

LEGENDS TO THE TABLE

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

The chemical formulae are symbolized by

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

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

Distribution information in Japan.

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

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

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

[Superfamily] Family Subfamily		Number of species			
		Sex pheromone		Sex attractant	
[Eriocranioidea]	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	11	(1)	4	(0)
[Tortricoidea]	Hamakiga-joka				
Tortricidae	Hamakiga-ka				
Tortricinae	Hamakiga-aka	114	(10)	132	(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	12	(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	21	(4)	1	(0)
Sphingidae	Suzumega-ka	11	(7)	11	(3)
[Noctuoidea]		Yaga-joka			
Notodontidae	Shachihokoga-ka	10	(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)
Amphipyriinae	Karasuyotouga-aka	6	(1)	24	(5)
Sarrothripinae	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	9	(1)	18	(4)
Ophiderinae	Kuchiba-aka	6	(3)	9	(6)
Hypeninae	Atsuba-aka	0	(0)	4	(0)
Hermiiniinae	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		726	(217)	1347	(334)

LIST OF SEX PHEROMONES AND ATTRACTANTS

[Super-family]

(Family; Sub-family)

Species Common name <Japanese common name>	Sex pheromone and sex attractant	Reference	Distribution in Japan
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(1) [Micropterigoidea] 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 rufulicapot</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> ,1' <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

(Ypsolophidae) Kuchibusaga-ka

<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

(Plutellidae) Konaga-ka

<i>Leuroperna sera</i> Meyrick <hiroba-konaga> att.		Z11-16:Ald + Z9-16:Ald (19:1)	Kohno, 2014	A
<i>Plutella xylostella</i> L. diamondback moth <konaga> phe.		*Z11-16:OAc + *Z11-16:Ald (2:3–3:2) (1:1) (3:2)	Tamaki, 1977(b) Koshihara, 1978 Chow, 1977	A
		+ Z11-16:OH (10:10:1)	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 Me5,Me9-17:H (5S,9S)-isomer	Francke, 1987; 1988 Tóth, 1989(c)	C
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*Me5,Me9-17:H + *Me5,Me9-18:H (100:0.1–100:5)	Riba, 1990
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<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.	*Me14,Δ1-18:H (S)-isomer	Sugie, 1984(a) Sato, 1985,1986	A
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<i>Lyonetia prunifoliella</i> Hübner apple leafminer moth <ringo-hamoguriga> <ginmon-hamoguriga> phe. in Korea	*Me10,Me14,Δ1-18:H + Me5,Me9-18:H + Me5,Me9-17:H (1:1:1) Me10,Me14,Δ1-18:H	Gries, 1997(b) Park, 2002	B
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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* Hoshimaruhakibaga-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	Green, 1969	A
		*Z7,Z11-16:OAc + *Z7,E11-16:OAc (1:1)	Hummel, 1973 Bierl, 1974	
	In Malawi	(11:9)	Marks, 1976	
	In the world	(1:1)	Flint, 1979	
	In India	(1:1)	Tamhankar, 1993	
<i>Pectinophora scutigera</i> Holdaway pink-spotted bollworm 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 tobacco field	(7:1–4:1) (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>Scrobipalpula</i> , = <i>Tuta</i>) <i>absoluta</i> Meyrick tomato leafminer phe.			*E3,Z8,Z11-14:OAc + *E3,Z8-14:OAc (9:1)	Attygalle, 1995; 1996 Filho, 2000 Ferrara, 2001 Svatos, 1996 Griepink, 1996	D

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

(11)[Zygaenoidea] Madaraga-joka
(Limaodidae) Iraga-ka

<i>Darna bradleyi</i> phe.	*isobutyl E7,Δ9-10:Ate + * methyl E7,Δ9-10:Ate (10:1)	Sasaerila, 2000(a)	D
<i>Darna pallivitta</i> Moore phe.	*butyl E7,Δ9-10:Ate + other components	Siderhurst, 2007	D
<i>Darna trima</i> phe.	*(E)-2-hexenyl E7,Δ9-10:Ate + *(S)-2-methylbutyl E7,Δ9-10:Ate (1:1-2:1)	Sasaerila, 2000(a)	D
<i>Heterogenea asella</i> Denis & Schiffermüller <kagiba-iraga> att.	Z9,E11-14:Ald	Priesner in Arn, 1986(a)	A

<i>Microleon longipalpis</i> Butler <tengu-iraga> att.	Z7-12:Ald	Ando, 1981	A
<i>Monema flavescens</i> Walker Oriental moth <iraga> phe.	*E8-10:OH + *E7,Δ9-10:OH (9:1)	Shibasaki, 2013	A
<i>Parasa lepida</i> Cramer blue-striped nettle grub moth <hiroheriao-iraga> phe.	*Z7,Δ9-10:OH	Wakamura, 2007(a) Islam, 2009	A
<i>Setora nitens</i> phe.	*Z9-12:Ald + *Z9,Δ11-12:Ald (1:1) + other components	Sasaerila, 2000(b)	D
<i>Setothosea asigna</i> Van Eecke nettle caterpillar 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	(R)-sec-butyl Z9-14:Ate	Tarmann	D

<i>att.</i>		in Subchev, 2014	
<i>Adscita alpina</i> Alberti <i>att.</i>	(<i>R</i>)-sec-butyl 2-12:Ate	Efetov, 2020(b)	D
<i>Adscita bolivari</i> Agenjo <i>att.</i>	sec-butyl 2-12:Ate	Efetov, 2019	D
<i>Adscita geryon</i> Hübner <i>att.</i>	(<i>S</i>)-sec-butyl Z7-12:Ate	Subchev, 2010	D
<i>Adscita italica</i> Alberti <i>att.</i>	(<i>R</i>)-sec-butyl 2-12:Ate or (<i>S</i>)-sec-butyl 2-12:Ate	Efetov, 2020(b)	D
<i>Adscita mannii</i> Lederer <i>att.</i>	(<i>S</i>)-sec-butyl Z7-12:Ate + (<i>S</i>)-sec-butyl Z9-14:Ate (<i>R</i>)-sec-butyl 2-12:Ate	Subchev, 2010 Razov, 2017 Efetov, 2020(b)	D
<i>Adscita obscura</i> Zeller <i>att.</i>	(<i>R</i>)-sec-butyl 2-12:Ate	Can, 2019	D
<i>Adscita statices</i> <i>att.</i>	(<i>R</i>)-sec-butyl 2-12:Ate	Efetov, 2020(a)	D
<i>Adscita subtristis</i> Staudinger <i>att.</i>	sec-butyl 2-12:Ate	Efetov, 2020(a)	D
<i>Goazrea lao</i> Mollet <i>att.</i>	sec-butyl 2-12:Ate	Efetov, 2020(a)	D
<i>Harrisina americana</i> Guénee <i>att.</i>	(<i>R</i>)-sec-butyl Z7-14:Ate	Landolt, 1986(a)	D
<i>Harrisina brillians</i> Barnes & McDunnough western grapeleaf skeletonizer <i>phe.</i>	*sec-butyl Z7-14:Ate (<i>S</i>)-(+)-isomer	Myerson, 1982 Soderstrom, 1985 Curtis, 1989	D
<i>Harrisina coracina</i> Clemens <i>att.</i>	(<i>S</i>)-sec-butyl Z7-14:Ate	Landolt, 1991	D
<i>Harrisina guatemalena</i> Druce <i>att.</i>	(<i>S</i>)-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	Subchev, 2010 Razov, 2017	D
	sec-butyl 2-12:Ate (<i>R</i>)-sec-butyl 2-12:Ate	Efetov, 2016 Efetov, 2021	
<i>Jordanita rietzsehi</i> Keil att.	sec-butyl 2-12:Ate	Keil in Efetov, 2020(a)	D
<i>Jordanita splendens</i> Staudinger att.	sec-butyl 2-12:Ate	Efetov, 2020(a)	D
<i>Jordanita subsolana</i> Staudinger att.	(<i>R</i>)-sec-butyl 2-12:Ate	Can, 2019 Efetov, 2020(b) Efetov, 2021	D

<i>Nealbertia constans</i> Edwards att.	(S)-sec-butyl Z9-14:Ate	Tarmann in Subchev, 2014	D
<i>Neoiliberis fusca</i> Edwards att.	(R)-sec-butyl Z9-14:Ate	Tarmann in Subchev, 2014	D
<i>Neoprocris avera</i> Edwards att.	(R)-sec-butyl Z9-14:Ate	Tarmann in Subchev, 2014	D
<i>Pyromorpha dyari</i> Jordan att.	(S)-sec-butyl Z7-12:Ate	Tarmann in Subchev, 2014	D
<i>Rhagades amasina</i> Herrich-Schäffer att.	(S)-sec-butyl 2-12:Ate	Can, 2019	D
<i>Rhagades predotae</i> Naufock att.	(S)-sec-butyl 2-12:Ate	Efetov, 2019	D
<i>Rhagades pruni</i> Denis & Schiffermüller att.	(R)-sec-butyl Z7-12:Ate (S)-sec-butyl 2-12:Ate	Subchev, 2010; 2014 Efetov, 2021	D
<i>Theresimima ampellophaga</i> Bayle-Barella vine bud moth phe.	*(S)-sec-butyl Z7-14:Ate sec-butyl 2-12:Ate (R)-sec-butyl 2-12:Ate	Subchev, 1998 Efetov, 2014 Efetov, 2021	D
<i>Triprocris cyanea</i> Barnes & McDunnough att.	(S)-sec-butyl Z9-14:Ate	Tarmann in Subchev, 2014	D
<i>Zygaena carniolica</i> Scopoli att.	Z7-12:OAc + Z9-14:OAc + Z11-16:OAc (100:30:3)	Priesner, 1984(a)	C
<i>Zygaena ephialtes</i> L. att.	Z11-14:OAc + E11-14:OAc + 12:OAc (7:3:40) Z11-14:OAc + E11-14:OAc (1:1) Z11-14:OAc	Hrdý, 1979 Konyukhov in Arn, 1986(a) Decamps, 1981	C

<i>Zygaena filipendulae</i> L. <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> Brünn <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>)-sec-butyl Z7-12:Ate or + (<i>R</i>)-sec-butyl Z9-14:Ate	Hofmann in Subchev, 2014	D
<i>Zygaenoprocis eberti</i> Alberti <i>att.</i>	(<i>R</i>)-sec-butyl Z7-12:Ate or + (<i>R</i>)-sec-butyl Z9-14:Ate	Hofmann in Subchev, 2014	D
<i>Zygaenoprocis taftana</i> Alberti	(<i>R</i>)-sec-butyl Z7-12:Ate	Efetov in Subchev, 2014	D

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

<i>Aegeria apiformis</i> hornet clearwing moth	*Z3,Z13-18:OH	Kovalev, 1988	C
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phe.

<i>Albuna fraxini</i> Henry Edwards <i>att.</i>	Z3,Z13-18:OH + Z3,Z13-18:OAc (3:1)	Greenfield, 1979 Nielsen, 1979	D
<i>Albuna pyramidalis</i> Walker <i>att.</i>	E3,Z13-18:OH	Cambell in Arn, 1986(a)	D
<i>Alcathoe carolinensis</i> Engelhardt <i>att.</i>	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. <i>att.</i>	Z3,Z13-18:OH + Z3,Z13-18:OAc or + E3,Z13-18:OAc	Bûda, 1993	C
<i>Bembecia ichneumoniformis</i> Denis & Schiffermüller <i>att.</i>	Z3,Z13-18:OH + E3,Z13-18:OAc (9:1)	Bûda, 1993	C
<i>Bembecia parthica</i> Led. <i>att.</i>	Z3,Z13-18:OAc + Z3,Z13-18:OH (9:1)	Bûda, 1993	C
<i>Bembecia puella</i> Lastuvka <i>att.</i>	Z3,Z13-18:OAc + Z3,Z13-18:OH (9:1)	Bûda, 1993	C
<i>Bembecia romanovi</i> Bartell <i>att.</i>	Z3,Z13-18:OAc + E3,Z13-18:OAc (9:1)	Bûda, 1993	C
<i>Bembecia scopigera</i> Scopoli <i>att.</i>	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 <i>att.</i>	Z3,Z13-18:OH + E3,Z13-18:OH (9:1)	Szöcs, 1989 Bûda, 1993	C
<i>Bembecia zuwandica</i> Gorbunov <i>att.</i>	Z3,Z13-18:OAc + E3,Z13-18:OAc (9:1)	Bûda, 1993	C
<i>Carmenta anthracipennis</i> Boisduval	Z3,Z13-18:OAc	Leeuw, 1983	D

<i>att.</i>	+ E3,Z13-18:OAc (1:1)	Snow, 1985	
<i>Carmenta bassiformis</i> Walker <i>att.</i>	Z3,Z13-18:OA + Z3,Z13-18:OH + E3,Z13-18:OAc (20:3:1)	Sharp, 1978	D
	Z3,Z13-18:OAc	Greenfield, 1979	
<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. <i>att.</i>	E3,Z13-18:OAc + Z13-18:OH (1:1)	Bûda, 1993	D

<i>Chamaesphecia bibioniformis</i> Esper <i>att.</i>	Z3,Z13-18:OAc + E3,Z13-18:OAc (9:1)	Karalius, 2001	D
<i>Chamaesphecia chalciformis</i> Esper <i>att.</i>	Z3,Z13-18:OH + E2,Z13-18:OAc (1:1)	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>Macrosclesia japona</i> Hampson <momobuto-sukashiba> <i>phe.</i>	*E2,Z13-18:Ald + *E2,Z13-18:OH (10:1)	Naka, 2007 Islam, 2007	A
<i>Macrosclesia longipes</i> Moore <ashinagamomobuto-sukashiba> <i>phe.</i>	*E2,Z13-18:OH + *E2,Z13-18:Ald (20:1)	Naka, 2007	A
<i>Melittia cucurbitae</i> Harris squash vine bore <i>phe.</i>	E2,Z13-18:OAc + Z3,Z13-18:OAc (99:1)	Alm, 1989 Snow, 1991	C

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

<i>Paranthrene tabaniformis</i> Rottemburg poplar twing clearwing moth phe.	E3,Z13-18:OH + Z3,Z13-18:OAc (9:1) + Z3,Z13-18:OH (9:1) *E3,Z13-18:OH + *Z3,Z13-18:OH + *E2,Z13-18:OH N + other components	Greenfield, 1979 Brown, 1986(b) Du in Arn, 1997 Nielsen, 1979 Karalius, 2001 Zhang, 1986 Mozūraitis, 2007	C
<i>Podosesia aureocincta</i> Purrington & Nielsen banded ash clearwing moth att.	Z3,Z13-18:OAc + E3,Z13-18:OAc + Z3,Z13-18:OH (20:1:3) Z3,Z13-18:OAc + Z3,Z13-18:OH (1:1) or + E3,Z13-18:OH (1:1)	Nielsen, 1978(b) Snow, 1985	D
<i>Podosesia syringae</i> Harris lilac borer att.	Z3,Z13-18:OAc	Nielsen, 1975 Adler, 1983	D
<i>Pyropteron</i> sp. att.	Z3,Z13-18:OH + Z3,Z13-18:OAc (9:1)	Bûda, 1993	D
<i>Sannina uroceriformis</i> Walker persimmon borer att.	E3,Z13-18:OH + Z3,Z13-18:OH (4:1) + Z3,Z13-18:OAc (9:1) E3,Z13-18:OH	Nielsen, 1979 Solomon, 1982 Snow, 1985	D
<i>Sesia apiformis</i> Cl. hornet moth phe.	*E2,Z13-18:Ald + *Z3,Z13-18:OH (3:2) + other components	Francke, 2004	C
<i>Sesia</i> (= <i>Aegeria</i>) <i>rhynchioides</i> Butler <kashiwa-sukashiba> att.	E3,Z13-18:OAc + Z3,Z13-18:OAc (1:1)	Tamaki, 1977(c)	A
<i>Sesia tibialis</i> Harris cottonwood crown borer	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>Sphacia</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>	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	E3,Z13-18:OAc	Yaginuma, 1976	A

cherry tree borer <ko-sukashiba> phe.	+ Z3,Z13-18:OAc (1:1) *E3,Z13-18:OAc + *Z3,Z13-18:OAc (1:1) + another component	Naka, 2008	
<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> att.	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 *Z3,Z13-18:OH	Tamaki, 1977(c) Naka, 2013 Yang, 2012	A
Korean strain			
<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) *E3,Z13-18:OAc + *Z3,Z13-18:OAc (4:1)	Voerman, 1983 Levi-Zada, 2011(b)	C

<i>Synanthedon viburni</i> Engelhardt att.	E3,Z13-18:OAc + Z3,Z13-18:OAc (9:1)	Greenfield, 1979	C
<i>Vitacea polistiformis</i> Harris grape root borer phe.	*E2,Z13-18:OAc + Z3,Z13-18:OAc (99:1)	Schwarz, 1983(b) Snow, 1987	D
<i>Vitacea scepsiformis</i> Henry Edwards att.	E3,Z13-18:OAc + Z3,Z13-18:OAc (3:1–9:1)	Sharp, 1978	D

(Sesiidae; Tinthiinae) Sukashibaga-ka; Himesukashiba-aka

<i>Microsphecia</i> (= <i>Tinthia</i>) <i>brosiformis</i> Hübner att.	E3,Z13-18:OAc	Bûda, 1993	D
<i>Paradoxecia pieli</i> L. (= <i>Paradoxes prelle</i> L.) mulberry clearwing moth phe.	*E3,Z13-18:OAc + another component	Tan, 1992 Lin, 1993	D
<i>Pennisetia bohémica</i> Kralicek & Povolny att.	E3,Z13-18:OH + E3,Z13-18:OAc (100:1)	Priesner, 1990	C
<i>Pennisetia hylaeiformis</i> Laspeyres raspberry clearwing moth <karafuto-sukashiba> att.	E3,Z13-18:OAc + E3,Z13-18:OH (1:1)	Priesner, 1986(b)	A
<i>Pennisetia marginata</i> Harris blackberry clearwing borer phe.	E3,Z13-18:OH *E3,Z13-18:Ald	Solomon, 1982 Brown, 1985(a) Judd, 2012 Teasdale, 2013	C
<i>Similipepsis takizawai</i> Arita et Spatenka att.	E3,Z13-18:OH + E2,Z13-18:OAc (1:1)	Bûda, 1993	D
<i>Zenodoxus</i> (= <i>Tinthia</i>) <i>hoplisiformis</i> Mann. att.	E3,Z13-18:OAc + E2,Z13-18:OAc (1:1)	Bûda, 1993	C

<i>Zenodoxus tineiformis</i> Esper att.	E3,Z13-18:OAc	Nielsen, 1979	C
(Brachodidae) ヒロハマキモドキガ科			
<i>Brachodes appendiculata</i> Esper att.	E3,Z13-18:OAc	Karalius, 2005	D
(13) [Cossoidea] Bokutouga-joka (Cossidae) Bokutouga-ka			
<i>Acosus centerensis</i> Litner aspen carpenterworm att.	E3,E5-14:OAc	Doolittle, 1976(a)	D
<i>Chilecomadia valdiviana</i> Philippi phe.	*Z7,Z10-16:Ald + other components	Herrera, 2016 Lapointe, 2017	D
<i>Coryphodema tristis</i> Drury quince borer phe.	*Z9-14:OAc + *Z9-14:OH (47:3) + another component + 14:OAc (38:1:1)	Bouwer, 2015 Bouwer, 2017	D
<i>Cossus cossus</i> L. European goat moth <oobokutou> phe.	Z5-12:OAc + Z3-10:OAc (4:1) + Z5-14:OAc (4:1:1) *Z5-12:OAc + Z3-12:OAc (4:1) + other components	Pasqualini in Arn, 1992 Sziráki in Arn, 1997 Capizzi, 1983	B
<i>Cossus insularis</i> Staudinger carpenterworm moth <hime-bokutou> phe.	*E3-14:OAc + other components	Chen, 2006	A
<i>Cossus mongolicus</i> att.	Z5-12:OAc	Qi in Arn, 1992	C
<i>Holcocerus arenicola</i> Staudinger sand <i>Salix</i> carpenterworm phe.	*Z7-14:OAc + *Z5-14:OAc + *Z7-14:OH (20:8:5)	Jing, 2010	D

	+ 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>Prionoxystus piger</i> att.	Z3,E5-14:OAc	Landolt, 1985	D
<i>Prionoxystus robiniae</i> Peck carpenterworm att.	Z3,E5-14:OAc + E3,E5-14:OAc (9:1-3:7) + E3-14:OAc (9:1)	Doolittle, 1976 (a,b) Solomon, 1978 Doolittle, 1986 Doolittle, 1986	D
<i>Zeuzera pyrina</i> L. leopard moth phe.	*E2,Z13-18:OAc + *Z13-18:OAc + *18:OAc N + *Z2,Z13-18:OAc (97:1:2) N + *E3,Z13-18:OAc (39:9:2) N E2,Z13-18:OAc	Tonini, 1986 Frérot, 1986 Malosse, 1993 Castellari in Arn, 1992	C

+ E2-18:OAc (19:1)	
+ 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 att.	E11-14:Ald + Z11-14:Ald (9:1) (20:1)	Frerot, 1985 Ostrauskas, 2010(a)	B
<i>Acleris filipjevi</i> Obraztsov <kousuao-hamaki> att.	E11-14:Ald + E11-14:OAc (9:1)	Ando, 1981	A

<i>Acleris fimbriana</i> Thunberg & Becklin yellow tortrix phe.	*E11,Δ13-14:Ald + *E11,Δ13-14:OAc + *E11-14:OAc (6:4:1) + another component	Liu, 2002(a); 2002(b); 2003	C
<i>Acleris fuscana</i> Barnes & Busck att.	E11-14:Ald + Z11-14:Ald (19:1)	Sanders, 1993	C
<i>Acleris hispidana</i> Christoph <haimidaremon-hamaki> 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	E11-14:OAc + Z11-14:OAc (4:1)	Frerot, 1979(b)	C

<i>Acleris scabrana</i> Denis & Shiffermüller	E11-14:Ald	Tagestad, 1975	C
<i>att.</i>			
<i>Acleris sparsana</i> Denis & Shiffermüller	E11-14:Ald	Knauf	C
<i>att.</i>	+ Z11-14:Ald (24:1)	in Arn, 1986(a)	
	(9:1)	Booij, 1985	
		Frerot, 1985	
<i>Acleris tripunctata</i> Hübner	E11-14:Ald	Booij, 1985	C
<i>att.</i>	+ Z11-14:Ald (1:1)		
<i>Acleris variana</i> Fern.	*E11,Δ13-14:Ald	Gries, 1994(a)	C
eastern blackheaded budworm			
<i>phe.</i>			
<i>Acropolitis</i> ^a <i>ergophora</i> Meyrick	*Z11-14:OAc E	Horak, 1988	D
<i>phe.</i>			
<i>Acropolitis hedista</i> Turner	*E11-14:OAc	Horak, 1988	D
<i>phe.</i>	+ *14:OAc (7:13) N		
<i>Acropolitis rudisana</i> Walker	*Z11-14:OAc	Horak, 1988	D
<i>phe.</i>	+ *E11-14:OAc (97:3) E		
<i>Acropolitis xuthobapta</i> Turner	*Z11-14:OAc	Horak, 1988	D
<i>phe.</i>	+ *E11-14:OAc (89:11)		
<i>Adoxophyes</i> ^a <i>honmai</i> Yasuda	*Z9-14:OAc	Tamaki, 1971(b)	A
smaller tea tortrix	+ *Z11-14:OAc (7:4)		
<chanokokakumon-hamaki>			
<i>phe.</i>	+ *E11-14:OAc	Tamaki, 1979; 1980	
	+ *Me10-12:OAc (63:31:4:2)		
	R:S = 19:1	Tamaki, 1983	
	+ other components	Noguchi, 1985	
Chainese strain	(47:50:1:2)	Hsiao, 1990	
Taiwanese strain	*Z9-14:OAc	Kou, 1990; 1992(c)	
	+ *Z11-14:OAc (9:16)		

Korean strain	(1:2)	Yang, 2009(a)	
	+ other components		
	Z9,E12-14:OAc	Negishi, 1979	
	+ Me11,Z9,Δ12-13:OAc		
	+ Z11-14:OAc (7:3:3)		
<i>Adoxophyes orana</i>	*Z9-14:OAc	Meijer, 1972	B
Fisher von Röslerstamm	+ *Z11-14:OAc (3:1)		
summerfruit tortrix			
phe.	(9:1)	Minks, 1973(a)	
In Romania	(4:1)	Ghizdavu in Arn, 1997	
	+ *Z9-14:OH	Guerin, 1986(a)	
	+ *Z11-14:OH (155:27:4:0.4)		
	+ other components		
Korea strain	(4:1)	Yang, 2009(a)	
	+ other components		
<i>Adoxophyes orana fasciata</i>	*Z9-14:OAc	Tamaki, 1971(a)	A
Walsingham	+ *Z11-14:OAc (13:4)		
<ringonokokakumon-hamaki>			
phe.	+ other components	Sugie, 1984(b)	
		Noguchi, 1985	
<i>Adoxophyes privatana</i> Walker	Z9-14:OAc	Shry, 1985	C
phe.	+ Z11-14:OAc		
	+ E11-14:OAc		
	+ Me10-12:OAc (63:31:4:2)		
	Z11-14:OAc	Hai, 2002	
	+ Z9-14:OAc (9:1)		
	*Z11-14:OAc	Vang, 2013	
	+ *Z9-14:OAc (9:1)		
<i>Adoxophyes privatara</i>	Z9-14:OAc	Shi in Arn, 1992	C
att.	+ Z11-14:OAc		
	+ E11-14:OAc		
	+ Me10-12:OAc (63:31:4:2)		
<i>Adoxophyes reticulana</i> Hübner	Z9-14:OAc	Chambon, 1974	C
att.	+ Z11-14:OAc (1:1)		

<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 *Z11-14:OAc + other components	Maini in Arn, 1986(a) Tóth, 1985	D
<i>Aleimma</i> ^c <i>loeflingiana</i> L. att.	E11-14:OAc + Z11-14:OAc E11-14:OAc + E11-14:Ald (1:1)	Frerot, 1979(b) Booij, 1985	D
<i>Amorbia</i> ^h <i>cuneana</i> Walsingham western avocado leafroller phe.	*E10,Z12-14:OAc + *E10,E12-14:OAc (17:8) + other components	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	Hrdý, 1979 Booij, 1984(a) Peltotalo, 1986 Ostrauskas, 2010(b)	C

	+ Z11-14:Ald (100:2:0.75:1)		
<i>Aphelia viburnana</i> Denis & Shiffermüller <i>att.</i>	Z11-14:Ald	Booij, 1985 Guerin, 1986(c)	C
<i>Archips^a argyrospilus</i> Walker fruittree leafroller <i>phe.</i>	*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> <i>att.</i>	E11-14:OAc + Z11-14:OAc (9:1) (7:3) Z9-14:OAc + Z11-14:OAc (9:1)	Ando, 1978 Mizukoshi, 2006 Mizukoshi, 2006	A
<i>Archips atrolucens</i> Diakonoff <i>phe.</i>	Z11-14:OAc + E11-14:OAc (5:5) *Z11-14:OAc + *E11-14:OAc + *14:OAc (2:1:1)	Hai, 2002 Vang, 2013	C
<i>Archips breviplicanus</i> Walsingham Asiatic leafroller <hosoatoki-hamaki> <ringomon-hamaki> <i>phe.</i>	*E11-14:OAc + *Z11-14:OAc (7:3)	Sugie, 1977	A
<i>Archips capsigeranus</i> Kennel <katakake-hamaki> <i>att.</i>	Z11-14:OAc + E11-14:OAc (1:1) (1:4)	Ando, 1981 Kozaki, 1984	A
<i>Archips cerasivoranus</i> Fitch uglynest caterpillar <i>phe.</i>	*E11-14:OAc + *Z11-14:OAc (83:17)	Roelofs, 1980	C
<i>Archips crataegana</i> Hübner	Z11-14:OAc	Ghizdavu, 1987	C

	att.	+ Z9-14:OAc (3:1)		
		+ 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		Z11-14:OAc	Ando, 1981	A
<midarekakumon-hamaki>		+ E11-14:OAc (4:1)		
	att.			
<i>Archips griseus</i> Robinson		Z11-14:Ald	Grant, 1983	C
black-shield leafroller		+ E11-14:Ald (3:1)		
	att.			
<i>Archips ingentanus</i> Christoph		Z11-14:OAc	Ando, 1978	A
<ooatoki-hamaki>		+ Z11-14:OH (9:1)		
	att.			
<i>Archips micaceanus</i> Walker		Z11-14:OAc	Zeleny, 1982	C
	att.	+ E11-14:OAc		
		+ 12:OAc		
		(7:3:40)	Spitzer, 1983	
<i>Archips mortuanus</i> Kearfoot		Z11-14:OAc	Cardé, 1977(a)	C
duskyback leafroller		+ E11-14:OAc		
	att.	+ Z9-14:OAc (90:10:1)		
<i>Archips oporana</i> L.		Z11-14:OAc	Booiij, 1984(a)	B
	att.	+ E11-14:OAc (9:1)		
<i>Archips oporanus</i>		Z11-14:OAc	Ando, 1978	A
(= <i>piceanus</i>) <i>similis</i> Butler		+ E11-14:OAc (4:1)		
<matsuatoki-hamaki>				
	att.	(1:1)	Kozaki, 1984	
<i>Archips peratrata</i> Yasuda		Z11-14:OAc	Ando, 1981	A
<kuroshio-hamaki>		+ E11-14:OAc (9:1)		
	att.			
<i>Archips podana</i> Scopoli		*Z11-14:OAc	Persoons, 1974	C
fruittree tortrix		+ *E11-14:OAc (1:1)		
	phe.			
		+ *Z11-14:OH	Safonkin, 2003	

