SPIS RZECZY — CONTENTS

Nr 5

Z. Sternicka. Scarabaeoidea (Coleoptera) of the Democratic People's Republic of Korea — Scarabaeoidea (Coleoptera) Koreńskiej Republiki Ludowo-Demokratycznej 191

Nr 6

Z. Szyndlar. Herpetofauna Bieszczadów Zachodnich — The Herpetofauna of the Western Bieszczady Mts 299

Nr 7

J. Koteja. Revision of the Genus Exaeretopus Newstead (Homoptera, Coccidae) — Rewizja rodzaju Exaeretopus Newstead (Homoptera, Coccidae) 337
ACTA ZOOLOGICA CRACOVIENSIA

XXIV: 5–7
RADA REDAKCYJNA — EDITORIAL BOARD

Przewodniczący — President: prof. dr R. J. Wojtusiak
Zast. przewodniczącego — Vice-President: doc. dr W. Micherdziński
Sekretarz — Secretary: dr hab. L. Sych


REDAKCJA — EDITORIAL STAFF

Redaktor naczelnny — Editor-in-chief: prof. dr K. Kowalski
Zast. redaktora naczelnego — Subeditor: doc. dr Z. Bocheński,
Sekretarz — Secretary: dr hab. L. Sych

Adres redakcji: Zakład Zoologii Systematycznej i Doświadczalnej Polskiej Akademii Nauk,
ul. Sławkowska 17, 31-016 Kraków
Address of the Editor: Institute of Systematic and Experimental Zoology, Polish Academy of Sciences, Sławkowska 17, 31-016 Kraków, Poland

Redaktor PWN
Maria Kaniowa

© Copyright by Państwowe Wydawnictwo Naukowe, Warszawa—Kraków 1980

ISBN 83-01-02098-9
ISSN 0065-1710
Zdzisława Stebnicka

**Scarabaeoidea (Coleoptera) of the Democratic People's Republic of Korea**

[With 232 text-figs]

*Scarabaeoidea (Coleoptera)* Koreańskiej Republiki Ludowo-Demokratycznej

**Abstract:** The author presents a monographic elaboration of the *Scarabaeoidea* of the Democratic People's Republic of Korea. The systematic part of the paper contains a review of 138 species, including redescriptions of five species and description of one new to science. Extensive distributional data and locality records are presented as well as feeding habits and behaviour, where known. Results of a detailed zoogeographical analysis concerning the fauna of *Scarabaeoidea* of the whole Far East, complete the elaboration.

**INTRODUCTION**

This paper presents a first systematic and faunistic revision of *Scarabaeoidea* of the Democratic People's Republic of Korea (D.P.R.K.). It refers to the bibliographical data which concern the whole Korean Peninsula. The work has been accomplished basing on the materials collected by the participants of six zoological expeditions of Polish Academy of Sciences, who carried out investigations in the Democratic People's Republic of Korea in the years 1959—1974. A great number of specimens has been collected herself by the author of the present study during the 6th "Cracovian" expedition in 1974. Some specimens from Hungarian Museum of Natural History in Budapest and Zoological Institute of the Academy of Sciences of USSR in Leningrad, have also been examined. The systematic review of species with illustrations of their morphological features and redescriptions of the little known or rare species are contained in the systematic part of this study. The discussion of the particular species contains the references from systematic literature, significant titles from faunistic literature and bionomical and distributional data. Also author's own comments and the localities of investigated individuals have been given. Of the total number of 224 species known from the Korean Peninsula, 138 are discussed in the present study. This number contains 29 species which are new to the Korean fauna and one new to science. All the species are listed in Tab. II which also indicates
their general distribution. The localities in Korea mentioned in the text (including the localities taken from the cited literature) are numbered and marked on the schematic map of the Korean Peninsula (Fig. 3) according to index. The geographic names, which are given in the literature in the Japanese language, have been transcribed with the international transliteration applying Latin alphabet (Mroczkowski, 1972). Spelling of the majority of the names in the Latin transliteration has been included in the index. The identification of North-Chinese and Manchurian localities that are indicated in the Japanese literature was not possible due to lack of the concerning cartographic sources. Following main works have been used for transliteration and identification of localities: The Columbia Lippincott Gazetteer of the World, Columbia, 1952; Bolšoj Korejsko-Russkij Slovar, Moscow, 1976; The World Atlas, Moscow, 1967; Atlas of the World, Warszawa, 1962.

Names of the institutions, which the examined specimens were from, are indicated in the text by the abbreviations listed below:

HNNH — Hungarian Museum of Natural History, Budapest
ISEZ — Institute of Systematic and Experimental Zoology of the Polish Academy of Sciences, Kraków
ZIL — Zoological Institute of Academy of Sciences of USSR, Leningrad
ZIW — Zoological Institute of the Polish Academy of Sciences, Warszawa.

The author wishes to express her cordial thanks to the following persons for their valuable help and cooperation: To Dr. hab. M. Mroczkowski from the Zoological Institute of the Polish Academy of Sciences in Warszawa for lending use of the materials collected during previous expeditions and for introduction to his own observations; to Dr. S. Endrődi from Budapest and Dr. O. L. Kryzhanovskij from Leningrad for their kind making available the comparative materials; to Mr. ČO†-DE-VÓN and Mr. KIM-Hjong-Sök, the functionaries of the Korean Academy of Sciences, and also to Mr. DŽU-DONG-JUL, Director of the Zoological Institute for their help in the organization of the 6th expedition and contribution in the course of it; to Prof. J. PAWŁOWSKI and Dr. hab. A. SZEPTYCKI, the participants of expedition for their interest and involvement in collecting Scarabaeoidea.

HISTORICAL REMARKS ON THE INVESTIGATIONS

Examination of Scarabaeoidea of the Korean Peninsula was undertaken already in the 19th century, however, in the European and Japanese systematic-faunistic literature only short notes concerning single species have appeared. The distributional data were usually limited to a single word „Korea”; in some cases totally disfigured names of provinces or larger towns were exclusively available. Only a few materials were collected coincidentally (mainly by the investigators who were interested in other animal groups) and therefore they are not accompanied by informations concerning the environment of the col-
lected specimens. Up to now, a Japanese coleopterologist Jozo Murayama was the only author who had published in a separate work the results of his many years' investigations on Scarabaeidae pleurosticti of Manchuria and Korea. He spent some time at the state agencies in these countries, which were Japanese provinces then. For 24 years he has collected the material and subsequently has published small reports (Murayama, 1931; 1934; 1937; 1938; 1941). Simultaneously he was preparing the edition of a monography. The story of this book is very dramatic: in the war the manuscript and the notes have been buried. The reconstruction of them took some years and finally the book was published in Japan at „Aid of the Department of Education” in 1954. Unfortunately, before his death J. Murayama managed to publish only the first volume of the monography, which covers only part of the collected materials, namely 74 species of Melolonthinae. The rest of the Murayama's collection is probably in China now. His book has been published in Japanese language; it contains descriptions of new species, redescriptions of the known ones, drawings of the male copulatory apparatus and color pictures of beetles on which the main morphologic features are emphasized. A list of references to the literature and detailed localities of the species in Manchuria and Korea, also in the southern part of the Korean Peninsula are given. This work is of an extraordinary relevance; it helps to solve many taxonomic problems, since it deals with many local species, which in the previous papers were discussed very superficially.

In the nineteen fifties the Polish Academy of Sciences has undertaken very intensive investigations on the fauna of the northern part of the Peninsula. The arrangement concerning scientific collaboration has been established between us and the Academy of Sciences of the Democratic People's Republic of Korea. Also the Hungarian Museum of Natural History joined the investigations and organized two zoological expeditions in the years 1970—1971. The participants of six Polish zoological expeditions in the years 1959, 1965, 1966, 1970, 1971, 1974 gathered a huge collection of invertebrates, which resulted in numerous papers by Polish and European specialists of various systematic groups. As it has been mentioned at the beginning, the present paper, which is a partial review of the investigations done up to the present, was accomplished thanks to a very abundant collection gathered by the Polish expeditions.

ZOO GEOGRAPHY

1. Methodical part

The analysis of the Korean fauna of Scarabaeoidea and its connections with the faunas of the contiguous territories is the subject of the present discuss. It has been done based on the present knowledge of these faunas. The tables
Fig. 1. Diagram of affinities between the faunas of compared territories, A — Taiwan; B — Ryu-kyu, Izu Archipelagos; C — Honshu, Shikoku, Kyushu; D — Hokkaido, Sachalin, Kurile Islands; E — Korean Peninsula; F — Manchuria, Primurie; G — Mongolia; H — North China; I — Central China; K — South China; L — Indochina. Numbers mark the percentile affinity factors.
given include 224 species of the Korean Peninsula recorded in the previous literature as well as new species, which are discussed in the systematic part of the present paper. The tables also contain the data concerning general distribution of particular species; some geographic territories bordered on the schematic map (Fig. 2) and marked with letters were considered. The distribution of the species which occur in the distinguished and compared regions of the Eastern Asia, was obtained from the data contained in the catalogues, monographies and numerous faunistic papers. The affinity criterium has been applied to acquire an objective idea of the similarities among the faunas in the distinguished regions. The percentile version of the Sørensen’s formula (1948) was applied to the statistical analysis: \( S = 100 \times \frac{2c}{a+b} \), in which \( S \) = affinity factor, \( a, b \) = number of species in the compared geographic territories, \( c \) = number of common species. The faunistic affinity factors obtained are illustrated in the diagram (Fig. 1), which has been plotted according to Cze- kanowski (1930). This diagram confirms in general that the classification of the compared regions has been done properly. However, it is not ideal, since as a principle the greatest similarities should be located as close to the diagonal line of the diagram as possible. Nevertheless, fairly objective picture of the differentiation of Scarabaeoidean fauna of this part of Far East was acquired (Fig. 2). The obtained results indicate the importance of the ecological, environmental and historical factors, which have an effect on the systematic group under discussion; they are considered further on.

2. Zoogeographic analysis

The superfamily Scarabaeoidea is not uniform as to the role which its elements play in the environment. What is more, both its systematics and chorology are not totally understood. This especially concerns the group of subfamilies Scarabaeidae laparosticti which, in contradistinction to the group of \( S. \) pleurosticti contains species that are not linked to the host plants, have different ecologic preferences and indicate adaptive mechanisms much more difficult to detect. For the above reasons common discussion of both groups could affect the value of the obtained results, which determine not only the affinity of faunas among particular territories, but also indirectly shows the similarity of the landscapes and environments which the discussed faunas are linked to.

In order to illustrate the comparisons of Korean fauna with the faunas of the distinguished territories, the affinity factors for each group separately as well as for both groups together have been calculated and given in the table below:
<table>
<thead>
<tr>
<th>Adjacent territories</th>
<th>Affinity factors (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>S. laparost.</td>
</tr>
<tr>
<td>A. Taiwan</td>
<td>17</td>
</tr>
<tr>
<td>B. Ryu-kyu, Izu Isl.</td>
<td>31</td>
</tr>
<tr>
<td>C. Honshu, Shikoku, Kyushu</td>
<td>46</td>
</tr>
<tr>
<td>D. Hokkaido, Sachalin, Kurile Isl.</td>
<td>44</td>
</tr>
<tr>
<td>F. Manchuria, Priamurie</td>
<td>46</td>
</tr>
<tr>
<td>G. Mongolia</td>
<td>27</td>
</tr>
<tr>
<td>H. North China</td>
<td>42</td>
</tr>
<tr>
<td>I. Central China</td>
<td>19</td>
</tr>
<tr>
<td>K. South China</td>
<td>11</td>
</tr>
<tr>
<td>L. Indochina</td>
<td>7</td>
</tr>
</tbody>
</table>

The above specification indicates that the affinity factor in the majority of regions compared to Korea is higher in the group of *S. laparosticti* than in the group of *S. pleurosticti*; these differences due to the following reasons. The group of *S. pleurosticti* is in general better known faunistically. Therefore the number of species given in this group is relatively high. The majority of them are, however, local species whose area of distribution is sometimes very narrow. Consequently, the composition of species is different in the compared regions and the number of common species is strikingly low in relation to the total fauna. There is an opposite situation in *S. laparosticti*; the number of endemic species is considerably lower, while numerous given species have very wide distribution. Therefore the number of common elements is higher and the percentage of the faunistic affinity is consequently increased. To some extent, the indicated differences also determine the environmental factors which affect each of the groups, however, detailed discussion of this problem seems untimely. Further faunistic investigations, in particular those carried out in the little known regions as, e.g. China, shall probably change the numerical relationships between both groups. It seems, however, that the general idea of the affinities that join all the Scarabaeoidea in the compared regions shall remain unchanged. The numerical data concerning the whole superfamily are given in the diagram (Fig. 1). They illustrate some regularities in the geographic distribution of Scarabaeoidea in quite a convincing way. The distribution of this superfamily is fairly similar to the distribution of other groups of entomofauna in this part of Palaearetic and Oriental Realm.

The analysis of the diagram (Fig. 1) leads to the following conclusions for the particular regions:

A. Fauna of Taiwan, which is considered by some authors (Kostrowicki, 1965) as a separate region of the Oriental Realm, is characterized by relatively low affinity factors (maximum 23%). This fact indicates a great independence of this fauna, which contains numerous endemic species. Its closest
connections are with the fauna of Central China (23%), South China (20%),
the fauna of contiguous islands of the archipelago Ryu-kyu (18%) and Korean
Peninsula (17%).

B. Relatively poor fauna of the archipelagos Ryu-kyu and Izu contains
few endemic species, some species of wider insular and continental distribu-
tion and the subspecies, that were distinguished by Japanese authors based
on the variability of populations inhabiting particular islands. It corresponds
to the fauna of the islands of Central Japan (35%), Korean Peninsula (26%),
northern insular region that contains Hokkaido (23%) and to the fauna of
Taiwan (18%). Taking into account the distribution of Scarabaeoidea one
may consider the archipelago Ryu-kyu as a Palaeartic-Oriental transitional
zone of the insular sector. This zone is located more or less between the islands
Yakushima and Amami-Öshima ("WATASE-line", Fig. 2) and the islands Miyako
and Ishigaki in the southern part of the archipelago ("HACHISKI-line", Fig. 2).

C. The islands of the Central Japan include Honshu, Shikoku, Kyushu
and Tsushima (the latter located very close to Korean Peninsula) as well as
small neighbouring islands, among others Sado and Oki. Fauna of these islands
is most closely related to the faunas of Hokkaido — Sachalin — Kurile Islands
(50%), Korean Peninsula (39%), Ryu-kyu Archipelago (23%) and Manchur-
ian-Priamurian fauna (22%). Less close similarities are those to the fauna of
North and Central China (18% each). Scarabaeoidean fauna is fairly uniform
there. Only in the northern part of Honshu, which extends beyond the sub-
tropical zone, does a slightly different fauna occur; it contains northern ele-
ments. According to phytogeographers (GOOD, 1974) and zoogeographers (KU-
RENOV, 1961), the islands of the Central Japan and Korean Peninsula con-
stitute Korean-Japanese phyto- and zoogeographic region; both flora and fauna
of this region is genetically and historically closest to forest formations and to
faunas of Manchurian-Priamurian and North-Chinese territories.

D. Fauna of the region that includes Hokkaido, Kurile Islands and Sachalin
is closest to the faunas of Central Japan (50%), Korean Peninsula (34%),
Manchuria-Priamurie (27%), and Ryu-kyu Islands (23%). It is also closely
related to the fauna of Northern China (20%). The island of Hokkaido, which
is separated from the northern promontory of Honshu by the narrow, geo-
logically young straits of Tsugaru ("BLAKISTON-line", Fig. 2), contains high per-
cent of Central-Japanese species. It also contains boreal elements and its faunis-
tic composition corresponds to those of Manchurian-Priamurian and Korean
territories. There is a very poor fauna in Sachalin and Kurile Islands. It is
mainly composed of boreal-northern and Manchurian-Priamurian elements.

The numeral data discussed above indicate that the fauna of Scarabaeoidea
in the regions of the insular sector is characterized by the closest reciprocal
relations. Taiwan, the fauna of which is more closely linked to the continental
one of Central and South China, is an exception.

E. Korean Peninsula is centrally located in the discussed regions. Thus,
their faunas largely contribute to the composition of the Korean fauna; this
is reflected in fairly high values of the indicators. The ordered affinities are as follows: Manchuria-Priamurie (53%), North China (41%), Central Japan (39%), Hokkaido-Sachalin-Kurile Islands (34%), Ryu-kyu, Izu (26%), Central China (24%), Mongolia (22%). These are followed by the faunas of Taiwan (17%), South China (10%) and Indochina (4%).

There are five main types of fauna found in Korean Peninsula:

a) Eurosiberian and Palaeartic species, which are nearly uninterruptedly distributed on the whole territory of Siberia and Europe;
b) less and less common, vanishing in the direction of West, species that inhabit the forests and open areas in Manchuria and South-East Siberia;
c) East-Asiatic species widely distributed in Manchuria and South-East Siberia, Japan and China; they form the most numerous group;
d) species that constitute the local fauna of Korean Peninsula;
e) Oriental species, which are widely distributed in South and Central China, Taiwan and southern Japanese Islands, as well as in Indochinese Peninsula and Philippines.

F. Manchuria, South-Eastern Siberia (Amur-Ussuri Lands and Primorskiy Krai = „Priamurie”). Most complex is the fauna of mixed and leafy forests, described by zoogeographers as „Manchurian-type”. It inhabits a separate zoogeographic subregion, whose borders determined by WALLACE (1876) are perpetually changed. Botanists (KOMAROV, 1949; ALECHIN, 1951) have largely contributed to the knowledge of the term „Manchurian elements”. They determined the area of Manchurian flora beyond Manchuria down to Amur—Ussuri Lands and North Korea. In the recent years due to the investigation of the distributional areas of various systematic groups of East-Asiatic entomo-fauna it was discovered, that its main part was concentrated in this very region. It is closely linked to the floristic landscape and is characterized by the occurrence of both endemic species and endemic genera. The fauna of Scarabaeoidea, in particular of the group of S. pleurosticti, is extremely rich in this region. In the north it borders upon a very poor tundra-taiga (Ochotsk—Kamchatka) fauna, in the west upon Mongolian-Daurian steppe fauna, in the south and south-east upon the North-Chinese and Korean-Japanese faunas connected to plant formations in which the evergreen plants are contained. The highest affinity factors indicate the connections of this fauna with those of Korea (53%), North China (45%), Mongolia (28%), Hokkaido-Sachalin-Kurile Islands (27%) and Central Japan (22%). Its connections with the fauna of Central China are insignificant (13%).

G. Mongolia is one of the regions that are better known faunistically. By zoogeographers (KOSTROWICKI, 1965) it is included into the Central-Asiatic Province, which contains the faunas of the forests and wooded-steppe of the Central Asiatic mountains and also the fauna of dry steppes, half-deserts and deserts of the central part of Palaeartic. Relatively low values of the factors indicate that the Mongolian fauna is separated zoogeographically from the
other discussed regions. It is closest to the faunas of Manchuria-Priamurie (28%), North China (25%) and Korea (22%).

