

## Short Reminiscences of a Turbellariologist

-At the Occasion of His 79<sup>th</sup> Birthday-

By Masaharu KAWAKATSU

### Epilogue

The family name <KAWAKATSU> is known as one of descendants of <Hata-no-KAWAKATSU> ('hata' means fields and farms in Japanese; *i.e.*, the leader of the KAWAKATSU's Group as a farming). 'Hata' (qin, or ch'in, in Chinese pronunciation) also means an ancient empire located in the east-central part of China. This semi-mythical person is believed as a leader of an old Chinese group of naturalized people into old Japan. They introduced advanced techniques of rice crop, sericulture, "Sake" brewing and "Kagura" (*Shintô* dances) to Japan. He also contributed to Japanese adaptation of Buddhism in the Court of Kyôto in the late 6<sup>th</sup> to the early 7<sup>th</sup> Centuries. Their stronghold was Kyôto, especially in and its NE suburbs (*i.e.*, closely near to my home City Kameoka).

The KAWAKATSU's family crest is called the 'Mitsuba-Tachi-Aoi' (*i.e.*, a standing 'Aoi' with 3 leaves). It is depicting auspicious plant, 'Kamo-Aoi' (*Asarum caulescens* Maxim.). Since the Futaba-Aoi' (*i.e.*, an Aoi with 2 leaves) is known as an very old crest of the Kamo Shrine of Kyôto (founded in 677), there may be some relationship between the Shrine and the ancestors of Kawakatsu's family --- such as one of the old parishioners the former.

### Background of a Naturalist

I was born in Asahi-mura Village, Kameoka-chô Town (now Asahi-chô in Kameoka City), Kyôto Prefecture, Honshû, Japan, on January 20, 1929. It is an old rural district with cultivated and rice fields, bamboo thickets, forests, hills, low mountains, brooks, rivers, and ponds. My parents' house was an old and big residence with a wide, non-artificial garden. Cf. Kawakatsu & Iwaki (1967: 218-223, fig. 7; Google Earth: 35°04'20.100"N and 135°34'08.20"E).

My father, Masakazu KAWAKATSU (1886-1952), was a squire of the village. He could trace his ancestors back to about 400 years ago. The oldest ancestor (with a clear record) was a leader of lower rank "Samurai" (warriors).

My mother, Tei KAWAKATSU (1893-1935; her old family name was OKAJIMA) was a daughter of a country medical doctor, Ei'ichi OKAJIMA (1863-1947). E. OKAJIMA (*i.e.*, my grandfather on the mother's side) was a parson of scientific curiosity. He talked me various scientific stories time and time in my childhood. He was familiar with names of various plants and animals. He had many books on sciences, detective stories, thrillers,

ghosts, etc. etc. Now, I am keeping several books left by the deceased. For example, Japanese translation series of J. H. Fabre's (1823-1918) Natural Science and Insecta Stories, 13 volumes (published in 1929-1930, Ars Co., Tôkyô). I am also keeping an old-fashioned microscope that used in the consultation room of the deceased.

### **A Boy as a Naturalist (1935-1945)**

My countryside where I spent my childhood had a full of natural environment. I learned from my grandfather the names of various weeds, trees, snails, insects, frogs, newts, freshwater fishes, birds, and mammals. He also taught me 'How to Use' of Illustrated Encyclopedias of fungi, weeds, garden flowers, trees, insects, and other various animals. Since I lost my mother (by an acute pneumonia) at the age of the 7 years old, my grandfather probably made a companion of young boy as his diversion.

While at a primary school, I had learned all of Japanese names of plants and animals inhabiting in my home ground and its vicinity. I also learned several scientific names of crops and domestic animals. I remember that my grandfather's handwriting alphabets were classical German style.

In April 1941, I attended the Sonobe Middle School located in a next town and joined a 'Natural History Club'. The school building was located in ruins of the castle with a part of old moat remains. It was a well-preserved natural corner with various plants and animals. My first article on the observation note of plants was published in the Alumni Magazine when I was a freshman (Kawakatsu, 1942).

The World War II dragged miserably on. I was a young substitute teacher for a primary school at my country village from July, 1945 to May, 1946.