<i>Archips poraivora</i> Meyrick <i>att.</i>	Z11-14:OAc + E11-14:OAc + Z11-14:OH (97:3:5)	Bhardwaj, 1987	C
<i>Archips rosana</i> L. European leafroller filbert leafroller <i>phe.</i>	*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 <i>phe.</i>	*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 <i>att.</i>	Z11-14:OAc	Zeleny, 1982 Spitzer, 1983	C
<i>Archips semistructus</i> Meyrick <usuatoki-hamaki> <i>att.</i>	Z11-14:OAc	Ando, 1977	A
<i>Archips strojny</i> Razowski tea tortrix <i>phe.</i>	*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 <i>att.</i>	E11-14:OAc	Daterman, 1977	C
<i>Archips viola</i> Falkovitsh <murasakikakumon- hamaki> <i>att.</i>	E11-14:OAc + Z11-14:OAc (7:3)	Ando, 1981	A
<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> att.	Z11-14:OAc + Z9,E12-14:OAc (1:1)	Ando, 1978	A
	Z11-14:OAc + Z9-12:OAc (1:1)	Ando, 1981 Kim, 2014(b)	
	Z9-14:OAc + Z11-14:OAc (9:1)	Mizukoshi, 2006	
<i>Argyrotaenia citrana</i> Fernald orange tortrix phe.	*Z11-14:OAc + *Z11-14:Ald (15:1)	Hill, 1975(b)	C
<i>Argyrotaenia dorsalana</i> Dyar att.	Z11-14:OAc	Steck, 1977(a) Daterman, 1977	C
	+ Z11-14:OH (1:1)	Steck, 1977(a)	
<i>Argyrotaenia liratana</i> Christoph (= <i>tricensa</i> Meyrick) <futamonko-hamaki> att.	Z9-12:OAc	Nagano, 1979	A
<i>Argyrotaenia pomililiana</i> L. phe.	*Z11-14:OAc + *Z11-14:Ald (20:1) + other components	Cichón, 2004	C
<i>Argyrotaenia pulchellana</i> Haworth phe.	Z11-14:OAc	Maini, 1973	C
	+ E11-14:OAc (9:1)	Frerot, 1979(b)	
	*Z11-14:OAc + *E11-14:OAc (76:19) + other components	Frerot, 1984	
<i>Argyrotaenia quadrifasciana</i> att.	Z10-12:OAc	Roelofs in Arn, 1986(a)	C
<i>Argyrotaenia sphaleropa</i> Meyrick phe.	*Z11,Δ13-14:Ald + *Z11-14:Ald (9:1) + *Z11,Δ13-14:OAc + *Z11-14:OAc	Nunez, 2002	C
	*Z11,Δ13-14:Ald + *Z11,Δ13-14:OAc (10:1)	Legrand, 2004	

	Z11,Δ13-14:Ald + Z11,Δ13-14:OAc (9:1-1:9)	Bavaresco, 2005	
<i>Argyrotaenia velutinana</i> Walker redbanded leafroller phe.	*Z11-14:OAc + *E11-14:OAc + *12:OAc (88:12:125) + other components	Roelofs, 1968(a); 1968(b) Roelofs, 1975(a) Bjostad in Arn, 1986(a)	C
<i>Arotrophora</i> ^b <i>arcuatalis</i> Walker phe.	*Z11-14:OAc + *E11-14:OAc (97:3) N	Horak, 1988	D
<i>Asthenoptycha</i> ^d sp. phe.	*Z8-14:OAc + *Z10-14:OAc (9:1) E	Horak, 1988	D
<i>Cacoecimorpha</i> ^a <i>pronubana</i> Hübner European carnation tortrix phe.	Z11-14:OAc + Z9-14:OAc Z11-14:OAc + Z11-14:OH + 14:OAc (18:1:1:20) Z11-14:OAc + E11-14:OAc + Z11-14:OH *Z11-14:OAc + *E11-14:OAc + *Z11-14:OH (87:3:10) + other components + *Z9-14:OAc [82:5:7:1] N (100:3:30:3)	Frerot, 1979(b) Soldán, 1983 Arsura in Arn, 1986(a) Frerot, 1982(b) Descoins, 1985 Kovalev, 1985 Witzgall, 1989(a); 1990	D
<i>Capnoptycha</i> ^d <i>ipnitis</i> Meyrick phe.	*Z8-14:OAc + *Z10-14:OAc (83:17) N	Horak, 1988	D
<i>Catamacta</i> ^a <i>gavisana</i> phe.	*Z11-14:OAc + *E11-14:OAc (49:51-61:39) N	Foster, 1988	D

<i>Cenopis</i> ^h <i>acerivorana</i> MacKay maple leafroller phe.	Z11-14:Ald + E11-14:Ald (4:1) *Z11-14:Ald + *E11-14:Ald + *Z11-14:OAc (13:7:2) + other components	Weatherston, 1978 Grant, 1983	C
<i>Choristoneura</i> ^a <i>biennis</i> Freeman two-year-cycle spruce budworm att.	E11-14:Ald	Sanders, 1974; 1993	C
<i>Choristoneura carnana</i> Barnes & Busck att.	E11-14:Ald + Z11-14:Ald (23:2)	Liebhold, 1985	C
<i>Choristoneura conflictana</i> Walker large aspen tortrix phe.	Z11-14:Ald *Z11-14:Ald + other components	Weatherston, 1976 Evenden, 2006	C
<i>Choristoneura fractivittana</i> Clemens att.	Z11-14:OH + Z11-14:Ald (19:1)	Roelofs, 1970(a) Weatherston, 1978	C
<i>Choristoneura fumiferana</i> Clemens eastern spruce budworm phe.	*E11-14:Ald + another component E11-14:Ald + Z11-14:Ald (19:1) *E11-14:OAc N *E11-14:Ald + *Z11-14:Ald (20:1) + other components + 14:Ald (19:1:1) + Z11-16:Ald (95:5:3.3) 1,E11-15:H + 1,Z11-15:H (19:1)	Weatherston, 1971 Weatherston, 1974(b) Sanders, 1976; 1984; 1993, Jennings, 1983 Wiesner, 1979 Silk, 1980 Alford, 1983 Silk, 1988(b) Silk, 1985(a)	C

<i>Choristoneura hebenstreitella</i> Müller <i>att.</i>	Z11-14:OH + Z11-14:Ald (1:1)	Booij, 1985	C
<i>Choristoneura lafauryana</i> Rag. oblique-banded leafroller <i>att.</i>	Z11-14:OH	Castellari, 1985	C
<i>Choristoneura lambertiana</i> Busck <i>att.</i>	E11-14:OAc or E11-14:Ald	Daterman, 1977	C
<i>Choristoneura lambertiana</i> <i>subretiniana</i> <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) *Z9-12:OAc + Z11-13:OAc (10:1) + *Δ11-12:OAc + *Z11-14:OAc + *E9-12:OAc (100:10:3:3)	Priesner, 1980(a) Priesner, 1982(a) Priesner, 1988(a)	C
<i>Choristoneura occidentalis</i> Freeman western spruce budworm <i>phe.</i>	Z11-14:OAc E11-14:Ald + *E11-14:Ald + *Z11-14:Ald (10:1) + other components	Burghardt, 1980 Weatherston, 1971 Cory, 1982 Silk, 1982; 1988(b) Alford, 1984 Sweeney, 1990	C
<i>Choristoneura orae</i> Freeman <i>phe.</i>	*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 <i>phe.</i>	* E11-14:OH + *Z11-14:OH + *E11-14:OAc + *14:OH (84:0.7:8:9)	Neal, 1982	C

	(100:5:4) + another component	Polavarapu, 1998	
<i>Choristoneura pinus</i> <i>maritima</i> Freeman att.	E11-14:OAc + Z11-14:OAc + E11-14:OH + Z11-14:OH	Silk, 1988(b)	C
	(153:27:17:3)	Liebhold, 1991	
<i>Choristoneura pinus pinus</i> Freeman jack pine budworm phe.	*E11-14:OAc + *Z11-14:OAc + *E11-14:OH + *Z11-14:OH (77:13:9:1) + other components	Silk, 1985(b)	C
<i>Choristoneura retiniana</i> Walsingham modoc budworm phe.	*E11-14:OAc + *Z11-14:OAc + *E11-14:OH + *Z11-14:OH (92:8:9:1)	Daterman, 1984	C
<i>Choristoneura rosaceana</i> Harris obliquebanded leafroller phe. New York strain	*Z11-14:OAc *Z11-14:OAc + *E11-14:OAc + *Z11-14:OH (95:5:0.5–95:5:10)	Roelofs, 1970(b) Hill, 1979(a)	C
Michigan strain	+ E11-14:OAc + *Z11-14:OH (74:5:21)	Huang, 2022	
In Eastern Canada	(96.5:2:1.5)	Delisle, 1992	
Okanagan Valley strain	+ *Z11-14:Ald (96.5:2:1.5:4)	Vakenti, 1988	
British Columbia strain	(100:2:0.75:1)	Thomson, 1991	
In Eastern Canada	(97:2:1.5:1) + other components	El-Sayed, 2001; 2003	
<i>Choristoneura sorbiana</i> Hübner (= <i>C. hebenstreitella</i> ?) att.	Z11-14:OH + E11-14:OH (97:3)	Frerot, 1979(b)	C
<i>Choristoneura viridis</i> Freeman (= <i>C. retiniana</i> ?)	E11-14:OAc	Sanders, 1974	C

green budworm att.			
<i>Choristoneura n. sp.</i> CPG=Prince George phe.	*E11-14:OAc + * Z11-14:OAc (13:7) + other components	Gray, 1993	C
<i>Clepsis</i> ^a <i>dumicolana</i> Zeller att.	Z11-14:OAc + E11-14:OAc (1:1)	Frerot, 1979(b)	C
<i>Clepsis furcana</i> Walsingham att.	E11-14:OAc	Daterman, 1977	C
<i>Clepsis melaleucana</i> Walker att.	Z11-14:OH + Z11-14:OAc (1:1)	Roelofs, 1971(a)	C
<i>Clepsis rurinana</i> L. <usumon-hamaki> att.	Z11-14:Ald	Capizzi in Arn, 1986(a) Frerot, 1985	A
<i>Clepsis semialbana</i> Cuc. att.	Z11-14:OAc + Z11-14:OH + Z9-14:OAc (17:2:1)	Frerot, 1982(a)	B
<i>Clepsis spectrana</i> Treitschke phe.	*Z11-14:OAc + *Z9-14:OAc (3:1)	Minks, 1973(b)	C
<i>Clepsis strigana</i> Hübner att.	Z11-14:OAc	Maini, 1973	B
<i>Cnephasia</i> ^b <i>alternella</i> Stephens att.	Z8-12:OAc	Chambon, 1974 Sziráki, 1978(a); (b)	C
	Z8-12:OAc + E8-12:OAc (18:7)	Beauvais, 1977	
<i>Cnephasia alticolana</i> Herrich-Schäffer att.	Z11-14:OAc + E11-14:OAc (1:1)	Olenici, 2007	C
<i>Cnephasia asseclana</i> Denis & Schiffermüller (= <i>interjectana</i> Haworth ?) att.	E9-12:OAc	Hrdý, 1989	C

<i>Cnephasia communana</i> Herrich & Schäffer <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) *Z11-14:OAc	Benn in Roelofs 1982(a) Foster, 1993	C
<i>Cnephasia longana</i> Haworth <i>phe.</i>	Z9-12:OAc Z9-12:OAc + Z9-12:OH (1:1) *Z9-12:OAc	Bathon, 1983 Booij, 1984(a) Bestmann, 1985	C
<i>Cnephasia pascuana</i> Hübner	Z8-12:OAc	Gigon, 1980	C

	att.	+ E8-12:OAc (24:1)		
<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	att.	E11-14:OAc	Frerot, 1985	C
		+ E11-14:OH (10:1)	Mozūraitis, 1998	
<i>Cochylis hospes</i> Walsingham banded sunflower moth	phe.	*E11-14:OAc + *Z11-14:OAc (9:1-4:1)	Underhill, 1986	C
<i>Cochylis hybridella</i> Hübner <togari-hosohamaki>	att.	Z11-14:Ald + E11-14:OAc (1:1)	Frerot, 1985	A

<i>Cochylis molliculana</i> att.	E11-14:OAc	Maini in Arn, 1986(a)	C
<i>Cochylis posterana</i> Zeller att.	Z8-12:OAc + E8-12:OAc + Z11-14:OAc (25:1:5)	Tóth in Arn, 1986(a)	C
	Z11-14:OAc + Z9-12:OAc (10:1)	Tóth, 1992(d)	
<i>Commophila</i> ^g <i>umbrabsana</i> Kearfott att.	E11-14:OAc	Daterman, 1977	D
<i>Croesia</i> ^c <i>askoldana</i> Christoph <ginsujikaba-hamaki> att.	Z11-14:Ald + Z11-14:OAc (9:1)	Ando, 1978	A
<i>Croesia bergmaniana</i> L. att.	E11-14:OAc + 14:OAc (9:1)	Voerman in Arn, 1986(a)	B
<i>Croesia conchyloides</i> Walsingham <neusu-hamaki> att.	Z11-14:Ald	Ando, 1978	A
<i>Croesia curvalana</i> Kearfott blueberry leaftier moth phe.	*E11-14:Ald + *Z11-14:Ald + *E11-14:OAc + *Z11-14:OAc (810:90:85:15)	Lonergan, 1989 Ponder, 1991	C
<i>Croesia dealbata</i> Yasuda <shiroobigin-hamaki> att.	E11-14:Ald	Ando, 1981	A
<i>Croesia forskaleana</i> att.	E11-14:Ald + Z11-14:Ald (1:1–1:9)	Frerot, 1985	C
<i>Croesia holmiana</i> L. att.	E11-14:OAc + 14:OAc (9:1) + Z11-14:Ald (1:1)	Arn, 1974 Frerot, 1979(b) Frerot, 1985	C

	Z6-14:OAc + E6-14:OAc (9:1)	Minks in Arn, 1986(a)	
<i>Croesia semipurpurana</i> Kearfott oak leaf shredder phe.	E11-14:Ald + Z11-14:Ald (9:1–8:2) *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 phe.			D
Auckland strains Type I	*Z8-14:OAc + *Z5-14:OAc (4:1)	Young, 1985 Clearwater, 1991	
Christchurch strains Type II (= <i>C. herana</i>)	*Z5-14:OAc + another component	Foster, 1987(a); 1991 Clearwater, 1991	
Type III	*Z8-14:OAc	Foster, 1986	

	+ *Z5-14:OAc (9:1)		
Type IV (= <i>C. filicis</i> ?)	*Z10-16:OAc	Foster, 1986	
<i>Ctenopseustis servana</i> phe.	*Z7-14:OAc + *Z5-14:OAc (4:1–5:3) N	Foster, 1988; 1990	D
<i>Decodes</i> ^b <i>stevensi</i> Powell att.	Z9-12:OAc	Stevens, 1985	D
<i>Ditula</i> ^a <i>angustiorana</i> Haworth att.	Z10-14:OAc	Frerot, 1985	C
<i>Dyceratura</i> ^g <i>ostrinana</i> Guenée att.	Z11-14:OAc + E11-14:OAc (3:2)	Frerot, 1982(a)	D
<i>Eana</i> ^b <i>argentana</i> Clerck <ginmuji-hamaki> att.	Z7-12:OAc	Priesner in Arn, 1986(a)	A
<i>Eana derivana</i> La Harpe att.	E9-12:OAc + Z9-12:OAc (11:9)	Hrdý, 1989	C
<i>Ecclitica</i> ^a <i>torogramma</i> phe.	*E11-14:OAc + *Z11-14:OAc (25:0–23:2) N	Foster, 1988	D
<i>Epagoge</i> ^a <i>grotiana</i> F. att.	Z10-14:OAc + Z11-14:OAc (3:1–1:3) (10:1)	Booij, 1984(a) Frerot, 1985 Mozūraitis, 1998	D
<i>Epichoristodes</i> ^a <i>acerbella</i> Walker phe.	*Z11-14:OAc + *Z11-14:OH + *Z9-14:OAc (32:13:4) + other components *Z11-14:OAc + Z9-14:OH (8:1:2:1)	L.-Cassou, 1980 Rossi, 1982 Dalla in Arn, 1992	D

<i>Epiphyas</i> ^a <i>postvittana</i> Walker lightbrown apple moth phe.	*E11-14:OAc + *E9,E11-14:OAc (20:1) (9:1) + *E11-14:OH + *E11-16:OAc (200:10:2:1) + other components	Bellas, 1983 Muggleston, 1989 El-Sayed, 2011	D
<i>Epiphyas xylodes</i> Meyrick phe.	*Z11-14:OAc + *E11-14:OAc (3:2)	Horak, 1988	D
<i>Epitymbia</i> ^d <i>alaudana</i> Meyrick phe.	*Z5-14:OAc + *Z7-14:OAc (2:1) E	Horak, 1988	D
<i>Epitymbia cosmota</i> Meyrick phe.	*Z7-14:OAc + *Z5-14:OAc (4:1) E	Horak, 1988	D
<i>Epitymbia eudrosa</i> Turner phe.	*Z7-14:OAc E	Horak, 1988	D
<i>Eulia</i> ^b <i>ministrana</i> L. <bokashi-hamaki> att.	Z11-14:OAc + Z9-14:OAc (9:1) (10:1)	Booij, 1984(a) Priesner, 1984(c)	A
	Z11-14:OAc + Z11-14:Ald (1:1)	Booij, 1985	
<i>Eupoecilia</i> ^g <i>ambiguella</i> Hübner European grape moth <budou-hosohamaki> phe.	*Z9-12:OAc Z9-12:OAc + 12:OAc (1:1–1:5) or + Z10-13:OAc (5:1–2:1)	Arn, 1976(b) Saglio, 1977(b) Rauscher, 1984	A
	*Z9-12:OAc + *12:OAc + *18:OAc (1:1:2) + other components	Arn, 1986(b),1988	
<i>Eupoecilia angustana</i> Hübner <tsumaobiki-hosohamaki> 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)	Noguchi, 1979; 1981	A
<i>Homona spargotis</i> Meyrick phe.	Z11-14:OAc + Z9-12:OAc (9:1)	Ando, 1981 Kim, 2014(b)	
<i>Homona spargotis</i> Meyrick phe.	*E9-12:OAc + *Z9-12:OAc + *E9-12:OH + *Z9-12:OH + *Z11-14:OAc (10:8:7:5:1) + other components	Whittle, 1987	C
<i>Homona tabescens</i> Meyrick phe.	*Z11-14:OAc + *Z9-12:OAc (9:1)	Vang, 2013	C
<i>Homonopsis</i> ^a <i>foederatana</i> Kennel <tsudurimon-hamaki> att.	Z11-14:OAc + E11-14:OAc (1:1)	Ando, 1978	A
	(3:7)	Mizukoshi, 2006	
<i>Homonopsis illotana</i> Kennel <tsuyasuji-hamaki> att.	Z11-14:OAc + Z11-14:OH (9:1)	Ando, 1978	A
<i>Hoshinoa</i> ^a <i>adumbratana</i> Walsingham <oofutasuji-hamaki> att.	Z11-14:Ald	Ando, 1978	A
<i>Hoshinoa longicellana</i> Walsingham common apple leafroller	Z11-14:OAc	Ando, 1975	A

<atoboshi-hamaki> phe.	*Z11-14:OAc + *E11-14:OAc (5:1)	Kozaki, 1984	
<i>Hysterosia</i> ^g <i>cartwrightana</i> Kearfott att.	E11-14:OAc	Struble, 1977(a)	C
<i>Hysterosia inopinana</i> att.	E11-14:OAc + E11-14:Ald (1:1)	Priesner in Arn, 1986(a)	C
<i>Isochorista</i> ^d <i>helota</i> Meyrick att.	Z5-14:OAc + Z7-14:OAc	Horak, 1988	D
<i>Kawabeia</i> ^b <i>ignavana</i> Christoph <usuobihairofuyu-hamaki> att.	Z7-12:OAc	Ando, 1981	A
<i>Kawabeia razowskii</i> Kawabe <hairofuyu-hamaki> att.	Z5-12:OAc	Ando, 1977	A
<i>Meridemis</i> ^a <i>furtiva</i> Diakonoff att.	Z11-14:OAc	Hai, 2002	D
<i>Meritastis</i> ^d <i>laganodes</i> Meyrick phe.	*Z9-14:OAc N	Horak, 1988	D
<i>Meritastis lythrodana</i> Meyrick phe.	*Z9-14:OAc E	Horak, 1988	D
<i>Meritastis pyrosemana</i> Meyrick phe.	*Z9-14:OAc N	Horak, 1988	D
<i>Meritastis</i> sp. phe.	*Z9-14:OAc E	Horak, 1988	D
<i>Merophyas</i> ^a <i>divulsana</i> Walker lucerne leafroller moth phe.		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 chlorograpt</i> Meyrick <usutobi-hamaki> att.	Z11-14:OAc + E11-14:OAc (4:1)	Ando, 1981	A
<i>Pandemis cinnamomeana</i> Treitschke <akatobi-hamaki> att.	Z11-14:OAc + E11-14:OAc (4:1)	Ando, 1978	A
<i>Pandemis heparana</i> Denis & Shiffermüller <tobi-hamaki> phe.	Z11-14:OAc + Z11-14:OH + Z9-14:OAc (17:2:1) (2:1:1)	Frerot, 1979(b)	A
	*Z11-14:OAc + *Z11-14:OH	Voerman in Arn, 1986(a)	
		Frerot, 1982(b)	

	+ *Z9-14:OAc (18:1:1) + other components		
<i>Pandemis limitata</i> Robinson threelined leafroller phe.	*Z11-14:OAc + *Z9-14:OAc (91:9)	Roelofs, 1976(b)	C
<i>Pandemis monticolana</i> Yasuda <yamatobi-hamaki> att.	E11-14:OAc + Z11-14:OAc (7:3)	Mizukoshi, 2006	A
<i>Pandemis pyrusana</i> Kearfott phe.	*Z11-14:OAc + *Z9-14:OAc (47:3)	Roelofs, 1977(a)	C
<i>Parapandemis</i> ^a <i>borealis</i> Freeman att.	Z11-14:OAc	Daterman, 1977	D
<i>Parasyndemis</i> ^a (= <i>Dichelia</i>) <i>histrionana</i> Frölich att.	Z11-14:OAc + E11-14:OAc Z11-14:OAc	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. att.	E11-14:OAc	Roelofs, 1970(a)	
<i>Phalonidia</i> ^g <i>manniana</i> att.	Z11-14:OAc + Z9,E11-14:OAc (10:1)	Priesner in Arn, 1986(a)	C
<i>Phalonidia minimana</i> Caradja <mini-hosohamaki> att.	Z11-14:OAc	Ando, 1977	A
<i>Phricanthes</i> ^e <i>asperana</i> Meyrick phe.	*Z9-12:OAc N	Horak, 1988	D
<i>Phtheochroa</i> ^g (= <i>Bonagota</i>) <i>cranaodes</i> Meyrick Brazilian apple leafroller phe.	*E3,Z5-12:OAc + *Z9-16:OAc (1:1) + other components	Unelius, 1996 Eiras, 1999	D

	(9:1)		Kovaleski, 2003	
	+ *Z5-12:OAc		Coracini, 2001	
	+ *E3,Z5-14:OAc (20:20:1:1)			
		(20:1:1:1)	Coracini, 2003	
<i>Phtheochroides</i> ^g <i>clandestina</i> Razowski <yomogioo-hosohamaki> <i>att.</i>	Z11-14:OAc + Z9-14:OAc (1:1)		Ando, 1981	A
<i>Planotortrix</i> ^a <i>clarkei</i> Philpott <i>phe.</i>	*Z11-14:OAc + *E11-14:OAc (23:2)	N	Foster, 1988	D
<i>Planotortrix excessana</i> Walker greenheaded leafroller <i>phe.</i>			Galbreath, 1985	D
A-race (= <i>P. octo</i> ?)	*Z8-14:OAc + *14:OAc (10:3)			
B-race	*Z5-14:OAc + *Z7-14:OAc (3:2)			
		(3:97 – 71:29) N	Foster, 1989	
	+ *Z9-14:OAc	N	Foster, 1988	
<i>Planotortrix flammea</i> Salmon <i>phe.</i>	*Z5-14:OAc + *Z7-14:OAc (3:2–1:1)	N	Foster, 1990	D
<i>Planotortrix notophaea</i> Turner <i>phe.</i>	*Z7-14:OAc	N	Foster, 1990	D
<i>Planotortrix octo</i> Dugdale <i>att.</i>	Z8-14:OAc + 14:OAc		Park, 1998	D
<i>Planotortrix orthrocopa</i> Meyrick <i>phe.</i>	*Z11-14:OAc	N	Foster, 1988	D
<i>Planotortrix orthropis</i> Meyrick <i>phe.</i>				
type 1	*Z11-14:OAc + *E11-14:OAc (87:13)	N	Foster, 1988	D
type 2	*Z11-14:OAc			

	+ *Z9-14:OAc (95:5–82:18)	N		
<i>Planotortrix spatiosa</i> Philpott phe.	*Z11-14:OAc + *E11-14:OAc (3:1–3:2)	N	Foster, 1988	D
<i>Planotortrix</i> "MBS" phe.	*Z7-14:OAc + *Z5-14:OAc (50:1–12:1)	N	Foster, 1990	D
<i>Planotortrix</i> sp. ("M") phe.	*Z5-14:OAc + *14:OAc (1:1)		Foster, 1987(b)	D
	+ *Z7-14:OAc (20:20:1)		Foster, 1990	
<i>Platynota</i> ^h <i>flavedana</i> Clemens variegated leafroller phe.	*E11-14:OH + *Z11-14:OH (9:1) + other components		Hill, 1977	D
<i>Platynota idaeusalis</i> Walker tufted apple bud moth phe.	*E11-14:OH + *E11-14:OAc (2:1)		Hill, 1974	D
<i>Platynota stultana</i> Walsingham omnivorous leafroller phe.	*E11-14:OAc + *Z11-14:OAc (22:3)		Hill, 1975(a)	D
	+ E & Z11-14:OH (1–0.2%)		Baker, 1975	
<i>Proeulia</i> ^a <i>auraria</i> Clarke phe.	*E11-14:OH		Bjostad in Roelofs, 1982(a)	D
<i>Proeulia triquetra</i> Obraztsov phe.	*Z11-14:OAc + *E9-12:OAc (10:1) + another component		Bergmann, 2016	D
<i>Proselena</i> ^f <i>tenella</i> Meyrick phe.	*Z11-14:OAc	N	Horak, 1988	D
<i>Pseudargyrotoza</i> ^a <i>conwagana</i> F. <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)		Frerot, 1979(b) Minks in Arn, 1986(a)	B
	*Z11-14:OH		Descoins in Arn, 1986(a)	

<i>Ptycholoma lecheana</i> <i>circumclusana</i> Christoph <ooginsujiaka-hamaki> att.	Z11-14:OH + Z11-14:OAc (9:1)	Ando, 1977 Ando, 1978	A
<i>Pyrgotis</i> ^a <i>chrysomela</i> phe.	*Z9-14:OAc + *Z11-14:OAc (100:0–99:1) N	Foster, 1988	D
<i>Pyrgotis plagiatana</i> phe.	*E11-14:OAc + *Z11-14:OAc (4:1) N	Foster, 1988	D
<i>Sparganothis</i> ^h <i>albicaudana</i> Busck att.	E11-14:OAc	Roelofs, 1971(a)	C
<i>Sparganothis directana</i> Walker chokecherry leafroller phe.	*E9,Δ11-12:OAc + *Z11-14:OAc + *E11-14:OAc (5:4:3) + other components	Bjostad, 1980(a)	C
<i>Sparganothis niveana</i> Walsingham (= <i>groteana</i> Fernald) att.	Z11-14:OH	Roelofs, 1970(a); 1982(a)	C
<i>Sparganothis pilleriana</i> Denis & Schiffermüller <tengu-hamaki> phe.	E9-12:OAc + E9-12:OH (8:2–9:1) E Z11-14:Ald *E9-12:OAc + *E9-12:OH + *E11-14:OAc + *Z11-14:OAc (4:1:4:20) + other components *E9-12:OAc + *E9-12:OH + *E11-14:OAc + *14:OAc (4:1:4:4) + other components	Saglio, 1977(a) Ando, 1978 Guerin, 1986(c) Arn, 1988	A
<i>Sparganothis sulfureana</i> Clemens Sparganothis fruitworm phe.	E11-14:OAc *E11-14:OAc + *Z11-14:OAc	Roelofs, 1970(a) Zhu, 2009	C