H. North-Chinese territory reaches Huanghe in the south and more or less Sinkiang-region in the west. This region is very little known; based on the present knowledge of the fauna of *Scarabaeoidea*, the highest affinity factors indicate its connections with those of Manchuria-Priamurie (45%), Korean Peninsula (41%), Mongolia (25%) and Central China (24%). Less close similarities are those to the fauna of Hokkaido-Sachalin-Kurile Islands (20%) and Central Japan (18%).

I. Central China extends between Huanghe and Yangzi (Changjiang), in the west it reaches Sichuan excluding Tibet. Kansu, Sichuan Valley and the eastern part which borders upon the Yellow Sea are partially better investigated. Considerable separateness is indicated by the fauna of Sichuan Valley and surrounding mountains, however, precise comparison are not able since the composition of species in Central China is poorly known and exact indicators are lacking. The closest faunas are those of South China (33%), North China and Korean Peninsula (24% each) and of Taiwan (23%). Connections with the fauna of Central Japan are also marked (18%), while the affinity to the Palaearctic-Oriental fauna of Ryu-kyu is very weak (10%). Based on the present knowledge of distribution, the eastern part of the discussed region, which is located between the rivers Huanghe, Yangzi and Weihe, should be recognized as Palaearctic-Oriental transitional zone.

K. The South-Chinese territory, which belongs to Oriental Realm, is situated between the river-basin of Yangzi and the borders of Indochinese Peninsula (Birma, Vietnam); it also includes the island Haiman. This area is little known faunistically. The majority of reports concern the provinces of Yunnan and Fukien as well as Haiman Island, therefore the indicators are not fully realiable. The sequence of affinities with the neighbouring faunas is as follows: Central China (33%), Indochina (24%), Taiwan (20%) and Korean Peninsula (10%). The rest of the factors do not exceed 8% (Ryu-kyu).

L. The Indochinese territory encircled on the map (Fig. 2) has been treated as the example of the faunistic separateness of the typically Oriental zone. It indicates very weak connections with the palaearctic part of Eastern Asia (the indicators do not exceed 4%). Unlike China, this area is better known. Thus it seems that the affinity factor of the closest fauna of South China has a lowered value (24%). More loose connections of this fauna have been found with the faunas of Taiwan (14%) and Central China (11%).

The results of the investigations done up to the present indicate that the fauna of *Scarabaeoidea* in Palaearctic and Palaearctic-Oriental part of Eastern Asia is very complex. It consist of groups that are historically connected to the evolution of the landscape. Depending on the geological basis and on the isolation from the neighbouring forms they indicate autochthony and endemicy of various degrees. The fauna of Korea is one of such complexes; it
has been formed for a very long time. It is particularly interesting because of the geomorphologic features of the territory which is linked to. Unsatisfactory knowledge of the fauna in the southern part of Korean Peninsula, mainly of

Fig. 2. Division of the studied area into working territories with diagram of affinities of the Korean fauna
its most southern coastal regions, makes the formulation of conclusions extremely difficult. A detailed examination of the whole Korea with contiguous islands would certainly result in many new zoogeographic observations. This is particularly important because the Korean fauna undergoes further transformation, connected among others to human activity.

The reconstruction of the history of the present fauna of the Far East is based on the palaeogeography and history of flora, which were the subject of several studies (Alechin, 1951; Kostrowicki, 1969; Kristofović, 1932, 1958; Kurenkov, 1952, 1960, 1961, 1974; Solovev, 1961). The performance of the history of this fauna is very difficult, since various faunistic groups as, e.g., faunas of leafy forests of the European type, of the coniferous forests, faunas of the open areas and evergreen forests, were formed as soon as in the Tertiary and shifted multidirectionally due to succeeding changes of the landscape and climate.

The marine regression caused by the intense tectonic movements, lasted during almost the entire Palaeogene. The Japanese Sea, which in the Palaeocene and Eocene was only a shallow gulf, completely disappeared in Oligocene, thus nearly whole Japan became connected with the continent. This region was under influence of temperate-warm and wet climate. Hence it was overgrown with the forest of Greenland type (domination of deciduous leafy trees and numerous conifers), only in the south were there mixed forests of the Greenland-subtropical type (with participation of evergreen trees and bushes). The orographic situation at that time was similar to this at present: three landscape types dominated — mountainous (Sichote-Alin, North Korea and Japan), uplands (West China) and lowlands (East China, Amur, Ussuri Land). The faunas of the lowland plains and borders of the fresh-water lakes that expanded out of drying Mongolia were developing parallelly to the development of the forest fauna. Higher in the mountains, formation of an ancient nucleus of Alpine fauna probably took place. Subsequently, strong tectonic movements and volcanic activity considerably affected the configuration of the ground: the masses like Chingan in Manchuria and numerous mountain chains in Korea were formed. The denuded sediments from these mountains covered the whole Yellow Sea, which was land at that time. Due to the processes of Alpine orogenesis and formation of steppes and deserts of Central Asia, on the turn of Palaeogene and Neogene the border of the subtropical flora and fauna shifted to the north. The vegetation of continental China and Mongolia underwent gradual xerophilisation.

Xerophilous brushwoods appeared in Manchuria and Korea as well; they bore down the plants demanding more humidity. Mongolia became covered with xerophilous vegetation and its humidity-demanding fauna mortified with the recession of lakes and lowland plains, which were similar to the former ones near Lower Amur. By drawing off into east this fauna probably sheltered partially in slightly similar environments on the plains of lake Chanka and Amur.
In a short period in Miocene, Sachalin and Japan formed an archipelago of small islands. They were surrounded by a shallow sea, which at the turn of Miocene and Pliocene withdrew behind the line Japan-Kurile Islands-Kamchatka and consequently the islands totally joined the continent again. Probably due to this reason the climate of the islands, as well as of the continental coastal zones that were affected periodically by the pressure of the ocean, was rather cool and wet, while on the rest of the region, temperate-subtropical climate was dominated. The xerophilisation of flora attained the islands only partially. It did not result in impetuous and acute ecological differentiations; in the most favorable refuges the fauna indicated a tendency to conserve the ancient forms. On the contrary, the fauna of the western part of the region remained in less favorable conditions: steppe-desert fauna that originated from Central Asia, assimilated the Tertiary forest fauna of North China. This strongly affected the ecological differentiation of biocenoses in Manchuria and Korea.

The period of older glaciation (Riss) was characterized by cooling of the climate. This was connected to the development of the mountain glaciers, which were strongest in the North-East Siberia and occurred locally in the mountains of Hokkaido and Honshu, Sichote-Alin, Chingan and North Korea. In this period, the wooded-steppe type vegetation, including tundra-growing species, dominated in the north and steppe flora in the south and the west. Forest formations were only locally preserved in the south and in the mountains, among others in Korea. The early glaciation only caused an indirect change in natural conditions of the Far East, through general cooling of the climate and shifting of some groups of thermophilous species to the south. Through dislocation along the present Korean Peninsula these faunas could contact those of Japan and China again.

In the interglacial warm period the seas of Far East gradually appeared; this led to a renewed humidification of the continental climate. Forests dominated in the east and south again; they were slightly less abundant than in the pre-glacial period. On the other hand in the western part of region, large areas were covered with wooded-steppe, characterized by more abundant vegetation. Manchurian, Priamurian and Korean faunas maintained the connection with the Japanese fauna through a narrow stripe of land, which still occurred instead of the present Korean Straits. This concerned Sachalin as well, which was also connected with the continent then. Thus, the close faunal connections established a long time ago were still sustained.

The last glaciation (Würm) affected more distinctly the natural conditions of Far East and therefore caused considerable disturbances in the biocenoses. Forest-tundra dominated in the north, while in the south — open steppes of the Mongolian type. Forest vegetation, mostly coniferous, occurred locally in the mountains of Sichote-Alin, in South Chingan and in Korea. Some ecologic complexes of the contemporary fauna sheltered themselves in the southern refuges, among others in the south of Primorskiy Kraj, in Korea and in the
south of Manchuria. There they formed sort of reservation; it was surrounded in the periphery by a zone of relicts that survived up to the present in the form of extremely impoverished complexes or single species adapted to the ecologic requirements of other faunas. Some elements of the thermophilous, subtropical fauna did not stand the cooling of the climate and perished. Therefore the northern border of the area of this fauna became shifted towards the south, into Central China. This was followed by the parallel succession of the fauna of tundra in the direction of the south. This was accomplished among others along the comb of Kurile Islands, which then served as a bridge to the large Japanese Islands.

Towards the close of Pleistocene, due to tectonic activity of the bottom of the sea, the Japanese Islands and Sachalin became finally separated from the continent. In the same period numerous straits and Kurile Islands were created in their present form; in the whole the Quaternary period the islands were affected by the tectonic movements and consequently their shape and surface configuration were not stable. The vegetation of the forest formations became dominant again, however, these forests were not nearly so rich as those of the early Pleistocene.

During the post-glacial warming up the faunas came back from the south accompanied by the plant formations. They established a biocenotic contact with the faunas of the northern, north-western and western refugia. The process of settlement of islands by the continental species was stopped (in the case of invertebrates was rather strongly limited) at the decline of Pleistocene. The migration pathways leading from the North-Eastern Asia through Sachalin — Hokkaido to Honshu and through Korea to southern part of Honshu were cut by the sea. Although there is no proof that the land bridge in the part of Honshu—Ryu-kyu—Taiwan did exist, the faunistic affinities of these islands support the assumption that the ways of expansion of species as, e. g., mechanical introduction due to typhoons or means of marine transport do occur.

The present period is marked by the limitation of forest grown area by man. In China forests have been almost completely felled over large areas and their habitat turned into farm land. On the huge territories contiguous to Amur there are vast meadows. In the Korean Peninsula large areas of the old forests were burned away with napalm in the war. Some enclaves of the old forests survived still locally in the Chingan mountains, Sichote-Alin and Korea. Most numerous Tertiary plant formations are maintained in Japan and Korea; they represent the refuges of the relicts of numerous faunistic groups.

The determination of which species or groups of species of Scarabaeoidea followed particular ways to the Korean Peninsula is very difficult because in the whole period of Tertiary and in main part of Quaternary, the discussed region was the scene of migrations both ways: from the depths of the continent to the present islands and backwards. In the period of Quaternary fluctuation of climate, the Korean pathway was possibly followed by the southern species, which in the warmer periods migrated into north, as well by the north-
### Table II

List of *Scarabaeoidea*-species recorded from Korean Peninsula with evidence of general distribution

| No | Species                                      | Taiwan | Kyu-kyu | Izu | Archipelagos | Honshu | Shikoku | Kyushu | Hokkaido | Sakhalin | Kurile Islands | Korea | Manchuria | Primorje | Mongolia | North China | Central China | South China | Indochina | Eurasia |
|----|---------------------------------------------|--------|---------|----|--------------|--------|---------|--------|----------|----------|----------------|-------|-----------|----------|----------|-------------|--------------|-------------|-----------|----------|--------|
| 1  | *Scarabaeus (Scarabaeus) affinis* Br.      |        |         |    |              |        |         |        |          |          |                |       |           |          |          |             |              |             |           |          |        |
| 2  | *Gymnopleurus (Gymnopleurus) mopsus* (Pall.) |        |         |    |              |        |         |        |          |          |                |       |           |          |          |             |              |             |           |          |        |
| 3  | *Gymnopleurus (Paragymnopleurus) sinuatus* (Ol.) |        |         |    |              |        |         |        |          |          |                |       |           |          |          |             |              |             |           |          |        |
| 4  | *Gymnopleurus (Paragymnopleurus) singularis* Wat. |        |         |    |              |        |         |        |          |          |                |       |           |          |          |             |              |             |           |          |        |
| 5  | *Sisyphus (Sisyphus) schaefferi* (L.)       |        |         |    |              |        |         |        |          |          |                |       |           |          |          |             |              |             |           |          |        |
| 6  | *Liabongius (Liabongius) phanaeoides* (Westw.) |        |         |    |              |        |         |        |          |          |                |       |           |          |          |             |              |             |           |          |        |
| 7  | *Copris (Copris) ochus* (Motsch.)           |        |         |    |              |        |         |        |          |          |                |       |           |          |          |             |              |             |           |          |        |
| 8  | *Copris (Copris) tripartitus* (Waterh.)    |        |         |    |              |        |         |        |          |          |                |       |           |          |          |             |              |             |           |          |        |
| 9  | *Caccobius (Caccophilus) christophi* Har.  |        |         |    |              |        |         |        |          |          |                |       |           |          |          |             |              |             |           |          |        |
| 10 | *Caccobius (Caccophilus) sibiricus* Balth. |        |         |    |              |        |         |        |          |          |                |       |           |          |          |             |              |             |           |          |        |
| 11 | *Caccobius (Caccophilus) sordidus* Har.    |        |         |    |              |        |         |        |          |          |                |       |           |          |          |             |              |             |           |          |        |
| 12 | *Caccobius (Caccophilus) brevis* Waterh.   |        |         |    |              |        |         |        |          |          |                |       |           |          |          |             |              |             |           |          |        |
| 13 | *Caccobius (Caccophilus) unicornis* (Fabr.)|        |         |    |              |        |         |        |          |          |                |       |           |          |          |             |              |             |           |          |        |
| 14 | *Onthophagus (Diagonthophagus) solicaqus* Har. |        |         |    |              |        |         |        |          |          |                |       |           |          |          |             |              |             |           |          |        |
| 15 | *Onthophagus (Diagonthophagus) hecanheus* Steb. |        |         |    |              |        |         |        |          |          |                |       |           |          |          |             |              |             |           |          |        |
| 16 | *Onthophagus (Strandius) lenzi* Har.      |        |         |    |              |        |         |        |          |          |                |       |           |          |          |             |              |             |           |          |        |
| 17 | *Onthophagus (Strandius) japonicus* Har.   |        |         |    |              |        |         |        |          |          |                |       |           |          |          |             |              |             |           |          |        |
| 18 | *Onthophagus (Phanaeomorphus) fodiens* Waterh. |        |         |    |              |        |         |        |          |          |                |       |           |          |          |             |              |             |           |          |        |
| 19 | *Onthophagus (Phanaeomorphus) ater* Waterh. |        |         |    |              |        |         |        |          |          |                |       |           |          |          |             |              |             |           |          |        |
| 20 | *Onthophagus (Gibbonthophagus) viduus* Har. |        |         |    |              |        |         |        |          |          |                |       |           |          |          |             |              |             |           |          |        |
| 21 | *Onthophagus (Gibbonthophagus) atripennis* Waterh. |        |         |    |              |        |         |        |          |          |                |       |           |          |          |             |              |             |           |          |        |
| 22 | *Onthophagus (Onthophagus) uniformis* Heyd. |        |         |    |              |        |         |        |          |          |                |       |           |          |          |             |              |             |           |          |        |
| 23 | *Onthophagus (Onthophagus) gibbulus* (Pall.) |        |         |    |              |        |         |        |          |          |                |       |           |          |          |             |              |             |           |          |        |
| 24 | *Onthophagus (Onthophagus) bivertex* Heyd. |        |         |    |              |        |         |        |          |          |                |       |           |          |          |             |              |             |           |          |        |