### **A Student of Kyôto Normal College and Thereafter (1946-1949).**

Kyôto Normal College (Kyôto Gakugei University, after 1950; now Kyôto Kyôiku University) is an educational organization for primary, middle and high school teachers. I was admitted to the school in late spring of 1946 and attended 3 years.

I was a member of the 'Biology Study Group' as a student. Since I liked field trip and mountain trekking for the observation of plants and animals, I had often visited hills and mountains of Honshû, Central Japan, with my friend, Mr. Gen NAKAI (=MURATA), of the same group (he is now known as an old botanist).

In 1948, the biology students and professors of 5 Normal Colleges located in the Kinki Region organized the Association of Biology Club. Thus, <The Biological Society of Kinki Normal Colleges> was established. Dr. Hisao SUGINO (Professor of Biology of Ôsaka Normal College at that time) was one of the most active leaders of this new Association. His main theme of academic studies was an analysis of planarian regeneration by a grafting operation technique. And, this was the first chance for me to know Dr. SUGINO (1906-1992).

During those days, I had published 2 short Japanese articles on the ecological observation of a Japanese common butterfly (Kawakatsu, 1948, 1949).

### **A Student and the Assistant of Kyôto Gakugei University (1950-1960)**

After the spring of 1950, Kyôto Normal College was renamed as Kyôto Gakugei University (a special educational university). And, I returned to this new university as a higher-class student of the Natural Science Course. Professor Kazunoshuke I. OKUGAWA (1907-1994) was one of a biology teacher at that time. He studied taxonomy and local fauna of microturbellarians from the Lake Biwa-ko area in the beginning of the 1930s.

After the spring of 1951, I was a senior as well as a private helper to Prof. OKUGAWA in his research of the <Sexual Induction in the Asexual Form of Japanese Common Freshwater Planarian>. At that time the animal used was erroneously known as “*Dugesia gonocephala* (Dugès, 1830)”. My principal work was the collecting, culture and grafting operation of planarians. The <asexual form (Kyûshû Stock)> of planarians used was given by Dr. SUGINO from his culture stocks in his laboratory of Ôsaka Gakugei University. Prof. OKUGAWA’s study (Okugawa, 1957) was actually his Doctor of Science thesis.

I was appointed as the Assistant of Kyôto Gakugei University from the first of April, 1953 until the end of March, 1961. My main theme of studies published during the 8 years in the Kyôto were as follows:

- 1). Studies on the fission of Japanese common freshwater planarian, *Dugesia gonocephala* (Dugès), I-VIII (Okugawa & Kawakatsu, 1954-1958).
- 2). Studies on the vertical distribution of Japanese freshwater planarians, I-VI, and others (mainly by Kawakatsu, 1954-1961).

### **A Turbellariologist at Fuji Women’s College (1961-1990’s)**

In the beginning of 1961, I received the Dr. Sc. degree from Hokkaidô University, Sapporo. The main part of the thesis was entitled “On the ecology and distribution of freshwater planarians in the Japanese Islands, with special references to their vertical distribution.” It was later published in *Hydrobiologia* (Kawakatsu, 1965).

#### ***My start as a taxonomist***

In the beginning of April in 1961, I moved to Fuji Women’s College, Sapporo, as the Associate Professor of Biology. This was due to the kind arrangement of Dr. Atsuhiko ICHIKAWA (1904-1991), Professor of the Zoological Institute, Faculty of Sciences, Hokkaidô University.

Although I was apprehensive about an everyday life especially in long winter with much snow in Hokkaidô in Northern Japan, my wife – I was married to Miss Kazuko HATANO in

the beginning of 1959 – was pleased this moving from Kyôto to Sapporo because the latter was her second homeland.

Since my new college of work is a small, private, mission school, my general biology lecture for students of Literatures and Nursing Courses attained nearly 12 classes per week. Moreover, students in my classes were always over 60 students in one class. Sr. Kiku MAKINO (1895-1996), the President of the College at that time, asked me a help of biology teaching at Fuji Women's High School, too. Thus, I realized the necessity of a change of my academic study plan.

