löfstedt, 1982, 1985(b), (c); 1986(b) Hansson, 1990(a) Lebedeva, 1991 Svensson, 1997 Wu, 1995	B?
in Zimbabwe	(25:100:3:10)	Wu, 1999	
	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 multangular</i> Hübner att.	Z11-16:OAc E + Z5-10:OAc (10:1)	Priesner, 1975 Subchev, 1990	C
<i>Cryptocala acadiensis</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 <kousucha-yaga> att.	Z9-14:OAc	Ando, 1977	A

<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 + Z5-10:OAc (5:5:1) or + Z5-12:OAc (5:5:1)	Steck, 1982(a)	C
<i>Euxoa campestris</i> Grote	Z5-10:OAc	Byers, 1981	C

<i>att.</i>	or + Z5-12:Ald (10:1)	Underhill, 1981	
<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 <i>att.</i>	Z9-14:OAc + Z11-16:OAc	Steck, 1976	C
<i>Euxoa maimes</i> Smith <i>phe.</i>	*Z9-14:OAc + *Z11-14:OAc	Struble, 1985	C

	+ *Z7-14:OAc (200:2:1) + other components		
<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) + Z7-12:OAc (200:1) *Z5-12:OAc + *Z7-12:OAc + *Z9-12:OAc + Z5-10:OAc (200:2:1:1)	Struble, 1978(b) Ayre, 1982(b) Steck, 1980(b) Struble, 1980(a); 1981(b)	C

	+ other components		
	(400:4:1:1)	Steck, 1982(b)	
<i>Euxoa olivia</i> Morrison <i>att.</i>	Z5-10:OAc	Underhill, 1981	C
<i>Euxoa perolivalis</i> Smith <i>att.</i>	Z9-14:OAc	Struble, 1987(c)	C
<i>Euxoa pestula</i> Grote <i>att.</i>	Z5-10:OAc + Z7-12:OAc + Z7-12:Ald (100:1:1)	Steck, 1982(a)	C
<i>Euxoa plagigera</i> Morrison <i>att.</i>	Z9-14:OAc + Z9-14:OH (5:1)	Steck, 1982(a)	C
<i>Euxoa pleuritica</i> Grote <i>att.</i>	Z7-12:OAc + Z7-12:OH + Z5-12:OAc (5:1:1–5:5:1) or + Z5-10:OAc (25:5:5:2)	Underhill, 1977(a)	C
<i>Euxoa ridingsiana</i> Grote <i>phe.</i>	Z9-14:OAc + Z7-12:OAc + Z11-16:OAc (500:1:20) *Z9-14:OAc + *Z7-14:OAc + *Z7-12:OAc (40:2:1) + other components	Steck, 1979(c)	C
<i>Euxoa rockburnei</i> Hardwick <i>att.</i>	Z5-10:OAc + Z5-12:Ald (10:1)	Byers, 1981 Underhill, 1981	C
<i>Euxoa scandens</i> Riley white cutworm <i>att.</i>	Z7-12:OH	McLeod, 1982	C
<i>Euxoa seliginis</i> Duponchel <i>att.</i>	Z5-10:OAc	Nagy, 2023	C
<i>Euxoa servita</i> Smith <i>att.</i>	Z7-14:OAc + Z7-14:Ald	Steck, 1979(c)	C
		Steck, 1982(a)	

<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> att.	Z9-14:OAc + Z9-14:Ald (9:1)	Ando, 1975 Ando, 1981	A

<i>Loxagrotis albicosta</i> Smith western bean cutworm phe.	*Z5-12:OAc + *Z7-12:OAc + *Δ11-12:OAc (5:1:5)	Klun, 1983	D
<i>Macronoctua onusta</i> Grote iris borer phe.	*Z11-16:Ald + *Z11-16:OH + *Z9-14:Ald (47:2:1) + other components	Klun, 1989	D
<i>Mesogona acetosellae</i> Denis & Schiffermüller att.	Z11-16:OAc	Stan in Arn, 1992	D
<i>Noctua comes</i> Hübner lesser yellow underwing moth att.	Z5-14:OAc	Priesner, 1985(a)	C
<i>Noctua comes</i> Hübner lesser yellow underwing moth att.	Z5-14:OAc	Priesner, 1985(a)	C
<i>Noctua fimbriata</i> Schreber att.	Z11-14:OAc + Z9-14:OAc (9:1)	Konstantin in Arn, 1986(a) Frerot, 1982(a) Ghizdavu, 1985	C
<i>Noctua fissipuncta</i> Haworth att.	Z11-16:Ald	Grichanov in Pherobase	C
<i>Noctua interjecta</i> Hübner att.	Z9-14:OAc + Z11-14:OAc	Priesner in Arn, 1986(a)	C
<i>Noctua janthina</i> Dennis & Schiffermüller att.	Z9-14:OAc + Z11-14:OAc (9:1)	Szöcs, 1983 Frerot, 1982(a) Ghizdavu, 1985	C
<i>Noctua orbona</i> Hufnagel att.	Z7-12:OAc	Subchev, 1990 Coroiu in Arn, 1997	C
<i>Noctua pronuba</i> L. large yellow underwing att.	Z11-14:OAc Z9,Z12,Z15-18:Ald + Z3,Z6,epo9-21:H	Hrudová, 2003 Ostrauskas, 2004	C C

