

List of Plant and Animal Species Living in Lake Biwa¹⁾ (Corrected Third Edition)

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(Received March 28, 1990)

Abstract This is a corrected third edition of the list of plant and animal species living in Lake Biwa. In the present edition 230 species of plants and 93 species of animals are newly added with correcting a number of already published specific names. Classification systems, especially concerning lower plants and animals, are fairly modified.

INTRODUCTION

This is a corrected third edition of the list which was published first in 1970 and secondly revised in 1980. A fair number of specific names were corrected and many newly found species were added. The classification system was renewed on some groups.

The first list was compiled mainly basing on the intensive study of Lake Biwa performed from 1962 through 1965 with a financial aid of the Ministry of Construction. Up to that time no all-inclusive list of plants and animals of Lake Biwa had ever been presented.

The second, revised list was then made by referring the results of investigations of the International Biological Programme (IBP) which was executed from 1964 through 1972 and also the results obtained through the extensive study on flora and fauna performed by the Director Council of the National Marine and Inland Water Biological Stations of Japan from 1974 through 1977. Financial aids of these two studies were offered by the Ministry of Education, Science and Culture. In this revised list 54 species of plants and 52 species of animals (total 106 species) were newly added with correcting a number of scientific names and some classification systems.

Ten years have passed since the publication of the revised list and thinking of the accumulation of vast knowledge realized during this period, the authors reached the idea that the time is now really appropriate to publish the renewed third edition.

In the present edition 230 species of plants and 93 species of animals (total 323 species) are newly added with correcting a number of already published specific names. Classification systems, especially concerning lower plants and animals, were fairly modified.

The symbol ● ahead of the specific names indicates those species are endemic to Lake Biwa and its connected water areas.

Lake Biwa is the most important lake in Japan viewing from various aspects and accordingly considerable numbers of works have hitherto been published and now are

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being done actively. The authors have referred these many literature and wish here to express sincere thanks to all these researchers, especially to Dr. Arinobu Kusakabe for attached algae, Dr. Kenichiro Negoro for planktonic plants and animals, Dr. Tetsuya Narita for Oligochaeta, Dr. Matsunae Tsuda for insects, Dr. Manabu Sasa for Diptera, Dr. Kazumi Tanida for Trichoptera, Dr. Naoshi Watanabe for Gastropod, Drs. Nobuhiko Mizuno and Hiroya Kawanabe for fishes and Mr. Tomio Okada and Dr. Kokichi Yamamoto for birds.

As for renewing the classification systems the following three books were most helpful: Yatsu and Uchida's "Dictionary on Classification Names of Animals" edited by Dr. Toru Uchida (1972), Kawamura's "Freshwater Biology of Japan" newly edited by Dr. Masuzo Uéno (1973) and "Freshwater Invertebrates of the United States, 2nd ed." by Dr. Robert W. Pennak (1978).

PLANT

PHYLUM CHRYSOPHYTA

- | | |
|--|---|
| Class Xanthophyceae | <i>M. granulata</i> (Ehr.) Ralfs var. |
| Ord. Heterococcales | <i>angustissima</i> Müller |
| Fam. Botryococcaceae | <i>M. italica</i> (Ehr.) Kütz. |
| <i>Botryococcus Braunii</i> Kütz. | <i>M. italica</i> (Ehr.) Kütz. var. <i>varida</i> Grun. |
| Class Chrysophyceae | <i>M. solida</i> Eulenstein |
| Ord. Chrysomonadales | <i>M. undulata</i> (Ehr.) Kütz. var. <i>Normanni</i> |
| Fam. Mallomonadaceae | Arnott |
| <i>Mallomonas fastigata</i> Zacharias | <i>M. distans</i> (Ehr.) Kütz. |
| <i>M. tonsurata</i> Teiling | <i>M. sp.</i> |
| <i>M. annulata</i> Harris | <i>Cyclotella stelligera</i> Cl. u. Grun. |
| <i>M. reginae</i> Teiling | <i>C. Meneghiniana</i> Kütz. |
| <i>M. akrokosmos</i> (Ruttner) Bourrelly | <i>C. sp.</i> |
| Fam. Syncryptaceae | <i>Stephanodiscus carconensis</i> Grun. |
| <i>Syncrypta</i> sp. | <i>S. carconensis</i> Grun. var. <i>pussila</i> Grun. |
| Fam. Synuraceae | <i>S. subsalsus</i> (A. Cleve) Hust. |
| <i>Synura uvella</i> Ehr. | Fam. Rhizosoleniaceae |
| Fam. Ochromonadaceae | <i>Rhizosolenia longiseta</i> Zacharias |
| <i>Uroglenopsis americana</i> (Calkins) | Fam. Chaetoceraceae |
| Lemmerm. | <i>Attheya Zachariasi</i> J. Brun |
| <i>Dinobryon bavaricum</i> Imhof | Ord. Pennales |
| <i>D. cylindricum</i> Imhof | Fam. Tabellariaceae |
| <i>D. divergens</i> Imhof | <i>Tabellaria fenestrata</i> (Lyngb.) Kütz. |
| <i>D. stipitatum</i> Stein | Fam. Meridionaceae |
| <i>D. sertularia</i> Ehr. | <i>Meridion circulare</i> Agardh var. <i>constricta</i> |
| Ord. Cryptomonadales | (Ralfs) |
| Fam. Cryptomonadaceae | Fam. Diatomaceae |
| <i>Cryptomonas</i> sp. | <i>Diatoma vulgare</i> Bory |
| Class Bacillariophyceae | <i>D. hiemale</i> (Lyngb.) Heiberg var. <i>mesodon</i> |
| Ord. Centrales | (Ehr.) Grun. |
| Fam. Coscinodiscaceae | Fam. Fragilariaceae |
| <i>Melosira varians</i> C.A. Agardh | <i>Asterionella formosa</i> Hassal |
| <i>M. granulata</i> (Ehr.) Ralfs | <i>Ceratoneis arcus</i> Kütz. var. <i>Hattoriana</i> |
| | Meister |
| | <i>Fragilaria capucina</i> Desmaziers |

