



HOKKAIDO UNIVERSITY

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By MASAKAZU SANO

Abstract

SANO, M. 2005. Type specimens of aphids (Aphididae; Homoptera) described by M. Inouye in the Hokkaido University Insect Collection. *Ins. matsum. n. s.* 61: 75–86.

The aphid species, 18 in total, described by M. Inouye are listed. For 15 species of them, their type specimens are confirmed to exist in the collection of Systematic Entomology, Hokkaido University. Collection data of the specimens and grounds for their confirmation are given.

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INTRODUCTION

Motonori Inouye (1901–1990) was a forest entomologist who provided the foundations for the taxonomy and control of conifer-feeding aphids in Japan. He described 18 species of Aphididae (Homoptera), mostly conifer-feeders, from Japan and Sakhalin as new to science. Dr. Inouye mentioned in his papers that the type specimens of these species were placed in several institutes he worked for at that time, although he sometimes did not indicate type depository. Most of the type specimens were transferred to the collection of Systematic Entomology, Hokkaido University (SEHU), where they have been preserved up to now.

Dr. Inouye often did not attach proper type labels to the specimens. Type labels sometimes appear on specimens not mentioned in the original description. In addition, when taxonomic status of his species changed, he attached identification labels indicating new status without leaving type labels. These problems make it difficult to specify type specimens in Inouye's species, and it is necessary to compare Inouye's specimens and their label data with the data mentioned in the original description for recognition of his type specimens. It is possible that Inouye's species are synonyms of other species, as suggested by Takahashi (1960) and Eastop *et al.* (1998). Specification of type specimens becomes necessary for future taxonomic studies.

In this paper, I provide a list of all aphid species described by M. Inouye and their available type specimens with commentary. He described some new species in Adelgidae (Aphidoidea), which are not treated in this paper.

FORMAT USED FOR THE LIST

Species are listed alphabetically according to the original species name given by Inouye. If the taxonomic status of Inouye's species has been changed, then the current valid name, which is accepted according to Remaudière and Remaudière (1997) and Aoki *et al.* (2001), is indicated in brackets after the original name. Data and type depository mentioned in the original description are cited. Some of the notes on the label data are reproduced. For all the type specimens recognized in this study, a new label is attached (Syntype(s), Generic name, Specific name, Inouye, 19XX, det. M. Sano, 2004). Abbreviations of morphs used in the list are as follows; apt., apterous viviparous female; al., alate viviparous female; ov., oviparous female; alm., alate male; ny., nymph.

LIST OF APHID SPECIES DESCRIBED BY M. INOUYE AND THEIR TYPE SPECIMENS

1. *Cinara chibi* Inouye, 1962 [=*Cinara (Cinara) chibi* Inouye]

Types. 2 slides with 12 apt. and 1 al., Oshamanbe, Monbetsu, Hokkaido, Japan, 10. IX. 1960, ex *Larix leptolepis*, M. Inouye leg, labeled as "*Cinara (Cinarellia) laricicola chibi* Inouye". One slide is labeled as "No. 31 Type", and the other as "No 34 Type".

Data in the original description. Many apterous and two alate viviparous females (Cotypes), collected by M. Inouye, at Oshamanbe, Hokkaido (10. IX, 1960). Host... *Larix leptolepis* Gord.

Type depository mentioned in the original description. The Government Forest Experiment Station, Hokkaido Branch.

Comments. Inouye (1970) treated *C. chibi* as a subspecies of *C. laricicola*

(Matsumura, 1917), although *C. chibi* is currently accepted as a good species. There are several slides labeled as “*Cinara (Cinarella) laricicola chibi* Inouye” and “Type”. Of these slides, two bear collection labels agreeing with the data given in the original description. The species was described on the basis of many apterous and two alate viviparous females. The specimens on the two slides are referable to a part of the syntypes of *C. chibi*.

2. *Cinara (Cinara) etsuhoe* Inouye, 1970

Types. 1 slide with 2 apt., Tsudaka-Kanayama, Okayama Pref., 24. X. 1966, ex *Pinus densiflora*, M. Inouye leg, labeled as “*Cinara sorini etsuhoi* Inouye” and “No. 1204–5 type”.