	+ $\Delta 1, Z3, Z6, \text{epo}9-21:H$ (8:1:1)		
<i>Ochropleura plecta</i> L. <maejiro-yaga> att.	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 att.	Z9-14:OAc + Z9-14:OH	Subchev, 1990	C
<i>Ochropleura triangularis</i> Moore <kokimae-yaga> att.	Z9-14:OAc	Ando, 1977	A
<i>Opigena polygona</i> Denis & Schiffermüller att.	Z9-14:OAc + Z11-14:OAc	Peltotalo, 1986	D
<i>Paradiarsia littoralis</i> Packard att.	Z7-12:OAc + Z5-12:OAc (100:1)	Steck, 1982(a); (b)	C
<i>Peridroma saucia</i> Hübner variegated cutworm <nisetamana-yaga> phe.	Z11-16:OAc + Z9-14:OAc (2:1–1:1) (15:2) *Z11-16:OAc + *Z9-14:OAc (3:1) In Korea (2:1)	Struble, 1976 Descoins, 1978 Landolt, 2003 Inomata, 2002 Choi, 2009(b)	A
<i>Rhyacia</i> (=Diarsia) <i>rubi</i> Viewg. att.	Z11-16:OAc	Terytze, 1987	C
<i>Sineugraphe disgnosta</i> Boursin <usuirokabusuji-yaga> att.	Z7-12:OH	Ando, 1981	A
<i>Spaelotis clandestina</i> Harris w-marked cutworm	Z7-14:Ald	Steck, 1979(c)	C

phe.		*Z7-14:Ald + other components	Steck, 1982(c)	
<i>Tmetolophota atristriga</i> Walker pink grass worm phe.	strain A	*Z11-16:OAc + *Z11-16:Ald (3:1)	El-Sayed, 2022	D
	strain B	*Z11-16:OAc + *Z11-16:Ald + *Z3,Z6,Z9-23:H (3:1:0.2) + other components		
<i>Xestia (=Amathes, Rhyacia) baja</i> Schiffmüller 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.)	E7-14:OAc	Roelofs, 1970(a)	
	U.S.A (large sp.)	Z7-14:OAc		
	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 att.		Z7-14:OAc + Z9-14:OAc (1:1)	Steck, 1979(c)	C
<i>Xestia ditrapezium</i>		Z7-14:OAc	Priesner, 1985(a)	B

Denis & Schiffermüller <tanpo-yaga> att.	+ Z9-14:OAc + Z5-14:OAc (10:2:1)		
<i>Xestia dolosa</i> Franclemont phe.	*Z7-14:OAc	Bjostad in Arn, 1986(a)	C
<i>Xestia rhomboidea</i> Esper att.	Z5-14:OAc + Z9-14:OAc (20:1)	Priesner, 1985(a)	C
<i>Xestia triangulum</i> Hufnagel att.	Z5-14:OAc	Priesner, 1985(a)	C
<i>Xestia xanthographa</i> Denis & Schiffermüller att.	Z9-14:OAc + Z11-14:OAc (9:1)	Booij, 1984(a)	C
	Z11-16:OAc + Z11-16:Ald (10:3)	Priesner in Arn, 1986(a)	
<i>Xestia</i> sp. att.	E11-14:Ald	Daterman, 1977	

(Noctuidae; Hadeninae) Yaga-ka; Yotouga-aka

<i>Acantholeucania</i> (= <i>Mythimna</i>) <i>loreyi</i> Duponchel lorey leafworm <kusashiroki-yotou> phe.	Z9-12:OAc	Ando, 1977	A
	*Z9-14:OAc + *Z11-16:OAc	Takahashi, 1979	
	+ *Z7-12:OAc (20:5:2)	Takahashi, 1980; 1983 Sato, 1980	
	(100:20:9)	Wang, 2023	
	Z9-14:OAc + Z11-14:OAc	Soldán, 1983	
	+ 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. att.	Z9-14:OAc + Z11-14:OAc (10:1)	Priesner in Arn, 1986(a)	C
<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 <shiromimihaiiro-yotou> att.	Z11-16:OAc + Z11-16:OH + Z11-16:Ald	Subchev in Arn, 1992	A
<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. <mokume-yoto> att.	Z9-14:OAc 12,12,12-F ₃ -Z9-12:OAc	Descoins, 1978 Szöcs, 1981 Ando, 1981 Bengtsson, 1990	A

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

	+ Z11-16:OAc	Priesner in Arn, 1986(a)	
<i>Dargida diffusa</i> Walker <i>att.</i>	Z11-16:OAc + Z11-16:Ald	Landolt in Pherobase	D
<i>Dargida terrapictalis</i> Buckett <i>att.</i>	Z11-16:OAc + Z11-16:Ald	Landolt in Pherobase	D
<i>Discestra</i> (=Scotogramma) <i>farnhami</i> Grote <i>att.</i>	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 <i>phe.</i>	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. <i>att.</i>	Z11-16:OAc + Z9-14:Ald	Stan, 1992	C
<i>Egira pulla</i> Denis & Schiffermüller <i>att.</i>	Z9-14:OAc	Subchev in Arn, 1992	C
<i>Enargia infumata</i> Grote <i>att.</i>	Z11-16:OAc + Z9-14:OAc (500:1)	Steck, 1982(b)	C
<i>Euplexia lucipara</i> L. <akagane-yotou> <i>att.</i>	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>	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> <i>att.</i>	Z9-14:Ald + Z9-14:OAc (9:1)	Ando, 1981	A
<i>Hoplodrina alsines</i> Brahm <i>att.</i>	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 <i>att.</i>	Z11-16:OAc + Z11-16:OH	Sherman in Pherobase	C
<i>Hoplodrina blanda</i> Denis & Schiffermüller <i>att.</i>	Z9-14:OAc + Z9,E11-14:OAc + Z9,E12-14:OAc	Arn, 1983 Ostrauskas, 2003	C
<i>Hoplodrina octogenaria</i> Goeze <i>att.</i>	Z11-16:OAc Z9-14:OAc + Z9,E11-14:OAc + Z9,E12-14:OAc	Stan, 1992 Ostrauskas, 2003	C
<i>Hoplodrina superstes</i> Ochsenheimer <i>att.</i>	Z5-10:OAc + Z7-12:OAc (1:1) (1:10)	Szöcs, 1983 Subchev, 1990	C
<i>Hydraecia micacea</i> Esper potato stem borer <i>phe.</i>	*E11-14:OAc + *Z11-14:OAc + *Z9-14:OAc + *14:OAc (15:13:3:69) Z11-14:OAc + Z9-14:OAc + 14:OAc (13:3:69)	Teal, 1983 Burns, 1989	C
<i>Hypocoena rufostrigata</i> Packard <i>att.</i>	Z11-16:Ald + Z11-16:OH + Z9-14:Ald (100:1:1)	Steck, 1982(a)	D
<i>Hyssia cavernosa</i> Eversmann <i>att.</i>	Z9-14:OAc E	Priesner, 1975	D