- F. capucina* Desmaziers var. *mesolepta* Rabh.
F. crotonensis Kitton
F. vaucheriae (Kütz.) Peters var. *vaucheriae* (Kütz.) Peters
F. vaucheriae (Kütz.) Peters var. *capitellata* (Grun.) Patr.
F. intermedia Grun.
F. brevistriata Grun. var. *infrata* (Pantocsek) Hust.
F. brevistriata Grun. var. *nipponica* Skv.
F. construens (Ehr.) Grun.
F. construens (Ehr.) Grun. var. *subsalina* Hust.
F. construens (Ehr.) Grun. var. *triundulata* Reich.
F. Harissoni W. Smith var. *dubia* Grun.
F. pinnata Ehr.
F. pinnata Ehr. var. *lancettula* (Schumann) Hust.
F. virescens Ralfs
Synedra ulna (Nitzsch) Ehr.
S. ulna (Nitzsch) Ehr. var. *ramesi* (Herieand et Peragallo) Hust.
S. ulna (Nitzsch) Ehr. var. *oxyrhynchus* (Kütz.) Von Heurck
S. acus Kütz.
S. rumpens Kütz.
S. rumpens Kütz. var. *meneghiniana* Grun.
S. rumpens Kütz. var. *familiaris* (Kütz.) Grun.
S. rumpens Kütz. var. *fragilarioides* Grun.
S. berlinensis Lemmerm.
S. familiaris Kütz.
S. pulchella Kütz. var. *lanceollata* O'Meara fo. *constricta* Hust.
S. vaucheriae Kütz.
S. vaucheriae Kütz. var. *capitellata* Grun.
S. vaucheriae Kütz. var. *truncata* (Greville) Grun.
- Fam. Eunotiaceae
Eunotia lunaris (Ehr.) Grun.
E. lunaris (Ehr.) Grun. var. *subarctuata* (Naeg.) Grun.
E. pectinalis (Kütz.) Rabh. var. *minor* (Kütz.) Rabh.
- E. veneris* (Kütz.) O.Müll.
- Fam. Achnanthaceae
Rhoicosphenia curvata (Kütz.) Grun.
Achnanthes Biasolottiana Kütz.
A. affinis Grun.
A. clevei Grun. var. *rostrata* Hust.
A. convergens H.Kobayasi
A. lanceolata Bréb.
A. lanceolata Bréb. var. *rostrata* Hust.
A. linearis W.Smith
A. minutissima Kütz.
A. pinnata Hust. var. *nipponica* Hust.
Cocconeis placentula Ehr.
C. placentula Ehr. var. *euglypta* (Ehr.) Cleve
C. placentula Ehr. var. *lineata* (Ehr.) Cleve
- Fam. Naviculaceae
Caloneis bacillum (Grun.) Mereschkowsky
Diploneis ovalis (Hilse) Cleve
Gyrosigma acuminatum (Kütz.) Rabenhorst
G. distortum (W.Smith) Cleve var. *Parkeri* Harrison
Stauroneis pheonicentron Ehr.
Pinnularia gentilis Donkin
P. Braunii (Grun.) Cleve var. *amphicephala* (A.Mayer) Hust.
P. interrupta W.Smith
P. microstauron (Ehr.) Cleve var. *Breppisonii* (Kütz.) Hust.
Navicula minima Grun.
N. cryptocephala Kütz. var. *veneta* Kütz.
N. radiosa Kütz. f. *nipponica* Skvortzow
N. radiosa Kütz. var. *tenella* (Bréb.) Grun.
N. exigua Greg.
N. rhyncocephala Kütz.
N. placentula (Ehr.) Grun.
N. placentula (Ehr.) Grun. f. *rostrata* A.Mayer
N. hasta Pantocsek
N. cuspidata Kütz.
N. amphibola Cleve
N. anglica Ralfs
N. cari Ehr.
N. costulata Grun.

- N. dicephala* (Ehr.) W.Smith
N. digitoradiata (Greg.) A.Schmidt
N. hungarica Grun. var. *capitata* (Ehr.) Cleve
N. lanceolata (Agardh) Kütz.
N. menisculus Schumann
N. menisculus Schumann var. *upsaliensis* (Grun.) Grun.
N. rostellata Kütz.
N. Schönfeldii Hust.
N. viridula Kütz.
N. decussis Oestrup var. *decussis* Oestrup
N. salinarum Grun. var. *intermedia* Cleve
N. spp.
Neidium iridia (Ehr.) Cleve var. *amplicata* (Ehr.) Cleve
N. Hitchcockii (Ehr.) Cleve
Fam. Gomphonemataceae
Gomphonema parvulum Kütz.
G. parvulum Kütz. var. *exilissima* Grun.
G. abbreviatum Kütz.
G. acuminatum Ehr.
G. acuminatum Ehr. var. *Brevissonii* Kütz.
G. constrictum Ehr.
G. constrictum Ehr. var. *capitatum* Grun.
G. angur Ehr.
G. sphaerophorum Ehr.
G. gracile Ehr.
G. angustatum (Kütz.) Rabh.
G. angustatum (Kütz.) Rabh. var. *producta* Grun.
G. clevei Fricke var. *javanica* Hust.
G. olivaceum (Lyngb.) Kütz.
G. quadripunctatum (Oestrup) Wislouch var. *hastata* Wislouch
G. lanceolatum Ehr.
Fam. Cymbellaceae
Cymbella ventricosa Kütz.
C. turgidula Grun.
C. turgidula Grun. var. *nipponica* Skvortzow
C. cuspidata Kütz.
C. tumida Brébisson
C. cistula (Hemprich) Grun.
C. obtusiuscula (Kütz.) Grun.
C. prostrata (Berkeley) Cleve
C. sinuata Gregory
C. sinuata Gregory var. *reniformis* Negoro
C. tumidula Grun.
C. turgida Grun.
C. spp.
Amphora ovalis Kütz. var. *libyca* (Ehr.) Cleve
Epithemia zebra (Ehr.) Kütz.
E. sorex (Ehr.) Kütz.
Rhopalodia sp.
Fam. Nitzschiaceae
Nitzschia palea Kütz.
N. holsatica Hust.
N. communis Rabh. var. *abbreviata* Grun.
N. paradoxa (Gmel.) Grun.
N. obtusa W.Smith
N. acicularis W.Smith
N. amphibia Grun.
N. dissipata (Kütz.) Grun.
N. fonticola Grun.
N. frustrum Kütz.
N. Hantzschiana Rabh.
N. sublinearis Hust.
Fam. Surirellaceae
Cymatopleura solea (Bréb.) W.Smith
C. elliptica (Bréb.) W.Smith var. *constricta* Grun.
C. sp.
Surirella biseriata Bréb.
S. robusta Ehr. var. *splendida* (Ehr.) van Heurck
S. Capronii Bréb.
S. linearis W.Smith
S. angustata Kütz.
S. ovata Kütz. var. *pinnata* (W.Smith) Hust.

PHYLUM CHLOROPHYTA

Class Chlorophyceae
Ord. Volvocales
Fam. Chlamydomonadaceae
Chlamydomonas conferta Korshikoff
C. pertusa Chodat
C. similis Korshikoff
Fam. Volvocaceae
Volvox aureus Ehr.

- V.* sp.
Pleudorina californica Show
Pandorina morum Bory
Eudorina elegans Ehr.
E. uniccocca G.M.Smith
Carteria globulosa Pascher
C. peterhofiensis Kiss
Coccomonas lunzensis Huber-Pestalozzi
Chlorogonium elongatum Dangeard
Gonium pectorale Müller
- Ord. Tetrasporales
 Fam. Palmellaceae
Gloeocystis gigas (Kütz.) Lageth.
G. ampla Kütz.
Sphaerocystis Schroeteri Chodat
Elakatothrix gelatinosa Wille
Tetraspora lacustris Lemmerm.
- Ord. Ulotrichales
 Fam. Ulotrichaceae
Ulothrix tenuissima Kütz.
U. zonata Kütz.
Hormidium sp.
- Ord. Chaetophorales
 Fam. Coleochaetaceae
Coleochaete orbicularis Pringsheim
C. pulvinata A.Braun
- Fam. Chaetophoraceae
Stigeoclonium lubricum Kütz.
S. stagnatile (Hazen) Collins
S. pachydermum Prescott
S. tenue (Agardh) Kütz.
S. sp.
Chaetophora elegans (Roth) Agardh
- Ord. Oedogoniales
 Fam. Oedogoniaceae
Oedogonium angustum (Hirn) Tiffany
O. oblongum Wittrock
O. varians Wittrock et Lund
Bulbochaete sp.
- Ord. Chlorococcales
 Fam. Chlorococcaceae
Planktosphaeria gelatinosa G.M.Smith
- Fam. Characiaceae
Schroederia setigera (Schröder) Lemmerm.
S. judayi G.M.Smith
S. ancora G.M.Smith
- Fam. Micractiniaceae
Acanthosphaera Zachariasi Lemmerm.
Errerella bornheimiensis Conrad
Micractinium pusillum Fres.
Treubaria setigerum (Archer) G.M.Smith
- Fam. Dictyosphaeriaceae
Dictyosphaerium pulchellum Wood
D. Ehrenbergianum Näg.
- Fam. Hydrodictyceae
 ● *Pediastrum biwae* Negoro
 ● *P. biwae* Negoro var. *triangulatum* Negoro
 ● *P. biwae* Negoro var. *ovatum* Negoro
P. duplex Meyen
P. duplex Meyen var. *cohaerens* Bohlin
P. duplex Meyen var. *gracillimum* W. et G.S.West
P. tetras (Ehr.) Ralfs
P. boryanum (Turpin) Menegh.
- Fam. Coelastraceae
Coelastrum microporum Näg.
C. cambricum Ascher
- Fam. Oöcystaceae
Oöcystis borgei Snow
O. parva W. et G.S.West
O. lacustris Chodat
O. submarina Lagerh.
Chodatella subsalsa Lemmerm.
C. citriformis Snow
Kirchneriella contorta (Schmidle) Bohl
K. obesa (W.West) Schmidle
K. lunaris (Kirchner)
Ankistrodesmus falcatus (Corda) Ralfs
A. falcatus (Corda) Ralfs var. *mirabile* W. et G.S.West
A. falcatus (Corda) Ralfs var. *tumidus* G.S.West
Quadrigula Chodatii (Tanner-Fullman) G.M.Smith
Q. pfitzeri (Schröder)
Q. lacustris (Chodat) G.M.Smith
Westella sp.
Selenastrum gracile Reinsch
Tetraedron gracile (Reinsch)
T. limneticum Borge
T. planctonicum G.M.Smith
- Fam. Scenedesmaceae