	+ *Z9-14:OAc (100:1:1) + other components		
<i>Sparganothis tunicana</i> Walsingham <i>att.</i>	E11-14:OAc	Daterman, 1977	C
<i>Sparganothis</i> sp. woodbine leafroller <i>phe.</i>	*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> <i>att.</i>	Z11-14:OAc + Z9-14:OAc (1:1) or + Z9,E12-14:OAc (1:1)	Ando, 1978	A
	Z11-14:OAc + Z9-14:OAc + Z11-14:OH (18:1:1)	Hrdý, 1989	
<i>Sperchia</i> ^a <i>intractana</i> Walker <i>phe.</i>	E11-14:OAc + Z11-14:OAc (2:1)	Benn, 1981	D
	*E11-14:OAc + *Z11-14:OAc (69:31) E	Horak, 1988	
<i>Stenodes</i> ^g <i>alternana</i> <i>att.</i>	Z9-14:OAc + Z11-14:OAc + E11-14:OAc (10:9:1)	Safonkin, 1988	C
<i>Syllomatia</i> ^b <i>pertinax</i> Meyrick <i>phe.</i>	*Z9-14:OAc E	Horak, 1988	D
<i>Syndemis</i> ^a <i>musculana</i> Hübner <i>phe.</i>	E11-14:OAc + Z11-14:OAc	Frerot, 1979(b)	B
	*E11-14:OAc + *Z11-14:OAc (9:1)	Persoons, 1984	
<i>Taeniarchis</i> ^b <i>catenata</i> Meyrick <i>phe.</i>	*Z11-14:OAc + *E11-14:OAc (14:11) N	Horak, 1988	D
<i>Terricula</i> ^a <i>violetana</i> Kawabe	Z11-14:OAc	Ando, 1978	A

<kushihigemurasaki-hamaki> att.	+ Z9,E12-14:OAc (1:1) or + Z9-14:OAc (1:1)		
<i>Tortrix</i> ^c <i>sinapina</i> Butler <usuamime-hamaki> att.	Z11-14:OAc	Ando, 1978	A
<i>Tortrix viridana</i> L. phe.	Z11-14:OAc	Hrdý, 1979 Knauf, 1979	C
	Z11-13:OAc or E11-13:OAc	Arn, 1979	
	*Z11-14:OAc	Arn, 1979	
	+ Z11-14:OH (9:1)	Novotny, 1990	
" <i>Tortrix</i> " <i>constrictana</i> Walker phe.	*Z11-14:OAc + *Z9-14:OAc (22:3) E	Horak, 1988	C

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

<i>Acanthoclit</i> ^b (= <i>Cydia</i>) <i>phaulomorpha</i> Meyrick att.	Z8-12:OAc + E8-12:OAc (1:1)	Bourdouxhe, 1982	C
<i>Ancylis</i> ^a <i>achatana</i> F. att.	Z9-12:OAc + E9-12:OAc (7:3)	Biwer, 1978(a)	C
<i>Ancylis alba</i> fasciana Heinrich att.	Z9-12:OAc	Stevens, 1985	C
<i>Ancylis apicella</i> Denis & Schiffermüller att.	Z8-12:OAc + Z9-12:OAc (1:1)	Booij, 1984(a)	C
<i>Ancylis burgessiana</i> Zeller att.	E9-12:OAc	Reed, 1985(b)	C
<i>Ancylis columbiana</i> McDunnough att.	Z9-12:OAc	Stevens, 1985	C

<i>Ancylis geminana</i> Donovan <shiroobi-himehamaki> att.	Z9-12:OH	Booij, 1984(a)	A
<i>Ancylis mediofasciana</i> Clemens att.	E9-12:OAc	Stevens, 1985	C
<i>Ancylis nubeculana</i> Clemens att.	Z9-12:OAc	Reed, 1985(b)	C
<i>Ancylis pacificana</i> Walsingham att.	Z9-12:OAc	Stevens, 1985	C
<i>Ancylis sativa</i> Liu jujube leafroller phe.	*E9-12:OAc + *Z9-12:OAc (4:1) + other components	Lin, 1984 Han, 1999	C
<i>Ancylis selenana</i> Guenée <futaboshi-himehamaki> att.	Z9,E11-14:OAc	Nagano, 1979	A
<i>Ancylis simuloides</i> McDunnough att.	Z9-12:OAc	Stevens, 1985	C
<i>Ancylis uncella</i> Denis & Schiffermüller <usubenikagiba-himehamaki> att.	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 <isshiki-himehamaki> att.	Z8,Z10-12:OH	Ando, 1987	A
<i>Bactra</i> ^d <i>lanceolana</i> Hübner <togariba-himehamaki> att.	E10-14:OAc	Booij, 1984(a)	A
<i>Bactra 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 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 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 rosaceana</i> Schläger att.	Z8-12:OAc	Alford, 1978	C
<i>Celypha rurestrana</i> Dup. att.	Z8-12:OAc Z8-12:OH	Sziráki, 1978(a) Tóth, 1992(d)	C
<i>Celypha striana</i> Denis & Schiffermüller att.	Z8-12:OH	Arn, 1974	C
<i>Centroxena</i> ^b sp. <mayapushiki-himeshinkui> phe.	*E8,E10-12:OAc + other components	Vang, 2005	A
<i>Cryptasasma</i> ^c sp. phe.	*Z9-14:OAc N	Horak, 1988	C
<i>Cryptophlebia</i> ^b <i>amamiana</i> Komai & Nasu <mhirugiashibuto-himehamaki> phe.	*Z8-12:OAc + other components	Vang, 2005	A
<i>Cryptophlebia horii</i> Kawabe <ohirugiashibuto-himehamaki> phe.	*Z8-12:OH + other components	Vang, 2005	A
<i>Cryptophlebia imicella</i> Zeller att.	Z8-12:OAc	Dix, 1984	C
<i>Cryptophlebia illepada</i> Butler koa seedworm	Z8-12:OAc + E8-12:OAc	Chang, 1995	C

<i>att.</i>	+ Z8-12:OH + Z7-12:OAc (93:4:1:2)		
<i>Cryptophlebia ombrodelta</i> Lower macadamia nut borer litchi fruit moth <ashibuto-himehamaki> <i>att.</i>	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> <i>phe.</i>	*Z8-12:OAc + other components	Vang, 2005	A
<i>Cryptophlebia peltastica</i> Meyrick litchi moth <i>att.</i>	Z8-12:OAc	Newton, 1993	C
<i>Cydia</i> ^b <i>americana</i> Walsingham <i>att.</i>	E8,E10-12:OAc	Stevens, 1985	C
<i>Cydia blackmoreana</i> Walsingham <i>att.</i>	E8,E10-12:OAc	Witzgall, 1996	C
<i>Cydia bracteatana</i> Fernald <i>att.</i>	Z9-12:OAc	Dix, 1984	C
<i>Cydia caryana</i> Fitch hickory shuckworm <i>phe.</i>	E8,E10-12:OAc or Z9-12:OAc *E8,E10-12:OAc	Smith, 1987 McDonough, 1990(a)	C
<i>Cydia colorana</i> Kearfott <i>att.</i>	E8,E10-12:OAc	Stevens, 1985	C
<i>Cydia coniferana</i> Ratzeburg <i>att.</i>	E8-12:OAc + E10-12:OAc (1:1) (9:1) or + E8-12:OH (9:1)	Booij, 1984(a) Voerman in Arn, 1992	C
<i>Cydia coronilana</i> <i>att.</i>	Z8-12:OAc + E8-12:OAc	Hrudová, 2003	C
<i>Cydia cosmophorana</i> Treitschke	E8-12:OAc	Booij, 1984(a)	C

	att.	+ E10-12:OAc (1:1)		
		E9-12:OAc	Tóth in Arn, 1997	
<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	Rotundo, 1984	A
		+ E8,E10-12:OH (3:1)	Rotundo, 1988	
		*E8,E10-12:OAc + other components	Witzgall, 1996	
<i>Cydia fletcherana</i>	Kearfott att.	E8-12:OAc	Reed, 1985(b)	C
<i>Cydia flexiloqua</i>	Heinrich att.	Z5,E7-12:Ald + Z5,Z7-12:Ald + Z7-12:Ald (10:1:1)	Chisholm, 1985(a)	C
<i>Cydia illutana</i>	H.-S. att.	E8,E10-12:OAc	Priesner in Arn, 1986(a) Witzgall, 1996	C
<i>Cydia indivisa</i>	Danilevski att.	Z8-12:OH + E8-12:OH (1:1)	Booij, 1984(d)	C
		Z8-12:OAc + E8-12:OAc (1:1)	Witzgall, 1996	
<i>Cydia ingrata</i>	Heinrich att.	E8,E10-12:OAc + E8,Z10-12:OAc (10:1)	Chisholm, 1985(a)	C
		(1:1)	Reed, 1985(b)	
<i>Cydia intexta</i>	Kuznetsov att.	E8,E10-12:OAc	Witzgall, 1996	C
<i>Cydia latiferreana</i>	Walsingham	E8,E10-12:OAc	Davis, 1981	C

(= <i>Melissopus latiferreanus</i>) filbertworm phe.	*E8,Z10-12:OAc + *E8,E10-12:OAc (43:10)	Davis, 1984	
<i>Cydia lautiuscula</i> Heinrich att.	E8,E10-12:OAc	Chisholm, 1985(a)	C
<i>Cydia leucostoma</i> Meyrick <minamitumajiro-himehamaki> att.	Z8,E10-12:OAc	Witzgall, 1996	A
<i>Cydia medicaginis</i> Kuznetsov att.	E8,E10-12:OAc	Frerot, 1979(a) Wall, 1987	C
<i>Cydia millenniana</i> Adamoz. att.	E8,E10-12:OAc + Z8,Z10-12:OAc (1:1)	Witzgall, 1996	C
<i>Cydia nigricana</i> F. pea moth <endou-shinkui> phe.	E8,E10-12:OAc or Z8-12:OAc or E10-12:OAc *E8,E10-12:OAc E10-12:OAc *E8,E10-12:OAc + other components	Lewis, 1975 Wall, 1976 Greenway, 1984 Horák, 1988 Witzgall, 1993; 1996	A
<i>Cydia orobana</i> Treitschke att.	E8,E10-12:OH	Rotundo, 1988	C
<i>Cydia oxytropidis</i> Martini att.	E8,E10-12:OAc	Witzgall, 1996	C
<i>Cydia pactolana</i> Zeller <todomatsumiki-moguriga> att.	Z8-12:OH	Booij, 1984(a)	B
<i>Cydia piperana</i> Kearfott seed worm att.	E9-12:OAc + Z9-12:OAc (7:3) (1:1)	Sartwell, 1985 Stevens, 1985	C
<i>Cydia pomonella</i> L. codling moth	E8,E10-12:OH	Roelofs, 1971(e)	C

phe.	*E8,E10-12:OH	Beroza, 1974 McDonough, 1974 Buser, 1975	
	+ *12:OH (3:1) + other components	Einhorn, 1984(b); 1986 Arn, 1985	
	+ *14:OH (10:5:1)	Bartell, 1988	
	E8,E10-12:OH	McDonough, 1993; 1995	
<i>Cydia populana</i> Busck att.	E8,E10-12:Ald	Chisholm, 1985(a)	C
	E8,E10-12:OAc	Stevens, 1985	
<i>Cydia pyrivora</i> Danil. phe.	E8,E10-12:OAc	Priesner in Arn, 1986(a)	C
	*E8,E10-12:OAc + other components	Witzgall, 1996	
<i>Cydia servillana</i> Dup. att.	E8,E10-12:OAc	Priesner in Arn, 1986(a) Witzgall, 1996	C
<i>Cydia splendana</i> Hübner chestnut codling moth phe.	E8,E10-12:OAc	Rotundo, 1988	C
	*E8,E10-12:OAc + E8,E10-12:Ald (9:1)	Frérot, 1995	
	+ *E8,Z10-12:OAc (1:1) + other components	Witzgall, 1996	
<i>Cydia strobilella</i> L. spruce seed moth <ezomatsukasaga> phe.	Z8-12:OH	Booij, 1984(a)	A
	E8-12:OAc	Grant, 1989	
	*E8-12:OAc	Bédard, 2002	
	E8,E10-12:OAc + E8,Z10-12:OAc (1:1)	Witzgall, 1996	
	*E8,E10-12:OAc + *E8,Z10-12:OAc (3:2)	Wang, 2010	

<i>Cydia</i> (= <i>Grapholita</i>) <i>succedana</i> Denis & Shiffermüller <i>att.</i>	E8,E10-12:OAc + E8,Z10-12:OAc (1:1)	Hrdý, 1989 Witzgall, 1996	C
<i>Cydia toreuta</i> Grote eastern pine seed worm <i>phe.</i>	E8,Z10-12:OAc *E8,Z10-12:OAc	Chisholm, 1985(a) Katovich, 1989	C
<i>Cydia trasi</i> Meyrick <i>phe.</i>	*E8,E10-12:OAc + *E8,E10-12:OH + *E8,E10-12:Ald (10:9:1)	Fu, 2002	C
<i>Cydia turciana</i> e Chambon <i>att.</i>	E8,E10-12:OAc + E8,Z10-12:OAc (1:1)	Witzgall, 1996 Chambon in Arn, 1997	C
<i>Cydia youngana</i> Kearfott spruce coneworm <i>att.</i>	E7-12:OH	Weatherston, 1977	C
<i>Cydia zebeana</i> Ratzeburg <i>att.</i>	E8-12:OAc + E10-12:OAc (1:1) (9:1)	Booij, 1984(a) Booij, 1986	C
<i>Cydia</i> (= <i>Laspeyresia</i>) sp. <i>att.</i>	Z8-12:OAc	Roelofs, 1971(a)	
<i>Cymolomia</i> ^d <i>hartigiana</i> Saxesen <touhi-himehamaki> <i>att.</i>	Z10-12:OAc	Witzgall, 1996	A
<i>Dichrorampha</i> ^b <i>acuminatana</i> Lienig & Zeller <i>att.</i>	Z9,Δ11-12:OAc E9,Δ11-12:OAc + Z9,Δ11-12:OAc (4:1)	Chisholm, 1985(b) Rotundo, 1985(b) Ulenberg in Arn, 1997	C
<i>Dichrorampha gueneeana</i> Obraztsov <kokiobihelihoshi-himehamaki> <i>att.</i>	Z9,Δ11-12:OAc + E9,Δ11-12:OAc (1:4)	Chisholm, 1985(b) Ulenberg in Arn, 1997	A
<i>Dichrorampha incursana</i> H.-S. <i>att.</i>	E9-12:OAc + Z9-12:OAc (11:9)	Hrdý, 1989	C

<i>Dichrorampha petiverella</i> L. <hosokiobiherihoshi- himehamaki> 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 phe.	*E8-12:OAc + *E8-12:OH (100:1 - 10:1)	Leal, 2001 Ono, 2001	D
<i>Ecdytolopa insiticiana</i> Zeller att.	E8-12:OAc	Roelofs, 1971(a)	D
<i>Ecdytolopa 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) Z8-12:OAc *Z9-12:OAc + *E9-12:OAc (6:4-5:5) + other components	Minks, 1976 Toshova, 2017 Hrdý, 1979 McNair, 1999	C

	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>att.</i> <i>caraduana</i> Busck	Z9-12:OAc	Dix, 1984	D
<i>Endothenia</i> ^d <i>att.</i> <i>benausopsis</i> Meyrick	Z10-14:OAc	Ando, 1977	A
<i>Endothenia ericetana</i> Humpr. & Westw. <i>att.</i>	Z10-14:OAc + E10-14:OAc (1:1) E10-14:OAc	Priesner in Arn, 1986(a) Mozūraitis, 1998	C
<i>Endothenia gentianaeana</i> Hübner <i>att.</i>	Z10-14:OAc	Frerot, 1985	A
<i>Endothenia nigricostana</i> Haworth <kuromadara-shinmushiga> <i>att.</i>	Z11-14:OAc + E11-14:OAc	Frerot, 1979(b)	A
<i>Endothenia quadrimaculana</i> Haworth <i>att.</i>	E10-14:OAc + Z10-14:OAc (3:1) (9:1)	Booij, 1984(a) Capizzi in Arn, 1992	C
<i>Endothenia ustulana</i> (= <i>carbonana</i>) Haworth <i>att.</i>	Z10-14:OAc	Arn, 1974	C
<i>Epiblema</i> ^a <i>att.</i> <i>confusana</i> H.-S.	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	Ando, 1977 Beauvais, 1977 Witzgall, 1996	A

	+ E8,Z10-12:OAc (1:1) or + *E8,E10-12:OAc (1:1) + oher components		
<i>Epiblema fuchsiana</i> Rössl. att.	Z8,Z10-12:OAc	Witzgall, 1996	C
<i>Epiblema resumptana</i> Walker att.	Z9-12:OAc + E9-12:OAc (1:1)	Stevens, 1985	C
<i>Epiblema scudderiana</i> Clemens att.	Z8-12:OH	Roelofs, 1971(a)	C
<i>Epiblema scutulana</i> Denis & Schiffermüller att.	Z8-12:OAc	Chambon, 1974 Sziráki, 1978(a) Hrdý, 1979 Tóth, 1992(d)	C
	Z8-12:OAc + E8-12:OAc + 12:OH (97:3:300)	Olenici, 2007	
<i>Epiblema</i> sp. att.	E11-14:OAc	Daterman, 1977	
<i>Epinotia</i> ^a <i>aporema</i> Walsingham phe.	*Z7,Z9-12:OH + *Z7,Z9-12:OAc (15:1)	Altesor, 2009	C
<i>Epinotia</i> ^a <i>atistriga</i> (= <i>atistriga</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 <i>att.</i>	E8-12:OAc + E10-12:OAc (1:1)	Booij, 1984(a)	C
<i>Epinotia rubiginosana</i> Herr. & Schaffer <matsunokuromadara- himehaamaki> <i>att.</i>	Z9-12:OAc + Z7-12:OAc (1:1) Z8-12:OAc + Z10-12:OAc (1:1)	Booij, 1984(a) Witzgall, 1996	A
<i>Epinotia silvertoniensis</i> Kearfott <i>att.</i>	Z7,Z9-12:OAc	Reed, 1985(a)	C
<i>Epinotia sollicitana</i> <i>att.</i>	E8-12:OAc	Miller in Arn, 1992	C
<i>Epinotia tedella</i> Clerck European spruce budmoth <i>phe.</i>	E9-12:OAc + Z9-12:OAc (9:1) *Z7,Z9-12:OAc + another component	Booij, 1984(a) Priesner, 1989(b)	C
<i>Epinotia tenerana</i> Denis & Shiffermüller <hanno-memushiga> <i>att.</i>	E10,E12-14:OAc + Z10,Z12-14:OAc (1:1)	Witzgall, 1996	A
<i>Epinotia zandana</i> Kearfott <i>att.</i>	Z7-12:OAc	Roelofs, 1971(a)	C
<i>Epinotia</i> sp. 1 (<i>zandana</i> ?) <i>att.</i>	Z7,Z9-12:OAc	Reed, 1985(a)	
<i>Epinotia</i> sp. 2 (<i>removana</i> ?) <i>att.</i>	Z7,Z9-12:OAc or Z7,Z9-12:OH	Reed, 1985(a)	
<i>Epinotia</i> sp. 3 <i>att.</i>	E8,E10-12:OAc	Stevens, 1985	
<i>Episimus</i> ^d <i>argutanus</i> Clemens <i>att.</i>	Z9-12:OAc + Z11-14:OAc (11:2)	Roelofs, 1971(a) Jordan, 2013	D
<i>Eucosma</i> ^a <i>aemulana</i> Schläger <shirozusosomon-himehamaki> <i>att.</i>	E8,E10-12:OAc + Z8,Z10-12:OAc (1:1)	Rotundo, 1985(b) Witzgall, 1996	A

<i>Eucosma bobana</i> Kearfott <i>att.</i>	Z9-12:OAc	Stevens, 1985 Rotundo in Arn, 1992	C
<i>Eucosma campoliliana</i> Denis & Shiffermüller <nisemonshirosusomon- himehamaki> <i>att.</i>	E8,E10-12:OH Z8,E10-12:OAc	Fassotte in Arn, 1986(a) Olenici, 2007 Priesner in Arn, 1986(a)	A
<i>Eucosma cana</i> Haworth <azamisusomon- himehamaki> <i>att.</i>	Z8,E10-12:OAc E8,E10-12:OAc + Z8-12:OAc + E8-12:OAc + 12:OAc (44:30:10:18)	Priesner in Arn, 1986(a) Witzgall, 1996 Fassotte in Arn, 1992	A
<i>Eucosma conioγραμμα</i> Clarke <ohirugi-himeshinkui> <i>phe.</i>	*E9-12:OAc	Vang, 2005	A
<i>Eucosma delericta</i> Heinrich <i>att.</i>	E7,E9-12:OAc + Z7,E9-12:OAc (1:1)	Chisholm, 1985(a)	C
<i>Eucosma giganteana</i> Riley <i>att.</i>	E8-12:OAc	Ruiz, 2022	C
<i>Eucosma gloriola</i> Heinrich <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> ?)	E8,E10-12:OH	Chambon, 1974	C

<i>Eucosma notanthes</i> Meyrick carambola fruit borer <i>att.</i>	Z8-12:OAc	Hwang, 1996(a)	C
<i>phe.</i>	*Z8-12:OAc + *Z8-12:OH (1:1)	Hung, 2001	
<i>Eucosma ponderosa</i> Powell <i>att.</i>	Z9-12:OAc	Stevens, 1985	C
<i>Eucosma recissoriana</i> (complex) <i>att.</i>	Z9-12:OAc	Stevens, 1985	C
<i>Eucosma sonomana</i> Kearfott Western pine shoot borer <i>att.</i>	Z9-12:OAc + E9-12:OAc (2:1)	Sower, 1979	C
<i>Eucosma tocullionana</i> Heinrich <i>att.</i>	Z9-12:OAc + E9-12:OAc (2:1)	Grant, 2002	C
<i>Eucosma womonana</i> Kearfott <i>phe.</i>	*Z7-12:OAc + *Z7,Z9-12:OAc + *Z7,E9-12:OAc + *Z5-12:OAc + *12:OAc (10:4:1:1:4) + other components	Underhill, 1987(b)	C
<i>Eucosmomorpha</i> ^a <i>albersana</i> Hübner <i>att.</i>	E9-12:OAc + Z9-12:OAc (9:1)	Booij, 1984(a)	C
<i>Eudemis</i> ^d <i>porphyrana</i> Hübner <i>att.</i>	Z10-14:OAc + E10-14:OAc (10:1)	Mozūraitis, 1998	C
<i>Exartema</i> ^d (= <i>Olethreutes</i>) <i>appendiceum</i> Zeller <i>att.</i>	E9-14:OAc	Steck, 1977(a)	C
<i>Exartema fusticanum</i> McDunnough <i>att.</i>	Z7-12:OH	Weatherston, 1974(a)	C
<i>Grapholita</i> ^b <i>caeruleana</i> Walsingham <i>att.</i>	E8,E10-12:OAc	Stevens, 1985	C
<i>Grapholita compositella</i> F.	E8,E10-12:OAc	Witzgall, 1996	C

<i>Grapholita conversana</i> Walsingham att.	E8,E10-12:OAc	Stevens, 1985	C
<i>Grapholita dimorpha</i> Komai <sumomohime-shinkui> <bokehime-shinkui> phe.	Z8-12:OAc + E8-12:OAc (4:1–2:3) *Z8-12:OAc + *E8-12:OAc (17:3) + other components	Mochizuki, 2003 Murakami, 2005	A
<i>Grapholita endrosias</i> Meyrick <sesshimofuri-himehamaki> att.	E7-12:OAc	Ando, 1981	A
<i>Grapholita funebrana</i> Treitschke plum fruit moth phe.	Z8-12:OAc Z10-12:OAc + codling moth Z8-12:OAc + E8-12:OAc (25:1) + 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 att.	E8,E10-12:OAc	Hrdý, 1989 Tóth, 1992(d) Witzgall, 1996	C
<i>Grapholita inopinata</i> Heinrich <ringoko-shinkui> phe.	Z8-12:OAc *Z8-12:OAc + other components	Ando, 1977 Tanaka, 2007	A
<i>Grapholita janthinana</i> Duponchel att.	Z8-12:OAc + E8-12:OAc (7:3–8:2) (1:1)	Beauvais, 1977 Biwer, 1978(b) Witzgall, 1996	C
<i>Grapholita</i> (= <i>Cydia</i>) <i>jungiella</i> Clerck	E8,Z10-12:OAc	Priesner in Arn, 1986(a)	C

				att.		Wang, 2010	
					+ Z8,E10-12:OAc (1:1)	Witzgall, 1996	
<i>Grapholita libertina</i> Heinrich				att.	E8-12:OAc + Z8-12:OAc + Z8-12:OH (17:2:1)	Hillier, 2002	C
<i>Grapholita lobarzewskii</i>				phe.	E8-12:OAc + Z8-12:OAc (9:1)	Biwer, 1978(b)	C
					*E8-12:OAc + *Z8-12:OAc (9:1) + other components	Witzgall, 1989(b)	
<i>Grapholita lunatana</i> Walsingham				att.	E8,E10-12:OAc	Chisholm, 1985(a)	C
<i>Grapholita molesta</i> Busck	U.S.A.				*Z8-12:OAc	Roelofs, 1969	A
Oriental fruit moth							
<nashihime-shinkui>	Australia				+ *E8-12:OAc [25:1]	Lacey, 1992	
phe.	U.S.A.				+ 12:OH (93:7:100)	Cardé, 1975(b)	
	U.S.A.				+ Z8-12:OH (311:22:1)	Cardé, 1975(c)	
	France				*Z8-12:OH (46:4:1)	Biwer, 1978(b)	
	U.S.A.				(50:3:50)	Linn, 1983	
	Korea				(95:5:1)	Han, 2001	
	U.S.A.				+ *12:OH [100:7:30:6]	Cardé, 1979	
					F ₂ -7,7-Z8-12:OAc	Masnyk, 1989	
<i>Grapholita packardii</i> Zeller					E8-12:OAc	Roelofs, 1970(a)	C
cherry fruitworm							
att.							
<i>Grapholita prunivora</i> Walsingham					Z8-12:OAc	Roelofs, 1970(a)	C
lesser appleworm					+ E8-12:OAc (49:1)	Roelofs, 1974(a)	
att.					(40:1)	Chisholm, 1985(a)	

<i>Grapholita tenebrosana</i> Duponchel <ibara-himeshinkui> att.	Z8-12:OAc E8,E10-12:OAc + E8-12:OAc + Z8-12:OH (85.5:5.5:9) Z8-12:OAc + E8-12:OAc + 12:OH (97:3:300)	Chambon, 1974 Alford, 1978 Hrdý, 1979 Peltotalo, 1986 Mizukoshi, 2006 Olenici, 2007	A
<i>Grapholita</i> sp. 1 att.	Z8-12:OAc	Ando, 1981	A
<i>Grapholita</i> sp. 2 att.	E8,E10-12:Ald + E8,E10-12:OAc (10:1)	Chisholm, 1985(a)	
<i>Grapholita</i> sp. 3 att.	E8-12:OAc	Chisholm, 1985(a)	
<i>Gravitarmata</i> ^a <i>margarotana</i> Heinemann <matsutobi-himehamaki> phe.	*Z9-12:OAc + *E9-12:OAc + *12:OAc (5:1:3) + other components	Löfstedt in Arn, 1992	A
<i>Gretchena</i> ^a <i>bolliana</i> Slingerland pecan bud moth att.	Z8-12:OAc + E8-12:OAc + 12:OH (100:7:1000)	Gentry, 1975	D
<i>Gretchena semialba</i> McD. att.	E11-14:Ald + Z11-14:Ald (19:1)	Sanders, 1993	D
<i>Griselda</i> ^a <i>myrtillana</i> Hump. & Westw. att.	Z11-14:OH	Booij, 1984(a)	C
<i>Gypsonoma</i> ^a <i>aceriana</i> Duponchel poplar shoot-borer att.	E10-12:OAc + E10-12:OH (3:1) (7:3)	Booij, 1984(a) Booij, 1984(d)	C
<i>Gypsonoma dealbana</i> Frölich	Z11-14:OAc	Frerot, 1982(a)	C

	+ E11-14:OAc (3:2)		
	(1:10)	Mozūraitis, 1998	
	E11-14:OAc	Möttus in Arn, 1992	
	E10-12:OAc	Booij, 1984(a)	
	+ E8-12:OAc (1:1)	Witzgall, 1996	
<i>Gypsonoma minutana</i> Hübner <popura-himehamaki> <i>att.</i>	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 sociana</i> Haworth <i>att.</i>	E10-12:OAc	Booij, 1984(a)	C
	E9-12:OAc + Z9-12:OAc (9:1)	Safonkin, 1988	
<i>Hedya</i> ^d (= <i>Aphania</i>) <i>auricristana</i> Walsingham <gumioousutsuma-himehamaki> <i>att.</i>	Z9-14:OAc + Z11-14:OAc (9:1-7:3)	Ando, 1975 Nagano, 1979	A
<i>Hedya chionosema</i> Zeller <i>att.</i>	E8-12:OAc + E8-12:OH	Roelofs, 1971(a)	C
	E8,E10-12:OAc + Z8-12:OAc + E8-12:OAc (100:35:3)	Roelofs, 1982(a)	
<i>Hedya dimidiana</i> Clerck <shiromon-himehamaki> <i>att.</i>	E8,E10-12:OAc + E8-12:OAc (10:1) + Z8,Z10-12:OAc (1:1)	Ando, 1987 Priesner in Arn, 1992 Witzgall, 1996	A
	Z8-12:OAc + E8-12:OAc + 12:OH (97:3:300)	Olenici, 2007	
<i>Hedya dimidioalba</i> Retz.	E8,E10-12:OAc	Witzgall, 1996	C

	att.	+ Z8,E10-12:OAc (1:1)		
<i>Hedya nubiferana</i> Haworth		E8,E10-12:OH	Arn, 1974	C
green budworm moth			Chambon, 1974	
	phe.	*E8,E10-12:OAc	Frerot, 1979(a)	
		+ *Z8-12:OAc		
		+ *12:OAc (48:32:100)		
		+ *E8-12:OAc (55:32:9:5)	Roelofs, 1982(a)	
		+ Z8-12:OAc (2:1)	Rotundo, 1988	
<i>Hedya ochroleucana</i> Frölich		Z8,E10-12:OAc	Frerot, 1979(a)	A
<shibechatsumajiro-				
himehamaki>		+ Z8,Z10-12:OAc (10:1)	Chisholm, 1985(a)	
	att.			
<i>Hedya pruniana</i> Hübner		Z8,E10-12:OAc	Witzgall, 1996	C
	att.			
<i>Hedya salicella</i> L.		E8,E10-12:OH	Olenici, 2007	A
	att.			
<i>Hedya separatana</i> Kearfott		Z10-12:OAc	Reed, 1985(b)	C
	att.			
<i>Latronympha</i> ^b <i>strigana</i> F.		Z8,Z10-12:OAc	Witzgall, 1996	C
	att.			
<i>Leguminivora</i> ^b <i>glycinivorella</i>		*E8,E10-12:OAc	Vang, 2006	A
Matsumura		+ other components		
soybean pod borer				
<name-shinkuiga>				
	phe.			
in China		E8,E10-12:OAc	Hu, 2012	
		+ E10-12:OAc (10:1)		
		or + E10-12:Ald (1:1)		
<i>Lobesia</i> ^d <i>aeolopa</i> Meyrick		Z7-10:OAc	Ando, 1975	A
<hosobachibi-himehamaki>				
	att.			
<i>Lobesia bicinctana</i> (= <i>bicincta</i> ?) Dup.		*Z9-12:OAc	Frérot, 1990(b)	C
	phe.	+ another component		