Data in the original description. Seven apterous viviparous females (Cotypes), collected by E. Inouye, Tsudaka-Kanayama, Okayama Pref., 24. X. 1966, ex *Pinus densiflora*.

Type depository mentioned in the original description. The Ôji Institute for Forest Tree Improvement.

Comments. The subspecific status as “*Cinara sorini etsuhoi* Inouye” on the label is not published. The collection label agrees with the data in the original description of *C. etsuhoe* except for collector’s name. Furthermore, “No. 1204” and “No. 1205” are shown as reference numbers in the table of measurements of apterous viviparous females in the original description (Inouye, 1970: P. 72). The two females on the slides mentioned above are regarded as a part of the syntypes of *C. etsuhoe*.

There is a further slide with three apterous viviparous females and one nymph labeled as “*Cinara sorini etsuhoi* Inouye”. This slide does not bear any collection labels or type labels. It may be difficult to recognize these females as syntypes of *C. etsuhoe*.

3. *Cinara ezoana* Inouye, 1936 [= *Cinara (Cinara) pruinosa ezoana* Inouye]

Types. All specimens were collected at Nopporo, Hokkaido, Japan, from *Picea glehnii*. All slides are labeled as “*Cinara (Cinara) bogdanowi ezoana* Inouye” and “T” unless otherwise stated. 3 slides with 7 al., 10. VII. 1935. 4 slides with 7 al., 12. VII. 1935. 3 slides with 3 al., 18. VII. 1935 [1 slide labeled as “P. T” instead of “T”]. 1 slide with a pair of fore wings, 18. VII. 1935, labeled as “P. T” instead of “T”. 2 slides with 2 apt. and 1 al., 8. VIII. 1935. 1 slide with 3 apt., 9. VIII. 1935. 2 slides with 7 apt., 10. VIII. 1935. 3 slides with 6 apt., 14. VIII. 1935.

Data in the original description. Many wingless and winged viviparous females collected at Nopporo, Hokkaido, Japan, in July and August, 1935. Host–*Picea glehni* Master. *Picea jezoensis* Carr.

Type depository mentioned in the original description. Not mentioned.

Comments. Inouye (1970) treated *Cinara ezoana* as a subspecies of *C. bogdanowi* (Mordvilko, 1895), which is currently accepted as a synonym of *C. pruinosa* (Hartig, 1841). There are many slides labeled as “*Cinara (Cinara) bogdanowi ezoana* Inouye” and “T” or “P. T”. Among them, nineteen slides with eighteen apterous and eighteen alate viviparous females, and a pair of fore wings bear collection labels agreeing with the data in the original description of *C. ezoana*. These specimens are probably syntypes of the species.

4. *Cinara hattorii* Kôno and Inouye, 1938 [= *Cinara (Cinara) hattorii* Kôno and Inouye]
Types. 4 slides with 4 al., Sapporo, Hokkaido, Japan, 8. VI. 1938, ex *Abies sachalinensis*, Kôno leg, labeled as “*Cinara hattori* Kôno et Inouye” and “T”.

Date in the original description. Typus–Geflügeltes vivipares Weibchen, 8/VI. 1938, gesammelt von H. Kôno. Paratypus–Geflügeltes vivipares Weibchen, 16/VI. 1935, an *Abies sachalinensis*, gesammelt von H. Kôno. Fundort: Hokkaido (Sapporo). Wirtspfl.: *Abies sachalinensis* (Todomatsu).

Type depository mentioned in the original description. Der Sammlung von H. Kôno.

Comments. Kôno and Inouye (1938) fixed “Typus” and “Paratypus” for *Cinara hattorii* without indicating the number of type specimens. It is possible that this species was described based on more than one specimen (cf. Inouye, 1970: P. 89). It is proper that type specimens of this species are treated as syntypes.

There are several slides labeled as “*Cinara hattori* Kôno et Inouye” and “T”. Of these slides, four with four alate viviparous females bear collection labels agreeing with the data for “Typus” in the original description of *C. hattorii*. These specimens on the slides are probably syntypes of the species.

No slide in the collection agrees with the data for “Paratypus” of *C. hattorii*.

