

LEGENDS TO THE TABLE

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

The chemical formulae are symbolized by

- 1) the number before the hyphen giving the position of double bond [$Z = (Z)$ -configuration, $E = (E)$ -configuration, $\Delta =$ terminal] or the following functional groups in the chain,
≡ = triple bond
epo = *cis*-epoxy ring
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 2024.10.19

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

[Superfamily] Family Subfamily		Number of species			
		Sex pheromone		Sex attractant	
[Eriocranioidea]	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	5	(1)	0	(0)
[Gelechioidea]	Kibaga-joka				
Ethmiidae	Suhirokibaga-ka	0	(0)	2	(0)
Elachistidae	Kusamoguriga-ka	2	(0)	1	(0)
Oecophoridae	Maruhakibaga-ka	3	(0)	20	(6)
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	15	(5)	56	(8)

[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)
[Tortricoidea]	Hamakiga-joka				
Tortricidae	Hamakiga-ka				
Tortricinae	Hamakiga-aka	114	(10)	133	(46)
Olethreutinae	Nokomehamakiga-aka	64	(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)
[Copromorpoidea]	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	13	(8)	20	(8)
[Lasiocampoidea]	Karehaga-joka				
Lasiocampidae	Karehaga-ka	13	(3)	0	(0)
[Drepanoidea]	Kagibaga-joka				
Drepanidae	Kagibaga-ka	0	(0)	6	(3)

[Geometroidea]		Shakuga-joka			
Geometridae	Shakuga-ka	55	(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)
Heliolithinae	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	Tomoeaga-ka				
Calpinae	Eguriba-aka	1	(1)	0	(0)
Catocalinae	Shitaba-aka	10	(2)	18	(4)
Ophiderinae	Kuchiba-aka	6	(3)	9	(6)
Hypeninae	Atsuba-aka	0	(0)	4	(0)
Hermiinae	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		731	(218)	1348	(334)

LIST OF SEX PHEROMONES AND ATTRACTANTS

[Super-family]

(Family; Sub-family)

Species Common name <Japanese common name>	Sex pheromone and sex attractant	Reference	Distribution in Japan
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(1) [Micropterigoidea] 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 (2S)-isomer + E6,8-9:2-OH (2S)-isomer (1:1)	Tóth, 1995	C
<i>Stigmella malella</i> Stainton Klimesch banded apple pigmy phe.	*Z6,8-9:2-OH (2S)-isomer + *E6,8-9:2-OH (2S)-isomer (10:3)	Tóth, 1995	C
<i>Trifurcula melanoptera</i> att.	Z6,8-9:2-OH (2R)-isomer + E6,8-9:2-OH (2R)-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	

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

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

+ another component

(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 (2S)-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.	Z3,Z13-18:OAc	Fassotte	C

			in Arn, 1986(a) 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. att.	Z3,Z13-18:OAc + Z3,Z13-18:OH (9:1) or + E3,Z13-18:OH (5:5)	Mäeorg in Arn, 1992 C Bûda, 1993 Karalius, 2005
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(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 Mori, 2010
<i>Diplodoma laichartingella</i> Goeze att.	E11-14:Ald + Z11-14:Ald (20:1)	Ostrauskas, 2010(a) C
<i>Megalophanes viciella</i> Denis & Schiffermüller phe.	* <i>isopropyl</i> 8:Ate	Subchev, 2000(a) D
<i>Oiketicus kirbyi</i> Guilding bagworm phe.	* <i>(R)</i> -1-methylbutyl 10:Ate + other components	Rhains, 1994 D
<i>Thyridopteryx ephemeraeformis</i> Haworth bagworm moth phe.	* <i>(R)</i> -1-methylbutyl 10:Ate (<i>R</i>)-1-methylpentyl 10:Ate	Leonhardt, 1983 D Warthen, 1996
<i>Whittleia 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
(Bucculatricidae) Chibiga-ka

<i>Bucculatrix thurberiella</i> Busck. cotton leafperforator phe.	*Z9-14:ONO ₂ + *Z8-13:ONO ₂ (20:1)	Hall, 1992 C
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(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 att.	E8,E10-14:Ald	Ando, 1987	A
<i>Acrocercops</i> sp. 2 att.	E8,E10-14:Ald	Ando, 1987	A
<i>Aspilapteryx</i> ^a <i>tringipennella</i> Zeller att.	Z11-14:OAc + E11-14:OAc (1:1)	Heikinheimo, 1978	D
<i>Caloptilia</i> ^a <i>fraxinella</i> Fly att.	Z11-16:Ald + Z11-16:OH (10:1)	Lemmen, 2009	C
<i>Caloptilia porphyretica</i> Braun blueberry leafminer phe.	*E11-16:Ald	Zhang, 2004	C
<i>Caloptilia theivora</i> Walsingham tea leafroller <chanohamaki-hosoga> phe.	E11-16:Ald *E11-16:Ald + Z11-16:Ald (9:1–7:3)	Ando, 1981 Ando, 1985(a)	A
<i>Calybites</i> ^a <i>auroguttella</i> Stephens att.	Z11-14:OAc + Z9-14:OAc + Z11-14:OH (18:1:1)	Hrdý, 1989	C
<i>Cameraria</i> ^b <i>ohridella</i> Deschka et Dimic horse-chestnut leafminer phe.	*E8,Z10-14:Ald	Svatos, 1999 Francke, 2002 Kalinová, 2003	C
<i>Conopomorpha</i> ^a <i>cramerella</i> Snellen cocoa pod borer moth phe.	*E4,E6,Z10-16:OAc + *E4,Z6,Z10-16:OAc + *E4,E6,Z10-16:OH + *E4,Z6,Z10-16:OH (30:20:3:2)	Beevor, 1986	D
	(55:40:6:4)	Niogret, 2022	
<i>Conopomorpha sinensis</i> Bradley litchi fruit borer att.	E4,E6,Z10-16:OAc + E4,Z6,Z10-16:OAc (3:2) + E4,E6,Z10-16:OH + E4,Z6,Z10-16:OH	Hwang, 1996(b) Hung, 2006	D

<i>Gracillaria</i> ^a <i>elongella</i> att.	Z10,E12-16:Ald	Priesner in Arn, 1986(a)	C
<i>Gracillaria syringella</i> F. <ibota-hosoga> att.	E11-14:Ald + Z11-14:Ald (9:1) E11-14:Ald	Ando, 1981 Knauf in Arn, 1986(a) Booij, 1985 Frerot, 1985	A
<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 *Z7,Z11-16:Ald	Ando, 1985(b) Mafi, 2005	A
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	E10-12:OAc	Roelofs, 1977(b) Voerman, 1978(a)	C

phe.		El-Sayed, 2004(b)	
	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. <i>att.</i>	Z10-14:OAc + E11-14:OAc (1:0–1:3)	Booij, 1984(a)	C
<i>Phyllonorycter mespilellus</i> Hübner tentiform leafminer <i>phe.</i>	E10-12:OAc *E4,E10-12:OAc + another component	Hrdý, 1989 Gries, 1993	C
<i>Phyllonorycter nigrescentella</i> Logan <i>phe.</i>	*Z8,E10-14:OAc + other components	Mozūraitis, 2008	C
<i>Phyllonorycter orientalis</i> Kumata <kaedekinmon-hosoga> <i>att.</i>	Z10-14:OAc	Ando, 1977	A
<i>Phyllonorycter oxyacanthae</i> Frey. <i>att.</i>	E10-12:OAc + E10-12:OH (10:1)	Mozūraitis, 1998	C
<i>Phyllonorycter platani</i> Staudinger <i>phe.</i>	*Z10-14:OAc	Subchev, 2003	C
<i>Phyllonorycter pulchra</i> Kumata <nakagurokinmon-hosoga> <i>att.</i>	E8,E10-14:OAc	Ando, 1987	A
<i>Phyllonorycter pygmaea</i> Kumata <himekinmon-hosoga> <i>att.</i>	Z8-14:OH	Ando, 1977	A
<i>Phyllonorycter pyrifoliella</i> <i>att.</i>	E10-12:OAc	Laanmaa in Arn, 1992	C
<i>Phyllonorycter ringoniella</i> Matsumura apple leafminer moth <kinmon-hosoga> <i>phe.</i>	*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. <i>att.</i>	E8-14:OAc + E10-14:OAc (1:1)	Voerman, 1988	C

<i>Phyllonorycter sorbi</i> Frey. att.	E10-12:OH	Mozūraitis, 1998	C
<i>Phyllonorycter sylvella</i> Hübner (= <i>acerifoliella</i> Z.) phe.	*Z10-14:OAc + *Z8-14:OAc + *E10-14:OAc (46:3:1) N (10:1:0)	Borg-Karlson, 1996 Mozūraitis, 2000	C
	E9-14:OAc + Z10-14:OAc (10:1)	Mozūraitis, 1998	
<i>Phyllonorycter ulmifoliella</i> Hübner <tsumasujikinmon-hosoga> phe.	Z10-14:OAc *Z10-14:OAc	Voerman, 1988 Mozūraitis, 1997	A
<i>Phyllonorycter watanabei</i> Kumata <watanabekinmon-hosoga> att.	Z10-13:OAc	Ando, 1977	A
<i>Phyllonorycter</i> sp. 1 att.	E8,E10-14:OAc or E8,E10-14:Ald	Reed, 1985(b)	
<i>Phyllonorycter</i> sp. 2 att.	E10-12:OAc	Reed, 1985(b)	
<i>Phyllonorycter</i> sp. 3 att.	E8-14:OAc	Priesner in Arn, 1986 (a)	
<i>Spulerina</i> ^a <i>astaurota</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: Argyresthiinae Memushiga-aka

<i>Argyresthia</i> ^c <i>albistria</i> Haworth att.	Z7-12:OAc + Z7-12:OH + Z9-14:OAc (20:1:1)	Tóth, 1992(d)	C
<i>Argyresthia beta</i> Friese & Moriuti	Z11-14:OH	Ando, 1981	A

<mochitsutsuji-memushiga> att.	Z7,E11-16:OH	Ando, 1985(b)	
<i>Argyresthia chamaecypariae</i> Moriuti <hinoki-hamoguriga> att.	E11-16:Ald	Ando, 1981	A
<i>Argyresthia conjugella</i> Zeller apple fruitle moth <ringohime-shinkui> phe.	Z11-16:OAc + Z13-18:OAc (3:1-1:3) *Z11-16:OAc + other components	Booij, 1984(a) Jaastad, 2002	A
<i>Argyresthia cornella</i> F. att.	Z11-16:OAc or + Z13-18:OAc (1:1)	Booij, 1984(a)	C
<i>Argyresthia fundella</i> Fischer von Röslerstamm att.	Z11-16:Ald	Booij, 1984(a)	C
<i>Argyresthia goedartella</i> L. att.	Z11-16:OAc + Z11-16:Ald (3:1)	Booij, 1984(a)	C
<i>Argyresthia mendica</i> att.	Z11-16:Ald	Subchev in Arn, 1992	C
<i>Argyresthia nemorivaga</i> Moriuti <todomatsu-memushiga> att.	Z11-16:Ald	Ando, 1981	A
<i>Argyresthia pruniella</i> Clerck att.	Z8-12:OAc or E8,E10-12:OH Z11-16:Ald	Alford, 1978 Booij, 1984(a)	C
<i>Argyresthia retinella</i> Zeller <amimeshiro-memushiga> att.	Z11-16:Ald	Tóth, 1992(d)	A
<i>Argyresthia semifusca</i> Haworth att.	Z7-12:OAc	Tóth, 1992(d)	C
<i>Argyresthia semitestacella</i> att.	Z11-16:OAc	Priesner in Arn, 1986(a)	C
<i>Argyresthia sorbiella</i> Tr.	Z7-12:OAc	Tóth, 1992(d)	C

<i>att.</i>	+ Z9-12:OAc (20:1)		
<i>Argyresthia thuiella</i> Packard <i>att.</i>	Z11-16:Ald	Booij, 1984(a)	C
<i>Euhyponomeutoides</i> ^a <i>albithoracellus</i> Gaj currant bud moth <i>phe.</i>	*Z11-14:OAc + *E11-14:OAc (3:1)	Svensson, 2023	C
<i>Euhyponomeutoides rufella</i> <i>att.</i>	Z11-14:OAc + E11-14:OAc	Peltotalo, 1986	C
<i>Euhyponomeutoides trachydeltus</i> Meyrick <hoso-suga> <i>att.</i>	Z11-14:OAc	Ando, 1981	A
<i>Ocnerostoma</i> ^a <i>friesei</i> Svensson <akamatsuhmoguri-suga> <i>att.</i>	E6-13:OAc	Willemse, 1987	A
<i>Paraargyresthia</i> ^c <i>japonica</i> Moriuti <nihonnise-memushiga> <i>att.</i>	E11-16:OAc	Ando, 1981	A
<i>Paraswammerdamia</i> ^a <i>lutarea</i> Hw. <i>att.</i>	Z7-14:OAc	Mozūraitis, 1998	C
<i>Prays</i> ^b <i>citri</i> Mill. citrus flower moth <i>phe.</i>	*Z7-14:Ald	Nesbitt, 1977 Sternlicht, 1978	C
<i>Prays endocarpa</i> Meyrick citrus pock caterpillar <i>phe.</i>	*Z7-14:Ald + other components	Vang, 2011	C
<i>Prays nephelomima</i> Meyrick citrus flower moth <i>phe.</i>	*Z7-14:Ald	Gibb, 2005	C
<i>Prays oleae</i> Bern. olive moth <i>phe.</i>	*Z7-14:Ald	Campion, 1979 Renou, 1979	C

<i>Swammerdamia</i> ^a <i>compunctella</i> H. S. att.	Z11-14:OAc + Z11-14:OH (9:1)	Sakin, 2023 Novotný, 1990	C
<i>Swammerdamia pyrella</i> Villers <usugurohime-suga> att.	Z5-14:OAc + Z7-14:OAc (1:1)	Tóth, 1991(b)	A
<i>Swammerdamia</i> sp. att.	Z11-14:OAc + Z7-14:OAc (3:2)	Szöcs, 1981	
<i>Thecobathra</i> ^a (= <i>Niphonympha</i>) <i>anas</i> Stringer <maruginbane-suga> att.	E11-14:OAc + E11-14:Ald (9:1)	Ando, 1981	A
<i>Xyrosaris</i> ^a <i>lichneuta</i> Meyrick <hosobako-suga> att.	Z11-14:OAc Z9,E11-14:OH	Ando, 1981 Ando, 1987	A
<i>Yponomeuta</i> ^a <i>cagnagellus</i> Hübner phe.	Z11-14:OAc *Z11-14:OAc + *E11-14:OAc + *Z11-14:OH (200:3:40) + other components (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	Löfstedt, 1988	C

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

	phe.	+ *Z11-14:OH (10:2:1) + other components		
<i>Yponomeuta yanagawanus</i> Matsumura <tsumagurohai-suga> att.		Z11-14:OAc	Ando, 1977	A
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(Ypsolophidae) Kuchibusaga-ka				
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<i>Ypsolopha dentella</i> att.		Z7-12:OAc or Z7-12:OH	Roelofs, 1971(a)	C
		+ Z7-12:OH (1:1)	Priesner in Arn, 1986(a)	
<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
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(Plutellidae) Konaga-ka				
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<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)	Tamaki, 1977(b) Koshihara, 1978 Chow, 1977	A
		+ Z11-16:OH (10:10:1)	Zilahi-Balogh, 1995 Ando, 1979	

(50:50:1)	Lin, 1982
+ Z9-14:OAc (30:70:1:0.01) or + Z9-14:OH (30:70:1:10)	Chisholm, 1983
+ *Z11-16:OH (3:6:1)	Suckling, 2002
[3:8:2]	Lee, 2005
(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
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(Glyphipterigidae) Hosohamakimodokiga-ka

<i>Glyphipterix eulucotoma</i> Diakonoff & Arita <atofutamom- hosohamakimodoki> att.	Z11-16:OAc + Z11-16:Ald (1:1)	Ando, 1981	A
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<i>Glyphipterix nigromarginata</i> Issiki <heriguro-hosohamakimodoki> att.	Z11-16:OAc + Z11-16:Ald (1:1)	Ando, 1981	A
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<i>Glyphipterix simplicella</i> Stephens att.	Z11-16:OAc + Z11-16:Ald (3:1)	Booij, 1984(a)	C
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(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	Francke, 1987; 1988	C
	Me5,Me9-17:H (5 <i>S</i> ,9 <i>S</i>)-isomer	Tóth, 1989(c)	
	*Me5,Me9-17:H + *Me5,Me9-18:H (100:0.1–100:5)	Riba, 1990	

<i>Leucoptera sinuella</i> Reutti	*Me3,Me7-15:H + *Me3,Me7-14:H + *Me7-15:H (95:2:3)	Barros-Parada, 2020	C
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<i>Lyonetia clerkella</i> L. peach leafminer moth <momo-hamoguriga> phe.	*Δ1,Me14-18:H	Sugie, 1984(a)	A
	(<i>S</i>)-isomer	Sato, 1985,1986	

<i>Lyonetia prunifoliella</i> Hübner apple leafminer moth <ringo-hamoguriga> <ginmon-hamoguriga> phe. in Korea	*Δ1,Me10,Me14-18:H + Me5,Me9-18:H + Me5,Me9-17:H (1:1:1)	Gries, 1997(b)	B
	Δ1,Me10,Me14-18:H	Park, 2002	

in Japan	(10 <i>S</i> ,14 <i>S</i>)-isomer	Taguri, 2014	
<i>Perileucoptera</i> (= <i>Leucoptera</i>) <i>coffeella</i> Guér.-Ménev. coffee leafminer moth phe.	*Me5,Me9-15:H (major) + *Me5,Me9-16:H *Me5,Me9-15:H (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

(Oecophoridae) Maruhahibaga-ka

a: Depressariinae Hiratamaruhakibaga-aka, b: Oecophoriinae Maruhakibaga-aka,
c: Chimabachinae Mesukobanemaruhakibaga-aka, d: Amphisbatinae,
e: Autostichinae Hoshimaruahakibaga-aka

<i>Acria</i> ^a <i>ceramitis</i> Meyrick <nezumiegurihirata- maruhakibaga> att.	E8,Z10-12:Ald + E8,Z10-12:OAc (1:1)	Ando, 1987	A
<i>Agonopterix</i> ^a <i>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 att.	Z7-12:OAc + Z7-12:OH + Z9-14:OAc (1:1:1)	Tóth, 1992(d)	C
<i>Agonopterix ulicetella</i> gorse soft shoot moth att.	Z5-10:OAc + Z7-12:OH (1:1)	Suckling, 2000	C
<i>Agonopterix yeatiana</i> F. att.	Z3-10:OAc + Z5-10:OAc (1:1)	Priesner, 1988(b)	C
<i>Agonopterix</i> sp. 1 att.	Z7-10:OAc	Ando, 1977	A
<i>Agonopterix</i> sp. 2 att.	Z7-12:OAc + Z9-14:OAc (1:1)	Ando, 1981	A
<i>Bisigna</i> ^b <i>procerella</i> Denis & Schiffermüller att.	E5-16:OAc	Willemse, 1987	D
<i>Cerconota</i> ^a <i>anonella</i> Sepp. phe.	*Z9-18:OH + *Z9-18:Ald + *Z9-18:OAc (5:3:1)	Pires, 2016	D
<i>Cheimophila</i> ^c <i>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>Depressaria</i> ^a <i>depressana</i> att.	Z3-10:OAc	Sziráki in Arn, 1997	C

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

(*Stathmopodidae*) Nisemaikoga-ka

<i>Oedematopoda</i> (= <i>Atkinsonia</i>) <i>ignipicta</i> Butler <segurobenitogeashiga> att.	E4,Z6-16:OAc	Kim, 2014(a)	A
<i>Stathmopoda auriferella</i> Walker (= <i>theoris</i> Meyrick) <kiiro-maikoga> phe.	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.	*E4,Z6-16:OAc + other components	Naka, 2003	A
Korean strain	*E4,Z6-16:OAc + *E4,Z6-16:OH (1:1)	Kim, 2014(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 <maechaoo- 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	Z5-10:OH	Priesner, 1987(a)	C

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

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

(Momphidae) Akabanakibaga-ka

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

<i>Anatrachyntis</i> (= <i>Sathrobrotia</i>) sp. 1 <i>att.</i>	E11-14:OAc		Ando, 1975	A
<i>Anatrachyntis</i> (= <i>Sathrobrotia</i>) sp. 2 <i>att.</i>	E11-14:OH		Ando, 1977	A
<i>Anatrachyntis</i> sp. 3 <i>att.</i>	E11,Δ13-14:OAc		Ando, 1987	A
<i>Chrysochrista</i> sp. <i>att.</i>	Z8-13:OAc or E8-13:OAc		Ando, 1977	A
<i>Cosmopterix fulminella</i> Stringer <kazariba> <i>att.</i>	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	*E5-10:OAc	Roelofs, 1975(b)	C

peach twing borer phe.	+ *E5-10:OH (17:3) (5:1)	Rice, 1975	
	+ other components	Millar, 1992(b)	
	+ *Me11-23:H	Schlamp, 2005	
	+ *18:OAc (body scale)		
<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 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 blandella</i> F. att.	E9-13:OAc	Willemse, 1987	C
<i>Brachmia inornatella</i> Douglas att.	E9-13:OAc or E8-13:OAc	Willemse, 1987	C
<i>Brachmia triannulella macroscopa</i> Meyrick sweet potato leaf folder worm <imo-kibaga> phe.	*E11-16:OAc	Hirano, 1976	A

<i>Bryotropha</i> ^d <i>dryadella</i> Zeller att.	Z11-14:OAc	Tóth, 1992(d)	C
<i>Bryotropha galbanella</i> Zeller att.	E9-13:OAc E9-14:OAc + Z10-14:OAc (1:1)	Willemse, 1987 Mozūraitis, 1998	C
<i>Bryotropha senectella</i> Zeller att.	Z9-14:OAc E8-13:OAc E11-14:Ald + Z11-14:Ald (20:1)	Kovaleva, 1975 Willemse, 1987 Ostrauskas, 2010(a)	C
<i>Bryotropha similis</i> Stain att. gray-race yellow-race	Z9-14:OAc E9-14:OAc	Roelofs, 1971(a)	C
<i>Bryotropha terrella</i> Denis & Schiffermüller att.	E9-14:OAc	Arn, 1974	C
<i>Bryotropha</i> sp. att.	E9-14:OAc	Roelofs, 1970(a)	
<i>Caryocolum</i> ^a <i>alsinellum</i> att.	Z5-12:OAc	Sziráki in Arn, 1997	C
<i>Caryocolum marmoreum</i> Haworth att.	Z5-12:OAc	Tóth, 1992(d)	C
<i>Caryocolum proximum</i> Haworth att.	Z5-12:OAc + Z7-12:OAc (1:1)	Tóth, 1992(d)	C
<i>Catelaphris</i> sp. att.	Z7,Z11-16:OAc + Z7,E11-16:OAc (1:1)	Marks, 1976	D
<i>Chionodes</i> ^a <i>electella</i> Zeller att.	Z3-14:OAc	Willemse, 1987 Priesner, 1987(b)	C
<i>Chionodes fuscomaculella</i> Chambers att.	Z5-12:OAc	Roelofs, 1970(a)	C

<i>Chionodes holosericella</i> H. Sch. att.	E3-12:OAc	Priesner, 1987(b)	C
<i>Chionodes luctuella</i> Hübner att.	Z3-14:OAc	Priesner, 1987(b)	C
<i>Chionodes lugubrella</i> F. att.	E3,Z5-12:OAc + Z3,E5-12:OAc (10:1)	Reed, 1985(b)	C
<i>Chionodes nebulosella</i> Hein. att.	Z3-14:OAc	Priesner, 1987(b)	C
<i>Chionodes perpetuella</i> H. Sch. att.	E3-14:OAc	Priesner, 1987(b)	C
<i>Chionodes psiloptera</i> Barnes & Busck att.	Z7,E11-16:OAc	Oetting, 1977	C
<i>Chionodes</i> sp. 1 att.	E11-14:OAc	Daterman, 1977	
<i>Chionodes</i> sp. 2 att.	E3-12:OAc	Reed, 1985(b)	
<i>Dactylethrella</i> ^f (= <i>Dactylethra</i> , <i>Ethmiopsis</i>) <i>tegulifera</i> Meyrick <kurokumoshiro-kibaga> att.	E7-12:OAc	Ando, 1981	A
<i>Dichomeris</i> ^f <i>ligulella</i> att.	E11-14:OAc	Roelofs, 1971(a)	C
<i>Dichomeris oceanis</i> Meyrick <fujifusa-kibaga> att.	Z7,E11-16:OAc	Ando, 1985(b)	A
<i>Evippe</i> ^e <i>prunifoliella</i> att.	Z3-12:OAc	Reed, 1985(b)	C
<i>Filatima</i> ^a sp. att.	Z7-12:OAc	Roelofs, 1970(a)	D
<i>Gaesa</i> ^f <i>sparsella</i> Christoph	Z8-11:OAc	Ando, 1977	A

<kurumioofusa-kibaga> att.			
<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	Charlton, 1991	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) + other components	Green, 1969 Hummel, 1973 Bierl, 1974 Zhu, 1981	A
In Malawi In the world In India	(11:9) (1:1) (1:1)	Marks, 1976 Flint, 1979 Tamhankar, 1993	
<i>Pectinophora scutigera</i> Holdaway pink-spotted bollworm att.	Z7,Z11-16:OAc	Rothschild, 1975	C
<i>Pexicopia malvella</i> Hübner att.	Z7,E11-16:OAc + Z7,Z11-16:OAc (5:1–1:1)	Tóth, 1986(a)	D
<i>Pexicopia</i> sp. att.	Z7,E11-16:OAc + Z7,Z11-16:OAc (4:1)	Flint, 1979	D
<i>Phthorimaea</i> ^a <i>operculella</i> Zeller potato tuberworm <jagaimo-kibaga> phe.			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. att.		Z5-12:OAc	Steck, 1979(c)	
<i>Platyedra subcinerea</i> Haworth att.		Z7,Z11-16:OAc	Tóth, 1986(a)	D
<i>Recurvaria</i> ^a <i>leucatella</i> Clerck white-barred groundling moth att.		E3,Z5-14:OAc	Tóth, 1992(b)	C
<i>Recurvaria nanella</i> Hübner lesser bud moth att.		E3-14:OAc	Tóth, 1992(b)	C
<i>Rhynchopacha</i> sp. att.		E5-14:OAc	Subchev, 1974	D
<i>Scrobipalpa</i> ^a <i>atriplicella</i> Fischer von Röslevstamm att.		Z5-12:OAc	Roelofs, 1970(a)	A
<i>Scrobipalpa heliopa</i> Lower tobacco stem borer phe.		*E3-13:OAc	Baker, 1985	C
<i>Scrobipalpa ocellatella</i> Boyd. sugar beet moth phe.		*E3-12:OAc	Renou, 1980	C
<i>Scrobipalpa salinella</i> Zeller phe.		*Z3-12:OAc + *Z5-12:OAc (20:1) + other components	Yang, 2011(c)	C
<i>Scrobipalpa</i> sp. att.		Z7,Z11-16:OAc + Z7,E11-16:OAc	Nagano, 1979	
<i>Scrobipalpuloides</i> ^a (= <i>Scrobipalpa</i> , = <i>Tuta</i>) <i>absoluta</i> Meyrick tomato leafminer phe.		*E3,Z8,Z11-14:OAc	Attygalle, 1995; 1996 Filho, 2000 Ferrara, 2001	D

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

(11)[Zygaenoidea] 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	Z9,E11-14:Ald	Priesner in Arn, 1986(a)	A

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

(Zygaenidae) 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	(S)-sec-butyl Z7-14:Ate	Landolt, 1991	D

<i>Illiberis pruni</i> Dyar <ringohamaki-kuroba> att.	(<i>R</i>)-sec-butyl Z7-12:Ate + (<i>R</i>)-sec-butyl Z9-14:Ate (10:1)	Subchev, 2013	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 sec-butyl 2-12:Ate (<i>R</i>)-sec-butyl 2-12:Ate	Subchev, 2010 Razov, 2017 Efetov, 2016 Efetov, 2021	D
<i>Jordanita rietzei</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	(<i>R</i>)-sec-butyl 2-12:Ate	Can, 2019	D

<i>att.</i>		Efetov, 2020(b) Efetov, 2021	
<i>Neolbertia constans</i> Edwards <i>att.</i>	(<i>S</i>)- <i>sec</i> -butyl Z9-14:Ate	Tarmann in Subchev, 2014	D
<i>Neoilliberis fusca</i> Edwards <i>att.</i>	(<i>R</i>)- <i>sec</i> -butyl Z9-14:Ate	Tarmann in Subchev, 2014	D
<i>Neoprocris avera</i> Edwards <i>att.</i>	(<i>R</i>)- <i>sec</i> -butyl Z9-14:Ate	Tarmann in Subchev, 2014	D
<i>Pyromorpha dyari</i> Jordan <i>att.</i>	(<i>S</i>)- <i>sec</i> -butyl Z7-12:Ate	Tarmann in Subchev, 2014	D
<i>Rhagades amasina</i> Herrich-Schäffer <i>att.</i>	(<i>S</i>)- <i>sec</i> -butyl 2-12:Ate	Can, 2019	D
<i>Rhagades predotae</i> Naufock <i>att.</i>	(<i>S</i>)- <i>sec</i> -butyl 2-12:Ate	Efetov, 2019	D
<i>Rhagades pruni</i> Denis & Schiffermüller <i>att.</i>	(<i>R</i>)- <i>sec</i> -butyl Z7-12:Ate (<i>S</i>)- <i>sec</i> -butyl 2-12:Ate	Subchev, 2010; 2014 Efetov, 2021	D
<i>Theresimima ampellophaga</i> Bayle-Barella vine bud moth <i>phe.</i>	*(<i>S</i>)- <i>sec</i> -butyl Z7-14:Ate <i>sec</i> -butyl 2-12:Ate (<i>R</i>)- <i>sec</i> -butyl 2-12:Ate	Subchev, 1998 Efetov, 2014 Efetov, 2021	D
<i>Tripocris cyanea</i> Barnes & McDunnough <i>att.</i>	(<i>S</i>)- <i>sec</i> -butyl Z9-14:Ate	Tarmann in Subchev, 2014	D
<i>Zygaena carniolica</i> Scopoli <i>att.</i>	Z7-12:OAc + Z9-14:OAc + Z11-16:OAc (100:30:3)	Priesner, 1984(a)	C
<i>Zygaena ephialtes</i> L. <i>att.</i>	Z11-14:OAc + E11-14:OAc + 12:OAc (7:3:40) Z11-14:OAc + E11-14:OAc (1:1)	Hrdý, 1979 Konyukhov in Arn, 1986(a)	C