At first, my main theme should be concentrated on the taxonomic study of freshwater planarians from Japan and the neighboring countries. Fortunately, I had numerous preserved samples of planarians collected and obtained during the Kyôto age. Secondly, the continuation of the study of vertical distribution of freshwater planarians in Japan will be continue in cooperation with many biology teachers of high schools (and middle schools) who lived in various areas of Japan.

### ***Taxonomic study of Japanese polymorphic Dugesia species and the necessity of an international cooperation***

The late Dr. Isao IJIMA (1861-1921) mentioned about the most common Japanese freshwater planarian species as follows: “Übrigens scheint *Planaria gonocephala* eine weit über der Erde verbreitete Art zu sein, denn ich finde sie auch in Japan”. (Cited from Ijima, 1887, p. 338. foot-note 4.)

My first taxonomic study was the confirmation of the taxonomic position of the dugesiid species recorded from Japan (including the Okinawa Islands), Taiwan, Korea, and China. For the exact identification of this widely distributed, polymorphic species, I studied their comparative anatomy and histology for the samples from various areas in the Far East. Samples of *Dugesia gonocephala* (Dugès, 1830) from various areas of Europe were also studied. The European samples used were kind gifts from Dr. Anders G. DAHM (Lund), Dr. Harald SIOLI (Plön), Dr. Hans AN DER LAN (1909-1982, Innsbruck), Dr. Farançoise STÉPHAN-DUBOIS (Strasbourg), and Dr. Rosine CHANDEBOIS (Marseille).

*Dugesia japonica* Ichikawa et Kawakatsu, 1964 was described as a new species. I learned that an international close cooperation should be necessary for my future taxonomic studies. Additionally, this study was a start of my (and my team members') over-40 years continuous research on the taxonomy and karyology of *D. japonica* and another Japanese species, *Dugesia ryukyuensis* Kawakatsu, 1976. Cf. Ichikawa & Kawakatsu (1964); Kawakatsu, Oki, Tamura & Sugino (1976); Kawakatsu, Oki & Tamura (1993).

### ***Instruction of Dr. HYMAN***

Dr. Libbie H. HYMAN (1888-1969) taught me the true scientific spirit, namely that knowledge must be shared and never kept as the secret of one person or one country. In the spring of 1965, I got her letter: “Due to advancing age (76) and declining strength I am forced

to decline anymore taxonomic material. In fact it is very uncertain that I can complete the material already on hand. Therefore I sent you the planarians from Lake Tahoe, California, with the hope that you will identify them ....”

The result of a taxonomic study of Lake Tahoe samples (over 40 lot of preserved specimens) was published as a <Contribution of a series ‘North American Triclad Turbellaria’ by L. H. Hyman> (cf. Kawakatsu, 1968). The memory of our friendship and the token of my gratitude lived on the muddy bottom of beautiful Lake Tahoe, a rare species of planarians, *Dendrocoelopsis hymanae* Kawakatsu, 1968. Cf. Kawakatsu (1970).

### ***A start of international cooperative studies***

My attendance as one of 23 guest speakers at the Libbie Henrietta Hyman Memorial Symposium (December 28-30, 1970 in Chicago; cf. Kawakatsu, 1974) had a material effect for my future studies. It was a new start of an international cooperative taxonomic study. Immediately after the Symposium, I went to Mexican caves with Dr. Robert W. MITCHELL (Prof. of Texas Tech University at that time), who was also a member of the Symposium. We also visited many Mexican caves in the summer of 1973.

From the results of those collecting trips, as well as Dr. MITCHELL’s additional Mexican cave samples, 5 new species of troglobitic planarians were described, of which one species was a member of the new family. Cf. Mitchell & Kawakatsu (1972, 1973 a, b). See also Kawakatsu, Mitchell, Sluys & Sasaki (2002).

Our cooperative taxonomic studies on freshwater planarians from the United States (including Hawaii), Mexico, South American countries, and some of Asian countries continued for 32 years (1972-2004) and published 31 cooperative papers in total.

My taxonomic studies on triclads (mainly freshwater planarians) with or without coauthors progressed well during from the 1970’s to 1990’s. Countries of samples studied are: Japan, several countries in SE Asia including Taiwan, the Middle and Near East, South Africa, the Caribbean and South American countries, etc. For these studies, I owe much for many advices and bibliographic help received from the late Dr. Roman KENK (1898-1988).