- Crucigenia rectangularis* (Näg.) Gay
C. irregularis Wille
C. lanterbornei Schmidle
Scenedesmus dimorphus (Turp.) Kütz.
S. falcatus Chodat
S. quadricauda (Turp.) Bréb.
S. acuminatus (Lagerh.)
S. acuminatus (Lagerh.) var. *elongatus*
 G.M.Smith
S. acutus(Meyen) Chodat f. *costulatus*
 (Chodat) Uherkovich
S. denticulatus Lagerh.
S. denticulatus Lagerh. var. *linearis*
 Hansgirg
S. circumfusus Hortobagyi
S. bijuga (Turp.) Kütz. var. *alternans*
 (Reinsch) Borge
S. spinosus Chodat
S. abundans (Kirchner) Chodat
S. quatrispina Chodat
S. protuberans Fritsch
S. opolinensis Richter
S. perforatus Lemmerm.
S. bicaudatus (Hansgirg) Chodat
S. soli Hortobagyi
Actinastrum Hantzschii Lagerh.
A. Hantzschii Lagerh. var. *fluviale*
 Schröder
A. sp.
Tetrastrum sp.
- Ord. Zygnematales
- Fam. Zygnemataceae
- Mougeotia viridis* (Kütz.) Wittrock
M. spp.
Spirogyra spp.
- Fam. Desmidiaceae
- Closterium aciculare* (Tuffen) West
C. aciculare (Tuffen) West var. *subpronum*
 W. et G.S.West
C. acerosum (Schränk) Ehr.
C. longissima Lemmerm.
C. gracile Bréb.
C. praelongum Bréb.
C. parvulum Näg.
C. diana Ehr.
C. leibleinii Kütz.
- C. moniliferum* (Borg) Ehr. var. *elegans*
 Hirano
C. ehrenbergii Menegh.
Pleurotaenium trabecula (Ehr.) Näg.
P. trabecula (Ehr.) Näg. var. *rectum*
 (Delp.) W. et G.S.West
P. ehrenbergii (Bréb.) DeBary
Oxychonema laeve Nordst.
Staurastrum dorsidentiformum W. et
 G.S.West var. *ornatum* Grönbl.
S. arctiscon (Ehr.)
S. biwaensis Hirano
S. gracile Ralfs
S. pingue Teiling
S. subborgesenii Grönbl.
S. limneticum Schmidle var. *Burmense* W.
 et G.S.West
S. paradoxum Meyen
S. tohopekaligense Wolle
S. leptocladum Nordst.
S. isotanum Wolle var. *divergens* Hirano
S. asterias Nygaard var. *divergens* Hirano
S. Sebaldi Reinsch var. *produatum* W. et
 G.S.West
S. Sebaldi Reinsch var. *ornatum* Nordst.
S. sonthalianum Turner
S. leptodermum Lundell var. *capitatum*
 Hirano
S. longiradiatum W. et G.S.West
S. hantzii Reinsch var. *japonicum* Roy et
 Biss.
S. muticum Bréb.
S. submanfeldtii W. et G.S.West
S. chaetoceras (Schröder) G.M.Smith
Cosmarium undulatum Corda
C. depressum (Näg.) Lund
C. circulare Reinsch
C. globosum Bulnh.
C. angulosum Bréb.
C. contractum Kirchn. var. *ellipsoideum*
 (Elfv.) W. et G.S.West
C. margaritatum (Lund) Roy et Bisset
C. quadrum Lund.
C. reniforme (Ralfs) Arch.
C. punctulatum Bréb. var. *subpunctula-*
tum (Nordst.) Börges.

C. obtusatum Schmidle
C. galeritum Nordst. var. *minus* Wille
C. pachydermum Lund. var. *aethiopicum*
 W. et G.S. West
C. lundellii Delp. var. *ellipticum* West
C. hammeri Reinsch var. *protuberans* W.
 et G.S. West
C. hammeri Reinsch var. *homalodrmum*
 (Nordst.) W. et G.S. West
C. malvernianum (Racib.) Schmidle
C. pseudoprotuberans Kirchn.
C. botrytus Menegh.
Sphaerozosma granulatus Roy et Biss.
S. vertebratum (Bréb.) Ralfs
Xanthidium hastiferum Turner var.
Javanicum (Nordst.) Turner
X. hastiferum Turner var. *curvispinosum*
 Okada
X. antilopaeum (Bréb.) Kütz.
Arthrodesmus convergens Ehr.
A. convergens Ehr. var. *curtus* Turner
A. curvatus Turner
A. phinus Turner
Spondylosium Lurkemulleri Grönbl.
S. ellipticum W. et G.S. West
S. moniliforme Lund.
Hyalotheca dissiliens (Sm.) Bréb.
H. mucosa (Mert.) Ehr.
Cosmocladium constrictum (Arch.)
 Joshua
C. saxonicum De Bary
Micrasterias crux-melitensis (Ehr.) Hass
M. crux-melitensis (Ehr.) Hass var.
superflua Turner
M. mahabuleshwariensis Hobson
M. mahabuleshwariensis Hobson var.
wallichii (Grun.) W. et G.S. West
Gonatozygon monotaenium DeBary

PHYLUM CYANOPHYTA

Class Cyanophyceae

Ord. Chroococcales

Fam. Chroococcaceae

Microcystis aeruginosa Kütz.
M. sp.
Merismopedia elegans A. Br.

M. punctata Meyen
M. tenuissima Lemmerm.
M. sp.
Chroococcus minutus (Kütz.) Näg.
C. dispersus (v. Keissler) Lemmerm.
C. limneticum Lemmerm.
Gloeocapsa compacta Kütz.
Aphanocapsa elachista W. et G.S. West
 var. *conferta* W. et G.S. West
A. muscicola (Menegh.) Wille
Gloeotheca rupestris (Lyngb.) Bornet
Aphanothece nidulans P. Richt
A. clathrata W. et G.S. West
Xenococcus kernerii Hansq.
Coolosphaerium kützingianum Näg.
Gomphosphaerium aponicus Kütz.
Dactylococcopsis acicularis Lemmerm.

Ord. Chamaesiphonales

Fam. Chamaesiphonaceae

Chamaesiphon polonicus (Rostafinski)
 Hansgirg

Ord. Pleurocapsales

Fam. Pleurocapsaceae

Pleurocapsa fluviatilis Lag.