	Z11-14:OAc	Decamps, 1981	
<i>Zygaena filipendulae</i> L. <i>att.</i>	Z7-12:OAc + Z9-14:OAc + Z5-12:OAc (100:10:3)	Priesner, 1984(a)	C
<i>Zygaena hippocrepidis</i> Hübner <i>att.</i>	Z11-14:OAc	Decamps, 1981	C
<i>Zygaena niphona</i> Butler <benimon-madara> <i>att.</i>	Z7-12:OAc + Z9-14:OAc	Toshova in Efetov, 2020(a)	A
<i>Zygaena purpuralis</i> Brunn <i>att.</i>	Z7-12:OAc + Z9-14:OAc + Z7-14:OAc (10:10:1)	Priesner, 1984(a)	C
<i>Zygaena scabiosae</i> Scheven <i>att.</i>	Z8-12:OAc + E8-12:OAc (24:1)	Hrdý, 1989	C
<i>Zygaena transalpina</i> Esper <i>att.</i>	Z11-14:OAc or Z11-14:OH	Benz, 1973	C
<i>Zygaena trifolii</i> Esper <i>att.</i>	Z7-12:OAc + Z5-12:OAc + Z9-14:OAc (10:10:3)	Priesner, 1984(a)	C
<i>Zygaena viciae</i> Denis & Schiffermüller <i>att.</i>	Z7-12:OAc + Z9-14:OAc + Z5-12:OAc (10:1:1)	Priesner, 1984(a)	C
<i>Zygaenoprocis chalcochlora</i> Hampson <i>att.</i>	(<i>R</i>)- <i>sec</i> -butyl Z7-12:Ate or + (<i>R</i>)- <i>sec</i> -butyl Z9-14:Ate	Hofmann in Subchev, 2014	D
<i>Zygaenoprocis eberti</i> Alberti <i>att.</i>	(<i>R</i>)- <i>sec</i> -butyl Z7-12:Ate or + (<i>R</i>)- <i>sec</i> -butyl Z9-14:Ate	Hofmann in Subchev, 2014	D
<i>Zygaenoprocis taftana</i> Alberti	(<i>R</i>)- <i>sec</i> -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) E3,Z13-18:OAc	Sharp, 1978 Snow, 1985 Brown, 1985(b)	D
<i>Bembecia chalciformis</i> Esp. att.	Z3,Z13-18:OH + Z3,Z13-18:OAc or + E3,Z13-18:OAc	Bûda, 1993	C
<i>Bembecia ichneumoniformis</i> Denis & Schiffermüller att.	Z3,Z13-18:OH + E3,Z13-18:OAc (9:1)	Bûda, 1993	C
<i>Bembecia parthica</i> Led. att.	Z3,Z13-18:OAc + Z3,Z13-18:OH (9:1)	Bûda, 1993	C
<i>Bembecia puella</i> Lastuvka att.	Z3,Z13-18:OAc + Z3,Z13-18:OH (9:1)	Bûda, 1993	C
<i>Bembecia romanovi</i> Bartell att.	Z3,Z13-18:OAc + E3,Z13-18:OAc (9:1)	Bûda, 1993	C
<i>Bembecia scopigera</i> Scopoli att.	Z3,Z13-18:OH Z3,Z13-18:OAc or + E2,Z13-18:OH (9:1)	Szöcs, 1989 Bûda, 1993	C
<i>Bembecia</i> (= <i>Synansphecica</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 <i>att.</i>	Z3,Z13-18:OAc + E3,Z13-18:OAc (1:1)	Leeuw, 1983 Snow, 1985	D
<i>Carmenta bassiformis</i> Walker <i>att.</i>	Z3,Z13-18:OA + Z3,Z13-18:OH + E3,Z13-18:OAc (20:3:1) Z3,Z13-18:OAc	Sharp, 1978 Neal, 1983 Greenfield, 1979	D
<i>Carmenta ithacae</i> Bentenmüller <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 *Z3,Z13-18:OAc	Eichlin, 1983 Vang, 2012	D
<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.	E3,Z13-18:OAc + Z13-18:OH (1:1)	Bûda, 1993	D

<i>att.</i>				
<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)	Mozūraitis, 1999(a)	D	
<i>Chamaesphecia empiformis</i> Esper <i>att.</i>	Z3,Z13-18:OH	Szöcs, 1989	D	
<i>Chamaesphecia mezentzevi</i> Gorbunov <i>att.</i>	Z3,Z13-18:OAc + Z3,Z13-18:OH (9:1)	Mozūraitis, 1999(a)	D	
<i>Chamaesphecia schmidtiformis</i> Frr. <i>att.</i>	Z3,Z13-18:OAc + Z3,Z13-18:OH (9:1)	Mozūraitis, 1999(a)	D	
<i>Chamaesphecia speia nova</i> Gorbunov <i>att.</i>	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) <i>att.</i>	E3,Z13-18:OAc	Voerman, 1983	D	
<i>Chamaesphecia zimmermanni</i> Lederer <i>att.</i>	E3,Z13-18:OH + Z3,Z13-18:OAc (9:1)	Mozūraitis, 1999(a)	D	
<i>Chamaesphecia</i> sp. <i>att.</i>	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> <i>phe.</i> in Korea	*Z3,Z13-18:OH + *Z3,Z13-18:OAc (8:1) + other components (9:1)	Arakawa, 2009 Naka, 2010 Yang, 2011(b)	A	
<i>Macroscelesia japona</i> Hampson <momobuto-sukashiba> <i>phe.</i>	*E2,Z13-18:Ald + *E2,Z13-18:OH (10:1)	Naka, 2007 Islam, 2007	A	
<i>Macroscelesia longipes</i> Moore <ashinagamobuto-sukashiba> <i>phe.</i>	*E2,Z13-18:OH + *E2,Z13-18:Ald (20:1)	Naka, 2007	A	
<i>Melittia cucurbitae</i> Harris	E2,Z13-18:OAc	Alm, 1989	C	

squash vine bore <i>phe.</i>	+ Z3,Z13-18:OAc (99:1)	Snow, 1991	
	*E2,Z13-18:OAc + *Z3,Z13-18:OAc (68.5:0.1) + other componets	Klun, 1990	
<i>Melittia satyriniformis</i> Hübner squash vine borer <i>phe.</i>	*E2,Z13-18:OAc	Schwarz, 1983(b)	C
<i>Nokona feralis</i> Leech <kikubi-sukashiba> <i>phe.</i>	*E3,Z13-18:OAc + *E3,Z13-18:OH (7:3)	Naka, 2018	A
<i>Nokona pernix</i> Leech <himeato-sukashiba> <i>phe.</i>	*E3,Z13-18:OH + *Z3,Z13-18:OH (9:1)	Naka, 2006	A
<i>Nokona (= Paranthrene) regalis</i> Butler vine tree borer <budou-sukashiba> <i>phe.</i>	*E3,Z13-18:OH E3,Z13-18:OH	Guo, 1990(b) Zhou, 1995 Shoji, 2009	A
<i>Osminia ruficornis</i> Henry Edwards <i>att.</i>	E2,Z13-18:OH or + E2,Z13-18:OAc (1:1)	Snow, 1989	D
<i>Paranthrene asilipennis</i> Boisdural <i>att.</i>	Z3,Z13-18:OAc E2,Z13-18:OAc + Z13-18:OAc (24:1)	Sharp, 1978 Snow, 1989	C
<i>Paranthrene dollii</i> Neumoegen <i>att.</i>	E3,Z13-18:OH + Z3,Z13-18:OH (3:1) (1:1)	Nielsen, 1979 Greenfield, 1979	C
<i>Paranthrene pellucida</i> Greenfield & Karandinos <i>att.</i>	E3,Z13-18:OAc + Z3,Z13-18:OAc (4:1)	Greenfield, 1979	C
<i>Paranthrene robiniae</i> Hy. Edwards western poplar clearwing <i>phe.</i>	*E3,Z13-18:OH + *Z3,Z13-18:OH (4:1)	Cowles, 1996	C
<i>Paranthrene simulans</i> Grote oak borer	Z3,Z13-18:OAc	Nielsen, 1975	C

<i>att.</i>	+ E2,Z13-18:OAc (1:1)	Snow, 1989	
<i>Paranthrene tabaniformis</i> Rottemburg poplar twing clearwing moth <i>phe.</i>	E3,Z13-18:OH + Z3,Z13-18:OAc (9:1) + Z3,Z13-18:OH (9:1) *E3,Z13-18:OH + *Z3,Z13-18:OH + *E2,Z13-18:OH N + other components	Greenfield, 1979 Brown, 1986(b) Du in Arn, 1997 Nielsen, 1979 Karalius, 2001 Zhang, 1986 Mozūraitis, 2007	C
<i>Podosesia aureocincta</i> Purrington & Nielsen banded ash clearwing moth <i>att.</i>	Z3,Z13-18:OAc + E3,Z13-18:OAc + Z3,Z13-18:OH (20:1:3) Z3,Z13-18:OAc + Z3,Z13-18:OH (1:1) or + E3,Z13-18:OH (1:1)	Nielsen, 1978(b) Snow, 1985	D
<i>Podosesia syringae</i> Harris lilac borer <i>att.</i>	Z3,Z13-18:OAc	Nielsen, 1975 Adler, 1983	D
<i>Pyropteron</i> sp. <i>att.</i>	Z3,Z13-18:OH + Z3,Z13-18:OAc (9:1)	Bûda, 1993	D
<i>Sannina uroceriformis</i> Walker persimmon borer <i>att.</i>	E3,Z13-18:OH + Z3,Z13-18:OH (4:1) + Z3,Z13-18:OAc (9:1)	Nielsen, 1979 Solomon, 1982	D
<i>Sesia apiformis</i> Cl. hornet moth <i>phe.</i>	E3,Z13-18:OH + Z3,Z13-18:OAc (9:1) E3,Z13-18:OH	Snow, 1985	
<i>Sesia (= Aegeria) rhynchioides</i> Butler <kashiwa-sukashiba> <i>att.</i>	*E2,Z13-18:Ald + *Z3,Z13-18:OH (3:2) + other components E3,Z13-18:OAc + Z3,Z13-18:OAc (1:1)	Francke, 2004 Tamaki, 1977(c)	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>siningensis</i> Hsu poplar pole clearwing moth phe.	*Z3,Z13-18:OH	Guo, 1990(a)	C
<i>Synanthedon acerni</i> Clemens maple callus borer att.	Z3,Z13-18:OAc + E3,Z13-18:OH (9:1) + Z3,Z13-18:OH (1:1)	Nielsen, 1979 Snow, 1985	C
<i>Synanthedon acerrubi</i> Engelhardt att.	E2,Z13-18:OAc + Z3,Z13-18:OAc (100:1)	Schwarz, 1983(b) Alm, 1989 Snow, 1991	C
<i>Synanthedon alleri</i> Engelhardt att.	E3,Z13-18:OAc + E3,Z13-18:OH (1:1)	Sharp, 1978 Snow, 1985	C
<i>Synanthedon andrenaeformis</i> Lasp. att.	E3,Z13-18:OAc + E2,Z13-18:OAc (10:1)	Priesner, 1986(a)	C
<i>Synanthedon arkansasensis</i> Duckworth & Eichlin att.	E3,Z13-18:OAc E3,Z13-18:OH	Sharp, 1978 Solomon, 1982	C
<i>Synanthedon bibionipennis</i> Boisduval strawberry crown moth att.	E3,Z13-18:OAc + E3,Z13-18:OH (2:1)	Nielsen, 1978(a)	C
<i>Synanthedon bicingulata</i> Staudinger phe.	*Z3,Z13-18:OAc + *E3,Z13-18:OAc (3:2)	Yang, 2011(a)	C
<i>Synanthedon bolteri</i> Hy. Edwards att.	E2,Z13-18:OAc + Z3,Z13-18:OAc (99:1)	Taft, 2005	C
<i>Synanthedon castaneae</i> Busck clearwing chestnut moth att.	E3,Z13-18:OH	Brown(b), 1992 Anagnostakis, 1994	C

<i>Synanthedon castanerora</i> att.	E3,Z13-18:OH	Lin, 1993	C
<i>Synanthedon caucasicum</i> Gorbunov att.	E3,Z13-18:OAc + Z3,Z13-18:OAc (9:1)	Mäeorg in Arn, 1992 Bûda, 1993	C
<i>Synanthedon conopiformis</i> Esp. att.	E3,Z13-18:OH	Bûda, 1993	C
<i>Synanthedon culiciformis</i> L. att.	Z3,Z13-18:OAc	Fassotte in Arn, 1986(a)	C
<i>Synanthedon decipiens</i> Henry Edwards att.	E3,Z13-18:OAc + Z3,Z13-18:OAc (7:3) Z3,Z13-18:OAc + Z2,Z13-18:OAc (1:1)	Sharp, 1978 Greenfield, 1979 Snow, 1985 Snow, 1989	C
<i>Synanthedon dominicki</i> Duckworth att.	E2,Z13-18:OAc	Brown, 1985(d)	C
<i>Synanthedon exitiosa</i> Say peachtree borer phe.	*Z3,Z13-18:OAc + E3,Z13-18:OAc (24:1)	Tumlinson, 1974 Barry, 1978	C
<i>Synanthedon fatifera</i> Hodges viburnum borer att.	Z3,Z13-18:OAc + E3,Z13-18:OAc (9:1)	Nielsen, 1975 Adler, 1983 Greenfield, 1979	C
<i>Synanthedon flaviventris</i> Staudinger att.	E2,Z13-18:OAc + Z3,Z13-18:OAc (49:1)	Karalius, 2006	C
<i>Synanthedon formicaeformis</i> Esp. att.	E2,Z13-18:OAc + E3,Z13-18:OAc (1:1)	Priesner, 1986(a)	C
<i>Synanthedon fulvipes</i> Harris att.	Z3,Z13-18:OAc + other isomers	Nielsen, 1979	C
<i>Synanthedon haitangvora</i> Yang phe.	*Z3,Z13-18:OAc + *E2,Z13-18:OAc (1:1) + other components	Yang, 2009(b)	B

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

<i>Synanthedon refulgens</i> Henry Edwards <i>att.</i>	E2,Z13-18:OAc + Z3,Z13-18:OAc (100:1)	Snow, 1991	C
<i>Synanthedon rhododendri</i> Beutenmüller rhododendron borer <i>att.</i>	Z3,Z13-18:OAc + E3,Z13-18:OAc (49:1) Z3,Z13-18:OAc	Nielsen, 1979 Neal, 1981 Adler, 1983	C
<i>Synanthedon rileyana</i> Henry Edwards horse nettle borer <i>att.</i>	E3,Z13-18:OH + E3,Z13-18:OAc (3:1) + Z3,Z13-18:OAc (1:1) E2,Z13-18:OAc	Nielsen, 1979 Williams, 1999 Snow, 1985 Snow, 1989	C
<i>Synanthedon rubrofascia</i> Henry Edwards <i>att.</i>	Z3,Z13-18:OAc + E3,Z13-18:OAc (3:1) (1:3)	Brown, 1986(a) Nielsen, 1975 Brown in Arn, 1992	C
<i>Synanthedon sapygaeformis</i> Walker <i>att.</i>	Z3,Z13-18:OAc	Sharp, 1978 Brown, 1986(a)	C
<i>Synanthedon scitula</i> Harris dogwood borer <i>phe.</i>	Z3,Z13-18:OAc + E2,Z13-18:OAc (1:100) *Z3,Z13-18:OAc + *Z3,E13-18:OAc + *E2,Z13-18:OAc (44:3:3)	Nielsen, 1975 Adler, 1983 Alm, 1989 Snow, 1991 Zhang, 2005 Leskey, 2006	C
<i>Synanthedon scoliaeformis</i> Borkh Welsh clearwing <i>phe.</i>	E2,Z13-18:OAc *E2,Z13-18:OAc + other components	Bûda, 1993 Mozūraitis, 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>	Z3,Z13-18:OAc *Z3,Z13-18:OAc	Tamaki, 1977(c) Naka, 2013	A
Korean strain	*Z3,Z13-18:OH	Yang, 2012	
<i>Synanthedon tipuliformis</i> Clerck currant borer <i>phe.</i>	E2,Z13-18:OAc + E3,Z13-18:OAc (100:3–100:10) + Z3,Z13-18:OAc (99:1) *E2,Z13-18:OAc + *Z13-18:OAc (93:7) + *E3,Z13-18:OAc (97:3) + *E3,Z13-18:OAc (100:0.7) + other components	Voerman, 1984 Priesner, 1986(a) Meyer, 1994 Szöcs, 1985 James, 2001 Mozūraitis, 2006	C
In Tasmania, Hungary	E2,Z13-18:OAc	Szöcs, 1990	
In New Zealand	+ E3,Z13-18:OAc (100:3) (100:0)	Szöcs, 1990 Suckling, 2005(a)	
In Europe	+ E3,Z13-18:OAc (100:3)	Szöcs, 1991	
<i>Synanthedon typhiaeformis</i> <i>att.</i>	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 <i>phe.</i>	E3,Z13-18:OAc + Z3,Z13-18:OAc (9:1)	Voerman, 1983	C

	*E3,Z13-18:OAc + *Z3,Z13-18:OAc (4:1)	Levi-Zada, 2011(b)	
<i>Synanthedon viburni</i> Engelhardt <i>att.</i>	E3,Z13-18:OAc + Z3,Z13-18:OAc (9:1)	Greenfield, 1979	C
<i>Vitacea polistiformis</i> Harris grape root borer <i>phe.</i>	*E2,Z13-18:OAc + Z3,Z13-18:OAc (99:1)	Schwarz, 1983(b) Snow, 1987	D
<i>Vitacea scepiformis</i> Henry Edwards <i>att.</i>	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 <i>att.</i>	E3,Z13-18:OAc	Bûda, 1993	D
<i>Paradoxecia pieli</i> L. (= <i>Paradoxes prelle</i> L.) mulberry clearwing moth <i>phe.</i>	*E3,Z13-18:OAc + another component	Tan, 1992 Lin, 1993	D
<i>Pennisetia bohemica</i> Kralicek & Povolny <i>att.</i>	E3,Z13-18:OH + E3,Z13-18:OAc (100:1)	Priesner, 1990	C
<i>Pennisetia hylaeiformis</i> Laspeyres raspberry clearwing moth <karafuto-sukashiba> <i>att.</i>	E3,Z13-18:OAc + E3,Z13-18:OH (1:1)	Priesner, 1986(b)	A
<i>Pennisetia marginata</i> Harris blackberry clearwing borer <i>phe.</i>	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 <i>att.</i>	E3,Z13-18:OH + E2,Z13-18:OAc (1:1)	Bûda, 1993	D
<i>Zenodoxus</i> (= <i>Tinthia</i>)	E3,Z13-18:OAc	Bûda, 1993	C

<i>hoplisiformis</i> Mann.	+ E2,Z13-18:OAc (1:1)		
<i>Zenodoxus tineiformis</i> Esper	E3,Z13-18:OAc	Nielsen, 1979	C

(Brachodidae) ヒロハマキモドキガ科

<i>Brachodes appendiculata</i> Esper	E3,Z13-18:OAc	Karalius, 2005	D
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(13) [Cossoidea] Bokutouga-joka
(Cossidae) Bokutouga-ka

<i>Acossus centerensis</i> Litner aspen carpenterworm	E3,E5-14:OAc	Doolittle, 1976(a)	D
<i>Chilecomadia valdiviana</i> Philippi	*Z7,Z10-16:Ald + other components	Herrera, 2016 Lapointe, 2017	D
<i>Coryphodema tristis</i> Drury quince borer	*Z9-14:OAc + *Z9-14:OH (47:3) + another component	Bouwer, 2015	D
	+ 14:OAc (38:1:1)	Bouwer, 2017	
<i>Cossus cossus</i> L. European goat moth <oobokutou>	Z5-12:OAc + Z3-10:OAc (4:1) + Z5-14:OAc (4:1:1)	Pasqualini in Arn, 1992 Sziráki in Arn, 1997	B
	*Z5-12:OAc + Z3-12:OAc (4:1) + other components	Capizzi, 1983	
<i>Cossus insularis</i> Staudinger carpenterworm moth <hime-bokutou>	*E3-14:OAc + other components	Chen, 2006	A
<i>Cossus mongolicus</i>	Z5-12:OAc	Qi in Arn, 1992	C
<i>Holcocerus arenicola</i> Staudinger	*Z7-14:OAc	Jing, 2010	D

sand <i>Salix</i> carpenterworm phe.	+ *Z5-14:OAc + *Z7-14:OH (20:8:5) + another component		
<i>Holcocerus artemisiae</i> Chou & Hua sand sagebrush carpenterworm phe.	*Z5-12:OAc + *Z5-14:OAc (5:3) + other components	Zhang, 2009	D
<i>Holcocerus hippophaecolus</i> Hua sandthorn carpenterworm phe.	*E3-14:OAc + *Z7-14:OAc (1:1) + other components + *E7-14:OAc (10:10:1)	Fang, 2005 Cheng, 2007	D
<i>Holcocerus insularis</i> Staudinger carpenterworm moth phe.	*Z3-14:OAc + other components	Zhang, 2001	D
<i>Holcocerus vicarius</i> Walker carpenterworm moth phe.	*Z7-14:OAc + *E3-14:OAc + *Z3,E5-14:OAc + *Z7-14:OH (50:22:17:10)	Yang, 2015	D
<i>Isoceras sibirica</i> Alpheraky phe.	*Z9-14:OAc + *Z7-14:OAc + *Z9-16:OAc (10:5:1) + other components	Zhang, 2011	D
<i>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	*E2,Z13-18:OAc + *Z13-18:OAc	Tonini, 1986	C

phe.

+ *18:OAc	N		
+ *Z2,Z13-18:OAc	(97:1:2)	N	Frérot, 1986
+ *E3,Z13-18:OAc	(39:9:2)	N	Malosse, 1993
E2,Z13-18:OAc + E2-18:OAc	(19:1)		Castellari in Arn, 1992
+ E3,Z13-18:OAc	(19:1)		Pasqualini in Arn, 1992,1997
+ Z2,Z13-18:OAc	(19:1:1)		Pasqualini in Arn, 1997

(14) [Tortricoidea] Hamakiga-joka

(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 <baremone-hamaki> phe.	*E11,Δ13-14:Ald	Svensson, 2019	A
<i>Acleris emargana</i> F. <eguri-hamaki> att.	E11-14:Ald	Weatherston, 1974(a)	A
<i>Acleris enitescens</i> Meyrick <seusuiro-hamaki> att.	E11-14:OAc + E11-14:Ald (1:1)	Ando, 1981	A
<i>Acleris ferrugana</i> Denis & Schiffermüller	E11-14:Ald + Z11-14:Ald (9:1)	Frerot, 1985	B

		(20:1)	Ostrauskas, 2010(a)	
<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> att.		E11,Δ13-14:Ald + E11-14:Ald (1:1)	Ando, 1987	A
<i>Acleris gloverana</i> Walsingham western blackheaded budworm phe.		*E11,Δ13-14:Ald + *Z11,Δ13-14:Ald (20:1) + other components	Gray, 1996	C
<i>Acleris japonica</i> Walsingham <nakajiro-hamaki> att.		E11,Δ13-14:Ald + E11-14:Ald (9:1)	Ando, 1987	A
<i>Acleris maccana</i> Tr. att.		E11-14:Ald + Z11-14:Ald (19:1)	Sanders, 1993	C
<i>Acleris maximana</i> Barnes & Busck att.		E11-14:Ald + Z11-14:Ald (19:1)	Sanders, 1993	C
<i>Acleris minuta</i> Robinson yellowheaded fireworm phe.		*E11,Δ13-14:Ald + other components	Schwarz, 1983(a)	C
<i>Acleris nigrilineana</i> Kawabe <sujiuro-hamaki> att.		E11,Δ13-14:Ald + E11-14:Ald (1:1)	Ando, 1987	A
<i>Acleris paradiseana</i> Walsingham <tsumamon-eguri-hamaki> att.		E11-14:OAc	Ando, 1978	A

<i>Acleris perfundana</i> Kuznetsov <narako-hamaki> att.	Z11-14:Ald + E11-14:Ald (1:1)	Ando, 1981	A
<i>Acleris rhombana</i> Denis & Shiffermüller att.	E11-14:OAc + Z11-14:OAc (4:1)	Frerot, 1979(b)	C
<i>Acleris scabrana</i> Denis & Shiffermüller att.	E11-14:Ald	Tagestad, 1975	C
<i>Acleris sparsana</i> Denis & Shiffermüller att.	E11-14:Ald + Z11-14:Ald (24:1) (9:1)	Knauf in Arn, 1986(a) Booij, 1985 Frerot, 1985	C
<i>Acleris tripunctata</i> Hübner att.	E11-14:Ald + Z11-14:Ald (1:1)	Booij, 1985	C
<i>Acleris variana</i> Fern. eastern blackheaded budworm phe.	*E11,Δ13-14:Ald	Gries, 1994(a)	C
<i>Acropolitis</i> ^a <i>ergophora</i> Meyrick phe.	*Z11-14:OAc E	Horak, 1988	D
<i>Acropolitis hedista</i> Turner phe.	*E11-14:OAc + *14:OAc (7:13) N	Horak, 1988	D
<i>Acropolitis rudisana</i> Walker phe.	*Z11-14:OAc + *E11-14:OAc (97:3) E	Horak, 1988	D
<i>Acropolitis xuthobapta</i> Turner phe.	*Z11-14:OAc + *E11-14:OAc (89:11)	Horak, 1988	D
<i>Adoxophyes</i> ^a <i>honmai</i> Yasuda smaller tea tortrix <chanokokakumon-hamaki> phe.	*Z9-14:OAc + *Z11-14:OAc (7:4) + *E11-14:OAc + *Me10-12:OAc (63:31:4:2) 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)	Meijer, 1972	B
In Romania	(9:1)	Minks, 1973(a)	
	(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)	Tamaki, 1971(a)	A
	+ other components	Sugie, 1984(b) Noguchi, 1985	
<i>Adoxophyes privatana</i> Walker phe.	Z9-14:OAc + Z11-14:OAc + E11-14:OAc + Me10-12:OAc (63:31:4:2)	Shry, 1985	C
	Z11-14:OAc + Z9-14:OAc (9:1)	Hai, 2002	
	*Z11-14:OAc + *Z9-14:OAc (9:1)	Vang, 2013	

<i>Adoxophyes privatara</i> att.	Z9-14:OAc + Z11-14:OAc + E11-14:OAc + Me10-12:OAc (63:31:4:2)	Shi in Arn, 1992	C
<i>Adoxophyes reticulana</i> Hübner att.	Z9-14:OAc + Z11-14:OAc (1:1)	Chambon, 1974	C
<i>Adoxophyes</i> sp. Korean strain phe.	*Z9-14:OAc + *Z11-14:OAc (1:40) + other components	Yang, 2009(a)	C
<i>Aethes</i> ^g <i>margarotana</i> Dup. att.	Z11-14:OAc + E11-14:OAc (3:2)	Frerot, 1982(a)	C
<i>Aethes rubigana</i> Treitschke <edaobi-hosohamaki> att.	Z11-14:OAc + Z11-14:OH (9:1)	Frerot, 1979(b)	A
	Z11-14:OAc + E11-14:OAc (1:1)	Ando, 1981	
<i>Agapeta</i> ^g <i>hamana</i> L. att.	Z11-14:OAc + Z11-14:OH (50:1) or + 12:OAc (50:1)	Tóth, 1985	D
<i>Agapeta zoegana</i> phe.	Z11-14:OAc	Maini in Arn, 1986(a)	D
	*Z11-14:OAc + other components	Tóth, 1985	
<i>Aleimma</i> ^c <i>loeflingiana</i> L. att.	E11-14:OAc + Z11-14:OAc	Frerot, 1979(b)	D
	E11-14:OAc + E11-14:Ald (1:1)	Booij, 1985	
<i>Amorbia</i> ^h <i>cuneana</i> Walsingham western avocado leafroller phe.	*E10,Z12-14:OAc + *E10,E12-14:OAc (17:8) + other components	McDonough, 1982(a)	D
	(53:47)	Hoffmann, 1983	
	(63:37–11:89)	Bailey, 1986	

