

THE HEBREW UNIVERSITY OF JERUSALEM

HAASIANA

A BIENNIAL NEWSLETTER OF THE NATIONAL NATURAL
HISTORY COLLECTIONS OF THE HEBREW UNIVERSITY

No. 6



Jerusalem, April 2012

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Compiled and edited by M.N. Ben-Eliahu and D. Golani

**The Biological Collections of the Hebrew University of Jerusalem
The Berman-Lubin Buildings, Edmond Safra Campus
Giv'at Ram, 91904 Jerusalem, Israel**

Cover photograph of *Chromodoris annulata* Eliot, 1904
by Oz Rittner.

Contributions appearing in the newsletter should be considered
as preliminary notes that have not been peer-reviewed.

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From the Director

Once again, it is my great pleasure to write these few opening words to this, the sixth, Haasiana Newsletter of the Hebrew University National Natural History Collections. Haasiana is our means of communicating to both the scientific and public community the most recent progress that has been made in the work of the Collections. We endeavour to bring out this newsletter at approximately two year intervals to ensure it's topicality. In each Haasiana we place focus on one of the six major Collections and this year it is the turn of the Mollusca Collection. There is a wonderful human history contained in each Collection and this issue's account of the people involved creating the Mollusca Collection is completely fascinating. I would specially like to thank Prof Yossi Heller and Henk Meinis for writing this exciting account of the Mollusca Collection. I would also take this opportunity to mention Yossi's beautifully illustrated book on the 'Land snails of Israel' recently published by the Penfold Press. The Hebrew University Collections are always in a state of progress and I am particularly happy to announce that Dr Dror Hawlena has joined us this year as Academic Curator of the Herpetology (Reptiles and Amphibians) Collection and Senior lecturer in the Department of Ecology, Evolution and Behaviour of the Institute of Life Sciences. Dror is making groundbreaking research on the effects of stress and fear on Lizard physiology and is a leading field expert on desert ecology. We wish Dror every success in his future career in the Hebrew University Collections. Finally, I would like to express thanks to Drs Nechama Ben- Eliahu and Danny Golani for once again making possible this new issue of our newsletter through their committed editorial work.

Prof. Alan Matthews
Director

From the Coordinator of the Collections

The current issue of *Haasiana* marks the sixth time that this newsletter, which summarizes the activities for the years 2010–2011 of the National Natural History Collections of the Hebrew University of Jerusalem, has been published. It is named after the late Professor Georg Haas, one of the founders and pillars of Zoology, Paleontology, and Natural History in Israel.

As in previous issues, the sixth issue of *Haasiana* presents the activities of each of the Hebrew University Natural History collections—namely, research projects and public outreach projects, and lists the scientific publications, articles and books that have been published by the researchers associated with the collections since the previous issue of *Haasiana*. The current issue focuses on the Mollusc Collection. Its comprehensive report contains the history of the collection and the absorption of major collections from abroad, description of the contents, and additional type material that has been added since the previous issue of this newsletter.

Since the untimely death of Dr. Shoshana Ashkenazi, responsibility for the Computerization Project was placed in the experienced hands of Ms. Naomi Sivan, who continued this important task until her retirement in February 2012. She has been replaced by Ms. Gali Beiner. The collections website, which can be found online at <http://nnhc.huji.ac.il>, can be accessed by researchers, zoologists and all interested people.

Recently, Dr. D. Hawlena became the curator of the Herpetology Collection. We welcome him and wish him much success and satisfaction in his new position.

Members of the staff of the Natural History Collections were responsible for organizing the 47th Conference of the Zoological Society of Israel, which took place in December 2010 at the Edmund Safra Campus of the Hebrew University at Giv'at Ram and the conference on Fish and Fishing: Archaeological, Anthropological, Taphonomical and Ecological Perspectives, which was a joint research conference of the Institute for Advanced Studies and the Israel Science Foundation, which took place in Jerusalem, Haifa and Eilat in October 2011.

As coordinator of the collections and on behalf of the other members of the collections, I would like to thank Dr. Nechama Ben-Eliahu, co-editor of *Haasiana*. Her dedication, meticulousness and persistence were indispensable in the creation of this issue. The editors thank Ms. Rahel Jaskow for reviewing the editing and proofreading the final draft of this issue.