*1* The species with asterisk are discussed in the text.
<table>
<thead>
<tr>
<th>No</th>
<th>Species</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>K</th>
<th>L</th>
<th>Eurasia</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td><em>Onthophagus (Onthophagus) rugulosus</em> Har.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>26</td>
<td><em>Onthophagus (Onthophagus) olsoufieffii</em> BouC.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>27</td>
<td><em>Onthophagus (Onthophagus) punctator</em> Reitt.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>28</td>
<td><em>Onthophagus (Onthophagus) necessarius</em> Reitt.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>29</td>
<td><em>Onthophagus (Onthophagus) pupillatus</em> Kolbe</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>30</td>
<td><em>Onthophagus (Onthophagus) trituber</em> (Wied.)</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>31</td>
<td><em>Onthophagus (Onthophagus) koma</em> Mats.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>32</td>
<td><em>Aphodius (Colobopterus) apicalis</em> Har.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>33</td>
<td><em>Aphodius (Colobopterus) indagator</em> MannRh.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>34</td>
<td><em>Aphodius (Colobopterus) subterraneus</em> (L.)</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>35</td>
<td><em>Aphodius (Teuchestes) brachysomus</em> Sols.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>36</td>
<td><em>Aphodius (Teuchestes) haemorrhoidalis</em> (L.)</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>37</td>
<td><em>Aphodius (Teuchestes) donghariensis</em> SteB.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>38</td>
<td><em>Aphodius (Pharaphodius) rugosostriatus</em> WaterH.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>39</td>
<td><em>Aphodius (Coptochiroideis) subcostatus</em> Kolbe</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>40</td>
<td><em>Aphodius (Acrossus) rufipes</em> (L.)</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>41</td>
<td><em>Aphodius (Acrossus) binoculus</em> Heyd.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>42</td>
<td><em>Aphodius (Acrossus) superatrus</em> Nom. et Nak.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>43</td>
<td><em>Aphodius (Paulianellus) maderi</em> Balth.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>44</td>
<td><em>Aphodius (Pleuraphodius) levis</em> WaterH.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>45</td>
<td><em>Aphodius (Trichaphodius) proclivis</em> Balth.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>46</td>
<td><em>Aphodius (Trichaphodius) comatus</em> A. Schm.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>47</td>
<td><em>Aphodius (Aganocrossus) wrostigia</em> Har.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>48</td>
<td><em>Aphodius (Pseudacrossus) juzius</em> Petr.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>49</td>
<td><em>Aphodius (Trichonotulus) dzamosanecis</em> SteB.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>50</td>
<td><em>Aphodius (Trichonotulus) mongolicus</em> MannRh.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>51</td>
<td><em>Aphodius (Aphodius) elegans</em> Allib.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>52</td>
<td><em>Aphodius (Orodalus) pusillus</em> (Hbst)</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>53</td>
<td><em>Aphodius (Orodalus) naraensis</em> Nak.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>54</td>
<td><em>Aphodius (Aphodaulacae) nigroeslesselatus</em> Motsch.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>55</td>
<td><em>Aphodius (Volinus) obsoleteguttatus</em> WaterH.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>56</td>
<td><em>Aphodius (Pheaphodius) rectus</em> Motsch.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>57</td>
<td><em>Aphodius (Agrilinus) uniformis</em> WaterH.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>58</td>
<td><em>Aphodius (Agrilinus) putridus</em> (Hbst)</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>59</td>
<td><em>Aphodius (Agrilinus) brevisculus</em> (Motsch.)</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>No</td>
<td>Species</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
<td>F</td>
<td>G</td>
<td>H</td>
<td>I</td>
<td>K</td>
<td>L</td>
<td>Eurasia</td>
</tr>
<tr>
<td>----</td>
<td>---------------------------------------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>--------</td>
</tr>
<tr>
<td>* 60</td>
<td><em>Aphodius (Agrilinus) inexpectatus BALTH.</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 61</td>
<td><em>Aphodius (Bodilus) sordidus (FABR.)</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 62</td>
<td><em>Aphodius (Bodilus) languidulus A. SCHM.</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 63</td>
<td><em>Aphodius (Nius) sturmii HAR.</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 64</td>
<td><em>Aphodius (Calamosternus) uniplagiatus WATERH.</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 65</td>
<td><em>Aphodius (Calamosternus) sublimbatis MOTSCH.</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 66</td>
<td><em>Aphodius (Calamosternus) prušai TES.</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 67</td>
<td><em>Aphodius (Phaorapodius) orientalis HAR.</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 68</td>
<td><em>Aegialia (Aegialia) comis (LEWIS)</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 69</td>
<td><em>Aegialia (Pseumoporus) kamtschatica MOTSCH.</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 70</td>
<td><em>Rhyssemus koreanus sp. n.</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>71</td>
<td><em>Saprosites japonicus WATERH.</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 72</td>
<td><em>Ochodes ferrugineus (ESCH.)</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>73</td>
<td><em>Kolbeus koreanus KOLBE</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 74</td>
<td><em>Geotrupes (Phelotrupes) auratus MOTSCH.</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 75</td>
<td><em>Geotrupes (Phelotrupes) laevistriatus MOTSCH.</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>76</td>
<td><em>Bolbocerodema zonatum NIKOL.</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>77</td>
<td><em>Bolbocerosoma nigroplagiatum (WATERH.)</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 78</td>
<td><em>Gastroserica herzi (HEYD.)</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 79</td>
<td><em>Nipponoserica similis (LEWIS)</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 80</td>
<td><em>Trichoserica polita (GEBL.)</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 81</td>
<td><em>Sericania fuscolinea MOTSCH.</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>82</td>
<td><em>Sericania latisulcata MURAY.</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>83</td>
<td><em>Sericania koryoensis MURAY.</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>84</td>
<td><em>Sericania hasegawai MURAY.</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>85</td>
<td><em>Paraserica grisea (MOTSCH.)</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 86</td>
<td><em>Serica boops WATERH.</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>87</td>
<td><em>Serica brunnea (L.)</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>88</td>
<td><em>Serica septentrionalis MURAY.</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>89</td>
<td><em>Serica elliptica MURAY.</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 90</td>
<td><em>Maladera (Maladera) castanea (ARR.)</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 91</td>
<td><em>Maladera (Maladera) gibbiventris (BRKOE.)</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 92</td>
<td><em>Maladera (Maladera) formsae (BRKOE.)</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 93</td>
<td><em>Maladera (Maladera) renardi BALL.</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>Species</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
<td>F</td>
<td>G</td>
<td>H</td>
<td>I</td>
<td>K</td>
<td>L</td>
<td>Eurasia</td>
</tr>
<tr>
<td>----</td>
<td>---------------------------------------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>-------</td>
</tr>
<tr>
<td>* 94</td>
<td>Maladera (Maladera) holosericea (Scop.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 95</td>
<td>Maladera (Maladera) cariniceps (Mos.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>96</td>
<td>Maladera (Maladera) laboriosa (BRSKE)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 97</td>
<td>Maladera (Maladera) fusania Muray.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 98</td>
<td>Maladera (Maladera) orientalis (MOTSCH.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 99</td>
<td>Maladera (Maladera) schonfeldti (MURAY.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>Maladera (Maladera) opaciventris (Mos.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>101</td>
<td>Maladera (Maladera) thibetana (BRSKE)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 102</td>
<td>Maladera (Maladera) okamotoi (MURAY.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>103</td>
<td>Maladera (Maladera) infusionata (Mos.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>104</td>
<td>Maladera (Maladera) stridula (BRSKE.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>105</td>
<td>Maladera (Maladera) japonica (MOTSCH.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>106</td>
<td>Maladera (Maladera) verticalis (FAIRM.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>107</td>
<td>Maladera (Maladera) ovatula (FAIRM.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>108</td>
<td>Maladera (Maladera) aureola (MURAY.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>109</td>
<td>Maladera (Maladera) koreana (MURAY.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 110</td>
<td>Maladera (Eumaladera) nitidiceps Nom.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 111</td>
<td>Hoplia (Euchromoplia) aureola (PALL.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 112</td>
<td>Hoplia (Decamera) djukini JACOB.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 113</td>
<td>Ectinohoplia rufipes (MOTSCH.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>114</td>
<td>Polyphylla laticollis LEWIS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>115</td>
<td>Polyphylla chinensis manchurica SEM.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 116</td>
<td>Hoplocesternus incanus MOTSCH.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>117</td>
<td>Hoplocesternus japonicus HAR.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 118</td>
<td>Hiliotroopus bicolorus (HEYD.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>119</td>
<td>Lachnosterna nipponensis Muray.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>120</td>
<td>Heptophylla picea MOTSCH.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 121</td>
<td>Apogonia cupreoverdis KOLBE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 122</td>
<td>Apogonia cribricollis BURM.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>123</td>
<td>Cyphochilus farinosus WATERH.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* 124</td>
<td>Brahmina rubetra (FALD.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>125</td>
<td>Brahmina intermedia (MANNRH.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>126</td>
<td>Brahmina darcisi REITT.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>127</td>
<td>Brahmina crenicollis MOTSCH.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>Species</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
<td>F</td>
<td>G</td>
<td>H</td>
<td>I</td>
<td>K</td>
<td>L</td>
<td>Eurasia</td>
</tr>
<tr>
<td>----</td>
<td>-------------------------------------------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>--------</td>
</tr>
<tr>
<td>128</td>
<td><strong>Brahmina excisiceps</strong> Muray.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*129</td>
<td><strong>Lasiopsis manchuricus</strong> Muray.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>130</td>
<td><strong>Lasiopsis sahlbergi</strong> (Mannh.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>131</td>
<td><strong>Metabolus impressifrons</strong> FAIRM.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*132</td>
<td><strong>Sophrops heydeni</strong> (Brske)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*133</td>
<td><strong>Sophrops striata</strong> (Brske)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*134</td>
<td><strong>Miridiba koreana</strong> Nilj. et Kin.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>135</td>
<td><strong>Miridiba castanea</strong> (Waterh.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*136</td>
<td><strong>Holotrichia diomphalia</strong> (Bat.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*137</td>
<td><strong>Holotrichia ernesti</strong> Reitt.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*138</td>
<td><strong>Holotrichia paralella</strong> (Motsch.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*139</td>
<td><strong>Holotrichia picea</strong> Waterh.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*140</td>
<td><strong>Holotrichia oblita</strong> (Fald.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*141</td>
<td><strong>Holotrichia inegans</strong> (Lewis)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>142</td>
<td><strong>Holotrichia castanea</strong> (Waterh.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>143</td>
<td><strong>Holotrichia sichotana</strong> (Brske)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>144</td>
<td><strong>Holotrichia kiootensis</strong> (Brske)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>145</td>
<td><strong>Holotrichia reticulata</strong> Muray.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>146</td>
<td><strong>Holotrichia koraensis</strong> Muray.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*147</td>
<td><strong>Eotrichia titanis</strong> (Reitt.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*148</td>
<td><strong>Popillia indigonacea</strong> Mqtsch.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*149</td>
<td><strong>Popillia atrocoerulea</strong> Bat.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>150</td>
<td><strong>Popillia chinensis</strong> Friv.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*151</td>
<td><strong>Popillia japonica</strong> Newm.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*152</td>
<td><strong>Popillia quadriguttata</strong> (Fabr.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*153</td>
<td><strong>Popillia ruficollis</strong> Kr.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>154</td>
<td><strong>Popillia uchidai</strong> Nilj. et Kin.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>155</td>
<td><strong>Popillia quepartiana</strong> Oh.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*156</td>
<td><strong>Phyllopertha horticola</strong> (L.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>157</td>
<td><strong>Phyllopertha diversa</strong> Waterh.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*158</td>
<td><strong>Spilota plagicollis</strong> FAIRM.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*159</td>
<td><strong>Proagopertha lucidulla</strong> (Fald.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*160</td>
<td><strong>Mimela splendens</strong> (Gyll.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*161</td>
<td><strong>Mimela chinensis</strong> Kirby</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>Species</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
<td>F</td>
<td>G</td>
<td>H</td>
<td>I</td>
<td>K</td>
<td>L</td>
<td>Eurasia</td>
</tr>
<tr>
<td>----</td>
<td>-------------------------------------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>--------</td>
</tr>
<tr>
<td>162</td>
<td>Mimela fusania Bat.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>163</td>
<td>Mimela concolor Blanch.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>164</td>
<td>Mimela pekinensis koreana Mach.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>165</td>
<td>Rhombonyx holosericea (Fabr.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>166</td>
<td>Rhombonyx testaceipes Motsch.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>167</td>
<td>Rhombonyx usuriensis Medv.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>168</td>
<td>Anomala (Chrysopelthisa) sieversi Heyd.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>169</td>
<td>Anomala (Chrysopelthisa) octiescostata Burm.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>170</td>
<td>Anomala (Euchromonala) cuprea (Hope)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>171</td>
<td>Anomala (Euchromonala) viridana Kolbe</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>172</td>
<td>Anomala (Euchromonala) mongolica Fald.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>173</td>
<td>Anomala (Euchromonala) albopilosa Hope</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>174</td>
<td>Anomala (Idiocnema) aulax Wied.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>175</td>
<td>Anomala (Idiocnema) costifera Reitt.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>176</td>
<td>Anomala (Idiocnema) spiloptera Burm.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>177</td>
<td>Anomala (Anomala) pleurimargo Reitt.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>178</td>
<td>Anomala (Anomala) corpulenta Motsch.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>179</td>
<td>Anomala (Anomala) luculenta Er.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>180</td>
<td>Anomala (Anomala) geniculata Motsch.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>181</td>
<td>Anomala (Anomala) rufocuprea Motsch.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>182</td>
<td>Anomala (Emphalena) chamaeleon Fairm.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>183</td>
<td>Bitopertha (Exomalas) pallidipennis Reitt.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>184</td>
<td>Bitopertha (Exomalas) orientalis (Waterh.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>185</td>
<td>Bitopertha (Bitopertha) conspurcata (Har.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>186</td>
<td>Adoretus (Lepadoretus) sinicus Burm.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>187</td>
<td>Adoretus (Lepadoretus) tenuimaculatus Waterh.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>188</td>
<td>Rhomborrhina (Rhomborrhina) japonica Hope</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>189</td>
<td>Diceranoccephalus adamsi Pasc.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>190</td>
<td>Cetonia (Eucetonia) magnifica Ball.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>191</td>
<td>Cetonia (Eucetonia) viridiopaca (Motsch.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>192</td>
<td>Cetonia (Eucetonia) pilifera (Motsch.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>193</td>
<td>Cetonia (Eucetonia) roelofsi Har.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>194</td>
<td>Potosia (Liocola) brevitarsis (Lewis)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>195</td>
<td>Potosia (Liocola) lugubris orientalis Medv.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ern species succeeding into south in the cold periods. Local fauna has been formed gradually; it was composed of various groups which found there favorable conditions for survival. In the core of the Far-Eastern forest fauna of Searabaeoidae dominating in the Korean Peninsula, occur some further changes. The elements that were previously widely distributed, nowadays occur locally in the mainstay areas of the Tertiary flora. Many of the phytophagous species have adapted themselves to the present conditions of the plant landscape created by man. They follow the succession of the agriculture and undergo gradual synantropization. The coprophagic species, majority of which is peculiar to the open areas, occupy large territories, in compliance with physical properties of the soil and their own adaptative abilities. Penetration of the Peninsula by the ubiquitous species, elements of North-Chinese, Manchurian, South-Siberian and Mongolian fauna as well as by Oriental species, will possibly develop. The main, most convenient pathways of migration are in the coastal regions; they lead from China and Manchuria at the Gulf of Korea and from Primorskiy Kraj along the Japanese Sea.

The summing-up of the above conclusions indicate that the fauna of the Korean Peninsula is considerably complex; its elements join the Far-Eastern faunas of Searabaeoidae, which have common history and origin and occur in the similar environmental conditions. The separateness of this fauna from those of the rest of Palaeartic is evident. Nevertheless, the determination of the zoogeographic border between both Far-Eastern, Palaeartic and Oriental faunas is not possible. The transitory zone of both types is very wide; their overlap is various in different regions of Far East. Consequently, with appropriateness to the distribution of various animal groups, their ecologic requirements and abilities to pass the barriers, the transition is formed somewhat in a different way.

LIST OF THE KOREAN GEOGRAPHIC PLACE- NAMES MENTIONED IN THE TEXT

Numbers indicate the localities on the map, Fig. 3. Japanese transcription of some place-names is given in square brackets.

1 — Anak [Angaku] 38°31', 125°28'
2 — Andžū [Anshu] 39°35', 125°38'
3 — Čežnu-do [Saishu-to, Saisyu-to] (Quelpart Island). A large island in the East China Sea off the southern tip of Korea 36°58', 127°57'
4 — Čungdžu [Chuschu] 36°36', 127°21'
5 — Čočingvun [Chochiin] 35°33', 126°50'
6 — Čongdžu [Seisyu, Seishu] 36°49', 127°11'
7 — Čongan [Tenan] 37°52', 127°44'
8 — Chunčhōn [Shunsen, Syunsen] 37°24', 128°39'
9 — Čongsōng [Shojo] 37°09', 139°14'
10 — Čongphjong 41°47', 129°48'
11 — Čongdžin [Seishin, Seisin] 36°38', 127°38'
12 — Čongdžu [Zeishu, Zensyu]
Fig. 3. Schematic map of the Korean Peninsula. Numbers mark the localities specified in the list.
51 — Kjongdžu [Keishu, Keisyu]
      35°49’, 129°14’
52 — Kimpho
      37°37’, 126°41’
53 — Kymgang-san
      Masin-rjông
      38°37’, 128°07’
54 — Kosan [Kosen]
      35°57’, 127°16’
55 — Kildžu [Kisshu, Kissyu]
      40°57’, 129°21’
56 — Késong [Kaijo]
      37°56’, 126°33’
57 — Kech’hón
      39°43’, 125°53’
58 — Kymch’ón
      38°09’, 126°27’
59 — Kodže [Kotei]
      34°51’, 128°36’
60 — Kvanmo-bong [Kwanboho]
      41°42’, 129°15’
61 — Kangsŏ [Kosi, Kosei]
      Thesŏng
      38°58’, 125°29’
62 — Kvesan [Kwasan]
      36°49’, 127°47’
63 — Kormusan [Kososan]
      42°07’, 129°43’
64 — Kosan [Kokusan]
      38°46’, 126°39’
65 — Kudžang
      Džosan-ri
      39°52’, 126°04’
66 — Mokpho [Moppo]
      34°48’, 126°24’
67 — Mudžu [Moshu, Mosyu]
      36°01’, 127°41’
68 — Mjongch’ón [Meisen]
      41°04’, 129°28’
69 — Mengsan
50 — Musan [Musan]
      39°40’, 126°29’
70 — Munch’ón [Bunsen]
      42°12’, 129°14’
71 — Mač’ón
      near: 39°55’, 127°50’
72 — Namvŏn [Nangen]
      35°24’, 127°22’
73 — Nadžin [BASHIN, RASIN]
      42°14’, 130°15’
74 — Nampho [Chinnampo, Tinnampo]
      Tedong-gang, Usan-ri, Vaudo
      38°45’, 125°25’
75 — Nampho-san
      near: 41°32’, 129°25’
76 — Onpho-ri
58 — Oro
      40°02’, 127°29’
78 — Pujŏ [Fuyo, Huyo]
      36°18’, 126°54’
79 — Pektu-san [Hakuyosan, Hakutosan]
      41°56’, 128°08’
80 — Phohang [Hoko]
      36°03’, 129°20’
81 — Pegam (Not localized on the map)
82 — Pusan [Fusan, Husan]
      35°09’, 129°02’
83 — Peksan
84 — Pungan [Hozan]
      35°43’, 126°43’
85 — Phjongjang [Heijo]
58 — Poch’ón
      39°00’, 125°45’
86 — Tedong-gang, Mankjongde, Mankjong-bong, Moran-bong
      near: 39°00’, 125°25’
87 — Purjong
      Thomak-tong, Musu-ri, Hjongde-tong
57 — Ponghwa-ri
88 — Pongsan-ri (Not localized on the map)
89 — Poč’ón
      41°32’, 128°20’
90 — Poč’ónbo, Karim-čh’ón, Posŏ-ri
91 — Puč’ón-gang [Fusen-ko]
92 — Suvŏn [Suigen]
      37°17’, 127°01’
93 — Soul [Keijo, Keizyo]
94 — Sunč’ón [Juntan]
      Džamo-ri, Džamo-san
95 — Sonchon [Seisen] 39°46', 124°51'
96 — Sinyidžu [Shingishu, Singisyu] 40°06', 124°23'
97 — Sičhang 40°08', 128°28'
98 — Sepho 38°39', 127°26'
99 — Sinphjong 38°53', 126°44'
100 — Samchóngpho [Sanseizan] 34°56', 128°05'
101 — Sarivón [Sharei, Sharini] 38°30', 125°48'
102 — Sungho [Shoko] near: 38°17', 125°22'
103 — Samdžijon 41°52', 128°23'
                Photče-chón, Poso-ri
104 — Sunan 39°14', 125°40'
            Junha-ri near: 39°20', 125°42'
105 — Sokam-Čosudži near: 39°10', 125°40'
106 — Samsók
                Tečhón-ri, Songmun-ri
107 — Sičung-ho near: 39°05', 127°24'
108 — Sinchón [Shinsen] 38°20', 125°30'
109 — Sangvón-am
                near: 39°55', 126°20'
110 — Susonĝ-chón
                near: 41°54', 129°43'
111 — Tongne [Torai] 35°12', 129°06'
112 — Tegu [Taikyu] 35°52', 128°35'
113 — Tedžon [Taisei] 36°18', 127°26'
114 — Thosan
115 — Tongčong-ho near: 38°00', 127°30'
116 — Uši 40°40', 125°40'
117 — Uldžin 37°00', 129°24'
118 — Vonsan [Gensan, Genzan] 39°10', 127°28'
                Ungčin
119 — Vondžu [Genshu] 37°20', 127°59
120 — Vando 34°19', 126°43'
121 — Sujang-san 38°06', 125°40'
122 — Kosóng [Koyo] 38°45', 128°12'
123 — Sam-il-pho near: 38°40', 128°12'
124 — Tesong-san near: 39°06', 125°52'
125 — Chosan [Sozan] 40°50', 125°46'
126 — Kojong 35°44', 128°17'
127 — Hvado 33°42', 126°23'
128 — Sinsang 39°40', 127°27'
129 — Sokčho 38°15', 128°38'
130 — Sinsan 36°15', 128°09'
131 — Kongdžu [Koshu] 36°25', 127°08'
132 — Nungni 38°40', 126°11'

**Scarabaeinae**

**Scarabaeini**

**Scarabaeus (Scarabaeus) affinis** Brullé, 1832

Distribution. South Europe, Asia Minor, Central Asia, Afghanistan, Tibet, West and North China, Manchuria, Korea (Balthasar, 1963 et all.).