<i>Ipimorpha pleonectusa</i> Grote <i>att.</i>	Z11-16:Ald + Z11-16:OH (100:1)	Steck, 1982(a)	C
<i>Ipimorpha retusa</i> L. <yanagi-kiriga> <i>att.</i>	Z11-16:OAc + Z11-16:OH (9:1)	Stan in Arn, 1992	A
<i>Ipimorpha subtusa</i> Denis & Schiffermüller <doro-kiriga> <i>att.</i>	Z11-16:Ald + Z9-16:Ald (19:1)	Grichanov in Pherobase Bulyginskaya in Pherobase	A
<i>Lacanobia subjuncta</i> Grote & Robinson <i>phe.</i>	*Z11-16:OAc + *Z11-16:Ald + *Z11-16:OH (3:1:0.08)	Landolt, 1998	C
<i>Lacinipolia lorea</i> Guenée <i>att.</i>	Z7-14:OAc	Roelofs, 1971(a)	D
<i>Lacinipolia renigera</i> Stephens bristly cutworm <i>phe.</i>	Z9-14:OAc *Z9-14:OAc + *Z9,E12-14:OAc (100:3)	Steck, 1982(a) Haynes, 1990	D
<i>Lacinipolia vicina</i> Grote <i>att.</i>	Z9-14:OAc + Z11-16:OAc + Z7-14:OAc (5:5:1)	Steck, 1982(a)	D
<i>Leucania anteoclara</i> Smith <i>phe.</i>	*Z11-16:OAc + *Z11-16:Ald + *Z9-14:OAc (10:4:1) + other components	Byers, 1997	C
<i>Leucania commoides</i> Guenée <i>phe.</i>	Z9-14:OAc + Z11-16:OAc + Z11-16:OH (5:4:1) *Z9-14:OAc + *Z11-16:OAc + *Z11-16:OH (5:4:1) + other components	Struble, 1977(d) Byers, 1997	C
<i>Leucania linda</i> Franclemout <i>att.</i>	Z9-14:OAc + Z11-14:OAc (19:1)	Roelofs, 1976(b)	C
<i>Leucania lithargyria</i> Esper	Z11-16:Ald	Grichanov	C

att.			in Arn, 1992	
<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) *Z9-14:OAc + *Z7-14:OAc + *14:OAc + *Z9-14:OH [72:11:15:2] N		Priesner in Arn, 1986(a) Frerot, 1987(b)	C
<i>Mamestra blenna</i> Hübner att.	Z11-16:OAc + Z11-16:OH + Z11-16:Ald (10:3:1)		Tóth, 1986(b)	C
<i>Mamestra brassicae</i> L. cabbage armyworm <yotouga> phe.	Z11-16:OAc *Z11-16:OAc + other components + Z11-16:Ald (100:0.1)		Ando, 1977 Bestmann, 1978(b) Descoins, 1978 Hirai, 1978 Struble, 1980(b) Attygalle, 1987 Farine, 1981 Sugie, 1993 Subchev, 1984	A

		Stan in Arn, 1992	
	+ Z11-16:OFo (100:0.1)	Subchev, 1984	
	+ *Z11-17:OAc [19:1] N	Novák, 1979	
	(8:1)	Van de Veire, 1986	
	(4:1)	Nedopekina in Arn, 1992	
	+ Z7-12:OAc (5:1) or + Z9-14:OAc (1000:1)	Subchev, 1987	
	Z11-14:OAc	Hrdý, 1979	
<i>Mamestra cappa</i> Hübner att.	Z7-12:OAc + Z11-16:OAc + Z11-16:OH	Sherman in Pherobase	C
<i>Mamestra configurata</i> Walker bertha armyworm phe.	Z10-16:OAc	Struble, 1975(b)	C
	*Z11-16:OAc + E11-16:OAc (17:3)	Chisholm, 1975	
	+ *Z9-14:OAc (19:1)	Underhill, 1977(b)	
	(15:2)	Landolt, 2003	
	+ *Z7-12:OAc (500:26:0.1) or + Z11-16:Ald (500:26:1)	Struble, 1984	
	Z11-16:OAc + Z9-14:OAc + Z7-12:OAc + Z7-12:OH (250:13:20:10)	Byers, 1987	
<i>Mamestra contigua</i> Denis & Schiffermüller att.	Z11-16:OAc + Z11-16:OH (9:1)	Stan in Arn, 1992	C
<i>Mamestra</i> (= <i>Lacanobia</i>) oleracea L. phe.	*Z11-16:OAc + *Z11-16:OH [1:1] N	Descoins, 1978 Kovalev in Arn, 1986(a)	C
	(9:1)	Sans, 1997	