<i>Lobesia botrana</i> Denis & Shiffermüller European grapevine moth phe.	*E7,Z9-12:OAc + Z9-12:OAc + E9-12:OAc + 12:OAc + *E7,Z9-12:OH + *Z9-12:OAc (100:20:5–100:5:1) + other components ≡7,Z9-12:OAc + *E7-12:OAc + *E7,E9,Δ11-12:OAc + *Z7,E9,Δ11-12:OAc N	Roelofs, 1973 Buser, 1974; 1975 Guerin in Arn, 1992 Arn, 1988 El-Sayed, 1999 Brückner, 1988 Witzgall, 2005	C
<i>Lobesia</i> sp. att.	Z9-12:OH	Ando, 1977	A
<i>Matsumuraeses</i> ^b <i>falcana</i> Walsingham podborer <nisemamesaya- himehamaki> phe.	*E8,E10-12:OAc + *E8-12:OAc (15:17) + other components + *E7,Z9-12:OAc (1:1:1)	Wakamura, 1985 Wakamura, 1986(b)	A
<i>Matsumuraeses ussuriensis</i> Caradja <niseazukisaya- himehamaki> 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 <i>att.</i>	Z10,Z12-14:OAc or Z10,Z12-14:OH	Reed, 1985(b)	C
<i>Notocelia roborana</i> Denis & Shiffermüller <i>phe.</i>	*Z10-14:OAc + *Z8,Z10-12:OAc [19:5] + other components N	Witzgall, 1996	C
<i>Notocelia rosaecolana</i> Doubleday <barashiro-himehamaki> <i>att.</i>	E8,E10-12:OAc E8,Z10-12:OAc + Z8,E10-12:OAc (1:1)	Booij, 1984(a) Witzgall, 1996	A
	Z8-12:OAc + E8-12:OAc	Hrudová, 2003	
<i>Notocelia trimaculana</i> Haworth <i>att.</i>	Z10,Z12-14:OAc	Witzgall, 1996	C
<i>Notocelia uddmanniana</i> L. <i>phe.</i>	Z10,E12-14:OAc *Z10,Z12-14:OAc + other components	Priesner in Arn, 1986(a) Witzgall, 1991(b)	C
<i>Olethreutes</i> ^d <i>bifasciana</i> Haworth <i>att.</i>	E10-14:OAc + Z10-14:OAc (3:1)	Booij, 1986	C
<i>Olethreutes bipunctana</i> F. <shiromadara-himehamaki> <i>att.</i>	Z8-14:OAc + Z10-14:OAc (1:1)	Booij, 1986	B
<i>Olethreutes decrepitana</i> <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>albuginana</i> Guenée <i>att.</i>	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 + E8-12:OAc (18:7)	Chambon, 1974 Sziráki, 1978(b) Witzgall, 1996 Beauvais, 1977	C
<i>Pammene</i> (= <i>Cydia</i>) <i>aurana</i> F. <i>att.</i>	Z8-12:OAc Z9-12:OAc Z8-12:OAc + Z10-12:OAc (1:1)	Alford, 1978 Hrdý, 1979 Voerman in Arn, 1992 Witzgall, 1996	C
<i>Pammene aurita</i> (= <i>aurantiana</i>) Staudinger <i>att.</i>	Z8-12:OAc + E8,E10-12:OAc (100:3) + E8-12:OAc (1:1)	Sziráki, 1978(a) Priesner in Arn, 1986(a) Witzgall, 1996	C
<i>Pammene fasciana</i> L. <i>att.</i>	Z8-12:OAc + Z8-12:OH + 12:OAc (15:5:8)	Chambon, 1974 Sziráki, 1978(b) Rotundo, 1984 Rotundo, 1991	C
<i>Pammene</i> (= <i>Cydia</i>) <i>gallicana</i> Guenée <i>att.</i>	Z8-12:OAc + E8-12:OAc (1:1)	Sziráki, 1978(a) Witzgall, 1996	C
<i>Pammene gallicolana</i> Lienig & Zeller <i>att.</i>	Z8-12:OAc	Sziráki, 1978(a); (b)	C
<i>Pammene giganteana</i> (= <i>inquilina</i>) Fletcher <i>att.</i>	Z8-12:OAc	Chambon, 1974	C
<i>Pammene insulana</i> Guenée <i>att.</i>	Z8-12:OAc	Sziráki, 1978(a)	C

<i>Pammene juniperana</i> 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 Z8,E10-12:OH	Brakefield in Arn, 1986(a) Guerin, 1983	C
<i>Pammene spiniana</i> Duponchel att.	Z8-12:OAc + E10-12:OAc (1:1)	Sziráki, 1978(a) Witzgall, 1996	C
<i>Pammene splendidulana</i> Guenée att.	Z8-12:OAc	Sziráki, 1978(a)	C
<i>Pammene suspectana</i> Lienig & Zeller att.	Z8-12:OAc Z9-12:OAc + Z11-14:OAc + E11-14:OAc + 12:OAc + 14:OAc (5:3:2:3:1)	Sziráki, 1978(a) Olenici, 2007	C
<i>Pammene</i> sp. att.	Z8-12:OAc	Ando, 1977	A

<i>Paralobesia</i> ^d (= <i>Endopiza</i>) <i>viteana</i> Clemens grape berry moth phe.	*Z9-12:OAc + *Z11-14:OAc (20:1) + other components Z9-12:OAc + E9-12:OAc (24:1)	Roelofs, 1971(c) Witzgall, 2000 Taschenberg, 1974	D
<i>Pelochrista</i> ^a <i>scintillana</i> <i>randana</i> Kearfott att.	E8,E10-12:OAc + Z8-12:OAc + E8-12:OAc (2:40:1)	Chisholm, 1985(a)	C
<i>Petrova</i> ^a <i>albicapitana</i> Busck att.	Z7,E9-12:OAc	Wong, 1985(a)	C
<i>Petrova burkeana</i> Kearfott att.	E8,E10-12:OAc	Chisholm, 1985(a)	C
<i>Petrova luculentana</i> Heinrich att.	Z7-12:OH + Z7-12:OAc + E9-12:OAc	Dix in Arn, 1986(a)	C
<i>Petrova</i> (= <i>Retinia</i>) <i>metallica</i> Busck metallic pitch nodule moth phe.	Z7-12:OH + Z7-12:OAc E9-12:OAc Z7,E9-12:OAc *Z7,E9-12:OAc + other components	Dix in Arn, 1986(a) Stevens, 1985 Wong, 1985(a) Dix, 1988	C
<i>Petrova piciolana</i> Dyar att.	Z9-12:OAc + E9-12:OAc (1:1)	Stevens, 1985	C
<i>Petrova</i> (= <i>Retinia</i>) <i>resinella</i> L. att.	Z9-12:OAc + E9-12:OAc (1:1) 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 att.	E8,E10-12:OAc + E10-12:OAc (10:1)	Reed, 1985(b)	C
<i>Phaneta columbiana</i> Walsingham att.	E8,E10-12:OAc	Stevens, 1985	C
<i>Phaneta latens</i> Heinrich att.	E8,E10-12:OH	Hathaway, 1981	C
<i>Phaneta ochroterminana</i> Kearfott att.	Z8,Z10-12:OAc + E8,E10-12:OAc (10:1)	Chisholm, 1985(b)	C
<i>Phaneta roseotermianana</i> Kearfott att.	Z8,Z10-12:OH	Chisholm, 1985(b)	C
<i>Proschistis</i> ^d <i>marmaropa</i> Meyrick <hirobakuro-himehamaki> att.	Z8,Z10-12:OH	Ando, 1987	A
<i>Proteoteras</i> ^a <i>crescentana</i> Kearfott phe.	*Z8-12:OAc + *Z8-12:OH (4:1)	Underhill in Roelofs, 1982(a)	D
<i>Proteoteras willingana</i> Kearfott phe.	*Z8-12:OH + *Z8-12:OAc (9:1)	Underhill in Roelofs, 1982(a)	D
<i>Pseudexentera</i> ^a <i>mali</i> Freeman pale apple budworm phe.	*Z8,Z10-16:OAc Z8,Z10-16:OAc	Hill in Roelofs, 1982(a) Grant, 1991	D
<i>Pseudexentera maracana</i> Kearfott 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>clausthaliana</i> Saxesen <amimemon-himehamaki> <i>att.</i>	Z8-14:OAc + Z10-14:OAc (1:1)	Voerman in Arn, 1986(a) Booij, 1986	A
<i>Pseudosciaphila</i> ^d <i>brandneriana</i> L. <doro-himehamaki> <i>att.</i>	Z8,E10-12:OAc	Witzgall, 1996	A
<i>Pseudosciaphila duplex</i> Walsingham <i>att.</i>	Z8,E10-12:OAc + Z8,E10-12:Ald (1:1)	Chisholm, 1985(a)	C
<i>Retinia</i> ^a <i>perangustana</i> Snellen <i>att.</i>	Z8-12:OAc + E8-12:OAc + 12:OH (93:7:300)	Olenici, 2007	C
<i>Rhadinoscolops</i> ^a <i>koenigianus</i> F. <sendan-himehamaki> <i>att.</i>	E8,E10-12:OAc	Vang, 2005	A
<i>Rhopobota</i> ^a <i>naevana</i> Hübner blackheaded fireworm <kuronehaiiro-himehamaki> <i>phe.</i>	Z9-12:OAc E8,E10-12:OH *Z11-14:OAc + *Z11-14:OH + Z9-12:OAc (9:3:1) (0:49:1) (69:23:8)	Ando, 1977 Guerin in Arn, 1986(a) Slessor, 1987 McDonough, 1987 Fitzpatrick, 1992	A
<i>Rhopobota ustomaculana</i> Curtis <seshiro-himehamaki> <i>att.</i>	Z9-12:OH	Booij, 1984(a)	A
<i>Rhyacionia</i> ^a <i>adana</i> Heinrich <i>att.</i>	E9-12:OAc + E9-12:OH (9:1)	Grant, 1985	C
<i>Rhyacionia buoliana</i> Denis & Schiffermüller European pine shoot moth	*E9-12:OAc + *E9-12:OH (10:1)	Smith, 1974 Gray, 1984(b)	C

	phe.			
<i>Rhyacionia busckana</i> Heinrich att.	E8,E10-12:OAc	Stevens, 1980	C	
	E9-12:OAc + E9-12:OH (9:1)	Grant, 1985		
<i>Rhyacionia bushnelli</i> Busck att.	Δ 9-10:OAc or Z9-12:OAc	Dix, 1984	C	
<i>Rhyacionia duplana</i> Hübner att.	E9-12:OAc	Tóth in Arn, 1986(a)	B	
<i>Rhyacionia duplana</i> <i>simulata</i> Heinrich <matsutsumaaka-shinmushi> att.	Z8,E10-12:OAc	Ando, 1987	A	
<i>Rhyacionia frustrana</i> Comstock nantucket pine tip moth phe.	*E9-12:OAc + *E9, Δ 11-12:OAc (24:1) + other components	Hill, 1981(a)	C	
	[17:1 – 23:1]	Asaro, 2001		
<i>Rhyacionia fumosana</i> Powell att.	E8,E10-12:OAc	Stevens, 1980	C	
<i>Rhyacionia granti</i> Miller att.	E8,E10-12:OAc	Grant, 1985	C	
<i>Rhyacionia jenningsi</i> att.	E9-12:OAc + Z9-12:OAc (1:1)	Stevens, 1980	C	
<i>Rhyacionia monophylliana</i> Kearfott 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)	Jacobson, 1978 Stevens, 1980	C	
	*E9-12:OAc + *Z9-12:OAc (4:1) + other components	Niwa, 1992		

<i>Rhyacionia rigidana</i> Fernald pitch pine tip moth phe.	*E8,E10-12:OAc	Hill, 1976	C
<i>Rhyacionia salmonicolor</i> Powell att.	Z9-12:OAc	Stevens, 1980	C
<i>Rhyacionia subtropica</i> Miller subtropical pine tip moth phe.	*E9-12:OAc	Roelofs, 1979	C
<i>Rhyacionia zozana</i> Kearfott phe.	E9-12:OAc + Z9-12:OAc (1:1) *E9-12:OAc + *E9-12:OH (19:1–14:6)	Sower, 1979 Stevens, 1980 Niwa, 1987	C
<i>Sereda</i> ^b <i>tautana</i> Clemens att.	E8,E10-12:OAc	Stevens, 1985	C
<i>Spilonota</i> ^a <i>laricana</i> Hein. phe.	Z8-14:OAc E *Z8-14:OAc + *Z8-14:OH (10:1–1:1) + another component	Priesner in Arn, 1986(a) Witzgall, 1991(a)	B
<i>Spilonota ocellana</i> Denis & Shiffermüller eyespotted bud moth <ringoshiro-himehamaki> phe.	Z8-14:OAc *Z8-14:OAc Z8-12:OAc + E8-12:OAc (9:1) *Z8-14:OAc + *Z8-14:OH (10:1–1:1) + another component (99:1–95:5)	Arn, 1974 Arn, 1975 Minks in Arn, 1986(a) Witzgall, 1991(a) McBrien, 1992; 1994	A
<i>Statherotis</i> ^d <i>discana</i> Felder & Rogenhofer <reishi-himehamaki>	*E8-14:OAc + *E8-12:OAc (4:1)	Wakamura, 1997	A

phe.			
<i>Strepsicrates</i> ^a <i>semicanella</i> Walker <banjiroutsunoeguri- himehamaki>	*Z7-12:OAc + *Z7-12:OH (9:1)	Wakamura, 2005(b)	A
phe.			
<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
phe.			
<i>Tetramoera</i> ^a <i>schistaceana</i> Snellen sugarcane shoot borer <kanshanoshinkui-hamaki>	*Z9-12:OAc + *E9,Δ11-12:OAc + E7,Δ9-10:OAc (100:10:1)	Kinjo, 1996	A
phe.			
<i>Thaumatotibia</i> ^b (= <i>Cryptophlebia</i>) <i>batrachopa</i> Meyrick	*Z8-12:OAc	Hall, 1984 La Croix, 1985	C
phe.			
<i>Thaumatotibia</i> (= <i>Cryptophlebia</i>) <i>leucotreta</i> Meyrick false codling moth	*E7-12:OAc *Z8-12:OAc	Read, 1974 Persoons, 1976(c); 1977	C
	+ E8-12:OAc (1:1)	Bourdouxhe, 1982	
	+ *E8-12:OAc (3:7-7:3)	Hall, 1984 La Croix, 1985	
	(1:8)	Newton, 1993	

	+ *12:OAc	Zagatti, 1983(a)	
	+ other components	Attygalle, 1986 Bestmann, 1988(b)	
<i>Thiodia</i> ^a <i>alterana</i> Heinrich att.	E10-12:OAc	Roelofs, 1974(b)	C
<i>Thiodia</i> sp. att.	E8,E10-12:OH	Roelofs, 1974(b)	
<i>Zeiraphera</i> ^a <i>canadensis</i> Mutuura & Freeman spruce budmoth phe.	E9-14:OAc *E9-14:OAc + another component	Turgeon, 1988 Silk, 1989	C
<i>Zeiraphera</i> <i>diniana</i> Guenée grey larch bud moth phe. (cembran pine-race)	E11-14:OAc E9-12:OAc	Roelofs, 1971(d)	B
(larch-race)	*E11-14:OAc + other components	Guerin, 1984 Baltensweiler, 1988	
(cembran pine-race)	*E9-12:OAc	Guerin, 1984 Baltensweiler, 1988	
(spruce-race)	E9-12:OAc	Vrkoc in Arn, 1992	
(= <i>griseana</i> Hübner ?) <haiiroamime-himehamaki> att.	E11-14:OAc or E9-12:OAc	Liska, 1990	A
<i>Zeiraphera</i> <i>isertana</i> F. att.	Z9-14:OAc + Z11-14:OAc (9:1)	Hrdý, 1989	C
<i>Zeiraphera</i> <i>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
<i>Prochoreutis myllerana</i> F. <shiroheri-hamakimodoki> att.	E2,Z13-18:OH	Karalius, 2005	A
<i>Prochoreutis sehestediana</i> F. <atoshirosuji-hamakimodoki> att.	E3,Z13-18:OAc + E2,Z13-18:OH (1:1) E2,Z13-18:OH + E2,Z13-18:Ald + Z3,Z13-18:OH (1:1:1)	Bûda, 1993 Karalius, 2005	A
<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	E10,E12-16:Ald	Priesner	A
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<tatejima-hosomaikoga>
att.

in Arn, 1986(a)

(18) [Epermeinoidea] Sasaberiga-joka

no species

(19) [Alucitoidea] Nijutoribaga-joka

no species

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

<i>Amblyptilia acantodactyla</i> Hübner (= <i>Amblyptilia acanthadactyla</i> ?) att.	Z11-16:OAc	Subchev, 1981	D
<i>Buckleria</i> (= <i>Trichoptilus</i>) <i>wahlbergi</i> Zeller <kinbanechibi-toriba> att.	Z7-12:Ald + Z7-12:OH (9:1)	Ando, 1981	A
<i>Emmelina</i> (= <i>Pterophorus</i>) <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. ?) att.	E11-14:OAc	Daterman, 1977	
<i>Oxyptilus tristis</i> Zeller att.	Z7-12:OAc + Z7-12:OH (1:1)	Tóth, 1992(d)	D
<i>Platyptilia carduidactyla</i> Riley artichoke plume moth phe.	*Z11-16:Ald	Klun, 1981	C
<i>Platyptilia ignifera</i> Meyrick <budouoo-toriba> phe.	*Z7-12:OAc + *Z9-12:OAc + another component	Fujii, 2010(a)	A
<i>Platyptilia jezoensis</i> Matsumura <odamaki-toriba> att.	Z11-16:OAc + Z11-16:Ald (9:1)	Ando, 1981	A
<i>Platyptilia</i> (= <i>Cnaemidophorus</i>) <i>rhododactyla</i> Denis & Schiffermüller <chousen-toriba>	Z11-14:Ald	Frerot, 1985	A

	att.			
<i>Platyptilia williamsii</i> Grinnell calendula plume moth		Z11-16:Ald	Haynes, 1987	C
	att.			
<i>Pselnophorus vilis</i> Butler <fuki-toriba>		Z9,E11-14:Ald + Z9,E11-14:OAc (9:1)	Ando, 1987	A
	att.			
<i>Pterophorus tenuidactylus</i> Fitch.		Z7-12:OAc	Roelofs, 1971(a)	C
	att.			
<i>Stenuptilia paludicola</i>		Z9-14:OH + Z9-14:Ald (1:1)	Tóth, 1992(d)	C
	att.			
<i>Trichoptilus lobidactylus</i> Fitch.		E11-14:OAc + Z11-14:OAc (19:1)	Sanders, 1993	C
	att.			

(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
	att.			
<i>Carposina maritima</i> Ponomarenko <kousuguro-shinkui>		Z7-20:11-one	Nasu, 2010	A
	att.			
<i>Carposina niponensis</i> Walsingham <nipponshiro-shinkui>		Z7-20:11-one	Nasu, 2010	A
	att.			
<i>Carposina sasakii</i> Matsumura (= <i>niponensis</i>) peach fruit moth <momohime-shinkui>		*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
	phe.			
in Korea		*Z7-20:11-one + another component	Han, 2000	
<i>Coscinoptycha improbana</i> Meyrick Australian guava moth		*Z7-18:11-one (=Z11-18:8-one)	Gibb, 2006(a)	D

phe.	+ *Z7-19:11-one (=Z12-19:9-one) + *Z7-23:11-one + *Z7-23:H (235:15:100:650)		
<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
<hr/>			
(22) [Hyblaeoidea]	Seserimodokiga-joka		
no species			
<hr/>			
(23) [Thyridoidea]	Madoga-joka (Thyrididae) Madoga-ka		
<hr/>			
<i>Thyris maculata</i> Harris att.	Z11-14:OAc Z3,Z13-18:OAc	Roelofs, 1971(a) Leeuw, 1983	C
<i>Thyris usitata</i> Butler <madoga> att.	Z11-14:OH	Ando, 1977	A
<hr/>			
(24) [Pyraloidea]	Meiga-joka (Pyralidae; Galleriinae) Meiga-ka; Tsuduriga-aka		
<hr/>			
<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	*Me6,Me10,Me14-15:2-OH	Hall, 1987	D

rice moth
phe. <short-range attraction>
(2R,6R,10R)-isomer Mori, 1991

(Pyralidae; Pyralinae) Meiga-ka; Shimameiga-aka

Endotricha flammealis Denis & Schiffermüller
att. E5-14:OH Voerman, 1988 C

Orthopygia (= *Herculia*) *glaucinalis* L.
<futasuji-shimameiga>
att. Z7-12:OAc Nagano, 1979 A

Pyralis farinalis L.
meal moth
<kashino-shimameiga>
phe. Z11,Z13-16:Ald Landolt, 1982 A
+ Z3,Z6,Z9,Z12,Z15-23:H Leal, 2005
+ Z3,Z6,Z9,Z12,Z15-25:H
+ other components
*Z11,Z13-16:Ald Kuenen, 2010
+ *Z3,Z6,Z9,Z12,Z15-23:H
+ other components

Tegulifera bicoloralis Leech
<maemon-shimameiga>
att. E11,Δ13-14:Ald Ando, 1987 A
+ E11-14:Ald (9:1)

(Pyralidae; Epipaschiinae) Meiga-ka; Futomeiga-aka

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

(Pyralidae; Phycitinae) Meiga-ka; Madarameiga-aka

Acrobasis nuxvorella Neunzig
pecan nut casebearer
phe. *E9,Z11-16:Ald Millar, 1996 C

Mexico strain	+ E9,Z11-16:OAc	Harris, 2008	
<i>Acrobasis pyrivorella</i> Matsumura pear fruit moth <nashi-madaramaiga> phe.	*Z9-15:OAc + *15:OAc (100:7)	Tabata, 2009	A
<i>Acrobasis rufilimbalis</i> Wileman <himetobine-madaramaiga> att.	Z9-15:OAc	Ando, 1977	A
<i>Acrobasis vaccinii</i> Riley cranberry fruitworm phe.	*E8,Z10-15:OAc + *E9-15:OAc (25:1) + other components	McDonough, 1994	C
<i>Amyelois transitella</i> Walker navel orangeworm phe.	*Z11,Z13-16:Ald + *Z3,Z6,Z9,Z12,Z15-23:H + *Z3,Z6,Z9,Z12,Z15-25:H + other components	Coffelt, 1979 Leal, 2005	D
	*Z11,Z13-16:Ald + *Z11,Z13-16:OH + *Z11,E13-16:OH + *Z3,Z6,Z9,Z12,Z15-23:H (20:20:3:1) + other components	Kuenen, 2010 Kanno, 2010	
<i>Cactoblastis cactorum</i> Berg cactus moth phe.	*Z9,E12-14:OAc + *Z9,E12-14:OH + *Z9-14:OAc (27:21:2)	Heath, 2006	D
<i>Cadra calidella</i> Guenée att.	Z9,E12-14:OAc	Boughdad in Arn, 1997	C
<i>Cadra</i> (= <i>Ephestia</i>) <i>cautella</i> Walker almond moth <suji-madaramaiga> phe.	*Z9,E12-14:OAc att. + *Z9-14:OAc (minor) + another component	Kuwahara, 1971(a) Brady, 1971(a) Zeleny, 1982 Brady, 1973 Kuwahara, 1973 Read, 1976,1979 Allison, 2006	A
	[22:3]	Barrer, 1987	

	(2:1)	Quartey, 1993	
<i>Cadra figulilella</i> Gregson raisin moth <hoshibudou-madaramaiga> phe.	*Z9,E12-14:OAc N Z9,E12-14:OAc	Brady, 1972(b) Soldán, 1983 Kehat, 1992	A?
<i>Citripestis sagittiferella</i> Moore citrus fruit borer phe.	*E11-14:OAc (main) + *Z11-14:OAc + *Z9,E11-14:OAc N	Dung, 2021	A
<i>Cryptoblabes gnidiella</i> Miller honeydew moth phe.	*Z11-16:Ald + *Z13-18:Ald + E11-16:Ald + E13-18:Ald (10:10:1:1) (5:1:5:1)	Bjostad, 1981 Anshelevich, 1993 Gurevitz in Arn, 1986(a)	C
<i>Dioryctria abietella</i> Denis & Schiffermüller spruce coneworm <matsuno-madaramaiga> phe.	*Z9,E11-14:OAc + another component + *Z3,Z6,Z9,Z12,Z15-25:H (1:10–1:30)	Löfstedt, 1983 Löfstedt, 2012 Lee, 2022	A
<i>Dioryctria abietivorella</i> Grote fir coneworm phe.	*Z9,E11-14:OAc + *Z3,Z6,Z9,Z12,Z15-25:H (1:5–1:10)	Millar, 2005 Strong, 2008	C
<i>Dioryctria amatella</i> Hulst southern pine coneworm phe.	Z11-16:OAc *Z11-16:OAc + Z3,Z6,Z9,Z12,Z15-25:H (1:10)	Hanula, 1984 Meyer, 1986 Miller, 2010	C
<i>Dioryctria aurantiella</i> Grote 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 (= Anagasta) 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>Ephesiodes infimella</i> Ragonot	Z9,E12-14:OAc	Adler, 1976	D
<i>Episcythrastis (= Myelopsis) tetricella</i> Denis & Schiffermüller att. att.	Z9,E11-14:OAc	Tóth, 1992(d)	D
<i>Etiella behrii</i> Zeller pod borer phe.	*Z11-14:OAc + *E9-12:OAc + *E11-14:OAc + *12:OAc (90:10:6.3:0.7) + another component	Wakamura, 1999 Hattori, 2001	C
<i>Etiella zinckenella</i> Treitschke lima-bean pod borer <shiroichimonji-madaramaiga> phe.	*Z11-14:OAc + *E11-14:OAc + *Z9-14:OAc (10:1:1) + other components (100:0:3)	Tóth, 1989(a) Hattori, 2001 Tóth, 1996	A
Japanese strain	*Z11-14:OAc + *Z9-14:OAc + *Z9-12:OAc (120:40:1) + other components	Tabata, 2008(a)	
<i>Eurhodope advenella</i> Zck. att.	Z7-14:OAc + Z10-16:OAc (1:1)	Kovalev, 1987	C
<i>Eurythmia hospitella</i> Zeller att.	Z9,E12-14:OAc	Steck, 1977(a)	D
<i>Euzophera batangensis</i> Caradja persimmon bark borer <kurofutamon-madaramaiga> phe.	*Z9,E12-14:OH (major) + *Z9-14:OH E *Z9,E12-14:OH + another component	Kalinová, 2006 Wen, 2009	A
<i>Euzophera bigella</i> att.	Z9-14:OH + Z9-14:OAc (3:1)	Maini in Arn, 1986(a)	C

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

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

(Crambidae; Schoenobiinae) 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	Cork, 1985(a)	A
	+ *16:Ald (6:3:2)	Tatsuki, 1985	
		Du, 1987(b)	

<i>Scirpophaga nivella</i> F. <tsumaki-oomeiga> phe.	*E11-16:Ald + *Z11-16:Ald (39:11)	Wu in Arn, 1992	A
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(Crambidae; Scopariinae) Tsutoga-ka; Yamameiga-aka

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

(Crambidae; Crambinae) Tsutoga-ka; Tsutoga-aka

<i>Agriphila aeneociliella</i> Eversmann eastern grass veneer <shirofutasuji-tutoga> phe.	*Z9,Z12,Z15-18:Ald + *Z9-16:OAc (16:1)	Zhan, 2023	A
<i>Agriphila straminella</i> Denis & Schiffermüller att.	Z11-16:Ald	Booij, 1984(c)	C
<i>Catoptria permutatella</i> 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	Nesbitt, 1986	C