Ord. Oscillatoriales

Fam. Oscillatoriaceae

Oscillatoria irrigua Kütz.
O. limosa Agardh
O. neglecta Lemmerm.
O. tenuis Ag.
O. tenuis Ag. var. *tergestina* Rabenhorst
O. angustissima W. et G.S. West
O. uncinata Emoto et Hirose
O. amoena Gom. var. *non-granulata*
 Ghose
O. formosa Bory
O. amphibia Agardh
O. geminata Menegh.
O. lemmermanni Woloszynska
O. sp.

Phormidium tenue (Menegh.) Gom.

P. mucicola Naumann et Huber-Pestalozzi

P. purpurascens (Kütz.) Gom.

P. pachydromaticum Fremy

P. autumnale (Ag.) Gom.

P. favosum (Bory) Gom.

P. ambigum Gom.
P. corium Gom.
P. sp.
Lyngbya mesotricha Skuja
L. limnetica Lemmerm.
L. contorta Lemmerm.
L. aerugineo-coerulea (Kütz.) Gom.
L. lagerheimii (Möbius) Gom.
L. martensiana Menegh.
Schizothrix calcicola (Ag.) Gom.
Symploca cartilaginea (Mont.) Gom.
Microcoleus delicatulus West et West
Raphidiopsis sp.
Spirulina major Kütz.
 Fam. Nostocaceae
Nostoc sp.
Anabaena macrospora Klebahn var. *crassa*
 Klebahn
A. spiroides Klebahn
A. spiroides Klebahn var. *crassa* Klebahn
 Fam. Scytonemataceae
Plectonema sp.
 Fam. Rivulariaceae
Homoeothrix janthina (Born. et Flah.)
 K.Starmach
H. varians Geitler
Amphithrix sp.
Calothrix brevissima G.S.West
 Fam. Stigonemataceae
Stigonema mamillosum (Lyngb.) Agardh
S. sp.

PHYLUM EUGLENOPHYTA

Class Euglenophyceae
 Ord. Euglenales
 Fam. Euglenaceae
Euglena proxima Dangeard
E. acus Ehr.
E. gracilis Klebs
E. oxyuris Schmarda
E. sp.
Trachelomonas hispida (Perty) Stein
 emend. Deflandre
Phacus triqueter (Ehr.) Duj.
P. pleuronectus (O.F.Müller) Duj.
P. longicauda (Ehr.) Duj.

Strombomonas verrucosa (Deday)
 Deflandre
Lepocinclis sp.
 Fam. Peranemaceae
Anisonema sp.

PHYLUM PYRROPHYTA

Class Dinophyceae
 Ord. Gymnodiniales
 Fam. Gymnodiniaceae
Gymnodinium helveticum Penard
G. sp.
 Ord. Peridinales
 Fam. Glenodiniaceae
Glenodinium spp.
Peridinium cunnigtonii Lemmerm. var.
contactum Lefèvre
P. tabulatum (Ehr.) Claparède et
 Lachmann
P. volzii Lemmerm.
 Fam. Ceratiaceae
Ceratium hirundinella (O.F.Müller)
 Schrank

PHYLUM CHAROPHYTA

Class Charophyceae
 Ord. Charales
 Fam. Characeae
Chara corallina Wild.
Nitella hyalina (D.C.) Agar.

PHYLUM PTERIDOPHYTA

Class Leptosporangiatæ
 Ord. Parkeriales
 Fam. Parkeriaceae
Ceratopteris thalictroides Brong.
 Ord. Marsileales
 Fam. Marsileaceae
Marsilea quadrifolia Lin.
 Class Hydropterididae
 Ord. Salviniaceae
 Fam. Salviniaceae
Azolla imbricata Nakai
A. japonica Franch. et Sav.
Salvinia natans All.

PHYLUM ANGIOSPERMAE

Class Monocotyledoneae

Ord. Typhales

Fam. Typhaceae

Typha angustata Bory et Chaub.

Fam. Sparganiaceae

Sparganium stoloniferum (Hamitt.)

Graben.

S. yamatense Makino

Ord. Potamogetonales

Fam. Potamogetonaceae

Potamogeton freyeri A. Benn.

P. distinctus A. Benn.

P. malainoides Miki

P. octandrus Poir

P. octandrus Poir var. *miduhikimo*

(Makino) Hara

P. dentatus Hagstr.

P. nipponicus Makino

P. malaianus Miq.

P. crispus Lin.

P. perfoliatus Lin.

P. oxyphyllus Miq.

P. maackianus A. Benn.

P. pectinatus Lin.

P. anguillanus Koidz.

● *P. biwaensis* Miki

Ord. Najadales

Fam. Najadaceae

Najas marina Lin.

N. oguraensis Miki

N. minor All.

N. foveolata A. Br.

N. graminea Del.

Ord. Alismatales

Fam. Alismataceae

Alisma plantago-aquatica Linn. var.

orientale Samuels

A. canaliculatum A. Br. et Bouche

Sagittaria pygmaea Miq.

S. trifolia Lin.

Ord. Hydrocharitales

Fam. Hydrocharitaceae

Vallisneria denseserrulata (Makino)

Makino

V. asiatica Miki

● *V. biwaensis* (Miki) Ohwi

Hydrilla verticillata (Lin. fil.) Casp.

Otella japonica Miq.

O. alisnoides (Lin.) Pers.

Hydrocharis asiatica Miq.

Elodea nuttallii (Planch.) St. John.

E. densa (Planch.) St. John.

Ord. Arales

Fam. Lemnaceae

Spirodela polyrrhiza (Lin.) Schleid

Lemna paucicostata Hegelm

Ord. Commelinales

Fam. Pontederiaceae

Eichhornia crassipes Sol. et Lauf.

Monochoria korsakowii Regel et Maack

M. vaginalis (Burm. fil.) Presl var.

plantaginea (Roxb) Solm. et Laub.

Ord. Graminales

Fam. Gramineae

Zizania latifolia Turcz.

Phragmites communis Steud.

P. japonica Steud.

P. karka (Retz.) Trin.

Fam. Cyperaceae

Eleocharis kuroguwai Ohwi

Scirpus lacustris Lin. var.

tabernaemontani (Gmel.) Doell

Class Dicotyledoneae

Ord. Ranales

Fam. Nymphaeaceae

Nuphar japonicum Dc.

N. subintegerrimum (Casp.) Makino

Nelumbo nucifera Gaertn.

Nymphaea tetragona Georgi.

Fam. Ceratophyllaceae

Ceratophyllum demersum Lin.

C. demersum Lin. var. *quadrifidum*

Makino

Fam. Ranunculaceae

Ranunculus nipponicus (Makino) Nakai

var. *major* Hara

Ord. Geraniales

Fam. Callitrichaceae

Callitriche verna Lin.