### ***Induction of karyological studies and Brazilian freshwater planarians***

The induction of karyological technique into my taxonomic study and consideration by my three coauthors was available. They are: the late Dr. Hisao SUGINO, Dr. Iwashiro OKI and Dr. Sachiko TAMURA. I owe much for their invaluable help and cooperations during from 1976 to 1998.

My acceptance of the invitation by the late Dr. Josef HAUSER S.J. (1920-2004) at the UNISINOS in São Leopoldo, Rio Grande do Sul, Brazil (July and August, 1979), had a fine result for both the late Dr. HAUSER’s team and I myself. We had 9 papers on the karyology and taxonomy of South Brazilian freshwater planarians. Cf. Kawakatsu, Hauser & Friedrich (1976) and Morphological, Karyological and Taxonomic Studies of Freshwater Planarians

from South Brazil, I-VIII (1980-1986). See also the IXth report of this series by Kawakatsu (1989). Our final cooperative taxonomic paper on Brazilian and Uruguayan dugesiid planarians was published in early 1990's (Kawakatsu, Hauser & Ponce de León, 1992).

***Induction of molecular biological study of *Dugesia japonica*, survey trips to Taiwan and a chance meeting with Dr. WU of University of Colorado Museum***

After the 1970's Dr. Shozo OSAWA and his team members (Dr. Hiroshi HORI and Dr. Akira MUTO) of Nagoya University, Japan, studied molecular biology of various organisms including planarians. On the other hand, KAWAKATSU studied freshwater planarian fauna of Taiwan with his team members (Ichikawa & Kawakatsu, 1967; Kawakatsu & Iwaki, 1968; Kawakatsu, Oki, Tamura, Yamayoshi, Lue & Hagiya, 1979). Dr. HORI of the OSAWA's team considered that *Dugesia japonica*, a common freshwater planarian species distributed widely in the Japanese Islands as well as in Taiwan, seems to be a nice material for their new molecular biological analysis.

In the autumn of 1984, 5 Japanese persons (Drs. OSAWA, HORI, MUTO, KAWAKATSU and Masayuki TAKAI) visited Taiwan to collect freshwater planarians in cooperation with Dr. Kuang-Yang LUE (Professor of Taiwan Normal University, Taipei) under the project of the "Effect of Geographical Isolation on the Evolutionary Rate of Nucleotide Substitutions – 5SrRNA Sequence of the Freshwater Planarians in Taiwan." The second survey trip to Taiwan was made in the early summer of 1986. We obtained planarian samples from various areas of Taiwan including plains and high altitude mountain. Samples from Lanhsü Island were also obtained.

The basic result of our molecular biological study was presented at the Vth International Symposium on the Biology of the Turbellaria (Göttingen in Germany, August 9-14, 1987. Cf. Hori, Muto, Osawa, Takai, Lue & Kawakatsu (1988).

KAWAKATSU (and Drs. TAKAI and LUE) also collected many samples of freshwater and land planarians in various areas of Taiwan for taxonomic study. For the result of preliminary taxonomic studies of these samples and the karyological data – studied with Drs. Iwashiro OKI and Sachiko TAMURA of Ôsaka, Japan – were published in "A New Series of Studies on the Freshwater and Land Planarians from Taiwa, I-VI (1985-1989)."

KAWAKATSU had several preserved specimens of freshwater planarians from Colorado, U. S. A. Those samples were collected by Dr. Michio MORITA of the Colorado State University and by Dr. Wataru TESHIROGI (1925-2007; Hirosaki University, Japan) who stayed in Dr. MORITA's laboratory (a few months in 1975). Dr. TESHIROGI also obtained several vertical distribution data of the Mts. Rocky planarians. The taxonomic study of Colorado freshwater planarians, especially *Polycelis* species in that area, was an interesting theme for KAWAKATSU. When I met Dr. LUE in Taiwan, I talked him about my idea and desire. And, he kindly made an introduction of Dr. Shi-Kuei WU, Professor of the University of Colorado at Boulder, Colorado, because they are friends as graduates of the Taiwan Normal University.