Dr. Daniel Golani

Coordinator of the National Natural History Collections

II. THE HEBREW UNIVERSITY BIOLOGICAL COLLECTIONS COMPUTERIZING PROJECT 2010–2011

Staff

Ms. N. Sivan, Webmaster and Project Coordinator, <nnhc@savion.huji.ac.il>

Mr. A. Ben-Nun, manager of the GIS services, advises the collections regarding hardware and software and supplies mapping and coordinate-transforming services.

As in the previous ones, the computerization of the collections has been one of the major aims of the collections staff. Work was carried out in parallel on the following objectives:

- Completion of the internet site of the collections, adding databases of the various collections and a search interface. This was seen as the webmaster's most important task during 2010–2011. The site is located at <<http://nnhc.huji.ac.il>>.
- Data entry of the various collections, done partly by the staff of these collections and partly by students, included additional taxonomic groups in different collections.

The Collections internet site and databases

During 2008–2009, the first stage of the internet site of the National Natural History Collections at the Hebrew University was completed and the site went online, despite the lack of much information both in the English and Hebrew versions. During 2010–2011, part of the missing information was added and other parts were updated, including a “News and Events” page which was updated when necessary. Most of the effort was invested in the development of the search interface, which gives the public access to the data of the databases. The first, basic version of the search interface was developed under Dr. Shosh Ashkenazi, but when she passed away in April 2010, it was not yet online. During the second half of 2010, the search interface was improved by adding information about the databases, search instructions, drop-down lists, a map of the districts of Israel and more. When the search interface was finished in the end of 2010, it was checked internally and then uploaded to the collections web site together with the first databases. Although the search interface is regarded as user-friendly, there is still room for improvement.

Databases of the collections, general information

The work on the databases includes various aspects:

Recovering old files prepared in computer formats other than Excel (usually done in Access) and transferring them to Excel. The new files are prepared directly in Excel under the curators' supervision, with data entry carried out in the various collections, including typing by the technicians and by students.

Verification of the databases, prepared by or under the supervision of the curators of the various collections, checking for mistakes and adding missing data (names of higher taxa when only genus and species are given; Israeli and international coordinates; district in Israel and adjacent regions when only location is given; marine regions; information on type material and more). The staff of the GIS assist with geographic

¹ This report on the computerizing project was written by **N. Sivan**.

problems and the translation from Israeli to international coordinates. Addition of coordinates and districts was carried out using a list prepared by the late Dr. Shosh Ashkenazi, maps, a specially adapted GIS interface, and also with reference to internet sites such as Google Earth and Amud Anan. Taxonomic information is added by using international databases recognized by the curator of the specific collection (such as “Fish Base”).

Adapting the Excel files to a common format fitting all the collections. The form includes 45 fields covering specimen code; taxonomic, geographic, collection and determination data; remarks and an option to add photos. For each database, additional fields are added—e.g., depth of collection for fishes and aquatic invertebrates.

Databases that were online by the end of 2011

The Herbarium

A combined file of Bryophyta (about 8,283 records) including liverworts (the material described in Heyn, C.C. and Herrnstadt, I. [2004]). The Bryophyte Flora of Israel and Adjacent Regions, The Israel Academy of Sciences and Humanities) and mosses.

Invertebrates (not including molluscs)

Arthropoda (2,900 records), including scorpions and pseudoscorpions.

Crustacea (2,840 records), including the groups **Amphipoda**, **Copepoda**, **Cumacea**, **Decapoda**, **Tanaidacea** and **Cirripedia**. The 134 types of Copepoda described by Prof. F.D. Por during his many years of research comprise an important part of the copepod file. An interesting species is the blind prawn, *Typhlocaris*, which was discovered in the Ayalon Cave in 2006 and described by M. Tsumamal (see Haasiana 3: 61 and 4: 19).

Nematoda (407 records): non-determined meiobenthos.

Plankton (7,700 records), including non-determined material from the Gulf of Aqaba (Elat) and the Eastern Mediterranean plankton samples collected by Prof. Baruch Kimor.

Mollusca

Land snails of Israel and adjacent regions (3,820 records). The file includes about half of the land snail material in the mollusc collection, representing close to 100 species.

Fishes

All of the collection material (18,064 records) is online. At present, this is our biggest database online.

Mammals

The database (1,296 records) includes mostly large mammals.