	+ *Z10-15:OAc (8:4:1) + another component		
<i>Chilo hyrax</i> Bleszynski reed stalk borer <nikameigamodoki> <i>att.</i>	Z9-16:Ald	Wu, 1993	A
<i>Chilo influscatellus</i> Snellen sugarcane stem borer <i>phe.</i>	*Z11-16:OH	Wu, 1984	C
<i>Chilo partellus</i> Swinhoe spotted stalk borer corn stem borer <i>phe.</i>	*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> <i>phe.</i>	*Z13-18:OAc + *Z13-18:OH (7:1)	Nesbitt, 1980(a)	A
<i>Chilo sacchariphagus indicus</i> Kapur <i>phe.</i>	*Z13-18:OAc + *Z13-18:OH (5:1)	David, 1985	B
<i>Chilo suppressalis</i> Walker rice stem borer <nika-meiga> <nikameichiu> <i>phe.</i>	*Z11-16:Ald + *Z13-18:Ald (5:1) (9:2) + *Z9-16:Ald (50:6:5) + other components	Nesbitt, 1975(b) Ohta, 1976 Beevor, 1977 Tatsuki, 1983 Mochida, 1984	A
<i>Chilo</i> (= <i>Proceras</i>) <i>venosatus</i> Walker (= <i>C. sacchariphagus</i> ?) sugarcane striped borer <i>phe.</i>	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 <i>phe.</i>	*Z11-16:OH + *16:OH + Z13-18:OH (7:2:1)	Zagatti, 1983(b)	C
<i>Chrysoteuchia topiaria</i> Zeller	*Z11-16:Ald	McDonough, 1979	C

cranberry girdler phe.		Kamm, 1979(b)	
	+ Z9-16:Ald (40:1–100:1)	Kamm, 1980; 1989	
	Z11-16:CN + Z9-16:CN (100:3)	Ujváry, 1993	
<i>Chrysoteuchia</i> sp. att.	Me2,epo7-18:H	Nagano, 1979	A
<i>Coniesta</i> (= <i>Acigona</i>) <i>ignefusalis</i> Hampson millet stem borer phe.	Z7-12:OH + Z5-10:OH + Z7-12:Ald (500:25:17)	Youm, 1995	D
	*Z7-12:OH + *Z5-10:OH + *Z7-12:Ald (100:5:3.3) + other components	Beevor, 1999	
<i>Crambus cypridalis</i> Hulst att.	Z11-16:OAc + Z11-16:Ald (10:1)	Landolt, 2012	C
<i>Crambus nemorella</i> Hübner att.	Z11-16:OAc	Booij, 1984(c)	C
<i>Deanolis sublimbalis</i> Snellen red banded mango caterpillar phe.	*Z11-16:Ald + *Z3,Z6,Z9-23:H (1:1) + other components	Gibb, 2007(a)	D
<i>Diatraea considerata</i> Heinrich phe.	*Z11-16:Ald + *Z7-16:Ald + *Z13-18:Ald (100:30:4) + other components	Gries, 1998	D
<i>Diatraea flavipennella</i> Box sugarcane borer phe.	*Z11-16:Ald + *Z9-16:Ald (3:1) + other components	Kalinová, 2012	D
<i>Diatraea grandiosella</i> Dyar southwestern corn borer phe.	*Z11-16:Ald + *Z9-16:Ald + *Z13-18:Ald (71:22:8) + other components	Hedin, 1986	D
	+ Z9-18:Ald (33:10:4:3)	Davis, 1986	
<i>Diatraea indigenella</i> Dyar & Heinrich	*Z9,E11-16:Ald	Palacio-Cortes, 2014	D

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

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

<i>Trichophysetis cretacea</i> Butler		*Z11-16:OAc	Peng, 2012	A
jasmine bud borer		+ *Z11-16:Ald		
<futaobi-nomeiga>		+ *Z11-16:OH (10:10:1)		
	phe.	(5:2:1)	Gu, 2013	

(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.	*Z11-16:OAc + *Z9-14:OAc (20:1)	Usui, 1987	A
Indonesia strain	(10:1)	Adati, 2013	
<i>Evergestis aenealis</i> att.	Z7-12:OAc + Z9-14:OAc (1:1)	Tóth, 1994(b)	C
<i>Evergestis extimalis</i> Scopoli <usubeni-nomeiga> att.	Z9-14:OAc + Z7-12:OAc (1:1)	Konstantin in Arn, 1986(a) Tóth, 1994(b)	A
<i>Evergestis forficalis</i> L. garden pebble moth <na-nomeiga> att.	E11-14:OAc	Lester in Hall, 1979 Priesner, 1980(a) Arn in Arn, 1986(a) Voerman in Arn, 1986(a)	A
<i>Evergestis frumentalis</i> att.	Z11-16:Ald + Z9-14:Ald (20:1)	Tóth, 1994(b)	C
<i>Hellula undalis</i> F. cabbage webworm <haimadara-nomeiga> phe.	*E11,E13-16:Ald + Z11-16:Ald (100:3) + *Z11-14:OAc + *E11-16:Ald + *Z3,Z6,Z9-23:H (7:3:3:1)	Arai, 1982 Sugie, 2003 Vang, 2020	A

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

<i>Agathodes ostentalis</i> Geyer <benimon-nomeiga> phe.	*E10,E12-16:Ald + *E11-16:Ald (1:1)	Wakamura, 2004	A
<i>Bradina</i> sp. att.	E11-16:Ald	Ando, 1981	A
<i>Cnaphalocrocis medinalis</i> Guenée rice leaffolder moth <kobu-nomeiga> phe.	Z13-18:OAc	Kang, 1985	A
Indian	*Z11-16:OAc + *Z13-18:OAc (49:1) E	Ramachandran, 1990	
Philippine	(1:10) (1:10–20) + another component	Raina in Arn, 1997 Rao, 1993: 1995	
Japanese	*Z13-18:Ald + *Z13-18:OH + *Z11-18:Ald + *Z11-18:OH (100:36:11:24)	Kawazu, 2000; 2002	
Indonesia	(100:37:10:26)	Kawazu, 2009	
<i>Cnaphalocrocis pilosa</i> (= <i>Marasmia latimarginalis</i>) <hanenagakobu-nomeiga> att.	Z11-16:OAc + Z13-18:OAc (50:1)	Kawazu, 2001	A
<i>Conogethes pluto</i> Butler Alpinia stem borer 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	Konno, 1982 Xiao, 2012	A

	(9:1:10:100)	Nam, 2022	
<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	A
<i>Desmia funeralis</i> Hübner grape leaf folder phe.	*Z11,Z13-16:Ald + *≡11-16:Ald + *Z11-16:Ald (3:1:1) + another component	Millar, 2002	D
<i>Diaphania angustalis</i> Snellen phe.	*E10,E12-16:Ald + *E10,E12-16:OH (9:1)	Ma, 2017	C
<i>Diaphania glauculalis</i> att.	E11-16:Ald + E10,E12-16:Ald	Wen, 2014	C
<i>Diaphania hyalinata</i> L. melonworm phe.	*E11-16:Ald + *E10,E12-16:Ald (5:4) + other components	Raina, 1986(a)	C
<i>Diaphania</i> (= <i>Palpita</i>) <i>indica</i> Saunders cotton caterpillar moth <wataherikuro- nomeiga> <uri-nomeiga> phe. In Korea	*E11-16:Ald + *E10,E12-16:Ald (2:1) + another component (7:3)	Wakamura, 1998 Choi, 2009(a)	A
<i>Diaphania nitidalis</i> Stoll pickleworm phe.	*E11-16:Ald + *Z11-16:Ald + *E10,Z12-16:Ald (75:3.3:0.2) + other components	Klun, 1986	C
<i>Diasemia litterata</i> Scopoli <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	*10,12,14-16:OAc	Seol, 1987	A

<chibisukashi-nomeiga>	*E10,E12,Z14-16:OAc	Honda, 1990	
<kuwa-nomeiga>			
phe.	+ *E10,E12,E14-16:OAc (7:1)	Guo, 2022	
<i>Haritalodes</i> (=Notarcha)	*E10,Z12-16:Ald	Honda, 1994	A
<i>Basipunctalis</i> Brem.	+ *E10,E12-16:Ald (4:1)		
phe.			
<i>Haritalodes</i> (=Notarcha) <i>derogata</i> F.	*E10,Z12-16:Ald	Himeno, 1992	A
cotton leaf-roller	+ *E10,E12-16:Ald (3:1)		
<wata-nomeiga>	+ other components		
phe.			
	*E10,Z12-16:Ald	Honda, 1994	
<i>Herpetogramma licarsisalis</i> Walker	*Z11,E13-16:OAc	Gibb, 2007(b)	A
grass webworm	+ other components		
<kuroobikuro-nomeiga>			
phe.			
<i>Herpetogramma submarginale</i>	*Z13-16:OAc	Yan, 2015(b)	A
Swinhoe	+ other components		
<herigurokiiro-nomeiga>			
phe.			
<i>Leucinodes orbonalis</i> Guenée	*E11-16:OAc	Zhu, 1987(a)	A
eggplant borer			
<nasu-nomeiga>	+ another component	Kong, 1990	
phe.		Attygalle, 1988(a)	
	+ *E11-16:OH (100:1)	Cork, 2001	
	+ *Z3,Z6,Z9-23:H (10:1)	Vang, 2018	
	+ another component		
<i>Maruca vitrata</i> (= <i>testulalis</i>) F.	*E10,E12-16:Ald	Adati, 1999	A
legume pod borer			
<mame-nomeiga>	+ *E10,E12-16:OH	Downham, 2003	
phe.	+ E10-16:Ald (20:1:1)	Schläger, 2015	
China (Wuhan strain)	*E10,E12-16:Ald	Lu, 2013	
	+ *E10,E12-16:OH		
	+ *E10-16:Ald (10:1:8)		
(Huazhou strain)	(10:1:1)		
<i>Mnesictena flavidalis</i>	E11-16:OAc	Clearwater, 1986	D
att.	+ Z11-16:OAc (10:1)		

<i>Neoleucinodes elegantalis</i> tomato fruit borer phe.	*E11-16:OH + *Z3,Z6,Z9-23:H (20:1) + other components	Cabrera, 2001	D
<i>Omphisa anastomosalis</i> Guenée sweetpotato vine borer moth <satsumaimo-nomeiga> phe.	*E10,E14-16:Ald + other components + *Z3,Z6,Z9-23:H (1:2) + other components + *Z3,Z6,Z9-23:H (1:2 – 1:5)	Wakamura, 2010 Yan, 2014 McQuate, 2019	A
<i>Palpita nigropunctalis</i> Bremer <maeakasukashi-nomeiga> phe.	*E11-16:Ald + *E11-16:OAc + *E11-16:OH (100:20:1) N	Yan, 2018(c)	A
<i>Palpita unionalis</i> Hübner jasmine moth phe.	*E11-16:OAc + *E11-16:Ald (7:3)	Mazomenos, 1994	C
<i>Patania</i> (= <i>Pleuroptya</i> , <i>Dichocrocis</i>) <i>chlorophanta</i> Butler <hosomisuji-nomeiga> att.	E10-16:Ald	Konno, 1982 Honda, 2004	A
<i>Patania</i> (= <i>Pleuroptya</i>) <i>ruralis</i> Scopoli bean webworm <ukon-nomeiga> phe.	*E10-16:Ald + *Z10-16:Ald (21:4)	Mochizuki, 2009(a); (b)	A
<i>Rehimena surusalis</i> Walker hibiscus flower-bud borer <kakumon-nomeiga> phe.	*E10,Z12-16:OAc + *E10,Z12-16:Ald + *Z3,Z6,Z9-23:H (5:1:14)	Honda, 2015	A
<i>Sceliodes cordalis</i> Doubleday phe.	*E11-16:OAc + *E11-16:OH (1:1)	Clearwater, 1986	D
<i>Terastia subjectalis</i> Lederer <ooguri-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 neobliteralis</i> Capps att.	E9-14:OAc	Roelofs, 1970(a)	C
<i>Loxostege sticticalis</i> L. beet webworm att.	E11-14:OAc	Struble, 1977(a)	C
<i>Marasmia patnalis</i> rice leaf folder phe.	*Z13-18:OAc + *Z11-16:OAc (24:1)	Ramachandran, 1990	C E
<i>Mutuuraia mysippusalis</i> Walker att.	Z7-10:OAc + Z7-12:OAc (1:1)	Steck, 1977(a)	C
<i>Mutuuraia</i> (= <i>Phlyctaenia</i>) <i>terrealis</i> Treitschke <sujimagari-nomeiga> att.	Z7-12:OAc	Roelofs, 1970(a)	A
<i>Ostrinia furnacalis</i> Guenée oriental (Asian) corn borer <ajiaawa-nomeiga> phe. Japan	*Z12-14:OAc + *E12-14:OAc + another component (3:2)	Ando, 1980(b) Huang, 1998(a)	A

Philippines		(1:1)	Klun, 1980(a)	
China		(1:1)	Cheng, 1981 Cheng, 1989	
Taiwan		(3:1)	Yeh, 1989	
		(1:1)	Kou, 1992(a)	
Korea		(2:1)	Boo, 1998(b)	
China	+ * 14:OAc	(21:16:13) (13:7:10)	Du, 1986 Deng, 2023	
<i>Ostrinia latipennis</i> Warren <usujiroki-nomeiga> phe.	*E11-14:OH		Ishikawa, 1999(b) Takanashi, 2000	A
<i>Ostrinia nubilalis</i> Hübner European corn borer <awa-nomeiga> "Z"-race phe.	*Z11-14:OAc		Klun, 1970	C
	+ *E11-14:OAc	(97:3)	Klun, 1973 Cheng, 1989	
	+ other components		Klun, 1977 Attygalle, 1987 Struble, 1987(a) Kalinová, 1994	
"E"-race	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		Klun, 1979(a)	

	+ *Z11-14:OAc (13:7)	Buechi, 1982	
maize race	*Z11-14:OAc	Pelozuelo, 2004	
mugwort and hop races	*E11-14:OAc		
<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 scapularis</i> Walker adzuki bean borer <azuki-nomeiga> <i>phe.</i> Z-type	*Z11-14:OAc + *E11-14:OAc (97:3) + another component	Huang, 1997	A
E-type	(1:99)	Huang, 2002 Tabata, 2003	
I-type	(36:64)		
<i>Ostrinia zaguliaevi</i> Mutuura & Munroe butterbur borer <fuki-nomeiga> <i>phe.</i>	*Z11-14:OAc + *Z9-14:OAc + *E11-14:OAc (10:9:1) + another component	Huang, 1998(c) Tabata, 2006	A
<i>Ostrinia zealis</i> Guenée burdock borer <gobou-nomeiga> <i>phe.</i>	*Z9-14:OAc + *E11-14:OAc + *Z11-14:OAc (70:24:6) + another component	Ishikawa, 1999(a)	A
<i>Ostrinia</i> sp. <i>phe.</i>	*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>	Z11-14:Ald + Z11-14:OAc (9:1)	Ando, 1981	A

<i>att.</i>				
<i>Paliga minnehaha</i> Pryer <maebeni-nomeiga> <i>att.</i>	E11-14:OAc		Ando, 1981	A
<i>Phlyctaenia coronata tertialis</i> Guenée <i>att.</i>	Z9-12:OAc		Reed, 1985(b)	C
<i>Pyrausta aurata</i> Scopoli <hakka-nomeiga> <i>att.</i>	E11-14:OAc		Maini in Arn, 1986(a) Stockel, 1977 Mozūraitis, 1998	A
<i>Pyrausta cingulata</i> <i>att.</i>	E11-14:OAc + Z11-14:OAc (1:1)		Arn in Arn, 1986(a)	C
<i>Pyrausta fodinalis</i> Lederer <i>att.</i>	E10,E12-14:OAc		Reed, 1985(b)	C
<i>Pyrausta ochosalis</i> <i>att.</i>	E11-14:OAc		Roelofs, 1971(a)	C
<i>Pyrausta ostrinalis</i> Hübner <i>att.</i>	E11-14:OAc		Bûda, 1987	C
<i>Pyrausta panopealis</i> Walker perilla leaf pyralid moth <benifuki-nomeiga> <i>phe.</i>	*E11-14:OAc + *Z11-14:OAc N		Kang, 1995	A
<i>Pyrausta purpuralis</i> L. <i>att.</i>	E11-14:OAc + Z11-14:OAc (3:2)		Anglade in Arn, 1986(a) Frerot, 1982(a)	C
<i>Pyrausta</i> (= <i>Ecpyrrhorhoe</i>) <i>rubiginalis</i> Hübner <akamyaku-nomeiga> <i>att.</i>	Z11-14:OAc + E11-14:OAc + 12:OAc (7:3:40)		Hrdý, 1979	A
<i>Sitochroa verticalis</i> L. <kuromyaku-nomeiga> <i>att.</i>	E9-12:OAc + E9-12:OH		Tóth, 1994(b) Roerich in Arn, 1986(a)	A
<i>Sufetula sunidesalis</i> Walker <shirosujiguri-nomeiga>	Z11-16:Ald + Z9-16:Ald (19:1)		Kohno, 2014	A

att.

(25) [Calliduloidea] Ikarimonga-joka

no species

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

<i>Dendrolimus houi</i> Lajonquiere Yunnan pine caterpillar phe.	*E5,Z7-12:OH + *E5,Z7-12:OAc + *E5,Z7-12:Ald (20:1:1) + other components	Kong, 2007(a)	C
<i>Dendrolimus kikuchii</i> Matsumura phe.	*Z5,E7-12:OAc + *Z5,E7-12:OH + *Z5-12:OH (20:4:5)	Kong, 2005; 2011	C
<i>Dendrolimus pini</i> L. European pine moth phe.	*Z5,E7-12:Ald + *Z5,E7-12:OH (3:2) + other components	Bestmann, 1982(b) Priesner, 1984(d) Kovalev, 1993 Rudziński, 2022	C
<i>Dendrolimus punctatus</i> Walker pine-caterpillar moth masson pine moth phe.	*Z5,E7-12:OH + *Z5,E7-12:OAc + Z5,E7-12:OPr (28:25:10) + *Z5,E7-12:OPr + *Z5-12:OH + *Z5-12:OAc (19:15:7:7:3)	China, 1979 Meng, 1983(a) Zhang, 2003(a) Zhao, 1993	C
<i>Dendrolimus spectabilis</i> Butler pine moth <matsu-kareha> phe.	*Z5,E7-12:OH	Vu, 1980 Ando, 1982	A
<i>Dendrolimus superans</i> Butler	*Z5,E7-12:Ald	Kong, 2007(b)	A

larch caterpillar moth <tuga-kareha> phe.	+ other components		
<i>Dendrolimus superans</i> <i>sibiricus</i> Butler Siberian moth phe.	Z5,E7-12:Ald + Z5,E7-12:OH + other components	Klun, 2000	B
	*Z5,E7-12:Ald + *Z5,E7-12:OH (1:1) + other components	Pletnev, 2000	
<i>Dendrolimus tabulaeformis</i> Tsai & Liu Chinese pine caterpillar phe.	Z5,E7-12:OH + Z5,E7-12:OAc + Z5,E7-12:OPr (1:1:1)	Meng, 1983(b)	C
	*Z5,E7-12:OH + *Z5,E7-12:OAc + *Z5,E7-12:OPr (20:20:1)	Kong, 2012(a)	
<i>Gastropacha quercifolia</i> L. lappet moth <birodo-kareha> phe.	*Z5-12:Ald + *Z5-12:OH + another component E	Bestmann, 1993(d)	B
<i>Malacosoma americanum</i> F. eastern tent caterpillar phe.	*E5,Z7-12:Ald + *Z5,E7-12:OH + *E5,Z7-12:OH (10:1-1:1)	Roelofs in Arn, 1986(a)	C
<i>Malacosoma californicum</i> Packard western tent caterpillar phe.	*Z5,E7-12:Ald	Underhill, 1980	C
<i>Malacosoma disstria</i> Hübner forest tent caterpillar phe.	*Z5,E7-12:OH + *Z5,E7-12:Ald (10:1) Z5,E7-12:Ald + Z5,Z7-12:Ald + Z7-12:Ald (10:1:1) (100:1:10)	Chisholm, 1980(a)	C
		Chisholm, 1982	
		Schmidt, 2003	
<i>Malacosoma neustria</i> L. lackey moth <obi-kareha>	*E5,Z7-12:Ald + *E5,Z7-12:OH (8:5) + other components	Konyukhov, 1988 Rotundo, 2004	A

phe.

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

(28) [Geometroidea] (Geometridae)	Shakuga-joka 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> <i>phe.</i>	* <i>epo3,Z6,Z9-17:H</i> (3 <i>S</i> ,4 <i>R</i>)-isomer + * <i>Z3,Z6,Z9-17:H</i> (10:1)	Tóth, 1992(a); 1994(a)	B	
<i>Abraxas nipponibia</i> Wehrli	<i>epo3,Z6,Z9-18:H</i>	Ando, 1995(a)	A	

<himemadara-edashaku> att.			
<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>Agriopsis</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>Agriopsis</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) Z3,epo6,Z9-19:H (6 <i>S</i> ,7 <i>R</i>)-isomer + Z3,Z6,Z9-19:H (10:3)	Hansson, 1990(b) Szöcs, 1993(b)	C
<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	Z3,Z6,Z9-19:H	Ando, 1993	A

<shiroobi-fuyushaku> att.			
<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 (6R,7S)-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) (6S,7R)-isomer	Millar, 1990(c)	D
<i>Anisodes</i> ^c sp. att.	E11-16:OAc + E11-16:Ald (7:3)	Mazomenos, 1994	C
<i>Anticlea</i> ^d <i>vasiliata</i> Guenée att.	Z3,Z6,Z9-21:H	Millar, 1991(c)	D
<i>Ascotis</i> ^e (= <i>Boarmia</i>) <i>selenaria</i> Denis & Schiffermüller giant looper phe.	*Z3,Z6,Z9-19:H E epo3,Z6,Z9-19:H + Z3,epo6,Z9-19:H + Z3,Z6,epo9-19:H (1:1:1) *epo3,Z6,Z9-19:H (3S,4R)-isomer + another component	Becker, 1983 Becker in Arn, 1986(a) Becker, 1990 Cossé, 1992	B
Korean strain 1 Korean strain 2	(3R,4S):(3S,4R) = 9:1 (3R,4S):(3S,4R) = 5:5	Choi, 2012	
<i>Ascotis selenaria cretacea</i> Butler Japanese giant looper mugwort looper <yomogi-edashaku> phe.	epo3,Z6,Z9-19:H *epo3,Z6,Z9-19:H (3R,4S)-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> att.	Z6,epo9-21:H	Kovalev, 1986	D
<i>Colotois</i> ^e <i>pennaria</i> L. phe.	*Z3,epo6,Z9-19:H + Z3,Z6,Z9-19:H (10:3) *Z3,epo6,Z9-19:H (6 <i>R</i> ,7 <i>S</i>)-isomer + *Z3,Z6,Z9-19:H + Z3,Z6,Z9-21:H (10:3:10)	Hansson, 1990(b) Szöcs, 1993(b)	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 components	Yamakawa, 2012(a)	A
<i>Dysstroma</i> ^d <i>brunneata ethela</i> Hulst att.	Z3,Z6,epo9-20:H (9 <i>S</i> ,10 <i>R</i>)-isomer	Wong, 1985(b)	C
<i>Dysstroma</i> sp. (<i>citrata</i> ?) att.	Z3,Z6,Z9-20:H or Z3,Z6,Z9-21:H	Wong, 1985(b)	
<i>Ectropis</i> ^e <i>excellens</i> Butler <ootobisuji-edashaku> att.	epo6,Z9-18:H	Ando, 1995(a)	A
<i>Ectropis</i> <i>grisescens</i> Warren phe.	*Z3,epo6,Z9-18:H + *Z3,Z6,Z9-18:H (4:1)	Ma, 2016	C
<i>Ectropis</i> <i>obliqua</i> Prout tea looper <usujiro-edashaku> phe.	*Z3,epo6,Z9-18:H + *Z3,Z6,Z9-18:H + another component N (3:2)	Yao, 1991 Yang, 2016	A
	+ *Z3,epo6,Z9-19:H (2:1:2)	Luo, 2017	
<i>Ennomos</i> ^e <i>subsignaria</i> Hübner elm spanworm phe.	*Z6,epo9-19:H (9 <i>S</i> ,10 <i>R</i>)-isomer + another component	Ryall, 2010	C
<i>Epelis</i> ^e <i>truncataria</i> Walker att.	epo3,Z6,Z9-17:H	Millar, 1990(c)	D
<i>Epirrhoe</i> ^d <i>sperryi</i> Herbulot phe.	Z3,Z6,Z9-19:H *Z3,Z6,Z9-19:H + other components	Wong, 1985(b) Millar, 1992(a)	C
<i>Epirrita</i> ^d <i>autumnata</i> Borkhausen <aki-namishaku> phe.	*Δ1,Z3,Z6,Z9-21:H	Zhu, 1995(b)	A
<i>Epirrita</i> <i>viridipurpurescens</i> Prout	Z3,Z6,Z9-21:H	Ando, 1993	A

<midoriaki-namishaku> att.			
<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 golda</i> Djakonov <chabane-fuyu-edashaku> att.	Z3,epo6,Z9-18:H	Ando, 1995(a)	A
<i>Esakiopteryx</i> ^d <i>volitans</i> Butler <usubeni-suji-namishaku> att.	Z3,Z6,Z9-19:H	Ando, 1993	A
<i>Euchlaena</i> ^e <i>madusaria</i> Walker att.	Z6,epo9-19:H (9 <i>S</i> ,10 <i>R</i>)-isomer + (9 <i>R</i> ,10 <i>S</i>)-isomer (1:1)	Millar, 1991(a)	D
<i>Eufidonia</i> ^e <i>convergaria</i> Walker phe.	*Z3,Z6,Z9-19:H + *Z3,epo6,Z9-19:H (6 <i>S</i> ,7 <i>R</i>)-isomer (1:1)	Millar, 1990(a)	D
<i>Eulithis</i> ^d <i>testata</i> L. <kimadara-namishaku> att.	Z3,Z6,Z9-20:H or Z3,Z6,Z9-21:H + epoxydienes	Wong, 1985(b)	A
<i>Eupithecia</i> ^d <i>abietaria</i> Götze cloaked pug moth phe.	*Z3,Z6,Z9-19:H + *Z3,Z6,epo9-19:H (9 <i>S</i> ,10 <i>R</i>)-isomer (19:1) + other components	Wang, 2015(a)	B
<i>Eupithecia annulata</i> Hulst att.	epoxydienes of Z3,Z6,Z9-20:H + epoxydienes of Z3,Z6,Z9-19:H or Z3,Z6,Z9-21:H Z3,Z6,epo9-20:H	Wong, 1985(b) Millar, 1991(b)	C

(9*S*,10*R*)-isomer

<i>Eupithecia assimilata</i> Doubleday currant pug moth phe.	*Z3,Z6,epo9-21:H (9 <i>S</i> ,10 <i>R</i>)-isomer + other components	Campbell, 2007	C
<i>Eupithecia subnotata</i> Hübner att.	Z3,Z6,Z9-19:H	Szöcs, 1987	C
<i>Eupithecia vulgata</i> Haworth att.	Z9,Z12,Z15-18:Ald + Z3,Z6,epo9-21:H + Δ1,Z3,Z6,epo9-21:H (8:1:1)	Ostrauskas, 2004	C
<i>Hemithea</i> ^b <i>tritonaria</i> Walker <herigurohime-aoshaku> phe.	*Z6,Z9,Z12-18:H + *(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 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 emarginata</i> att.	Z9,Z11-14:OAc + Z7,Z9-12:OAc	Zhu, 1996	C