5. *Cinara horii* Inouye, 1941 [= *Cinara (Cinara) horii* Inouye]

Types. All specimens were collected at Saghalien, from *Picea jezoensis*, by Hori. All slides are labeled as “*Cinara (Cinaropsis) horii* Inouye” and “T”. 1 slide with 1 fundatrix, 8. V. 1937. 1 slide with 1 fundatrix, 17. V. 1937. 1 slide with 1 al., 17. V. 1937. 1 slide with 1 al., 21. V. 1937. 1 slide with 1 apt., 24. V. 1937.

Data in the original description. Fundatrix Mutter, 2. Exs. 8–24/V. 1937; ungeflügeltes vivipares ♀, 1. Ex. 24/V. 1937; geflügeltes vivipares ♀, 4. Exs. 17–24/V. 1937; an *Picea jezoensis*, ges. von M. Inouye. Fundort: Sachalin (Toyohara).

Type depository mentioned in the original description. Entomologischen Institut der Kaiserlichen Hokkaido Universität zu Sapporo und der Hokkaido Forstversuchsanstalt zu Nopporo.

Comments. There are five slides labeled as “*Cinara (Cinaropsis) horii* Inouye” and “T”. Their collection labels agree with the data in the original description except for collector’s name. The two fundatrices, and one apterous and two alate viviparous females on the slides are presumably a part of the syntypes of *C. hattorii*.

6. *Cinara kochi* Inouye, 1939 [= *Cinara kochiana* Börner, 1939]

Comments. Koch (1856) described *Lachnus laricis*, which is homonymous with *Lachnus laricis* (Walker, 1848). In May 1939, Börner (1939) proposed *Cinara kochiana* as a replacement name for *Lachnus laricis* Koch 1856. Subsequently, in July 1939, Inouye (1939) also gave a replacement name, *Cinara kochi*, for *Lachnus laricis* Koch 1856. Thus the type specimens of *C. kochiana* Börner, 1939 and those of *C. kochi* Inouye, 1939 correspond to those of *C. laricis* Koch, 1856. *C. kochiana* and *C. kochi* share the same type specimens and are objective synonyms.

7. *Cinara kochiana kochi* Inouye, 1962 [= *Cinara (Cinara) kochiana kochi* Inouye, 1962, not *Cinara kochi* Inouye, 1939]

Comments. Inouye (1962) regarded the Japanese form of *C. kochiana* as a subspecies, and gave the name of *C. kochiana kochi* Inouye, 1939. This act may be

accepted as the description of a new subspecies, *C. kochiana kochi* Inouye, 1962. As mentioned above, the species-group name *kochi* was already preoccupied by Inouye (1939). Therefore, the subspecific epithet proposed for this subspecies by Inouye (1962) is a junior homonym of *C. kochi* Inouye, 1939, and a replacement name is required for this subspecies.

Twenty-four slides bear collection labels almost agreeing with the data in Inouye (1962). The specimens on the slides listed below are referable to a part of the syntypes.

Types. All specimens were collected from *Larix leptolepis*, by M. Inouye unless otherwise stated. All slides are labeled as "*Cinara kochiana kochi* Inouye". 5 slides with 11 ov. and 1 alm., Nopporo, Hokkaido, Japan, 24. X. 1936, ex *Larix* [4 slides with 9 ov. and 1 alm. labeled as "T", and 1 slide as "P. T"]. 7 slides with 12 apt. and 4 al., Nopporo, Hokkaido, Japan, 28. VIII. 1938, labeled as "T". 2 slides with 3 apt. and 1 al. (also containing 6 ny.), Kashiwabara, Nagano Pref., Japan, 4. VI. 1960. 2 slides with 7 apt. (also containing 1 ny.), Togakushi, Nagano Pref., Japan, 4. VI. 1960 [1 slide with 4 apt. and 1 ny. labeled as "P. T"]. 4 slides with 6 apt. (also containing 11 ny.), Soehi, Nagano Pref., Japan, 5. VI. 1960. 1 slide with 2 apt., Nopporo, Hokkaido, Japan, ex *Larix*, 8. VII. 1960. 3 slides with 9 apt. (also containing 1 al.), Tomakomai, Hokkaido, Japan, ex *Larix*, 13. VII. 1960 [2 slides with 7 apt. labeled as "T"].