Remarks. The specimen collected is a representative of var. *typhon* Fisch., which occurs in the eastern part of the distributional area of this species.

**Gymnopleurini**

**Gymnopleurus (Gymnopleurus) mopsus** *(Pallas, 1781)*


Remarks. Palaeartic species, new to the Korean fauna.

**Gymnopleurus (Paragymnopleurus) sinuatus** *(Olivier, 1789)*

(Fig. 4)

Distribution. Central and South China, Taiwan (Rosen, Nanshanchi, Wushe, Taloko, Lutao Is., Lanyu Is.), India, Indochina (Thailand), Sunda Islands *(Balthasar, 1963; Nomura, 1973)*.


Remarks. Species of the Oriental origin, new to the Korean fauna.

**Sisyphini**

**Sisyphus (Sisyphus) schaefferi** *(Linnaeus, 1758)*


**Coprinae**

**Oniticellini**

**Liatongus (Liatongus) phanaeoides** *(Westwood, 1840)*

(Fig. 5)


Remarks. This species occurs exclusively in the mountainous regions and in mountains where it reaches 2500 m above sea level.

_Copris (Copris) ochus_ (MÖTSCHULSKY, 1860)


_Copris (Copris) tripartitus_ Waterhouse, 1875


_Caccobius (Caccophilus) christophi_ Harold, 1879

(Fig. 6)

Distribution. USSR — Amur, Ussuri, Primorskij Kraj; North and Central China, Korea (Balthasar, 1963).

Material examined. 30 ♂♂ and ♀♀. Prov. Hamgjông-pukto, distr. Kjongsoŋ (44), Onpho-ri (77), 20 IX 1959, B. PISARSKI and J. PRÓSZYŃSKI (ZIW);

Remarks. Manchurian species, local and not frequent in D.P.R.K.

*Caccobius (Caccophilus) sibiricus* Balthasar, 1935

(Fig. 7)


Remarks. Species new to the Korean fauna, probably local. Single population found in one of the northern Provinces. Occurs in cattle dung.

*Caccobius (Caccophilus) sordidus* Harold, 1886

(Fig. 10)

Distribution. USSR — Ussuri, Primorskij Kraj; Manchuria (Harbin), North China, Korea (Balthasar, 1963).


*Caccobius (Caccophilus) brevis* Waterhouse, 1875

(Fig. 9)


**Caccobius (Caccophilus) unicornis** (Fabricius, 1798)

Syn.: *Caccobius yamauchi* Matsumura, 1936.

(Fig. 8)

Distribution, Japan — Honshu, Kyushu, Ryu-kyu Isl.; Korea, China, Taiwan (Liyutan, Roshan, Funchiiffo, Chipon, Oulanpi), India, Burma, Indochina, Malaysia, Sunda Isl., Philippines (Balatasar, 1963; Nomura, 1973). Material examined. 11 ♀♂ and ♀♀. Prov. Hvanginge-namdo, valley of river

**Onthophagus (Digitonthophagus) solivagus** Harold, 1886

(Figs. 11, 12)


Remarks. This species is probably an element of Manchurian fauna; it has relatively narrow area of distribution. Frequent, in some Provinces numerous and widely distributed.

**Onthophagus (Digitonthophagus) hvangheus** Stebnicka, 1973

(Fig. 13)


Remarks. Only one male specimen of this species has been known up to the present. The female differs from the male by the shape of anterior tibia and by strongest and more distinct clypeal punctures, which are transversely wrinkled near anterior margin.

**Onthophagus (Strandius) lenzi** Harold, 1874

(Figs. 14, 15)


Remarks. Very common species in D.P.R.K., locally frequent, occurs in various biotopes. Found under excrements in the soil up to 10 cm below its surface. Readily comes to light; numerous specimens have been collected under the street lamps.

Onthophagus (Strandius) japonicus Harold, 1874

(Figs. 18, 19)


Remarks. According to Balthasar (1963) this species is not frequent but widely distributed in Japan; its similar distribution has been observed in D.P.R.K., where single specimens often occur in various biotopes.

Figs. 13—21. Male genitalia, lateral and dorsal view: 13 — Onthophagus (Digitonthophagus) hwangheus Steb.; 14, 15 — O. (Strandius) lenzi Har.; 16, 17 — O. (Phanaemorphus) fodiens Waterh.; 18, 19 — O. (Strandius) japonicus Har.; 20, 21 — O. (Gibbonthophagus) viduus Har. Fig. 22. O. (Phanaemorphus) ater Waterh. — female head
Onthophagus (Phanaeomorphus) fodiens Waterhouse, 1875
(Figs. 16, 17)


Remarks. Species widely distributed but not frequent, found as single specimens in various biotopes. According to the Nomura's data (1973), the other similar species named O. yubarinus Mats. (= Matasha mushana Mats. sensu Nomura, 1973) probably occurs in Taiwan; Balthasar (1963) considered it as a synonym of O. fodiens Waterh.

Onthophagus (Phanaeomorphus) ater Waterhouse, 1875
(Fig. 22)

Distribution. East Siberia, North- and Central China (Sichuan), Korea, Taiwan (Sungkang, Funchiifo), Japan — Hokkaido, Honshu (Kurokawa, Matsunoyama, Midama), Awa-shima, Sado (Oda, Hatan, Kitauzima, Mt. Donden, Ogura-toge), Shikoku, Kyushu, Yakushima, Miyake, Mikura, Hachijö (Nakane et Baba, 1960; Balthasar, 1963; Nomura, 1969; 1973).


Onthophagus (Gibbonthophagus) viduus Harold, 1874
(Figs. 20, 21)

Distribution. North China (Shandong), Manchuria, Korea, Japan — Hokkaido, Honshu (Kurokawa, Niigata, Sakasamaki), Sado (Nakaoku), Shikoku, Kyushu, Yakushima, Tanegashima, Tsushima, Nakanoshima, Takarajima, Ama-


*Onthophagus (Gibbonthophagus) atriennis* Waterhouse, 1875

(Figs. 23, 24)


*Onthophagus (Onthophagus) uniformis* Heyden, 1886

(Figs. 25, 26)


Remarks. Manchurian species of probably small area of distribution. New to the Korean fauna.

*Onthophagus (Onthophagus) gibbulus* (Pallas, 1781)

(Fig. 27)


Sinčhôn (108), valley of river, 16 IX 1971, in cow dung, A. Szeptycki (ISEZ).

Remarks. Palearctic species not shown in Korea up to the present; relatively frequent but not numerous, occurs in various biotopes.

*Onthophagus (Onthophagus) bivertex* (Heyden, 1887)
(Figs. 28, 29)

Distribution. USSR — Primorskiy Kraj (Vladivostok), Ussuri; North China Korea, Japan (Balthasar, 1963).


Remarks. The species occurs in the pastures and other open areas in cow dung and at human excrements and is often collected.

*Onthophagus (Onthophagus) rugulosus* Harold, 1886

Syn.: *Onthophagus sonani* Miwa, 1930.
(Figs. 33, 34)

Distribution. India (Assam), China (Yunnan, Sichuan, Fukien), Korea, Indochina — Vietnam (Tonkin), Taiwan (Nanshanchi, Funchiifo) (Balthasar, 1963; Nomura, 1973).

in cow dung on the banks of the lake, Z. STEBNICKA (ISEZ); Prov. Kangvŏn-do, Kymgang-san (Mts, 53) near Kosŏng (122), 16 VI 1974, at human excrements, Z. STEBNICKA (ISEZ).

Remarks. Oriental species, relatively frequent in the southern Provinces of D.P.R.K.; collected mainly under human excrements, deep up to 30 cm below soil surface.

*Onthophagus (Onthophagus) olsoufieffi* BOUCOMONT, 1924

Syn.: *Onthophagus uedanus* MATSUMURA, 1937.

(Figs. 30, 31)


Remarks. Species found most frequently in human excrements or in the vicinity of them in the upper layer of soil.

*Onthophagus (Onthophagus) punctator* REITTER, 1892

Syn.: *Onthophagus sunanious* STEBNICKA, 1973, syn. n.

(Fig. 32)


Remarks. The taxonomic error made by the author (STEBNICKA, 1973) was due to the fact that in the descriptions of this species (REITTER, 1892: 179; BALTHASAR, 1963: 233, 489) the most characteristic feature, i. e. the shape of male anterior tibia had been omitted. BALTHASAR (1963) emphasises similar features in the descriptions of the following species: *O. atricapillus* d'ORB. and *O. nigellus* (ILLIG.). *O. punctator* REITT. is frequent and numerous in D.P.R.K.; most frequently found in the vicinity of waters in sandy soil under cow and sheep dung and at human excrements.
Aphodiinae

Aphodiini

Aphodius (Colobopterus) apicalis Harold, 1861


(Figs. 35—37)


Aphodius (Colobopterus) indagator Mannerheim, 1849

(Figs. 38—40)


Remarks. This species is very similar to the former one: its distribution is little known. New to the Korean fauna, occurs sporadically and not frequently.
**Aphodius (Colobopterus) subterraneus** (Linnaeus, 1758)

(Figs. 41, 42)


Figs. 35—37. *Aphodius (Colobopterus) apicalis* Har. 35, 36 — male genitalia, lateral and dorsal view; 37 — female genitalia, stylus.

Figs. 38—40. *A. (C.) indagator* Mannrh.; 38 — female genitalia, stylus; 39, 40 — male genitalia, lateral and dorsal view. Figs. 41—44. Male genitalia, lateral and dorsal view; 41, 42—*A. (C.) subterraneus* (L.); 43, 44 — *A. (Teuchestes) brachymenus* Sol.

Remarks. Palaeartic species, not shown in Korea up to now. Occurs mainly in lowlands and open pastures in cattle and sheep dung, at human excrements and in vegetable-detritus. Enemy of cultivation of fungi. A typical black form occurs in D.P.R.K. and also a rare variety ab. fusceipennis Muls. (elytra red); no numerous population found in Korea.

Aphodius (Teuchestes) brachysomus SOLSKY, 1874
(Figs. 43, 44)

Distribution. USSR (Ussuri), China, Korea, Japan — Honshu, Kyushu, Takarajima (BALTHASAR, 1964; NOMURA, 1966).


Remarks. This species occurs sporadically and not frequently in D.P.R.K.; typical form only found.

Aphodius (Teuchestes) haemorrhoidalis (LINNAEUS, 1758)
(Figs. 49, 50)


Remarks. Ubiquistic, very frequent and numerous species in the whole area of distribution. A typical form occurs in D.P.R.K., and also a very numerous variety ab. sanguinolentus Herbst. New to the Korean fauna.
Aphodius (Teuchestes) donghariensis Stebnicka, 1973
(Fig. 48)


Aphodius (Pharaphodius) rugosostriatus Waterhouse, 1875
(Figs. 45—47)


Remarks. Species very similar to A. (Coptochiroides) subcostatus Kolbe. In Korea occurs sporadically only in summer; probably gives one generation per year.

Aphodius (Coptochiroides) subcostatus Kolbe, 1886
(Figs. 51, 52)


Remarks. Oriental species, similarly as A. (Pharaphodius) rugosostriatus Waterh. is rare and not frequent in Korea.

Aphodius (Acrossus) rufipes (Linnaeus, 1758)

Syn.: Aphodius matsuzawai Yawata, 1942.
(Figs. 53, 54)

Distribution. Europe, Transcaucasia, Iran, Siberia, Kurile Islands, Japan — Honshu (Utsukushigahara, Mt. Yatsugatake, Mt. Tateshima, Mt. Asama, Shinshu-toge), North- and South America (introduced), South Africa (introduced) (Balthasar, 1964; Nakane et Masumoto, 1967; Medvedev et Ermolenko, 1969; Kryvoluckaja, 1973; Stebnicka, 1976).

Material examined. 3 ♂♂. Prov. Hamgjong-pukto, distr. Kjongsong (44), Onpho-ri (77), 11 IX 1966, H. Szelegiewicz and C. Dziadosz (ZIW); Prov,
Figs. 45—47. *Aphodius* (*Pharaphodius*) *rugosostriatus* Waterh. 45, 46 — male genitalia, lateral and dorsal view; 47 — female genitalia, stylus.

Fig. 48. *A. (Teuchestes) donghariensis* Stebb. — female head. Figs. 49—54. Male genitalia, lateral and dorsal view; 49, 50 — *A. (T.) haemorrhoidalis* (L.); 51, 52 — *A. (Coptochiroides) subcostatus* Kolbe; 53, 54 — *A. (Acrossus) rufipes* (L.). Figs. 55—57. *A. (A.) binaevulus* Heyd. 55 — female genitalia, stylus; 56, 57 — male genitalia, lateral and dorsal view

Phjongjang-si, Jongak-san (Mt., 40), 29 V 1974, in cow dung, Z. Sternicka (ISEZ).

Remarks. The Korean specimens do not differ significantly from the va-
riable individuals of this species known as very common and numerous one in Europe; in D.P.R.K. it occurs seldom, exclusively in the mountains. New to the Korean fauna.

*Aphodius (Acrossus) binaevulus* HEYDEN, 1887
(Figs. 55—57)

Distribution. USSR — Primorskij Kraj (Vladivostok), USSR (BAIKAH, 1964).


Remarks. New species to the Korean fauna, occurs in the mountains. Several coloured variants found; most frequently is represented the variety ab. *diaphanomaeculatus* HEYD. (head and pronotum black, elytra red), less numerous is the variety ab. *niger* TES. (whole body black), a typical form is seldom (elytra black with yellowish or reddish spots near the apex). This species is very similar to the Euro-Siberian one *A. (A.) depressus* (KUG.) whose area extends as far as to Bajkal. It seems that *A. binaevulus* HEYD. replaces *A. depressus* in the same habitat to the south-east of the latter's range.

*Aphodius (Acrossus) superatratrus* NOMURA et NAKANE, 1951
(Figs. 58, 59)


Description of the Korean specimens. Length 6—7.5 mm. Elongate-oval, rather strongly convex, shining, black. Clypeal margin finely reflexed, broadly rounded each side of very shallow median emargination, sides arcuate to sharply rounded, right-angled genae; surface of head with rather evenly spaced, moderately coarse punctures, generally separated by their diameters over middle disc, finer and closer anteriorly and a little smaller basally. Pronotum moderately convex, sides strongly margined, base without marginal line; surface very minutely alutaceous throughout under high magnification, mixed moderately fine and coarse, quite evenly distributed punctures throughout except for a narrow, impunctate, longitudinal midline; the punctures are larger and closer laterally. Scutellum triangular with a few coarse punctures at base. Elytra convex, oval, humeri distinctly dentate, striae moderately deep, very
finely and indistinctly punctate; intervals slightly convex with moderately fine, close, evenly distributed punctures which practically contiguous the same size as finer punctures of the pronotum; lateral and apical part of elytra shortly piliferous. Ventral surface and femora alutaceous, closely punctate, metasternum flat, midline shallow, metasternal surface distinctly punctate. Apical spur of fore tibia straight and acute; apex of middle and hind tibiae fringed with moderately long, unequal spines; first posterior tarsal segment noticeably shorter than the upper spur, equal to the remaining segments combined.

Male. Pronotum more convex than in female. Aedeagus as in figures 58, 59.

Female. Pronotum less convex than in male.

Remarks. Little known species; as the majority of representatives of the subgenus Acrobus Muls. it occurs exclusively in the mountains.

Aphodius (Paulianellus) maderi Balthasar, 1938

Syr.: Aphodius osahinai Nakane, 1951.

(Figs. 60, 61)

Distribution. China (Sichuan), Japan — Honshu (Nara), Kyushu (Balthasar, 1964; Nakane et Masumoto, 1967).


Remarks. Little known species distinguished by the features given in the diagnosis of the subgenus Paulianellus Balth. It is closely related to the representatives of subgenus Acrobus Muls. New to the Korean fauna.

Aphodius (Pleuraphodius) lewisi Waterhouse, 1875

(Fig. 64)


Description of the Korean specimens. Length 2—3 mm. Elongate-oblong, moderately convex, shining, dark reddish-brown or brown, posterior part of head and disc of pronotum sometimes darker. Head trapezoid, moderately convex without tubercles, frontal suture feebly marked; elypeal margin finely reflexed, obtusely rounded each side of moderate median emargination; sur-
face punctures fine, evenly distributed, slightly alutaceous within. Pronotum convex, sides slightly arcuate, anterior and posterior angles obtusely rounded, sides finely margined, base with a row of dense, fine punctures, without marginal line; surface alutaceous, densely, moderately coarsely punctate throughout. Scutellum triangular, narrow, impunctate. Elytra oval, humeri not dentate; striae moderately deep, shining, closely and finely punctate, the punctures not creating inner margins of the intervals, the 8th stria long, approaching the base of elytra; intervals moderately wide, not connected apically, each interval laterally flattened, mat with shining, impunctate carina at middle. Metasternum shining, finely and densely punctate, midline distinctly but not deeply impressed; abdomen shining, finely punctate. Legs slender; apical spur of fore tibia straight, acute; middle and hind tibiae thin, apical fringe with thin setae unequal in length; first posterior tarsal segment long, about half time longer than the upper spur, slightly longer than following three segments combined.

Male. The last abdominal segment slightly shorter than in female. Aedeagus as in figure 64.

Female. The last abdominal segment slightly longer than in male.

Remarks. The subgenus Pleuraphodius A. Schm. contains about 22 species, that inhabit mainly the Ethiopian Region, Oriental Realm and East Palaearctic. P. levisi Waterri. is considered as a rare species (Balthasar, 1964); it is relatively frequent but not numerous in the southern Provinces of D.P.R.K.

**Aphodius (Trichaphodius) proclivis** Balthasar, 1933

(Figs. 62, 63)

*Aphodius (Gillettianus) proclivis* Balthasar, 1933:139 (description of male); Balthasar, 1964: 177—178 (redescription).