	+ Z7,E9-12:OAc (10:10:1)		
<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 straminata</i> Borkhausen phe.	*Z7,Z9-12:OAc + *E7,Z9-12:OAc + *Z9,Z11-14:OAc (10:1:10) + another component	Zhu, 1996	C
<i>Idaea trisetata</i> Prout <mijinki-himeshaku> att.	E7,Z9-12:OH	Ando, 1987	A
<i>Idiochlora</i> ^b <i>ussuriaria</i> Bremer <namisujiko-aoshaku> att.	Z6,Z9,Z12-17:H	Yamakawa, 2011(a)	A
<i>Inurois</i> ^a <i>fletcheri</i> Inoue <usuba-fuyushaku> att.	Z3,Z6,Z9,E11-20:H	Yamamoto, 2008	A
<i>Inurois fumosa</i> Inoue <usumon-fuyushaku> att.	epo3,Z6,Z9-21:H	Ando, 1993	A
<i>Inurois membranaria</i> Christoph <kuroten-fuyushaku> att.	epo3,Z6,Z9-21:H	Ando, 1993	A
<i>Itame</i> ^c <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 brunneata</i> Thunberg att.	epo3,Z6,Z9-17:H (3 <i>S</i> ,4 <i>R</i>)-isomer	Millar, 1990(c)	D
<i>Itame 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>Labdina</i> ^e <i>athasaria</i> Walker spring hemlock looper phe.	*Me7-17:H + *Me7,Me11-17:H (1:1) + another component (7S)-isomer + 7,11-meso (25:8)	Gries, 1994(b) Duff, 2001	D
<i>Labdina 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 (5R,11S)-isomer Me2,Me5-17:H (5R)-isomer	Gries, 1991 Li, 1993(a) Silk in Arn, 1997 Silk in Arn, 1997	D
<i>Labdina fiscellaria</i> <i>lugubrosa</i> Hulst western hemlock looper phe.	*Me5,Me11-17:H + *Me2,Me5-17:H + *Me7-17:H (1:1:1) Me5,Me11-17:H + Me2,Me5-17:H (1:1) Me5,Me11-17:H (5R,11S)-isomer + Me2,Me5-17:H (5S)-isomer + Me7-17:H (7S)-isomer	Gries, 1993(b) Evenden, 1995 Li, 1993(a) Li, 1993(b)	D
<i>Labdina pellucidaria</i> Grote & Robinson pitch pine looper phe.	*Me7-17:H + *Me7,Me11-17:H (1:1) + another component (7S)-isomer + 7,11-meso (25:8)	Maier, 1998 Duff, 2001	D
<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) *Z3,Z6,Z9-21:H + Z6,Z9-21:H (19-4:1)	Underhill in Arn, 1986(a) Millar, 1992(a)	C
<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 (= <i>Hemerophila</i>) <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</i> <i>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.	*Δ1,Z3,Z6,Z9-19:H	Roelofs, 1982(b) Bestmann, 1982(c) Albert, 1984 Knauf, 1984	C
<i>Operophtera fagata</i> Scharf. northern winter moth phe.	*Z6,Z9-19:H + *Δ1,Z3,Z6,Z9-19:H (10:1) + other components	Szöcs, 2004	C
<i>Operophtera occidentalis</i> att.	Δ1,Z3,Z6,Z9-19:H	Roelofs, 1982(b)	C
<i>Operophtera rectipostmediana</i> Inoue <ichimojifuyu-namishaku> att.	Δ1,Z3,Z6,Z9-19:H	Yamamoto, 2008	A
<i>Operophtera relegata</i> Prout <kuroobifuyu-namishaku> att.	Z3,epo6,Z9-19:H or Z3,Z6,epo9-19:H or epo3,Z6,Z9-19:H Z3,Z6,epo9-19:H (9 <i>S</i> ,10 <i>R</i>):(9 <i>R</i> ,10 <i>S</i>) = 1:1	Ando, 1993 Qin, 1997	A
<i>Ourapteryx</i> ^e <i>sambucaria</i> L. att.	Z3,Z6,Z9-19:H	Subchev, 1986(a)	C
<i>Pachyerannis</i> ^e <i>obliquaria</i>	epo3,Z6,Z9-19:H	Qin, 1997	A

	Motschulsky <kurosujifuyu-edashaku> att.	(3 <i>R</i> ,4 <i>S</i>)-isomer		
<i>Pachyligia</i> ^e att.	<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 att.	<i>superans</i> Butler <oo-aoshaku> att.	Z3,Z6,Z9-20:H	Ando, 1993	A
<i>Paleacrita</i> ^e phe.	<i>vernata</i> Peck spring cankerworm	*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 phe.	<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 phe.	<i>rhomboidaria</i> Denis & Schiffermüller	*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 att.	<i>grandis</i> Hulst	E11-14:Ald	Daterman, 1977	C
<i>Plagodis</i> ^e att.	<i>alcoolaria</i> Guenée	Z3,Z6,Z9-20:H + Z3,epo6,Z9-20:H (6 <i>R</i> ,7 <i>S</i>)-isomer (1:1)	Millar, 1991(c)	C
<i>Probole</i> ^e att.	<i>alienaria</i> Herrich-Schäffer	Z3,epo6,Z9-19:H (6 <i>R</i> ,7 <i>S</i>):(6 <i>S</i> ,7 <i>R</i>) = 1:1	Landolt, 1996	D
<i>Probole</i> phe.	<i>amicaria</i> Herrich-Schäffer	*epo3,Z6,Z9-19:H (3 <i>S</i> ,4 <i>R</i>)-isomer + Z3,epo6,Z9-19:H (6 <i>R</i> ,7 <i>S</i>)-isomer + *Z3,Z6,Z9-19:H (9:1:8)	Millar, 1990(b); (c)	D

<i>Prochoerodes</i> ^e <i>transversata</i> Drury large maple spanworm att.	Z3,Z6,epo9-19:H (9 <i>S</i> ,10 <i>R</i>)-isomer + Z3,Z6,Z9-19:H (4:1)	Wong, 1985(b)	D
<i>Pseudocoremia</i> ^e <i>fenerata</i> Felder & Rogenhofer att.	Z6,epo9-19:H	Gibb, 2006(b)	D
<i>Pseudocoremia leucelaea</i> Meyrick att.	Z6,epo9-19:H	Gibb, 2006(b)	D
<i>Pseudocoremia suavis</i> Butler common forest looper phe.	*Z3,Z6,epo9-19:H + other components	Gibb, 2006(b)	D
<i>Rhynchobapta</i> ^e <i>cervinaria</i> <i>bilineata</i> Leech <futasujio-edashaku> att.	Z6,Z9-17:H	Ando, 1995(a)	A
<i>Sabulodes</i> ^e <i>caberata</i> Guenée omnivorous looper phe.	*Z6,Z9-19:H + other components	McDonough, 1986	D
<i>Scopula</i> ^c <i>personata</i> Prout <namisujichibi-himeshaku> att.	Z9,E11-14:OAc	Nagano, 1979	A
<i>Semiothisa</i> ^e <i>bicolorata</i> F. att.	Z3,Z6,Z9-17:H + Z3,epo6,Z9-17:H (10:1)	Millar, 1987	C
<i>Semiothisa cineraria</i> Bremer & Grey scholar tree looper phe.	*epo3,Z6,Z9-17:H + *Z3,Z6,Z9-17:H (6:1) (3 <i>R</i> ,4 <i>S</i>)-isomer	Li, 1993 Kong, 2012(b)	C
<i>Semiothisa</i> (= <i>Chiasmia</i>) <i>clathrata</i> L. <himeamime-edashaku> phe.	*epo3,Z6,Z9-17:H (3 <i>R</i> ,4 <i>S</i>)-isomer + *Z3,Z6,Z9-17:H (3:1)	Tóth, 1991(a); 1994(a)	A
<i>Semiothisa delectata</i> Hulst att.	Z3,epo6,Z9-17:H + Z3,Z6,Z9-17:H (10:1)	Millar, 1987	C

<i>Semiothisa marmorata</i> Ferguson att.	epo3,Z6,Z9-17:H (3 <i>R</i> ,4 <i>S</i>)-isomer + Z3,Z6,Z9-17:H (9:1–1:1)	Gries, 1993(a)	C
<i>Semiothisa neptaria</i> Guenée phe.	*Z3,Z6,Z9-17:H N epo3,Z6,Z9-17:H (3 <i>R</i> ,4 <i>S</i>):(3 <i>S</i> ,4 <i>R</i>) = 2:1	Millar, 1987 Gries, 1993(a)	C
<i>Semiothisa sexmaculata</i> Packard phe.	*epo3,Z6,Z9-17:H (3 <i>R</i> ,4 <i>S</i>)-isomer	Gries, 1993(a)	C
<i>Semiothisa signaria</i> <i>dispuncta</i> Walker phe.	*epo3,Z6,Z9-17:H + *Z3,Z6,Z9-17:H (10:1) or epo3,Z6,Z9-18:H + Z3,Z6,Z9-18:H (9:1)	Millar, 1987	C
<i>Semiothisa ulsterata</i> Pearsall att.	Z3,epo6,Z9-17:H (6 <i>S</i> ,7 <i>R</i>)-isomer	Millar, 1987 Millar, 1990(c)	C
<i>Sibatania</i> ^d <i>mactata</i> Felder & Rogenhofer <birodo-namishaku> att.	Z3,Z6,Z9-21:H	Ando, 1993	A
<i>Sicya</i> ^e <i>macularia</i> Harris att.	epo3,Z6,Z9-19:H (3 <i>S</i> ,4 <i>R</i>)-isomer + Z3,Z6,Z9-19:H (9:1)	Millar, 1990(b), (c)	D
<i>Synaxis</i> ^e <i>jubararia</i> Hulst 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 <szanamishiro-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</i> <i>polycommata</i> Denis & Schiffermüller barred tooth striped moth <hanenagakobane-namishaku> phe.	*Z6,Z9-19:H	Oleander, 2019	B
<i>Triphosa</i> ^d <i>haesitata</i> <i>affirmata</i> Guenée att.	Z9,Z12,Z15-18:OAc + Z3,Z6,Z9-20:H (1:20) or + Z3,Z6,Z9-21:H (1:20)	Wong, 1985(b)	C
<i>Wilemania</i> ^e <i>nitobei</i> Nitobe <nitobe-edashaku> att.	Z3,Z6,Z9,E11-19:H	Yamamoto, 2008	A
<i>Xanthorhoe</i> ^d <i>abrasaria aquilonaria</i> Herrich-Schiffermüller att.	Z3,Z6,Z9-21:H + its epoxydienes (4:1) Z3,epo6,Z9-21:H (6 <i>S</i> ,7 <i>R</i>)-isomer + Z3,Z6,epo9-21:H (9 <i>S</i> ,10 <i>R</i>)-isomer (10:1)	Wong, 1985(b) Millar, 1991(c)	C
<i>Xanthorhoe</i> <i>ferrugata</i> Clerck att.	Z3,epo6,Z9-21:H (6 <i>S</i> ,7 <i>R</i>)-isomer	Millar, 1991(c)	C
<i>Xanthorhoe</i> <i>iduata</i> Guenée att.	Z3,Z6,Z9-21:H + its epoxydienes (1:1)	Wong, 1985(b)	C
<i>Xanthorhoe</i> <i>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	Wong, 1985(b) Millar, 1991(c)	C

	+ Z3,Z6,Z9-21:H (10:1)		
<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>Epiplema moza</i> Butler <kurohoshi-futao> att.	E11-16:OAc	Ando, 1975	A
<i>Epiplema plaqifera</i> Butler <kuroobishiro-futao> att.	E9-14:OH	Ando, 1977	A

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

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

<i>Bombyx mandarina</i> Moore <kuwako> phe.	*E10,Z12-16:OH + another component	Kuwahara, 1979 Daimon, 2012(b) Kuwahara, 1984	A
	*E3,Z13-18:OH	Gao in Arn, 1997	
<i>Bombyx mori</i> L. silkworm moth <kaiko> phe.	*E10,Z12-16:OH + other components	Butenandt, 1959; 1961 Kasang, 1978(a); (b)	A
<i>Rondotia menciiana</i> Moore	*E10,Z12-16:OAc	Dai, 1988	D

mulberry white caterpillar
phe.

<i>Trilocha varians</i> Walker <ichijikukasan> phe.	*E10,Z12-16:Ald + *E10,Z12-16:OAc (5:2)	Daimon, 2012(a)	D
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(Saturniidae = Attacidae) Yamamayuga-ka

<i>Actias luna</i> L. luna moth phe.	*E6,Z11-18:Ald + *E6-18:Ald (4:1) + another component	Millar, 2016	C
<i>Antheraea pernyi</i> Guérin-Méneville <saku-san> phe.	E6,Z11-16:OAc E E6,Z11-16:Ald E *E6,Z11-16:Ald + *E6,Z11-16:OAc + *E4,Z9-14:OAc (5:1:2) E + other components	Kaissling in Arn, 1986(a) Bestmann, 1987	A
<i>Antheraea polyphemus</i> Cramer phe.	*E6,Z11-16:OAc + *E6,Z11-16:Ald (9:1)	Kochansky, 1975(b)	C
<i>Callosamia promethea</i> Drury promethea moth phe.	*E4,E6,Z11,Z13-16:Ald	Gago, 2013	D
<i>Coloradia pandora pandora</i> Blake pandora moth phe.	*E10,Z12-16:Ald + *E10,Z12-16:OAc + *E10,E12-16:OAc (10:5:1) + other components	McElfresh, 2000	D
<i>Coloradia velda</i> Johnson & Walter common sheep moth phe.	*E10,Z12-16:OAc + *E10,E12-16:OAc + *E10,Z12-16:OH (10:1:0.33) + other components	McElfresh, 1999(c)	D
<i>Graellsia isabellae</i> Spanish moon moth phe.	*E4,E6,Z11-16:Ald	Millar, 2010	D
<i>Hemileuca burnsi</i> Watson phe.	E10,Z12-16:OAc + E10,Z12-16:OH + E10,Z12-16:Ald	McElfresh, 1999(d)	D

	+ other components		
	*E10,Z12-16:OAc + *E10,Z12-16:OH + *E10,Z12-16:Ald + *E10,E12-16:OAc + *16:OAc (100:14:0.4:23:232)	McElfresh, 2008	
<i>Hemileuca eglanterina</i> Boisduval common sheep moth phe.	*E10,Z12-16:OAc + *E10,Z12-16:OH + *E10,Z12-16:Ald (100:10:1) + other components	McElfresh, 1999(a)	D
<i>Hemileuca electra electra</i> Wright phe.	*E10,Z12-16:OAc (main) + *E10,Z12-16:OH + *E10,Z12-16:Ald + other components	McElfresh, 1999(d)	D
<i>Hemileuca electra mojavensis</i> Tuskes & McElfresh phe.	*E10,Z12-16:OAc (main) + *E10,Z12-16:OH + *E10,Z12-16:Ald + other components	McElfresh, 1999(d)	D
<i>Hemileuca maia</i> Drury buck moth phe.	*E10,Z12-16:Ald + *E10,Z12-16:OH + *E10,Z12-16:OAc (20:5:2) + other components	McElfresh, 2001(b)	D
<i>Hemileuca nuttalli</i> Strecker Nuttall's sheep moth phe.	*E10,Z12-16:OAc + *E10,E12-16:OAc (2:1-1:2) + other components	McElfresh, 1999(b)	D
<i>Loepa sakaei</i> Inoue <haguruma-yamamayyu> phe.	*E4,Z9-14:OAc	Yan, 2015(a)	A
<i>Lonomia obliqua</i> Walker phe.	*E11-16:OAc + *E11-16:OH (20:7)	Zarbin, 2007	D
<i>Nudaurelia cytherea cytherea</i> F. pine tree emperor moth phe.	*Z5-10:OisoVa	Henderson, 1973	D
<i>Rhodinia fugax</i> Butler pellucid silk moth <usutabiga>	*E6,Z11-16:Ald	Yan, 2015(a)	A

<i>Samia cynthia ricini</i> Donovan eri-silkworm moth <eri-san, hima-san> phe.	*E4,E6,Z11-16:OAc (major) + *E4,E6,Z11-16:Ald N	Bestmann, 1989	A
<i>Saturnia albofasciata</i> Johnson phe.	*E4,Z9-14:Ald + another component	McElfresh, 2001(a)	C
<i>Saturnia mendocino</i> Behrens phe.	*E4,Z9-14:Ald + another component	McElfresh, 2001(a)	C
<i>Saturnia</i> (= <i>Eudia</i>) <i>pavonia</i> att.	Z6,Z11-16:OAc	Bestmann, 1982(d)	C
<i>Saturnia walterorum</i> Hogue & Johnson phe.	*E4,Z9-14:Ald + another component	McElfresh, 2001(a)	C

(Sphingidae) Suzumega-ka

<i>Agrius convolvuli</i> L. sweetpotato hornworm <ebigara-suzume> phe.	*E11,E13-16:Ald	Wakamura, 1996(a)	A
<i>Amphion floridensis</i> Clark att.	E10,Z12-16:Ald	Landolt, 1989(a)	D
<i>Deilephila elpenor</i> L. elephant hawk-moth phe.	*E11-16:Ald + *E10,E12-16:Ald N	Bestmann, 1992(b)	B
<i>Deilephila elpenor lewisii</i> Butler <beni-suzume> phe.	*E11-16:Ald + *E10,E12-16:Ald (17:3)	Uehara, 2012	A
<i>Deilephila porcellus</i> att.	E10,E12-16:Ald	Priesner in Arn, 1986(a)	C
<i>Dolbina tancrei</i> Staudinger <sazanami-suzume> phe.	*E9,Z11-15:Ald + *Z9,Z11-15:Ald (9:1)	Uehara, 2013	A

<i>Hemaris affinis</i> Bremer <kurosukiba-houjaku> phe.	*Z11-16:Ald + *E10,E12-16:Ald + *E10,Z12-16:Ald (9:7:4)		Uehara, 2015	A
<i>Hemaris diffinis</i> Boisduval att.	Z10,E12-16:Ald		Reed, 1987	C
<i>Hemaris fuciformis</i> L. att.	Z10,E12-16:Ald		Priesner in Arn, 1986(a)	C
<i>Hippotion celerio</i> L. silver-striped hawk-moth phe.	*E10,E12-16:Ald	N	Bestmann, 1992(b)	C
<i>Hyles gallii</i> Rottenburg <ibuki-suzume> att.	E10,E12-16:Ald E10,Z12-16:Ald	E E	Reed, 1987	A
<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>	*Z10,Z12-16:OAc + *E10,Z12-16:OAc		Kosaki, 2021	A

	phe.	+ *Z10,E12-16:OAc [87:7:6]		
<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
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(30) [Noctuoidea]	Yaga-joka			
(Notodontidae)	Shachihokoga-ka			
<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	Frerot, 1993(c)	D
<i>Thaumetopoea pinivora</i> Treischke	phe.	Z11,Z13-16:Ald + Z11,Z13-16:OH (9:1)	Frérot, 1990(a)	D
		*Z11,Z13-16:OH + *Z11,Z13-16:Ald [4:1] N	Frerot, 1993(c)	
<i>Thaumetopoea pityocampa</i> Denis & Schiffermüller		*≡11,Z13-16:OAc	Guerrero, 1981 Einhorn, 1983	D

processionary moth phe.		Quero, 1997	
	≡11,Z13-16:OAc	Cuevas, 1983 Tiberi, 1984	
	≡11-16:OAc	Quero, 1995	
<i>Thaumetopoea processionea</i> L. oak processionary moth phe.	≡11,Z13-16:OAc	Tiberi, 1984	D
	*Z11,Z13-16:OAc + *Z11,Z13-16:OH [19:1] N	Frerot, 1993(c)	
	*Z11,Z13-16:OAc + other components	Quero, 2003 Breuer, 2003	
	+ *Z11,E13,Δ15-16:OAc (1:1)	Gries, 2004	
<i>Thaumetopoea solitaria</i> Fr. phe.	*Z13,Z15-18:Ald N	Frerot, 1993(c)	D
<i>Thaumetopoea wilkinsoni</i> Tams. phe.	≡11,Z13-16:OAc	Halperin, 1982	D
	*≡11,Z13-16:OAc N	Frerot, 1993(c)	

(Noctuidae) Yaga-ka
(Noctuidae; Dilobinae) Yaga-ka;

<i>Diloba caeruleocephala</i> L. 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) McLeod, 1982	D
<i>Simyra henrici</i> Grote att.	Z7-14:Ald	Steck, 1982(a)	C

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

<i>Helicoverpa</i> (= <i>Heliothis</i>) <i>armigera</i> Hübner old world bollworm cotton bollworm <oo-tabakoga> phe.	*Z11-16:Ald + Z11-14:Ald (1:1) + Z9-14:Ald (100:1–100:5) + Z9-16:Ald (25:1) (10:1) + *Z11-14:Ald (1:3) + other components + *Z9-16:Ald (20:1–97:3) + other components	Piccardi, 1977 Gothilf, 1978 Rothschild, 1978 Kehat, 1980 Buleza in Arn, 1992 Konjuchov, 1983 Nesbitt, 1979(b); 1980(b) Dunkelblum, 1980 Kehat, 1990	A
<i>Helicoverpa</i> (= <i>Heliothis</i>) <i>assulta</i> Guenée oriental tobacco budworm <tabakoga> phe. Japan strain	*Z9-16:Ald + *Z9-16:OAc + *Z11-16:Ald + *16:Ald (100:15:3:8) + other components	Sugie, 1991(b)	A
Korea strain	+ *Z11-16:OAc (100:30:5:1.5) + other components Z9-16:Ald + Z11-16:Ald (25:1)	Cork, 1992 Park, 1996 Park, 1994	

Thailand strain	+ Z9-16:OAc (7:5:1)	Cork, 1992	
China strain	Z9-16:Ald + Z11-16:Ald (20:1) (100:9.5)	Cork, 1992 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 adauca</i> Butler flax budworm <tsumekusaga> phe.	*Z11-16:Ald + *Z11-16:OH (100:1) + another component	Kakizaki, 2003	A
<i>Heliothis ononis</i> Denis & Schiffermüller att.	Z11-16:Ald	Steck, 1982(a)	C
<i>Heliothis peltigera</i> Denis & Schiffermüller phe.	Z11-16:Ald + Z9-14:Ald (16:1) *Z11-16:Ald + *Z9-14:Ald + *Z11-16:OH (10:5:3) + other components	Nesbitt, 1979(b) Dunkelblum, 1989	C
<i>Heliothis phloxiphaga</i> Grote & Robinson phe.	*Z11-16:Ald + *Z11-16:OH + *Z9-16:Ald (482:15:3)	Raina, 1986(b)	C
<i>Heliothis subflexa</i> Guenée phe.	*Z11-16:Ald + *Z9-16:Ald + *Z7-16:OAc + *Z9-16:OAc + *Z11-16:OAc (41:15:3:6:26) + other components + *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	Roelofs, 1974(c) Tumlinson, 1975 Hendricks, 1989 Klun, 1979(b); 1980(c) Pope, 1982 Vetter, 1983 Ramaswamy, 1985 Teal, 1986	C

	+ Z11-16:OH (15:1:0.04)	Shaver, 1989	
	+ *Z11-16:OH (100:5:1)	Groot, 2018	
	Z9-14:OFo + Z9-14:Ald (32:1–16:1)	Mitchell, 1978	
<i>Protoschinia scutosa</i> Denis & Schiffermüller <yomogiga> att.	Z11-16:OH + Z7-12:OAc + Z9-14:OAc (1:3:1)	Konstantin in Arn, 1986(a) Li, 1993(d)	A
<i>Pyrrhia umbra</i> Hufnagel <ki-tabakoga> att.	Z11-16:OAc	Stan, 1992	A
<i>Schinia bina</i> Guenée att.	Z11-16:OAc + Z11-16:Ald (7:3)	Underhill, 1977(a)	D
<i>Schinia meadi</i> Grote att.	Z11-16:Ald	Steck, 1982(a)	D
<i>Schinia sueta</i> Grote att.	Z9-14:OAc + Z11-16:OAc + Z11-16:OH	Byers, 1987	D

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<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	Z7-14:OAc	Steck in Arn, 1986(a)	C

	att.	+ Z5-14:OAc (20:1)		
<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)	Bestmann, 1980 Vrkoc, 1983 Priesner, 1985(b) Grodner, 2018	B
		+ other components	Lebedeva, 2000(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)	Steck, 1979(c) Hill, 1979(b) Causse in Arn, 1986(a) Wakamura, 1986(a)	A
		+ Z11-16:OH + 16:OAc (8:4:4:1:2)	Buleza, 1991	
European strain		+*Z11-16:OAc + other components	Picimbon, 1997	
American strain other strains		+*Z11-16:OAc (3:1:6)	Gemeno, 1998; 2000	
<i>Agrotis obliqua</i> Smith	att.	Z5-14:OAc	Steck, 1982(a)	C

<i>Agrotis volubilis</i> Harvey att.	Z5-14:OAc + Z5-14:Ald (1:1) + Z7-14:OAc (100:1)	Underhill, 1977(a) Steck, 1982(a)	C
<i>Chersotis juncta</i> Grote att.	Z11-16:OAc + Z11-16:Ald	Steck, 1982(a)	C
<i>Chersotis multangular</i> Hübner att.	Z11-16:OAc E + Z5-10:OAc (10:1)	Priesner, 1975 Subchev, 1990	C
<i>Cryptocala acadiensis</i> Bethune att.	Z9-14:OAc + Z11-16:OAc + Z9-14:Ald	Steck, 1976 Steck, 1982(a)	D
<i>Diarsia brunnea</i> Denis & Schiffermüller <miyamaaka-yaga> att.	Z11-16:OAc + Z11-16:Ald (3:1)	Subchev in Arn, 1992 Priesner in Arn, 1986(a)	A
<i>Diarsia dahlia</i> Hübner barred chestnut moth <ezoohbako-yaga> att.	Z7-14:OAc + Z9-14:OAc + Z5-14:OAc (10:2:1)	Priesner, 1985(a)	A
<i>Diarsia deparca</i> Butler <kousucha-yaga> att.	Z9-14:OAc	Ando, 1977	A
<i>Diarsia pseudorosaria</i> Hardwick att.	Z11-16:OAc + Z9-16:OAc (3:1)	Kamm, 1985	C
<i>Diarsia rubi</i> Vieweg att.	Z11-16:OAc	Terytze in Pherobase	C
<i>Euagrotis tepperi</i> Smith att.	Z11-16:OAc + Z9-14:OAc + Z7-12:OAc (10:1:1)	Steck, 1982(a)	D
<i>Eurois astricta</i> Morrison att.	Z11-16:OAc + Z9-14:OAc + Z11-16:Ald (8:2:1)	Underhill, 1977(a)	C

<i>Eurois occulta</i> L. <ooshirahoshi-yaga> <i>att.</i>	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 + Z11-16:OAc (1:1)	Priesner in Arn, 1986(a)	
<i>Euxoa acornis</i> Smith <i>att.</i>	Z9-14:OAc + Z9-14:Ald + Z11-16:OAc (6:3:2)	Underhill, 1977(a)	C
<i>Euxoa albipennis</i> Grote <i>att.</i>	Z5-10:OAc + Z7-12:OAc + Z7-12:OH (10:1:1)	Steck, 1979(d)	C
<i>Euxoa altera</i> Smith <i>att.</i>	Z11-16:OAc + Z9-14:OAc (5:1)	Steck, 1982(a)	C
<i>Euxoa auxiliaris</i> Grote army cutworm <i>att.</i>	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 <i>att.</i>	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 <i>att.</i>	Z5-10:OAc or + Z5-12:Ald (10:1)	Byers, 1981 Underhill, 1981	C
<i>Euxoa cicatricosa</i> Grote & Robinson <i>att.</i>	Z7-12:OAc	Steck, 1982(a)	C
<i>Euxoa dargo</i> Strecker <i>att.</i>	Z11-16:OAc + Z9-14:OAc (1:9)	Steck, 1979(c) Steck, 1982(a)	C
<i>Euxoa declarata</i> Walker <i>att.</i>	Z5-10:OAc or + Z5-12:Ald (10:1)	Byers, 1981 Underhill, 1981	C
<i>Euxoa distinguenda</i> Lederer	Z3-10:OAc	Priesner, 1988(b)	C

<i>Euxoa divergens</i> Walker <i>att.</i>	Z9-12:OAc + Z7-10:OAc + Z7-12:OAc (200:1)	Steck, 1979(c) Steck, 1982(a)	C
<i>Euxoa drewseni</i> Staudinger <i>phe.</i>	*Z5-12:OAc + *Z7-14:OAc + *12:OAc (6:1:2) + other components	Struble, 1983(a)	C
<i>Euxoa eruta</i> Hübner <i>att.</i>	Z3-10:OAc + Z5-10:OAc (1:1)	Priesner, 1988(b)	C
<i>Euxoa flavicollis</i> Smith <i>att.</i>	Z9-14:OAc + Z7-12:OAc (1000:1)	Steck, 1979(c) Steck, 1982(a)	C
<i>Euxoa hastifera</i> Donzel <i>att.</i>	Z5-10:OAc + Z7-12:OAc (1:1) (2:1)	Tóth in Arn, 1986(a) Subchev, 1990 Coroiu, 1986	C
<i>Euxoa idahoensis</i> Grote <i>att.</i>	Z5-10:OAc + Z5-12:OAc + Z7-12:OAc + Z9-12:OAc	Byers, 1987	C
<i>Euxoa lutulenta</i> Smith <i>att.</i>	Z9-14:OAc + Z11-16:OAc	Steck, 1976	C
<i>Euxoa maimes</i> Smith <i>phe.</i>	*Z9-14:OAc + *Z11-14:OAc + *Z7-14:OAc (200:2:1) + other components	Struble, 1985	C
<i>Euxoa manitobana</i> McDunough <i>att.</i>	Z9-14:OAc + Z7-14:OAc (4:1)	Steck, 1982(a)	C
<i>Euxoa messoria</i> Harris darksided cutworm <i>phe.</i>	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 + *Z11-16:OH + Z11-16:Ald (1000:25:2:20) + other components	Struble, 1987(b)	
<i>Euxoa mimallonis</i> Grote att.	Z5-10:OAc	Steck, 1982(a)	C
<i>Euxoa nigricans</i> L. att.	Z7-12:OAc + Z5-10:OAc (1:1)	Arn, 1983 Szöcs, 1983	C
<i>Euxoa obeliscoides</i> Guenée att.	Z9-14:OAc + Z11-16:Ald (1:1) + Z7-12:OAc (500:1)	Underhill, 1977(a) Steck, 1982(b)	C
<i>Euxoa ochrogaster</i> Guenée redbacked cutworm phe.	Z5-12:OAc + Z8-12:OAc (1:2) + Z5-11:OAc (25:50:1) + Z7-12:OAc (200:1) *Z5-12:OAc + *Z7-12:OAc + *Z9-12:OAc + Z5-10:OAc (200:2:1:1) + 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 att.	Z5-10:OAc	Underhill, 1981	C
<i>Euxoa perolivalis</i> Smith att.	Z9-14:OAc	Struble, 1987(c)	C
<i>Euxoa pestula</i> Grote	Z5-10:OAc	Steck, 1982(a)	C

	att.	+ Z7-12:OAc + Z7-12:Ald (100:1:1)		
<i>Euxoa plagigera</i> Morrison	att.	Z9-14:OAc + Z9-14:OH (5:1)	Steck, 1982(a)	C
<i>Euxoa pleuritica</i> Grote	att.	Z7-12:OAc + Z7-12:OH	Underhill, 1977(a)	C
		+ Z5-12:OAc (5:1:1–5:5:1) or + Z5-10:OAc (25:5:5:2)	Steck, 1978	
<i>Euxoa ridingsiana</i> Grote	phe.	Z9-14:OAc + Z7-12:OAc	Steck, 1979(c)	C
		+ Z11-16:OAc (500:1:20)	Steck, 1982(a)	
		*Z9-14:OAc + *Z7-14:OAc + *Z7-12:OAc (40:2:1) + other components	Struble, 1985	
<i>Euxoa rockburnei</i> Hardwick	att.	Z5-10:OAc + Z5-12:Ald (10:1)	Byers, 1981 Underhill, 1981	C
<i>Euxoa scandens</i> Riley white cutworm	att.	Z7-12:OH	McLeod, 1982	C
<i>Euxoa seliginis</i> Duponchel	att.	Z5-10:OAc	Nagy, 2023	C
<i>Euxoa servita</i> Smith	att.	Z7-14:OAc + Z7-14:Ald	Steck, 1979(c) Steck, 1982(a)	C
<i>Euxoa siccata</i> Smith	att.	Z5-12:OAc + Z7-12:OAc	Byers, 1987	C
<i>Euxoa tessellata</i> Harris striped cutworm	att.	Z7-16:OAc + Z5-14:OAc (200:1) or + Z5-16:OAc (1:1)	Roelofs, 1970(a) Struble, 1982	C
<i>Euxoa tritici</i> L.	att.	Z5-10:OAc	Nagy, 2023	C