Ord. Parieteles

Fam. Elatinaceae

- Elatine triandra* Schk.
 Ord. Myrtiflorae
 Fam. Lythraceae
Rotala mexicana Cham. et Schlttdt.
 Fam. Hydrocariaceae
Trapa natans Lin. var. *bispinosa* Makino
T. incisa Sieb. et Zucc.
 Fam. Haloragaceae
Myriophyllum spicatum Lin.
 Ord. Contortae
 Fam. Gentianaceae
Nymphoides indica O. Kuntze
N. peltata O. Kuntze

ANIMAL

PHYLUM PROTOZOA

- Class Actinopoda
 Ord. Heliozoa
 Fam. Actinophyridae
Actinosphaerium eichhorni (Ehr.)
Actinophrys sol Ehr.
 Fam. Clathruliniidae
Clathrulina sp.
 Fam. Acanthocystidae
Acanthocystis chaetophora Leidy
Raphidiophrys viridis Arther
 Class Rhizopoda
 Ord. Testacida
 Fam. Arcellidae
Arcella vulgaris Ehr.
A. discoides Ehr.
Pyxidicula operculata Ehr.
Pseudochlamys patella Cl. et L.
 Fam. Diffugiidae
Pseudodiffugia horrida Penard
Centropyxis aculeata (Ehr.) Stein
C. constricta (Ehr.)
C. sp.
Diffugia acuminata Ehr.
 ● *D. biwae* Kawamura
D. brevicolla Cash et Hopkinson
D. globulus (Ehr.)
D. lanceolata Penard
D. lobostoma Laidy
D. oblonga Ehr.
D. pyriformis Perty

- D. tuberculata* Wallich
D. gramen Penard
D. manicata Penard
D. corona Wallich
 Fam. Euglyphidae
Cyphoderia ampulla Ehr.
Nebella sp.
Euglypha alveolata Dujardin
E. acanthophora (Ehr.) Perty
E. ciliata Ehr.
Paulinella sp.
Lacquereusia spiralis Ehr.
 Ord. Amoebida
 Fam. Amoebidae
Amoeba sp.
 Fam. Mayorellidae
Vexillifera ambulacrallis (Penard)

SUBPHYLUM CILIOPHORA

- Subclass Suctorina
 Ord. Suctorida
 Fam. Dendrosomidae
Staurophrya elegans Gajewskaja
 Fam. Acinetidae
Tokophrya quadrupartita Claparède et Lachmann
 Subclass Holotricha
 Ord. Gymnostomatida
 Fam. Spathidiidae
Euchylidium sp.
Spathidium sp.
 Fam. Didiniidae
Askenaria volvox (Claparède et Lachmann)
A. sp.
Didinium balbianii (Fabre-Domerque)
D. nasutum (O.F. Müller)
 Fam. Colepidae
Coleps hirtus O.F. Müller
 Fam. Actinobolinidae
Actinobolina radians (Stein)
 Fam. Tracheliidae
Dileptus sp.
Paradileptus robustus Wenrich
 Fam. Nassulidae
Nassula sp.

Ord. Hymenostomatida

Fam. Parameciidae

Paramecium sp.

Fam. Pleuronematidae

Pleuronema sp.

Subclass Spirotricha

Ord. Hypotrichida

Fam. Oxytrichidae

Balladyna parvulla Kowalewski*Stylonychia* sp.

Ord. Heterotrichida

Fam. Bursariidae

Bursaria sp.

Fam. Stentriidae

Stentor sp.

Ord. Oligotrichida

Fam. Halteriidae

Halteria grandinella (O.F.Muller)*Strombidium gyrans* Stokes*S. viride* Stein*S. sp.*

Fam. Tintinnidae

Tintinnidium fluviatile (Stein) S.Kent*Tintinnopsis cratera* (Leidy) Hada*T. sp.*

Ord. Sessilia

Fam. Epistylidae

Epistylis sp.

Fam. Vorticellidae

Vorticella campanula Ehr.*V. spp.**Carchesium* sp.

Ord. Mobilia

Fam. Urceolariidae

Trichodina sp.**PHYLUM PORIFERA**

Class Demospongia

Ord. Haplosclerina

Fam. Spongillidae

Spongilla lacustris (Lin.)*S. clementis* Annandale*S. semispongilla* (Annandale)*Heteromeyenia stepanowii* (Dybowsy)*Ephidatia mülleri* (Lieberkühn)*E. japonica* (Hilgendorf)**PHYLUM CNIDARIA**

Class Hydrozoa

Ord. Hydroida

Fam. Hydridae

Hydra japonica Ito**PHYLUM PLATYHELMINTHES**

Class Turbellaria

Ord. Catenulida

Fam. Catenulidae

Catenula lemnae Ant. Dugés*Stenostomum leucops* (Ant. Dugés)*S. unicolor* O.Schmidt*S. ignavum* Vejdovsky*Rhunchoscolex simplex* Leidy

Ord. Macrostromida

Fam. Microstromidae

Microstomum lineare (O.F.Müller)

Fam. Macrostromidae

Macrostomum hystricum Beklemischev*M. tuba* (Graff)*M. tuba* (Graff) var. *gigas* Okugawa

Ord. Prolecithophora

Fam. Plagiostomidae

Plagiostomum lemnae (du Plessis)

Ord. Tricladida

Fam. Planariidae

Dugesia gonocephala Dugés

Fam. Dendrocoelidae

● *Bdellocephala annandalei* Ijima et

Kaburaki

Ord. Neorhabdocoela

Fam. Dalyelliidae

Microdalyellia armigera (O.Schmist)● *M. biwae* (Okugawa)

Fam. Typhloplanidae

Typhloplana viridata (Abildgaard)*Castrada hofmanni* M.Braun*Strongylostoma radiatum* (O.F.Müller)*Rhynchomesostoma rostratum*

(O.F.Müller)

Mesostoma productum (O.Schmist)

Ord. Kalyptorhynchia

Fam. Gytracidae

Gytratrix hermaphroditus Ehr.

PHYLUM ASCHELMINTHES

Class Rotifera

Ord. Bdelliodea

Fam. Philodinidae

Rotatoria rotatoria (Pallas)*R. neptunia* (Ehr.)*Dissotrocha aculeata* (Ehr.)*Philodina roseola* Ehr.

Ord. Flosculariacea

Fam. Flosculariidae

Lacinularia floscularia (O.F.Müller)*Conochilus unicornis* Rousset

C. Sp.

Conochiloides natans (Seligo)

Fam. Filiniidae

Filinia longiseta (Ehr.)*Tetramastrix opeliensis* Zacharias var.*brevispina* Ahlstrom*Hexarthra mira* (Hadson)*Pompholyx complanata* Gosse*P. sulcata* Hudson

Fam. Testudinellidae

Testudinella patina (Hermann)

Ord. Collothecacea

Fam. Collothecidae

Collothecca cornuta (Dobie)*C. campanulata* Dobie*C. mutabilis* (Bolt.)

Ord. Ploima

Fam. Notommatidae

Cephalodella sp.

Fam. Synchaetidae

Synchaeta oblonga Ehr.*S. stylata* Wierzejski*S. tremula* (O.F.Müller)

S. sp.

Polyarthra vulgaris Carlin*P. euryotera* Wierzejski*P. trigla* (Ehr.)*Ploesoma hudsoni* (Imhof)*P. truncatum* (Levander)

Fam. Gastropodidae

Chromogaster testudo Lauterborn*C. ovalis* (Bergendal)

Fam. Trichoceridae

Trichocera iernis (Gosse)*T. cylindrica* (Imhof)*T. capucina* (Wierzejski et Zacharias)*T. longiseta* (Schränk)*T. cristata* Harring*T. bicristata* (Gosse)*T. elongata* (Gosse)*T. chattoni* (de Beauchamp)*T. (Diurella) tigris* (O.F.Müller)*T. (D.) stylata* (Eyferth)*T. (D.) porcellus* (Gosse)*T. (D.) brachyura* (Gosse)*T. (D.) tenuior* (Gosse)

T. spp.

Fam. Asplanchnidae

Asplanchna priodonta Gosse

A. sp.

Fam. Brachionidae

Brachionus falcatus Zacharias*B. quadridentatus* Hermann*B. budapestinensis* Daday*B. forficula* Wierzejski*B. urceolaris* O.F.Müller*B. angularis* Gosse*B. angularis* Gosse var. *bidens* Plate*B. calyciflorus* Pallas*B. calyciflorus* Pallas var. *dorcas* (Gosse)*B. dimidiatus* (Bryce)*B. diversicornis* Daday*B. rubens* Ehr.