Data in the original description. Many examples of apterous viviparous female were collected at Kashiwabara, Togakushi, Soehi and Oiwake, Nagano Prefecture, Honshu (4–7. VI, 1960); at Nopporo and Tomakomai, Hokkaido (8–13. VII, 1960); at Nopporo, Hokkaido (28. VIII, 1938); at Tate and Yamabe, Hokkaido (9–11. XI, 1960). Many examples of alate viviparous female were collected at Kashiwabara and Koumi, Nagano Prefecture (4. VI, 1960). Two examples of alate viviparous female were collected at Nopporo, Hokkaido (8. VII, 1960); many examples were collected at Nopporo (28. VIII, 1938) and one example collected at Oiwake, Hokkaido (28. IX. 1938); ten examples were collected at Tate, Hokkaido (9. XI, 1960). Many examples of oviparous females and alate males were collected at Toyohira, Sapporo, Hokkaido (28. X, 1960); at Nopporo, Hokkaido (24. X, 1936). The above mentioned examples were all collected by M. Inouye. Host...*Larix leptolepis* Gord. and *Larix koraiensis* Sieb. et Zucc.

Type depository mentioned in the original description. Not mentioned.

8. *Cinara konoï* Inouye, 1941 [= *Cinara (Cinara) hattorii* Kôno and Inouye, 1938]

Types. All specimens were collected at Nopporo, Hokkaido, Japan, from *Abies sachalinensis* (= *mayriana*). All slides are labeled as "*Cinara hattorii* Kôno et Inouye" or "*Cinara hattorii* Kôno et Inouye", and "T". 1 slide with 1 apt., 28. VII. 1935. 3 slides with 6 apt., 2. VIII. 1935 [1 slide with 2 apt. labeled as "*konoï*" deleted by double lines]. 3 slides with 13 apt., 28. IX. 1935 [2 slides with 7 apt. labeled as "*konoï*" deleted by double lines, the other labeled as "*konoï*".]

Data in the original description. Ungeflogeltes vivipares ♀, 1 Ex., 28/VII. 1935, 8 Exs., 2/VIII. 1935, 13 Exs., 28/IX. 1935, an *Abies Mayriana*, ges. von M. Inouye. Foundort: Hokkaido.

Type depository mentioned in the original description. Entomologischen Institut der Kaiserlichen Hokkaido Universität zu Sapporo und der Hokkaido Forstversuchsanstalt zu Nopporo.

Comments. Inouye (1970) treated *Cinara konoï* as a synonym of *C. hattorii* Kôno and Inouye. There are several slides labeled as "*Cinara hattorii* Kôno et Inouye" or "*Cinara*

hattorii Kôno et Inouye”, and “T”. Of these slides, seven with twenty apterous viviparous females bear collection labels agreeing with the data in the original description of *C. konoï*. Furthermore, four slides have label data of “*konoï*”, some of which are deleted by double lines. These females are referred to syntypes of the species.

9. *Cinara nopporensis* Inouye, 1937 [= *Cinara (Cinara) nopporensis* Inouye]

Types. All specimens were collected at Nopporo, Hokkaido, Japan, from *Picea glehnii*. All slides are labeled as “*Cinara (Cinaropsis) pilicornis* Htg.” and “T”. 6 slides with 19 apt., 18. VI. 1936. 4 slides with 4 al. (all wings were removed), 18. VI. 1936, labeled as “No. A”–“No. D”. 3 slides with 6 fore and 5 hind wings, 18. VI. 1936, labeled as “No. A”, “No. B”, or “No. E”. 6 slides with 15 al. (7 of them had their wings removed), 1. VII. 1936. 4 slides with 8 fore and 6 hind wings, 1. VII. 1936. 9 slides with 3 ov. and 8 alm. (also containing 3 apt.), 21. IX. 1936.

Data in the original description. Wingless viviparous female (Apterous virgogenia): 19 examples collected on 18 June, 1936, at Nopporo. Winged viviparous female (Alate virgogenia): 5 examples collected on 18 June and 20 examples collected on 1 July, 1936, at Nopporo. Oviparous female: Many examples collected on 21 September, 1936 at Nopporo. Alate male: Many examples collected on 21 September, 1936, at Nopporo. Host—*Picea Glehni* Masters.