<i>Euxoa tristicula</i> Morrison early cutworm att.	Z9-12:OAc + 12:OAc (1:3) + Z7-12:OAc + Z9-14:OAc (2:5:0.01)	Steck, 1979(a) Steck, 1982(a)	C
<i>Euxoa</i> sp. 1 att.	E11-14:Ald	Daterman, 1977	
<i>Euxoa</i> sp. 2 att.	E11-14:Ald	Daterman, 1977	
<i>Euxoa</i> sp. 3 att.	Z7-16:OAc	Underhill, 1977(a)	
<i>Euxoa</i> sp. 4 att.	Z5-12:OAc	Underhill, 1977(a)	
<i>Feltia ducens</i> Walker att.	Z11-16:OAc + Z9-14:Ald (1:1) + Z7-12:OAc + Z9-14:OAc (2000:1:1)	Underhill, 1977(a) Steck, 1982(a)	D
<i>Feltia jaculifera</i> Guenée dingy cutworm phe.	*Z11-16:OAc + Z9-14:OAc + Z7-12:OAc (1000:1:1)	Steck, 1986	D
species A	+ *Z9-14:OAc	Byers, 1990	
species B	+ *Z7-12:OAc (0:1:10) (2000:1:1)	Gemeno, 1998	
<i>Hermonassa cecilia</i> Butler <kurokumo-yaga> 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)	Subchev, 1981 Voerman in Arn, 1986(a) Priesner	B

			in Arn, 1986(a)	
	(100:3–100:1)		Tóth, 1986(b)	
			Stan in Arn, 1992	
<i>Ochropleura signifera</i> Denis & Schiffermüller <i>att.</i>	Z9-14:OAc + Z9-14:OH		Subchev, 1990	C
<i>Ochropleura triangularis</i> Moore <kokimae-yaga> <i>att.</i>	Z9-14:OAc		Ando, 1977	A
<i>Opigena polygona</i> Denis & Schiffermüller <i>att.</i>	Z9-14:OAc + Z11-14:OAc		Peltotalo, 1986	D
<i>Paradiarsia littoralis</i> Packard <i>att.</i>	Z7-12:OAc + Z5-12:OAc (100:1)		Steck, 1982(a); (b)	C
<i>Peridroma saucia</i> Hübner variegated cutworm <nisetamana-yaga> <i>phe.</i>	Z11-16:OAc + Z9-14:OAc (2:1–1:1) (15:2)		Struble, 1976 Descoins, 1978 Landolt, 2003	A
	*Z11-16:OAc + *Z9-14:OAc (3:1)		Inomata, 2002	
In Korea	(2:1)		Choi, 2009(b)	
<i>Rhyacia (=Diarsia) rubi</i> Viewg. <i>att.</i>	Z11-16:OAc		Terytze, 1987	C
<i>Sineugraphe disgnosta</i> Boursin <usuirokabusuji-yaga> <i>att.</i>	Z7-12:OH		Ando, 1981	A
<i>Spaelotis clandestina</i> Harris w-marked cutworm <i>phe.</i>	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 <i>phe.</i>	*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, Rhyacia) <i>baja</i> Schifferrmüller dotted clay moth att.		Z9-14:OAc + Z7-12:OAc + Z5-12:OAc (1000:100:1)	Priesner, 1984(b)	C
<i>Xestia</i> (=Amathes) <i>candellarum</i> Staudinger att.		Z7-14:OAc E + Z5-14:OAc	Priesner, 1977 Priesner in Arn, 1986(a)	C
<i>Xestia</i> (=Amathes) <i>c-nigrum</i> L. spotted cutworm <shiromon-yaga> phe.				A
	U.S.A (small sp.)	E7-14:OAc	Roelofs, 1970(a)	
	U.S.A (large sp.)	Z7-14:OAc		
	Japan	Z7-14:OAc	Fujimura, 1976 Ando, 1977	
	Japan	*Z7-14:OAc	Hirai in Arn, 1986(a)	
	Germany		Bestmann, 1979	
	Canada	+ Z5-14:OAc (100:9–100:1)	Steck, 1982(d)	
	U.S.A.	(100:1)	Landolt, 2011	
	Bulgaria, Romania, Hungary	Z7-14:OAc	Subchev, 1996	
<i>Xestia</i> (=Amathes) <i>collaris</i> Grote & Robinson att.		Z7-14:OAc + Z9-14:OAc (1:1)	Steck, 1979(c)	C
<i>Xestia ditrapezium</i> Denis & Schifferrmüller <tanpo-yaga> att.		Z7-14:OAc + Z9-14:OAc + Z5-14:OAc (10:2:1)	Priesner, 1985(a)	B
<i>Xestia dolosa</i> Franclemont phe.		*Z7-14:OAc	Bjostad in Arn, 1986(a)	C

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

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<i>Acantholeucania</i> (= <i>Mythimna</i>) <i>loreyi</i> Duponchel lorey leafworm <kusashiroki-yotou> <i>phe.</i>	Z9-12:OAc *Z9-14:OAc + *Z11-16:OAc + *Z7-12:OAc (20:5:2) (100:20:9) Z9-14:OAc + Z11-14:OAc + Z7-12:OAc (9:1) + other components	Ando, 1977 Takahashi, 1979 Takahashi, 1980; 1983 Sato, 1980 Wang, 2023 Soldán, 1983 Lin, 1982 Ho, 2002	A
<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 in Arn, 1986(a)	C
<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)	Grichanov in Arn, 1992 Sorochinskaya in Arn, 1992	C
<i>Apamea indela</i> Smith <i>att.</i>	Z11-16:OAc + Z11-16:OH + Z11-16:Ald (200:50:1)	Steck, 1982(b)	C
<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 <shiomimihaiiro-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>	*Z11-16:Ald N	Kou, 1989; 1991	A

phe.

<i>Caradrina clavipalpis</i> Scopoli att.	Z7-12:OAc + Z9-14:OAc (4:1)	Szöcs, 1981	D
<i>Caradrina morpheus</i> Hufnagel att.	E9-12:OAc + Z9-12:OAc (1:4) Z9-14:OAc + Z11-14:OAc (9:1)	Arn, 1974 Brewer, 1985 Ghizdavu, 1985	D
<i>Celaena haworthii</i> att.	Z11-16:Ald + Z11-16:OAc (3:1)	Bykhovets in Arn, 1992	C
<i>Celaena leucostigma</i> Hübner <shoubuoo-yotou> att.	Z11-16:OAc + Z11-17:OAc	Krivokhizhin, 1984 Möttus in Arn, 1986(a)	A
<i>Ceramica picta</i> Harris zebra caterpillar moth att.	Z11-14:OAc + Z11-14:Ald (1:1) + Z11-16:OAc + Z9-14:OAc (200:2:1)	Roelofs, 1971(a) Underhill, 1977(a) Steck, 1982(a)	C
<i>Ceramica</i> (=Mamestra, Polia) <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 <i>att.</i>	Z11-16:OAc + Z11-16:Ald	Landolt in Pherobase	D
<i>Dargida terrapictalis</i> Buckett <i>att.</i>	Z11-16:OAc + Z11-16:Ald	Landolt in Pherobase	D
<i>Discestra</i> (=Scotogramma) <i>farnhami</i> Grote <i>att.</i>	Z11-16:Ald + Z9-14:Ald + Z9-16:Ald (100:1:1)	Steck, 1979(c) Steck, 1982(b)	C
<i>Discestra</i> (=Scotogramma) <i>trifolii</i> Hufnagel clover cutworm <i>phe.</i>	Z11-16:OAc + Z11-16:OH (9:1) + Z5-16:OAc (100:1) *Z11-16:OAc + *Z11-16:OH (9:1) Z11-14:OAc Z11,E14-16:OAc + Z11,E14-16:OH (10:1)	Roelofs, 1970(a) Subchev, 1981 Krivokhizhin, 1984 Struble, 1975(a) Subchev, 1987 Underhill, 1976 Ayre, 1982(a) Boness, 1978 Hrdý, 1979 Chisholm, 1980(b)	C
<i>Dypterygia scabriuscula</i> L. <i>att.</i>	Z11-16:OAc + Z9-14:Ald	Stan, 1992	C
<i>Egira pulla</i> Denis & Schiffermüller <i>att.</i>	Z9-14:OAc	Subchev in Arn, 1992	C
<i>Enargia infumata</i> Grote <i>att.</i>	Z11-16:OAc + Z9-14:OAc (500:1)	Steck, 1982(b)	C
<i>Euplexia lucipara</i> L. <akagane-yotou> <i>att.</i>	Z11-16:Ald + Z11-16:OAc (10:1)	Priesner in Arn, 1986(a) Subchev in Arn, 1992	A
<i>Eupsilia quadrilinea</i> Leech <yosujinokome-kiriga> <i>att.</i>	Z11-16:OH or E11-16:OH	Ando, 1977	A

<i>Eupsilia transversa</i> Hufnagel <ezomitsuboshi-kiriga> att.	Z11-16:OH	Priesner in Arn, 1986(a) Subchev in Arn, 1992	A
<i>Eupsilia tripunctata</i> Butler <mitsuboshi-kiriga> att.	Z11-16:OAc + Z11-16:Ald + Z11-16:OH (9:9:2)	Ando, 1981	A
<i>Faronta diffusa</i> Walker wheat head armyworm att.	Z11-16:OAc + Z11-16:Ald (9:1)	Underhill, 1977(a)	D
<i>Graphania bromias</i> Meyrick phe.	*Z9-14:OAc + *Z9-14:OH (2:1) + another component	Frérot, 1993(b)	D
<i>Graphania insignis</i> Walker phe.	*Z7-12:OH + *Z9-14:OH (1:1)	Frérot, 1993(b)	D
<i>Graphania mutans</i> Walker phe. Auckland population	*Z9-14:OH + *Z9-14:OAc + *Z7-14:OH + *Z7-14:OAc (100:50:13:3)	Frérot, 1991	D
Lincoln population	+ *Z9-14:Ald (15:35:14:5:100)		
<i>Graphania plena</i> Walker phe.	*Z7-12:OAc + *Z9-14:OAc (100:33) + other components	Frérot, 1993(b)	D
<i>Graphania ustistriga</i> Walker phe.	*Z7-12:OAc + *Z7-12:OH N	Frérot, 1993(b)	D
<i>Hada (=Polia) nana</i> Hufnagel att.	Z9-14:OAc E	Priesner, 1975	C
<i>Heliophobus reticulata</i> Gze. att.	Z9-14:OAc	Szöcs, 1983	C
<i>Helotropha reniformis</i> Grote att.	Z11-16:OAc + Z7-16:OAc (40:1) + Z11-16:OH (40:1:0.08)	Struble, 1977(c) Struble, 1987(b)	C

<i>Hemiglaea</i> (=Blepharosis) <i>costalis</i> Butler <kimae-kiriga> att.	Z9-14:Ald + Z9-14:OAc (9:1)	Ando, 1981	A
<i>Hoplodrina alsines</i> Brahm att.	Z7-12:OAc + Z9-14:OAc (1:1) + Z11-16:OAc (1:1:1)	Arn, 1983 Szöcs, 1983	C
<i>Hoplodrina ambigua</i> Denis & Schiffermüller att.	Z11-16:OAc + Z11-16:OH	Sherman in Pherobase	C
<i>Hoplodrina blanda</i> Denis & Schiffermüller att.	Z9-14:OAc + Z9,E11-14:OAc + Z9,E12-14:OAc	Arn, 1983 Ostrauskas, 2003	C
<i>Hoplodrina octogenaria</i> Goeze att.	Z11-16:OAc Z9-14:OAc + Z9,E11-14:OAc + Z9,E12-14:OAc	Stan, 1992 Ostrauskas, 2003	C
<i>Hoplodrina superstes</i> Ochseneheimer att.	Z5-10:OAc + Z7-12:OAc (1:1) (1:10)	Szöcs, 1983 Subchev, 1990	C
<i>Hydraecia micacea</i> Esper potato stem borer phe.	*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 att.	Z11-16:Ald + Z11-16:OH + Z9-14:Ald (100:1:1)	Steck, 1982(a)	D
<i>Hyssia cavernosa</i> Eversmann att.	Z9-14:OAc E	Priesner, 1975	D

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

<i>Leucania lithargyria</i> Esper <i>att.</i>	Z11-16:Ald	Grichanov in Arn, 1992	C
<i>Leucania multilinea</i> Walker <i>att.</i>	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 Z11-16:OAc	Roelofs, 1971(a) Fleischer, 2005	C
<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 + Z9-14:Ald (10:1–2:1)	Subchev, 1990	C
<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 + Z11-14:OAc (20:1) *Z9-14:OAc + *Z7-14:OAc + *14:OAc + *Z9-14:OH [72:11:15:2] N	Priesner in Arn, 1986(a) Frerot, 1987(b)	C
<i>Mamestra blenna</i> Hübner <i>att.</i>	Z11-16:OAc + Z11-16:OH + Z11-16:Ald (10:3:1)	Tóth, 1986(b)	C
<i>Mamestra brassicae</i> L. cabbage armyworm <yotouga> <i>phe.</i>	Z11-16:OAc *Z11-16:OAc + other components	Ando, 1977 Bestmann, 1978(b) Descoins, 1978 Hirai, 1978 Struble, 1980(b) Attygalle, 1987 Farine, 1981	A

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

			in Arn, 1986(a)	
		(9:1)	Sans, 1997	
<i>Mamestra</i> (= <i>Melanchra</i>) <i>persicariae</i> L.	Z11-16:OAc		Möttus in Arn, 1986(a)	C
att.				
<i>Mamestra suasa</i> Denis & Schiffermüller	Z11-16:OAc		Subchev, 1981	C
phe.	*Z11-16:OAc		Vrkoc, 1981	
	+ Z11-16:Ald (1:1)		Szöcs, 1983	
		(10:1)	Subchev, 1984 Priesner in Arn, 1986(a)	
	+ *Z11-16:Ald (10:1)		Tóth, 1986(b)	
	+ other components		Frerot, 1988(c)	
	+ Z7-12:OAc (10:3)		Subchev, 1987	
	+ Z7-12:OAc		Subchev in Arn, 1997	
	+ Z11-16:Ald (100:100:1)			
<i>Mamestra thalassina</i> Hufnagel	Z11-16:OAc		Möttus in Arn, 1986(a)	C
phe.				
	*Z11-16:OAc		Renou, 1991	
	+ *Z11-16:Ald			
	+ *Z11-16:OH E			
<i>Mamestra w-latinum</i> Hufnagel	Z11-16:OAc		Subchev, 1981 Szöcs, 1983	C
att.				
<i>Mesapamea secalis</i> L.	Z11-14:OH		Fassotte	C
att.	+ E11-14:OH (97:3)		in Arn, 1986(a)	
	Z11-16:OAc		Subchev	
	+ Z11-16:OH		in Arn, 1992	
<i>Mniotype versuta</i> Smith	Z9-14:OAc		Byers, 1987	C
att.	+ Z11-16:OAc			
<i>Morrisonia confusa</i> Hübner	Z11-16:OAc		Roelofs, 1970(a)	D

<i>Mythimna albipuncta</i> Denis & Schiffermüller <i>att.</i>	Z11-16:OH + Z11-16:Ald (1:1)	Tóth in Arn, 1986(a) Subchev in Arn, 1992	C
<i>Mythimna conigera</i> Denis & Schiffermüller <i>att.</i>	Z11-16:Ald	Subchev in Arn, 1992	C
<i>Mythimna farrago</i> F. <i>att.</i>	Z11-16:Ald	Tóth in Arn, 1986(a)	C
<i>Mythimna hamifera</i> Walker <uki-yotou> <i>att.</i>	Z11-16:Ald + Z9-16:Ald (19:1)	Kohno, 2014	A
<i>Mythimna pallens</i> L. <i>att.</i>	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> <i>att.</i>	Z11-16:OAc + Z11-16:Ald + Z7-16:OAc Z11-16:Ald + Z9-16:Ald (19:1)	Subchev in Pherobase Kohno, 2014	A
<i>Mythimna vitellina</i> Hübner <i>att.</i>	Z11-16:OAc + Z11-16:Ald	Subchev in Arn, 1992	C
<i>Nedra ramosula</i> Guenée <i>att.</i>	Z11-14:OH	Roelofs, 1970(a)	D
<i>Nephelodes emmedonia</i> Cramer bronze cutworm <i>att.</i>	Z11-16:Ald	Underhill, 1977(a)	D
<i>Nephelodes minians</i> Guenée bronzed cutworm <i>phe.</i>	Z11-16:Ald + Z11-16:OAc *Z11-16:Ald + *Z11-16:OAc (5:1)	Steck, 1977(b) Zhu, 2004	D
<i>Oligia bridghami</i> Grote & Robinson <i>att.</i>	Z11-16:OAc + Z11-16:OH (500:1)	Steck, 1982(a)	C

<i>Oligia egens</i> Walker att.	Z11-16:OAc + Z7-16:OAc	Byers, 1987	C
<i>Oligia fascinucula</i> Haworth att.	Z9-14:OAc + Z11-14:OAc (9:1)	Boness, 1978	C
<i>Oligia furuncula</i> Hw. att.	Z11-16:OAc + Z11-16:Ald (10:1–10:3) + Z11-16:OH	Tóth, 1986(b) Subchev in Arn, 1992	C
<i>Oligia latruncula</i> Denis & Schiffermüller att.	Z9-14:OAc + Z11-16:OAc (1:1) + Z11-14:OAc (17:20:3)	Priesner, Tóth in Arn, 1986(a) Guerin in Arn, 1986(a)	C
<i>Oligia mactata</i> Guenée att.	Z11-16:OAc + Z11-16:OH (500:1)	Steck, 1982(a)	C
<i>Oligia strigilis</i> L. att.	Z11-16:OAc + Z9-14:OAc (9:1)	Szöcs, 1983	C
<i>Oligia versicolor</i> Borkhausen att.	Z9-14:OAc + Z11-14:OAc (10:1)	Priesner in Arn, 1986(a)	C
<i>Orbona fragariae pallidior</i> Warren <ichigo-kiriga> att.	Z11-16:Ald + Z9-16:Ald (19:1)	Kohno, 2014	A
<i>Orthodes crenulata</i> Butler att.	Z11-16:OAc	Roelofs, 1970(a)	D
<i>Orthodes vecors</i> Guenée att.	Z11-16:OAc	Roelofs, 1970(a)	D
<i>Orthosia angustipennis</i> Matsumura <hosoba-kiriga> att.	Z9,E12-14:OAc	Ando, 1977	A
<i>Orthosia carnipennis</i> Butler <akaba-kiriga> att.	Z9-14:OAc + Z11-16:OAc (1:1) + Z11-14:OAc (9:1)	Ando, 1981 Mizukoshi, 2006	A

<i>Orthosia cruda</i> Denis & Schiffermüller <i>att.</i>	Z11-16:OAc + Z9-14:OAc (9:1) (20:1)	Booij, 1984(b) Tóth, 1993	C
<i>Orthosia ella</i> Butler <yomogi-kiriga> <i>att.</i>	Z11-16:OAc + Z11-16:Ald (1000:1)	Ando, 1977 Kakizaki in Pherobase	A
<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) + Z9-14:OH + Z5-14:OAc (20:1:20:1)	Austara in Arn, 1986(a) Bradshaw, 1983 Tóth, 1992(f)	B
<i>Orthosia gothica</i> <i>askoldensis</i> Staudinger <kashiwa-kiriga> <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>	Z9-14:OAc + Z9-14:Ald (9:1)	Ando, 1981	A

<i>Orthosia lizetta</i> Butler <kuromimi-kiriga> att.	Z11-16:OAc + Z11-16:Ald (1:1)	Ando, 1981	A
<i>Orthosia miniosa</i> Denis & Schiffermüller att.	Z9-14:OAc + Z11-14:OAc (20:1)	Priesner in Arn, 1986(a)	C
<i>Orthosia munda</i> Denis & Schiffermüller <sumomo-kiriga> att.	Z11-16:OH + Z11-16:Ald (20:1) + Z11-16:OAc (9:9:2)	Tóth, 1993 Ando, 1981	A
<i>Orthosia odiosa</i> Butler <chairo-kiriga> att.	Z7-12:OAc	Ando, 1977	A
<i>Orthosia paromoea</i> Hampson <buna-kiriga> att.	Z7-14:OAc	Ando, 1977	A
<i>Orthosia stabilis</i> Denis & Schiffermüller att.	Z11-16:Ald + Z9-14:Ald (100:1)	Subchev, 1986(b) Tóth, 1993	C
<i>Pachetra sagittigera</i> (= <i>fulminea</i>) Hufnagel att.	Z7-12:OAc E Z7-12:OAc + Z5-12:OAc	Priesner, 1975 Priesner in Arn, 1986(a)	D
<i>Panolis flammea</i> Denis & Shiffermüller pine beauty moth <matsu-kiriga> phe.	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 att.	Z11-16:OAc + Z11-16:Ald	Steck, 1982(a)	C

<i>Parastichtis suspecta</i> Hübner <haiiro-yotou> att.	Z11-16:OAc	Myttus in Arn, 1986(a)	A
<i>Polia assimilis</i> Morrison att.	Z11-14:OAc + Z9-14:OAc (100:1)	Steck, 1982(b)	C
<i>Polia</i> (= <i>Lacanobia</i>) <i>atlantica</i> Grote att.	Z11-16:OAc + Z7-12:OAc (9:1) + Z11-16:Ald + Z11-14:Ald (200:1:1)	Steck, 1977(a) Steck, 1980(a)	C
<i>Polia bombycina</i> Hufnagel <oochairo-yotou> att.	Z9-14:OAc + Z9-14:Ald (1:1)	Tóth in Arn, 1986(a)	A
<i>Polia discalis</i> Grote att.	Z9-14:OAc + Z11-14:OAc (10:1)	Steck, 1982(a)	C
<i>Polia grandis</i> Boisduval att.	E9-14:OAc	Roelofs, 1970(a)	C
<i>Polia ingravis</i> Smith att.	Z9-14:OAc + Z11-16:OAc (100:1)	Steck, 1982(b)	C
<i>Polia lilacina</i> Harvey att.	Z7-14:OAc + Z9-14:OAc (10:1)	Steck, 1982(a)	C
<i>Polia nebulosa</i> Hufnagel <ooshirahoshi-yotou> att.	Z11-14:OAc + E11-14:OAc + Z9-14:OAc (100:10:3)	Subchev in Pherobase	A
<i>Polia</i> (= <i>Lacanobia</i>) <i>nevadae</i> Grote 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)	Underhill, 1977(a)	C

	(100:1)	Steck, 1982(b)	
<i>Pseudaletia</i> (= <i>Leucania</i> , <i>Mythimna</i>)			A
<i>separata</i> Walker			
oriental armyworm			
<awa-yotou>			
phe.			
Japan strain	*Z11-16:OAc + *Z11-16:OH (4:1–9:1)	Takahashi, 1979; 1980	
China strain	(4:1)	Lin in Arn, 1992	
	+ *16:Ald + *Z11-16:OH (100:10:0.1)	Zhu, 1987(c)	
	*Z11-16:Ald	Wei, 1985	
	+ another component	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>)			C
<i>unipuncta</i> Haworth			
armyworm moth			
phe.			
	*Z11-16:OAc + other components	Hill, 1980 McDonough, 1980 Farine in Arn, 1992	
	Z11-16:OAc	Soldán, 1983	
	+ Z11-16:OH (100:0.2)	Steck, 1980(a)	
	+ Z11-16:Ald + Z9-14:OAc (100:0.2:0.05:0.01)	Steck, 1982(e)	
	+ Z9-14:OAc + 16:OAc (1:5:2:1)	Guerrero, 1986	
	+ Z11-16:Ald + 12:OAc (9:1:1:2)	Rotundo in Arn, 1992	
<i>Rhynchaglaea fuscipennis</i> Sugi	Z7-12:OAc	Ando, 1977	A

<kurochamadara-kiriga> att.	Z9-14:Ald	Ando, 1981	
<i>Rhynchaglaea scitula</i> Butler <chamadara-kiriga> att.	Z9,E12-14:OH	Ando, 1977	A
<i>Sarcopolia</i> (= <i>Mamestra</i>) <i>illoba</i> Butler <shiroshita-yotou> att.	Z11-16:OAc	Ando, 1977	A
<i>Sesamia calamistis</i> Hampson phe.	*Z11-16:OAc + *Z9-14:OAc (3:1) + other components	Zagatti, 1988	C
<i>Sesamia cretica</i> Lederer durra stemborer phe. in Italy	Z9-14:OH + Z9-14:OAc (3:1) *Z9-14:OH + *Z9-14:OAc + *Z11-16:OH (90:1:9)	Arsura, 1977 Germinara, 2007	C
in Iran, Egypt	(8:1:1)	Avand-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) (19:1) + *Z11-16:Ald	Sreng, 1985 Rotundo in Arn, 1986(a) Mazomenos, 1989(a)	C

	+ *12:OAc (9:1:1:2) + another component	Krokos, 2002	
	(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) + *Z9,E11-14:OAc (7:3:1) + other components	Jacobson, 1970 Teal, 1985	C

	+ Z11-16:OAc (56:21:9:14)	Mitchell, 1994	
<i>Spodoptera evanida</i> att.	Z9-14:OAc + Z9,E12-14:OAc	L.-Cassou in Pherobase	C
<i>Spodoptera exempta</i> Walker African armyworm <afuricashirona-yotou> phe.	*Z9-14:OAc + *Z9,E12-14:OAc (20:1) (99:1–9:1)	Beevor, 1975 Wakamura, 2011	A
	+ *Z11-16:OAc (20:1:1) + other componets	Cork, 1989	
<i>Spodoptera exigua</i> Hübner beet armyworm <shiroichimoji-yotou> phe.	*Z9,E12-14:OAc + other componets + *Z9-14:OH (5:4) + other componets att. (10:1) att. (9:1–7:3)	Brady, 1972(a) Persoons, 1981 Tumlinson, 1981 Mitchell, 1983 Wakamura, 1987	A
	+ *Z9,E12-14:OH + other componets att. (7:3-3:7)	Mochizuki, 1993 Mochizuki, 1994	
	*Z9,E12-14:OAc + *Z9-14:OH + *Z11-16:OAc (87.2:2.5:10.3) + other componets att. (7:3:1–7:3:5)	Tumlinson, 1990 Mitchell, 1994 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	Sekul, 1967 Mitchell, 1976 Jones, 1979 Mitchell, 1985	C

	(81.61:0.25:0.45:17.69)		
	+ *Z7-12:OAc (30:1)	Tumlinson, 1986	
	+ other components	Descoins, 1988	
	+ *9:Ald (1000:5.8:10)	Saveer, 2023	
Brazil strain	+ *Z7-12:OAc	Batista-Pereira, 2006	
	+ *E7-12:OAc (100:1:1)		
	+ other components		
Invasive strain in Japan	+ *Z7-12:OAc (100:1)	Wakamura, 2021	
	+ other components		
	+ *Z11-16:OAc	Tabata, 2023	
	+ *Z9-12:OAc		
	+ *Z9,E12-14:OAc (200:2:40;1:1)		
China strain	(25:1)	Jiang, 2022	
	+ other components		
China strain	+ *Z11-16:OAc (88:1:11)	Wang, 2022	
	+ other components		
<i>Spodoptera latifascia</i> Walker phe.	*Z9-14:OAc	Teixeira, 1989	C
	+ *Z9,E12-14:OAc N		
	(19:1)	Monti, 1995	
	+ other components		
<i>Spodoptera littoralis</i> Boisduval cotton leafworm phe.	*Z9,E11-14:OAc	Nesbitt, 1973	C
	+ other components	Campion, 1974; 1980	
		Dunkelblum, 1987(b)	
	+ *Z9,E12-14:OAc (10:1)	Tamaki, 1974	
		Yushima, 1974	
	(100:1)	Kehat, 1976; 1977	
	+ other components	Dunkelblum, 1982	
	+ *E10,E12-14:OAc N	Navarro, 1997	
<i>Spodoptera litura</i> F. common cutworm <hasumon-yotou> phe.	*Z9,E11-14:OAc	Tamaki, 1973	A
	+ *Z9,E12-14:OAc (9:1)		