<i>Aphelia</i> ^a <i>paleana</i> Hübner att.	Z11-14:OAc + E11-14:OAc (9:1) + Z11-14:OH + Z11-14:Ald (100:2:0.75:1)	Hrdý, 1979 Booij, 1984(a) Peltotalo, 1986 Ostrauskas, 2010(b)	C
<i>Aphelia viburnana</i> Denis & Shiffermüller att.	Z11-14:Ald	Booij, 1985 Guerin, 1986(c)	C
<i>Archips</i> ^a <i>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) (100:64:2:1)	Roelofs, 1974(d) Cardé, 1977(a) Deland, 1993	C
<i>Archips asiaticus</i> Walsingham (= <i>audax</i> Razowski) <atoki-hamaki> att.	E11-14:OAc + Z11-14:OAc (9:1) (7:3) Z9-14:OAc + Z11-14:OAc (9:1)	Ando, 1978 Mizukoshi, 2006 Mizukoshi, 2006	A
<i>Archips atrolucens</i> Diakonoff phe.	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> phe.	*E11-14:OAc + *Z11-14:OAc (7:3)	Sugie, 1977	A
<i>Archips capsigeranus</i> Kennel <katakake-hamaki>	Z11-14:OAc + E11-14:OAc (1:1)	Ando, 1981	A

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

<kuroshio-hamaki> att.	+ E11-14:OAc (9:1)		
<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 semiferanus</i> Walker oak leafroller phe.	*Z10-14:OAc + other components *E11-14:OAc + *Z11-14:OAc (2:1)	Hendry, 1974 Hendry, 1975 Miller, 1976	C
<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 <urasakikakumon- hamaki>	E11-14:OAc + Z11-14:OAc (7:3)	Ando, 1981	A

<i>att.</i>			
<i>Archips xylosteanus</i> L. <kakumon-hamaki> <i>phe.</i>	Z11-14:OAc + E11-14:OAc (4:1) *Z11-14:OAc + *E11-14:OAc (23:2)	Ando, 1978 Frerot, 1983	A
<i>Argyrotaenia</i> ^a (= <i>Neocalyptis</i>) <i>angustilineata</i> Walsingham <kohososuji-hamaki> <i>att.</i>	Z11-14:OAc + Z9,E12-14:OAc (1:1) Z11-14:OAc + Z9-12:OAc (1:1) Z9-14:OAc + Z11-14:OAc (9:1)	Ando, 1978 Ando, 1981 Kim, 2014(b) Mizukoshi, 2006	A
<i>Argyrotaenia citrana</i> Fernald orange tortrix <i>phe.</i>	*Z11-14:OAc + *Z11-14:Ald (15:1)	Hill, 1975(b)	C
<i>Argyrotaenia dorsalana</i> Dyar <i>att.</i>	Z11-14:OAc + Z11-14:OH (1:1)	Steck, 1977(a) Daterman, 1977 Steck, 1977(a)	C
<i>Argyrotaenia liratana</i> Christoph (= <i>tricensa</i> Meyrick) <futamonko-hamaki> <i>att.</i>	Z9-12:OAc	Nagano, 1979	A
<i>Argyrotaenia pomililiana</i> L. <i>phe.</i>	*Z11-14:OAc + *Z11-14:Ald (20:1) + other components	Cichón, 2004	C
<i>Argyrotaenia pulchellana</i> Haworth <i>phe.</i>	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> <i>att.</i>	Z10-12:OAc	Roelofs in Arn, 1986(a)	C

<i>Argyrotaenia sphaleropa</i> Meyrick phe.	*Z11,Δ13-14:Ald + *Z11-14:Ald (9:1) + *Z11,Δ13-14:OAc + *Z11-14:OAc	Nunez, 2002	C
	*Z11,Δ13-14:Ald + *Z11,Δ13-14:OAc (10:1)	Legrand, 2004	
	Z11,Δ13-14:Ald + Z11,Δ13-14:OAc (9:1-1:9)	Bavaresco, 2005	
<i>Argyrotaenia velutinana</i> Walker redbanded leafroller phe.	*Z11-14:OAc	Roelofs, 1968(a); 1968(b)	C
	+ 12:OAc (2:3)	Hamstead, 1972	
	+ *E11-14:OAc + *12:OAc (88:12:125)	Roelofs, 1975(a)	
	+ other components	Bjostad in Arn, 1986(a)	
<i>Arotrophora</i> ^b <i>arcuatalis</i> Walker phe.	*Z11-14:OAc + *E11-14:OAc (97:3) N	Horak, 1988	D
<i>Asthenoptycha</i> ^d sp. phe.	*Z8-14:OAc + *Z10-14:OAc (9:1) E	Horak, 1988	D
<i>Cacoecimorpha</i> ^a <i>pronubana</i> Hübner European carnation tortrix phe.	Z11-14:OAc + Z9-14:OAc	Frerot, 1979(b)	D
	Z11-14:OAc	Soldán, 1983	
	+ Z11-14:OH + 14:OAc (18:1:1:20)	Arsura in Arn, 1986(a)	
	Z11-14:OAc + E11-14:OAc + Z11-14:OH	Frerot, 1982(b)	
	*Z11-14:OAc + *E11-14:OAc + *Z11-14:OH (87:3:10) + other components	Descoins, 1985	

	+ *Z9-14:OAc [82:5:7:1] N (100:3:30:3)	Kovalev, 1985 Witzgall, 1989(a); 1990	
<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</i> <i>carmana</i> Barnes & Busck att.	E11-14:Ald + Z11-14:Ald (23:2)	Liebhold, 1985	C
<i>Choristoneura</i> <i>conflictana</i> Walker large aspen tortrix phe.	Z11-14:Ald *Z11-14:Ald + other components	Weatherston, 1976 Evenden, 2006	C
<i>Choristoneura</i> <i>fractivittana</i> Clemens att.	Z11-14:OH + Z11-14:Ald (19:1)	Roelofs, 1970(a) Comeau, 1973 Weatherston, 1978	C
<i>Choristoneura</i> <i>fumiferana</i> Clemens eastern spruce budworm phe.	*E11-14:Ald + another component E11-14:Ald + Z11-14:Ald (19:1) *E11-14:OAc N	Weatherston, 1971 Weatherston, 1974(b) Sanders, 1976; 1984; 1993, Jennings, 1983 Wiesner, 1979	C

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

<i>Choristoneura orae</i> Freeman phe.	*E11-14:OAc + *Z11-14:OAc + *E11-14:OH (82:9:9) + other components	Gray, 1984(a)	C
<i>Choristoneura parallela</i> Robinson spotted fireworm phe.	* E11-14:OH + *Z11-14:OH + *E11-14:OAc + *14:OH (84:0.7:8:9) (100:5:4) + another component	Neal, 1982 Polavarapu, 1998	C
<i>Choristoneura pinus</i> <i>maritima</i> Freeman att.	E11-14:OAc + Z11-14:OAc + E11-14:OH + Z11-14:OH (153:27:17:3)	Silk, 1988(b) Liebhold, 1991	C
<i>Choristoneura pinus pinus</i> Freeman jack pine budworm phe.	*E11-14:OAc + *Z11-14:OAc + *E11-14:OH + *Z11-14:OH (77:13:9:1) + other components	Silk, 1985(b)	C
<i>Choristoneura retiniana</i> Walsingham modoc budworm phe.	*E11-14:OAc + *Z11-14:OAc + *E11-14:OH + *Z11-14:OH (92:8:9:1)	Daterman, 1984	C
<i>Choristoneura rosaceana</i> Harris obliquebanded leafroller phe. New York strain	*Z11-14:OAc *Z11-14:OAc + *E11-14:OAc + *Z11-14:OH (95:5:0.5–95:5:10)	Roelofs, 1970(b) Hill, 1979(a)	C
Michigan strain	+ E11-14:OAc + *Z11-14:OH (74:5:21)	Huang, 2022	
In Eastern Canada	(96.5:2:1.5)	Delisle, 1992	
Okanagan Valley 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> ?) <i>att.</i>	Z11-14:OH + E11-14:OH (97:3)	Frerot, 1979(b)	C
<i>Choristoneura viridis</i> Freeman (= <i>C. retiniana</i> ?) green budworm <i>att.</i>	E11-14:OAc	Sanders, 1974	C
<i>Choristoneura n. sp.</i> CPG=Prince George <i>phe.</i>	*E11-14:OAc + * Z11-14:OAc (13:7) + other components	Gray, 1993	C
<i>Clepsis</i> ^a <i>dumicolana</i> Zeller <i>att.</i>	Z11-14:OAc + E11-14:OAc (1:1)	Frerot, 1979(b)	C
<i>Clepsis furcana</i> Walsingham <i>att.</i>	E11-14:OAc	Daterman, 1977	C
<i>Clepsis melaleucana</i> Walker <i>att.</i>	Z11-14:OH + Z11-14:OAc (1:1)	Roelofs, 1971(a)	C
<i>Clepsis rurinana</i> L. <usumon-hamaki> <i>att.</i>	Z11-14:Ald	Capizzi in Arn, 1986(a) Frerot, 1985	A
<i>Clepsis semialbana</i> Cuc. <i>att.</i>	Z11-14:OAc + Z11-14:OH + Z9-14:OAc (17:2:1)	Frerot, 1982(a)	B
<i>Clepsis spectrana</i> Treitschke <i>phe.</i>	*Z11-14:OAc + *Z9-14:OAc (3:1)	Minks, 1973(b)	C
<i>Clepsis strigana</i> Hübner <i>att.</i>	Z11-14:OAc	Maini, 1973	B
<i>Cnephasia</i> ^b <i>alternella</i> Stephens <i>att.</i>	Z8-12:OAc Z8-12:OAc	Chambon, 1974 Sziráki, 1978(a); (b) Beauvais, 1977	C

	+ E8-12:OAc (18:7)		
<i>Cnephasia alticolana</i> Herrich-Schäffer <i>att.</i>	Z11-14:OAc + E11-14:OAc (1:1)	Olenici, 2007	C
<i>Cnephasia asseclana</i> Denis & Schiffermüller (= <i>interjectana</i> Haworth ?) <i>att.</i>	E9-12:OAc	Hrdý, 1989	C
<i>Cnephasia communana</i> Herrich & Schäffer <i>att.</i>	Z8-12:OAc + E8-12:OAc	Alford, 1978 Frilli, 1974	C
<i>Cnephasia cupressivorana</i> <i>att.</i>	E9-12:OAc	Tóth in Arn, 1997	C
<i>Cnephasia ecullyana</i> Real. <i>att.</i>	Z9-12:OAc + Z9-12:OH	Nässig, 1991 Tóth, 1992(d)	C
<i>Cnephasia genitalana</i> Pierce & Metcalfe <i>att.</i>	Z9-12:OAc	Sziráki, 1980	C
<i>Cnephasia</i> (= <i>Decodes</i>) <i>horarianus</i> Walsingham <i>att.</i>	Z7-10:OAc	Steck, 1977(a)	C
<i>Cnephasia incertana</i> Treitschke <i>att.</i>	Z10-14:OAc F ₂ 11,11-Z9-12:OAc Z10-12:OAc	Frerot, 1985 Bengtsson, 1990 Witzgall, 1996	C
<i>Cnephasia interjectana</i> <i>att.</i>	E10-12:OAc E9-12:OAc + E9,Δ11-12:OAc (19:1) E9-12:OAc	Booij, 1984(a) Brewer, 1985 Priesner in Arn, 1986(a)	C
<i>Cnephasia jactatana</i> Walker <i>phe.</i>	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> att.	Z8-12:OAc + E8-12:OAc + Z8-12:OH (85.5:5.5:9)	Mizukoshi, 2006	A
<i>Cnephasia</i> sp. att.	E11-14:OAc	Klun, 1972	
<i>Cochylis</i> ^g <i>arthuri</i> Dang phe.	*Z11-14:OAc + *E11-14:OAc (4:1)	Foster, 2003	C

<i>Cochylis dubitana</i> Hübner <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> <i>att.</i>	Z11-14:Ald + Z11-14:OAc (9:1)	Ando, 1978	A
<i>Croesia bergmaniana</i> L. <i>att.</i>	E11-14:OAc + 14:OAc (9:1)	Voerman in Arn, 1986(a) Frerot, 1979(b)	B
<i>Croesia conchyloides</i> Walsingham <neusu-hamaki> <i>att.</i>	Z11-14:Ald	Ando, 1978	A
<i>Croesia curvalana</i> Kearfott blueberry leaftier moth <i>phe.</i>	*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>	E11-14:Ald	Ando, 1981	A

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

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

<i>Epichoristodes</i> ^a <i>acerbella</i> Walker phe.	*Z11-14:OAc + *Z11-14:OH + *Z9-14:OAc (32:13:4) + other components	L.-Cassou, 1980	D
	*Z11-14:OAc + Z9-14:OH (8:1:2:1)	Rossi, 1982 Dalla in Arn, 1992	
<i>Epiphyas</i> ^a <i>postvittana</i> Walker lightbrown apple moth phe.	*E11-14:OAc + *E9,E11-14:OAc (20:1)	Bellas, 1983	D
	phe. (9:1)	Muggleston, 1989	
	att. (19:1)	Yazdani, 2024	
	+ *E11-14:OH + *E11-16:OAc (200:10:2:1) + other components	El-Sayed, 2011	
<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 <i>alaudana</i> Meyrick phe.	*Z5-14:OAc + *Z7-14:OAc (2:1) E	Horak, 1988	D
<i>Epitymbia cosmota</i> Meyrick phe.	*Z7-14:OAc + *Z5-14:OAc (4:1) E	Horak, 1988	D
<i>Epitymbia eudrosa</i> Turner phe.	*Z7-14:OAc E	Horak, 1988	D
<i>Eulia</i> ^b <i>ministrana</i> L. <bokashi-hamaki> att.	Z11-14:OAc + Z9-14:OAc (9:1) (10:1)	Booij, 1984(a) Priesner, 1984(c)	A
	Z11-14:OAc	Booij, 1985	

	+ Z11-14:Ald (1:1)		
<i>Eupoecilia</i> ^g <i>ambiguella</i> Hübner European grape moth <budou-hosohamaki> phe.	*Z9-12:OAc Z9-12:OAc + 12:OAc (1:1-1:5) or + Z10-13:OAc (5:1-2:1) *Z9-12:OAc + *12:OAc + *18:OAc (1:1:2) + other components	Arn, 1976(b) Saglio, 1977(b) Rauscher, 1984 Arn, 1986(b),1988	A
<i>Eupoecilia angustana</i> Hübner <tsumaobiki-hosohamaki> att.	Z11-14:OAc + E11-14:OAc + 12:OAc (7:3:40)	Hrdý, 1979	A
<i>Eupoecilia kobeana</i> Razowski <akaobi-hosohamaki> att.	Z11-14:OH	Ando, 1977	A
<i>Exapate</i> ^g <i>congelatella</i> Clerck att.	Z11-14:OAc + E11-14:OAc (4:1)	Velcheva, 1990	D
<i>Homona</i> ^a <i>coffearia</i> Neitner 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) Z11-14:OAc + Z9-12:OAc (9:1)	Noguchi, 1979; 1981 Ando, 1981 Kim, 2014(b)	A
<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> <i>att.</i>	Z11-14:OAc + E11-14:OAc (1:1) (3:7)	Ando, 1978 Mizukoshi, 2006	A
<i>Homonopsis</i> <i>illotana</i> Kennel <tsuyasuji-hamaki> <i>att.</i>	Z11-14:OAc + Z11-14:OH (9:1)	Ando, 1978	A
<i>Hoshinoa</i> ^a <i>adumbratana</i> Walsingham <oofutasuji-hamaki> <i>att.</i>	Z11-14:Ald	Ando, 1978	A
<i>Hoshinoa</i> <i>longicellana</i> Walsingham common apple leafroller <atoboshi-hamaki> <i>phe.</i>	Z11-14:OAc *Z11-14:OAc + *E11-14:OAc (5:1)	Ando, 1975 Kozaki, 1984	A
<i>Hysterosia</i> ^g <i>cartwrightana</i> Kearfott <i>att.</i>	E11-14:OAc	Struble, 1977(a)	C
<i>Hysterosia</i> <i>inopinana</i> <i>att.</i>	E11-14:OAc + E11-14:Ald (1:1)	Priesner in Arn, 1986(a)	C
<i>Isochorista</i> ^d <i>helota</i> Meyrick <i>att.</i>	Z5-14:OAc + Z7-14:OAc	Horak, 1988	D
<i>Kawabeia</i> ^b <i>ignavana</i> Christoph <usuobihairofuyu-hamaki> <i>att.</i>	Z7-12:OAc	Ando, 1981	A
<i>Kawabeia</i> <i>razowskii</i> Kawabe <hairofuyu-hamaki> <i>att.</i>	Z5-12:OAc	Ando, 1977	A
<i>Meridemis</i> ^a <i>furtiva</i> Diakonoff <i>att.</i>	Z11-14:OAc	Hai, 2002	D
<i>Meritastis</i> ^d <i>laganodes</i> Meyrick <i>phe.</i>	*Z9-14:OAc N	Horak, 1988	D
<i>Meritastis</i> <i>lythrodana</i> Meyrick	*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.			Whittle, 1991	D
E-type	*E11-14:OAc + *16:OAc + *14:OAc (10:20:7)			
Z-type	*Z11-14:OAc + *E11-14:OAc + *14:OAc (25:5:2)			
<i>Merophyas leucaniana</i> Walker phe.	*Z11-14:OAc + *E11-14:OAc + *Z11-14:OH + *14:OAc (100:5:17:33) + another component		Foster, 1988; 1993	D
<i>Merophyas</i> sp. phe.	*Z11-14:OAc + *E11-14:OAc (83:17)	E	Horak, 1988	D
<i>Neosphaleroptera</i> ^b <i>nubilana</i> Stephens att.	Z5-10:OAc		Subchev, 1990 Tóth, 1992(d)	D
<i>Pandemis</i> ^a <i>borealis</i> att.	Z11-14:OAc		Daterman in Arn, 1992	C
<i>Pandemis canadana</i> Kearfott att.	Z11-14:OAc + Z9-14:OAc (9:1)		Steck, 1977(a)	C
<i>Pandemis cerasana</i> Hübner phe.	Z11-14:OAc + E11-14:OAc (1:1)		Konyukhov in Arn, 1986(a)	C
	*E11-14:OAc + *Z11-14:OAc (3:1) + other components		Tonini, 1982	
<i>Pandemis chlorograptta</i> Meyrick	Z11-14:OAc		Ando, 1981	A

<usutobi-hamaki> <i>att.</i>	+ E11-14:OAc (4:1)		
<i>Pandemis cinnamomeana</i> Treitschke <akatobi-hamaki> <i>att.</i>	Z11-14:OAc + E11-14:OAc (4:1)	Ando, 1978	A
<i>Pandemis heparana</i> Denis & Shiffermüller <tobi-hamaki> <i>phe.</i>	Z11-14:OAc + Z11-14:OH + Z9-14:OAc (17:2:1) (2:1:1)	Frerot, 1979(b) Voerman in Arn, 1986(a)	A
	*Z11-14:OAc + *Z11-14:OH + *Z9-14:OAc (18:1:1) + other components	Frerot, 1982(b)	
<i>Pandemis limitata</i> Robinson threelined leafroller <i>phe.</i>	*Z11-14:OAc + *Z9-14:OAc (91:9)	Roelofs, 1976(b)	C
<i>Pandemis monticolana</i> Yasuda <yamatobi-hamaki> <i>att.</i>	E11-14:OAc + Z11-14:OAc (7:3)	Mizukoshi, 2006	A
<i>Pandemis pyrusana</i> Kearfott <i>phe.</i>	*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	Frerot, 1979(b) Priesner, 1980(a) Olenici, 2007	D
	E11-14:Ald + Z11-14:Ald (20:1)	Ostrauskas, 2010(a)	
<i>Phalonia</i> ^g sp. <i>att.</i>	E11-14:OAc	Roelofs, 1970(a)	

<i>Phalonidia</i> ^g <i>manniana</i> att.	Z11-14:OAc + Z9,E11-14:OAc (10:1)	Priesner in Arn, 1986(a)	C
<i>Phalonidia</i> <i>minimana</i> Caradja <mini-hosohamaki> att.	Z11-14:OAc	Ando, 1977	A
<i>Phricanthes</i> ^e <i>asperana</i> Meyrick phe.	*Z9-12:OAc N	Horak, 1988	D
<i>Phtheochroa</i> ^g (= <i>Bonagota</i>) <i>cranaodes</i> Meyrick Brazilian apple leafroller phe.	*E3,Z5-12:OAc + *Z9-16:OAc (1:1) + other components (9:1) + *Z5-12:OAc + *E3,Z5-14:OAc (20:20:1:1) (20:1:1:1)	Unelius, 1996 Eiras, 1999 Kovaleski, 2003 Coracini, 2001 Coracini, 2003	D
<i>Phtheochroides</i> ^g <i>clandestina</i> Razowski <yomogioo-hosohamaki> att.	Z11-14:OAc + Z9-14:OAc (1:1)	Ando, 1981	A
<i>Planotortrix</i> ^a <i>clarkei</i> Philpott phe.	*Z11-14:OAc + *E11-14:OAc (23:2) N	Foster, 1988	D
<i>Planotortrix</i> <i>excessana</i> Walker greenheaded leafroller phe. A-race (= <i>P. octo</i> ?) B-race	*Z8-14:OAc + *14:OAc (10:3) *Z5-14:OAc + *Z7-14:OAc (3:2) (3:97 – 71:29) N + *Z9-14:OAc N	Galbreath, 1985 Foster, 1989 Foster, 1988	D
<i>Planotortrix</i> <i>flammea</i> Salmon phe.	*Z5-14:OAc + *Z7-14:OAc (3:2–1:1) N	Foster, 1990	D

<i>Planotortrix notophaea</i> Turner phe.	*Z7-14:OAc N	Foster, 1990	D
<i>Planotortrix octo</i> Dugdale att.	Z8-14:OAc + 14:OAc	Park, 1998	D
<i>Planotortrix orthrocopa</i> Meyrick phe.	*Z11-14:OAc N	Foster, 1988	D
<i>Planotortrix orthropis</i> Meyrick phe. type 1	*Z11-14:OAc + *E11-14:OAc (87:13) N	Foster, 1988	D
type 2	*Z11-14:OAc + *Z9-14:OAc (95:5–82:18) N		
<i>Planotortrix spatiosa</i> Philpott phe.	*Z11-14:OAc + *E11-14:OAc (3:1–3:2) N	Foster, 1988	D
<i>Planotortrix</i> "MBS" phe.	*Z7-14:OAc + *Z5-14:OAc (50:1–12:1) N	Foster, 1990	D
<i>Planotortrix</i> sp. ("M") phe.	*Z5-14:OAc + *14:OAc (1:1) + *Z7-14:OAc (20:20:1)	Foster, 1987(b) Foster, 1990	D
<i>Platynota</i> ^h <i>flavedana</i> Clemens variegated leafroller phe.	*E11-14:OH + *Z11-14:OH (9:1) + other components	Hill, 1977	D
<i>Platynota idaeusalis</i> Walker tufted apple bud moth phe.	E11-14:OH + E11-14:OAc (1:1) *E11-14:OH + *E11-14:OAc (2:1)	Bode, 1973 Hill, 1974	D
<i>Platynota stultana</i> Walsingham omnivorous leafroller phe.	*E11-14:OAc + *Z11-14:OAc (22:3) + E & Z11-14:OH (1–0.2%)	Hill, 1975(a) Baker, 1975	D
<i>Proeulia</i> ^a <i>auraria</i> Clarke phe.	*E11-14:OH	Bjostad in Roelofs, 1982(a)	D

<i>Proeulia triquetra</i> Obraztsov phe.	*Z11-14:OAc + *E9-12:OAc (10:1) + another component	Bergmann, 2016	D
<i>Proselena</i> ^f <i>tenella</i> Meyrick phe.	*Z11-14:OAc N	Horak, 1988	D
<i>Pseudargyrotoza</i> ^a <i>conwagana</i> F. <miyamamadaraaginsuji-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) *Z11-14:OH	Frerot, 1979(b) Minks in Arn, 1986(a) Descoins in Arn, 1986(a)	B
<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 plagiata</i> phe.	*E11-14:OAc + *Z11-14:OAc (4:1) N	Foster, 1988	D
<i>Sparganothis</i> ^h <i>albicaudana</i> Busck att.	E11-14:OAc	Roelofs, 1971(a)	C
<i>Sparganothis directana</i> Walker chokecherry leafroller phe.	*E9,Δ11-12:OAc + *Z11-14:OAc + *E11-14:OAc (5:4:3) + other components	Bjostad, 1980(a)	C
<i>Sparganothis niveana</i> Walsingham (= <i>groteana</i> Fernald) att.	Z11-14:OH	Roelofs, 1970(a); 1982(a)	C
<i>Sparganothis pilleriana</i> Denis & Schiffermüller <tengu-hamaki> phe.	E9-12:OAc + E9-12:OH (8:2–9:1) E Z11-14:Ald	Saglio, 1977(a) Ando, 1978	A

	*E9-12:OAc + *E9-12:OH + *E11-14:OAc + *Z11-14:OAc (4:1:4:20) + other components	Guerin, 1986(c)	
	*E9-12:OAc + *E9-12:OH + *E11-14:OAc + *14:OAc (4:1:4:4) + other components	Arn, 1988	
<i>Sparganothis sulfureana</i> Clemens Sparganothis fruitworm phe.	E11-14:OAc *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	Daterman, 1977	C
<i>Sparganothis</i> sp. woodbine leafroller phe.	*E11-14:OH + *Z11-14:OH + *E11-14:OAc (15:11:2) + other components	Bjostad, 1980(c)	
<i>Spatalistis</i> ^c <i>bifasciana</i> Hübner <ginsujikuro-hamaki> att.	Z11-14:OAc + Z9-14:OAc (1:1) or + Z9,E12-14:OAc (1:1) Z11-14:OAc + Z9-14:OAc + Z11-14:OH (18:1:1)	Ando, 1978 Hrdý, 1989	A
<i>Sperchia</i> ^a <i>intractana</i> Walker phe.	E11-14:OAc + Z11-14:OAc (2:1) *E11-14:OAc + *Z11-14:OAc (69:31) E	Benn, 1981 Horak, 1988	D
<i>Stenodes</i> ^g <i>alternana</i> att.	Z9-14:OAc + Z11-14:OAc	Safonkin, 1988	C

	+ E11-14:OAc (10:9:1)		
<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 *E11-14:OAc + *Z11-14:OAc (9:1)	Frerot, 1979(b) Persoons, 1984	B
<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 Z11-13:OAc or E11-13:OAc *Z11-14:OAc + Z11-14:OH (9:1)	Hrdý, 1979 Knauf, 1979 Arn, 1979 Arn, 1979 Novotny, 1990	C
" <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>Acanthoclita</i> ^b (= <i>Cydia</i>) <i>phaulomorpha</i> Meyrick	Z8-12:OAc + E8-12:OAc (1:1)	Bourdouxhe, 1982	C
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	att.			
<i>Ancylis</i>	^a att.	<i>achatana</i> F.	Z9-12:OAc + E9-12:OAc (7:3)	Biwer, 1978(a) C
<i>Ancylis</i>	att.	<i>albafasciana</i> Heinrich	Z9-12:OAc	Stevens, 1985 C
<i>Ancylis</i>	att.	<i>apicella</i> Denis & Schiffermüller	Z8-12:OAc + Z9-12:OAc (1:1)	Booij, 1984(a) C
<i>Ancylis</i>	att.	<i>burgessiana</i> Zeller	E9-12:OAc	Reed, 1985(b) C
<i>Ancylis</i>	att.	<i>columbiana</i> McDunnough	Z9-12:OAc	Stevens, 1985 C
<i>Ancylis</i>	att.	<i>geminana</i> Donovan <shiroobi-himehamaki>	Z9-12:OH	Booij, 1984(a) A
<i>Ancylis</i>	att.	<i>mediofasciana</i> Clemens	E9-12:OAc	Stevens, 1985 C
<i>Ancylis</i>	att.	<i>nubeculana</i> Clemens	Z9-12:OAc	Reed, 1985(b) C
<i>Ancylis</i>	att.	<i>pacificana</i> Walsingham	Z9-12:OAc	Stevens, 1985 C
<i>Ancylis</i>	phe.	<i>sativa</i> Liu jujube leafroller	*E9-12:OAc + *Z9-12:OAc (4:1) + other components	Lin, 1984 Han, 1999 C
<i>Ancylis</i>	att.	<i>selenana</i> Guenée <futaboshi-himehamaki>	Z9,E11-14:OAc	Nagano, 1979 A
<i>Ancylis</i>	att.	<i>simuloides</i> McDunnough	Z9-12:OAc	Stevens, 1985 C
<i>Ancylis</i>	att.	<i>uncella</i> Denis & Schiffermüller <usubenikagiba-himehamaki>	Z9-12:OH	Booij, 1984(a) A