Dr. WU is a specialist of shells and snails. He kindly sent me various preserved samples of freshwater planarians from Colorado, especially the samples of the Rocky Mountains and additional data on their vertical distribution. Thus, we had a unique paper based upon our compound data. Cf. Kawakatsu, Teshirogi, Wu & Mitchell (1989).

Additionally, the following papers on Taiwan land planarians are the result of our twenty years friendship. Cf. Wu, Kawakatsu, Lue, Lee, Tsai, Lin, Sluys & Sasaki (2005); Kawakatsu, Wu, Sluys, Sasaki, Kawakatsu (M.-y.) & Kawakatsu (T.) (2007); Kawakatsu, Gelder, Ponce de León, Volonterio, Wu, Nishino, Ohtaka, Niwa, Fujita, Urabe, Sasaki, Kawakatsu (M.-y.) & Kawakatsu (T.) (2007).

### ***Land Planarian Indices Series***

The first part of the “Land Planarian Indices Series” published in 1987 by Ogren & Kawakatsu. It was all of the taxonomic information on the Bipaliidae species with their synonyms and distribution data. This work was initiated by the late Dr. Robert E. OGREN (1922-2005). The taxonomic information on the Rhynchodemidae (Rhynchodeminae and Moicroplaninae) and Geoplanidae (Geoplaninae, Caenoplaninae and Pelmatoplaninae) was followed by the Bipaliidae Index. Dr. Eudóxia Maria FROEHLICH (São Paulo) and Dr. Hugh D. JONES (Manchester) kindly joined with us. Although Dr. OGREN died in 2005, this serial work has continued until today (26 parts were published until the end of 2007; 689 pages in total).

### **Before and Behind of the Retirement (1990's-2007)**

#### ***Cooperative studies on the taxonomy and distribution of Japanese and Russian freshwater planarians with Dr. TIMOSHKIN's team***

Among the freshwater planarian fauna of Japan, 8 genera are now known if an exotic one (*i.e.*, *Girardia* Ball, 1974) is included. Four of the remained 7 genera are also distributed in the Far East of Russia. They are: *Phagocata* Leidy, 1847; *Polycelis* Ehrenberg, 1831; *Seidlia* Zabusov, 1911; *Bdellocephala* De Man, 1875. In the Kamchatka Peninsula and the Kuril Islands, 3 genera (*i.e.*, *Polycelis*, *Seidlia* and *Bdellocephala*) are found. Taxonomic comparison of the Japanese and Russian species of these genera based upon their histological slides was my pressing desire for many years.

During from 1993 to 2006, I had published 6 cooperative articles (and several abstracts on Japanese and Russian freshwater planarian species with Dr. Oleg A. TIMOSHKIN (Irkutsk) and his team members; Dr. Ronald SLUYS (Amsterdam) was a coauthor of 4 of these papers. Dr. TIMOSHKIN also published 4 taxonomic papers with KAWAKATSU on micro-turbellarians and freshwater Nemertea from Lake Biwa-ko (Japan) and/or Lake Baikal (Russia).

#### ***Comparative taxonomic and phylogenetic studies on triclads and their bibliographic research with Dr. SLUYS***

Our plan of cooperative studies was started when we met at the occasion of the VIIth International Symposium on the Biology of the Turbellaria (Åbo in Finland, June 17-22, 1993). It consisted of two parts, *i.e.*, 1) a bibliographic research (mainly responsible by KAWAKATSU) and 2) taxonomic and phylogenetic studies (mainly responsible by Dr. SLUYS).

During from 1995 to the end of 2007, a total of 17 cooperative papers on triclads – marine, freshwater and land planarians – had been published (including 4 web articles). We also published 3 articles on our study materials and abstracts. Our 12 years' cooperative studies had a substantial contribution to the promotion of faunal, taxonomic and phylogenetic knowledge for the turbellariology. A confirmation of the taxonomic basis of land planarian study in the Far East was also a good result.

It is emphasized that the basic study of land planarian taxonomy in Japan and its neighbouring countries was confirmed by 2 papers: Kawakatsu, Sluys & Ogren (2005); Wu, Kawakatsu, Lue, Lee, Tsai, Lin, Sluys & Sasaki (2005). For the completion of the latter, I owe much for the kind cooperation of Dr. Shi-Kuei WU (University of Colorado and the Endemic Species Research Institute, Taiwan) in the collection of Taiwan land planarian samples and their distribution data.