Type depository mentioned in the original description. The Entomological Institute of the Hokkaido Imperial University and the Hokkaido Forestry Experimental Station.

Comments. Inouye (1970) treated *Cinara nopporensis* as a synonym of *C. pilicornis* (Hartig, 1841), although *C. nopporensis* is currently accepted as a good species. There are many slides labeled as “*Cinara (Cinaropsis) pilicornis* Htg. ” and “T”. Of these slides, thirty-two bear collection labels agreeing with the data in the original description. The specimens on the slides mentioned above are probably syntypes of the species.

Some wings were removed from alatae, and mounted separately on other slides without cross-reference. It is impossible to establish original combination of these alate bodies and their wings.

10. *Cinara (Cinaropsis) ozawai* Inouye, 1970 [= *Cinara (Cinara) ozawai* Inouye]

Type. 1 slide with 1 apt., Fukushima, Kiso-gun, Nagano Pref., 27. VI. 1968, ex *Tsuga diversifolia*, M. Inouye leg, labeled as “*Cinara (Cinaropsis) ozawai* Inouye” and “No. 1303 type”.

Data in the original description. Four apterous and one alate viviparous females (Cotypes), collected by T. Ozawa, at Kiso-Fukushima, Nagano Prefecture, 29. VI, 1968, ex *Tsuga diversifolia*.

Type depository mentioned in the original description. The Ôji Institute for Forest Tree Improvement.

Comments. There is one slide with one apterous viviparous female labeled as “*Cinara ozawai*” and “No. 1303 type”. It was collected on 27. VI. 1968. The date disagrees with the collection date mentioned in the text of the original description but agrees with that given in the table for apterous viviparous females. Other collection data agree with those in the original description except for collector’s name. Furthermore, “No. 1303” is shown as a reference number in the table for apterous viviparous females in the original description. This apterous viviparous female on the slide is probably one of the syntypes of *C. ozawai*.

11. *Cinara shinjii* Inouye, 1938 [=*Cinara (Cinara) shinjii* Inouye]

Comments. Shinji (1922) described *Lachnus fasciatus*, which is homonymous with *Lachnus fasciatus* Burmeister, 1835. Inouye (1938) proposed *Cinara shinjii* as a replacement name for *Lachnus fasciatus* Shinji, 1922. Thus the type specimens of *C. shinjii* Inouye correspond to specimens used by Shinji (1922).

There are several slides labeled as “*Cinara shinji* Inouye” and “P. T”. Of these slides, four with eight apterous and two alate viviparous females, and one alate male bear collection labels agreeing with the data in Inouye (1938). These specimens, listed below, are regarded as a part of the specimens used by Inouye (1938).

Specimens. All specimens were collected at Shirikishinai, Hokkaido, Japan, from *Pinus himekomatsu*. All slides are labeled as “*Cinara (Cinara) shinji* Inouye” and “P. T”. 3 slides with 8 apt. and 2 al., 19. VII. 1937. 1 slide with 1 alm.(also containing 2 apt.), 30. IX. 1937.

Data in Inouye (1938). Wingless viviparous female (Apterous virgogenia): 10 examples collected on 19 July and 30 August, 1937 at Shirikishinai in Hokkaido. Winged viviparous female (Alate virgogenia): 3 examples collected on 19 July, 1936, at Shirikishinai in Hokkaido. Oviparous female: One example collected on 4 October, 1937, at Shirikishinai in Hokkaido. Alate male: One example collected on 30 September, 1937, at Shirikishinai in Hokkaido. Host–*Pinus Himekomatsu* Miyabe et Kudo.

Depository of specimens mentioned in Inouye (1938). Not mentioned.

12. *Cinara (Cinara) sorini* Inouye, 1970

Types. 1 slide with 1 apt., Mt. Kongo, Osaka, Japan, 4. IX. 1963, ex *Pinus thunbergii*, M. Sorin leg, labeled as “*Cinara sorini* Inouye” and “cotype No. 1101”. 1 slide with 2 apt., Mt. Makio, near Kawachinagano, Osaka, Japan, 29. IX. 1963, ex *Pinus*, M. Sorin leg, labeled as “*Cinara sorini* Inouye” and “cotype No. 1102–1103”.