<i>Ancylis</i> sp. att.	Z9,Δ11-12:OAc + Z9,Δ11-12:OH (10:1)	Chisholm, 1985(b)	C
<i>Aphania</i> ^a <i>infida</i> Heinrich att.	Z8-12:OAc	Roelofs, 1971(a)	C
<i>Apotomis</i> ^d <i>betuletana</i> Haworth <tumajiro-himehamaki> att.	Z10-14:OAc	Booij, 1984(a)	A
<i>Apotomis capreana</i> Hübner <yanagitsumajiro-himehamaki> att.	Z11-14:OAc + E11-14:OAc	Bûda, 1987	A
<i>Apotomis corticana</i> Hübner att.	Z10-14:OAc + E8,E10-12:OH ?	Arn, 1974	C
<i>Apotomis lineata</i> Schiffermüller att.	Z8-12:OAc	Sziráki, 1978(a)	C
<i>Apotomis moestana</i> Wocke att.	Z8-12:OAc	LinnaLuoto, 1983	C
<i>Apotomis turbidana</i> Hübner att.	Z10-14:OAc Z8-14:OAc	Roelofs, 1982(a) Fassotte in Arn, 1986(a)	C
<i>Apotomis</i> sp. att.	Z8-12:OH or Z8-12:OAc	Ando, 1977	A
<i>Argyroploce</i> ^d <i>aurofasciana</i> Haworth <kokekiobi-himehamaki> att.	E10-12:OAc	Arn, 1974	A
<i>Argyroploce lacunana</i> Denis & Schiffermüller <miyamaunmon-himehamaki> att.	Z8-12:OAc	Sziráki, 1978(a)	A
<i>Argyroploce schistaceana</i> Snellen phe.	*9-12:OAc	China, 1978	C
<i>Aterpia</i> ^d <i>issikii</i> Kawabe	Z8,Z10-12:OH	Ando, 1987	A

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

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

<i>Cydia caryana</i> Fitch hickory shuckworm phe.	E8,E10-12:OAc or Z9-12:OAc *E8,E10-12:OAc	Smith, 1987 McDonough, 1990(a)	C
<i>Cydia colorana</i> Kearfott att.	E8,E10-12:OAc	Stevens, 1985	C
<i>Cydia coniferana</i> Ratzeburg att.	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> att.	Z8-12:OAc + E8-12:OAc	Hrudová, 2003	C
<i>Cydia cosmophorana</i> Treitschke att.	E8-12:OAc + E10-12:OAc (1:1) E9-12:OAc	Booij, 1984(a) Tóth in Arn, 1997	C
<i>Cydia cupressana</i> Kearfott att.	Z9-12:OAc	Stevens, 1985	C
<i>Cydia duplicana</i> Zett. att.	E8,E10-12:OAc	Witzgall, 1996	C
<i>Cydia exquisitana</i> att.	E8,E10-12:OH	Chambon, 1978	C
<i>Cydia fagiglandana</i> Zeller phe.	E8,E10-12:OAc + E8,E10-12:OH (3:1) *E8,E10-12:OAc + other components	Rotundo, 1984 Rotundo, 1988 Witzgall, 1996	A
<i>Cydia fletcherana</i> Kearfott 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.	E8,E10-12:OAc	Priesner	C

			in Arn, 1986(a) Witzgall, 1996	
<i>Cydia indivisa</i> Danilevski <i>att.</i>	Z8-12:OH + E8-12:OH (1:1)		Booij, 1984(d)	C
	Z8-12:OAc + E8-12:OAc (1:1)		Witzgall, 1996	
<i>Cydia ingrata</i> Heinrich <i>att.</i>	E8,E10-12:OAc + E8,Z10-12:OAc (10:1)		Chisholm, 1985(a)	C
		(1:1)	Reed, 1985(b)	
<i>Cydia intexta</i> Kuznetsov <i>att.</i>	E8,E10-12:OAc		Witzgall, 1996	C
<i>Cydia latiferreana</i> Walsingham (= <i>Melissopus latiferreanus</i>) filbertworm <i>phe.</i>	E8,E10-12:OAc *E8,Z10-12:OAc + *E8,E10-12:OAc (43:10)		Davis, 1981 Davis, 1984	C
<i>Cydia lautiuscula</i> Heinrich <i>att.</i>	E8,E10-12:OAc		Chisholm, 1985(a)	C
<i>Cydia leucostoma</i> Meyrick <minamitumajiro-himehamaki> <i>att.</i>	Z8,E10-12:OAc		Witzgall, 1996	A
<i>Cydia medicaginis</i> Kuznetsov <i>att.</i>	E8,E10-12:OAc		Frerot, 1979(a) Wall, 1987	C
<i>Cydia millenniana</i> Adamoz. <i>att.</i>	E8,E10-12:OAc + Z8,Z10-12:OAc (1:1)		Witzgall, 1996	C
<i>Cydia nigricana</i> F. pea moth <endou-shinkui> <i>phe.</i>	E8,E10-12:OAc or Z8-12:OAc or E10-12:OAc *E8,E10-12:OAc E10-12:OAc *E8,E10-12:OAc + other components		Lewis, 1975 Wall, 1976 Greenway, 1984 Horák, 1988 Witzgall, 1993; 1996	A

<i>Cydia orobana</i> Treitschke 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)	Roelofs, 1971(e) Beroza, 1974 McDonough, 1974 Buser, 1975 Einhorn, 1984(b); 1986 Arn, 1985 Bartell, 1988	C
<i>Cydia populana</i> Busck att.	E8,E10-12:Ald E8,E10-12:OAc	Chisholm, 1985(a) Stevens, 1985	C
<i>Cydia pyrivora</i> Danil. phe.	E8,E10-12:OAc *E8,E10-12:OAc + other components	Priesner in Arn, 1986(a) Witzgall, 1996	C
<i>Cydia servillana</i> Dup. att.	E8,E10-12:OAc	Priesner in Arn, 1986(a) Witzgall, 1996	C
<i>Cydia splendana</i> Hübner	E8,E10-12:OAc	Rotundo, 1988	C

chestnut codling moth phe.	*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 + E8,Z10-12:OAc (1:1)	Hrdý, 1989 Witzgall, 1996	C
<i>Cydia toreuta</i> Grote eastern pine seed worm phe.	E8,Z10-12:OAc *E8,Z10-12:OAc	Chisholm, 1985(a) Katovich, 1989	C
<i>Cydia trasi</i> as Meyrick phe.	*E8,E10-12:OAc + *E8,E10-12:OH + *E8,E10-12:Ald (10:9:1)	Fu, 2002	C
<i>Cydia turciana</i> e Chambon att.	E8,E10-12:OAc + E8,Z10-12:OAc (1:1)	Witzgall, 1996 Chambon in Arn, 1997	C
<i>Cydia youngana</i> Kearfott spruce coneworm att.	E7-12:OH	Weatherston, 1977	C
<i>Cydia zebeana</i> Ratzeburg att.	E8-12:OAc + E10-12:OAc (1:1)	Booij, 1984(a)	C
	(9:1)	Booij, 1986	
<i>Cydia</i> (= <i>Laspeyresia</i>) sp. att.	Z8-12:OAc	Roelofs, 1971(a)	

<i>Cymolomia</i> ^d <i>hartigiana</i> Saxesen <touhi-himehamaki> att.	Z10-12:OAc	Witzgall, 1996	A
<i>Dichrorampha</i> ^b <i>acuminatana</i> Lienig & Zeller att.	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 gueneeana</i> Obraztsov <kokiobiherihoshi-himehamaki> att.	Z9,Δ11-12:OAc + E9,Δ11-12:OAc (1:4)	Chisholm, 1985(b) Ulenberg in Arn, 1997	A
<i>Dichrorampha incurzana</i> H.-S. att.	E9-12:OAc + Z9-12:OAc (11:9)	Hrdý, 1989	C
<i>Dichrorampha petiverella</i> L. <hosokiobiherihoshi- himehamaki> att.	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 att.	E9-12:OAc + Z9-12:OAc (9:1)	Booij, 1984(a)	C
<i>Dichrorampha sedatana</i> (= <i>sedetana</i> ?) Busck att.	E8,E10-12:OAc	Stevens, 1985	C
<i>Dichrorampha simpliciana</i> Haworth att.	E9-12:OAc + E9,Δ11-12:OAc (19:1)	Brewer, 1985	C
<i>Dichrorampha simulana</i> Clemens att.	E9,Δ11-12:OAc + E9,Δ11-12:OH (10:1)	Chisholm, 1985(b)	C
<i>Dichrorampha</i> sp. att.	E9-12:OAc + E9-12:OH	Roelofs, 1971(a)	
<i>Ecdytolopa</i> ^b <i>aurantiana</i> citrus borer moth	*E8-12:OAc + *E8-12:OH (100:1 - 10:1)	Leal, 2001 Ono, 2001	D

phe.

<i>Ecdytolopha insiticihana</i> Zeller att.	E8-12:OAc	Roelofs, 1971(a)	D
<i>Ecdytolopha torticornis</i> Meyrick macadamia nut borer phe.	*E8-12:OAc + other components	Chamberlain, 2003	D
<i>Enarmonia</i> ^a <i>formosana</i> Scopoli cherry bark tortrix phe.	Z9-12:OAc + E9-12:OAc (1:1)	Minks, 1976 Toshova, 2017	C
	Z8-12:OAc	Hrdý, 1979	
	*Z9-12:OAc + *E9-12:OAc (6:4-5:5) + other components	McNair, 1999	
	Z9-12:OAc + Z11-14:OAc + E11-14:OAc + 12:OAc + 14:OAc (5:3:2:3:1)	Olenici, 2007	
<i>Endopiza</i> ^d <i>caraduana</i> Busck att.	Z9-12:OAc	Dix, 1984	D
<i>Endothenia</i> ^d <i>benausopsis</i> Meyrick att.	Z10-14:OAc	Ando, 1977	A
<i>Endothenia ericetana</i> Humpr. & Westw. att.	Z10-14:OAc + E10-14:OAc (1:1)	Priesner in Arn, 1986(a)	C
	E10-14:OAc	Mozūraitis, 1998	
<i>Endothenia gentianaeana</i> Hübner att.	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)	Booij, 1984(a)	C

	(9:1)	Capizzi in Arn, 1992	
<i>Endothenia ustulana</i> (= <i>carbonana</i>) Haworth <i>att.</i>	Z10-14:OAc	Arn, 1974	C
<i>Epiblema</i> ^a <i>confusana</i> H.-S. <i>att.</i>	E8,Z10-12:OAc + Z8,Z10-12:OAc (1:1)	Witzgall, 1996	C
<i>Epiblema desertana</i> Zeller <i>att.</i>	Z8-12:OAc	Roelofs, 1971(a)	C
<i>Epiblema foenella</i> L. <yomogi-nemushiga> <i>phe.</i>	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. <i>att.</i>	Z8,Z10-12:OAc	Witzgall, 1996	C
<i>Epiblema resumptana</i> Walker <i>att.</i>	Z9-12:OAc + E9-12:OAc (1:1)	Stevens, 1985	C
<i>Epiblema scudderiana</i> Clemens <i>att.</i>	Z8-12:OH	Roelofs, 1971(a)	C
<i>Epiblema scutulana</i> Denis & Schiffermüller <i>att.</i>	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. <i>att.</i>	E11-14:OAc	Daterman, 1977	
<i>Epinotia</i> ^a <i>aporema</i> Walsingham <i>phe.</i>	*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> Denis & Shiffermüller <hanno-memushiga> att.	E10,E12-14:OAc + Z10,Z12-14:OAc (1:1)	Witzgall, 1996	A
<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 conioγραμμα</i> Clarke <ohirugi-himeshinkui> phe.	*E9-12:OAc	Vang, 2005	A
<i>Eucosma delericta</i> Heinrich att.	E7,E9-12:OAc + Z7,E9-12:OAc (1:1)	Chisholm, 1985(a)	C
<i>Eucosma giganteana</i> Riley	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 + *Z5-12:OAc + *12:OAc (10:4:1:1:4) + other components	Underhill, 1987(b)	C
<i>Eucosmomorpha</i> ^a <i>albersana</i> Hübner	E9-12:OAc	Booij, 1984(a)	C

att.	+ Z9-12:OAc (9:1)		
<i>Eudemis</i> ^d att.	<i>porphyrana</i> Hübner Z10-14:OAc + E10-14:OAc (10:1)	Mozūraitis, 1998	C
<i>Exartema</i> ^d att.	(= <i>Olethreutes</i>) <i>appendiceum</i> Zeller E9-14:OAc	Steck, 1977(a)	C
<i>Exartema</i> att.	<i>fusticanum</i> McDunnough Z7-12:OH	Weatherston, 1974(a)	C
<i>Grapholita</i> ^b att.	<i>caeruleana</i> Walsingham E8,E10-12:OAc	Stevens, 1985	C
<i>Grapholita</i> att.	<i>compositella</i> F. E8,E10-12:OAc	Witzgall, 1996	C
<i>Grapholita</i> att.	<i>conversana</i> Walsingham E8,E10-12:OAc	Stevens, 1985	C
<i>Grapholita</i> phe.	<i>dimorpha</i> Komai <sumomohime-shinkui> <bokehime-shinkui> *Z8-12:OAc + *E8-12:OAc (4:1–2:3) (17:3) + other components	Mochizuki, 2003 Murakami, 2005	A
<i>Grapholita</i> att.	<i>endrosias</i> Meyrick <sehimofuri-himehamaki> E7-12:OAc	Ando, 1981	A
<i>Grapholita</i> phe.	<i>funebrana</i> Treitschke plum fruit moth Z8-12:OAc Z10-12:OAc + codling moth Z8-12:OAc + E8-12:OAc (25:1) + E10-12:OAc (1:1) *Z8-12:OAc + *E8-12:OAc (10:1) + other components	Granges, 1971 Arn, 1974 Arn, 1976(a) Biwer, 1978(b) Witzgall, 1996 Guerin, 1986(b)	B

<i>Grapholita</i> (= <i>Cydia</i>) <i>gemmiferana</i> Treischke <i>att.</i>	E8,E10-12:OAc	Hrdý, 1989 Tóth, 1992(d) Witzgall, 1996	C
<i>Grapholita inopinata</i> Heinrich <ringoko-shinkui> <i>phe.</i>	Z8-12:OAc *Z8-12:OAc + other components	Ando, 1977 Tanaka, 2007	A
<i>Grapholita janthinana</i> Duponchel <i>att.</i>	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 <i>att.</i>	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 <i>att.</i>	E8-12:OAc + Z8-12:OAc + Z8-12:OH (17:2:1)	Hillier, 2002	C
<i>Grapholita lobarzewskii</i> <i>phe.</i>	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 <i>att.</i>	E8,E10-12:OAc	Chisholm, 1985(a)	C
<i>Grapholita molesta</i> Busck Oriental fruit moth <nashihime-shinkui> <i>phe.</i>	U.S.A. *Z8-12:OAc Australia + *E8-12:OAc [25:1] U.S.A. + 12:OH (98:2:1000) U.S.A. + 12:OH (93:7:100) U.S.A. + Z8-12:OH (311:22:1) France (9:1)	Roelofs, 1969 Lacey, 1992 Beroza, 1973(c) Cardé, 1975(b) Cardé, 1975(c) Biwer, 1978(b)	A

	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	Mizukoshi, 2006	
		+ Z8-12:OH (85.5:5.5:9)		
		Z8-12:OAc	Olenici, 2007	
		+ E8-12:OAc		
		+ 12:OH (97:3:300)		
<i>Grapholita</i> sp. 1 att.		Z8-12:OAc	Ando, 1981	A
<i>Grapholita</i> sp. 2 att.		E8,E10-12:Ald	Chisholm, 1985(a)	
		+ E8,E10-12:OAc (10:1)		
<i>Grapholita</i> sp. 3 att.		E8-12:OAc	Chisholm, 1985(a)	
<i>Gravitarmata</i> ^a <i>margarotana</i> Heinemann <matsutobi-himehamaki>		*Z9-12:OAc	Löfstedt	A
		+ *E9-12:OAc	in Arn, 1992	
		+ *12:OAc (5:1:3)		

	phe.	+ other components		
<i>Gretchena</i> ^a pecan bud moth att.	<i>bolliana</i> Slingerland	Z8-12:OAc + E8-12:OAc + 12:OH (100:7:1000)	Gentry, 1975	D
<i>Gretchena</i> att.	<i>semialba</i> McD.	E11-14:Ald + Z11-14:Ald (19:1)	Sanders, 1993	D
<i>Griselda</i> ^a att.	<i>myrtilana</i> Hump. & Westw.	Z11-14:OH	Booij, 1984(a)	C
<i>Gypsonoma</i> ^a att.	<i>aceriana</i> Duponchel poplar shoot-borer	E10-12:OAc + E10-12:OH (3:1) (7:3)	Booij, 1984(a) Booij, 1984(d)	C
<i>Gypsonoma</i> att.	<i>dealbana</i> Frölich	Z11-14:OAc + E11-14:OAc (3:2) (1:10)	Frerot, 1982(a) Mozūraitis, 1998	C
		E11-14:OAc	Möttus in Arn, 1992	
		E10-12:OAc + E8-12:OAc (1:1)	Booij, 1984(a) Witzgall, 1996	
<i>Gypsonoma</i> att.	<i>minutana</i> Hübner <popura-himehamaki>	Z11-14:OAc + E11-14:OAc + 12:OAc (9:1:10)	Safonkin, 1988	A
		E10-14:OAc + Z11-14:OAc (10:1)	Mozūraitis, 1998	
<i>Gypsonoma</i> att.	<i>sociana</i> Haworth	E10-12:OAc E9-12:OAc + Z9-12:OAc (9:1)	Booij, 1984(a) Safonkin, 1988	C
<i>Hedya</i> ^d	(= <i>Aphania</i>) <i>auricristana</i> Walsingham	Z9-14:OAc	Ando, 1975	A

<gumioousutsuma-himehamaki> <i>att.</i>	+ Z11-14:OAc (9:1-7:3)	Nagano, 1979	
<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 <i>att.</i>	Z8,E10-12:OAc	Witzgall, 1996	C
<i>Hedya salicella</i> L. <i>att.</i>	E8,E10-12:OH	Olenici, 2007	A
<i>Hedya separatana</i> Kearfott	Z10-12:OAc	Reed, 1985(b)	C

<i>att.</i>				
<i>Latronympha</i> ^b <i>strigana</i> F.	Z8,Z10-12:OAc	Witzgall, 1996	C	
<i>att.</i>				
<i>Leguminivora</i> ^b <i>glycinivorella</i> Matsumura soybean pod borer <mame-shinkuiga>	*E8,E10-12:OAc + other components	Vang, 2006	A	
<i>phe.</i> in China	E8,E10-12:OAc + E10-12:OAc (10:1) or + E10-12:Ald (1:1)	Hu, 2012		
<i>Lobesia</i> ^d <i>aeolopa</i> Meyrick <hosobachibi-himehamaki>	Z7-10:OAc	Ando, 1975	A	
<i>att.</i>				
<i>Lobesia bicinctana</i> (= <i>bicincta</i> ?) Dup.	*Z9-12:OAc + another component	Frérot, 1990(b)	C	
<i>phe.</i>				
<i>Lobesia botrana</i> Denis & Shiffermüller European grapevine moth	*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	Roelofs, 1973 Buser, 1974; 1975 Guerin in Arn, 1992 Arn, 1988 El-Sayed, 1999	C	
<i>phe.</i>	≡7,Z9-12:OAc	Brückner, 1988		
	+ *E7-12:OAc + *E7,E9,Δ11-12:OAc + *Z7,E9,Δ11-12:OAc N	Witzgall, 2005		
<i>Lobesia</i> sp.	Z9-12:OH	Ando, 1977	A	
<i>att.</i>				
<i>Matsumuraeses</i> ^b <i>falcana</i> Walsingham podborer	*E8,E10-12:OAc + *E8-12:OAc (15:17)	Wakamura, 1985	A	

<nisemamesaya- himehamaki> phe.	+ other components + *E7,Z9-12:OAc (1:1:1)	Wakamura, 1986(b)	
<i>Matsumuraeses 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 purpurissatana</i> Heinrich att.	Z10,Z12-14:OAc or Z10,Z12-14:OH	Reed, 1985(b)	C
<i>Notocelia roborana</i> Denis & Shiffermüller phe.	*Z10-14:OAc + *Z8,Z10-12:OAc [19:5] + other components N	Witzgall, 1996	C
<i>Notocelia 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 trimaculana</i> Haworth att.	Z10,Z12-14:OAc	Witzgall, 1996	C
<i>Notocelia uddmanniana</i> L. phe.	Z10,E12-14:OAc *Z10,Z12-14:OAc + other components	Priesner in Arn, 1986(a) Witzgall, 1991(b)	C

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

<i>Pammene fasciana</i> L. att.	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 gallicana</i> Guenée att.	Z8-12:OAc	Sziráki, 1978(a)	C
	+ E8-12:OAc (1:1)	Witzgall, 1996	
<i>Pammene gallicolana</i> Lienig & Zeller att.	Z8-12:OAc	Sziráki, 1978(a); (b)	C
<i>Pammene giganteana</i> (= <i>inquilina</i>) Fletcher att.	Z8-12:OAc	Chambon, 1974	C
<i>Pammene insulana</i> Guenée att.	Z8-12:OAc	Sziráki, 1978(a)	C
<i>Pammene juniperana</i> att.	Z8-12:OAc + E8-12:OAc + Z8-12:OH + 12:OH	Mariani in Arn, 1986(a)	C
<i>Pammene nemorosa</i> Kuznetzov <nemorousa-himehamaki> att.	Z8-12:OAc	Ando, 1975	A
<i>Pammene obscurana</i> Stephens <usuguro-himehamaki> att.	Z8-12:OAc + Z8-12:OH (1:1)	Booij, 1984(a)	A
<i>Pammene populana</i> F. att.	Z8-12:OH	Booij, 1984(a)	C
<i>Pammene querceti</i> Gozmany att.	Z8-12:OAc	Sziráki, 1978(a); (b)	C
<i>Pammene regiana</i> Z. att.	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 <i>att.</i>	Z8-12:OAc + E10-12:OAc (1:1)	Sziráki, 1978(a) Witzgall, 1996	C
<i>Pammene splendidulana</i> Guenée <i>att.</i>	Z8-12:OAc	Sziráki, 1978(a)	C
<i>Pammene suspectana</i> Lienig & Zeller <i>att.</i>	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. <i>att.</i>	Z8-12:OAc	Ando, 1977	A
<i>Paralobesia</i> ^d (= <i>Endopiza</i>) <i>viteana</i> Clemens grape berry moth <i>phe.</i>	*Z9-12:OAc + *Z11-14:OAc (20:1) + other components	Roelofs, 1971(c) Witzgall, 2000	D
	Z9-12:OAc + E9-12:OAc (24:1)	Taschenberg, 1974	
<i>Pelochrista</i> ^a <i>scintillana</i> <i>randana</i> Kearfott <i>att.</i>	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 <i>att.</i>	Z7,E9-12:OAc	Wong, 1985(a)	C
<i>Petrova burkeana</i> Kearfott <i>att.</i>	E8,E10-12:OAc	Chisholm, 1985(a)	C
<i>Petrova luculentana</i> Heinrich <i>att.</i>	Z7-12:OH + Z7-12:OAc + E9-12:OAc	Dix in Arn, 1986(a)	C
<i>Petrova</i> (= <i>Retinia</i>) <i>metallica</i> Busck	Z7-12:OH	Dix in Arn, 1986(a)	C

metallic pitch nodule moth <i>phe.</i>	+ Z7-12:OAc E9-12:OAc Z7,E9-12:OAc *Z7,E9-12:OAc + other components	Stevens, 1985 Wong, 1985(a) Dix, 1988	
<i>Petrova piciolana</i> Dyar <i>att.</i>	Z9-12:OAc + E9-12:OAc (1:1)	Stevens, 1985	C
<i>Petrova (= Retinia) 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 roseoterminana</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 <i>phe.</i>	*Z8-12:OAc + *Z8-12:OH (4:1)	Underhill in Roelofs, 1982(a)	D

<i>Proteoteras willingana</i> Kearfott phe.	*Z8-12:OH + *Z8-12:OAc (9:1)	Underhill in Roelofs, 1982(a)	D
<i>Pseudexentera</i> ^a <i>mali</i> Freeman pale apple budworm phe.	*Z8,Z10-16:OAc Z8,Z10-16:OAc	Hill in Roelofs, 1982(a) Grant, 1991	D
<i>Pseudexentera maracana</i> Kearfott att.	Z8-12:OAc	Roelofs, 1971(a)	D
<i>Pseudexentera oregonana</i> Walsingham aspen leafroller phe.	*Z8-14:OAc + other components	Grant, 1991	D
<i>Pseudexentera spoliata</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>claustraliana</i> Saxesen <amimemon-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 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>Rhadinocolops</i> ^a <i>koenigianus</i> F. <sendan-himehamaki> att.	E8,E10-12:OAc	Vang, 2005	A
<i>Rhopobota</i> ^a <i>naevana</i> Hübner	Z9-12:OAc	Ando, 1977	A

blackheaded fireworm <kuronehaiiro-himehamaki> phe.	E8,E10-12:OH	Guerin in Arn, 1986(a)	
	*Z11-14:OAc + *Z11-14:OH + Z9-12:OAc (9:3:1)	Slessor, 1987	
	(0:49:1)	McDonough, 1987	
	(69:23:8)	Fitzpatrick, 1992	
<i>Rhopobota ustomaculana</i> Curtis <seshiro-himehamaki> att.	Z9-12:OH	Booij, 1984(a)	A
<i>Rhyacionia</i> ^a <i>adana</i> Heinrich att.	E9-12:OAc + E9-12:OH (9:1)	Grant, 1985	C
<i>Rhyacionia buoliana</i> Denis & Schiffermüller European pine shoot moth phe.	*E9-12:OAc + *E9-12:OH (10:1)	Smith, 1974 Gray, 1984(b)	C
<i>Rhyacionia busckana</i> Heinrich att.	E8,E10-12:OAc E9-12:OAc + E9-12:OH (9:1)	Stevens, 1980 Grant, 1985	C
<i>Rhyacionia bushnelli</i> Busck att.	Δ 9-10:OAc or Z9-12:OAc	Dix, 1984	C
<i>Rhyacionia duplana</i> Hübner att.	E9-12:OAc	Tóth in Arn, 1986(a)	B
<i>Rhyacionia duplana</i> <i>simulata</i> Heinrich <matsutsumaaka-shinmushi> att.	Z8,E10-12:OAc	Ando, 1987	A
<i>Rhyacionia frustrana</i> Comstock nantucket pine tip moth phe.	*E9-12:OAc + *E9, Δ 11-12:OAc (24:1) + other components	Hill, 1981(a)	C
	[17:1 – 23:1]	Asaro, 2001	
<i>Rhyacionia fumosana</i> Powell	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 eyespotted 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 sugarcane shoot borer <kanshanoshinkui-hamaki> phe.	*Z9-12:OAc + *E9,Δ11-12:OAc + E7,Δ9-10:OAc (100:10:1)	Kinjo, 1996	A
<i>Thaumatotibia</i> ^b (= <i>Cryptophlebia</i>) <i>batrachopa</i> Meyrick phe.	*Z8-12:OAc	Hall, 1984 La Croix, 1985	C
<i>Thaumatotibia</i> (= <i>Cryptophlebia</i>) <i>leucotreta</i> Meyrick false codling moth phe.	*E7-12:OAc *Z8-12:OAc + E8-12:OAc (1:1) + *E8-12:OAc (3:7-7:3) (1:8) + *12:OAc + other components	Read, 1974 Persoons, 1976(c); 1977 Bourdouxhe, 1982 Hall, 1984 La Croix, 1985 Newton, 1993 Zagatti, 1983(a) Attygalle, 1986 Bestmann, 1988(b)	C
<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) (larch-race)	E11-14:OAc E9-12:OAc *E11-14:OAc + other components	Roelofs, 1971(d) Baltensweiler, 1978 Guerin, 1984 Baltensweiler, 1988	B

(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> att.	E11-14:OAc or E9-12:OAc	Liska, 1990	A
<i>Zeiraphera isertana</i> F. att.	Z9-14:OAc + Z11-14:OAc (9:1)	Hrdý, 1989	C
<i>Zeiraphera unfortunana</i> Powell purplestriped shootworm phe.	*E9-12:OAc	Silk, 1988(a)	C

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

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

(15) [Galacticoidea] Nemusuga-joka

no species

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

<i>Homadaula anisocentra</i> Meyrick mimosa webworm <nemusuga> phe.	E11-14:OAc + E11-14:OH (1:1) *E11-14:OAc + other components	Song, 1978 Kuenen, 1990	A
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<i>Prochoreutis myllerana</i> F. <shiroheri-hamakimodoki> att.	E2,Z13-18:OH	Karalius, 2005	A
<i>Prochoreutis sehestediana</i> F. <atoshirosuji-hamakimodoki> att.	E3,Z13-18:OAc + E2,Z13-18:OH (1:1)	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>	Z7-12:Ald + Z7-12:OH (9:1)	Ando, 1981	A

att.			
<i>Emmelina</i> (= <i>Pterophorus</i>) <i>jezonica</i> Matsumura <hirugao-toriba> att.	Z9-12:Ald	Ando, 1981	A
<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>Nippopectia issikii</i> Yano <isshikibudou-toriba> att.	Z7-12:OAc	Ando, 1975	A
<i>Nippopectia 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. ?)	E11-14:OAc	Daterman, 1977	

<i>Oxyptilus tristis</i> Zeller <i>att.</i>	Z7-12:OAc + Z7-12:OH (1:1)	Tóth, 1992(d)	D
<i>Platyptilia carduidactyla</i> Riley artichoke plume moth <i>phe.</i>	*Z11-16:Ald	Klun, 1981	C
<i>Platyptilia ignifera</i> Meyrick <budouoo-toriba> <i>phe.</i>	*Z7-12:OAc + *Z9-12:OAc + another component	Fujii, 2010(a)	A
<i>Platyptilia jezoensis</i> Matsumura <odamaki-toriba> <i>att.</i>	Z11-16:OAc + Z11-16:Ald (9:1)	Ando, 1981	A
<i>Platyptilia</i> (= <i>Cnaemidophorus</i>) <i>rhododactyla</i> Denis & Schiffermüller <chousen-toriba> <i>att.</i>	Z11-14:Ald	Frerot, 1985	A
<i>Platyptilia williamsii</i> Grinnell calendula plume moth <i>att.</i>	Z11-16:Ald	Haynes, 1987	C
<i>Pselnophorus vilis</i> Butler <fuki-toriba> <i>att.</i>	Z9,E11-14:Ald + Z9,E11-14:OAc (9:1)	Ando, 1987	A
<i>Pterophorus tenuidactylus</i> Fitch. <i>att.</i>	Z7-12:OAc	Roelofs, 1971(a)	C
<i>Stenuptilia paludicola</i> <i>att.</i>	Z9-14:OH + Z9-14:Ald (1:1)	Tóth, 1992(d)	C
<i>Trichoptilus lobidactylus</i> Fitch. <i>att.</i>	E11-14:OAc + Z11-14:OAc (19:1)	Sanders, 1993	C