### ***The KAWAKATSU's Collection***

Since KAWAKATSU's retirement from Fuji Women's College was scheduled for the spring of 1999, I decided to transfer all of the collection of planarians (glass slides and wet specimens from all over the world) to the care of Dr. SLUYS. These materials are now deposited in the Zoological Museum Amsterdam (*cf.* Sluys, Kawakatsu & Bleeker, 2006; see also a Web Version with a reproduced poster (<http://victoriver.com> . Bar: 10<sup>th</sup> ISFB 2006.)

### **Prologue**

KAWAKATSU has published many papers on planarians during the past over 50 years (1953-2007). Their round numbers attained to approximately 800 (including abstracts, popular scientific and educational publications). Their itemization is: articles in Japanese (352), articles in Japanese with English summary (145) and articles in English and some other foreign languages (306). Another itemization by the number of authors is: articles published by Kawakatsu only (317) and articles published with coauthors (486). The number of coauthors attained 1148 persons of 16 countries in the total number, as follows: Japan (830), China (1), Korea (10), Taiwan (27), Malaysia (4), India (5), Russia (60), Rumania (2), Holland (25), Germany (1), United Kingdom (8), Australia (2), United States of America (108), Argentina (1), Brazil (57), and Uruguay (7).

KAWAKATSU is a member of the following scientific organizations: Zoological Society of Japan (over-50 years member), Japanese Society of Systematic Zoology, Biogeographical Society of Japan (Second Prize in 1993), Speleological Society of Japan, and Scientific Research Society of Inland Water Biology, Japan. He was recognized by Who's

Who in the World, Who's Who in Asia, Who's Who in Science and Engineering, International Biographical Center, Cambridge. See also the following web article in the Homepage of Kameoka City, Kyôto Prefecture, Japan.

<http://www.city.kameoka.kyoto.jp/wkame/sekai/sekai3.html>

### Acknowledgements

Especially, KAWAKATSU wishes to express his hearty thanks to all of the coauthors for their kind cooperation. He is also indebted to Dr. Ronald SLUYS (Amsterdam) for his exhortation of the preparation of this life story. Dr. Shi-Kuei WU (Boulder) is thanked for his kind reading and correction of the early draft.

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KAWAKATSU's publications on "Turbellarians" are shown in the serial bibliographic series entitled <A List of Publications on Japanese Turbellarians (-year-) --- Including titles of publications written by the Japanese authors ---. Cf. Kawakatsu (1967-1998); Kawakatsu & Takai (1999-2000); Kawakatsu, Takai & Sasaki (2001-2005); Kawakatsu, Sasaki, Kawakatsu (M.-y.) & Kawakatsu, (T.) (2006); Kawakatsu, Kawakatsu (M.-y.) & Kawakatsu, (T.) (2007). (To be continue.) Cf. <http://victoriver.com>. Bar: BFWC & BFWU 67-05; Bars: Miscellaneous 05, 06, 07 (ARTICLE I).

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For portraits of turbellariologists (no more persons only), see Dr. Anno Faubel's Homepage.

<http://www.rrz.uni-hamburg.de/benthos>. Bar: turbellariologists.

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Note 1. KAWAKATSU's many teaching guides and popular scientific articles published in Japanese (mainly with Dr. T. Yamada, Mr. I. Tanaka, the late Mr. Y. Tarui, and the late Mr. G. Okafuji) were published in the Collecting & Breeding, Tôkyô (1953-1986, vols. 15-48). Those articles (except for planarians) were not listed in the above-cited list.

Note. 2. Digital versions of various taxonomic and ecological papers published by the Kawakatsu's team are available at Kawakatsu's private collection (magneto-optical discs). Digital versions of teaching guides and popular scientific articles are now in preparation.

#### **Appendix. Animals Named in Honor of Dr. KAWAKATSU and His Family**

Marine planarian – Family Bdelloulidae Diesing, 1982.