B. sp.

Platyias patulus (O.F.Müller)*P. quadricornis* (Ehr.)*Keratella cochlearis* (Gosse)*K. cochlearis macracantha* Lauterborn*K. cochlearis micracantha* Lauterborn*K. cochlearis* (Gosse) var. *tecta* (Gosse)*K. quadrata* (O.F.Müller)*K. quadrata* (O.F.Müller) f. *testudo* (Ehr.)*K. valga* (Ehr.) f. *monstrosa* Barrois et

Daday

K. valga (Ehr.) f. *tropica* Apstein*Kelicottia longispina* (Kelicott)*Notholca striata* (O.F.Müller)*N. foliacea* Ehr.*N. labis* Gosse

N. sp.
Anuraeopsis fissa (Gosse)
Epiphanes senta (O.F.Müller)
Euchlanis dilatata Ehr.
Dipleuchlanis propatula (Gosse)
Lepadella ovalis (O.F.Müller)
L. acuminata (Ehr.)
L. oblonga (Ehr.)
Lophochalis salpina (Ehr.)
Mytilina ventralis (Ehr.)
Trichotria pocillum (O.F.Müller)
T. tetractis (Ehr.)
T. sp.
Scaridium longicaudum (O.F.Müller)
Colurella adriatica Ehr.
C. obtusa Gosse
C. bicuspidata (Ehr.)
C. colurus (Ehr.)
Lecane luna (O.F.Müller)
L. flexilis (Gosse)
L. ludwigii (Eckstein)
L. hamata (Stokes)
L. hastata (Murray)
L. lunaris (Ehr.)
L. bulla (Gosse)
L. quadridentata (Ehr.)
L. stenroosi (Meissner)
L. arcuata (Bryce)
L. clostercerca (Schmarda)
L. galeata (Bryce)
L. sp.

PHYLUM TENTACULATA

Class Ectoprocta
 Ord. Phylactolaemata
 Fam. Plumatellidae
Plumatella emarginata Allman
 Fam. Lophopodellidae
Pectinatella gelatinosa Oka
Lophopodella carteri (Hyatt)
 Fam. Fredericellidae
Fredericella sultana (Blumenbach)

PHYLUM ANNELIDA

Class Oligochaeta
 Ord. Archioliogochaeta

Fam. Naididae
Chaetogaster limnaei K.V.Baer
Nais bretscheri Michaelsen
Stylaria lacustris (Lin.)
 Fam. Tubificidae
Rhyacodrilus hiemalis Ohtaka
Bothrioneurum vej dovskyanum Stole
Branchiura sowerbyi Beddard
Limnodrilus grandisetosus Nomura
L. hoffmeisteri Claparède
L. claparedeianus Ratzel
L. profundicola (Verrill)
Tubifex sp.
 ● *Kawamura japonica* Stephenson
Spirosperma yamaguchii (Brinkhurst)
 Tubificidae sp.
 Fam. Criodrilidae
Criocrilus bathybatu s Stephenson
 Class Hirudinea
 Ord. Rhynchobdellae
 Fam. Glossiphonidae
 ● *Ancyrobdella biwae* Oka
Helobdella sp.
Glossiphonia sp.
 Fam. Hirudidae
Whitmania pigra (Whitman)
 Ord. Pharyngobdellae
 Fam. Erpobdellidae
Mimobdella japonica Blanchard
Erpobdella sp.

PHYLUM MOLLUSCA

Class Gastropoda
 Ord. Mesogastropoda
 Fam. Viviparidae
Cipangopaldina japonica (v.Martens)
C. chinensis malleata (Reeve)
 ● *Heterogen longispira* (Smith)
Sinotaia quadrata histrica (Gould)
 Fam. Valvatidae
 ● *Valvata (Cincinna) japonica biwaensis*
 Preston
 Fam. Bithyniidae
Parafossarulus manchouricus japonicus
 (Pilsbry)
 Fam. Thiaridae

- Semisulcospira libertina* (Gould)
- *S. decipiens* (Westerlund)
 - *S. multigranosa* Boettger
 - *S. reticulata* Kajiyama et Habe
 - S. kurodai* Kajiyama et Habe
 - *S. nakasekoe* Kuroda
 - *S. niponica* (Smith)
 - S. reiniana* (Brot)
 - *S. morii* Watanabe
- Ord. Basommatophora
- Fam. Lymnaeidae
- Austropeplea ollula* (Gould)
- Fossaria truncatula* (Müller)
- Radix auricularia japonica* (Jay)
- *R. (Biwakoa) onychia* (Westerlund)
- Fam. Planorbiidae
- Camptoceras hirasei* Walker
- Culmenella prashadi* (Clench)
- Polypulvis hemisphaerula nitidella*
v. Martens
- Gyraulus chinensis hiemantium*
(Westerlund)
- *G. biwaensis* (Preston)
 - *G. amplificatus* (Mori)
- Fam. Ancyliidae
- Pettancylus nipponica* (Kuroda)
- P. japonica* Habe et Burch
- Ord. Stylommatophora
- Fam. Succinidae
- Oxyloma hirasei* (Pilsbry)
- Class Bivalvia
- Ord. Palaeoheterodonta
- Fam. Unionidae
- *Lanceolaria oxyrhyncha* (v. Martens)
 - Unio (Nodularia) douglasiae nipponensis*
v. Martens
 - *U. (N.) biwae* Kobelt
 - Inversidens brandti* (Kobelt)
 - *I. reiniana* (Kobelt)
 - I. japonensis* (Lea)
 - Pseudodon (Obovalis) omiensis*
(Heimburg)
 - *Hyriopsis (Nipponohyria) schlegeli*
(v. Martens)
 - *Cristaria plicata clessini* (Kobelt)
 - Anodonta lauta* v. Martens

- *A. calipygos* Kobelt
- Fam. Corbiculidae
- *Corbicula sandai* Reinhardt
 - C. (Corbiculina) leana* Prime
- Fam. Sphaeriidae
- *Pisidium kawamurai* Mori
 - P. cinereum lacustre* Woodward
 - *Sphaerium japonicum biwaense* Mori

PHYLUM ARTHROPODA

- Class Crustacea
- Ord. Copepoda
- Fam. Diaptomidae
- Eodiaptomus japonicus* (Burckhardt)
- Sinodiaptomus valkanovi* Kiefer
- Fam. Cyclopidae
- Eucyclops serrulatus* (Fischer)
- Tropocyclops prasinus* (Fischer)
- Paracyclops fimbriatus* (Fischer)
- Cyclops strenuus* Fischer
- C. vicinus* Uljanin
- Mesocyclops thermocyclopoides* (Claus)
- Thermocyclops taihokuensis* (Harada)
- Limnoncaea* sp.
- Fam. Harpacticidae
- Parastenocaris biwae* Miura
- Ord. Branchiopoda
- Fam. Sidaidae
- Sida crystallina* (O.F. Müller)
- Diaphanosoma brachyurum* (Lievin)
- Fam. Holopedidae
- Holopedium gibberum* Zaddach
- Fam. Daphniidae
- *Daphnia biwaensis* Uéno
 - D. longispina* (O.F. Müller)
 - D. hyalina* Leydig
 - D. galeata* G.O. Sars
 - Moina macrocopa* Straus
- Fam. Bosminidae
- Bosmina longirostris* (O.F. Müller)
- B. fatalis* Burckhardt
- Bosminopsis deitersi* Richard
- Fam. Chydoridae
- Camptocercus rectirostris* (Schoedler)
- Alona guttata* G.O. Sars
- A. rectangularis* G.O. Sars