(21) [Copromorphoidea] Marubashinkuiga-joka
(Carposinidae) Shinkuiga-ka

<i>Carposina coreana</i> <sanshuyu-shinkui>	Z7-20:11-one + Z7-23:H (1:4)	Fujii, 2013(a)	A
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	att.			
<i>Carposina maritima</i> Ponomarenko <kousuguro-shinkui> att.	Z7-20:11-one	Nasu, 2010	A	
<i>Carposina niponensis</i> Walsingham <nipponshiro-shinkui> att.	Z7-20:11-one	Nasu, 2010	A	
<i>Carposina sasakii</i> Matsumura (= <i>niponensis</i>) peach fruit moth <momonohime-shinkui> phe.	*Z7-20:11-one (=Z13-20:10-one) + *Z7-19:11-one (=Z12-19:9-one) (20:1) + another component	Tamaki, 1977(a) Honma, 1978	A	
in Korea	*Z7-20:11-one + another component	Han, 2000		
<i>Coscinoptycha improbana</i> Meyrick Australian guava moth phe.	*Z7-18:11-one (=Z11-18:8-one) + *Z7-19:11-one (=Z12-19:9-one) + *Z7-23:11-one + *Z7-23:H (235:15:100:650)	Gibb, 2006(a)	D	
<i>Heterocrossa rubophaga</i> Dugdale New Zealand raspberry bud moth Phe.	*Z7-19:11-one + *Z7-23:H (1:1)	Foster, 2000 Twidle, 2020	D	
<i>Meridarchis excisa</i> Walsingham <kobushiro-shinkui> Att.	Z7-20:11-one	Mizukoshi, 2006	A	

(22) [Hyblaeoidea] Sesarimodokiga-joka

no species

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

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

(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	Landolt, 1982 Leal, 2005	A
	*Z11,Z13-16:Ald + *Z3,Z6,Z9,Z12,Z15-23:H + other components	Kuenen, 2010	

<i>Tegulifera bicoloralis</i> Leech <maemon-shimameiga> att.	E11,Δ13-14:Ald + E11-14:Ald (9:1)	Ando, 1987	A
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(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
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(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
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<i>Acrobasis pyrivorella</i> Matsumura pear fruit moth <nashi-madarameiga> phe.	*Z9-15:OAc + *15:OAc (100:7)	Tabata, 2009	A
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<i>Acrobasis rufilimbalis</i> Wileman <himetobine-madarameiga> att.	Z9-15:OAc	Ando, 1977	A
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<i>Acrobasis vaccinii</i> Riley cranberry fruitworm phe.	*E8,Z10-15:OAc + *E9-15:OAc (25:1) + other components	McDonough, 1994	C
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<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)	Coffelt, 1979 Leal, 2005 Kuenen, 2010 Kanno, 2010	D
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	+ other components		
<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 phe.	Z11-16:OAc *Z11-16:OAc + Z3,Z6,Z9,Z12,Z15-25:H (1:10)	Hanula, 1984 Meyer, 1986 Miller, 2010	C
<i>Dioryctria aurantiella</i> Grote 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 phe.	*Z11-16:OAc + *Z7-14:OAc + *Z9-14:OAc + *Z9-14:OH (8:8:4:1) + other components	Lynch, 1984	C
Brazil strain	*Z11-16:OAc + other components E	Jham, 2005; 2007	
<i>Ephestia elutella</i> Hübner tobacco moth (cacao moth, chocolate moth) <cha-madaramaiga> phe.	*Z9,E12-14:OAc + *Z9,E12-14:OH (19:5) (5:1-1:1)	Brady, 1971(b) Kuwahara, 1973 Krasnoff, 1984	A
	Z9,E12-14:OAc	Soldán, 1983	
<i>Ephestia</i> (= <i>Anagasta</i>) <i>kuehniella</i> Zeller Mediterranean flour moth <sujikona-madaramaiga> phe.	*Z9,E12-14:OAc + *Z9,E12-14:OH (14:3)	Kuwahara, 1971(b) Kuwahara, 1973	A
<i>Ephestiodes infimella</i> Ragonot	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. <i>att.</i>	Z7-14:OAc + Z10-16:OAc (1:1)	Kovalev, 1987	C
<i>Eurythmia hospitella</i> Zeller <i>att.</i>	Z9,E12-14:OAc	Steck, 1977(a)	D
<i>Euzophera batangensis</i> Caradja persimmon bark borer <kurofutamon-madaramaiga> <i>phe.</i>	*Z9,E12-14:OH (major) + *Z9-14:OH E *Z9,E12-14:OH + another component	Kalinová, 2006 Wen, 2009	A
<i>Euzophera bigella</i> <i>att.</i>	Z9-14:OH + Z9-14:OAc (3:1)	Maini in Arn, 1986(a)	C
<i>Euzophera punicaella</i> M. <i>phe.</i>	*Z9,E12-14:OH + *Z9,E12-14:OAc (4:1) E	Bestmann, 1993(b)	C
<i>Euzophera pyriella</i> Yang <i>phe.</i>	*Z9,E12-14:OH + another component	Ma, 2014	C
<i>Euzophera semifuneralis</i> Walker American plum borer <i>phe.</i>	*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 <i>att.</i>	Z9-14:Ald + Z9-14:OH (20:1)	Tóth, 1992(d)	D
<i>Homoeosoma electellum</i> Hulst sunflower moth <i>phe.</i>	*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 <i>phe.</i>	*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	*Z9-14:OAc	Davis, 1993	D

sugar beet crown borer phe.	+ *Z11-16:OAc + *Z9-14:OH (100:21:8)		
<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 + *Z9-14:OH (2:3:3:2)	Bosson, 1982 Ma, 2015	D
<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 *Z9,E12-14:Ald + *Z9,E12-14:OH (5:1)	Guerin in Arn, 1986(a) Arn, 1992	D
<i>Myelois cribrella</i> Hübner <goma-madaramaiga> phe.	Z11-16:OAc *Z9,E12-14:OAc + *Z9-14:OAc + *Z11-16:OAc (2:1:1)	Subchev, 1981 Attygalle, 1988(b)	A
<i>Plodia interpunctella</i> Hübner Indian meal moth <noshime-madaramaiga> phe.	*Z9,E12-14:OAc Z9,E12-14:OAc + *Z9,E12-14:OH (8:3) + *Z9,E12-14:Ald N + *Z9-14:OAc (100:18:11:12) + another component (8:2:1:0.8)	Kuwahara, 1971(a) Brady, 1971(a) Dahm, 1971 Soldán, 1983 Kuwahara, 1973 Teal, 1995 Zhu, 1999 Hu, 2005	A
<i>Vitula edmandsae serratilineella</i> Ragonot driedfruit moth	*Z9,E12-14:OH + *Z9,E12-14:Ald (100:1) + other components	Struble, 1983(b)	D

phe.

+ *Z11-16:OH (20:1)

Scott, 1984

(Crambidae; Schoenobiinae) Tsutoga-ka ; Oomeiga-aka

<i>Scirpophaga excerptalis</i> Walker sugarcane tip borer <shiro-oomeiga> phe.	*E11-16:Ald + *Z11-16:Ald (4:1)	Wu, 1990(b)	A
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 biplagiialis</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> Herrich-Schäfer att.	Z11-16:Ald	Booij, 1984(c)	C
<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 stemborer 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	*Z11-16:Ald	Nesbitt, 1975(b)	A

rice stem borer <nika-meiga> <nikameichiu> phe.	+ *Z13-18:Ald (5:1) (9:2) + *Z9-16:Ald (50:6:5) + other components	Ohta, 1976 Beevor, 1977 Tatsuki, 1983 Mochida, 1984	
<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) *Z13-18:OAc + *Z11-16:OAc + *Z13-18:OH (7:8:42)	Wu, 1982 Wu, 1990(a)	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.	Me ₂ ,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	*Z11-16:Ald	Gibb, 2007(a)	D

red banded mango caterpillar phe.	+ *Z3,Z6,Z9-23:H (1:1) + other components		
<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	Hedin, 1986	D
	+ Z9-18:Ald (33:10:4:3)	Davis, 1986	
<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	Carney, 1982	D
	+ * Z11-16:Ald (10:1)	Santangelo, 2002 Batista-Pereira, 2002	
Brazilian and Columbian strains	+ *Z11-16:Ald (9:1-3:1)	Kalinová, 2005	N
	+ *Z9-16:Ald + *16:Ald (10:1:1:1)	Cortés, 2010	
		Silva, 2021	
<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)	Clark, 1990	A
		Sugie, 1994	

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

(Crambidae; Glaphyriinae) 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>	Z9-14:OAc	Konstantin in Arn, 1986(a)	A

<i>att.</i>	+ Z7-12:OAc (1:1)	Tóth, 1994(b)	
<i>Evergestis forficalis</i> L. garden pebble moth <na-nomeiga> <i>att.</i>	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> <i>att.</i>	Z11-16:Ald + Z9-14:Ald (20:1)	Tóth, 1994(b)	C
<i>Hellula undalis</i> F. cabbage webworm <haimadara-nomeiga> <i>phe.</i>	*E11,E13-16:Ald + Z11-16:Ald (100:3) + *Z11-14:OAc + *E11-16:Ald + *Z3,Z6,Z9-23:H (7:3:3:1)	Arai, 1982 Sugie, 2003 Vang, 2020	A

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

<i>Agathodes ostentalis</i> Geyer <benimon-nomeiga> <i>phe.</i>	*E10,E12-16:Ald + *E11-16:Ald (1:1)	Wakamura, 2004	A
<i>Bradina</i> sp. <i>att.</i>	E11-16:Ald	Ando, 1981	A
<i>Cnaphalocrocis medinalis</i> Guenée rice leaffolder moth <kobu-nomeiga> <i>phe.</i>	Z13-18:OAc	Kang, 1985	A
Indian	*Z11-16:OAc + *Z13-18:OAc (49:1) E	Ramachandran, 1990	
Philippine	(1:10) (1:10–20) + another component	Raina in Arn, 1997 Rao, 1993: 1995	
Japanese	*Z13-18:Ald + *Z13-18:OH + *Z11-18:Ald	Kawazu, 2000; 2002	

	+ *Z11-18:OH (100:36:11:24)		
Indonesia	(100:37:10:26)	Kawazu, 2009	
<i>Cnaphalocrocis pilosa</i> (= <i>Marasmia latimarginalis</i>) <hanenagakobu-nomeiga> att.	Z11-16:OAc + Z13-18:OAc (50:1)	Kawazu, 2001	A
<i>Conogethes pluto</i> Butler Alpinia stem borer phe.	*E10-16:Ald + *E10,E12-16:Ald + *Z3,Z6,Z9-23:H (100:2:3) + othre components	El-Sayed, 2013	C
<i>Conogethes</i> (= <i>Dichocrocis</i>) <i>punctiferalis</i> Guenée yellow peach moth <momonogomadara-nomeiga> phe.	*E10-16:Ald + Z10-16:Ald (9:1) + *Z3,Z6,Z9-23:H + * Z9-27:H N (9:1:10:100)	Konno, 1982 Xiao, 2012 Nam, 2022	A
<i>Cydalima</i> (= <i>Glyphodes</i>) <i>perspectalis</i> Walker box tree pyralid <tsuge-nomeiga> phe. In Korea	*Z11-16:Ald + *E11-16:Ald (4:1) + another component (5:1, 7:1)	Kawazu, 2007 Kim, 2013	A
<i>Desmia funeralis</i> Hübner grape leaffolder phe.	*Z11,Z13-16:Ald + *≡11-16:Ald + *Z11-16:Ald (3:1:1) + another component	Millar, 2002	D
<i>Diaphania angustalis</i> Snellen phe.	*E10,E12-16:Ald + *E10,E12-16:OH (9:1)	Ma, 2017	C
<i>Diaphania glauculalis</i> att.	E11-16:Ald + E10,E12-16:Ald	Wen, 2014	C
<i>Diaphania hyalinata</i> L. melonworm phe.	*E11-16:Ald + *E10,E12-16:Ald (5:4) + other components	Raina, 1986(a)	C
<i>Diaphania</i> (= <i>Palpita</i>) <i>indica</i> Saunders cotton caterpillar moth	*E11-16:Ald + *E10,E12-16:Ald (2:1)	Wakamura, 1998	A

<wataherikuro- nomeiga> <uri-nomeiga> phe. In Korea	+ another component (7:3)	Choi, 2009(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> att.	E11-16:OAc	Ando, 1977	A
<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	*E11-16:OAc	Zhu, 1987(a)	A

<nasu-nomeiga> phe.	+ another component	Kong, 1990 Attygalle, 1988(a)	
	+ *E11-16:OH (100:1)	Cork, 2001	
	+ *Z3,Z6,Z9-23:H (10:1) + another component	Vang, 2018	
<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	Wakamura, 2010 Yan, 2014	A
	+ *Z3,Z6,Z9-23:H (1:2 – 1:5)	McQuate, 2019	
<i>Palpita nigropunctalis</i> Bremer <maeakasukashi-nomeiga> phe.	*E11-16:Ald + *E11-16:OAc + *E11-16:OH (100:20:1)	Yan, 2018(c)	A
	N		
<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 <ooeguri-nomeiga> phe.	*E10,E12-16:Ald + *E11-16:Ald (19:1)	Wakamura, 2004	A
<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.	E11-14:OAc	Struble, 1977(a)	C

beet webworm att.				
<i>Marasmia patnalis</i> rice leaffolder phe.	*Z13-18:OAc + *Z11-16:OAc (24:1)	E	Ramachandran, 1990	C
<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 + *E11-14:OAc (97:3)		Klun, 1970 Klun, 1973 Cheng, 1989	C

	+ other components		Klun, 1977 Attygalle, 1987 Struble, 1987(a) Kalinová, 1994	
"E"-race	E11-14:OAc		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 + E11-14:OAc (1:1–7:13)		Klun, 1975 Anglade, 1984 Maini in Arn, 1986(a)	
	*E11-14:OAc + *Z11-14:OAc (13:7)		Klun, 1979(a) Buechi, 1982	
maize race mugwort and hop races	*Z11-14:OAc *E11-14:OAc		Pelozuelo, 2004	
<i>Ostrinia obumbratalis</i> Lederer <i>att.</i>	Z11-14:OAc + E11-14:OAc (1:1)		Klun, 1972	C
<i>Ostrinia orientalis</i> Mutuura & Munroe <onamomi-nomeiga> <i>phe.</i>	*Z11-14:OAc + *E11-14:OAc (98:2) + another component		Ishikawa, 1999(b) Fu, 2004	A
<i>Ostrinia palustralis</i> Hübner <yuugumo-nomeiga> <i>phe.</i>	*E11-14:OAc + *Z11-14:OAc (99:1) + another component		Huang, 1998(b)	A
<i>Ostrinia scapulalis</i> Walker adzuki bean borer <azuki-nomeiga> <i>phe.</i> Z-type	*Z11-14:OAc + *E11-14:OAc (97:3) + another component		Huang, 1997	A
E-type		(1:99)	Huang, 2002 Tabata, 2003	

I-type	(36:64)		
<i>Ostrinia zaguliaevi</i> Mutuura & Munroe butterbur borer <fuki-nomeiga> 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> att.	Z11-14:Ald + Z11-14:OAc (9:1)	Ando, 1981	A
<i>Paliga minnehaha</i> Pryer <maebeni-nomeiga> att.	E11-14:OAc	Ando, 1981	A
<i>Phlyctaenia coronata tertialis</i> Guenée att.	Z9-12:OAc	Reed, 1985(b)	C
<i>Pyrausta aurata</i> Scopoli <hakka-nomeiga> att.	E11-14:OAc	Maini in Arn, 1986(a) Stockel, 1977 Mozūraitis, 1998	A
<i>Pyrausta cingulata</i> att.	E11-14:OAc + Z11-14:OAc (1:1)	Arn in Arn, 1986(a)	C
<i>Pyrausta fodinalis</i> Lederer att.	E10,E12-14:OAc	Reed, 1985(b)	C
<i>Pyrausta machaeralis</i> Walker phe.	*E11-14:OAc + *Z11-14:OAc (24:1)	Qian, 2024	C
<i>Pyrausta ochosalis</i> att.	E11-14:OAc	Roelofs, 1971(a)	C
<i>Pyrausta ostrinalis</i> Hübner	E11-14:OAc	Bûda, 1987	C

att.			
<i>Pyrausta panopealis</i> Walker perilla leaf pyralid moth <benifuki-nomeiga> phe.	*E11-14:OAc + *Z11-14:OAc N	Kang, 1995	A
<i>Pyrausta purpuralis</i> L. att.	E11-14:OAc + Z11-14:OAc (3:2)	Anglade in Arn, 1986(a) Frerot, 1982(a)	C
<i>Pyrausta</i> (= <i>Ecpyrrhorhoe</i>) <i>rubiginalis</i> Hübner <akamyaku-nomeiga> att.	Z11-14:OAc + E11-14:OAc + 12:OAc (7:3:40)	Hrdý, 1979	A
<i>Sitochroa verticalis</i> L. <kuromyaku-nomeiga> att.	E9-12:OAc + E9-12:OH	Tóth, 1994(b) Roehrich in Arn, 1986(a)	A
<i>Sufetula sunidesalis</i> Walker <shirosujieguri-nomeiga> att.	Z11-16:Ald + Z9-16:Ald (19:1)	Kohno, 2014	A

(25) [Calliduloidea] 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	Bestmann, 1982(b) Priesner, 1984(d)	C

	+ *Z5,E7-12:OH (3:2)	Kovalev, 1993	
	+ other components	Rudziński, 2022	
<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 superans</i> Butler larch caterpillar moth <tuga-kareha> phe.	*Z5,E7-12:Ald + other components	Kong, 2007(b)	A
<i>Dendrolimus superans</i> <i>sibiricus</i> Butler Siberian moth phe.	Z5,E7-12:Ald + Z5,E7-12:OH + other components	Klun, 2000	B
	*Z5,E7-12:Ald + *Z5,E7-12:OH (1:1) + other components	Pletnev, 2000	
<i>Dendrolimus tabulaeformis</i> Tsai & Liu Chinese pine caterpillar phe.	Z5,E7-12:OH + Z5,E7-12:OAc + Z5,E7-12:OPr (1:1:1)	Meng, 1983(b)	C
	*Z5,E7-12:OH + *Z5,E7-12:OAc + *Z5,E7-12:OPr (20:20:1)	Kong, 2012(a)	
<i>Gastropacha quercifolia</i> L. lappet moth <birodo-kareha>	*Z5-12:Ald + *Z5-12:OH + another component E	Bestmann, 1993(d)	B

	phe.			
<i>Malacosoma americanum</i> F.		*E5,Z7-12:Ald	Roelofs	C
eastern tent caterpillar		+ *Z5,E7-12:OH	in Arn, 1986(a)	
	phe.			
		+ *E5,Z7-12:OH (10:1–1:1)	Kochansky, 1996	
<i>Malacosoma californicum</i> Packard		*Z5,E7-12:Ald	Underhill, 1980	C
western tent caterpillar				
	phe.			
<i>Malacosoma disstria</i> Hübner		*Z5,E7-12:OH	Chisholm, 1980(a)	C
forest tent caterpillar		+ *Z5,E7-12:Ald (10:1)		
	phe.			
		Z5,E7-12:Ald	Chisholm, 1982	
		+ Z5,Z7-12:Ald		
		+ Z7-12:Ald (10:1:1)		
		(100:1:10)	Schmidt, 2003	
<i>Malacosoma neustria</i> L.		*E5,Z7-12:Ald	Konyukhov, 1988	A
lackey moth		+ *E5,Z7-12:OH (8:5)	Rotundo, 2004	
<obi-kareha>		+ other components		
	phe.			

(27) [Drepanoidea] Kagibaga-joka
(Drepanidae) Kagibaga-ka + (Thyatiridae) Togaribaga-ka

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

<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>Agriopsis 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>Agriopsis marginaria</i> F. att.	Z3,epo6,Z9-19:H + Z3,Z6,Z9-19:H (10:3)	Hansson, 1990(b)	C
	Z3,epo6,Z9-19:H (6 <i>S</i> ,7 <i>R</i>)-isomer + Z3,Z6,Z9-19:H (10:3)	Szöcs, 1993(b)	
<i>Alcis</i> ^e <i>angulifera</i> Butler <nakausu-edashaku> att.	epo3,Z6,Z9-19:H (3 <i>S</i> ,4 <i>R</i>)-isomer	Ando, 1993 Ando, 1997	A
<i>Alcis</i> (= <i>Boarmia</i>) <i>repandata</i> L. att.	Z6,Z9-19:H + Z3,Z6,Z9-19:H (2:1-1:1) or + Δ1,Z3,Z6,Z9-19:H (2:1-1:1)	Bogenschütz, 1985 Subchev, 1986(a)	C
<i>Alsophila</i> ^a <i>japonensis</i> Warren <shiroobi-fuyushaku> att.	Z3,Z6,Z9-19:H	Ando, 1993	A
<i>Alsophila pometaria</i> Harris fall cankerworm moth phe.	*Z3,Z6,Z9-19:H + *Z3,Z6,Z9,E11-19:H (1:2) or + *Z3,Z6,Z9,Z11-19:H (1:6)	Wong, 1984(a); (b)	C
<i>Alsophila quadripunctata</i> Esper att.	Z3,Z6,Z9-19:H + Z6,Z9-19:H (1:1)	Szöcs, 1984	C
<i>Anacamptodes</i> ^e <i>humaria</i> Guenée phe.	*epo6,Z9-19:H (6 <i>R</i> ,7 <i>S</i>)-isomer	Millar, 1991(a)	D
<i>Anavitrinella</i> ^e <i>pampinaria</i> Guenée att.	epo3,Z6,Z9-19:H + Z3,epo6,Z9-19:H (19:1) (6 <i>S</i> ,7 <i>R</i>)-isomer	Millar, 1990(c)	D
<i>Anisodes</i> ^c sp. att.	E11-16:OAc + E11-16:Ald (7:3)	Mazomenos, 1994	C
<i>Anticlea</i> ^d <i>vasiliata</i> Guenée	Z3,Z6,Z9-21:H	Millar, 1991(c)	D

att.			
<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 + another component Korean strain 1 (3 <i>R</i> ,4 <i>S</i>):(3 <i>S</i> ,4 <i>R</i>) = 9:1 Korean strain 2 (3 <i>R</i> ,4 <i>S</i>):(3 <i>S</i> ,4 <i>R</i>) = 5:5	Becker, 1983 Becker in Arn, 1986(a) Becker, 1990 Cossé, 1992 Choi, 2012	B
<i>Ascotis selenaria cretacea</i> Butler Japanese giant looper mugwort looper <yomogi-edashaku> phe.	epo3,Z6,Z9-19:H *epo3,Z6,Z9-19:H (3 <i>R</i> ,4 <i>S</i>)-isomer + another component + *Z3,Z6,Z9-19:H (100:5–100:1)	Ando, 1993 Ando, 1997 Witjaksono, 1999	A
<i>Biston</i> ^e <i>robustum</i> Butler giant geometrid moth <tobimonoo-edashaku> phe.	*epo6,Z9-19:H (6 <i>S</i> ,7 <i>R</i>)-isomer + *Z3,epo6,Z9-19:H (9:1) + other components	Yamamoto, 2000	A
<i>Bupalus</i> ^e <i>piniarius</i> L. phe.	Z6,Z9-19:H *tepo4,Z6,Z9-19:H (4 <i>S</i> ,5 <i>S</i>)-isomer + other components	Bestmann, 1982(a) Chittamuru in Pherobase	C
<i>Cabera</i> ^e <i>erythemaria</i> Guenée att.	Z3,Z6,epo9-19:H (9 <i>S</i> ,10 <i>R</i>)-isomer + (9 <i>R</i> ,10 <i>S</i>)-isomer (1:1)	Wong, 1985(b)	C
<i>Caripeta</i> ^e <i>angustiorata</i> Walker att.	Z3,Z6,Z9-19:H + Z3,epo6,Z9-19:H (1:1)	Millar, 1990(a)	D
<i>Caustoloma</i> ^e <i>flavicaria</i>	Z6,epo9-21:H	Kovalev, 1986	D

att.			
<i>Colotois</i> ^e <i>pennaria</i> L. phe.	*Z3,epo6,Z9-19:H + Z3,Z6,Z9-19:H (10:3)	Hansson, 1990(b)	B
	*Z3,epo6,Z9-19:H (6R,7S)-isomer + *Z3,Z6,Z9-19:H + Z3,Z6,Z9-21:H (10:3:10)	Szöcs, 1993(b)	
<i>Colotois pennaria</i> <i>ussuriensis</i> Bang-Haas <kaba-edashaku> att.	epo3,Z6,Z9-20:H or Z3,epo6,Z9-19:H Z3,epo6,Z9-20:H	Ando, 1993 Ando, 1995(a)	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 (9S,10R)-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 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	*Z3,epo6,Z9-18:H	Yao, 1991	A

tea looper <usujiro-edashaku> phe.	+ *Z3,Z6,Z9-18:H + another component N (3:2) (6 <i>S</i> ,7 <i>R</i>)-isomer E	Yang, 2016 Yu, 2017	
	+ *Z3,epo6,Z9-19:H (2:1:2)	Luo, 2017	
<i>Ennomos</i> ^e <i>subsignaria</i> Hübner elm spanworm phe.	*Z6,epo9-19:H (9 <i>S</i> ,10 <i>R</i>)-isomer + another component	Ryall, 2010	C
<i>Epelis</i> ^e <i>truncataria</i> Walker att.	epo3,Z6,Z9-17:H	Millar, 1990(c)	D
<i>Epirrhoe</i> ^d <i>sperryi</i> Herbulot phe.	Z3,Z6,Z9-19:H *Z3,Z6,Z9-19:H + other components	Wong, 1985(b) Millar, 1992(a)	C
<i>Epirrita</i> ^d <i>autumnata</i> Borkhausen <aki-namishaku> phe.	*Δ1,Z3,Z6,Z9-21:H	Zhu, 1995(b)	A
<i>Epirrita</i> <i>viridipurpurescens</i> Prout <midoriaki-namishaku> att.	Z3,Z6,Z9-21:H	Ando, 1993	A
<i>Erannis</i> ^e <i>defoliaria</i> Clerck mottled umber moth <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>	Z3,Z6,Z9-19:H	Ando, 1993	A

<i>Euchlaena</i> ^e <i>madusaria</i> Walker att.	Z6,epo9-19:H (9 <i>S</i> ,10 <i>R</i>)-isomer + (9 <i>R</i> ,10 <i>S</i>)-isomer (1:1)	Millar, 1991(a)	D
<i>Eufidonia</i> ^e <i>convergaria</i> Walker phe.	*Z3,Z6,Z9-19:H + *Z3,epo6,Z9-19:H (6 <i>S</i> ,7 <i>R</i>)-isomer (1:1)	Millar, 1990(a)	D
<i>Eulithis</i> ^d <i>testata</i> L. <kimadara-namishaku> att.	Z3,Z6,Z9-20:H or Z3,Z6,Z9-21:H + epoxydienes	Wong, 1985(b)	A
<i>Eupithecia</i> ^d <i>abietaria</i> Götze 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</i> <i>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) Millar, 1991(b)	C
<i>Eupithecia</i> <i>assimilata</i> Doubleday currant pug moth phe.	*Z3,Z6,epo9-21:H (9 <i>S</i> ,10 <i>R</i>)-isomer + other components	Campbell, 2007	C
<i>Eupithecia</i> <i>subnotata</i> Hübner att.	Z3,Z6,Z9-19:H	Szöcs, 1987	C
<i>Eupithecia</i> <i>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 Yamakawa, 2011(a)	A