**Distribution:** South China (Yunnan-Sen).


Description of the Korean specimens. Length 4.3—5.5 mm. Oblong-elongate, moderately convex, shining, dark brown with sides of pronotum, legs and usually base and apical part of elytra partially yellowish. Antennae light yellow, antennal clubs brownish, terminal segment of maxillary palpus cylindrical. Head
broad, very weakly convex, strongly reflexed clypeal margin broadly rounded each side of very shallow median emargination, sides arcuate to sharply rounded right-angled genae; surface very minutely alutaceous with rather evenly spaced, fine punctures. Pronotum rather weakly convex, sides moderately arcuate, anterior angles widely rounded, posterior angles obtuse, sides and base

Figs. 58—68. Male genitalia, lateral and dorsal view; 58, 59 — Aphodius (Acrossus) supertratus Nom. et NAK.; 60, 61 — A. (Paulianellus) maderi BALTH.; 62, 63 — A. (Trichaphodius) proelvis BALTH.; 64 — A. (Pleuraphodius) lewisi WATERH.; 65, 66 — A. (Aganocrossus) wrostigma HARI.; 67, 68 — A. (Trichonotulus) mongolicus MANNRH. Fig. 69. A. (Aphodius) elegans ALLIB. — left elytron

finely margined; surface very minutely alutaceous throughout under high magnification, mixed very fine and fine, unevenly distributed punctures a trifle smaller on the disc, larger and closer laterally. Scutellum triangular, narrow, finely punctate. Elytra convex, subparallel with sides and apical part shortly,
distinctly piliferous; striae fine, not deep, very fine strial punctures weakly 
crenating inner margins of the moderately convex, minutely alutaceous in-
tervals; intervals with very fine punctures, closer and more distinct at apex 
of elytra. Metasternum minutely alutaceous, impunctate, midline weakly im-
pressed, abdominal sterna alutaceous, finely punctate. Anterior tibia with 
three lateral teeth, crenate toward the base, the terminal spur straight; middle 
and hind tibiae long, slender, apical fringe with rather long setae, distinctly 
unequal in length; first posterior tarsal segment very long, about one-third 
time longer than the upper spur and clearly longer than following three seg-
ments combined.

Male. Apical spur of fore tibia wider than in female, truncate at apex; 
metasternum slightly concave, pronotal punctures less coarse. Aedeagus as 
in figures 62, 63.

Female. Apical spur of fore tibia narrower than in male, sharply pointed; 
metasternum not concave, pronotal punctures more coarse.

Remarks. I have examined the holotype of *A. procevis* in the BALTHASAR’S 
collection in Prague. This species has been described by BALTHASAR (1933) 
in a new subgenus *Gilletianus BALTHASAR*. The establishment of this subgenus was 
not justified, since the complex of the features of this species indicates its affiliation to 
the subgenus *Trichaphodius A. SCHEL*. New to the Korean fauna, frequent and numerous in various biotopes.

*Aphodius (Aganocrossus) urostigma* HAROLD, 1862

(Figs. 65, 66)

Distribution. Sunda Islands (Java, Borneo, Sumatra, Celebes), Indochina 
(Malaya, Thailand, Laos, Vietnam, Burma), India (Assam), Nepal, China (Ha-
ian, Yunnan), South Afghanistan, Taiwan (Liuyuan, Nanshanchi, Liukuei 
Lutao Isl., Lanyu Isl.), Korea, Japan — Hokkaido, Honshu, Shikoku, Kyushu, 
Yakushima, Kuchinoerabu, Nakanoshima, Takarajima, Amami-Oshima, Iki, 
Tsushima, Ishigaki, Iriomote, Ohshima, Toshima, Miyake, Hachijo, Hachijo-
Kojima, Aogashima, Tokara; Africa (introduced) (BALTHASAR, 1964; 1965; 

Material examined. 95 ♀♀ and ♂♂. Japan — Honshu, Kanagawa Pref., 
Sagamihara, 13 VII 1967, Y. SHIBATA (ISEZ), Yamanashi Pref., near Gozaishi, 
27 VII 1965, Y. SHIBATA (ISEZ), Tokyo, Machida, Tsurukawa, 6 VIII 1968, 
Y. SHIBATA (ISEZ); Korea — Prov. Hvang-he-namdo, Sinchon (108), 18 IX 
1971, J. PAWLOWSKI (ISEZ), vicinity of the water-fall Sujang-san (Mt., 121) 
neat Hedju (18), 1—3 VI 1974, Z. STEBNICKA (ISEZ); Prov. Kangwon-do, 
Kymgang-san (Mts, 53), 16—18 VI 1974, in cow dung and at human excrements, 
Z. STEBNICKA (ISEZ); Prov. Phjong-an-namdo, distr. Kangso (61), Thesong, 
distr. Sunan (104), Sokam—Cosudzi (105), 30 V 1974, in cow dung, Z. STEB-

4 — AZC XXIV/5–7

Remarks. Species frequent and numerous in D.P.R.K., occurs in various biotopes.

**Aphodius (Trichonotulus) dzamosanicus Stebnicka, 1973**

(Fig. 70)


**Aphodius (Trichonotulus) mongolicus Mannerheim, 1852**

(Figs. 67, 68)


Remarks. Species very similar to the Euro-Caucasian one A. (T.) serofa (F.); slightly differs from it by shape and punctuation of the head. According to Balthasar (1964) it is probably a subspecies of A. (T.) serofa, however, its distribution is little known as yet.

**Aphodius (Aphodius) elegans Allibert, 1847**

(Fig. 69)


**Aphodius (Orodeus) pusillus (Herbst, 1789)**

(Figs. 71, 72)

Distribution. Europe, Transcaucasia, Siberia, Mongolia, Japan — Hokkaido, Honshu (Niigata, Shibata), Shikoku, Kyushu (Nakane, 1960; Nakane et Baba, 1960; Balthasar, 1964; Endrödi, 1971 et all.).

Remarks. In the whole distributional area this species indicates great individual variability; it mainly concerns punctuation of head and pronotum, sculpture of elytra, color and body size. The distinction of Far-Eastern subspecies based on the small differences in external morphology by some authors is not sufficiently justified. Species new to the Korean fauna, occurs in some color variants. Locally numerous, collected mainly in cow and sheep dung.

Aphodius (Orodalus) naraensis NAKANE, 1956

(Figs. 73—75)


Description of the Korean specimens. Length 3—3.5 mm. Elongate oblong, moderately convex, black; margin of clypeus, shoulders and apex of elytra reddish, sometimes disc of elytra reddish brown. Head slightly convex, finely reflexed clypeal margin obtusely rounded each side of moderately deep anterior emargination, sides weakly arcuate to small, slightly flattened genae; frontal suture distinctly marked, surface of head everywhere closely, uniformly, moderately punctate, the punctures generally separated by less than their diameters. Pronotum more or less convex, slightly alutaceous, posterior angles obtusely rounded, sides and base margined; surface everywhere very densely punctate, the punctures moderate in size, very slightly smaller and closer toward the sides. Scutellum elongate, slightly convex at apex, finely punctate. Elytra subparallel, striae moderately deep, strial punctures as wide as striae, distinctly crenating edges of the intervals; intervals more or less convex, alutaceous with close, fine punctures. Ventral surface alutaceous, finely punctate, metasternum with moderately deep midline. Apex of middle and hind tibiae fringed with short, unequal spines; first segment of posterior tarsus longer than the upper spur and nearly equal to the following two segments combined.

Male. Apical spur of fore tibia bent inward at apex; aedeagus as in figures 74, 75.

Female. Apical spur of fore tibia straight; stylus as in figure 73.
Remarks. The original description of the male holotype of *A. naraensis* is incomplete. The holotype was not examined by the author of the present study. Series of specimens from Korea is characterized by great individual variability; this concerns punctation and color of elytra and shape of pronotum. Body shape of this species is very similar to this of *A. pusillus* (Herrbst); both species occur in the same biotopes. New to the Korean fauna.

Fig. 70. *Aphodius* (*Trichonotulus*) *dazusanicus* Steb. — female head.
Figs. 71, 72. *A. (Orodalus) pusillus* (Hbst) — male genitalia, lateral and dorsal view. Figs. 73—75. *A. (O.) naraensis* Nak. 73 — female genitalia, stylus; 74, 75 — male genitalia, lateral and dorsal view.
*Aphodius (Phaeaphodius) rectus* Motschulsky, 1866
(Fig. 80)

Distribution. Central Asia (Iran), Mongolia, East Siberia (Bajkal Region), Sachalin, Kurile Islands (Southern Kurilsk, Alechino, basin of Kurilka river), Primorskij Krai; North- and Central China, Korea, Japan — Hokkaido, Honshu, Shikoku, Kyushu, Sado, Ohshima, Miyake, Hachijo, Hachijo-Kojima; Taiwan (Balthasar, 1964; Tesař, 1968; Nomura, 1969; Kryvuluckaja, 1973).


Remarks. This species is very characteristic representative of Manchurian fauna. In D.P.R.K. locally frequent, mainly in the northern Provinces. Typical black form occurs with the variety ab. *biformis* Reitt.

*Aphodius (Agrilinus) uniformis* Waterhouse, 1875

Syn.: *Aphodius etorofoensis* Konô, 1937;
*Aphodius maritimus* Nomura et Nakane, 1951.

(Figs. 76, 77)


Remarks. Frequent and relatively numerous species in D.P.R.K., occurs in various biotopes, in cattle dung and human excrements.

Figs. 83—86. Male genitalia, lateral and dorsal view; 83, 84 — Aphodius (Bodilus) languidus A. Schönh.; 85, 86 — A. (Calamosternus) uniplagiatus Waterh. Figs. 87—89, A. (Agrilinus) inexpectatus Balth. 87 — female genitalia, stylus; 88, 89 — male genitalia, lateral and dorsal view. Figs. 90—95. Male genitalia, lateral and dorsal view; 90, 91 — A. (Bodilus) sordidus (Fabr.); 92, 93 — A. (Calamosternus) sublimatus (Motsch.); 94, 95 — A. (Nialus) sturmi Har.
Aphodius (Agrilinus) putridus (Herbst, 1789)
(Figs. 81, 82)


Remarks. Euro-Siberian species, new to the Korean fauna. In D.P.R.K. variety ab. transitus found, which differs from the typical form by color of elytra (black with reddish spots on shoulders and at apex) and strongest punctuation.

Aphodius (Agrilinus) breviusculus (Motschulsky, 1866)
Syn.: Aphodius nigerrimus Waterhouse, 1875.
(Figs. 78, 79)


Remarks. Probably local species, sometimes numerous, collected in D.P.R.K. only in one of northern Provinces.

Aphodius (Agrilinus) inexpectatus Balthasar, 1935
(Figs. 87—89)


Description of the Korean specimens. Length 4.5—5.5 mm. Oblong, subparallel, moderately convex, shining, dark red-brown, sometimes disc of pronotum and lateral part of elytra darker. Head moderately convex, edge finely reflexed, clypeus slightly angulate each side of moderate median emargination, sides nearly straight to small, obtusely rounded genae; surface of head finely punctate, frontal suture with three more or less distinct tubercles. Pronotum moderately convex, posterior angles obtusely rounded, sides straight or weakly emarginated over anterior three-fifths then weakly arcuate to posterior angles, side and base finely marginated; surface densely punctate with mixed fine and
moderately coarse punctures, closer and larger laterally. Scutellum triangular, distinctly punctate. Elytra convex, sides weakly arcuate, humeri not dentate; striae deep, rather wide, stria punctures slightly crenating inner margins of the narrow, strongly convex, not connected at apex intervals; surface of intervals impunctate, shining. Ventral surface shining; metasternum finely punctate, midline shallow. Apical spur of fore tibia straight and acute; apex of middle and hind tibiae fringed with short, equal spines; first segment of posterior tarsus shorter than upper spur and slightly longer than the next two segments combined.

Male. Frontal tubercles distinctly marked, shorter spur of middle tibia slightly truncate at apex. Aedeagus as in figures 88, 89.

Female. Frontal tubercles less distinctly marked than in male, shorter spur of middle tibia sharply pointed. Stylus as in figure 87.

Remarks. Species new to the Korean fauna. The holotype (only one male specimen known) belongs to the private collection of V. BALTHASAR in Prague.

*Aphodius* (*Bodilus*) *sordidus* (*Fabricius, 1775*)

(Figs. 90, 91)


Remarks. Euro-Asiatic species; occurs in various biotopes, in particular in the regions rich in limestone. In the D.P.R.K. frequent but not very numerous.

*Aphodius* (*Bodilus*) *languidulus* A. Schmidt, 1922

(Figs. 83, 84)


Remarks. Not frequent and not numerous species. It is probably an element of the Manchurian fauna of narrow area of distribution. In Korea collected mainly at light.

*Aphodius* (*Nialis*) *sturmi* HAROLD, 1870

Syn.: *Aphodius inouei* NOMURA, 1942.

(Figs. 94, 95)


*Aphodius* (*Calamosternus*) *uniplagiatatus* WATERHOUSE, 1875

(Figs. 85, 86)


Material examined. 79 ♀♀ and ♂♂. Prov. Kangwŏn-do, Vŏnsan (118), 1 IX 1966, H. ŠZELEGIĘWIECZ and C. DZIADOSZ (ZIW), Kymgang-san (Mts, 53),

Remarks. Common species, in Korea frequent and numerous in various biotopes.

Figs. 96—98. Aegialia (Psammoporus) kamtschatica Motsch. 96 — female genitalia, stylus; 97 — aedeagus, lateral view; 98 — paramera, dorsal view. Fig. 99. A. (Aegialia) comis (Lewis) — female genitalia, stylus. Figs. 100—102. Male genitalia, lateral and dorsal view; 100 — Rhyssenus koreanus sp. n.; 101 — Ochodes ferrugineus Esch.; 102 — Trox sabulosus (L.)

**Aphodius (Calamosternus) sublimbatus** (Motschulsky, 1860)


(Figs. 92, 93)

Distribution. East Siberia (Ussuri, Amur), Manchuria, China, Korea, Japan — Hokkaido, Honshu, Shikoku, Kyushu, Tsushima, Kuchinoerabu, Takarajima, Minami-Daitōjima, Toshima, Miyake, Hachijo, Hachijo-Kojima,


Remarks. East-Asiatic species inhabiting large area. Forms numerous not distinctly bordered local races, which slightly differ by color and sometimes by shape. Frequent but not numerous in D.P.R.K.

**Aegialiini**

**Aegalia (Aegalia) comis** (LEWIS, 1895)

(Fig. 99)

Distribution. USSR — Primorskij Kraj (Suputinka), Japan — Honshu (Nikkō), Hokkaido (Sapporo, Kotonai, Bankei, Tokachi, Abashiri); North Korea — Prov. Čchongdžin-si, valley of river Susong-chon (110) (STEBNICKA, 1977).

**Aegalia (Psammoporus) kamtschatica** MOTSCHULSKY, 1860

(Figs. 96—98)

Distribution. USSR — Bajkal and Transbajkal Region, Siberia (Daurija), basin of Ussuri river (Birskoje), Kamchatka, Sachalin, Kurile Islands; Japan — Hokkaido, Honshu; North Korea — Prov. Hamgjong-pukto, Kvanmo-bong (Mt.), 60 (STEBNICKA, 1977).

Psammodiini

Rhyssemus koreanus sp. n.

(Fig. 100)

Holotype ♂: North Korea, Prov. Hangjöng-namdo, distr. Hjangsan (27), Miyohjang-san (Mts), 3 VIII 1959, B. Pisarski and J. Prószyński; Paratype ♀, the same data as holotype, in coll. ISEZ.

Description. Length 2.8—3 mm. Elongate-oblong, moderately convex, shining-black; legs, elytral margin and ventral side reddish. Head strongly convex at middle, edge finely reflexed, elytrum sharply angled each side of broad, moderately deep median emargination, sides weakly arcuate to small genae; front with rounded median convexity, occipital area with two weakly marked carinae and two small tubercles on each side; surface of head everywhere granulated. Pronotum transverse, sides and base margined, setaceous, weakly crenate, marginal setae yellow, short; disc with five transverse, moderately convex carinae and granulated convexity placed on each side near middle of lateral declivity; grooves wide with dense, coarse punctures, surface of carina impunctate. Scutellum small, triangular, alutaceous. Elytra subparallel, humeri sharply dentate; elytral striae moderately deep, intervals slightly convex with a row of moderately large tubercles along outside margin and a row of small tubercles along inner margin. Ventral surface shining; metasternum slightly concave, midline distinct; abdominal segments distinctly delimited by deep, finely and closely punctated transverse grooves; femora with a few punctures bearing yellow hairs. Middle and hind tibiae slender; first segment of posterior tarsus longer than the upper spur and subequal to following three segments combined.

Male. Apical spur of fore tibia bent inward at apex. Aedeagus as in figure 100.

Female. Apical spur of fore tibia straight.

Remarks. R. koreanus sp. n. resembles R. lunatus Petr. (described from Taiwan) very closely, but these species are separated by differences in the sculpture of pronotum.

Ochodaeinae

Ochodaeus ferrugineus (Eschscholtz, 1818)

(Fig. 101)

Distribution. Europe, Caucasus, Siberia, Mongolia, Korea (Nomura, 1942; Horion, 1958; Stebnicka 1976 et al.).

Geotrupinae

Geotrupes (Phelotrupes) avaritus Motschulsky, 1857

Distribution. USSR — Primorskij Kraj, Kurile Islands (Alechino, Sernovodsk, Kunašir), Japan — Hokkaido, Honshu (Kurokawa, Matsunoyama), Shikoku, Kyushu; Korea (Nakane et Baba, 1960; Medvedev et Ermolenko, 1969; Kryvoluckaja, 1973).


Remarks. Belongs to the group of Manchurian species of rather narrow area of distribution. Fairly common in D.P.R.K.; occurs in the woodland, beetles fly during the day.

Geotrupes (Phelotrupes) laevistriatus Motschulsky, 1857


Remarks. An element of Manchurian-fauna. Occurs in the areas with mixed forests in mountainous regions and mountains. Feeds probably in vegetable detritus, sometimes found in cattle excrements. Beetles fly during the day.
Melolonthinae

Sericini

Gastroserica herzi (Heyden, 1887)
(Figs. 103, 104)

Distribution. China, Manchuria, Taiwan (Hori), Korea — Chosan (125), Usi (116), Kočchang (48), Hverjöng (25), Kangjasan (49), Andžu (2), Suvón (92), Kangnyung (42), Pegam (82), Vónsan (118), Pusan (83) (Murayama, 1938; Medvedev, 1952; Murayama, 1954; Nakane, 1973; Nomura, 1973).


Remarks. The occurrence of this species in Japan reported by Murayama (1938, 1954) was not confirmed in the subsequent literature. In the islands of Central Japan occurs very similar species G. higonia (Lewis); the shape of its male copulatory organ is different from this of G. herzi (Heyd.) (Nomura, 1973).

Nipponoserica similis (Lewis, 1895)
(Figs. 105, 106)


Material examined. 2 ♂♂. Prov. Hvanghe-namdo, vicinity of the water-fall Sujang-san (Mt., 121) near Hedžu (18), 2 VI 1974, under vegetation, Z. Stebnicka (ISEZ).

Remarks. Species collected in the central part of Peninsula, on the southern slope of the mountain covered with xerophilous vegetation.

Trichoserica polita (Gebler, 1832)
(Fig. 107, 108)

Distribution. USSR — Bajkal and Transbajkal Region (Čitinskaja Obl.), Bur'atskaja ASSR (Nerčinsk), Primorskij Kraj (Blagoveščensk, Chabarovsky, Askol'd Isl.), Manchuria, Korea — Hverjöng (25), Sungho (102), Sarivón (101), Kangjasan (49) (Murayama, 1938; Medvedev, 1952; Murayama, 1954; Nomura, 1971).