Data in the original description. Three apterous and two alate viviparous females (cotypes), collected by Dr. M. Sorin at Mt. Kongo, Ōsaka and Mt. Makio, near Kawachinagano, Ōsaka, 4–29/IX, 1963, ex *Pinus thunbergii*.

Type depository mentioned in the original description. The Ōji Institute for Forest Tree Improvement.

Comments. There are two slides labeled as “*Cinara sorini* Inouye” and “cotype”, and numbered as “No. 1101” or “No. 1102–1103”. Their collection labels almost agree with the data in the original description. Furthermore, “No. 1101”–“No. 1103” are shown as reference numbers in the table for apterous viviparous females in the original description (Inouye, 1970: P. 70). The three apterous viviparous females on the slides are regarded as a part of the syntypes of *C. sorini*.

13. *Cinara (Cinara) watanabei* Inouye, 1970

Types. All specimens were collected at Yamabe, Hokkaido, Japan unless otherwise stated. All slides are labeled as “*Cinara watanabei* Inouye”. 1 slide with 2 apt., 29. VI. 1966, ex *Pinus koraiensis*, M. Inouye leg, labeled as “Type No. 1001–2”. 1 slide with 1 apt. (also containing 1 non-type apt.), 10. VII. 1966, ex *Pinus koraiensis*, M. Inouye leg, labeled as “Type No. 1003”. 1 slide with 1 al. (also containing 2 ny.), 30. VI. 1960, ex *Pinus strobi*, Watanabe leg, labeled as “No. 1004 Type”. 1 slide with 1 al. (also containing 1 ny.), 30. VI. 1960, ex *Pinus strobi*, Watanabe leg, labeled as “type No. 1005”. 1 slide with 1 al. (also containing 2 ny.), Sapporo, Hokkaido, Japan, 7. VII. 1937,

ex *Pinus koraiensis*, Kôno leg, labeled as “type No. 1006” and “T”. 1 slide with 1 ov. (also containing 1 non-type ov.), 7. XI. 1960, ex *Pinus strobi*, Nishiguchi leg, labeled as “No. 1007 type.” 1 slide with 1 ov. (also containing 2 non-type ov.), 7. XI. 1960, ex *Pinus strobi*, Nishiguchi leg, labeled as “No. 1008 type”. 1 slide with 1 ov. (also containing 1 non-type ov. and 1 alm.), 7. XI. 1960, ex *Pinus strobi*, Nishiguchi leg, labeled as “No. 1009 type”. 1 slide with 1 alm. (also containing 2 ov.), 7. XI. 1960, ex *Pinus strobi*, Nishiguchi leg, labeled as “No. 1010 type”. 1 slide with 1 alm. (also containing 1 non-type alm. and 1 ov.), 7. XI. 1960, ex *Pinus strobi*, Nishiguchi leg, labeled as “No. 1011 type”.

Data in the original description. Yamabe, three apterous females (cotypes), 29. VI–10. VII, 1966, ex *Pinus koraiensis*, M. Inouye leg. Yamabe, two alate viviparous females (cotypes), 30. VI, 1960, ex *Pinus strobus*, C. Watabe leg. Sapporo, one alate viviparous female (cotype), 7. VII, 1937, ex *Pinus koraiensis*, H. Kôno leg. Yamabe, three oviparous females and two alate males, (paratype), 7. XI, 1960, ex *Pinus strobus*, C. Nishiguchi leg.

Type depository mentioned in the original description. The Ôji Institute for Forest Tree Improvement.

Comments. Inouye (1970) fixed “cotypes” and “paratypes” for *Cinara watanabei*. It is proper that both “cotypes” and “paratypes” are regarded as the syntypes of this species.

There are ten slides labeled as “*Cinara watanabei*” and “type”, and numbered as “1001”–“1011”. Their collection labels almost agree with the data for “cotypes” and “paratypes” in the original description. “No. 1001”–“No. 1006” and “No. 1010”–“No. 1011” are shown as reference numbers in the table of the measurements of apterous and alate viviparous females, and alate males in the original description (Inouye, 1970: P. 74–77). Although “No. 1007”–“No. 1009” are not found in any tables in the original description, these numbers were supposed to be used in the table for oviparous females (Inouye, 1970: P. 76) because this table has no reference numbers.