<i>Spodoptera pectinicornis</i> Hampson <ukikusa-yoto> att.	Z7-12:OAc	Hai, 2002	C
<i>Spodoptera</i> (= <i>Prodenia</i>) <i>praefica</i> Grote western yellow-striped armyworm phe.	Z7-12:OAc *Z7-12:OAc + *Z9-14:OAc (50:1) + other components	Birch, 1977 Landolt, 2003	C
<i>Spodoptera sunia</i> Guenée phe.	*Z9-14:OAc (major) + *Z9-14:OH + *Z11-16:OAc + *Z9,E12-14:OAc N	Bestmann, 1988(a)	C
<i>Spodoptera triturrata</i> Walker att.	Z9-14:OAc (major) + Z9,E12-14:OAc + E9-14:OAc (17:3)	Campion, 1975 Blair, 1978	C
<i>Tholera cespitis</i> Denis & Schiffermüller att.	Z11-16:Ald	Subchev in Pherobase	D
<i>Trachea atriplicis</i> L. <shirosujiao-yotou> att.	Z11-16:OAc + Z11-16:OH (8:1) (4:1) + Z11-16:Ald (10:1:1)	Stan in Arn, 1992 Li, 1993(d) Subchev, 1992	B
<i>Xanthia icteritia</i> Hufnagel <monki-kiriga> att.	Z11-16:Ald + Z9-16:Ald (19:1)	Grichanov in Pherobase Bulyginskaya in Pherobase	A
<i>Xanthia lutea</i> Ström att.	Z9,E12-14:Ald	Steck, 1982(a)	C
<i>Xylena exoleta</i> L. att.	Z11-16:Ald	Subchev in Pherobase	C
<i>Xylena formosa</i> Butler <kibaramokume-kiriga>	Z11-16:Ald	Ando, 1977	A

<i>att.</i>	+ Z9-16:Ald (19:1)	Kohno, 2014	
<i>Xylena fumosa</i> Butler <ayamokume-kiriga> <i>att.</i>	Z11-16:Ald + Z9-16:Ald (19:1)	Kohno, 2014	A
<i>Xylomyges curialis</i> Grote <i>phe.</i>	*Z11-16:OH	McDonough, 1982(b)	C
<i>Xylomyges dolosa</i> Grote <i>att.</i>	Z7-12:OAc	Steck, 1979(c)	C

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

<i>Allophyes oxyacanthae</i> L. <i>att.</i>	Z9-14:OAc + Z9-14:OH (1:1)	Tóth in Arn, 1986(a)	D
<i>Ammoconia caecimacula</i> Denis & Shiffermüller <i>att.</i>	Z9-14:OAc	Tóth, 1979	D
<i>Antivaleria</i> (= <i>Valeriodes</i>) <i>viridimacula</i> Graeser <aobahagata-kiriga> <i>att.</i>	Z11-16:OAc	Ando, 1977	A
<i>Atethmia ambusta</i> F. <i>att.</i>	Z7-14:OAc + Z5-14:OAc (10:1)	Subchev, 1995	D
<i>Blepharita solieri</i> Boisduval <i>phe.</i>	*Z11-16:Ald	Rotundo, 1983	C
<i>Callierges ramosa</i> Esper <i>att.</i>	Z11-16:OAc + Z11-16:Ald	Subchev, 1986(b)	D
<i>Calophasia platyptera</i> Esper <i>att.</i>	Z9-14:OAc + Z9-14:Ald (1:1)	Tóth in Arn, 1986(a)	D
<i>Conistra grisescens</i> Draudt <miyamaobi-kiriga> <i>att.</i>	Z7-12:OAc	Ando, 1977	A
<i>Conistra rubiginea</i> Denis & Schiffermüller	Z11-16:OAc + Z11-16:Ald	Subchev in Arn, 1992	C

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

<i>Cucullia postera</i> Guenée <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> att.	Z11-14:OAc	Ando, 1981	A
<i>Jodia croceago</i> Denis & Schiffermüller att.	Z11-16:OAc	Subchev, 1990	C
<i>Oncocnemis chandleri</i> Grote att.	E5,Z7-12:OAc	Reed, 1984	C
<i>Oncocnemis cibalis</i> Grote att.	E5,Z7-12:OAc + Z7-12:OAc (1:1)	Reed, 1984	C
<i>Oncocnemis lepipuloides</i> McDunnough att.	Z7-12:OAc + Z9-14:OAc	Steck, 1982(a)	C
<i>Oncocnemis mackiei</i> Barnes & Benjamin att.	E5,Z7-12:OAc	Reed, 1984	C
<i>Oncocnemis piffardi</i> Walker att.	Z9-12:OAc Z9-14:OAc + Z7-12:OAc (500:1)	Underhill, 1977(a) Steck, 1982(b)	C
<i>Polymixis polymita</i> L. att.	Z9-14:OAc + Z11-14:OAc (1:1)	Ghizdavu, 1985	D
<i>Pyreferra citrombra</i> Franclemont att.	Z9-14:OAc + Z7-12:OAc	Roelofs, 1971(a) Steck, 1982(a)	D
<i>Rancora albida</i> Guenée 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; Amphipyriinae) 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>	Z7-12:OAc + Z9-14:OAc (8:5–2:5)	Szöcs, 1983	A

<i>Athetis hospes</i> Freyer <i>att.</i>	Z9-14:OH	Capizzi, Guerrero in Arn, 1986(a) Albages, 1988 Guerrero, 1986	C
<i>Athetis lepigone</i> Möschler <kousuiro-yotou> <i>phe.</i>	Z7-12:OAc + Z9-14:OAc (1:1) *Z9-14:OAc + *Z7-12:OAc (7:3)	Szöcs, 1981 Li, 1993(d) Yan, 2018(a)	A
<i>Athetis</i> (= <i>Dadica</i>) <i>lineosa</i> Moore <shiromon-obi-yotou> <i>att.</i>	Z9-14:OAc + Z11-14:OAc (1:1)	Ando, 1981	A
<i>Athetis pallustris</i> Hübner <i>att.</i>	Z9-14:OAc + Z7-14:OAc (9:1)	Frérot, 1987(a)	C
<i>Athyra pulmonaris</i> Esper <i>att.</i>	Z11-16:OAc + Z11-16:OH (1:1)	Priesner in Arn, 1986(a)	D
<i>Busseola fusca</i> Fuller maize stalk borer <i>phe.</i>	*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 <i>phe.</i>	*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. <i>phe.</i>	*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 <i>att.</i>	Z5-10:OAc + Z7-12:OAc + Z9-14:OAc (3:1:1)	Arn, 1983	D
<i>Crymodes devastator</i> Brace	Z11-16:Ald	Steck, 1980(c)	C

glassy cutworm <i>att.</i>	+ Z11-16:OAc + Z11-16:OH (100:50:3)		
<i>Dicycla oo</i> L. <i>att.</i>	Z9-14:OAc + Z11-16:OAc (9:1)	Szöcs, 1983	D
<i>Diparopsis castanea</i> Hmpson 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 att.	Z11-16:OAc	Subchev in Arn, 1992	D

(Noctuidae; Sarrothripinae)		Yaga-ka; Kinokawaga-aka	

<i>Nolathripa</i> (= <i>Lamprothripa</i>) <i>lactaria</i> Graeser <komabashiro-kinokawaga> att.	Z9,E12-14:OPr	Ando, 1977	A

(Noctuidae; Chloephorinae)		Yaga-ka; Ringa-aka	

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

(Noctuidae; Acontiinae)		Yaga-ka; Koyaga-aka	

<i>Deltotes candidula</i> Denis & Schiffermüller att.	Z9-16:Ald	Capizzi in Arn, 1986(a)	D
<i>Emmelia</i> (= <i>Acontia</i>) <i>trabealis</i> Scopoli <kimadara-koyaga> att.	Z5-10:OAc Z11-16:OAc + Z5-10:OAc (10:1)	Arn, 1983 Szöcs, 1983 Nagy, 2023 Subchev, 1987	A
<i>Eustrotia uncula</i> Clerck <suji-koyaga>	Z5-10:OAc + Z3-10:OAc (10:1)	Priesner, 1988(b)	A

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

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

<i>Anadevidia peponis</i> F. <urikin-uwaba> <i>phe.</i>	*Z7-12:OAc + *Z5-10:OAc + *Z7-12:OH (10:5:1) + other components	Inomata, 2000	A
<i>Anagrapha falcifera</i> Kirby celery looper <i>att.</i>	Z7-12:OAc + Z7-12:OFo (1:1) + Z7-12:OH (10:1)	Roelofs, 1970(a) Butler, 1977 Steck, 1979(b)	D

<i>Argyrogramma signata</i> F. 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	Ghizdavu, 1979 Priesner in Arn, 1986(a) Soldán, 1983	A

	*Z7-12:OAc + *Z7-12:OH (10:1–19:1)	Dunkelblum, 1983 Tóth, 1983 Mazor, 1992	
<i>Autographa nigrisigna</i> Walker semi-looper <tamanagin-uwaba> phe.	*Z7-12:OAc + *Z7-12:OH + *Z5-12:OAc + *Z7-14:OAc (100:62:2:4) + other components	Sugie, 1991(a)	A
<i>Autographa precationis</i> Guenée att.	Z7-12:OAc	Roelofs, 1971(a)	C
<i>Autographa pulchrina</i> Haworth att.	Z7-12:OAc E	Priesner, 1977	C
<i>Chrysaspidia bractea</i> Schiffermüller att.	Z11-16:OAc	Bykhovets in Pherobase	D
<i>Chrysaspidia contexta</i> Grote att.	Z7-12:OAc	Roelofs, 1970(a)	D
<i>Chrysaspidia festucae</i> L. att.	Z11-17:OH	Bykhovets in Pherobase	D
<i>Chrysaspidia venusta</i> Walker att.	Z5-12:OAc + Z7-12:OAc (1:1)	Steck, 1977(a)	D
<i>Chrysodeixis acuta</i> Walker <hosobanekin-uwaba> att.	Z5-10:OAc + Z7-12:OAc (1:1)	Tóth, 1992(c)	A
<i>Chrysodeixis argentifera</i> Guenée att.	Z7-12:OAc	Tóth in Arn, 1986(a)	C
<i>Chrysodeixis eriosoma</i> Doubleday New Zealand silver Y moth <ichijikukin-uwaba> phe.	*Z7-12:OAc + *Z9-12:OAc (50:1) or + Z9-14:OAc (5:1)	Benn, 1982	A
	Z7-12:OAc + Z9-12:OAc (17:3)	Sugie, 1990	
	+ Z9-14:OAc + Z11-16:OAc (10:2:1)	Inomata, 2000	

<i>Cornutiplusia</i> (= <i>Syngrapha</i>) <i>circumflexa</i> L. phe.	Z7-12:OH + Z7-12:OAc (5:1) *Z7-12:OH + *Z7-12:OAc (5:1)	Dunkelblum in Arn, 1986(a) Mazor, 1991	C
<i>Ctenoplusia</i> (= <i>Acanthoplusia</i>) <i>agnata</i> Staudinger three-spotted plusia <mitsumonkin-uwaba> phe.	*Z7-12:OAc + *Z9-12:OAc (10:1)	Sugie, 1990	A
in Vietnam	Z7-12:OAc	Hai, 2002	
<i>Ctenoplusia albostrigata</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)	Booij, 1984(a) Ando, 1981 Li, 1993(d)	A
	+ Z7-14:OAc	Szöcs, 1983	
	*Z7-12:OAc + *Z9-14:OAc (5:1) + other components	Inomata, 2000	
<i>Macdunnoughia crassisigna</i> Warren <ookikugin-uwaba> phe.	*Z7-12:OAc + *Z9-14:OAc (3:1) + another component	Wang, 2024	A
<i>Macdunnoughia purissima</i> Butler <ginmonshiro-uwaba> phe.	Z7-12:OAc + Z5-10:OAc + Z7-12:OH + Z5-12:OAc (10:5:1:1)	Inomata, 2000	A
	*Z7-12:OAc + *Z7-12:OH + *Z5-12:OAc (5:4:1)	Inomata, 2005	
<i>Plusia aereoides</i> Grote att.	Z7-12:OAc	Roelofs, 1970(a)	C
<i>Plusia</i> (= <i>Chrysodeixis</i>) <i>chalcites</i> Esper tomato looper phe.	*Z7-12:OAc + *Z9-14:OAc (5:1) + other components	Dunkelblum, 1981	C
	+ *Z9-12:OAc (10:1:1)	Dunkelblum, 1987(a); 1993	
<i>Plusia festucae</i> L. rice looper <inekin-uwaba> phe.	*Z5-12:OAc + *Z7-14:OAc + *Z5-12:OH (100:15:6) + another component	Ando, 1995(b)	A

<i>Plusia</i> (= <i>Chrysaspidia</i>) <i>putnami</i> Grote att.	Z5-12:OAc + Z7-12:OAc (100:1)	Steck, 1977(a) Steck, 1982(b)	B
<i>Pseudoplusia includens</i> Walker soybean looper phe.	*Z7-12:OAc + *12:OAc + *Δ11-12:OAc + *Z7-12:OPr + *Z7-12:OBu (93.2:1.2:0.7:0.9:0.2)	Berger, 1968 Tumlinson, 1972 Linn, 1987	D
<i>Rachiplusia ou</i> Guenée phe.	*Z7-12:OAc N	Berger, 1968	D
<i>Sclerogenia</i> (= <i>Autographa</i>) <i>jessica</i> Butler <waginmon-uwaba> att.	Z7-12:OAc + Z7-12:OH (9:1)	Ando, 1981	A
<i>Syngrapha ain</i> Hochenwarth <kishitagin-uwaba> phe.	Z7-12:OH + Z7-12:OAc (3:1) *Z7-12:OAc + *Z7-12:OH (3:2)	Priesner in Arn, 1986(a) Inomata, 2005	A
<i>Syngrapha epigaea</i> Grote att.	Z7-12:OAc + 14:OAc (20:1)	Steck, 1982(a)	C
<i>Syngrapha parilis</i> Hübner att.	Z7-12:OAc	Linnaluoto, 1983	C
<i>Syngrapha rectangula</i> Kirby att.	Z7-12:OAc	Steck, 1982(a)	C
<i>Syngrapha variabilis</i> att.	Z7-14:OAc E	Priesner, 1977	C
<i>Thysanoplusia intermixta</i> Warren chrysanthemum golden plusia <kikukin-uwaba> phe.	*E5,Z7-12:OAc + *E5,Z7-12:OH + *Z7-12:OAc (100:13:18) + another component	Ando, 1998	A
<i>Thysanoplusia orichalcea</i> F.	*Z7-12:OAc	Ando, 1998	A

<nettaikikukin-uwaba> phe.	+ *E5,Z7-12:OAc (100:11) + other components		
<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

(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
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(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>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 erectea</i> Cramer forage looper phe.	*Z3,Z6,Z9-21:H + *Z3,Z6,Z9-20:H (4:1)	Underhill, 1983	D
<i>Euclidia cuspidea</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 att.	Z3,Z6,epo9-21:H (9S,10R)-isomer E	Renou, 1988	D

<i>Gonodonta bidens</i> Geyer att.	Z3,Z6,Z9-21:H	E	Renou, 1988	D
<i>Gonodonta incurva</i> Sepp att.	Z3,Z6,Z9-21:H	E	Renou, 1988	D
<i>Gonodonta parens</i> Guenée att.	Z3,Z6,Z9-21:H	E	Renou, 1988	D
<i>Gonodonta sicheas</i> Cramer att.	Z3,Z6,Z9-21:H	E	Renou, 1988	D
<i>Hypenomorpha calamina</i> Butler <hirobachibitogari-atsuba> att.	Z6,epo9-20:H		Ando, 1995(a)	A
<i>Lesmone formularis</i> Geyer att.	Z3,Z6,epo9-21:H (9S,10R)-isomer	E	Renou, 1988	D
<i>Massala obvertens</i> Walker att.	Z3,Z6,Z9-20:H	E	Renou, 1988	D
<i>Melipotēs fasciolaris</i> Hübner att.	Z3,Z6,epo9-21:H (9S,10R)-isomer	E	Renou, 1988	D
<i>Melipotēs januaris</i> Guenée att.	Z3,Z6,Z9-21:H	E	Renou, 1988	D
<i>Mocis disseverans</i> Walker phe.	*Z3,Z6,Z9-21:H + *Z3,Z6,Z9-20:H (49:1)		Landolt, 1986(b)	C
	Z3,Z6,Z9-21:H		McLaughlin, 1989	
<i>Mocis latipes</i> Guenée phe.	*Z3,Z6,Z9-21:H + *Z6,Z9-21:H (3:1)		Descoins, 1986	C
	(4:1)		Landolt, 1989(b)	
	+ *Z3,Z6,Z9-20:H (49:1)		Landolt, 1986(b)	
<i>Mocis marcida</i> Guenée phe.	*Z3,Z6,Z9-21:H + *Z3,Z6,Z9-20:H	N	Landolt, 1986(b)	C
<i>Mocis megas</i> Guenée phe.	*Z3,Z6,Z9-21:H + *Z3,Z6,epo9-21:H		Descoins, 1990	C

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

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

<i>Aedia leucomelas</i> L. <nakajiro-shitaba> phe.	*Z3,Z6,Z9-21:H		Tamaki, 1996	A
<i>Alabama argillacea</i> Hübner phe.	*Me9-19:H (<i>S</i>)-isomer + other components		Hall, 1993	D
<i>Anomis sabulifera</i> Guenée jute semilooper phe.	*Z6,Z9-21:H + *Z3,Z6,Z9-21:H (3:1)		Babu, 2021	C
<i>Anomis texana</i>	*Me7-17:H		Hall, 1993	C

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

<i>Dasychira plagiata</i> Walker att.	Z6-21:11-one + E6-21:11-one (100:1)	Grant, 1977	C
<i>Dasychira vagans grisea</i> Barnes & McDunnough att.	Z6-21:11-one	Daterman, 1976	C
<i>Euproctis chrysorrhoea</i> L. browntail moth phe.	*Z7,Z13,Z16,Z19-22:OisoBu	Leonhardt, 1991 Khrimian, 2008	C
<i>Euproctis terminalis</i> Walker pine browntail moth phe.	*Z7,Z13,Z16,Z19-22:OisoBu	Bouwer, 2021	C
<i>Gynaephora ginghamensis</i> phe.	*Z3,Z6,Z9-21:H + Z3,Z6,Z9-20:H (100:1)	Chen in Arn, 1986(a)	C
<i>Leucoma salicis</i> L. satin moth <yanagi-dokuga> phe. In Canada In Hungary	*Z3,epo6,epo9-21:H + other components (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 + *Me2,epo7,Δ17-18:H + other components (EAG active)	Bierl, 1970 Klimetzek, 1976 Cardé, 1977(b) Miller, 1978 Gries, 2005(a)	B
<i>Lymantria dispar asiatica</i> Vnukovskij Asian gypsy moth att.	Me2,epo7-18:H (7R,8S)-isomers + Me2,epo7,Δ17-18:H (10:1)	Wallner, 1984 Park, 2019	B

(7R,8S)-isomers

<i>Lymantria dispar japonica</i> Motschulsky Japanese gypsy moth <maimaiga> att.	Me ₂ ,epo7-18:H (7R,8S)-(+)-isomer	Beroza, 1973(a) Iwaki, 1974	A
<i>Lymantria fumida</i> Butler <haraaka-maimai> phe.	Me ₂ ,epo7-18:H *Me ₂ ,epo7-18:H (7R,8S)-(+)-isomer + *Me ₂ ,Z7-18:H (10:1)	Beroza, 1973(a) Schaefer, 1999	A
<i>Lymantria lucescens</i> Butler phe. <ooyama-maimai>	*Me ₂ ,Z7-18:H	Gries, 2002	A
<i>Lymantria mathura</i> L. rosy (pink) gypsy moth <kashiwa-maimai> phe.	Me ₂ ,epo7-18:H (7R,8S)-(+)-isomer *Z3,Z6,epo9-19:H (9S,10R)-isomer + another component (9S,10R):(9R,10S) = (4:1)	Odell, 1992 Oliver, 1999 Gries, 1999(b)	A
<i>Lymantria monacha</i> L. nun moth <nonne-maimai> phe.	Me ₂ ,epo7-18:H *Me ₂ ,epo7-18:H (-):(+) = 9:1 E (+)-isomer + Me ₂ ,Z7-18:H (1:3) (+)-isomer + *epo7-18:H (7R,8S)-(+)-isomer + *Me ₂ ,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 Indian gypsy moth phe.	Me ₂ ,epo7-18:H *Me ₂ ,epo7-18:H	Beroza, 1973(b) Gries, 2007	C

	(7 <i>R</i> ,8 <i>S</i>)-(+)-isomer + *Me2,Z7-18:H (2:1)		
<i>Lymantria serva</i> phe.	*Me2,Z7-18:H	Gries, 2002	C
<i>Lymantria xyli</i> Swinhoe Casuarina moth <maeguro-maimai> phe.	*Me2,epo7-20:H	Gries, 1999(c)	A
<i>Orgyia antiqua</i> L. rusty tussock moth att.	Z6-21:11-one	Daterman, 1976	C
<i>Orgyia cana</i> Edwards western tussock moth att.	Z6-21:11-one	Daterman, 1976	C
<i>Orgyia detrita</i> Guérin-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 Ishigaki strain	*Z6,Z9,tepo11-21:H (11 <i>S</i> ,12 <i>S</i>)-isomer + other components	Wakamura, 2001(a); 2005(a)	A

Taiwan strain	+ *Z6-21:11-one	Chow, 2001	
<i>Orgyia pseudotsugata</i> McDunnough Douglas-fir tussock moth phe.	*Z6-21:11-one + *Δ1,Z6-21:11-one + *Z6,E8-21:11-one (100:1)	Smith, 1975 Smith, 1978 Gries, 1997(a)	C
<i>Orgyia thyellina</i> Butler white-spotted tussock moth <himeshiromon-dokuga> phe.	*Z6-21:11-one + *Z6-21:9-one (20:1)	Gries, 1999(a)	A
<i>Orgyia vetusta</i> Boisduval western tussock moth phe.	*Z6,E8-21:11-one + other components	Gries, 2005(d)	C
<i>Orvasca</i> (=Euproctis) <i>taiwana</i> Shiraki <taiwanki-dokuga> phe.	*Z9,Me16-17:OisoBu + another component	Yasuda, 1995	A
<i>Perina nuda</i> F. clear-winged tussock moth <sukiba-dokuga> phe.	*Z3,epo6,Z9-21:H (6S,7R)-isomer + *epo3,epo6,Z9-21:H (10:1) [(3S,4R,6S,7R): (3R,4S,6S,7R) = 3:2]	Yamazawa, 2001 Wakamura, 2002	A
<i>Somena</i> (=Euproctis) <i>pulverea</i> Leech <gomafuri-dokuga> phe.	*Z11,Z14,Z17-20:OisoBu + *Z11,Z14,Z17-20:O-Me4'Va (2:1) + other components	Wakamura, 2001(c)	A
<i>Sphrageidus</i> (=Euproctis) <i>similis</i> Fuessly browntail moth <monshiro-dokuga> phe.	*Z7-18:O-Me2'Bu (2'S:2'R = 7:2) + *Z7-18:OisoVa + *Z7-18:OBu + *Z7-18:OisoBu (20:12:1:1) + other components	Yasuda, 1994	A
<i>Sphrageidus</i> (=Euproctis) <i>similis xanthocampa</i> Dyar <monshiro-dokugamodoki> phe.	*Z7-18:OisoVa + other components	Tan, 1984	A

<i>Teia anartoides</i> Walker painted apple moth phe.	*Z6,Z9-21:11-one + *Z6,εpo9-21:H (9R,10S)-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 (S)-isomer + 17:8-OPr (S)-isomer (1:1)	Fujii, 2013(b)	A
<i>Barsine expressa</i> Inoue <sakishimabeni-kokega> phe.	*17:7-OPr (S)-isomer + *17:8-OPr (S)-isomer (1:1) + other components	Fujii, 2013(b)	A
<i>Eilema japonica</i> Leech <kimae-hosoba> phe.	*Z6,Z9-21:H + *Z3,Z6,Z9-21:H + *Z6,Z9-22:H + *Z3,Z6,Z9-22:H (86:17:59:57) + other components	Fujii, 2010(b)	A
<i>Lyclene dharma dharma</i> Moore <himehoshiki-kokega> phe.	*Me6-18:2-one (S)-isomer + *Me14-18:2-one (S)-isomer + another component	Yamamoto, 2007 Do, 2009 Adachi, 2010	A
<i>Miltochrista calamina</i> Butler <hagataki-kokega> phe.	*Me5-17:7-OH (5R,7R)-isomer	Yamakawa, 2011(b) Muraki, 2014	A
<i>Miltochrista striata</i> Bremer & Grey phe.	*Z3,Z6,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
<i>Dysauxes ancilla</i> L. att.	Δ1,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.	*Δ1,Z3,Z6,Z9-21:H + *Z3,Z6,Z9-21:H + other components	Matsuoka, 2008	A

(Erebidae: Arctiinae: Arctiini) Tomoega-ka : Hitoriga-aka : Hitoriga-zoku

<i>Amsacta albistriga</i> Walker	*Z3,Z6,Z9-21:H + *Z9,Z12,Z15-18:Ald + *Z9,Z12-18:Ald + *18:Ald (24:11.5:1:1)	Persoons, 1993	D
<i>Arctia caja</i> L. <hitoriga> phe.	*Z3,Z6,Z9-21:H + *Z3,Z6,epo9-21:H + *Z3,Z6,epo9-20:H N	Bestmann, 1992(a)	B
<i>Arctia plantaginis</i> wood tiger moth <himekishita-hitori> phe.	*Z3,Z6,Z9-21:H + *E4,Z6,Z9-21:H + *Δ1,Z3,Z6,Z9-21:H + *Z2,E4,Z6,Z9-21:H E [30:3:5:1]	Muraki, 2017	A
<i>Arctia villica</i> phe.	*Z3,Z6,Z9-21:H + *Δ1,Z3,Z6,Z9-21:H N	Einhorn, 1984(a)	C
<i>Callimorpha dominula</i> L. scarlet tiger moth phe.	*Z3,Z6,epo9-21:H N (9S,10R)-isomer	Clarke, 1996	C
<i>Cretonotos gangis</i> L. <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.	Z3,Z6,epo9-18:H	Hai, 2002	C

<i>Cymbalophora pudica</i> Esper att.	*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> att.	Me2-17:H E	Roelofs, 1971(b)	D

<i>Holomelina lamae</i> phe.	*Me2-17:H N		Roelofs, 1971(b)	D
	+ other components		Schal, 1987	
<i>Holomelina nigricans</i> phe.	*Me2-17:H N		Roelofs, 1971(b)	D
<i>Holomelina rubicundaria</i> att.	Me2-17:H		Roelofs, 1971(b)	D
<i>Holomelina</i> sp. att.	Me2-17:H		Weatherston, 1974(a)	D
<i>Hyphantria cunea</i> Drury fall webworm moth American white moth <amerikashiro-hitori> phe	*Z3,Z6,epo9-21:H + *Z9,Z12,Z15-18:Ald + *Z9,Z12-18:Ald		Hill, 1982	A
	U.S.A. (27:6:1)			
	U.S.S.R. [13:6:5]			
	France [52:41:7] N		Einhorn, 1982	
	+ *Δ1,Z3,Z6,epo9-21:H		Tóth, 1989(b)	
	+ *Z3,Z6,epo9-20:H			
	+ *Δ1,Z3,Z6,epo9-20:H			
	Hungary [60:40:5:8:0.4:0.04] N			
	+ other components			
	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)	
	(9S,10R)-isomer			
	+ *Δ1,Z3,Z6,epo9-21:H			
	(9S,10R)-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 + other components	Roelofs, 1971(b) Krasnoff, 1988	D
<i>Panaxia</i> (= <i>Callimorpha</i>) <i>quadripunctaria</i> phe.		*Z6,Z9-21:H + *Z6,Z9-20:H N	Schneider, 1998	C
<i>Pareuchaetes pseudoinsulata</i> Rego Barros phe.		*Z3,Z6,Z9-21:H N + other components *Δ1,Z3,Z6,Z9-21:H N + other components	Schneider, 1992 Frérot, 1993(a)	D
<i>Phragmatobia fuliginosa</i> ruby tiger moth <ama-hitori> phe. Europe strain		*Z3,Z6,epo9-21:H + *Z3,Z6,Z9-21:H + *Z6,epo9-21:H + *Z6,Z9-21:H N + Z9,Z12,Z15-18:Ald + Z9,Z12-18:Ald (21:8:1)	Descoins in Arn, 1992 Kovalev, 1986	B?
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		*Z3,Z6,epo9-21:H (9 <i>S</i> ,10 <i>R</i>)-isomer	Frérot, 1988(a) Bestmann, 1994	D

phe.	+ other components	N	Clarke, 1996	
<i>Utetheisa ornatix</i>	*Z3,Z6,Z9-21:H		Conner, 1980	C
phe.	*Δ1,Z3,Z6,Z9-21:H		Jain, 1983	
	+ *Z6,Z9-21:H			
	+ *Z3,Z6,Z9-21:H	N	Choi, 2007	