<i>Hydriomena</i> ^d <i>furcata</i> Thunbery <yanagi-namishaku> att.	E9-12:OAc	Liska, 1990	A
<i>Hydriomena</i> <i>ruberata</i> Freyer att.	Z11-16:OAc	Frérot, 1987(a)	C
<i>Hypagyrtis</i> ^e <i>piniata</i> att.	Z3,Z6,Z9-19:H + Z3,epo6,Z9-19:H (6 <i>S</i> ,7 <i>R</i>)-isomer (10:1)	Underhill in Arn, 1986(a)	D
<i>Idaea</i> ^c <i>aversata</i> L. <ezoki-himeshaku> phe.	*Z9,Z11-14:OAc + E9,Z11-14:OAc + *Z7,Z9-12:OAc (100:7:10)	Zhu, 1996	B
<i>Idaea</i> (= <i>Sterrha</i>) <i>biselata</i> Hufnagel <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</i> <i>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>Sterrha</i>) <i>imbecilla</i> Inoue <oosumonki-himeshaku> att.	Z7-12:OAc	Ando, 1977	A
<i>Idaea</i> (= <i>Sterrha</i>) <i>rubraria</i> Stgr. att.	E7,Z9-12:OAc	Szöcs, 1987	C
<i>Idaea</i> <i>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</i> <i>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</i> <i>fumosa</i> Inoue <usumon-fuyushaku> att.	epo3,Z6,Z9-21:H	Ando, 1993	A
<i>Inurois</i> <i>membranaria</i> Christoph <kuroten-fuyushaku> att.	epo3,Z6,Z9-21:H	Ando, 1993	A
<i>Itame</i> ^e <i>argillacearia</i> Packard blueberry spanworm phe.	*epo3,Z6,Z9-17:H (3 <i>R</i> ,4 <i>S</i>)-isomer + *Z3,Z6,Z9-17:H (1:1)	Silva, 2013	D
<i>Itame</i> <i>brunneata</i> Thunberg att.	epo3,Z6,Z9-17:H (3 <i>S</i> ,4 <i>R</i>)-isomer	Millar, 1990(c)	D
<i>Itame</i> <i>occiduaria</i> Packard att.	epo3,Z6,Z9-17:H (3 <i>R</i> ,4 <i>S</i>)-isomer + Z3,Z6,Z9-17:H (9:2)	Millar, 1990(c)	D
<i>Jodis</i> ^b <i>lactearia</i> L. <namigatausuki-aoshaku> att.	Z11-14:OAc + Z9,E11-14:OAc Z3,Z6,Z9,Z12-20:H	Priesner in Arn, 1986(a) Yamakawa, 2011(a)	A
<i>Lambdina</i> ^e <i>athasaria</i> Walker spring hemlock looper phe.	*Me7-17:H + *Me7,Me11-17:H (1:1) + another component (7 <i>S</i>)-isomer + 7,11-meso (25:8)	Gries, 1994(b) Duff, 2001	D
<i>Lambdina</i> <i>fiscellaria</i> <i>fiscellaria</i> Guenée eastern hemlock looper phe.	*Me5,Me11-17:H + *Me2,Me5-17:H (1:1) + other components Me5,Me11-17:H	Gries, 1991 Li, 1993(a)	D

	(5 <i>R</i> ,11 <i>S</i>)-isomer	Silk in Arn, 1997	
	Me2,Me5-17:H (5 <i>R</i>)-isomer	Silk in Arn, 1997	
<i>Lambdina fiscellaria</i> <i>lugubrosa</i> Hulst western hemlock looper phe.	*Me5,Me11-17:H + *Me2,Me5-17:H + *Me7-17:H (1:1:1)	Gries, 1993(b)	D
	Me5,Me11-17:H + Me2,Me5-17:H (1:1)	Evenden, 1995	
	Me5,Me11-17:H (5 <i>R</i> ,11 <i>S</i>)-isomer	Li, 1993(a)	
	+ Me2,Me5-17:H (5 <i>S</i>)-isomer + Me7-17:H (7 <i>S</i>)-isomer	Li, 1993(b)	
<i>Lambdina pellucidaria</i> Grote & Robinson pitch pine looper phe.	*Me7-17:H + *Me7,Me11-17:H (1:1) + another component	Maier, 1998	D
	(7 <i>S</i>)-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 (3 <i>S</i> ,4 <i>R</i>)-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 (= Hemerophila) <i>atrilineata</i> Butler mulberry looper <kuwa-edashaku> phe.	*Z3,Z6,epo9-18:H + *Z6,epo9-18:H (10:1) (9 <i>S</i> ,10 <i>R</i>)-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 + Z3,epo6,Z9-21:H (5:50:1) (6 <i>R</i> ,7 <i>S</i>)-isomer	Wong, 1985(b) Millar, 1991(c)	C
<i>Metanema</i> ^e <i>inatomaria</i> Guenée att.	Z3,Z6,epo9-19:H + Z3,Z6,epo9-20:H (4:1) (9 <i>R</i> ,10 <i>S</i>)-isomers or + Z3,Z6,Z9,E11-19:H (4:1)	Wong, 1985(b)	D
<i>Milionia</i> ^e <i>basalis pryeri</i> Druce <kiobi-edashaku> phe.	*epo3,Z6,Z9-19:H (3 <i>S</i> ,4 <i>R</i>)-isomer	Yasui, 2005	A
<i>Mnesampela</i> ^e <i>privata</i> Guenée autumn gum moth 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 (3 <i>S</i> ,13 <i>R</i>)-isomer	Gries, 1993(c) King, 1995	D
<i>Operophtera</i> ^d <i>bruceata</i> Hulst Bruce spanworm 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.	* $\Delta 1, Z3, Z6, Z9-19:H$	Roelofs, 1982(b) Bestmann, 1982(c) Albert, 1984 Knauf, 1984	C
<i>Operophtera fagata</i> Scharf. northern winter moth phe.	* $Z6, Z9-19:H$ + * $\Delta 1, Z3, Z6, Z9-19:H$ (10:1) + other components	Szöcs, 2004	C
<i>Operophtera occidentalis</i> att.	$\Delta 1, Z3, Z6, Z9-19:H$	Roelofs, 1982(b)	C
<i>Operophtera rectipostmediana</i> Inoue <ichimojifuyyu-namishaku> att.	$\Delta 1, Z3, Z6, Z9-19:H$	Yamamoto, 2008	A
<i>Operophtera relegata</i> Prout <kuroobifuyyu-namishaku> att.	$Z3, epo6, Z9-19:H$ or $Z3, Z6, epo9-19:H$ or $epo3, Z6, Z9-19:H$	Ando, 1993	A
	$Z3, Z6, epo9-19:H$ (9S, 10R):(9R, 10S) = 1:1	Qin, 1997	
<i>Ourapteryx</i> ^e <i>sambucaria</i> L. att.	$Z3, Z6, Z9-19:H$	Subchev, 1986(a)	C
<i>Pachyerannis</i> ^e <i>obliquaria</i> Motschulsky <kurosujifuyyu-edashaku> att.	$epo3, Z6, Z9-19:H$ (3R, 4S)-isomer	Qin, 1997	A
<i>Pachyligia</i> ^e <i>dolosa</i> Butler <atojiro-edashaku> att.	$Z3, Z6, epo9-21:H$ or $Z3, epo6, Z9-21:H$	Ando, 1993	A
<i>Pachyodes</i> ^b <i>superans</i> Butler <oo-aoshaku> att.	$Z3, Z6, Z9-20:H$	Ando, 1993	A
<i>Paleacrita</i> ^e <i>vernata</i> Peck spring cankerworm phe.	* $Z3, Z6, Z9-20:H$ + * $Z3, Z6, Z9-19:H$ + * $Z6, Z9-19:H$ (8:2:1)	Underhill in Arn, 1986(a) Millar, 1990(d)	D

<i>Pamphlebia</i> ^b <i>rubrolimbraria</i> <i>rubrolimbraria</i> Guenée <herigurotogari-aoshaku> phe.	*Z6,Z9,Z12-18:H + other components E	Yamakawa, 2009; 2011(a)	A
<i>Peribatodes</i> ^e <i>rhomboidaria</i> Denis & Schiffermüller phe.	*Z3,Z6,Z9-19:H + *Z6,Z9-19:3-one (5:1) (1:1–1:4)	Buser, 1985 Tóth, 1987	C
<i>Perizoma</i> ^d <i>grandis</i> Hulst att.	E11-14:Ald	Daterman, 1977	C
<i>Plagodis</i> ^e <i>alcoolaria</i> Guenée att.	Z3,Z6,Z9-20:H + Z3,epo6,Z9-20:H (6R,7S)-isomer (1:1)	Millar, 1991(c)	C
<i>Probole</i> ^e <i>alienaria</i> Herrich-Schäffer att.	Z3,epo6,Z9-19:H (6R,7S):(6S,7R) = 1:1	Landolt, 1996	D
<i>Probole</i> <i>amicaria</i> Herrich-Schäffer phe.	*epo3,Z6,Z9-19:H (3S,4R)-isomer + Z3,epo6,Z9-19:H (6R,7S)-isomer + *Z3,Z6,Z9-19:H (9:1:8)	Millar, 1990(b); (c)	D
<i>Prochoerodes</i> ^e <i>transversata</i> Drury large maple spanworm att.	Z3,Z6,epo9-19:H (9S,10R)-isomer + Z3,Z6,Z9-19:H (4:1)	Wong, 1985(b)	D
<i>Pseudocoremia</i> ^e <i>fenerata</i> Felder & Rogenhofer att.	Z6,epo9-19:H	Gibb, 2006(b)	D
<i>Pseudocoremia</i> <i>leucelaea</i> Meyrick att.	Z6,epo9-19:H	Gibb, 2006(b)	D
<i>Pseudocoremia</i> <i>suavis</i> Butler common forest looper phe.	*Z3,Z6,epo9-19:H + other components	Gibb, 2006(b)	D
<i>Rhynchobapta</i> ^e <i>cervinaria</i>	Z6,Z9-17:H	Ando, 1995(a)	A

<i>bilineata</i> Leech <futasujio-edashaku> att.			
<i>Sabulodes</i> ^e <i>caberata</i> Guenée omnivorous looper phe.	*Z6,Z9-19:H + other components	McDonough, 1986	D
<i>Scopula</i> ^c <i>personata</i> Prout <namisujichibi-himeshaku> att.	Z9,E11-14:OAc	Nagano, 1979	A
<i>Semiothisa</i> ^e <i>bicolorata</i> F. att.	Z3,Z6,Z9-17:H + Z3,epo6,Z9-17:H (10:1)	Millar, 1987	C
<i>Semiothisa cineraria</i> Bremer & Grey scholar tree looper phe.	*epo3,Z6,Z9-17:H + *Z3,Z6,Z9-17:H (6:1) (3R,4S)-isomer	Li, 1993 Kong, 2012(b)	C
<i>Semiothisa</i> (= <i>Chiasmia</i>) <i>clathrata</i> L. <himeamime-edashaku> phe.	*epo3,Z6,Z9-17:H (3R,4S)-isomer + *Z3,Z6,Z9-17:H (3:1)	Tóth, 1991(a); 1994(a)	A
<i>Semiothisa delectata</i> Hulst att.	Z3,epo6,Z9-17:H + Z3,Z6,Z9-17:H (10:1)	Millar, 1987	C
<i>Semiothisa marmorata</i> Ferguson att.	epo3,Z6,Z9-17:H (3R,4S)-isomer + Z3,Z6,Z9-17:H (9:1–1:1)	Gries, 1993(a)	C
<i>Semiothisa neptaria</i> Guenée phe.	*Z3,Z6,Z9-17:H N epo3,Z6,Z9-17:H (3R,4S):(3S,4R) = 2:1	Millar, 1987 Gries, 1993(a)	C
<i>Semiothisa sexmaculata</i> Packard phe.	*epo3,Z6,Z9-17:H (3R,4S)-isomer	Gries, 1993(a)	C
<i>Semiothisa signaria</i> <i>dispuncta</i> Walker phe.	*epo3,Z6,Z9-17:H + *Z3,Z6,Z9-17:H (10:1) or epo3,Z6,Z9-18:H + Z3,Z6,Z9-18:H (9:1)	Millar, 1987	C

<i>Semiothisa ulsterata</i> Pearsall att.	Z3,epo6,Z9-17:H (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 att.	Z3,Z6,Z9-19:H + Z3,Z6,epo9-19:H (4:1–1:1)	Wong, 1985(b)	D
<i>Synegia</i> ^e <i>esther</i> Butler <kurohaguruma-edashaku> att.	Z6,Z9-21:H	Ando, 1995(a)	A
<i>Tephrina</i> ^e <i>arenacearia</i> Hübner phe.	*epo3,Z6,Z9-17:H (3 <i>S</i> ,4 <i>R</i>)-isomer + Z3,epo6,Z9-17:H	Tóth, 1991(a); 1994(a)	C
<i>Thalassodes</i> ^b <i>immissaria</i> <i>intaminata</i> Inoue <sazanamishiro-aoshaku> phe.	*Z3,Z6,Z9,Z12-20:H	Yamakawa, 2009	A
<i>Theria</i> ^e <i>rupicapraria</i> phe.	*Z6,Z9-20:H + *Z6,Z9-21:H N + other components	Szöcs in Arn, 1997	D
<i>Trichopteryx</i> ^d <i>carpinata</i> Borkhausen att.	Z6,Z9-19:H	Oleander, 2019	C
<i>Trichopteryx polycommata</i> Denis & Schiffermüller barred tooth striped moth <hanenagakobane-namishaku> phe.	*Z6,Z9-19:H	Oleander, 2019	B

<i>Triphosa</i> ^d <i>haesitata</i> <i>affirmata</i> Guenée att.	Z9,Z12,Z15-18:OAc + Z3,Z6,Z9-20:H (1:20) or + Z3,Z6,Z9-21:H (1:20)	Wong, 1985(b)	C
<i>Wilemania</i> ^e <i>nitobei</i> Nitobe <nitobe-edashaku> att.	Z3,Z6,Z9,E11-19:H	Yamamoto, 2008	A
<i>Xanthorhoe</i> ^d <i>abrasaria aquilonaria</i> Herrich-Schifferrmüller att.	Z3,Z6,Z9-21:H + its epoxydienes (4:1) Z3,epo6,Z9-21:H (6 <i>S</i> ,7 <i>R</i>)-isomer + Z3,Z6,epo9-21:H (9 <i>S</i> ,10 <i>R</i>)-isomer (10:1)	Wong, 1985(b) Millar, 1991(c)	C
<i>Xanthorhoe ferrugata</i> Clerck att.	Z3,epo6,Z9-21:H (6 <i>S</i> ,7 <i>R</i>)-isomer	Millar, 1991(c)	C
<i>Xanthorhoe iduata</i> Guenée att.	Z3,Z6,Z9-21:H + its epoxydienes (1:1)	Wong, 1985(b)	C
<i>Xanthorhoe munitata</i> Hübner att.	epoxydienes of Z3,Z6,Z9-21:H Z3,epo6,Z9-21:H (6 <i>S</i> ,7 <i>R</i>)-isomer + Z3,Z6,Z9-21:H (10:1)	Wong, 1985(b) Millar, 1991(c)	C
<i>Xanthotype</i> ^e <i>sospeta</i> Drury att.	Z6,epo9-19:H (9 <i>S</i> ,10 <i>R</i>)-isomer	Millar, 1991(a)	D
<i>Zethenia</i> ^e <i>albonotaria</i> <i>nesiotis</i> Wehrlic <monshirotsamakiri-edashaku> att.	epo3,Z6,Z9-19:H (3 <i>S</i> ,4 <i>R</i>)-isomer	Qin, 1997	A

(Uraniidae) Tsubamega-ka

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

att.

(29) [Bombycoidea] Kaikoga-joka
(Endromidae)

Andraca bipunctata Walker *E11,E14-18:Ald Ho, 1996 D
tea cluster caterpillar
+ other components
phe.

(Bombycidae) Kaikoga-ka

Bombyx mandarina Moore *E10,Z12-16:OH Kuwahara, 1979 A
<kuwako> Daimon, 2012(b)

+ another component Kuwahara, 1984

*E3,Z13-18:OH Gao in Arn, 1997

Bombyx mori L. *E10,Z12-16:OH Butenandt, 1959; 1961 A
silkworm moth + other components Kasang, 1978(a); (b)
<kaiko>
phe.

Rondotia menciiana Moore *E10,Z12-16:OAc Dai, 1988 D
mulberry white caterpillar
phe.

Trilocha varians Walker *E10,Z12-16:Ald Daimon, 2012(a) D
<ichijikukasan> + *E10,Z12-16:OAc (5:2)

(Saturniidae = Attacidae) Yamamayuga-ka

Actias luna L. *E6,Z11-18:Ald Millar, 2016 C
luna moth + *E6-18:Ald (4:1)
phe. + another component

Antheraea pernyi Guérin-Méneville E6,Z11-16:OAc E Kaissling A
<saku-san> E6,Z11-16:Ald E in Arn, 1986(a)

*E6,Z11-16:Ald Bestmann, 1987
+ *E6,Z11-16:OAc
+ *E4,Z9-14:OAc (5:1:2) E

	+ other components		
<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 mojavensis</i> Tuskes & McElfresh	*E10,Z12-16:OAc (main) + *E10,Z12-16:OH	McElfresh, 1999(d)	D

phe.	+ *E10,Z12-16:Ald + other components		
<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 phe.	*E10,Z12-16:OAc + *E10,E12-16:OAc (2:1-1:2) + other components	McElfresh, 1999(b)	D
<i>Loepa sakaei</i> Inoue <haguruma-yamamayu> phe.	*E4,Z9-14:OAc	Yan, 2015(a)	A
<i>Lonomia obliqua</i> Walker phe.	*E11-16:OAc + *E11-16:OH (20:7)	Zarbin, 2007	D
<i>Nudaurelia cytherea cytherea</i> F. pine tree emperor moth phe.	*Z5-10:OisoVa	Henderson, 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>	E10,E12-16:Ald E E10,Z12-16:Ald E	Reed, 1987	A

att.				
<i>Hyloicus pinastri</i> L. <matsukuro-suzume> att.	E10,E12-16:Ald E10,Z12-16:Ald	E 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> <i>sangaica</i> Butler <hoshihime-houjaku> phe.	E10,Z12-16:Ald *E10,Z12-16:Ald		Daimon, 2012(b) Uehara, 2015 Uehara, 2016	A
<i>Pachysphinx modesta</i> Harris att.	Z10,E12-16:OAc		Reed, 1987	D
<i>Proserpinus flavofasciata</i> Walker att.	E10,E12-16:Ald		Reed, 1987	D
<i>Smerinthus cerisyi</i> Kirby att.	Z10,E12-16:OAc + Z10,E12-16:Ald (10:1)		Reed, 1987	C
<i>Smerinthus jamaicensis</i> Drury att.	Z10,E12-16:Ald + Z10,Z12-16:Ald (10:1)		Reed, 1987	C
<i>Smerinthus tokyonis</i> Matsumura <kouchi-suzume> phe.	*Z10,Z12-16:OAc + *E10,Z12-16:OAc + *Z10,E12-16:OAc [87:7:6]		Kosaki, 2021	A
<i>Sphinx drupiferarum</i> J. E. Smith phe.	*E10,Z12-16:Ald	N	Reed, 1987	C
<i>Theretra japonica</i> Boisduval <ko-suzume> att.	E10,Z12-16:Ald		Uehara, 2015	A
<i>Theretra oldenlandiae</i> <i>oldenlandiae</i> F. <sesuji-suzume> phe.	*E10,Z12-16:Ald + *E10,E12-16:Ald + *E11-16:Ald (4:3:3)		Uehara, 2012	A

(30) [Noctuoidea] [Yaga-joka](#)

(Notodontidae) Shachihokoga-ka

<i>Heterocampa guttivitta</i> Walker saddled prominent moth phe.	*≡11,Z13-16:Ald + *≡11-16:Ald (9:1) + another component	Silk, 2000	C
<i>Micromelalopha siversi</i> Staudinger phe.	*Z13,E15-18:Ald + other component	Liu, 2019; 2021	C
<i>Notodonta dromedarius</i> phe.	*Z11,Z13-16:Ald + other components	Bestmann, 1993(a)	C
<i>Notodonta torva</i> Hübner <tobimadara-shachihoko> phe.	*Z11,Z13-16:OAc + other components	Bestmann, 1991	B
<i>Schizura semirufescens</i> att.	Z7-12:OH	Roelofs, 1971(a)	D
<i>Thaumetopoea bonjeani</i> Powell phe.	*Z11,Z13-16:Ald + *Z11,Z13-16:OH (9:1)	Frérot, 1990(a)	D
<i>Thaumetopoea jordana</i> Stgr. phe.	*≡11,Z13-16:OH + *≡11,Z13-16:Ald + *≡11,Z13-16:OAc [5:4:1] N	Frérot, 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	Frérot, 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	Frérot, 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. figure-of-eight moth att.	Z8-13:OAc	Subchev, 2000(b)	D
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(Noctuidae; Acronictinae) Yaga-ka; Kenmonyaga-aka

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

(Noctuidae; Heliothinae) Yaga-ka; Tabakoga-aka

<i>Helicoverpa</i> (=Heliothis)	*Z11-16:Ald	Piccardi, 1977	A
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armigera Hübner
 old world bollworm
 cotton bollworm
 <oo-tabakoga>
 phe.

+ Z11-14:Ald (1:1)	Gothilf, 1978
+ Z9-14:Ald (100:1–100:5)	Rothschild, 1978
+ Z9-16:Ald (25:1)	Kehat, 1980
(10:1)	Buleza in Arn, 1992
+ *Z11-14:Ald (1:3)	Konjuchoy, 1983
+ other components	
+ *Z9-16:Ald (20:1–97:3)	Nesbitt, 1979(b); 1980(b)
+ other components	Dunkelblum, 1980 Kehat, 1990
+ *Z9-16:Ald	Zhang, 2012
+ *Z9-14:Ald (98.3:1.4:0.3)	
+ other components	

Helicoverpa (= *Heliothis*)

A

assulta Guenée
 oriental tobacco budworm
 <tabakoga>
 phe.
 Japan strain

*Z9-16:Ald	Sugie, 1991(b)
+ *Z9-16:OAc	
+ *Z11-16:Ald	
+ *16:Ald (100:15:3:8)	
+ other components	
Korea strain	
+ *Z11-16:OAc (100:30:5:1.5)	Cork, 1992
+ other components	Park, 1996
Z9-16:Ald	Park, 1994
+ Z11-16:Ald (25:1)	
Thailand strain	
+ Z9-16:OAc (7:5:1)	Cork, 1992
China strain	
Z9-16:Ald	Cork, 1992
+ Z11-16:Ald (20:1)	
(100:9.5)	Cai in Arn, 1997

<i>Helicoverpa gelotopoen</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) *Z11-16:Ald + *Z11-16:OAc + Z9-14:Ald (20:20:1) + other components	Rothschild, 1978 Rothschild, 1982	C
<i>Helicoverpa</i> (= <i>Heliothis</i>) <i>zea</i> Boddie corn earworm phe.	Z9-14:OFo E *Z11-16:Ald + *Z9-16:Ald (65:1–40:1) + other components + *Z11-16:OH + *16:Ald N + Z9-16:Ald + Z7-16:Ald + 16:Ald (87:3:2:8)	Priesner, 1975 Roelofs, 1974(c) Klun, 1979(b); 1980(b) Pope, 1984 Teal, 1984 Descoins, 1988 Lopez, 1990	C
<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 maritime adaucta</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	Z11-16:Ald	Steck, 1982(a)	C

att.

<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 + *Z11-16:OH + *Z11-16:OAc (10:5:1:1) wind tunnel + other components	Teal, 1981 Klun, 1982 Vickers, 2002 Nojima, 2018	C
<i>Heliothis virescens</i> F. tobacco budworm phe.	*Z11-16:Ald + *Z9-14:Ald (16:1) (15:1) + other components + Z11-16:OH (15:1:0.04) + *Z11-16:OH (100:5:1) Z9-14:OFo + Z9-14:Ald (32:1–16:1)	Roelofs, 1974(c) Tumlinson, 1975 Hendricks, 1989 Klun, 1979(b); 1980(c) Pope, 1982 Vetter, 1983 Ramaswamy, 1985 Teal, 1986 Shaver, 1989 Groot, 2018 Mitchell, 1978	C
<i>Protoschinia scutosa</i>	Z11-16:OH	Konstantin	A

Denis & Schiffermüller <yomogiga> att.	+ Z7-12:OAc + Z9-14:OAc (1:3:1)	in Arn, 1986(a) Li, 1993(d)	
<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) + Z11-16:OAc (3:4:2) (3:1:15) + Z11-16:OH + 16:OAc (8:4:4:1:2)	Steck, 1979(c) Hill, 1979(b) Causse in Arn, 1986(a) Wakamura, 1986(a) Buleza, 1991	A
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	*Z5-10:OAc + *Z9-16:OAc	Bestmann, 1978(a) Voronkova	B?

white-line dart moth phe.		in Arn, 1992	
	*Z7-12:OAc + *Z9-14:OAc (4:1-1:1)	Tóth, 1980	
	*Z7-12:OAc + *Z5-10:OAc (2:1) + other components	Arn, 1980	
	+ Z9-14:OAc (1:1:1)	Arn, 1983 Grodner, 2018	
	+ *Z9-14:OAc (1:1:1) + other components	Löfstedt, 1982, 1985(b), (c);1986(b) Hansson, 1990(a) Lebedeva, 1991 Svensson, 1997	
	+ *Z5-12:OAc (50:10:25:1)	Wu, 1995	
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)	Steck, 1979(d)	C
	+ Z5-12:OAc (100:10:1)	Steck, 1982(b)	
	+ Z7-12:Ald (100:10:1)	Steck, 1982(a)	
<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)	Underhill, 1977(a)	C
	+ Z7-14:OAc (100:1)	Steck, 1982(a)	
<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 acadensis</i> Bethune att.	Z9-14:OAc + Z11-16:OAc + Z9-14:Ald	Steck, 1976 Steck, 1982(a)	D
<i>Diarsia brunnea</i> Denis & Schiffermüller <miyamaaka-yaga> att.	Z11-16:OAc + Z11-16:Ald (3:1)	Subchev in Arn, 1992 Priesner in Arn, 1986(a)	A
<i>Diarsia dahlia</i> Hübner barred chestnut moth <ezoohbako-yaga> att.	Z7-14:OAc + Z9-14:OAc + Z5-14:OAc (10:2:1)	Priesner, 1985(a)	A
<i>Diarsia deparca</i> Butler <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) or + Z11,E14-16:OAc (3:1)	Steck, 1976 Chisholm, 1980(b)	A
in Canada	+ Z11-16:Ald (100:30:1)	Steck, 1982(b)	
in Europa	Z9-14:OAc	Priesner	

	+ Z11-16:OAc (1:1)	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) + Z7-14:OAc + Z9-14:OAc (100:1:10)	Struble, 1977(b) Struble, 1981(a)	C
<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 att.	Z5-10:OAc or + Z5-12:Ald (10:1)	Byers, 1981 Underhill, 1981	C
<i>Euxoa cicatricosa</i> Grote & Robinson att.	Z7-12:OAc	Steck, 1982(a)	C
<i>Euxoa dargo</i> Strecker att.	Z11-16:OAc + Z9-14:OAc (1:9)	Steck, 1979(c) Steck, 1982(a)	C
<i>Euxoa declarata</i> Walker att.	Z5-10:OAc or + Z5-12:Ald (10:1)	Byers, 1981 Underhill, 1981	C
<i>Euxoa distinguenda</i> Lederer att.	Z3-10:OAc	Priesner, 1988(b)	C
<i>Euxoa divergens</i> Walker att.	Z9-12:OAc + Z7-10:OAc + Z7-12:OAc (200:1)	Steck, 1979(c) Steck, 1982(a)	C
<i>Euxoa drewseni</i> Staudinger	*Z5-12:OAc	Struble, 1983(a)	C

	phe.	+ *Z7-14:OAc + *12:OAc (6:1:2) + other components		
<i>Euxoa eruta</i> Hübner att.		Z3-10:OAc + Z5-10:OAc (1:1)	Priesner, 1988(b)	C
<i>Euxoa flavicollis</i> Smith att.		Z9-14:OAc + Z7-12:OAc (1000:1)	Steck, 1979(c) Steck, 1982(a)	C
<i>Euxoa hastifera</i> Donzel att.		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 att.		Z5-10:OAc + Z5-12:OAc + Z7-12:OAc + Z9-12:OAc	Byers, 1987	C
<i>Euxoa lutulenta</i> Smith att.		Z9-14:OAc + Z11-16:OAc	Steck, 1976	C
<i>Euxoa maimes</i> Smith phe.		*Z9-14:OAc + *Z11-14:OAc + *Z7-14:OAc (200:2:1) + other components	Struble, 1985	C
<i>Euxoa manitobana</i> McDunough att.		Z9-14:OAc + Z7-14:OAc (4:1)	Steck, 1982(a)	C
<i>Euxoa messoria</i> Harris darksided cutworm phe.		Z11-16:OAc + Z7-16:OAc (40:1) or + Z7,Z11-16:OAc (9:1) + Z7-14:OAc	Struble, 1977(c) Steck, 1979(c)	C
		Z11,E14-16:OAc + Z7-16:OAc (25:1)	Chisholm, 1980(b)	
		Z11-16:OAc + Z7-16:OAc (20:1)	Ayre, 1982(b)	
		*Z11-16:OAc + *Z7-16:OAc	Struble, 1987(b)	

	+ *Z11-16:OH + Z11-16:Ald (1000:25:2:20) + other components		
<i>Euxoa mimallonis</i> Grote <i>att.</i>	Z5-10:OAc	Steck, 1982(a)	C
<i>Euxoa nigricans</i> L. <i>att.</i>	Z7-12:OAc + Z5-10:OAc (1:1)	Arn, 1983 Szöcs, 1983	C
<i>Euxoa obeliscoides</i> Guenée <i>att.</i>	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 <i>phe.</i>	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) + other components (400:4:1:1)	Struble, 1978(b) Ayre, 1982(b) Steck, 1980(b) Struble, 1980(a); 1981(b) Steck, 1982(b)	C
<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	Underhill, 1977(a)	C