<i>Mamestra</i> (= <i>Melanchra</i>) <i>persicariae</i> L. att.	Z11-16:OAc	Möttus in Arn, 1986(a)	C
<i>Mamestra suasa</i> Denis & Schiffermüller phe.	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 phe.	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) Z11-16:OAc + Z11-16:OH	Fassotte in Arn, 1986(a) Subchev in Arn, 1992	C
<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 Z11-16:Ald + Z9-16:Ald (19:1)	Subchev in Pherobase Kohno, 2014	A
<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, Töth 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 att.	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	Z11-16:OAc	Ando, 1977	A

<yomogi-kiriga> att.	+ Z11-16:Ald (1000:1)	Kakizaki in Pherobase	
<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 Z9-14:Ald + Z11-14:Ald (100:1)	Hill, 1978 Steck, 1982(a)	C
<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	Z9-14:OAc + Z11-14:OAc (20:1)	Priesner in Arn, 1986(a)	C

<i>Orthosia munda</i> Denis & Schiffermüller <sumomo-kiriga> <i>att.</i>	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> <i>att.</i>	Z7-12:OAc	Ando, 1977	A
<i>Orthosia paromoea</i> Hampson <buna-kiriga> <i>att.</i>	Z7-14:OAc	Ando, 1977	A
<i>Orthosia stabilis</i> Denis & Schiffermüller <i>att.</i>	Z11-16:Ald + Z9-14:Ald (100:1)	Subchev, 1986(b) Tóth, 1993	C
<i>Pachetra sagittigera</i> (= <i>fulminea</i>) Hufnagel <i>att.</i>	Z7-12:OAc E Z7-12:OAc + Z5-12:OAc	Priesner, 1975 Priesner in Arn, 1986(a)	D
<i>Panolis flammea</i> Denis & Shiffermüller pine beauty moth <matsu-kiriga> <i>phe.</i>	Z9-14:OAc + 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, 1978 Priesner, 1983 Knauf, 1979 Baker, 1982	B
<i>Parastichtis discivaria</i> Walker <i>att.</i>	Z11-16:OAc + Z11-16:Ald	Steck, 1982(a)	C
<i>Parastichtis suspecta</i> Hübner <haiiro-yotou> <i>att.</i>	Z11-16:OAc	Myttus in Arn, 1986(a)	A
<i>Polia assimilis</i> Morrison <i>att.</i>	Z11-14:OAc + Z9-14:OAc (100:1)	Steck, 1982(b)	C
<i>Polia</i> (= <i>Lacanobia</i>) <i>atlantica</i> Grote	Z11-16:OAc	Steck, 1977(a)	C

<i>att.</i>	+ Z7-12:OAc (9:1)		
	+ Z11-16:Ald	Steck, 1980(a)	
	+ Z11-14:Ald (200:1:1)		
<i>Polia bombycina</i> Hufnagel <oochairo-yotou> <i>att.</i>	Z9-14:OAc + Z9-14:Ald (1:1)	Tóth in Arn, 1986(a)	A
<i>Polia discalis</i> Grote <i>att.</i>	Z9-14:OAc + Z11-14:OAc (10:1)	Steck, 1982(a)	C
<i>Polia grandis</i> Boisduval <i>att.</i>	E9-14:OAc	Roelofs, 1970(a)	C
<i>Polia ingravis</i> Smith <i>att.</i>	Z9-14:OAc + Z11-16:OAc (100:1)	Steck, 1982(b)	C
<i>Polia lilacina</i> Harvey <i>att.</i>	Z7-14:OAc + Z9-14:OAc (10:1)	Steck, 1982(a)	C
<i>Polia nebulosa</i> Hufnagel <ooshirahoshi-yotou> <i>att.</i>	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> Japan strain	 *Z11-16:OAc + *Z11-16:OH (4:1–9:1)	 Takahashi, 1979; 1980	A

China strain	(4:1)	Lin in Arn, 1992	
	+ *16:Ald	Zhu, 1987(c)	
	+ *Z11-16:OH (100:10:0.1)		
	*Z11-16:Ald	Wei, 1985	
	+ another component	Wang, 1997	
A strain	*Z11-16:Ald	Meng, 2025	
	+ other components		
E strain	*Z11-16:OAc		
	+ *Z11-16:OH (4:1)		
	+ other components		
Taiwan strain	*Z11-16:OAc	Kou, 1992(b)	
	+ *Z11-16:OH (2:1)		
	+ other components		
Russian strain	*Z11-16:Ald	Lebedeva, 2000(a)	
	+ *Z11-16:OAc (20:1)		
	+ other components		
<i>Pseudaletia</i> (= <i>Mythimna</i>)	*Z11-16:OAc	Hill, 1980	C
<i>unipuncta</i> Haworth	+ other components	McDonough, 1980	
armyworm moth		Farine in Arn, 1992	
phe.	Z11-16:OAc	Soldán, 1983	
	+ Z11-16:OH (100:0.2)	Steck, 1980(a)	
	+ Z11-16:Ald	Steck, 1982(e)	
	+ Z9-14:OAc (100:0.2:0.05:0.01)		
	+ Z9-14:OAc	Guerrero, 1986	
	+ 16:OAc (1:5:2:1)		
	+ Z11-16:Ald	Rotundo	
	+ 12:OAc (9:1:1:2)	in Arn, 1992	
<i>Rhynchaglaea fuscipennis</i> Sugi	Z7-12:OAc	Ando, 1977	A
<kurochamadara-kiriga>			
att.	Z9-14:Ald	Ando, 1981	
<i>Rhynchaglaea scitula</i> Butler	Z9,E12-14:OH	Ando, 1977	A
<chamadara-kiriga>			