Databases presently being developed and plans for the future

The Herbarium

Algae: Although a database of 4,100 records has been prepared, there are still some problems which need to be solved together with the expert on the taxon.

Vascular plants: Close to 55,000 records are on the computer, transferred from older files. The records need thorough checking, which is not planned for the near future.

Type material in the Herbarium is being computerized.

Invertebrates (not including molluscs): Additional databases of the **marine invertebrates**, including both **meiobenthos** and **macrobenthos** material, have been prepared. The databases need verification and adjustment to fit the format of the internet, and this is being done gradually.

Arthropoda, spiders: The **Solifugae** (camel spiders), 683 records, have been computerized; the file is being adapted for the internet. The records will be added to the Arthropoda database. The **Aranea** catalogue includes about 5,000 records; of these, 4,000 have been computerized. When completed, the database will be checked against the material in the collection—a time-consuming process.

Amphibians and Reptiles: The **Amphibia** database will be the first to be placed online. Most of the material has been computerized and the data are being checked by the collection manager, who will also add additional records. Most of the records still lack geographic coordinates.

Reptiles: Additional databases (**turtles, lizards, snakes**, etc.) will gradually be adapted for the internet. Most of the data are already computerized and will be checked by the collection manager, who will add additional records.

Birds: The **bird** database (780 records) has been completed except for the geographic coordinate data, which will be added in the near future.

Molluscs

Freshwater snails of Israel and adjacent regions: The previous Access file, which has been transferred to Excel, includes ca. 680 records. The file lacks geographic coordinates. The computerization was done about 12 years ago, and data on all subsequent material are lacking.

Marine snails of Israel and adjacent regions: The previous Access file, which has been transferred to Excel, includes ca. 1,500 records. The computerization was done nearly 12 years ago, and data on all subsequent material are lacking.

Mammals: The computerization of the rodents is in progress. The work includes numbering each bone, a very time-consuming process. Geographic coordinates will be added.

Note that since new material is continually being added to the collections, the databases that are already online need to be updated from time to time.

An example from the database of the mammal collection

An example of search results
for *Gazella gazella*

Search Parameters:	
Click here to search again	
Search Results:	
Institute and specimen code	HUJMAM 2066
Genus	Gazella
Species	gazella
Country	Israel and adjacent regions
District	Judean Mountains
Institute and specimen code	HUJMAM 3865
Genus	Gazella
Species	gazella
Country	Israel and adjacent regions
District	Judean Mountains
Institute and specimen code	HUJMAM 7951
Genus	Gazella
Species	gazella
Country	Israel and adjacent regions
District	Judean Mountains
Institute and specimen code	HUJMAM 8282
Genus	Gazella
Species	gazella
Country	Israel and adjacent regions
District	Judean Mountains
Institute and specimen code	HUJMAM 8192
Genus	Gazella
Species	gazella
Country	Israel and adjacent regions
District	Judean Mountains

[top of page](#)

Detailed information for one of
the specimens

Search Parameters:	
Click here to search again	
Search Results:	
Institute and specimen code	HUJMAM 2066
Genus	Gazella
Species	gazella
Country	Israel and adjacent regions
District	Judean Mountains
Phylum (Division)	Chordata
Subphylum (Subdivision)	Vertebrata
Class	Mammalia
Order	Artiodactyla
Family	Bovidae
Subfamily	Antilopinae
Genus	Gazella
Species	gazella
Subspecies	gazella
Subspecies author	Pallas, 1767
Country	Israel and adjacent regions
District	Judean Mountains
Locality	Nes Harim (road near Even Sapiir, Jerusalem area)
Collection month	February
Collection year	1964
Collector(s)	Falk R.
Geographic coordinate system - longitude	35° 08' E
Geographic coordinate system - latitude	31° 45' N
Israel grid (ITM) - longitude	212834
Israel grid (ITM) - latitude	630110
Coordinates - original (O), reconstructed (R)	R
Institute and specimen code	HUJMAM 3728

III. THE BIOLOGICAL COLLECTIONS

III-1. THE MOLLUSC COLLECTION¹

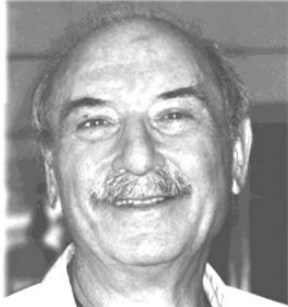
1a. THE HISTORY OF THE HEBREW UNIVERSITY MOLLUSC COLLECTION

Two years ago, when it was decided that the mollusc collection would be the focus of the next (6th) *Haasiana*, no one recalled that the publication of the current issue would coincide with the 80th anniversary of the establishment of the collection by **Dr. Georg Haas**.