	+ Z5-12:OAc (5:1:1–5:5:1) or + Z5-10:OAc (25:5:5:2)	Steck, 1978	
<i>Euxoa ridingsiana</i> Grote phe.	Z9-14:OAc + Z7-12:OAc	Steck, 1979(c)	C
	+ Z11-16:OAc (500:1:20)	Steck, 1982(a)	
	*Z9-14:OAc + *Z7-14:OAc + *Z7-12:OAc (40:2:1) + other components	Struble, 1985	
<i>Euxoa rockburnei</i> Hardwick att.	Z5-10:OAc + Z5-12:Ald (10:1)	Byers, 1981 Underhill, 1981	C
<i>Euxoa scandens</i> Riley white cutworm att.	Z7-12:OH	McLeod, 1982	C
<i>Euxoa seliginis</i> Duponchel att.	Z5-10:OAc	Nagy, 2023	C
<i>Euxoa servita</i> Smith att.	Z7-14:OAc + Z7-14:Ald	Steck, 1979(c) Steck, 1982(a)	C
<i>Euxoa siccata</i> Smith att.	Z5-12:OAc + Z7-12:OAc	Byers, 1987	C
<i>Euxoa tessellata</i> Harris striped cutworm att.	Z7-16:OAc + Z5-14:OAc (200:1) or + Z5-16:OAc (1:1)	Roelofs, 1970(a) Struble, 1982	C
<i>Euxoa tritici</i> L. att.	Z5-10:OAc	Nagy, 2023	C
<i>Euxoa tristicula</i> Morrison early cutworm att.	Z9-12:OAc + 12:OAc (1:3) + Z7-12:OAc + Z9-14:OAc (2:5:0.01)	Steck, 1979(a) Steck, 1982(a)	C
<i>Euxoa</i> sp. 1	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 + Δ1,Z3,Z6,epo9-21:H (8:1:1)	Hrudová, 2003 Ostrauskas, 2004	C C
<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)	Struble, 1976 Descoins, 1978 Landolt, 2003 Inomata, 2002	A
In Korea	(2:1)	Choi, 2009(b)	
<i>Rhyacia</i> (=Diarsia) <i>rubi</i> Viewg. att.	Z11-16:OAc	Terytze, 1987	C
<i>Sineugraphe disgnosta</i> Boursin <usuirokabasuji-yaga> att.	Z7-12:OH	Ando, 1981	A
<i>Spaelotis clandestina</i> Harris w-marked cutworm phe.	Z7-14:Ald *Z7-14:Ald + other components	Steck, 1979(c) Steck, 1982(c)	C
<i>Tmetolophota atristriga</i> Walker pink grass worm strain A phe.	*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</i> (=Amathes, <i>Rhyacia</i>) <i>baja</i> Schiffermüller dotted clay moth	Z9-14:OAc + Z7-12:OAc + Z5-12:OAc (1000:100:1)	Priesner, 1984(b)	C

<i>Xestia (=Amathes) candellarum</i> Staudinger	Z7-14:OAc E	Priesner, 1977	C
<i>att.</i>	+ Z5-14:OAc	Priesner in Arn, 1986(a)	
<i>Xestia (=Amathes) c-nigrum</i> L. spotted cutworm <shiromon-yaga>			A
<i>phe.</i>			
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	Z7-14:OAc + Z9-14:OAc (1:1)	Steck, 1979(c)	C
<i>att.</i>			
<i>Xestia ditrapezium</i> Denis & Schiffermüller <tanpo-yaga>	Z7-14:OAc + Z9-14:OAc + Z5-14:OAc (10:2:1)	Priesner, 1985(a)	B
<i>att.</i>			
<i>Xestia dolosa</i> Franclemont <i>phe.</i>	*Z7-14:OAc	Bjostad in Arn, 1986(a)	C
<i>Xestia rhomboidea</i> Esper <i>att.</i>	Z5-14:OAc + Z9-14:OAc (20:1)	Priesner, 1985(a)	C
<i>Xestia triangulum</i> Hufnagel <i>att.</i>	Z5-14:OAc	Priesner, 1985(a)	C
<i>Xestia xanthographa</i>	Z9-14:OAc	Booij, 1984(a)	C

	Denis & Schiffermüller <i>att.</i>	+ Z11-14:OAc (9:1)		
		Z11-16:OAc + Z11-16:Ald (10:3)	Priesner in Arn, 1986(a)	
<i>Xestia</i> sp. <i>att.</i>		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> <i>phe.</i>		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 <i>att.</i>		E9-14:OAc E	Priesner, 1975	D
<i>Agrochola circellaris</i> Hufnagel <i>att.</i>		Z11-16:OAc	Stan, 1992	C
<i>Agrochola helvola</i> L. <i>att.</i>		Z9-14:Ald + Z11-16:Ald (1:1)	Priesner in Arn, 1986(a)	C
<i>Agrochola humilis</i> Dennis & Shiffermüller <i>att.</i>		Z11-16:Ald + Z9-14:Ald (100:3)	Subchev, 1994	C
<i>Agrochola litura</i> L. <i>att.</i>		Z9-14:Ald + Z11-16:Ald (10:1)	Subchev, 1994 Priesner	C

			in Arn, 1986(a)	
<i>Agrochola lota</i> Clerck <i>att.</i>	Z9-14:OAc		Subchev, 1990	C
<i>Agrochola lychnidis</i> Dennis & Shiffermüller <i>att.</i>	Z9-14:Ald		Subchev, 1994	C
<i>Agrochola macilenta</i> Hübner <i>att.</i>	Z11-16:OAc		Tóth, 1979 Stan in Arn, 1992	C
<i>Aletia oxygala</i> Grote <i>att.</i>	Z11-16:Ald + Z11-16:OAc (20:1)		Chisholm, 1979 Steck, 1982(a)	C
<i>Amphipoea americana</i> Speyer <i>att.</i>	Z9-14:OAc + Z11-14:OAc (5:1)		Struble, 1987(c)	C
<i>Amphipoea fucosa</i> Freyer <kitashoubu-yotou> <i>att.</i>	Z9-14:OAc + Z11-14:OAc (9:1)		Peltotalo, 1986 Mizukoshi, 2006	A
<i>Amphipoea oculea</i> L. <i>att.</i>	Z9-14:OAc + Z11-14:OAc (10:1)		Priesner in Arn, 1986(a)	C
<i>Anarta melanopa</i> Thunberg <i>att.</i>	Z11-16:OAc + Z11-16:Ald		Linnaluoto, 1983	D
<i>Anarta myrtilli</i> L. <i>att.</i>	Z9-14:OAc + Z11-14:OAc		Austara in Pherobase	D
<i>Andropolia contacta</i> Walker <i>att.</i>	Z5-12:OAc + Z7-12:OAc (1:1)		Steck, 1977(a)	D
<i>Anhimella contrahens</i> Walker <i>att.</i>	Z11-16:Ald + Z11-16:OH (10:1)		Steck, 1982(a)	D
<i>Apamea anceps</i> Denis & Shiffermüller <i>att.</i>	Z11-16:Ald + Z11-16:OH (1:3)		Grihanov in Arn, 1992 Soroehinskaya in Arn, 1992	C
<i>Apamea indela</i> Smith <i>att.</i>	Z11-16:OAc + Z11-16:OH		Steck, 1982(b)	C

	+ Z11-16:Ald (200:50:1)		
<i>Apamea inordinate</i> Morrison <i>att.</i>	Z11-16:OAc + Z11-16:OH	Byers, 1987	C
<i>Apamea</i> (= <i>Amphipoea</i>) <i>interoceanica</i> Smith strawberry cutworm <i>att.</i>	Z9-14:OAc + E11-14:OAc (5:1)	Roelofs, 1970(a) Struble, 1987(c)	C
<i>Apamea monoglypha</i> Hufnagel <i>att.</i>	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> <i>att.</i>	Z11-16:OAc + Z11-16:OH	Stan in Arn, 1992	A
<i>Apamea sordens</i> Hufnagel <shiromimihaiiro-yotou> <i>att.</i>	Z11-16:OAc + Z11-16:OH + Z11-16:Ald	Subchev in Arn, 1992	A
<i>Apamea</i> (= <i>Amphipoea</i>) <i>velata</i> Walker <i>att.</i>	Z11-16:OAc	Roelofs, 1971(a)	C
<i>Axylia</i> (= <i>Rhyathia</i>) <i>putris</i> L. <mokume-yoto> <i>att.</i>	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> <i>phe.</i>	*Z11-16:Ald N	Kou, 1989; 1991	A
<i>Caradrina clavipalpis</i> Scopoli <i>att.</i>	Z7-12:OAc + Z9-14:OAc (4:1)	Szöcs, 1981	D
<i>Caradrina morpheus</i> Hufnagel <i>att.</i>	E9-12:OAc + Z9-12:OAc (1:4)	Arn, 1974 Brewer, 1985	D

	Z9-14:OAc + Z11-14:OAc (9:1)	Ghizdavu, 1985	
<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) <i>pisi</i> 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 + Z11-16:OAc	Booij, 1985 Subchev in Arn, 1992 Priesner in Arn, 1986(a)	B
<i>Dargida diffusa</i> Walker att.	Z11-16:OAc + Z11-16:Ald	Landolt in Pherobase	D
<i>Dargida terrapictalis</i> Buckett att.	Z11-16:OAc + Z11-16:Ald	Landolt in Pherobase	D

<i>Discestra</i> (=Scotogramma) <i>farnhami</i> Grote att.	Z11-16:Ald + Z9-14:Ald + Z9-16:Ald (100:1:1)	Steck, 1979(c) Steck, 1982(b)	C
<i>Discestra</i> (=Scotogramma) <i>trifolii</i> Hufnagel clover cutworm phe.	Z11-16:OAc + Z11-16:OH (9:1) + Z5-16:OAc (100:1) *Z11-16:OAc + *Z11-16:OH (9:1) Z11-14:OAc Z11,E14-16:OAc + Z11,E14-16:OH (10:1)	Roelofs, 1970(a) Subchev, 1981 Krivokhizhin, 1984 Struble, 1975(a) Subchev, 1987 Underhill, 1976 Ayre, 1982(a) Boness, 1978 Hrdý, 1979 Chisholm, 1980(b)	C
<i>Dypterygia scabriuscula</i> L. att.	Z11-16:OAc + Z9-14:Ald	Stan, 1992	C
<i>Egira pulla</i> Denis & Schiffermüller att.	Z9-14:OAc	Subchev in Arn, 1992	C
<i>Enargia infumata</i> Grote att.	Z11-16:OAc + Z9-14:OAc (500:1)	Steck, 1982(b)	C
<i>Euplexia lucipara</i> L. <akagane-yotou> att.	Z11-16:Ald + Z11-16:OAc (10:1)	Priesner in Arn, 1986(a) Subchev in Arn, 1992	A
<i>Eupsilia quadrilinea</i> Leech <yosujinokome-kiriga> att.	Z11-16:OH or E11-16:OH	Ando, 1977	A
<i>Eupsilia transversa</i> Hufnagel <ezomitsuboshi-kiriga> att.	Z11-16:OH	Priesner in Arn, 1986(a) Subchev in Arn, 1992	A
<i>Eupsilia tripunctata</i> Butler <mitsuboshi-kiriga> att.	Z11-16:OAc + Z11-16:Ald + Z11-16:OH (9:9:2)	Ando, 1981	A

<i>Faronta diffusa</i> Walker wheat head armyworm <i>att.</i>	Z11-16:OAc + Z11-16:Ald (9:1)	Underhill, 1977(a)	D
<i>Graphania bromias</i> Meyrick <i>phe.</i>	*Z9-14:OAc + *Z9-14:OH (2:1) + another component	Frérot, 1993(b)	D
<i>Graphania insignis</i> Walker <i>phe.</i>	*Z7-12:OH + *Z9-14:OH (1:1)	Frérot, 1993(b)	D
<i>Graphania mutans</i> Walker <i>phe.</i> 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 <i>phe.</i>	*Z7-12:OAc + *Z9-14:OAc (100:33) + other components	Frérot, 1993(b)	D
<i>Graphania ustistriga</i> Walker <i>phe.</i>	*Z7-12:OAc + *Z7-12:OH N	Frérot, 1993(b)	D
<i>Hada (=Polia) nana</i> Hufnagel <i>att.</i>	Z9-14:OAc E	Priesner, 1975	C
<i>Heliophobus reticulata</i> Gze. <i>att.</i>	Z9-14:OAc	Szöcs, 1983	C
<i>Helotropha reniformis</i> Grote <i>att.</i>	Z11-16:OAc + Z7-16:OAc (40:1) + Z11-16:OH (40:1:0.08)	Struble, 1977(c) Struble, 1987(b)	C
<i>Hemiglaea (=Blepharosis) 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)	Arn, 1983	C

	+ Z11-16:OAc (1:1:1)	Szöcs, 1983	
<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> Ochseneheimer <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> att.	Z11-16:Ald + Z9-16:Ald (19:1)	Grichanov in Pherobase Bulyginskaya in Pherobase	A
<i>Lacanobia subjuncta</i> Grote & Robinson phe.	*Z11-16:OAc + *Z11-16:Ald + *Z11-16:OH (3:1:0.08)	Landolt, 1998	C
<i>Lacinipolia lorea</i> Guenée att.	Z7-14:OAc	Roelofs, 1971(a)	D
<i>Lacinipolia renigera</i> Stephens bristly cutworm phe.	Z9-14:OAc *Z9-14:OAc + *Z9,E12-14:OAc (100:3)	Steck, 1982(a) Haynes, 1990	D
<i>Lacinipolia vicina</i> Grote att.	Z9-14:OAc + Z11-16:OAc + Z7-14:OAc (5:5:1)	Steck, 1982(a)	D
<i>Leucania anteoclara</i> Smith phe.	*Z11-16:OAc + *Z11-16:Ald + *Z9-14:OAc (10:4:1) + other components	Byers, 1997	C
<i>Leucania commoides</i> Guenée phe.	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 att.	Z9-14:OAc + Z11-14:OAc (19:1)	Roelofs, 1976(b)	C
<i>Leucania lithargyria</i> Esper att.	Z11-16:Ald	Grichanov in Arn, 1992	C
<i>Leucania multilinea</i> Walker att.	Z9-14:OAc + Z11-16:OAc + Z11-16:OH (4:4:1)	Struble, 1977(d)	C

<i>Leucania phragmitidicola</i> Guenée <i>att.</i>	Z9-14:OAc	Roelofs, 1971(a)	C
	Z11-16:OAc	Fleischer, 2005	
<i>Lithomoia solidaginis</i> Hübner <shirosuji-kiriga> <i>att.</i>	Z11-16:Ald	Underhill, 1977(a)	A
<i>Lithophane ornitopus</i> Hufnagel <i>att.</i>	Z9-14:OAc	Subchev, 1990	C
	+ Z9-14:Ald (10:1–2:1)		
<i>Lithophane thaxteri</i> Grote <i>att.</i>	Z9-14:OAc	Steck, 1979(c)	C
<i>Lithophane unimoda</i> Lintner <i>att.</i>	Z9-14:OAc	Steck, 1982(a)	C
<i>Mamestra biren</i> Goeze <i>phe.</i>	Z9-14:OAc	Priesner in Arn, 1986(a)	C
	+ Z11-14:OAc (20:1)		
	*Z9-14:OAc	Frerot, 1987(b)	N
	+ *Z7-14:OAc		
+ *14:OAc			
+ *Z9-14:OH [72:11:15:2]			
<i>Mamestra blenna</i> Hübner <i>att.</i>	Z11-16:OAc	Tóth, 1986(b)	C
	+ Z11-16:OH		
	+ Z11-16:Ald (10:3:1)		
<i>Mamestra brassicae</i> L. cabbage armyworm <yotouga> <i>phe.</i>	Z11-16:OAc	Ando, 1977	A
	*Z11-16:OAc	Bestmann, 1978(b)	
		Descoins, 1978	
		Hirai, 1978	
	+ other components	Struble, 1980(b)	
		Attygalle, 1987	
		Farine, 1981	
		Sugie, 1993	
+ Z11-16:Ald (100:0.1)	Subchev, 1984		
	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 <i>att.</i>	Z7-12:OAc + Z11-16:OAc + Z11-16:OH	Sherman in Pherobase	C
<i>Mamestra configurata</i> Walker bertha armyworm <i>phe.</i>	Z10-16:OAc *Z11-16:OAc + E11-16:OAc (17:3) + *Z9-14:OAc (19:1) (15:2) + *Z7-12:OAc (500:26:0.1) or + Z11-16:Ald (500:26:1)	Struble, 1975(b) Chisholm, 1975 Underhill, 1977(b) Landolt, 2003 Struble, 1984	C
	Z11-16:OAc + Z9-14:OAc + Z7-12:OAc + Z7-12:OH (250:13:20:10)	Byers, 1987	
<i>Mamestra contigua</i> Denis & Schiffermüller <i>att.</i>	Z11-16:OAc + Z11-16:OH (9:1)	Stan in Arn, 1992	C
<i>Mamestra</i> (= <i>Lacanobia</i>) <i>oleracea</i> L. <i>phe.</i>	*Z11-16:OAc + *Z11-16:OH [1:1] N (9:1)	Descoins, 1978 Kovalev in Arn, 1986(a) Sans, 1997	C
<i>Mamestra</i> (= <i>Melanchra</i>) <i>persicariae</i> L. <i>att.</i>	Z11-16:OAc	Möttus in Arn, 1986(a)	C

<i>Mamestra suasa</i> Denis & Schiffermüller 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	Z11-16:Ald	Subchev in Arn, 1992	C

att.			
<i>Mythimna farrago</i> F. att.	Z11-16:Ald	Tóth in Arn, 1986(a)	C
<i>Mythimna hamifera</i> Walker <uki-yotou> att.	Z11-16:Ald + Z9-16:Ald (19:1)	Kohno, 2014	A
<i>Mythimna pallens</i> L. att.	Z11-16:OAc + Z11-16:Ald (1:1)	Tóth in Arn, 1986(a) Subchev in Arn, 1992 Stan in Arn, 1992	C
<i>Mythimna turca</i> L. <futaobiki-yotou> att.	Z11-16:OAc + Z11-16:Ald + Z7-16:OAc	Subchev in Pherobase	A
	Z11-16:Ald + Z9-16:Ald (19:1)	Kohno, 2014	
<i>Mythimna vitellina</i> Hübner att.	Z11-16:OAc + Z11-16:Ald	Subchev in Arn, 1992	C
<i>Nedra ramosula</i> Guenée att.	Z11-14:OH	Roelofs, 1970(a)	D
<i>Nephelodes emmedonia</i> Cramer bronze cutworm att.	Z11-16:Ald	Underhill, 1977(a)	D
<i>Nephelodes minians</i> Guenée bronzed cutworm phe.	Z11-16:Ald + Z11-16:OAc	Steck, 1977(b)	D
	*Z11-16:Ald + *Z11-16:OAc (5:1)	Zhu, 2004	
<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.	Z11-16:OAc	Tóth, 1986(b)	C

<i>att.</i>	+ Z11-16:Ald (10:1–10:3)		
	+ Z11-16:OH	Subchev in Arn, 1992	
<i>Oligia latruncula</i> Denis & Schiffermüller	Z9-14:OAc + Z11-16:OAc (1:1)	Priesner, Tóth in Arn, 1986(a)	C
<i>att.</i>	+ Z11-14:OAc (17:20:3)	Guerin in Arn, 1986(a)	
<i>Oligia mactata</i> Guenée	Z11-16:OAc + Z11-16:OH (500:1)	Steck, 1982(a)	C
<i>att.</i>			
<i>Oligia strigilis</i> L.	Z11-16:OAc + Z9-14:OAc (9:1)	Szöcs, 1983	C
<i>att.</i>			
<i>Oligia versicolor</i> Borkhausen	Z9-14:OAc + Z11-14:OAc (10:1)	Priesner in Arn, 1986(a)	C
<i>att.</i>			
<i>Orbona fragariae pallidior</i> Warren <ichigo-kiriga>	Z11-16:Ald + Z9-16:Ald (19:1)	Kohno, 2014	A
<i>att.</i>			
<i>Orthodes crenulata</i> Butler	Z11-16:OAc	Roelofs, 1970(a)	D
<i>att.</i>			
<i>Orthodes vecors</i> Guenée	Z11-16:OAc	Roelofs, 1970(a)	D
<i>att.</i>			
<i>Orthosia angustipennis</i> Matsumura <hosoba-kiriga>	Z9,E12-14:OAc	Ando, 1977	A
<i>att.</i>			
<i>Orthosia carnipennis</i> Butler <akaba-kiriga>	Z9-14:OAc + Z11-16:OAc (1:1)	Ando, 1981	A
<i>att.</i>	+ Z11-14:OAc (9:1)	Mizukoshi, 2006	
<i>Orthosia cruda</i> Denis & Schiffermüller	Z11-16:OAc + Z9-14:OAc (9:1)	Booij, 1984(b)	C
<i>att.</i>	(20:1)	Tóth, 1993	
<i>Orthosia ella</i> Butler <yomogi-kiriga>	Z11-16:OAc	Ando, 1977	A

<i>att.</i>	+ Z11-16:Ald (1000:1)	Kakizaki in Pherobase	
<i>Orthosia evanida</i> Butler <kaba-kiriga> <i>att.</i>	Z9-14:Ald	Ando, 1981	A
<i>Orthosia gothica</i> L. <i>att.</i>	Z9-14:OAc + Z11-14:OAc (20:1)	Austara in Arn, 1986(a) Bradshaw, 1983	B
	+ Z9-14:OH + Z5-14:OAc (20:1:20:1)	Tóth, 1992(f)	
<i>Orthosia gothica</i> <i>askoldensis</i> Staudinger <kashiwa-kiriga> <i>att.</i>	Z9-14:Ald + Z9-14:OAc (9:1)	Ando, 1981	A
<i>Orthosia</i> (= <i>Monima</i>) <i>gracilis</i> Denis & Schiffermüller <i>att.</i>	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 <i>att.</i>	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> <i>att.</i>	Z9-14:Ald + Z11-16:Ald (9:1)	Booij, 1984(b)	A
<i>Orthosia limbata</i> Butler <shiroheri-kiriga> <i>att.</i>	Z9-14:OAc + Z9-14:Ald (9:1)	Ando, 1981	A
<i>Orthosia lizetta</i> Butler <kuromimi-kiriga> <i>att.</i>	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 att.	Z11-16:OAc + Z7-12:OAc (9:1) + Z11-16:Ald + Z11-14:Ald (200:1:1)	Steck, 1977(a) Steck, 1980(a)	C
<i>Polia bombycina</i> Hufnagel <oochairo-yotou> att.	Z9-14:OAc + Z9-14:Ald (1:1)	Tóth in Arn, 1986(a)	A
<i>Polia discalis</i> Grote att.	Z9-14:OAc + Z11-14:OAc (10:1)	Steck, 1982(a)	C
<i>Polia grandis</i> Boisduval att.	E9-14:OAc	Roelofs, 1970(a)	C
<i>Polia ingravis</i> Smith att.	Z9-14:OAc + Z11-16:OAc (100:1)	Steck, 1982(b)	C
<i>Polia lilacina</i> Harvey att.	Z7-14:OAc + Z9-14:OAc (10:1)	Steck, 1982(a)	C
<i>Polia nebulosa</i> Hufnagel <ooshirahoshi-yotou> att.	Z11-14:OAc + E11-14:OAc + Z9-14:OAc (100:10:3)	Subchev in Pherobase	A
<i>Polia</i> (= <i>Lacanobia</i>) <i>nevadae</i> Grote att.	Z11-16:OAc + Z11-16:Ald	Steck, 1982(a)	C
<i>Polia purpurissata</i> Grote att.	Z9-14:OAc + Z7-14:OAc (100:1)	Steck, 1982(a)	C
<i>Polia segregata</i> Smith att.	Z7-14:OAc + Z11-14:OAc (10:1)	Steck, 1979(c) Steck, 1982(a)	C
<i>Polia tacoma</i> Strecker att.	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> phe.			A

Japan strain	*Z11-16:OAc + *Z11-16:OH (4:1-9:1)	Takahashi, 1979; 1980	
China strain	(4:1) + *16:Ald + *Z11-16:OH (100:10:0.1) *Z11-16:Ald + another component	Lin in Arn, 1992 Zhu, 1987(c) Wei, 1985 Wang, 1997	
Taiwan strain	*Z11-16:OAc + *Z11-16:OH (2:1) + other components	Kou, 1992(b)	
Russian strain	*Z11-16:Ald + *Z11-16:OAc (20:1) + other components	Lebedeva, 2000(a)	
<i>Pseudaletia</i> (= <i>Mythimna</i>) <i>unipuncta</i> Haworth armyworm moth phe.	*Z11-16:OAc + other components Z11-16:OAc + Z11-16:OH (100:0.2) + Z11-16:Ald + Z9-14:OAc (100:0.2:0.05:0.01) + Z9-14:OAc + 16:OAc (1:5:2:1) + Z11-16:Ald + 12:OAc (9:1:1:2)	Hill, 1980 McDonough, 1980 Farine in Arn, 1992 Soldán, 1983 Steck, 1980(a) Steck, 1982(e) Guerrero, 1986 Rotundo in Arn, 1992	C
<i>Rhynchaglaea fuscipennis</i> Sugi <kurochamadara-kiriga> att.	Z7-12:OAc Z9-14:Ald	Ando, 1977 Ando, 1981	A
<i>Rhynchaglaea scitula</i> Butler <chamadara-kiriga> att.	Z9,E12-14:OH	Ando, 1977	A
<i>Sarcopolia</i> (= <i>Mamestra</i>)	Z11-16:OAc	Ando, 1977	A

<i>illoba</i> Butler <shiroshita-yotou> att.			
<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-Faghieh, 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) + *Z11-16:Ald + *12:OAc (9:1:1:2) + another component	Sreng, 1985 Rotundo in Arn, 1986(a) Mazomenos, 1989(a) Krokos, 2002	C
	(19:1)		
	(2:3:4:5)	Mazomenos, 1989(b)	
	(8.5:1:1:2)	Rotundo 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	*Z9-14:OAc	Beevor, 1975	A

African armyworm <afuricashirona-yotou> phe.	+ *Z9,E12-14:OAc (20:1) (99:1–9:1)	Wakamura, 2011	
	+ *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	Mochizuki, 1993	
	att. (7:3-3:7)	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.	*Z9-14:OAc + Z9,E12-14:OAc (24:1) + Z9-12:OAc (1:20) + Z9-12:OAc + Z7-12:OAc + Z11-16:OAc (81.61:0.25:0.45:17.69)	Sekul, 1967 Mitchell, 1976 Jones, 1979 Mitchell, 1985	C
	+ *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	
China strain	(25:1) + other components	Jiang, 2022	
China 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	
<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 <hasumon-yotou> phe.	*Z9,E11-14:OAc + *Z9,E12-14:OAc (9:1)	Tamaki, 1973; 1974(b)	A
<i>Spodoptera pectinicornis</i> Hampson <ukikusa-yoto>	Z7-12:OAc	Hai, 2002	C

<i>Spodoptera</i> (= <i>Prodenia</i>) <i>praefica</i> Grote western yellow-striped armyworm <i>phe.</i>	Z7-12:OAc *Z7-12:OAc + *Z9-14:OAc (50:1) + other components	Birch, 1977 Landolt, 2003	C
<i>Spodoptera sunia</i> Guenée <i>phe.</i>	*Z9-14:OAc (major) + *Z9-14:OH + *Z11-16:OAc + *Z9,E12-14:OAc N	Bestmann, 1988(a)	C
<i>Spodoptera triturrata</i> Walker <i>att.</i>	Z9-14:OAc (major) + Z9,E12-14:OAc + E9-14:OAc (17:3)	Campion, 1975 Blair, 1978	C
<i>Tholera cespitis</i> Denis & Schiffermüller <i>att.</i>	Z11-16:Ald	Subchev in Pherobase	D
<i>Trachea atriplicis</i> L. <shirosujiao-yotou> <i>att.</i>	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> <i>att.</i>	Z11-16:Ald + Z9-16:Ald (19:1)	Grichanov in Pherobase Bulyginskaya in Pherobase	A
<i>Xanthia lutea</i> Ström <i>att.</i>	Z9,E12-14:Ald	Steck, 1982(a)	C
<i>Xylena exoleta</i> L. <i>att.</i>	Z11-16:Ald	Subchev in Pherobase	C
<i>Xylena formosa</i> Butler <kibaramokume-kiriga> <i>att.</i>	Z11-16:Ald + Z9-16:Ald (19:1)	Ando, 1977 Kohno, 2014	A
<i>Xylena fumosa</i> Butler	Z11-16:Ald	Kohno, 2014	A

<ayamokume-kiriga> att.	+ Z9-16:Ald (19:1)		
<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

(Noctuidae; Cuculliinae)		Yaga-ka; Sedakamokume-aka	

<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 att.	Z11-16:OAc + Z11-16:Ald	Subchev in Arn, 1992	C
<i>Conistra torida</i> L.	Z11-16:OAc	Subchev	C