att.			
<i>Sarcopolia</i> (= <i>Mamestra</i>) <i>illoba</i> Butler <shiroshita-yotou> att.	Z11-16:OAc	Ando, 1977	A
<i>Sesamia calamistis</i> Hampson phe.	*Z11-16:OAc + *Z9-14:OAc (3:1) + other components	Zagatti, 1988	C
<i>Sesamia cretica</i> Lederer durra stemborer phe. in Italy	Z9-14:OH + Z9-14:OAc (3:1) *Z9-14:OH + *Z9-14:OAc + *Z11-16:OH (90:1:9)	Arsura, 1977 Germinara, 2007	C
in Iran, Egypt	(8:1:1)	Avand-Faghih, 2008	
<i>Sesamia grisescens</i> Walker phe.	*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> phe. China	*Z11-16:OAc + Z11-16:OH (4:1) + *Z11-16:OH + *Z11-16:Ald (4:1:0.1)	Nesbitt, 1976 Wu, 1986(a) Zhu, 1987(b)	A
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) + *Z11-16:Ald + *12:OAc (9:1:1:2) + another component (2:3:4:5) (8.5:1:1:2)	Sreng, 1985 Rotundo in Arn, 1986(a) Mazomenos, 1989(a) Krokos, 2002 Mazomenos, 1989(b) Rotundo	C

		in Arn, 1992	
	(77:8:10:5)	Sans, 1997	
<i>Sideridis rosea</i> Harvey <i>att.</i>	Z9-14:OAc + Z11-16:OAc (2:1)	Struble, 1976	C
<i>Spodoptera androgea</i> Stoll <i>att.</i>	Z9-14:OAc + Z9,E12-14:OAc	L.-Cassou in Pherobase	C
<i>Spodoptera cilium</i> Guenée <kushinashisujikiri-yotou> <i>att.</i>	Z9,E12-14:OAc Z9-14:OAc (main) + Z9,E11-14:OAc	Soldán, 1983 Campion, 1975	A
<i>Spodoptera cosmioides</i> Walker black armyworm <i>phe.</i>	*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> <i>phe.</i>	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 <i>phe.</i>	*Z9,E12-14:OAc + *Z9-14:OAc (1:1) + other components	Monti, 1995	C
<i>Spodoptera dolichos</i> F. <i>att.</i>	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 <i>phe.</i>	*Z9-14:OAc + *Z9,E12-14:OAc (4:1) (1:1) + *Z9,E11-14:OAc (7:3:1) + other components + Z11-16:OAc (56:21:9:14)	Jacobson, 1970 Redfern, 1971 Teal, 1985 Mitchell, 1994	C
<i>Spodoptera evanida</i> <i>att.</i>	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) (99:1–9:1)	Beevor, 1975 Wakamura, 2011	A
	+ *Z11-16:OAc (20:1:1) + other components	Cork, 1989	
<i>Spodoptera exigua</i> Hübner beet armyworm <shiroichimoji-yotou> phe.	*Z9,E12-14:OAc + other componets	Brady, 1972(a) Persoons, 1981	A
	+ *Z9-14:OH (5:4) + other componets	Tumlinson, 1981	
	att. (10:1) att. (9:1–7:3)	Mitchell, 1983 Wakamura, 1987	
	+ *Z9,E12-14:OH + other components att. (7:3-3:7)	Mochizuki, 1993 Mochizuki, 1994	
	*Z9,E12-14:OAc + *Z9-14:OH + *Z11-16:OAc (87.2:2.5:10.3) + other components	Tumlinson, 1990 Mitchell, 1994	
	att. (7:3:1–7:3:5)	Jung, 2003	
	phe. (56:37:7) + other componets	Acin, 2010	
<i>Spodoptera frugiperda</i> J. E. Smith fall armyworm phe.	Z5,Z9-13:OAc or E5,Z9-13:OAc	Warthen, 1967	C
	*Z9-14:OAc	Sekul, 1967	
	+ Z9,E12-14:OAc (24:1)	Mitchell, 1976	
	+ Z9-12:OAc (1:20)	Jones, 1979	
	+ Z9-12:OAc + Z7-12:OAc + Z11-16:OAc (81.61:0.25:0.45:17.69)	Mitchell, 1985	
	+ *Z7-12:OAc (30:1) + other components	Tumlinson, 1986 Descoins, 1988	

	+ *9:Ald (1000:5.8:10)	Saveer, 2023	
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	Wakamura, 2021	
	+ *Z11-16:OAc + *Z9-12:OAc + *Z9,E12-14:OAc (200:2:40;1:1)	Tabata, 2023	
Chaina strain	(25:1) + other components	Jiang, 2022	
Chaina strain	+ *Z11-16:OAc (88:1:11) + other components	Wang, 2022	
strains in Kenya	+ *Z7-14:OAc + *Z11-14:OAc + *Z11-16:OAc N	Sisay, 2024	
Australia atrain	+ *Z7-12:OAc + *Z9-12:OAc + *Z11-16:OAc (86:3:6:5) N	Akter, 2025	
<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 + *Z9,E12-14:OAc (10:1) (100:1) + other components + *E10,E12-14:OAc N	Nesbitt, 1973 Campion, 1974; 1980 Dunkelblum, 1987(b) Tamaki, 1974(a) Yushima, 1974 Kehat, 1976; 1977 Dunkelblum, 1982 Navarro, 1997	C
<i>Spodoptera litura</i> F. common cutworm	*Z9,E11-14:OAc + *Z9,E12-14:OAc (9:1)	Tamaki, 1973; 1974(b)	A

<hasumon-yotou> phe.				
<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 trituratora</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 <monki-kiriga> att.	Z11-16:Ald + Z9-16:Ald (19:1)	Grichanov in Pherobase Bulyginskaya in Pherobase	A	
<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	Z11-16:Ald	Ando, 1977	A	