Material examined. 1 ♂ and 2 ♀. Prov. Kesõng-si, vicinity of the water-fall Pakjón on the Čhonma-san (Mt., 13), 8 VI 1974, Z. Stebnicka (ISEZ); Prov.
Figs. 103—115. Male genitalia, lateral and dorsal view; 103 — Gastroserica herzi (HEDY.); 104 — G. higonia (LEWIS); 105, 106 — Nipponoserica similis (LEWIS); 107, 108 — Trichoserica polita (GEBL.); 109, 110 — Sericania fuscolineata MOTSCH.; 111, 112 — Maladera (Maladera) gibbiventeris (BRSKE); 113, 114 — M. (M.) castanea (ARROW); 115 — Serica boops WATERR.
Haengjong-namdo, distr. Hjangsan (27), Sangwŏn-am (109), Mjohjang-san (Mts), 17 VI 1965, M. Mroczkowski and A. Riedel (ZIW).

Remarks. Specimens were collected on Rosaceae bushes.

Sericania fuscolineata MOTSCHULKY, 1860

(Figs. 109, 110)

Distribution. USSR — Transbaikal Region (Čitinskaja Obl.), Šantarskij Isl., Amur (Nižne-V'atskoje), Daurija, Primorskij Kraj (Askol’d Isl., Vladivostok), North China, Manchuria (four localities recorded in Japanese), Japan — Kyushu (Nagasaki), Ryu-kyu Isl., Tsushima; Korea — Hverjöng (25), Pučhŏn (river, 91), Kwanmo-bong (Mt., 60) (and 13 not called localities in Japanese) (Murayama, 1938; Medvedev, 1952; Murayama, 1954; Nomura, 1976).


Remarks. Frequent species, locally numerous. In D.P.R.K. found mainly in the mountains. Collected during the day on various plants, comes to light in the evenings.

Serica boops WATERHOUSE, 1875

Syn.: Ophthalmo-serica niijima KONTKANEN, 1956.

(Fig. 115)

Distribution. Japan — Honshu (Aomori: Tsuta spa; Fukushima: Kashi, Hutamata; Gunma: Mt. Tanigawa, Hoshi spa, Kiruzumi spa, Odaira; Niigata: Motohashi, Niitsu, Ikenotaira, Shiori-toge, Sagasha-maki, Kurokawa, Kanamaru; Nagano: Kuruizawa, Tobira spa, Kiso-Fukushima; Yamashita: Kiyosato, Ina, Yamano-kako, Sagashio spa; Tokyo: Okutama, Mt. Takamiz, Mt. Mitake, Mt. Takao; Kanagawa: Hakone; Shizuoka: Odaru spa, Mt. Fuji; Aichi: Mt. Dando; Gifu: Hirayu; Kyoto: Mt. Hie; Mie: Misugi; Wakayama: Mt. Koya,
Mt. Ryujin; Hyogo: Maiyasen, Mt. Hyonosen), Shikoku (Ehime: Mt. Nara-
bara), Kyushu (Fukuoka: Mt. Wakasugi, Mt. Hikosan, Mt. Shaka), Izu Isl.
(Hachijo); Korea — Čeďžu-do (Isl., 3) (Murayama, 1938; Medvedev, 1952;

Material examined. 1 ♀. Prov. Hvanghe-namdo, vicinity of the water-fall
Sujang-san (Mt., 121) near Hedžu (18), 2 VI 1974, under stone, Z. Stebnicka
(ISEZ).

Remarks. The occurrence of this species in Manchuria and Primorski Kraj
reported by Murayama (1954) and Medvedev (1952) probably concern a very
similar species S. rosinae (Pic), whose area of distribution lies more to the north.

Maladera (Maladera) castanea (Arrow, 1913)

Syn.: Maladera japonica: Medvedev, 1953 (see Motschulsky, 1860).

(Figs. 113, 114)

Distribution. USSR — Primorski Kraj, Kurile Islands, Caucasus (intro-
duced); North America (introduced); North- and Central China, Japan — Hok-
kaido (Ishikari), Honshu (Aomori; Akita; Yamagata: Yonezawa; Miyagi:
Sendai; Tochigi: Ohtawara; Chiba: Mt. Kiyosumi; Tokyo: Kunitachi, Okutama;
Kanagawa: Hiratsuka; Niigata: Kurokawa, Senami, Nakajo, Hirabayashi,
Shibata, Kaji, Kama, Yuzawa spa, Maoroshi, Nito, Gosen-shi, Gamohara spa,
Momozaki-hama, Sasaguchi-hama; Ishikawa: Tsurugi; Nagano: Suwa, Kiso;
Shizuoka: Akiba; Gifu; Mie: Misugi; Kyoto; Hyogo: Kobe), Sado (Mt. Kinpoku,
Futami, Tahara), Shikoku (Ehime: Sawatani, Ichiu), Kyushu (Fukuoka: Mt.
Hikosan, Kokura; Saga; Nagasaki: Kuchinotsu, Tsushima; Kumamoto; Miya-
zaki: Takaneba; Kagoshima: Kirishima), Ryu-kyu Isl. (Yakushima, Tanegashima;
Izu Isl. (Toshima, Nii-jima, Shikine, Kouzu, Mikura, Miyake, Hachijo,
Hachijo-kojima, Aogashima); Taiwan; Korea — Suvon (92), Kyang-san
(Mts. 53), Soul (93) (Murayama, 1938; Nakane et Baba, 1960; Murayama,

Material examined. 19 ♀♀ and ♀♀. Prov. Kangyŏn-do, Vonsan (118), 1 IX
1966, H. Szelgiewicz and C. Dziadosz (ZIW); Prov. Hamgjŏng-namdo,
distr. Hjangsan (27), Hjangam-ri, 18 VI 1965, M. Mroczkowski and A. Riedel
(ZIW); Prov. Phjong-san-namdo, distr. Sunchŏn (94), Džamo-san, 27 VIII 1971,
J. Pavloński (ISEZ), distr. Sunan (104), Sokam-Čosudži (105), 21 VIII 1971,
J. Pavloński (ISEZ); Prov. Phjongjang-si, Jongak-san (Mt., 40), 20 VIII
1971, J. Pavloński (ISEZ), Phjongjang (86), 1 VII 1950, Borchsenius (ZIL).

Remarks. Medvedev (1952) considered M. castanea as a synonym of M.
japonica (Motsch.), however, they are two different species. The distributional
data of M. castanea are given above; according to Nomura (1973), M. japonica
japonica (Motsch.) inhabits Japan exclusively. Both species are enemies of
tea and vegetable cultivations and also of orchards; larva gnaws roots of va-
rious plants including cultivated ones. One generation per year.
Maladera (Maladera) gibbiventris (Brenske, 1897)  
(Figs. 111, 112)

Distribution. Central China (Changyang), Taiwan (Wushe, Nanshanchi), Korea — Chungdzu (4), Pujô (79), Chongdzu (12), Hedzu (18), Kangnyung (42), Chinhvingvon (5), Suvôn (92), Sôul (93), Kwangjang (43), Kjongsong (44), Inchon (33), Kangge (45) (Muraiama, 1938; 1954; Nomura, 1974).


Maladera (Maladera) formosae (Brenske, 1897)  
(Figs. 116, 117)

Distribution. Taiwan (Wushe, Nanshanchi, Lyutan, Liukuei, Tai-tsung, Jenaï, Tainan, Kenting Park), Korea — Mokpho (66), Suvôn (92), Kjongsong (44), Sôul (93) (Muraiama, 1938; 1954; Nomura, 1974).


Maladera (Maladera) renardi (Ballion, 1871)

Syn.: Serica spissigrada Brensk, 1897;  
Serica motschulskyi Brensk, 1897;  
Serica nakayamae Murayama, 1938.

(Fig. 118)

Distribution. USSR — Primorski Kraj (Chabarovsky, Vladivostok), Manchuria, North China, Japan — Honshu (Yamagata: Atsumi spa; Fukushima: Wakamatsu; Ibaragi: Tone; Tokyo: Tamagawa; Kanagawa: Oiso, Kuneguma; Niigata: Shibata, Kurokawa, Sasaguchi-hama, Naka, Murakami, Niitsu, Nagaoka; Shimane: Enya), Sado, Shikoku (Tokushima: Kamiryo), Kyushu (Fukuoka: Mt. Hikosan; Nagasaki), Korea — Sôul (93), Mudžu (67), Kvesan (62), Kosan (54), Kodže (59), Hongchon (20), Hedzu (18), Hamhyung (19), Kangge (45), Kildzu (55), Kymchon (58), Anak (1), Ich'on (33), Kjongsong

Remarks. Beetles are enemies of orchards and cultivations, among others, of broad bean and soya. One generation per year.

**Maladera (Maladera) holosericea** (Scopoli, 1772)
(Figs. 119, 120)

**Distribution.** Europe, Caucasus, Siberia, Manchuria (numerous localities recorded in Japanese), Korea — Kjongsong (44), Suvon (92), Kesong (56), Hamhyng (19), Kangge (45), Kordże (59), Hedžu (18), Hjesan (26), Hverjong (25), Kvesan (62), Sōul (53), Kangnyng (42) (Murayama, 1938; Medvedev, 1952; Murayama, 1954; Medvedev, 1974; Stebnicka, 1978 et al.).


Remarks. Palearctic species. Beetles are enemies of vegetable cultivations, orchards and field cultivations. Imagines feed on young sprouts, leaves and stamens. One generation per year.

**Maladera (Maladera) cariniceps** (Moser, 1915)
(Figs. 121, 122)

**Distribution.** Manchuria, Japan — Kyushu (Nagasaki), Tsushima; Korea — Mokpho (66), Namvön (73), Korjong (126), Chungdžu (4), Hverjong (25), Kesong (56), Jongdžu (34), Hedžu (18), Chocheungvön (5), Pujö (79), Sōul (93), Kvesan (62), Inchon (32), Chongdžu (12), Suvon (92), Kangnyng (42), Kjongsong (44), Kwangjang (43), Vonsan (118), Čedžu-do (Isl., 3) (Murayama, 1938; 1954; Nomura, 1973).


**Maladera (Maladera) fusania** (Murayama, 1934)
(Figs. 123, 124)

**Distribution.** Taiwan (Chihpen), Korea — Mokpho (66), Kwangjang (43), Kunsan (46), Kwangdžu (47), Hedžu (18), Kodże (59), Tongne (111), Mudžu (67), Tegu (112), Chocheungvön (5), Suvon (92), Phohang (81), Sōul (93), Kangnyng (42), Kjongsong (44), Hamhyng (19) (Murayama, 1938; 1954; Nomura, 1974).

Material examined. 16 ♂♂ and ♀♀. Prov. Kangvön-do, Vonsan (118), 15.VI

Remarks. Similarly as M. cariniceps (Mos.) this species has been collected exclusively in the vicinity of water, most frequently under stones and on the ground, where it spends the day. Active at dusk, comes to light.
Maladera (Maladera) orientalis (Motschulsky, 1857)

Syn.: Serica salebrosa Brenske, 1897.

(Figs. 125, 126)

Distribution. USSR — Primorskij Kraj, Sachalin; North China (Pekin, Alashan), Mongolia, Manchuria (numerous localities recorded in Japanese), Japan — Hokkaido (Otaru), Honshu (Iwate: Kuji; Miyagi: Sendai; Yamagata: Sendai, Atsumi; Tochigi: Nasu, Ohtawara; Gunma: Yokogawa, Kirizumi; Ibaragi: Mt. Tsukuba; Tokyo: Mt. Takao, Kunitachi, Takamizu, Mt. Kumotori, Tama-gawa; Kanagawa: Kamakura, Fujisawa, Tsujido, Hakone; Niigata: Kurokawa, Saseguchi-hama, Kakuda-hama, Kamiishikawa, Shidai-hama, Mitote, Sakasamaki, Shiunji, Dainichihara, Yoshigahira, Momozaki-hama, Imakawa, Murakami, Senami, Kanamatsu, Tsunagi, Yoneyama, Okutadami, Tsuchitaru, Naguoka, Asagai, Ooyu spa, Agekawa, Shiori-toge; Awa-shima Isl.; Nagano: Mt. Yatsugatake; Shizuoka: Kunozan; Aichi: Nagoya; Gift; Ishikawa: Tsurugi; Nara: Yamakita; Tokushima: Mt. Tsurugi, Kamiyoo), Sado (Umezu, Ogura-toge, Mt. Donden), Shikoku (Ehime: Omogo), Kyushu (Fukuoka; Nagasaki), Izu Isl. (Toshima, Niijima); Taiwan; Korea — Hedzú (18) Mokpho (66), Kyangdzu (47), Tongne (111), Čongdzu (6), Henam (24), Jösú (38), Sŏul (93), Kangnyng (42), Kosan (54), Kséong (56), Samchónpho (100), Kǒdže (59), Hamhyng (19), Nadzín (74), Kangge (45), Kwanmo-bong (60), Phohang (81), Mudžu (67), Tegu (112), Čechingvón (5), Čongdžin (11), Vŏndzu (119), Suvón (92), Jŏdzú (39), Ičhôn (32), Kjongsgón (44), Jŏnchón (35), Hongčhón (20), Čedžu-do (Isl., 3) (Murayama, 1938; Medvedev, 1952; Murayama, 1954; Nakane et Baba, 1960; Nomura, 1969; 1973; Medvedev, 1974).

Remarks. This is one of most numerous, widely distributed species of the genus *Maladera* Muls. that occur in Far East. Inhabits mountainous regions. Collected at waters and higher rice fields under stones or directly on the ground; comes to light in the evenings. Beetles are enemies of orchards; imagines destroy young sprouts and leaves, larvae — roots of various trees and shrubs. One generation per year.

*Maladera (Maladera) schonfeldti* (Murayama, 1937)
(Figs. 127, 128)

Distribution. Korea — Mokpho (66), Suvŏn (92), Korjŏng (126), Kesŏng (56), Kangsŏ (61), Hamhyng (19) (Murayama, 1938; 1954).


Remarks. This species has been known up to now only from Korea. Local, relatively numerous, collected at light. Body surface of the beetles brown, brownish-black or black, covered by a characteristic grey coating. Description of this species is not contained in the present paper since the representatives of the genus *Maladera* Muls. are very similar externally and indicate a great individual variability; the difference in the structure of their male copulatory apparatus is the only criterium on which they are properly determinable.

*Maladera (Maladera) okamotoi* (Murayama, 1938)
(Figs. 129, 130)

Distribution. China, Manchuria (two localities recorded in Japanese), Korea — Namvŏn (73), Jongdžu (34), Chŏngdžu (12), Chungdžu (4), Čočingvŏn (5), Suvŏn (92) (Murayama, 1938; 1954).


Remarks. This species was collected only at light.

*Maladera (Eumaladera) nitidiceps* Nomura, 1967
(Figs. 131, 132)


**Hopliini**

*Hoplia (Euchromopia) aureola* (Pallas, 1781)

(Figs. 133, 134)


Remarks. An element of Manchurian fauna. Beetles appear in great numbers, cover various herbaceous plants and bush scrubs; they are enemies of cabbage and rice cultivations. In D.P.R.K. collected frequently in the vicinity of plough-lands, at stream borders, on bushes and flowers.

*Hoplia (Decamera) djukini* Jacobson, 1914

(Figs. 135, 136)

Distribution. USSR — Primorskij Krai (Vorošilov-Ussurijskij, Šmakovka, vicinity of Spassk, Vinogradovka, Tiutiche river, Tumen-ula river), (Medvedev, 1952).


Remarks. According to Medvedev (1952) beetles occur on the banks of inland waters and at sea shore, often locally in Primorskij Krai. Species new to the Korean fauna.
Ectinohoplia rufipes (Motschulsky, 1860)
(Figs. 139, 140)


Remarks. Beetles inhabit wooded areas, occur in great numbers in Primorskij Kraj. By eating leaves of apple-trees, plum-trees and other fruit-trees often cause great damages in orchards.

Melolonthini

Hoplosternus incanus Motschulsky, 1853
(Figs. 141, 142)

Distribution. USSR — Primorskij Kraj (Vorošilov-Ussurijskij, Vladivostok, Tumen-ula river), North China (to Peking), Manchuria (twelve localities recorded in Japanese), Japan — Kyushu; Korea — Mokpho (66), Kangjasan (49), Suvon (92), Sičhang (97), Čočingvón (5), Kjongšón (44), Kymgang-san (Mt., 53), Ichon (33), Hedžu (18), Hamhyng (19), Musan (70), Kangge (45), Songchon (95), Sinyidžu (96), Purjông (87) (and 13 not called localities recorded in Japanese) (Medvedev, 1951; Murayama, 1954).


Remarks. Similar to the majority of representatives of the tribe Melolonthini, this species appears exclusively in the evenings and at the beginning of nights. Linked to woodland, collected only at light.

Heptophyllini

Hilyotrogus bicoloreus (Heyden, 1887)
(Figs. 137, 138)

Distribution. USSR — Primorskij Kraj (Vladivostok, Olga), Manchuria, Korea — Kangjasan (49), Korjong (126), Kymgang-san (Mt., 53) (and 13 not called localities recorded in Japanese) (Medvedev, 1951; Murayama, 1954).

Remarks. Rare species, probably mountainous, collected as isolated individuals. The not-deciphered names of the localities in Korea given by Murayama (1954) in the Japanese language, mainly indicate mountains or eminences (—"san" ending). The names of particular summits were created according to designations by local inhabitants, therefore the identification of them is very difficult.

**Rhizotrogini**

*Apogonia cupreoviridis* Kolbe, 1886

(Figs. 143, 144)

Distribution. Japan, Manchuria (seven localities recorded in Japanese), Korea — Vando (120), Kwangjang (43), Sunčhŏn (94), Tongne (111), Kwangdžu (47), Mokpho (66), Namvŏn (73), Kangjasan (49), Mudžu (67), Čongdžu (6), Ponghwa-ri (88), Uldźin (117), Čochingvŏn (5), Thosan (114), Suvŏn (92), Kjongsoň (44), Pisylsan (89), Čunčhŏn (8), Vŏndžu (119), Hongčhŏn (20), Ičhŏn (33), Vŏnsan (118), Hedźu (18), Kečhŏn (57), Čongphjong (10), Jŏngvŏn (37) (and nine not called localities recorded in Japanese) (Murayama, 1954).


Remarks. Species frequent and numerous in D.P.R.K. Collected mainly under stones, on plants or directly on the ground, also at light. Most frequently occurs at sea-shore, in the valleys of mountainous rivers and streams and in the vicinity of lakes.

*Apogonia cribricollis* Burmeister, 1855

(Figs. 145, 146)

Distribution. Manchuria (six localities recorded in Japanese), Korea — Su-voń (92), Kjongsoń (44) (Murayama, 1954).