##### ***Oahuhawaiiiana kazukolinda* Kawakatsu et Mitchell, 1984.**

Cf. Kawakatsu & Mitchell (1984: 489). "The specific name we have chosen for this unusual planarian has been compounded from the given names of Mrs. KAWAKATSU (Kazuko) and Mrs. MITCHELL (Linda), whose help to us through the years has been invaluable during the course of our studies."

Type locality: Manoa Stream, Honolulu, Oahu Island, Hawaii, U. S. A.

Freshwater planarians – Family Planariidae Stimpson, 1857

##### ***Phagocata kawakatsui* Okugawa, 1956**

Cf. Okugawa (1956: 19). "In the March of 1955 numerous specimens of a rather small

fresh-water planarian were found by Mr. M. Kawakatsu, the Assistant of our Zoological Laboratory, in the vicinity of his house.”

Type locality: A spring-fed creek on the grounds of KAWAKATSU’s country house, Bukuden-2, Hongô, Minoda, Asahi-chô, Kameoka City, Kyôto Prefecture, Kinki Region, Honshû, Japan.

Land planarians - Family Bipaliidae Von Graff, 1896

***Bipalium tetsuyai* Kawakatsu, Sluys et Ogren, 2005**

Cf. Kawakatsu, Sluys & Ogren (2005: 54). “The specific epithet is based on the name of KAWAKATSU’s son, who was one of the collectors of this new species.

Type locality: Mt. Moiwa, the western part of Sapporo City, Hokkaidô, Japan.

***Novibipalium miyukiae* Kawakatsu, Sluys et Ogren, 2005**

Cf. Kawakatsu, Sluys & Ogren (2005: 64). “This specific epithet is based on the name of KAWAKATSU’s daughter, whose technical assistance through the years has been invaluable for the Turbellarians studies of senior author.”

Type locality: Hakodate City, Hokkaidô, Japan.

Land planarian – Family Geoplanidae, 1857; Subfamily Caenoplaninae Ogren et Kawakatsu, 1991

***Reomkago Winsor, 1991***

Cf. Winsor (1991: 42). “The generic epithet is a combination of the initials of R. E. OGREN and M. KAWAKATSU with the suffix –ago, etc.”

Land leech – Family Gastrostomobdellidae Richardson, 1971

***Orobdella kawakatsuorum* Richardson, 1975**

Cf. Richardson (1975: 42). “The specific name is given as a small appreciation of the generous cooperation of Professor Masaharu Kawakatsu which has provided me with the privilege of studying some of the zoologically significant leeches of Japan,”

Type locality: The house garden of KAWAKATSU, NE part of Sapporo City (near Fuji Women’s College), Hokkaidô, Japan. This locality was lost about 25 years ago by a highway construction

Protyra (=Myrientomata) – Eosentomidae

***Verrucoentomon (Verrucoentomon) kawakatsui (Imadaté, 1964)***

Synonym. *Acerella kawakatsui* Imadaté, 1964

Cf. Imadaté (1964: 275-276).

Type locality: Hokkaidô, Japan.

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KAWAKATSU had a plan to add the following chapter in this web article. Appendix II. Planarians named in honor of respectful turbellariologists by Kawakatsu and the coauthors. However, its early draft became too long. Thus, its revised draft will be published as a separate web article in near future.

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Homepage: Kawakatsu’s Original Site. Kawakatsu’s Web Library on Planariuans.

<http://victoriver.com> .

*Explanation of Plate Figures*

Pl. Fig. 1. Dr. Masaharu KAWAKATSU. At his 76<sup>th</sup> Birthday (January 20, 2006).

Pl. Fig. 2. Family Crest, etc.

Top: <Aoi> *Asarum caulescens*. From Makino's New Illustrated Flora of Japan (1961).

Middle: *Oni-gawara*, a front tile with a figure of <Aoi>, placed on the corner of inside fence surrounding the back garden (a product of 19C; Kawakatsu's country house).

Bottom-left: One of boxes (40cm x 20cm x 40cm) of a *Chôchin* (paper lantern) for the use of guests who return to each home at night (a product of 19C; Kawakatsu's country house).

Bottom-right. Top: Crests of <Mitsuba-Tachi-Aoi> (Kawakatsu's Family Crest since 1600's).

Bottom-right. Bottom: Crests of <Futaba-Aoi> (Very old crests of the Kamo Shrine in Kyôto).