<kibaramokume-kiriga> att.	+ Z9-16:Ald (19:1)	Kohno, 2014	
<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>Allophyes 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	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 uncinata</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> att.	Z9-14:OAc + Z7-14:OAc + 14:OAc (8:1:1)	Frerot, 1987(a)	A
	12,12,12-F ₃ -Z9-12:OAc	Bengtsson, 1990	
<i>Cucullia lychnitis</i> Rambur att.	Z9-14:OH E	Priesner, 1975	C
<i>Cucullia omissa</i> Dod att.	Z9-14:OAc	Steck, 1982(a)	C

<i>Cucullia postera</i> Guenée att.	Z9-14:OAc + Z9-14:Ald (100:1)	Steck, 1982(a)	C
<i>Cucullia speyeri</i> Lintner att.	Z9-14:OAc	Steck, 1982(a)	C
<i>Cucullia tanacetii</i> Denis & Schiffermüller att.	Z9-14:OAc + Z7-12:OAc (5:1)	Konstantin in Arn, 1986(a)	C
<i>Cucullia umbratica</i> L. att.	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 phe.	*Z9-16:OAc + *Z9-14:OAc + *14:OAc	Zhang, 2003(b)	D
<i>Fishia derelicta</i> Hampson att.	Z7-12:OAc + Z9-14:OAc (3:1) + Z9-14:Ald (4:8:1)	Steck, 1982(a) Underhill, 1977(a)	D
<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	Dateman, 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>	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 att.	Z9-14:OAc	Steck, 1982(a)	D
<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> att.	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 gluteosa</i> Treitschke <himeobiusuiro-yotou> att.	Z7-12:OAc + Z9-14:OAc (8:5–2:5)	Szöcs, 1983	A
<i>Athetis hospes</i> Freyer att.	Z9-14:OH	Capizzi, Guerrero in Arn, 1986(a)	C

		Albages, 1988 Guerrero, 1986	
<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>Atyhpa 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 + *Z9-14:OAc + *Z11-14:OH (62:20:10:5:5)	Félix, 2011	D
<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> Hampson 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) Yaga-ka; Kinokawaga-aka

<i>Nolathripa</i> (= <i>Lamprothripa</i>) <i>lactaria</i> Graeser <komabashiro-kinokawaga> att.	Z9,E12-14:OPr	Ando, 1977	A
(Noctuidae; Chloephorinae) Yaga-ka; Ringa-aka			
<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) Yaga-ka; Koyaga-aka			
<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 <kimadara-koyaga> att.	Z5-10:OAc Z11-16:OAc + Z5-10:OAc (10:1)	Arn, 1983 Szöcs, 1983 Nagy, 2023 Subchev, 1987	A
<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) Korean strain (4:1:2)	Ando, 1980(a) Cho, 2014	A
<i>Phyllophila obliterata</i> cretacea Butler <yomogi-koyaga> att.	Z9-14:OAc or Z9,E12-14:OAc	Nagano, 1979	A

(Noctuidae; Plusiinae) Yaga-ka; Kinuwaba-aka

<i>Anadevidia peponis</i> F. <urikin-uwaba> phe.	*Z7-12:OAc + *Z5-10:OAc + *Z7-12:OH (10:5:1) + other components	Inomata, 2000	A
<i>Anagrapha falcifera</i> Kirby celery looper att.	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. att.	Z5-10:OAc	Hai, 2002	D
<i>Argyrogramma verruca</i> F. phe.	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 <i>att.</i>	Z7-12:OAc + Z7-14:OAc	Steck, 1979(c)	C
<i>Autographa gamma</i> L. silver Y moth <gamakin-uwaba> <i>phe.</i>	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	A
<i>Autographa nigrisigna</i> Walker semi-looper <tamanagin-uwaba> <i>phe.</i>	*Z7-12:OAc + *Z7-12:OH + *Z5-12:OAc + *Z7-14:OAc (100:62:2:4)	Sugie, 1991(a)	A

	+ other components		
<i>Autographa precationis</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 New Zealand silver Y moth <ichijikukin-uwaba> phe.	*Z7-12:OAc + *Z9-12:OAc (50:1) or + Z9-14:OAc (5:1) Z7-12:OAc + Z9-12:OAc (17:3) + Z9-14:OAc + Z11-16:OAc (10:2:1)	Benn, 1982 Sugie, 1990 Inomata, 2000	A
<i>Cornutiplusia</i> (= <i>Syngrapha</i>) <i>circumflexa</i> L. phe.	Z7-12:OH + Z7-12:OAc (5:1) *Z7-12:OH + *Z7-12:OAc (5:1)	Dunkelblum in Arn, 1986(a) Mazor, 1991	C
<i>Ctenoplusia</i> (= <i>Acanthoplusia</i>) <i>agnata</i> Staudinger three-spotted plusia <mitsumonkin-uwaba>	*Z7-12:OAc + *Z9-12:OAc (10:1)	Sugie, 1990	A

phe.			
in Vietnam	Z7-12:OAc	Hai, 2002	
<i>Ctenoplusia albostrata</i> Bremer & Grey <ezogikukin-uwaba> phe.	*Z9,E12-14:OAc N Z7-12:OAc + Z5-10:OAc (2:1)	Boughdad in Arn, 1997 Inomata, 2000	A
in Vietnam	(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) + Z5-10:OAc (1:10) *Z7-10:OAc + *Z5-10:OAc	Capizzi in Arn, 1986(a) Priesner, 1985(c) Tóth, 1988 Hansson in Arn, 1992 Löfstedt, 1994	A
<i>Diachrysia chryson</i> Esper <ookin-uwaba> att.	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) *Z7-10:OAc + *Z5-10:OAc	Priesner, 1985(c) Tóth, 1988 Hansson in Arn, 1992 Löfstedt, 1994	C
<i>Macdunnoughia confusa</i> Stephens <kikugin-uwaba> phe.	Z7-12:OAc + Z9-14:OAc (1:1)	Booij, 1984(a) Ando, 1981	A