Material examined. 6 ♂♂ and ♀♀. Prov. Hamgjong-namdo, distr. Hjango-san
Figs. 143—156. Male genitalia, lateral and dorsal view; 143, 144 — *Apogonia cupreoviridis* Kolbe; 145, 146 — *A. cribricollis* Burm.; 147, 148 — *Lasiopsis manchuricus* Muray.; 149, 150 — *Brahmina rubetra* (Fald.); 151, 152 — *Sophrops heydeni* (Brske); 153, 154 — *S. striata* (Brske); 155, 156 — *Méridiba koreana* Niij. et Kin.
(27), Hjangam-ri, Mjohjang-san (Mts), 19 VI 1965, M. Mroczkowski and A. Riedel (ZIW); Prov. Phjongjang-si, Phjongjang (86), town park Moran-bong, 29 V 1965, M. Mroczkowski and A. Riedel (ZIW).

Remarks. Species much more rare than the former one; nothing is known of the ecology of its. Differs from *A. eupreoviridis* Kolbe by smaller body size and punctuation of elytra.

*Brahmina rubetra* (Faldermann, 1835)

(Figs. 149, 150)

Distribution. North China (to Peking), Manchuria (Medvedev, 1951; Murayama, 1954).


Remarks. A new species to the Korean fauna. It is probably an element of the Manchurian fauna of a narrow range.

*Lasiopsis manchuricus* Murayama, 1941

(Figs. 147, 148)


Remarks. Species new to the Korean fauna, up to now known only from Manchuria. It differs from the other Far-Eastern species of the genus Lasiopsis Er. by the structure of male copulatory apparatus.

*Sophrops heydeni* (Brenske, 1892)

(Figs. 151, 152)

Distribution. USSR — Primorskiy Kraj (Černigovka, Jakovlevka, Vorošílov-Ussurijskij, Tumen-ula river), Korea — Mokpho (66), Peksan (84), Kangjasan (49), Tegu (112), Mudžu (67), Čočingvŏn (5), Suvŏn (92), Kjongŏng (44), Inčhŏn (32), Hongchŏn (20) (and nine not called localities recorded in Japanese) (Medvedev, 1951; Murayama, 1954).


Remarks. Beetles active in the evenings.
Sophrops striata (BRENSKE, 1892)
(Figs. 153, 154)

Distribution. China, Korea — Kangjasan (49), Korjöng (126), Suvôn (92), Hvado (127), Sokho (129), Kjöngsöng (44), Sarivôn (101), Sinsang (128), Inčhon (32), Andžu (2), Sŏnch'ŏn (95), Sŏnsan (130) (and six not called localities recorded in Japanese) (MEDVEDEV, 1951; MURAYAMA, 1954).


Remarks. Species nocturnal, beginning activity soon after sunset. During the day the beetles stay under stones and plants, come to light in the evenings.

Miridiba koreana NIJIMA et KINOSHITA, 1923
(Figs. 155, 156)

Distribution. Manchuria (five localities recorded in Japanese), Korea — Mokpho (66), Jongdzu (34), Chungdzu (4), Čočingvŏn (5), Suvôn (92), Kjöngsöng (44), Vŏnșan (118), Sepho (98), Andžu (2), Kangge (45), Sinphjöng (99) (MURAYAMA, 1954).


Remarks. This is one of three known species of the genus Miridiba REITT. inhabiting North China, Manchuria and Korea. Beetles are active at dusk and in the nights, collected only at light (cover the shades of street lamps).

Holotrichia diomphalia (BATES, 1888)
(Fig. 157)

Distribution. USSR — Transbaikal Region (Čitinskaja Obl.), Amur, Ussuri, Primorskij Kraj (Tarasovka), Sachalin; North China (to Peking), Manchuria (24 localities recorded in Japanese), Japan, Korea — Mokpho (66), Vando (120), Kvangjang (43), Sunčhŏn (94), Tongne (111), Peksan (84), Tegu (112), Kangjasan (49), Kongdzu (131), Kymgang-san (Mts, 53), Kvandz'u (47), Čöngdz'u (6), Suvon (92), Kjöngsöng (44), Kosan (54), Hongch'ŏn (20), Chunčhŏn (8), Jŏncchŏn (35), Ich'ŏn (33), Kangnyng (42), Kočhang (48), Jongdŏk (36), Vŏndžu (119), Koksan (64), Čočngdz'u (12), Hamhyng (19), Phjongjang (86), Jŏngvŏn (37), Sŏnch'ŏn (95), Kangge (45), Mjöngch'ŏn (68), Čočngsŏng (9), Kildžu (55) (MEDVEDEV, 1951; MURAYAMA, 1954; MEDVEDEV, 1974; KALININA, 1977).

Remarks. Numerous species of the genus Holotrichia Hope, which mainly inhabit East Asia are very similar externally and difficult to determine, however, the morphology of male copulatory apparatus of particular species is distinctly differentiated. Bionomy of the representatives of this genus is very little known. Beetles are active at evenings and nights, however, nearly exclusively females were collected by means of electric light. This indicates that mainly females fly. Imagines probably feed on leaves and young tree-sprouts. The developmental cycle of H. diomphalia (Bat.) takes two years on an average; larva winters twice. Larvae destroy the cultivations of rice, wheat, barley, millet, maize, pulse plants, flax, hemp, sugar cane and potatoes.

Holotrichia ernesti Reitter, 1902
(Fig. 158)

Distribution. USSR — Amur, Ussuri, Primorski Kraj (Chanka Lake), North China, Mongolia, Manchuria (Mukden, Harbin), Korea — Namvŏn (73), Korjŏng (126), Suvŏn (92), Kjongsoŋ (44) (MedveDEV, 1951; Murayama, 1954; Kalinina, 1977).


Remarks. Fairly frequent but not numerous species, beginning activity soon after sunset; during the day the beetles stay in the ground or under stones, come to light in the evenings. Probably linked to watersides.

*Holotrichia paralella* (Motschulsky, 1854)

Syn.: *Holotrichia morosa* Waterhouse, 1875.

(Figs. 161, 162)

Distribution. USSR — Sachalin, Primorski Kraj (Tumen-ula), Japan — Honshu (Kurokawa), Tsushima; North- and Central China, Tibet, Manchuria (six localities recorded in Japanese), Korea — Čedžu-do (Isl., 3), Kwangjjang (43), Vando (120), Kwangdžu (47), Sunčhôn (94), Mokpho (66), Tongne (111), Kangjasan (49), Namvôn (73), Pungan (85), Kangdžin (50), Hadong (21), Kjön-gdžu (51), Chǒngdžu (12), Tegu (112). Chǒngan (7), Hvengjang (22), Tedžôn
(113), Suvôn (92), Jongdžu (34), Kimpho (52), Inčhôn (32), Kjôngsông (44), Kojông (126), Čočingvön (5), Chunčhôn (8), Kymgang-san (Mt., 53), Hwacheôn (23) (Medvedev, 1951; Nakane et Baba, 1960; Murayama, 1954; Kalinina, 1977).


*Holotrichia picea* Waterhouse, 1875

Syn.: *Holotrichia infantula* Medvedev, 1951.

(Figs. 163—166, 172)

Distribution. USSR — Promorskij Krai (Chasan, Sidemi, Barabaš, Tunmen-ula, Razdolnoj river), Japan — Hokkaido, Honshu (Momozaki-hama, Mt. Yakamine, Kyoto), Awa-shima, Kyushu; Manchuria, Korea — Kangjasan (49), Čežu-do (Isl., 3) (Medvedev, 1951; Nakane et Baba, 1960; Murayama, 1954; Kalinina, 1977).


Remarks. Species spread in the northern part of the Peninsula, not numerous. Collected at light.

*Holotrichia oblitera* (Faldermann, 1835)

Syn.: *Holotrichia amplipennis* Fairmaire, 1887.

(Figs. 167, 168)

Distribution. Manchuria, Japan — Honshu (Medvedev, 1951).

Remarks. This species reported by Medvedev (1951) from Primorski Kraj, according to Kalinina (1973) does not occur on the territory of USSR. New to the Korean fauna, widely distributed in northern Provinces. Fairly frequent, unfortunately only females were collected. Probably linked to watersides. Evening-active, comes to light, during the day the beetles hide in the ground or under stones.

Figs. 165, 166. Holotrichia picea Waterh.; 165 — female pigidium; 166 — apex of posterior tibia. Figs. 167, 168. H. oblitA (FALD.); 167 — female pigidium; 168 — apex of posterior tibia. Figs. 169—171. H. inelegans (Lewis); 169 — female pigidium; 170 — apex of posterior tibia; 171 — last segment of maxillary palpus. Fig. 172. H. picea Waterh. — last segment of maxillary palpus.

Holotrichia inelegans (Lewis, 1895)
(Figs. 169—171)

Distribution. USSR — Primorski Kraj (Tatjanovka, Kamen-Rybolov, Troickoe, Jakovlevka, Ussurijsk, vicinity of Chabarovsk, Nizh. Tambovskoe), Sachalin; Manchuria (Mukden), Japan — Hokkaido, Honshu, Kyushu (Medvedev, 1951; Kalinina, 1977).

s — AZC XXIV/5—7

Remarks. This species has been probably reported from Korea by Murayama (1954) as *H. kiotoensis* BRSKE, however, due to lack of the material I can not check this report. A detailed revision of the genus *Holotrichia* HOPE is desirable, with reference to the materials from China and to the reports done previously by the Chinese (Chang You-Wei, 1965) and Japanese authors.

_Eotrichia titanis* (Reitter, 1902)
(Figs. 159, 160)

Distribution. USSR — Primorskiy Krai (Černigovka, Kamen-Rybolov, Novo-Nikolskoje, Vorošilov-Ussurijskij, Ula-che and Tumen-ula rivers), Manchuria, Korea — Tegu (112), Suvôn (92), Vando (120), Kjöngsông (44), Vŏndžu (119), Kesoŋ (56), Chunčhön (8), Čhôngdžu (12), Mengsan (69), Hamhyng (19), Sin'yidžu (96), (Medvedev, 1951; Murayama, 1954; Medvedev, 1974).


Remarks. Bionomics similar to that of *H. diomphalia* (Bat.). Beetles are evening-active, come to light. Larvae are enemies of cultivations.

_Rutelinae_

_Rutelini_

_Popillia indigonacea* Motchulsky, 1853
(Figs. 173, 174)

Distribution. USSR — Amur, Ussuri, Bureiskij Chrebet, Primorskiy Krai (Sedanka, Černigovka), Manchuria, East China, Korea, Japan — Ryn-kyu Isl.; Taiwan (Medvedev, 1949; Machatschke, 1972; Medvedev, 1974).

Remarks. Species widely spread but not numerous in D.P.R.K. Collected with *P. atrocoerulea* BAT. mainly in the flowers of *Rosa* L. According to MEDVEDEV (1974) this species is an enemy of cotton in China and Taiwan.

Figs. 173—182. Male genitalia, lateral and dorsal view; 173, 174 — *Popillia indigonacea* Motsch.; 175, 176 — *P. atrocoerulea* BAT.; 177, 178 — *P. japonica* Newm.; 179, 180 — *P. quadriguttata* (Fabr.); 181, 182 — *P. ruficollis* Kr.

*Popillia atrocoerulea* Bates, 1888
(Figs. 175, 176)

Distribution. USSR — Primorskiy Krai (Chasan, Tumen-ula), North- and Central China, Taiwan, Korea — Vōnsan (118) (MEDVEDEV, 1949; MACHTSCHKE, 1972; MEDVEDEV, 1974).

Remarks. Similarly to the former one this species inhabits areas with abundant vegetation. It flies in the daytime, feeds on flowers, leaves and also on fruits of numerous plants. More numerous in southern Provinces of D.P.R.K. Collected on flowers of Rosa L. One-colored typical form occurs with the sporadically occurring ab. biplagiata Kr.

*Popillia japonica* Newmann, 1838

(Figs. 177, 178)

Distribution. USSR — Kurile Islands (Kunashir), North China, Japan — Hokkaido, Honshu (Ginzandaira, Yoshigahira, Nanatani), Awa-shima, Sado (Sukunegi, Umezu, Mt. Donden), Shikoku, Kyushu; North America (New Jersey) and Canada (introduced) (Medvedev, 1949; Nakane et Baba, 1960; Machatschke, 1972; Kryvoluckaja, 1973; Medvedev, 1974).


Remarks. According to Medvedev (1949) *P. japonica* is an endemic, Japanese species introduced to China and to the American Continent, where it considerably multiplied and caused great damages in cultures. Nevertheless in Japan it never does occur in great masses, consequently it does not have an economic significance. Beetles are enemies of gardens and fruit-trees, larvae damage roots of various plants. This species was not reported from Korea up the present. Often mistaken as *P. quadriguttata* (Fab.) because seems not different externally.

*Popillia quadriguttata* (Fabricius, 1787)

(Figs. 179, 180)

Distribution. USSR — Primorskiy Kraj (Chabarovsk), Manchuria (Harbin, Mukden), North China (Peking, Tianjin), Central China (Kansu), Korea, Taiwan, Vietnam (Medvedev, 1949; Machatschke, 1972; Medvedev, 1974).

Remarks. This species occurs mainly in the river-valleys. Beetles are enemies of vegetable cultures (pulse plants, cabbage, potatoes), fruit-trees, rye, wheat and vineyards.

*Popillia ruficollis* Kraatz, 1892
(Figs. 181, 182)


Remarks. Species very similar to the former one. Described by Kraatz (1892) as *P. quadriguttata* var. *ruficollis*, formed as separate species by Medvedev (1949). New to the Korean fauna.

*Phyllopertha horticola* (Linnaeus, 1758)
(Figs. 183, 184)

Distribution. Europe, Caucasus, Siberia, Mongolia, Manchuria, North China (Medvedev, 1949; Machatschke, 1972; Medvedev, 1974; Sternicka, 1978 et al.).


Remarks. Palaearctic species, not recorded from Korea up to the present. Beetles, sometimes very numerous feed on various plants; they are enemies of gardens and orchards.

*Spilota plagiocollis* Fairmaire, 1886
(Figs. 185, 186)

Distribution. USSR — Primorskij Kraj (Vladivostok), North- and Central China, Korea (Medvedev, 1949; Machatschke, 1972).


Remarks. This species is a single representative of the genus *Spilota* Burm. and a typical element of the Manchurian fauna.

*Proagopertha lucidula* (Faldemann, 1835)
(Fig. 187)

Distribution. USSR — Ussuri, Primorskij Kraj (Chanka lake, Spāšsk), Manchuria (Mukden), North- and East China (Medvedev, 1949; Machatschke, 1972; Medvedev, 1974).

Remarks. Beetles feed on leaves of apple-trees and other fruit-trees in orchards. They also occur in forest clearings on flowers, especially Rosa davurica Pall. Species new to the Korean fauna.

*Mimela splendens* (Gyllenhal *in* Schönherr, 1817)
(Figs. 188, 189)

Distribution. USSR — Primorskiy Krai (Vladivostok), East China, Korea — Čedžu-do (Isl., 3), Japan — Honshu (Tochigi: Ootawara; Saitama-Tokorazawa, Hannò; Tokyo: Meguro, Kunitachi, Murayama; Kanagawa: Noborito; Niigata: Kurokawa, Imakawa, Shibata, Niigata; Shizuoka: Ohdaru spa; Aichi: Toyohashi; Gifu; MIe: Mt. Fujiwara, Iga, Yunoyama; Kyoto: Kyoto, Yamazaki; Osaka: Minoo; Hyogo: Hyonosen; Wakayama: Kanaya), Sado (Ogura-toge), Shikoku (Tokushima: Kamiryö; Ehime: Imabari, Mt. Ishizuchi), Kyushu (Fukuoka: Mt. Hikosan; Oita: Beppu; Kumamoto: Mt. Ichifusa; Kagoshima: Kurino spa, Kagoshima); Taiwan (Chiahsien, Fengshan, Suisharyo, Kangkou, Lienhwachi, Qixinsha, Puli, Nanshanchi), Indochina (Burma) (Medvedev, 1949; Nakane et Baba, 1960; Machatschke, 1972; Nomura et Korayashi, 1976).


*Mimela chinensis* Kirby, 1823
(Figs. 190, 191)


Remarks. Bionomics of the species of the genus *Mimela* Kirby is little known; beetles fly in the daytime, feed on various plants. Both species were collected in the vicinity of waters in leafy brushwood.
Figs. 183—186. Male genitalia, lateral and dorsal view; 183, 184 — *Phyllopertha horticola* (L.); 185, 186 — *Spilota plagicollis* FAIRM.

Fig. 187. *Proagopertha lucidula* (FALD.) — last segment and claws of posterior tarsus. Figs. 188—194. Male genitalia, lateral and dorsal view; 188, 189 — *Mimela splendens* (GYLL.); 190, 191 — *M. chinensis* KIRBY; 192, 193 — *Rhombonyx holosercea* (FABR.); 194 — *Anomala* (Chrysoplethisa) sieversi HEYD.

**Rhombonyx holosercea** (FABRICIUS, 1787)
(Figs. 192, 193)

Distribution. European part of USSR to South Siberia, Amur, Primorskij Kraj, Sachalin; Mongolia, North China, Manchuria, Korea, Japan (MEDVEDEV, 1949; MACHATSCHE, 1972; MEDVEDEV, 1974).
Material examined. 1 ♂ and 2 ♀♀. Prov. Hamgjông-pukto, distr. Kjong-
sông (44), valley Onpho-ri (77), 11 IX 1966, H. Szeleżiewicz and C. Dziad-
dosz (ZIW); Prov. Jianggang-do, distr. Pochón (90), vicinity of the village
Poső-ri, 3 IX 1971, J. Razowski (ISEZ).
Remarks. Species linked to coniferous forests, expanded in taiga far to
the west and crossed Ural. Beetles occur in woodland on sandy soil, in summer
fly over forest clearings, sit on flowers and young trees, feed among others
on pine needles. According to Medvedev (1974) larvae destroy roots of garden
plants. This is a frequent and numerous species in Primorskij Krai. Duration
of the developmental cycle not known yet.

**Anomala (Chrysoplethisa) sieversi** Heyden, 1887

(Fig. 194)

Distribution. North- and East China, Korea, Japan (Medvedev, 1949;

Material examined. 61 ♂♂ and ♀♀. Prov. Kessōng-si, vicinity of the water-fall
Pakjŏn on the Chŏnma-san (Mt., 13), 5—8 VI 1974, Z. Stebnicka (ISEZ);
Prov. Phjong-nam-do, distr. Sunan (104), Sŏkam-Ăeousi (105), 21 V 1965,
M. Mrocikowski and A. Riedel (ZIW), distr. Kangsŏ (61), Thesŏng, 25—26
V 1965, M. Mrocikowski and A. Riedel (ZIW), distr. Sunchŏn (94), Džamo-
ri, 27 V 1965, M. Mrocikowski and A. Riedel (ZIW); Prov. Phjongjang-si,
Samsŏk (106), Sŏngmun-ri, 22 V 1965, M. Mrocikowski and A. Riedel (ZIW);
Prov. Kangyon-do, Čhŏnne (14), 10 VI 1965, M. Mrocikowski and A. Rie-
del (ZIW).