In the table for the measurements, “No. 1001”–“No. 1003” were used for apterous viviparous females, “No. 1004”–“No. 1006” for alate viviparous females, “No. 1007”–“No. 1009” for oviparous females, and “No. 1010”–“No. 1011” for alate males. Judging from the reference numbers on the slides, it is possible to recognize syntypes to the slides “No. 1001”, “No. 1002”, “No. 1004”–“No. 1006”, and “No. 1010”. Other syntypes, however, cannot be specified.

14. *Eulachnus pumilae* Inouye, 1939

Types. 3 slides with 5 apt. (also containing 2 ny.), Kawayu, Hokkaido, Japan, 11. VII. 1938, on leaf of *Pinus pumila*, M. Inouye leg, labeled as “*Eulachnus pumilae* Inouye” and “T”.

Data in the original description. Wingless viviparous female (*Apterous virgogenia*): Many examples collected on 11 July, 1938, by the writer at Kawayu. Winged viviparous female (*Alate virgogenia*): Many examples collected by the writer on 20 July, 1938 at Kawayu. Host–*Pinus pumila* Regel.

Type depository mentioned in the original description. The Entomological Institute of the Hokkaido Imperial University and the Hokkaido Forestry Experimental Station.

Comments. There are many slides labeled as “*Eulachnus pumilae* Inouye” and “T”. Of these slides, three with five apterous viviparous females bear collection labels agreeing with the data in the original description. This species was described on the basis

of many apterous and alate viviparous females. The five apterous viviparous females on the slides are referable to a part of the syntypes of *E. pumilae*.

There are two slides with seven nymphs labeled as “*Eulachnus pumilae* Inouye” and “T”. Their collection labels agree with the data in the original description. However, it is impossible to recognize these specimens as syntypes of the species because these seven nymphs were not mentioned in the original description.

15. *Mansakia betulina makabae* Inouye, 1963 [= *Hamamelistes miyabei* (Matsumura, 1917)]

Types. Not found.

Data in the original description. Types: afforestation area of *Betula maximowicziana*, Mitsui forests, Mukawa-tyô, Iburi-gun, 10/VIII 1963 (alate and apterous viviparous females, and aestivalis junglarvae), and 26/VIII 1963 (hiemalis junglarve), collected by M. Inouye. Paratypes: alate and apterous viviparous females, Kamaya, Kikonai-tyô, Kamiiso-gun, 2/VIII 1963, from galls on *Betula maximowicziana* (written in Japanese).

Type depository mentioned in the original description. The Ôji Institute for Forest Tree Improvement (written in Japanese).

Comments. Inouye (1963) fixed “Types” and “Paratypes” for *Mansakia betulina makabae*. It is proper that both “Types” and “Paratypes” are recognized as the syntypes of this species.

There are three slides with six apterous and three alate viviparous females labeled as “*Mansakia betulina makabae* Inouye” and “T”. Their collection labels, however, disagree with the data for “Types” nor “Paratypes” in the original description. It is impossible to recognize these specimens as a part of the syntypes of this species.

There are also seven slides with eleven apterous and three alate viviparous females, and one fore wing whose collection labels agree with the data for “Paratypes”. However, it may be difficult to recognize these specimens as syntypes of the species because no type label is attached on the slides.

16. *Neomyzaphis piceana* Inouye, 1939 [= *Elatovium momii* (Shinji, 1922)]

Types. All specimens were collected at Nopporo, Hokkaido, Japan, from *Picea jezoensis*, on 12. VII. 1938, by M. Inouye. All slides are labeled as “*Liosomaphis piceana* (Inouye)” unless otherwise stated. 1 slide with 2 apt., labeled as “*Elatobium piceana* (Inouye)” and “Type 1”. 1 slide with 2 apt. (also containing 3 ny.), labeled as “Type 3”. 1 slide with 1 apt. (also containing 3 ny.), labeled as “Type 5”. 1 slide with 2 apt., labeled as “Type 6, 7”. 1 slide with 3 apt. (also containing 1 ny.), labeled as “Type 8”. 1 slide with 2 apt., labeled as “Type 9”. 1 slide with 1 apt. (also containing 1 ny.), labeled as “*Elatobium piceana* (Inouye)” and “Type 10”.