		Li, 1993(d)	
	+ Z7-14:OAc	Szőcs, 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 tomato looper phe.	*Z7-12:OAc + *Z9-14:OAc (5:1) + other components + *Z9-12:OAc (10:1:1)	Dunkelblum, 1981 Dunkelblum, 1987(a); 1993	C
<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>Chrysaspidia</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	Berger, 1968 Tumlinson, 1972 Linn, 1987	D

(93.2:1.2:0.7:0.9:0.2)

<i>Rachiplusia ou</i> Guenée phe.	*Z7-12:OAc N	Berger, 1968	D
<i>Sclerogenia</i> (= <i>Autographa</i>) jessica 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>Thysanoplusia 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>Thysanoplusia 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

	Z7-12:OAc	Mayer, 1995	
<i>Trichoplusia oxygramma</i> Geyer att.	Z7-12:OAc	Mitchell, 1972; 1973	C
	+ E7-12:OAc (24:1)	McLaughlin, 1975	
	+ Z9-14:OAc (10:0.9)	Landolt, 1986(c)	
<i>Zonoplusia ochureata</i> Walker <koseakakin-uwaba> att.	Z7-12:OAc + Z5-12:OAc (1:1)	Hai, 2002	A
(Noctuidae; Metoponiinae) Yaga-ka;			
<i>Tyta luctuosa</i> Denis & Schiff. phe.	*Z11-16:Ald + * Z9-14:Ald (5:1) N + other components	Cao, 2002, 2003	D
(Nolidae) Kobuga-ka			
<i>Nola confusalis</i> Herrich-Schäffer <hime-kobuga> att.	E10,Z12-16:Ald	Priesner in Arn, 1986(a)	A
<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
(Erebidae; Calpinae) Tomoega-ka; Eguriba-aka			
<i>Rusicada privata</i> Walker hibiscus-leaf caterpillar moth <ooaka-kiriba> phe.	*Me7-17:H	Kim, 2023	A
(Erebidae; Catocalinae) Tomoega-ka; Shitabaga-aka			
<i>Achaea janata</i> L.	*Z3,Z6,Z9-21:H	Persoons, 1993	A

castor semilooper <shirahoshiashibuto- kuchiba> phe.	+ *Z6,Z9-21:H + *21:H + *Z9,Z12-18:Ald (65:1:1:1)	Krishnakumari, 1998	
<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>Bastilla arctotaenia</i> Guenée <hosoobiashibuto-kuchiba> phe.	*Z3,Z6,Z9-21:H	Abubaker, 2024(a)	A
<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 + Z3,Z6,Z9-20:H (45:1:1) *Z3,Z6,Z9-21:H + *Z3,Z6,epo9-21:H (10:1) + other components	Wong, 1985(b) Underhill in Arn, 1986(a) Millar, 1991(b)	C
<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>Grammodes geometrica</i> F. <nakaguro-kuchiba> phe.	*Z3,Z6,Z9-21:H + *Z3,Z6,Z9-23:H + *Z3,Z6,Z9-20:H (50:2:1)	Abubaker, 2024(b)	A
<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	Z3,Z6,epo9-21:H	Renou, 1988	C

att.	(9 <i>S</i> ,10 <i>R</i>)-isomer	E		
<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 (9 <i>R</i> ,10 <i>S</i>)-isomer		Wong, 1985(b)	D
<i>Zale fictilis</i> Guenée att.	Z3,Z6,epo9-21:H (9 <i>S</i> ,10 <i>R</i>)-isomer	E	Renou, 1988	D
<i>Zale lunifera</i> Hübner att.	Z3,Z6,epo9-21:H (9 <i>R</i> ,10 <i>S</i>)-isomer		Landolt, 1996	D

(Erebidae; Ophiderinae) Tomoega-ka; Kuchiba-aka

<i>Aedia leucomelas</i> L. <nakajiro-shitaba> phe.	*Z3,Z6,Z9-21:H		Tamaki, 1996	A
<i>Alabama argillacea</i> Hübner phe.	*Me9-19:H (<i>S</i>)-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 (<i>S</i>)-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	Z3,Z6,epo9-21:H		Renou, 1988	C

att.	(9 <i>S</i> ,10 <i>R</i>)-isomer	E		
<i>Hypocala rostrata</i> F. <indokishita-kuchiba> att.	Z3,epo6,Z9-21:H (6 <i>S</i> ,7 <i>R</i>)-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) (9 <i>S</i> ,10 <i>R</i>)-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 (6 <i>S</i> ,7 <i>R</i>)-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 (<i>S</i>)-isomer	Francke, 2000 Toshova, 2003	A	
Gen et sp. att.	Δ1,Z3,Z6,Z9-19:H	Yamamoto, 2008	A	

(Erebidae; Hypheninae) Tomoega-ka; Atsuba-aka

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

(Erebidae: *Herminiinae*) Tomoega-ka : Kurumaatsuba-aka

<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 (6 <i>R</i> ,7 <i>S</i>):(6 <i>S</i> ,7 <i>R</i>) = 4:1 or Z3,epo6,Z9-20:H (6 <i>R</i> ,7 <i>S</i>):(6 <i>S</i> ,7 <i>R</i>) = 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 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)	Wong, 1985(b) Millar, 1991(c)	D
<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) Tomoega-ka : Dokuga-aka