Remarks. Subgenus Chrysoplethisa Reitt. is characteristic for the eastern
part of Palaeartic. It forms a separate group of species ecology of which is
little known. Fairly numerous specimens of the typical form A. sieversi and
some specimens of ab. atrocoerulea Reitt. were collected in Korea from flowers
of bushes and herbaceous plants on sunny days in May and June. Similarly
as other species of genus Anomala Sam., they probably feed on leaves and flo-
ers of various plants, including cultivated ones.

**Anomala (Euchronomala) cuprea** (Hope, 1839)

(Figs. 195, 196)

Distribution. USSR — Primorskij Krai (Vladivostok), Kurile Islands (Ale-
chio, Goriače Lake, Veslovskij Pen., Sernovodsk); North-Eastern China, Ko-
rea, Japan — Hokkaido Honshu (Kurokawa, Niigata, Hishizato), Sado (Mat-
sugasaki, Mt. Dondon), Shikoku, Kyushu (Medvedev, 1949; Nakane et Baba,
1960; Medvedev et Ermolenko, 1969; Machatschke, 1972; Kryvoluckaja,
1973; Medvedev, 1974).

Remarks. Species fairly numerous and widely distributed in Korea. Imagines feed on leaves and pollen of various plants, among others of roses (*Rosa rugosa* Thunb.). Larvae are enemies of corn and other cultivated plants.

*Anomala (Euchronomala) viridana* Kolbe, 1886

Distribution. USSR — Primorskij Kraj (Vladivostok), Kurile Islands, (Kuňašir, Alechino); Korea, Japan — Honshu (Kurokawa, Niigata, Arahama, Kinoto, Maki), Sado (Matsugasaki, Nakaoku), Shikoku (Medvedev, 1949; Nakane et Baba, 1960; Medvedev et Ermlenko, 1969; Machatschke, 1972; Kryvoluckaja, 1973).


Remarks. Species very similar to the former one. Differs from it by slightly more mat surface of the upper side of body and more dense punctuation of elytra.

*Anomala (Anomala) corpulenta* Motschulsky, 1853

(Fig. 197)


*Anomala (Anomala) luculenta* Erichson, 1847

(Figs. 198, 199)

Distribution. USSR — Transbajkal Region, Amur, Primorskij Kraj; North China, Manchuria, Mongolia, Korea (Medvedev, 1949; Machatschke, 1972; Medvedev, 1974; 1976).

Figs 195—206. Male genitalia, lateral and dorsal view; 195, 196 — Anomala (Euchronomala) cuprea (Hope); 197 — A. (Anomala) corpulenta Motsch.; 198, 199 — A. (A.) luculenta Er.; 200, 201 — Blitopertha (Exomala) pallidipennis Reitt.; 202 — B. (E.) orientalis (Waterh.); 203, 204 — B. (Blitopertha) conspurcata (Har.); 205, 206 — Adoretus (Lepadoretus) sinicus Burm. Fig. 207. A. (L.) tenuimaculatus Waterh. — last segment and claws of female anterior tarsus

Remarks. Manchurian element, linked to sandy and halfsandy soils; penetrates toward west, probably along river valleys. Imagines and larvae are enemies of orchards. Beetles come to light.

**Blitopertha (Exomala) pallidipennis** Reitter, 1903  
(Figs. 200, 201)

Distribution. USSR — Primorskij Kraj; Mongolia, Manchuria, North Korea (Medvedev, 1949; Machatschke, 1972; Medvedev, 1974; 1976).


Remarks. Manchurian element of a narrow range. Beetles occur on various bushes and herbaceous plants, feed on flowers and young leaves. Larvae are enemies of young forest cultures.

**Blitopertha (Exomala) orientalis** (Waterhouse, 1875)  
(Fig. 202)

Distribution. Korea, Japan — Hokkaido (Hakodate), Honshu (Echigo: Kurokawa, Gokahama, Tanibama, Mt. Hishigatake, Ginzandaira, Yoshigahira), Sado (Suizu, Hatano, Mt. Donden, Aoneba-goe), Shikoku, Kyushu, Tsushima, Yakushima, Amami-Ōshima, Ogasawara, Niijima, Shikine, Kousu, Hachijo, Torishima; Hawaiian Islands, North America (Medvedev, 1949; Nakané et Baba, 1960; Nomura, 1966; 1969; Machatschke, 1972; Medvedev, 1974).

Material examined. 6 ♂♂ and ♀♀. Prov. Hamgjŏng-pukto, valley of river Poro-čhŏn 20 km NW of Kjongŏng (44), 4 VI 1965, M. Mroczykowski and A. Riedel (ZIW); Prov. Hamgjŏng-namdo, distr. Hjangsan (27), Mjohjang-san (Mts), 3 VIII 1959, B. Pisarski and J. Prószyński (ZIW).

Remarks. The collected specimens are uniformly black with opalescent lustre. Representatives of this species are enemies of vineyards and plantations of sugar cane.

**Blitopertha (Blitopertha) conspurcata** (Harold, 1878)  
(Figs. 203, 204)

Distribution. USSR — South-Eastern Siberia (vicinity of Blagoveščensk), Primorskij Krai (vicinity of Chanka Lake); North China, Korea, Japan — Honshu (Echigo: Kurokawa, Maramatsu-hama, Sasaguchi-hama, Kinoto) (Medvedev, 1949; Nakané et Baba, 1960; Machatschke, 1972).


Remarks. Numerous specimens of this species were collected from flowers of briar-rose; petals were nearly completely eaten. Similarly as other species of the same genus, occurs in great masses.

**Adoretini**

*Adoretus (Lepadoretus) sinicus* BURMEISTER, 1855

(Figs. 205, 206)


Remarks. The representatives of the subgenus *Lepadoretus* REITZ. mainly inhabit the Oriental Realm; in Palaeartic occur only two species. Their biol-ogy is little known. According to MedveDev (1949) they are active in the evenings and nights and are enemies of fruit-trees, roses and grape-vines. *A. sinicus* is fairly frequent and numerous in D.P.R.K, especially in southern Provinces. In the evenings comes to light, however, it was collected mainly during the day on various Rosaceae.
Adoretus (Lepadoretus) tenuimaculatus Waterhouse, 1875
(Fig. 207)

Distribution. China, Korea Japan — Honshu (Echigo: Kurokawa, Sakasamaki, Mt. Kasuga), Sado (Kawaharada), Ryu-kyu Islands; Indochina (Burma, Vietnam), Java, Hawaiian Islands (Medvedev, 1949; Nakane et Baba, 1960; Machatschke, 1972; Medvedev, 1974).


Remarks. According to Medvedev (1949, 1974) this species similarly to the former one is an enemy of fruit-trees, roses and grape-vines. No numerous populations were found in D.P.R.K.

Cetoniinae
Goliathini

Rhomborrhina (Rhomborrhina) japonica Hope, 1841
(Figs. 209, 210)

Distribution. Central- and South China, Korea, Japan — Honshu (Shibata, Niigata, Mt. Yoneyama), Awa-shima, Sado (Sukunegi, Katabe, Kawamo, Mt. Donden, Ogura-toge, Suzu, Tassha, Matsugasaki), Shikoku, Kyushu, Tsushima, Ohshima, Niijima, Kouzu (Nakane et Baba 1960; Medvedev; 1964; Nomura, 1969).


Remarks. Nothing is known of the bionomy of representatives of the genus. Korean specimens were collected in young forest, among bush-like shrubs including Aceraceae (Calopanax pictum).

Dicranosephalus adamsi Pascoe, 1863
(Fig. 208)

Distribution. Tibet („Maenia”), China (Sichuan), South Korea („Kosan”, „Hpouno-Soun-Ouen”), Indochina — Vietnam (Bao Lâc) (Medvedev, 1964).


Remarks. Genus Dicranosephalus Burm., discussed by Pouillaude (1914), Medvedev (1964), Kurosawa (1968) and Mikšić (1971) contains 8 species both Palaeartic and Oriental ones. Bionomy of these species is not known; they are probably linked to woodland and occur rarely. One female specimen has been collected by the author on the southern slope of a mountain in the young leafy forest containing Ginkgo biloba, Quercus dentata, Q. aliena, Kalopanax pictum and Fagus sp. The specimen is carbon black, without a sign of creme or white coating. Pouillaude (1914) already reported the occurrence of females coloured similarly.
Fig. 208. Diceranoccephalus adamsi Pasc. — female head. Figs. 209, 210. Rhomborrhina (Rhomborrhina) japonica Hope; 209 — male genitalia, lateral view; 210 — clypeus. Figs. 211—216. Male genitalia, lateral and dorsal view; 211, 212 — Cetonia (Eucetonia) magnifica Ball.; 213, 214 — Potosia (Lhoolea) brevisetis (Lewis); 215, 216 — P. (Colopotosia) aerata Ehr.

Cetonii

Cetonia (Eucetonia) magnifica Ballion, 1870

(Figs. 211, 212)


Remarks. Beetles occur in woodland, on large forest clearings and glades, in parks. They sit on flowers of various plants, in particular of Spiraeoideae, Tamaricaceae and Caprifoliaceae. Species widely spread in Korea, frequent but not numerous.

**Potosia (Liocola) brevitarsis** (Lewis, 1879)

(Figs. 213, 214)

Distribution. USSR — Chabarovskij and Primorskij Kraj, Sachalin, Kurile Islands (Vl. Mendelejev, Rejdo, Kujiysjevo); Mongolia, North-Eastern China, Taiwan, Korea, Japan — Hokkaido, Honshu (Kurokawa), Sado (Futami, Matuyama), Shikoku, Kyushu (Nakane et Baba, 1960; Medvedev, 1964; Endrödi, 1971; Kryvoluckaja, 1973; Medvedev, 1974).


Remarks. Beetles are enemies of fruit-trees, maize and other cultivated plants. No numerous population found in D.P.R.K.
Potosia (Calopotosia) aerata (ERICHSON, 1834)
(Figs. 215, 216)

Distribution. USSR — Primorskiy Kraj (Vladivostok); East China, Korea, Japan — Honshu, Kyushu (MEDVEDEV, 1964).


Potosia (Potosia) famelica (JANSON, 1879)
(Figs. 217, 218)


Remarks. Species linked to leafy forests. According to MEDVEDEV (1964) and Mikoš (1959) in the southern part of the range occurs subspecies P. famelica scheini Mikš., which inhabits a part of Eastern China and South Korea including Čedžu-do (Isl., 3).

Poecilophilides rusticola (BURMEISTER, 1842)
(Figs. 219, 220)

Distribution. USSR — Amur, Ussuri, Daurija, Primorskiy Kraj; Mongolia, Korea, North- and Central China, Japan — Honshu (Niigata), Kyushu, Sado (Kanazawa) (Tesař, 1959; NAKANE et BABA, 1960; MEDVEDEV, 1964).


Remarks. Species linked to leafy forests of a Manchurian type. Beetles fly from April to the beginning of September in lowlands and in mountains (up to 1000 m above sea level). They stay on flowers of various plants, are also found under bark of leafy trees. According to MEDVEDEV (1964) this species is frequent in Primorskiy Kraj; very numerous locally in D.P.R.K.

Glycyphana (Glycyphana) fulvistemma (MOTSCHULSKY, 1860)
(Figs. 221, 222)

Distribution. USSR — East- and South Bajkal, Amur, Primorskiy Kraj; Manchuria, North China, Korea, Japan — Honshu (Kurokawa); Taiwan (NAKANE et BABA, 1960; MEDVEDEV, 1964; MIKŠIĆ, 1970; MEDVEDEV, 1974).


Remarks. Manchurian species, occurs in woodland. Beetles fly from Spring to Autumn; feed on flowers of various plants, among others on fruit-trees. Numerous populations were not found in D.P.R.K.

7 — AZC XXIV/5—7
**Oxycetonia jucunda jucunda** (Faldermann, 1835)
(Figs. 223, 224)

Distribution. North-and East India, Tibet, Nepal, North-and Central China, Manchuria, USSR — Kamchatka Pen., Sachalin, Kurile Islands, Komandor Islands, Amur, Ussuri, Primorskij Krai; Korea — Čedžu-do (Isl., 3); Japan — Hokkaido, Honshu (Kurokawa, Shibata, Niigata, Kakuda-hama, Noo, Miomote, Yoshigahira), Awa-shima, Sado (Futami, Ogura-toge, Ookura-go), Shikoku, Kyushu, Tsushima, Yakushima, Tanegashima, Ohshima, Toshima, Niijima, Shikine, Kouzu, Miyake, Hachijo, Aogashima; Central and North America (introduced) (Nakane et Baba, 1960; Medvedev, 1964; Nomura, 1969; Medvedev, 1974).


Remarks. Species is characterised by a great individual variability. Occur in a number of variants. Moreover, it forms geographic races reported from Japan by Nomura (1966). According to their range (northern or southern) beetles fly in Spring or Summer in open woodland, in lowlands or mountains. They feed on flowers of various trees, bushes and herbaceous plants, are enemies of orchards in blossoms. The species occurs in great masses in Primorskiy Krai, however, its number decreases gradually to the direction of north. In North Korea is widely distributed and numerous. Occurrence in great masses (10—20 specimens on a single inflorescence) was found locally. Besides of a typical form, variants ab. ferruginosa Reitt., ab. vitticollis Reitt., ab. marginalis Medv., ab. kuperi Schaum, ab. dolens Kr. occur frequently.

Cremastoehilini

Clinterocera mandarina (Westwood, 1874)
(Figs. 225, 226)


Remarks. The way of life of the representatives of the tribe Cremastoehilini does not differ from this of other Cetoniinae, however, their ecology is little known. Beetles are day-active, occur in Spring and Summer. C. mandarina is one of two species that inhabit Korean Peninsula; found sporadically in the leafy forests of a Manchurian type.

Valginae

Dasyvalgus angusticollis (Waterhouse, 1875)
(Figs. 227, 228)

Material examined. 6 ♂ and ♀. Prov. Kesŏng-si, vicinity of the waterfall Pakjŏn on the Chŏnma-san (Mt., 13) 5—8 VI 1974, Z. STEBNICKA (ISEZ).

Remarks. Beetles dendrophilic, fly during warm sunny days, occur on leaves and flowers of trees and bushes.

Figs. 227—232. Male genitalia, lateral and dorsal view; 227, 228 — Dasyvalgus angusticollis (WATERIL.); 229, 230 — Lasiotrichius succinctus (PALL.); 231, 232 — Gnornius subopacus Motsch.

Trichiinae

Trichiini

Lasiotrichius succinctus (PALLAS, 1781)
(Figs. 229, 230)


Material examined. 80 ♂ and ♀. Prov. Kangvŏn-do, Kymgang-san (Mts, 53), 18 VI 1974, Z. STEBNICKA (ISEZ), Samil-pho (123) vicinity of the lake, 19 VI 1974, J. PAWŁOWSKI (ISEZ), Masin-rjŏng, mountain pass, 34 km W of

Remarks. East-Siberian species, occurs in lowlands and mountains, in leafy and coniferous forests. Beetles are active from Spring to early Autumn, feed on flowers of herbaceous plants, trees and bushes. Species frequent and numerous in D.P.R.K., found mainly on large inflorescences of Rosaceae and Caprifoliaceae.

_Gnorimus subopacus_ Motschulsky, 1860

(Figs. 231, 232)

Distribution. USSR — Amur, Ussuri, Primorski Kraj, Sachalin, Kurile Islands (Kunašir); North-Eastern China, Manchuria, Korea, Japan (Medvedev, 1960; Medvedev et Ermolenko, 1969; Kryvoluckaja, 1973).


Remarks. Manchurian species, linked to leafy and mixed forests. Beetles are active in Summer, feed on flowers of bushes and herbaceous plants. The Korean specimens have been collected on the flowers of Magnoliaceae.

_Trogidae_

_Trox sabulosus_ (Linnaeus, 1758)

(Fig. 102)

Distribution. Europe, Caucasus, Siberia, Korea — Čedžu-do (Isl., 3) (Horion, 1958 et alll.).

Lucanidae

Psalidoremus inclinatus (Motschulsky, 1857)

Distribution. Taiwan, Korea, Japan — Hokkaido, Honshu, Sado, Shikoku, Kyushu, Yakushima, Kuchinoerabu, Ohshima, Niijima, Kouzu, Miyake, Mikura (Didier et Séguy, 1952—1953; Benesh, 1960; Nomura, 1965; 1966; Nishio, 1970; Nakane, 1977 — P. 27, Fig. 577).


Macrodorcas rubrofemoratus (Vollenhoven, 1865)

Distribution. USSR — Primorskij Kraj, Kurile Islands (Alechino); North and Central China, Taiwan, Korea, Japan — Hokkaido, Honshu, Shikoku, Kyushu, Amami-Oshima (Didier et Séguy, 1952—1953; Benesh, 1960; Nomura, 1966; Nishio, 1970; Kryvoluckaja, 1973; Nakane, 1977 — Pl. 27, Fig. 579).


Macrodorcas striatipennis Motschulsky, 1861


Serrognathus titanus (Boisduval, 1835)


**Dorcus hopei** (SAUNDERS, 1854)


**Dorcus montivagus** (LEWIS, 1883)


Institute of Systematic and Experimental Zoology
Polish Academy of Sciences,
Sławkowska 17, 31-016 Kraków, Poland

REFERENCES


Fabricius J. Ch. 1775. Systema Entomologiae, sistens Insectorum classes, ordines, genera, species, adiectis synonymis, locis, descriptionibus, observationibus. Flensburgi et Lipsiae, 32+832 pp.


Kurenčov A. I. 1960. Proischoždenie i osnovnye etapy razvitija mančžurskoj entomofauny. Tez. dokl. 4-go seza Vsesojuz. entomol. obšč., 73—76.


Kurosawa Y. 1968. Notes on the Formosan Cetonid Beetles. I — A. Revision on the For-


MATSUMURA S. 1937. The Onthophagid Insects from Korea with Description of New Species. Insecta matsum., 12: 1–6.


MEDVEDEV S. I. 1960. Plastinčatousye (Scarabaeidae), podsem. Euchirrinae, Dynastinae, Gla


MOTSCHULSKY V. 1860. Coléoptères rapportés de la Sibérie orientale et notamment de pays situés sur les bords du fleuve Amour par M. M. Schrenck, Maack, Ditmar, Voznesen-


STRESZCZENIE


Całość opracowania uzupełnia szczegółowa synteza zoogeograficzna, dokonana w oparciu o metodę statystyczną, obejmująca Scarabaeoidea Dalekiego Wschodu i nawiązująca do historii trzeciorzędu i czwartorzędu tego obszaru.

Redaktor zeszytu: prof. dr W. Szymczakowski