Data in the original description. Ten examples collected on 12 July, 1938, by the writer at Nopporo. Host—*Picea jezoensis* Carr.

Type depository mentioned in the original description. The Entomological Institute of the Hokkaido Imperial University and the Hokkaido Forestry Experimental Station.

Comments. Inouye (1941) regarded *Neomyzaphis piceana* as *Liosomaphis piceana*, and Takahashi (1960) synonymized *N. piceana* with *Elatobium momii* Shinji, 1922. There are seven slides with thirteen apterous viviparous females labeled as “*Liosomaphis piceana* (Inouye)” or “*Elatobium piceana* (Inouye)”, and “Type”. Their collection labels

agree with the data in the original description. This species was described on the basis of ten apterous viviparous females. A part of these thirteen females are referable to the syntypes of *N. piceana* although it is impossible to specify the ten syntypes among the thirteen specimens.

There are three slides with nine apterous viviparous females whose collection labels agreeing with the data in the original description. However, these slides do not bear any type labels. It may be difficult to recognize these specimens as syntypes of the species.

17. *Stomaphis ulmicola* Inouye, 1938

Types. All specimens were collected at Nopporo, Hokkaido, Japan, from *Ulmus propinqua*. All slides are labeled as “cotype”. 2 slides with 3 apt., 12. VII. 1936. 2 slides with 5 apt. (also containing 2 ny.), 17. VIII. 1937. 2 slides with 3 apt. (also containing 2 ny.), 11. X. 1937.

Data in the original description. Wingless viviparous female (*Apterous virgogenia*), No. 1–No. 3, 12. VII, 1936, No. 4–No. 7, 17. VIII, 1937, and No. 8–No. 10, 11. X, 1937. Type–locality–Hokkaido (Nopporo). Host–*Ulmus propinqua* Koidz.

Type depository mentioned in the original description. The Entomological Institute of the Hokkaido Imperial University and the Hokkaido Forestry Experimental Station.

Comments. There are six slides with eleven apterous viviparous females and labeled as “*Stomaphis ulmicola* Inouye” and “cotype”. Their collection labels agree with the data in the original description. Inouye (1938) did not indicate the number of type specimens, although ten apterous viviparous females were tabulated for measurements (Inouye, 1938: P. 75). All of the eleven females are probably syntypes of the species.

18. *Tuberolachnus todocolus* Inouye, 1936 [=*Cinara (Cinara) todocola* (Inouye)]

Types. All specimens were collected at Nopporo, Hokkaido, Japan, from *Abies sachalinensis*. All slides are labeled as “*Cinara (Cinaropsis) todocola* Inouye” and “T” unless otherwise stated. 2 slide with 3 apt., 10. VII. 1935. 3 slides with 7 apt., 11. VII. 1935. 4 slides with 4 al., 12. VII. 1935. 1 slide with 1 apt., 17. VII. 1935. 1 slide with 2 apt., 28. VII. 1935. 2 slides with 4 apt., 30. VII. 1935 [1 slide with 2 apt. labeled as “P. T” instead of “T”]. 2 slides with 4 apt., 10. VIII. 1935 [1 slide with 3 apt. labeled as “P. T” instead of “T”]. 1 slide with 2 al., 12. VIII. 1935.

Data in the original description. Many wingless and winged viviparous females collected at Nopporo, Hokkaido, Japan, in July and August, 1935. Host–*Abies mayriana* Miyabe et Kudo. *Abies sachalinensis* Fr. Schm.

Type depository mentioned in the original description. Not mentioned.

Comments. Inouye (1970) regarded *Tuberolachnus todocolus* as *Cinara (Cinaropsis) todocola*. There are many slides labeled as “*Cinara (Cinaropsis) todocola*”, and “T” or “P. T”. Among them, sixteen slides bear collection labels agreeing with the data in the original description. The species was described on the basis of many apterous and alate viviparous females. The twenty-one apterous and six alate viviparous females on the slides are probably syntypes of *T. todocolus*.

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(*not directly seen)