- A. quadrangularis* (O.F.Müller)
Chydrus sphaericus (O.F.Müller)
 Fam. Leptodoridae
Leptodora kindtii (Focke)
 Ord. Ostracoda
 Ostracoda sp.
 Ord. Amphipoda
 Fam. Gammaridae
Jesogammarus (Annisogammarus) annandalei (Tattersall)
J. naritai Morino
 Fam. Corophiidae
 ● *Kamaka biwae* Ueno
 Fam. Talidridae
Orchestia japonica (Tattersall)
 Ord. Isopoda
 Fam. Corallanidae
Tachea chinensis Thielemann
 Fam. Asellidae
Asellus sp.
 Ord. Decapoda
 Fam. Palaemonidae
Palaemon paucidens De Haan
Macrobrachium nipponensis (De Haan)
 Fam. Atyidae
Paratya compressa (De Haan)
 Fam. Astacidae
Procambarus clarkii (Girard)
 Fam. Grapsidae
Eriocheir japonicus (De Haan)
 Ord. Acarina
 Fam. Eylaidae
Eylais sp.
 Fam. Unionicolidae
Unionicola (Pentatax) imamurai Hevers
U. (Parastitatax) ypsilophora Bonz
 Fam. Axonopsidae
Albaxona japonica Imamura
Lethaxona sp.
Axonopsis (Hexaxonopsis) subterranea
 Uchida et Imamura
 Fam. Arrenuridae
Arrenurus agrionicolus Uchida
 Class Insecta
 Ord. Trichoptera
 Fam. Psychomyiidae
Paduniella amurensis Martynow
Tinodes sp.
 Fam. Polycentropidae
Cyrnus sp.
Dipseudopsis alba (Iwata)
Ecnomus tenellus Ramber
E. yamashironis Tsuda
Neucentropus mandjuricus Martynow
 Fam. Hydropsychidae
Cheumatopsyche brevilineata (Iwata)
C. echigoensis (Tsuda)
 Fam. Hydroptilidae
Hydroptila itoi Kobayashi
H. sp.
Orthotrichia sp.
 Fam. Limnephilidae
Apatania tsudai Schmid
 ● *A.* sp. (*biwaensis* Nishimoto ms.)
Goera japonica Banks
Limnephilus fuscovittatus Matsumura
L. orientalis Martynow
Nemotaulius admorsus (McLachlan)
Nothopsyche ruficollis Ulmer
N. ulmeri Schmid
 Fam. Lepidostomatidae
Goerodes japonicus (Tsuda)
 Fam. Sericostomatidae
Gumaga okinawaensis Tsuda
 Fam. Calamoceratidae
Rhabdoceras japonicum Ulmer
 Fam. Molannidae
Molanna moesta Banks
 Fam. Leptoceridae
Ceraclea biwaensis (Tsuda)
C. superbus Tsuda
C. sp. (comb.nov. *Leptocerus nigronervosus* McLachlan)
Mystacides interjecta Banks
M. sp. (comb. nov. *M. azurea* Lin.)
Oecetis orientalis Tsuda
 ● *O. morii* Tsuda
 ● *O. yukii* Tsuda
O. spp.
Triplectides magnus (Walker)
 ● *Setodes biwae* Tsuda
 Ord. Ephemeroptera

- Fam. Ecdyonuridae
Ecdyonurus kibunensis Imanishi
E. yoshidae Takahashi
Cinygma hirasana Imanishi
- Fam. Siphonuridae
Siphonurus sanukensis Takahashi
- Fam. Polymitarciidae
Polymitarcis shigae Takahashi
- Fam. Potamanthidae
Potamanthus kamonis Imanishi
- Fam. Caenidae
Caenis sp. CH
- Fam. Leptophlebiidae
Choroterpes trifurcara Uéno
- Fam. Ephemeridae
Ephemera lineata Eaton
- Ord. Plecoptera
Fam. Perlidae
Neoperla nipponensis (McLachlan)
- Fam. Leuctridae
Leuctridae sp.
- Ord. Coleoptera
Fam. Psephenidae
Eubrianax granicollis Lewis
Helichus sp. HC
Metanopsephenus japonicus Matsumura
- Fam. Hydrichidae
Hydrochus japonicus Sharp
- Fam. Hydrophilidae
Coelostoma (Holocoelostoma) stultum (Walker)
Enochrus (Holophilydrys) simulans simulans (Sharp)
E. (Lumetus) vilis (Sharp)
E. (Lumetus) haroldi (Sharp)
Berosus (s.str.) signaticollis punctipennis Harold
Regimbartia profunda (Sharp)
- Fam. Noteridae
Noterus japonicus Sharp
- Fam. Dytiscidae
Laccophilus difficilis Sharp
Ilybius apicalis Sharp
Cybister tripunctatus orientalis Gschwendtner
- Fam. Gyrinidae
Grinus (s.str.) curtus Sharp
Dineutus (Spinosodineutes) orientalis (Modeer)
- Fam. Heteroceridae
Heterocerus (s.str.) asiaticus Nomura
- Ord. Megaloptera
Fam. Corydalidae
Parachuliodes japonicus McLachlan
- Ord. Odonata
Fam. Agrionidae
Cercion calamorum Ris
C. hieroglyphicum Brauer
- Fam. Calopterygidae
Calopteryx atrata Selys
- Fam. Gomphidae
● *Stylurus oculus* (Asahina)
● *S. annulatus* (Djakonov)
Gomphus melaenops Selys
G. postularis Selys
Trigomphus interruptus Selys
T. ogumai Asahina
Nihonogomphus viridis Oguma
Onychogomphus viridicostus Oguma
Ictinogomphus clavatus Fabricius
Sieboldius albardae Selys
- Fam. Aeschnidae
Aeschnophlebia longistigma Selys
Anax parthenope julius Brauer
- Fam. Corduliidae
Macromia amphigona Selys
Epophthalmia elegans Brauer
- Fam. Libellulidae
Orthetrum albistylum speciosum Uhler
O. triangulare melania Selys
Crocothemis servilia Drudy
Deielia phaon Selys
Sympetrum frequens Selys
S. darwinianum Selys
S. risi risi Barteneff
S. infuscatum Selys
S. eroticum eroticum Selys
Pseudothemis zonata Burmeister
Calopteryx atrata Selys
- Ord. Neuroptera
Fam. Sisyridae
Sisyra nikkoana Navas

Ord. Diptera

Fam. Chironomidae

- Chironomus circumdatus* (Kieffer)
C. fujiprimus Sasa
C. kiiensis Tokunaga
C. nippodorsalis Sasa
C. nipponensis Tokunaga
C. plumosus (Lin.)
C. salinarius Kieffer
C. samoensis Edwards
C. yoshimatsui Martin et Sublette
Camptochironomus biwaprimus Sasa
Dicortendipes nervosus (Staeger)
D. niveicaudus (Kieffer)
Einfeldia dissidens (Walker)
● *Glyptotendipes biwasecundus* Sasa
Phytotendipes tokunagai (Sasa)
Cryptochironomus albofasciatus (Staeger)
Harnischia curtilamellata (Malloch)
Microchironomus tener (Kieffer)
Parachironomus arcuatus Goetghebuer
Endochironomus pekanus (Kieffer)
Microtendipes britteni (Edwards)
Paratendipes tamayubai Sasa
Pentapedilum tritum (Walker)
Polypedilum cultellatum Goetghebuer
P. japonicum (Tokunaga)
P. kyotoense (Tokunaga)
P. masudai (Tokunaga)
P. nubeculosum (Meigen)
P. nubifer (Skuse)
Stictochironomus akizukii (Tokunaga)
S. histrio (Fabricius)
Biwatendipes motoharui Tokunaga
Cladotanytarsus vanderwulpi (Edwards)
Neozavrelia bicoliocula (Tokunaga)
● *Paratanytarsus biwatertius* Sasa
P. miikesecundus (Sasa)
P. tamanegi Sasa
Rheotanytarsus aestuarius (Tokunaga)
● *Tanytarsus kirai* Sasa
● *T. biwatrifurcatus* Sasa
T. gregarius Kieffer
T. konishii Sasa et Kawai
T. okuboi Sasa et Kikuchi
T. oyamai Sasa