<i>att.</i>	+ Z11-16:Ald	in Pherobase	
<i>Conistra unimacula</i> Sugi <hoshiobi-kiriga> <i>att.</i>	Z11-16:OAc	Ando, 1977	A
<i>Conistra vaccinii</i> L. <i>att.</i>	Z7-14:OAc	Priesner in Arn, 1986(a)	C
<i>Conistra veronicae</i> Hübner <i>att.</i>	Z7-12:OAc	Subchev, 1990	C
<i>Copitarsia decolora</i> Guenée <i>phe.</i>	*Z9-14:OAc + *Z9-14:OH (100:1 – 4:1)	Rojas, 2006	D
<i>Copitarsia uncilata</i> Burgos & Leiva <i>phe.</i>	*Z9-14:OAc or *E9-14:OAc + other components N	Altamar-Varón, 2016	D
<i>Cucullia argentea</i> Hufnagel <aomonginsedakamokume> <i>att.</i>	Z7-12:OFo	Szöcs, 1981	A
<i>Cucullia chamomilliae</i> Denis & Schiffermüller <i>att.</i>	Z9-14:OAc + Z11-14:OAc (9:1)	Frerot, 1982(a)	C
<i>Cucullia florea</i> Guenée <i>att.</i>	Z9-14:OAc	Steck, 1982(a)	C
<i>Cucullia intermedia</i> Speyer <i>att.</i>	Z9-14:OAc	Roelofs, 1971(a)	C
<i>Cucullia lucifuga</i> Denis & Schiffermüller <miyamasedakamokume> <i>att.</i>	Z9-14:OAc + Z7-14:OAc + 14:OAc (8:1:1)	Frérot, 1987(a)	A
	12,12,12-F ₃ -Z9-12:OAc	Bengtsson, 1990	
<i>Cucullia lychnitis</i> Rambur <i>att.</i>	Z9-14:OH E	Priesner, 1975	C
<i>Cucullia omissa</i> Dod <i>att.</i>	Z9-14:OAc	Steck, 1982(a)	C
<i>Cucullia postera</i> Guenée <i>att.</i>	Z9-14:OAc + Z9-14:Ald (100:1)	Steck, 1982(a)	C

<i>Cucullia speyeri</i> Lintner <i>att.</i>	Z9-14:OAc	Steck, 1982(a)	C
<i>Cucullia tanaceti</i> Denis & Schiffermüller <i>att.</i>	Z9-14:OAc + Z7-12:OAc (5:1)	Konstantin in Arn, 1986(a)	C
<i>Cucullia umbratica</i> L. <i>att.</i>	Z9-14:OAc E Z9-14:OAc + Z9-14:OH (1:4) + Z7-12:OAc (1:1) or + Z7-14:OAc (1:1) + Z7-12:OAc + Z5-10:OAc (1:1:1) + Z7-12:OAc + Z11-14:OAc + Z7-12:OAc	Priesner, 1975 Platia in Arn, 1986(a) Szöcs, 1983 Coroiu, 1986 Priesner in Arn, 1986(a) Ostrauskas, 2003	C
<i>Epiglaea apiata</i> Grove cranberry blossom worm <i>phe.</i>	*Z9-16:OAc + *Z9-14:OAc + *14:OAc	Zhang, 2003(b)	D
<i>Fishia derelicta</i> Hampson <i>att.</i>	Z7-12:OAc + Z9-14:OAc (3:1) + Z9-14:Ald (4:8:1)	Steck, 1982(a) Underhill, 1977(a)	D
<i>Fishia evelina hanhami</i> Grote <i>att.</i>	Z5-14:OAc + Z9-14:OAc (8:1)	Steck, 1979(c)	D
<i>Homoglaea</i> sp. <i>att.</i>	E11-14:OAc	Daterman, 1977	D
<i>Homohadena infixata</i> Walker <i>att.</i>	Z7-14:OAc + Z9-14:OAc (100:1)	Steck, 1982(b)	D
<i>Isopolia strigidisca</i> Moore <himarayahagata-yotou> <i>att.</i>	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)	Ghizdav, 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

(Noctuidae; Amphipyrinae) Yaga-ka; Karasuyotou-aka

<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	Z9-14:OH	Capizzi, Guerrero	C

			in Arn, 1986(a) 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 (= Dadica) lineosa</i> Moore <shironon-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. <i>att.</i>	Z9-14:OAc + Z11-16:OAc (9:1)	Szöcs, 1983	D
<i>Diparopsis castanea</i> Hampson red bollworm <i>phe.</i>	*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 <i>att.</i>	Z11-16:Ald + Z9-16:Ald (25:1)	Subchev, 1994	C
<i>Gortyna leucostigma</i> Hübner <i>att.</i>	Z11-16:OAc	Priesner in Arn, 1986(a)	C
<i>Gortyna xanthenes</i> Germar artichoke moth <i>phe.</i>	*Z11-16:Ald + *Z9-16:Ald + *Z11-16:OH + *16:Ald (500:15:12:15)	Rotundo, 1985(a)	C
<i>Oria musculosa</i> Hübner <i>att.</i>	Z11-16:OAc	Subchev, 1981 Tóth, 1992(e)	D
<i>Orthogonia sera</i> Felder & Felder <nokomesedaka-yotou> <i>att.</i>	Z7-12:OAc	Ando, 1975	A
<i>Panemeria tenebrata</i> Scopoli <i>att.</i>	Z9-14:OAc + Z11-14:OAc (9:1)	Szöcs, 1983 Ghizdavu, 1985	D
<i>Platysenta videns</i> Guenée <i>att.</i>	Z11-16:Ald + Z9-14:Ald + 16:Ald + 14:Ald (12:4:3:6)	Teal, 1982	C
<i>Protagrotis niveivenosa</i> Grote <i>att.</i>	Z11-16:Ald + Z9-14:OAc	Steck, 1982(a)	D
<i>Protagrotis obscura</i> Barnes & McDunnough <i>att.</i>	Z11-16:Ald	Kamm, 1982	D
<i>Thalpophila matura</i> Hufnagel <i>att.</i>	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	Arn, 1983 Szöcs, 1983 Nagy, 2023	A
	Z11-16:OAc + Z5-10:OAc (10:1)	Subchev, 1987	
<i>Eustrotia uncula</i> Clerck <suji-koyaga> att.	Z5-10:OAc + Z3-10:OAc (10:1)	Priesner, 1988(b)	A
<i>Lithacodia albidula</i> Guenée	Z5-12:OAc	Steck, 1982(a)	C

	att.	+ Z7-14:OAc		
<i>Lithacodia deceptor</i>	att.	Z7-12:OH	Priesner in Arn, 1986(a)	C
<i>Lithacodia pygarga</i>		Z7-14:OAc + Z5-14:OAc (10:1)	Priesner, 1985(a)	A
	att.			
<i>Lithacodia signifera</i>	att.	Z9-14:OAc	Li, 1993(d)	C
<i>Micardia argentata</i>	att.	E7-12:OAc or Z7-12:OAc	Ando, 1977	A
<i>Naranga aenescens</i>		*Z11-16:OAc + *Z9-16:OAc + *Z9-14:OAc (4:1:1)	Ando, 1980(a)	A
	phe.			
		Korean strain (4:1:2)	Cho, 2014	
<i>Phyllophila obliterata</i>		Z9-14:OAc or Z9,E12-14:OAc	Nagano, 1979	A
	att.			

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

<i>Anadevidia peponis</i>	phe.	*Z7-12:OAc + *Z5-10:OAc + *Z7-12:OH (10:5:1) + other components	Inomata, 2000	A
<i>Anagrapha falcifera</i>	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>	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 att.	Z7-12:OH	Priesner in Arn, 1986(a)	C
<i>Autographa ampla</i> Walker att.	Z7-12:OAc	Roelofs, 1970(a)	C
<i>Autographa biloba</i> Stephens phe.	*Z7-12:OAc N	Berger, 1968	C
<i>Autographa bractea</i> Denis & Schiffermüller att.	Z7-12:OH	Priesner in Arn, 1986(a)	C
<i>Autographa californica</i> Speyer alfalfa looper phe.	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 att.	Z5-12:OAc	Kaae, 1973(a)	C
<i>Autographa flagellum</i> Walker att.	Z7-12:OAc + Z7-14:OAc	Steck, 1979(c)	C
<i>Autographa gamma</i> L. silver Y moth <gamakin-uwaba> phe.	Z7-12:OAc + Z7-12:OH (20:1) Z7-14:OAc + E7-14:OAc *Z7-12:OAc + *Z7-12:OH (10:1–19:1)	Ghizdavu, 1979 Priesner in Arn, 1986(a) Soldán, 1983 Dunkelblum, 1983 Tóth, 1983	A

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

	*Z7-12:OH + *Z7-12:OAc (5:1)	Mazor, 1991	
<i>Ctenoplusia</i> (= <i>Acanthoplusia</i>) <i>agnata</i> Staudinger three-spotted plusia <mitsumonkin-uwaba> phe.	*Z7-12:OAc + *Z9-12:OAc (10:1)	Sugie, 1990	A
in Vietnam	Z7-12:OAc	Hai, 2002	
<i>Ctenoplusia albostriata</i> Bremer & Grey <ezogikukin-uwaba> phe.	*Z9,E12-14:OAc N 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)	Priesner, 1985(c) Tóth, 1988	C

	*Z7-10:OAc + *Z5-10:OAc	Hansson in Arn, 1992 Löfstedt, 1994	
<i>Macdunnoughia confusa</i> Stephens <kikugin-uwaba> phe.	Z7-12:OAc + Z9-14:OAc (1:1) + Z7-14:OAc *Z7-12:OAc + *Z9-14:OAc (5:1) + other components	Booij, 1984(a) Ando, 1981 Li, 1993(d) Szöcs, 1983 Inomata, 2000	A
<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) *Z7-12:OAc + *Z7-12:OH + *Z5-12:OAc (5:4:1)	Inomata, 2000 Inomata, 2005	A
<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>Chryspidia</i>) <i>putnami</i> Grote	Z5-12:OAc	Steck, 1977(a)	B

<i>att.</i>	+ Z7-12:OAc (100:1)	Steck, 1982(b)	
<i>Pseudoplusia includens</i> Walker soybean looper <i>phe.</i>	*Z7-12:OAc + *12:OAc + *Δ11-12:OAc + *Z7-12:OPr + *Z7-12:OBu (93.2:1.2:0.7:0.9:0.2)	Berger, 1968 Tumlinson, 1972 Linn, 1987	D
<i>Rachiplusia ou</i> Guenée <i>phe.</i>	*Z7-12:OAc N	Berger, 1968	D
<i>Sclerogenia</i> (= <i>Autographa</i>) <i>jessica</i> Butler <waiginmon-uwaba> <i>att.</i>	Z7-12:OAc + Z7-12:OH (9:1)	Ando, 1981	A
<i>Syngrapha ain</i> Hochenwarth <kishitagin-uwaba> <i>phe.</i>	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 <i>att.</i>	Z7-12:OAc + 14:OAc (20:1)	Steck, 1982(a)	C
<i>Syngrapha parilis</i> Hübner <i>att.</i>	Z7-12:OAc	Linnaluoto, 1983	C
<i>Syngrapha rectangula</i> Kirby <i>att.</i>	Z7-12:OAc	Steck, 1982(a)	C
<i>Syngrapha variabilis</i> <i>att.</i>	Z7-14:OAc E	Priesner, 1977	C
<i>Thysanoplusia intermixta</i> Warren chrysanthemum golden plusia <kikukin-uwaba> <i>phe.</i>	*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> <i>phe.</i>	*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) Z7-12:OAc	Berger, 1966 Kaae, 1973(b) Bjostad, 1980(b); 1984 Dunkelblum, 1993 Linn, 1984 Steck, 1980(a) Mayer, 1995	A
<i>Trichoplusia oxygramma</i> Geyer att.	Z7-12:OAc + E7-12:OAc (24:1) + Z9-14:OAc (10:0.9)	Mitchell, 1972; 1973 McLaughlin, 1975 Landolt, 1986(c)	C
<i>Zonoplusia ochureata</i> Walker <koseakakin-uwaba> att.	Z7-12:OAc + Z5-12:OAc (1:1)	Hai, 2002	A

(Noctuidae; Metoponiinae) Yaga-ka;

<i>Tyta luctuosa</i> Denis & Schiff. phe.	*Z11-16:Ald + * Z9-14:Ald (5:1) N + other components	Cao, 2002, 2003	D
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(Nolidae) 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. castor semilooper <shirahoshiashibuto- kuchiba> phe.	*Z3,Z6,Z9-21:H + *Z6,Z9-21:H + *21:H + *Z9,Z12-18:Ald (65:1:1:1)	Persoons, 1993 Krishnakumari, 1998	A
<i>Anticarsia gemmatalis</i> Hübner velvetbean caterpillar phe.	*Z3,Z6,Z9-20:H + *Z3,Z6,Z9-21:H (5:3) (39:11)	Heath, 1983 McLaughlin, 1989	C
<i>Bastilla arctotaenia</i> Guenée <hosoobiashibuto-kuchiba> phe.	*Z3,Z6,Z9-21:H	Abubaker, 2024	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)	Wong, 1985(b) Underhill in Arn, 1986(a)	C
	*Z3,Z6,Z9-21:H + *Z3,Z6,epo9-21:H (10:1) + other components	Millar, 1991(b)	
<i>Eulepidotis addens</i> Walker	Z3,Z6,epo9-21:H	Renou, 1988	D

	att.	(9 <i>S</i> ,10 <i>R</i>)-isomer	E		
<i>Gonodonta bidens</i> Geyer	att.	Z3,Z6,Z9-21:H	E	Renou, 1988	D
<i>Gonodonta incurva</i> Sepp	att.	Z3,Z6,Z9-21:H	E	Renou, 1988	D
<i>Gonodonta parens</i> Guenée	att.	Z3,Z6,Z9-21:H	E	Renou, 1988	D
<i>Gonodonta sicheas</i> Cramer	att.	Z3,Z6,Z9-21:H	E	Renou, 1988	D
<i>Hypenomorpha calamina</i> Butler <hirobachibitogari-atsuba>	att.	Z6,epo9-20:H		Ando, 1995(a)	A
<i>Lesmone formularis</i> Geyer	att.	Z3,Z6,epo9-21:H (9 <i>S</i> ,10 <i>R</i>)-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 (9 <i>S</i> ,10 <i>R</i>)-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		*Z3,Z6,Z9-21:H		Descoins, 1990	C

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

(Erebidae; Ophiderinae) 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 (S)-isomer + other components		Hall, 1993	D
<i>Anomis sabulifera</i> Guenée jute semilooper phe.	*Z6,Z9-21:H + *Z3,Z6,Z9-21:H (3:1)		Babu, 2021	C

<i>Anomis texana</i> phe.	*Me7-17:H (S)-isomer + another component	Hall, 1993	C
<i>Hypersynoides submarginata</i> Walker <ooshiroten-kuchiba> att.	epo3,Z6,Z9-19:H + Z3,Z6,Z9-19:H (1:1-1:0.1)	Witjaksono, 1999	A
<i>Hypocala andremona</i> Stoll att.	Z3,Z6,epo9-21:H (9S,10R)-isomer E	Renou, 1988	C
<i>Hypocala rostrata</i> F. <indokishita-kuchiba> att.	Z3,epo6,Z9-21:H (6S,7R)-isomer + epo3,epo6,Z9-21:H (10:1)	Wakamura, 2002	A
<i>Luceria</i> sp. att.	Z3,Z6,epo9-18:H	Hai, 2002	C
<i>Oraesia excavata</i> Butler fruit-piercing moth <akaeguriba> phe.	*Z6,epo9-21:H + *Z3,Z6,epo9-21:H (20:0-17:3) (9S,10R)-isomer	Ohmasa, 1991 Yamamoto, 1999	A
<i>Rivula leucanioides</i> Walker <take-atsuba> att.	Z3,epo6,Z9-18:H	Ando, 1995(a)	A
<i>Rivula propinqualis</i> Guenée att.	epoxydienes of Z3,Z6,Z9-19:H Z3,Z6,Z9-19:H + Z3,epo6,Z9-19:H (6S,7R)-isomer (10:1)	Wong, 1985(b) Millar, 1990(a)	C
<i>Rivula sasaphila</i> Sugi <kuriiro-atsuba> att.	Z3,epo6,Z9-19:H	Ando, 1993	A
<i>Rivula sericealis</i> Scopoli <tenkuro-atsuba> att.	Z3,epo6,Z9-19:H	Ando, 1993	A
<i>Scoliopteryx libatrix</i> L. herald moth <hagata-kiriba> phe.	*Z6,Me13-21:H (S)-isomer	Francke, 2000 Toshova, 2003	A

Gen et sp. att.	$\Delta 1,Z3,Z6,Z9-19:H$	Yamamoto, 2008	A
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(Erebidae; Hypeninae) 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
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<i>Lomanaltes eductalis</i> Walker att.	$Z3,Z6,epo9-21:H$ (9 <i>S</i> ,10 <i>R</i>)-isomer	Wong, 1985(b)	D
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<i>Spargaloma sexpunctata</i> Grote att.	$Z3,Z6,epo9-20:H$ (9 <i>S</i> ,10 <i>R</i>)-isomer	Wong, 1985(b)	D
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(Erebidae: Herminiinae) Tomoega-ka : Kurumaatsuba-aka

<i>Adrapsa notigera</i> Butler <fujiro-atsuba> att.	$Z3,epo6,Z9-23:H$	Ando, 1995(a)	A
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<i>Bleptina caradrinalis</i> Guenée att.	epoxydienes of $Z3,Z6,Z9-21:H$	Wong, 1985(b)	C
	$Z3,epo6,Z9-21:H$ (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	Millar, 1991(c)	

<i>Idia aemula</i> Hübner att.	epoxydienes of $Z3,Z6,Z9-21:H$	Wong, 1985(b)	D
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<i>Idia americalis</i> Guenée att.	epoxydienes of $Z3,Z6,Z9-20:H$	Wong, 1985(b)	D
	$Z3,epo6,Z9-20:H$ (6 <i>S</i> ,7 <i>R</i>)-isomer + $Z3,epo6,Z9-21:H$ (6 <i>S</i> ,7 <i>R</i>)-isomer (1:1)	Millar, 1991(c)	

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

(Erebidae: Lymantriinae) Tomoega-ka : Dokuga-aka

<i>Arna</i> (=Euproctis) <i>pseudoconspersa</i> Strand tea tussock moth <cha-dokuga> phe.	*Me10,Me14-15:OisoBu + *Me14-15:OisoBu (20:1-5:1) + another component (10 <i>R</i> :10 <i>S</i> =10:0-1:9)	Wakamura, 1994 Ichikawa, 1995 Wakamura, 1996(b) Zhao, 1998 Tsai, 1999	A
<i>Artaxa</i> (=Euproctis) <i>subflava</i> Bremer oriental tussock moth <dokuga> phe.	*Me10,Me14-15:OisoBu (<i>R</i>)-isomer + another component	Wakamura, 2007(b)	A
<i>Dasychira baibarana</i> Matsumura tea black tussock moth phe.	*Z3,Z6,epo9-21:H + *Z3,Z6,epo9,E11-21:H + *Z3,Z6-21:11-one (5:4:11)	Magsi, 2022	C
<i>Dasychira grisefacta ella</i> Bryk. att.	Z6-21:11-one	Daterman, 1976	C

<i>Dasychira plagiata</i> Walker att.	Z6-21:11-one + E6-21:11-one (100:1)	Grant, 1977	C
<i>Dasychira vagans grisea</i> Barnes & McDunnough att.	Z6-21:11-one	Daterman, 1976	C
<i>Euproctis chrysorrhoea</i> L. browntail moth phe.	*Z7,Z13,Z16,Z19-22:OisoBu	Leonhardt, 1991 Khrimian, 2008	C
<i>Euproctis terminalis</i> Walker pine browntail moth phe.	*Z7,Z13,Z16,Z19-22:OisoBu	Bouwer, 2021	C
<i>Gynaephora 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 (6S,7R,9S,10R)-isomer (6R,7S,9R,10S)-isomer	Gries, 1997(c) Holden, 2000 Szöcs, 2005	A
<i>Lymantria bantaizana</i> Matsumura <bantai-maimai> phe.	*Me2,Z7,E9-18:H	Gries, 2005(c)	A
<i>Lymantria concolor</i> Walker att.	Me2,epo7-18:H	Bhardwaj, 1987	C
<i>Lymantria</i> (= <i>Porthetria</i>) <i>dispar</i> L. gypsy moth phe.	*Me2,epo7-18:H (7R,8S)-(+)-isomer	Bierl, 1970; 1972 Klimetzek, 1976 Cardé, 1977(b) Miller, 1978	B
	+ *Me2,epo7,Δ17-18:H (7R,8S)-(+)-isomer + other components	Gries, 2005(a)	
<i>Lymantria dispar asiatica</i> Vnukovskij	Me2,epo7-18:H (7R,8S)-isomers	Wallner, 1984	B

Asian gypsy moth <i>att.</i>	+ Me₂,epo7,Δ17-18:H (10:1) (7 <i>R</i> ,8 <i>S</i>)-isomers	Park, 2019	
<i>Lymantria dispar japonica</i> Motschulsky Japanese gypsy moth <maimaiga> <i>att.</i>	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> <i>phe.</i>	Me₂,epo7-18:H *Me₂,epo7-18:H (7 <i>R</i> ,8 <i>S</i>)-(+)-isomer + *Me₂,Z7-18:H (10:1)	Beroza, 1973(a) Schaefer, 1999	A
<i>Lymantria lucescens</i> Butler <i>phe.</i> <ooyama-maimai>	*Me₂,Z7-18:H	Gries, 2002	A
<i>Lymantria mathura</i> L. rosy (pink) gypsy moth <kashiwa-maimai> <i>phe.</i>	Me₂,epo7-18:H (7 <i>R</i> ,8 <i>S</i>)-(+)-isomer *Z₃,Z₆,epo9-19:H (9 <i>S</i> ,10 <i>R</i>)-isomer + another component (9 <i>S</i> ,10 <i>R</i>):(9 <i>R</i> ,10 <i>S</i>) = (4:1)	Odell, 1992 Oliver, 1999 Gries, 1999(b)	A
<i>Lymantria monacha</i> L. nun moth <nonne-maimai> <i>phe.</i>	Me₂,epo7-18:H *Me₂,epo7-18:H (-):(+) = 9:1 E (+)-isomer + Me₂,Z7-18:H (1:3) (+)-isomer + *epo7-18:H (7 <i>R</i> ,8 <i>S</i>)-(+)-isomer + *Me₂,Z7-18:H (10:10:1)	Schönherr, 1972 Klimetzek, 1976 Minyailo, 1976 Bierl, 1975 Hansen, 1984 Grant, 1996 Gries, 1996; 2001	A
<i>Lymantria obfuscata</i> Walker	Me₂,epo7-18:H	Beroza, 1973(b)	C

Indian gypsy moth phe.	*Me ₂ ,epo7-18:H (7R,8S)-(+)-isomer + *Me ₂ ,Z7-18:H (2:1)	Gries, 2007	
<i>Lymantria serva</i> phe.	*Me ₂ ,Z7-18:H	Gries, 2002	C
<i>Lymantria xyliana</i> Swinhoe Casuarina moth <maeguro-maimai> phe.	*Me ₂ ,epo7-20:H	Gries, 1999(c)	A
<i>Orgyia antiqua</i> L. rusty tussock moth att.	Z6-21:11-one	Daterman, 1976	C
<i>Orgyia cana</i> Edwards western tussock moth att.	Z6-21:11-one	Daterman, 1976	C
<i>Orgyia detrita</i> Guérin-Ménéville 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	*Z6,Z9,tepo11-21:H	Wakamura,	A

Ishigaki strain	(11 <i>S</i> ,12 <i>S</i>)-isomer + other components	2001(a); 2005(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 (6 <i>S</i> ,7 <i>R</i>)-isomer + *epo3,epo6,Z9-21:H (10:1) [(3 <i>S</i> ,4 <i>R</i> ,6 <i>S</i> ,7 <i>R</i>): (3 <i>R</i> ,4 <i>S</i> ,6 <i>S</i> ,7 <i>R</i>) = 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' <i>S</i> :2' <i>R</i> = 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>	*Z7-18:OisoVa + other components	Tan, 1984	A

phe.

<i>Teia anartoides</i> Walker painted apple moth phe.	*Z6,Z9-21:11-one + *Z6,εpo9-21:H (9 <i>R</i> ,10 <i>S</i>)-isomer + *Z6,Z9-21:H + other components	El-Sayed, 2004(a); 2005(a) Gries, 2005(b)	D
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(Erebidae: Arctiinae: Lithosiini) Tomoega-ka : Hitoriga-aka : Kokega-zoku

<i>Barsine aberrans aberrans</i> Butler <hagatabeni-kokega> att.	17:7-OPr (<i>S</i>)-isomer + 17:8-OPr (<i>S</i>)-isomer (1:1)	Fujii, 2013(b)	A
<i>Barsine expressa</i> Inoue <sakishimabeni-kokega> phe.	*17:7-OPr (<i>S</i>)-isomer + *17:8-OPr (<i>S</i>)-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 (<i>S</i>)-isomer + *Me14-18:2-one (<i>S</i>)-isomer (2:1) + another component	Yamamoto, 2007 Do, 2009 Adachi, 2010	A
<i>Miltochrista calamina</i> Butler <hagataki-kokega> phe.	*Me5-17:7-OH (5 <i>R</i> ,7 <i>R</i>)-isomer	Yamakawa, 2011(b) Muraki, 2014	A
<i>Miltochrista striata</i> Bremer & Grey phe.	*Z3,Z6,εpo9-18: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,εpo7-18:H Z3,Z6,Z9-21:H	Capek, 1979 Szöcs, 1987	C
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<i>Dysauxes ancilla</i> L. att.	$\Delta 1, Z3, Z6, Z9-19:H$ + $Z3, Z6, Z9-19:H$ (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.	* $\Delta 1, Z3, Z6, Z9-21:H$ + * $Z3, Z6, Z9-21:H$ + 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.	* $Z3, Z6, Z9-21:H$ + * $E4, Z6, Z9-21:H$ + * $\Delta 1, Z3, Z6, Z9-21:H$ + * $Z2, E4, Z6, Z9-21:H$ E [30:3:5:1]	Muraki, 2017	A
<i>Arctia villica</i> phe.	* $Z3, Z6, Z9-21:H$ + * $\Delta 1, Z3, Z6, Z9-21:H$ 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. <kurosuji-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 acrea</i> saltmarsh caterpillar moth phe.	*Z3,Z6,epo9-21:H + *Z9,Z12,Z15-18:Ald + *Z9,Z12-18:Ald (27:6:1)	Hill, 1981(b)	D
<i>Euchaetes egle</i> Drury milkweed tussock moth phe.	*Z3,Z6,Z9-21:H + *Δ1,Z3,Z6,Z9-21:H [5:2] + other components N	Simmons, 1998	D
<i>Eurata patagiata</i> Burmeister phe.	*Z9,Z12,Z15-18:OH + * Z9,Z12,Z15-18:Ald (3:1)	Rodríguez, 2018	D
<i>Halysidota leda</i> Druce neo-tropical tiger moth phe.	*Z3,Z6,epo9-21:H (major) + *Z3,Z6,Z9-21:H + other components N	Descoins, 1989	D
<i>Halysidota tessellaris</i> Smith att.	Z3,Z6,epo9-21:H (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>	Me2-17:H E	Roelofs, 1971(b)	D

att.				
<i>Holomelina lamae</i>		*Me2-17:H	N	Roelofs, 1971(b) D
phe.				
		+ other components		Schal, 1987
<i>Holomelina nigricans</i>		*Me2-17:H	N	Roelofs, 1971(b) D
phe.				
<i>Holomelina rubicundaria</i>		Me2-17:H		Roelofs, 1971(b) D
att.				
<i>Holomelina</i> sp.		Me2-17:H		Weatherston, 1974(a) D
att.				
<i>Hyphantria cunea</i> Drury		*Z3,Z6,epo9-21:H		Hill, 1982 A
fall webworm moth		+ *Z9,Z12,Z15-18:Ald		
American white moth		+ *Z9,Z12-18:Ald		
<amerikashiro-hitori>	U.S.A.		(27:6:1)	
phe	U.S.S.R.		[13:6:5]	
	France		[52:41:7] N	Einhorn, 1982
		+ *Δ1,Z3,Z6,epo9-21:H		Tóth, 1989(b)
		+ *Z3,Z6,epo9-20:H		
		+ *Δ1,Z3,Z6,epo9-20:H		
	Hungary		[60:40:5:8:0.4:0.04] N	
		+ other components		
	Japan	Z3,Z6,epo9-21:H		Senda, 1991
		+ Δ1,Z3,Z6,epo9-21:H		
		+ Z9,Z12,Z15-18:Ald	(5:2:2)	
	China		(1:1:8)	Zhang, 1996
	Japan	*Z3,Z6,epo9-21:H		Yamakawa, 2012(b)
		(9 <i>S</i> ,10 <i>R</i>)-isomer		
		+ *Δ1,Z3,Z6,epo9-21:H		
		(9 <i>S</i> ,10 <i>R</i>)-isomer		
		+ *Z9,Z12-18:Ald		
		+ *Z9,Z12,Z15-18:Ald		
			[10:2:5:4] N	
	New Zealand	*Z3,Z6,epo9-21:H		El-Sayed, 2005(c)
		+ *Δ1,Z3,Z6,epo9-21:H		
		+ *Z9,Z12,Z15-18:Ald		

		+ *Z9,Z12-18:Ald (279:1:66:6)		
	China	(58:6:34:2)	Su, 2008	
<i>Isia</i> (= <i>Pyrrharctia</i>) <i>isabella</i> phe.		*Me2-17:H	Roelofs, 1971(b)	D
		+ other components	Krasnoff, 1988	
<i>Panaxia</i> (= <i>Callimorpha</i>) <i>quadripunctaria</i> phe.		*Z6,Z9-21:H + *Z6,Z9-20:H N	Schneider, 1998	C
<i>Pareuchaetes pseudoinsulata</i> Rego Barros phe.		*Z3,Z6,Z9-21:H N + other components	Schneider, 1992	D
		*Δ1,Z3,Z6,Z9-21:H N + other components	Frérot, 1993(a)	
<i>Phragmatobia fuliginosa</i> ruby tiger moth <ama-hitori> phe. Europe strain		*Z3,Z6,epo9-21:H + *Z3,Z6,Z9-21:H + *Z6,epo9-21:H + *Z6,Z9-21:H N	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 ornatix</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