<i>Arna</i> (=Euproctis) <i>pseudoconsersa</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 ginghamensis</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 (6 <i>S</i> ,7 <i>R</i> ,9 <i>S</i> ,10 <i>R</i>)-isomer (6 <i>R</i> ,7 <i>S</i> ,9 <i>R</i> ,10 <i>S</i>)-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 (7 <i>R</i> ,8 <i>S</i>)-(+)-isomer + *Me2,epo7,Δ17-18:H (7 <i>R</i> ,8 <i>S</i>)-(+)-isomer + other components	Bierl, 1970; 1972 Klimetzek, 1976 Cardé, 1977(b) Miller, 1978 Gries, 2005(a)	B
<i>Lymantria dispar asiatica</i> Vnukovskij Asian gypsy moth att.	Me2,epo7-18:H (7 <i>R</i> ,8 <i>S</i>)-isomers + Me2,epo7,Δ17-18:H (10:1) (7 <i>R</i> ,8 <i>S</i>)-isomers	Wallner, 1984 Park, 2019	B
<i>Lymantria dispar japonica</i> Motschulsky Japanese gypsy moth <maimaiga> att.	Me2,epo7-18:H (7 <i>R</i> ,8 <i>S</i>)-(+)-isomer	Beroza, 1973(a) Iwaki, 1974	A
<i>Lymantria fumida</i> Butler <haraaka-maimai> phe.	Me2,epo7-18:H *Me2,epo7-18:H	Beroza, 1973(a) Schaefer, 1999	A

	(7R,8S)-(+)-isomer + *Me2,Z7-18:H (10:1)		
<i>Lymantria lucescens</i> Butler phe. <ooyama-maimai>	*Me2,Z7-18:H	Gries, 2002	A
<i>Lymantria mathura</i> L. rosy (pink) gypsy moth <kashiwa-maimai> phe.	Me2,epo7-18:H (7R,8S)-(+)-isomer *Z3,Z6,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.	Me2,epo7-18:H *Me2,epo7-18:H (-):(+) = 9:1 E (+)-isomer + Me2,Z7-18:H (1:3) (+)-isomer + *epo7-18:H (7R,8S)-(+)-isomer + *Me2,Z7-18:H (10:10:1) (±)-Me2,epo7-18:H + (±)-epo7-18:H + Me2,Z7-18:H (10:10:1)	Schönherr, 1972 Klimetzek, 1976 Minyailo, 1976 Bierl, 1975 Hansen, 1984 Grant, 1996 Gries, 1996; 2001 Vasian, 2025	A
<i>Lymantria obfuscata</i> Walker Indian gypsy moth phe.	Me2,epo7-18:H *Me2,epo7-18:H (7R,8S)-(+)-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	*Me2,epo7-20:H	Gries, 1999(c)	A

<maeguro-maimai> phe.			
<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 + other components	Grant, 1987(b)	
<i>Orgyia postica</i> Walker <koshiromon-dokuga> phe. Okinawa strain Ishigaki strain	*Z6,Z9,tepol1-21: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> phe.	*Z7-18:O-Me2'Bu (2'S:2'R = 7:2) + *Z7-18:OisoVa + *Z7-18:OBu + *Z7-18:OisoBu (20:12:1:1) + other components	Yasuda, 1994	A
<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) Tomoega-ka : Hitoriga-aka : Kokega-zoku

<i>Barsine aberrans aberrans</i> Butler	17:7-OPr (S)-isomer	Fujii, 2013(b)	A
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<hagatabeni-kokega> att.	+ 17:8-OPr (S)-isomer (1:1)		
<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 (2:1) + 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) Tomoega-ka : Hitoriga-aka : Kanokoga-zoku

<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 ancilla</i> L. att.	Δ 1,Z3,Z6,Z9-19:H + Z3,Z6,Z9-19:H (1:1)	Szöcs, 1987	D
<i>Empyreuma mucro</i> Zerny phe.	*Z3,Z6,epo9-21:H (major) + *Z3,Z6,Z9-21:H N	Descoins, 1989	D
<i>Syntomeida epilais</i> Walker phe.	*Z3,Z6,epo9-21:H (major) + *Z3,Z6,Z9-21:H N	Descoins, 1989	D
<i>Syntomoides 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)

Tomoega-ka : Hitoriga-aka : Hitoriga-zoku

<i>Amsacta 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 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 plantaginis</i> wood tiger moth <himekishita-hitori> phe.	*Z3,Z6,Z9-21:H + *E4,Z6,Z9-21:H + *Δ1,Z3,Z6,Z9-21:H + *Z2,E4,Z6,Z9-21:H E [30:3:5:1]	Muraki, 2017	A
<i>Arctia villica</i> phe.	*Z3,Z6,Z9-21:H + *Δ1,Z3,Z6,Z9-21:H N	Einhorn, 1984(a)	C
<i>Callimorpha dominula</i> L. scarlet tiger moth phe.	*Z3,Z6,epo9-21:H N (9S,10R)-isomer	Clarke, 1996	C
<i>Cretonotos gangis</i> L. <kurosui-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>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 (9S,10R)-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 acraea</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 (9R,10S)-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> phe.	*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 + other components	Roelofs, 1971(b) Schal, 1987	D
<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

	+ other components		
<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	Descoins in Arn, 1992	B?
	+ Z9,Z12,Z15-18:Ald + Z9,Z12-18:Ald (21:8:1)	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 att.	Z3,Z6,Z9-21:H	Hai, 2002	C
<i>Spilosoma lubricipeda</i> L. att.	Z9,Z12,Z15-18:Ald + Z3,Z6,epo9-21:H + Δ1,Z3,Z6,epo9-21:H (8:1:1)	Ostrauskas, 2004	B
<i>Tyria jacobaeae</i> L. cinnabar moth phe.	*Z3,Z6,epo9-21:H (9S,10R)-isomer + other components N	Frérot, 1988(a) Bestmann, 1994 Clarke, 1996	D
<i>Utetheisa ornatrix</i> phe.	*Z3,Z6,Z9-21:H *Δ1,Z3,Z6,Z9-21:H + *Z6,Z9-21:H + *Z3,Z6,Z9-21:H N	Conner, 1980 Jain, 1983 Choi, 2007	C