- T. takahashii* Kawai et Sasa
T. tamagotoi Sasa
T. unagiseptimus Sasa
Cricotopus bicinctus (Meigen)
C. bimaculatus Tokunaga
● *C. biwannulatus* Sasa
C. triannulatus (Macqart)
Isocladius sylvestris (Fabricius)
I. tricinctus (Meigen)
I. trifasciatus (Panzer)
Nanocladius tamabicolor Sasa
Paratrachocladius rufiventris (Meigen)
Rheocricotopus chalybeatus (Edwards)
● *Eukiefferiella biwaquarta* Sasa
Orthocladius glabripennis (Goetghebuer)
Psectrocladius yunoquartus Sasa
Tokunagayusurika akamusi (Tokunaga)
Limnophyes fujinonus Sasa
Smittia aterrima (Meigen)
S. nudipennis Goetghebuer
Thienemaniella vittata (Edwards)
Monodiamesa bathyphila (Kieffer)
Ablabesmyia monilis (Lin.)
Clinotanypus sugiyamai Tokunaga
Procladius iris Kieffer
P. choreus (Meigen)
Tanypus punctipennis Meigen

Ord. Lepidoptera

Fam. Pyralidae

- Nymphula vittalis* Bremer
N. turpata Butler
N. interruptalis Preyer

Ord. Hemiptera

Fam. Naucoridae

- Ilyocoris exclamationis* Scott

Fam. Nepidae

- Ranatra chinensis* Mayr
R. unicolor Scott

Fam. Gerridae

- Gerris (Aquarius) paludum* (Fabricius)

PHYLUM VERTEBRATA

Class Petromyzones

Ord. Petromizonida

Fam. Petromizonidae

- Entosphenus reissneri* (Dibowski)

Class Teleostomi

Ord. Clupeida

Fam. Salmonidae

- *Oncorhynchus rhodurus* f. *rhodurus*
Jordan et McGregor
- O. rhodurus* f. *macrostomus* (Günther)
- Salmo gairdnerii irideus* Gibbons

Fam. Plecoglossidae

Plecoglossus altivelis Tem. et Schl.

Fam. Osmeridae

Hypomessus olidus (Pallas)

Ord. Cyprinida

Fam. Cyprinidae

- Acheilognathus lanceolata* (Tem. et Schl.)
- A. limbata* (Tem. et Schl.)
- Paracheilognathus rhombea* (Tem. et Schl.)
- P. tabira* (Jordan et Thompson)
- P. cyanostigma* (Jordan et Fowler)
- Rhodeus ocellatus ocellatus* (Kner)
- R. ocellatus smithi* (Regan)
- Pungtungia herzi* Herzenstein
- *Sarcocheilichthys variagatus microoculus*
Mori
- *S. biwaensis* Hosoya
- Abbottina rivularis* (Basilewsky)
- Gnathopogon elongatus elongatus* (Tem. et Schl.)
- *G. caerulescens* (Sauvage)
- G. japonicus* (Sauvage)
- G. biwae* Jordan et Snyder
- Pseudogobio esocinus* (Tem. et Schl.)
- Hemibarbus barbus* (Tem. et Schl.)
- Biwae zezera* (Ishikawa)
- Pseudorasvora parva* (Tem. et Schl.)
- Tribolodon hakonensis hakonensis*
(Günther)
- Moroco steindachneri steindachneri*
(Sauvage)
- M. steindachneri jouyi* (Jordan et Snyder)
- Zacco platypus* (Tem. et Schl.)
- Z. temminckii* (Tem. et Schl.)
- *Opsariichthys uncirostris* (Tem. et Schl.)
- Hemigrammocypripis rasborella* Fowler
- *Ischikauia steenackeri* (Sauvage)
- Cyprinus carpio* Lin.

● *Carassius cuvieri* (Tem. et Schl.)

● *C. carassius grandoculus* (Tem. et Schl.)
C. gibelio langsdorfi (Cuvier et Valenciennes)

Fam. Cobitidae

Misgurunus anguillicaudatus (Cantor)

Cobitis biwae (Jordan et Schl.)

C. taenia striata Ikeda

Hymenophysa curta (Tem. et Schl.)

Fam. Siluridae

Parasilurus asotus Lin.

● *P. biwaensis* Tomoda

● *P. lithophilus* Tomoda

Fam. Bagridae

Pelteobagrus undiceps (Sauvage)

Liobagrus reini Hilgendorf

Ord. Anguillida

Fam. Anguillidae

Anguilla japonica Tem. et Schl.

Ord. Cyprinodontida

Fam. Cyprinodontidae

Orizias latipes (Tem. et Schl.)

Ord. Gasterosteida

Fam. Gasterosteidae

Gasterosteus aculeatus microcephala
(Girard)

Ord. Percida

Fam. Channidae

Channa maculata (Lacapada)

Fam. Centrarchidae

Micropterus salmoides (Lacépède)

Lepomis macrochirus Rafinesque

Fam. Eleotridae

Mogurnda obscura (Tem. et Schl.)

Fam. Gobiidae

Rhinogobius similis (Gill)

Chaenogobius urotaenia (Hilgendorf)

● *C. isaza* Tanaka

Ord. Cottida

Fam. Cottidae

Cottus pollux (Günther)

Class Aves

Ord. Passeres

Fam. Troglodytidae

Cinclus pallasii Tem.

Ord. Halcyones

- Fam. Alcedinidae
Ceryle lugubris (Tem.)
Alceso atthis Lin.
- Ord. Accipitres
Fam. Falcomidae
Milvus migrans (Boddaest)
- Fam. Pandionidae
Pandion haliaëtus (Lin.)
- Ord. Gressores
Fam. Ardeidae
Ardea cinerea Lin.
Egretta alba modesta (Gray)
E. intermedia (Wagler)
E. garzetta (Lin.)
Bubulcus ibis (Lin.)
Butorides striatus (Lin.)
Nycticorax nycticorax (Lin.)
Isobrychus sinensis (Gmelin)
I. eurhythmus (Swinhoe)
- Ord. Anseres
Fam. Anatidae
Cygnus cygnus (Lin.)
Anser albifrons (Scopoli)
A. fabalis (Latham)
A. platyrhynchos Lin.
A. poecilorhyncha J.R.Forster
A. strepera Lin.
A. crecca Lin.
A. formosa Georgi
A. falcata Georgi
A. penelope Lin.
A. acuta Lin.
A. clypeata Lin.
A. querquedula Lin.
Aix galericulata (Lin.)
Aythya ferina (Lin.)
A. fuligula (Lin.)
- A. marila* (Lin.)
Bucephala clangula (Lin.)
Melanitta fusca (Lin.)
M. nigra (Lin.)
Mergellus albellus Lin.
Mergus serrator Lin.
M. merganser Lin.
- Ord. Stegonopodes
Fam. Phalacrocoracidae
Phalacrocorax carbo Lin.
P. capillatus (Tem. et Schl.)
- Ord. Tubinares
Fam. Puffinidae
Calanectris leucomelas (Tem.)
- Ord. Pygopodea
Fam. Podicipidae
Podiceps ruficollis (Pallas)
P. caspicus Hablizi
P. griseigena Boddaert
P. cristata (Lin.)
P. auritus (Lin.)
- Ord. Gaviiformes
Fam. Gaviidae
Gavia stellatus (Pontoppidan)
- Ord. Lari
Fam. Laridae
Sterna albifrons Pallas
S. hirundo Lin.
Rissa tridactyla (Lin.)
Larus argentatus Pontoppidan
L. canus Lin.
L. crassirostris Vieillot
L. ridibundus Lin.
- Ord. Alectoridae
Fam. Rallidae
Gallinula chloropus (Lin.)
Fulica atra Lin.

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