The scientists that developed and managed the mollusc collection



Georg Haas
(1905–1981)



Eitan Tchernov
(1935–2002)



Joseph Heller
(b. 1941)



Henk K. Mienis
(b. 1941)

Dr. Haas immigrated to Palestine from Vienna, Austria in 1932 after completing his education. In 1928, he obtained a Ph.D. from the University of Vienna in zoology and palaeontology. His dissertation dealt with the functional cranial anatomy of primitive snakes. This was followed by postdoctoral research on protozoans at the Kaiser Wilhelm Institute in Berlin until 1932. In 1932, he came to Palestine and joined the staff of the Department of Zoology of the Hebrew University of Jerusalem (the university was founded in 1925).

A classical zoologist, **Prof. Haas** recognized the importance of general zoological collections, and immediately began to improve the collections of the Department of Zoology by carrying out methodical collection of animals of all the taxonomic groups. In addition to reptiles, he was particularly interested in molluscs. Haas became responsible for the mollusc collection and was involved in its development until his death. In 1935, Haas published his first notes on the mollusc fauna of Palestine, followed by nine other publications (see References). Haas's mollusc research supplemented that of the geologists **M. Avnimelech**, who had published various notes about the land snails of Palestine in 1933, and **L. Picard** who, one year later, dealt with the fossil freshwater molluscs in the Levantine layers of the Jordan Valley. Part of the material of both authors is still present in the mollusc and/or paleontological collections of the university.

Haas's collecting was supplemented by the work of his colleagues: the entomologist **O. Theodor**, the parasitologist **G.-G. Witenberg** (mainly freshwater snails of the genera *Bulinus* and *Biomphalaria* serving as intermediate hosts for flukes transmitting

¹ This report on the Mollusc collection was written by **H.K. Mienis**.

Schistosomiasis), and the zoologists **H. Bytinski-Salz** (mainly land snails), **H. Mendelssohn** (chiefly *Sphincterochila*), and **J. Wahrman** (land snails from the southern Negev and Sinai).

Collecting molluscs in those times was not as easy as it is today. A network of roads hardly existed in the country, and large parts of the Negev were still more or less *terra incognita*. Travelling through the Negev was also rather unsafe due to the presence of robbers. That was one of the reasons that, when they visited the Gulf of Aqaba, **Haas** and his colleagues always travelled first to Amman in Trans-Jordan, and from there they drove southwards to Aqaba, occasionally travelling to Umm Rash-Rash (the Arabic name for the village that preceded the modern city of Elat).

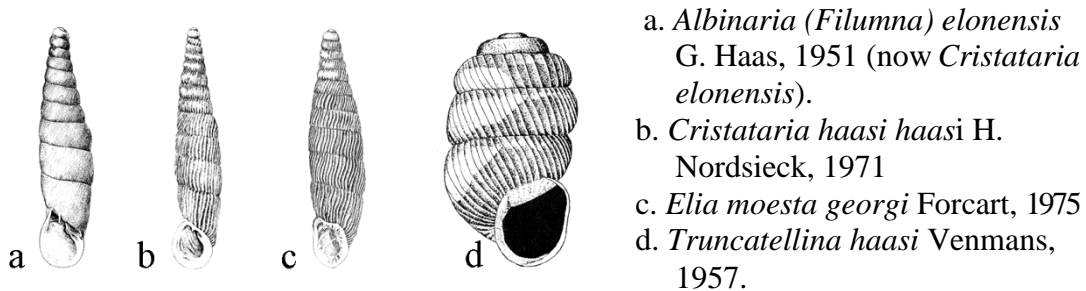
While collecting molluscs was not an easy task, identifying the material was even more difficult because literature hardly existed and was also difficult to obtain in those early days. Although **Germain**'s monograph of the land and freshwater molluscs of Syria, which included Lebanon and Palestine, had been published as early as 1921–1922, with **Pallary**'s addition to it in 1929, there were no copies in the library of the University. For this reason, **Haas** regularly sent part of the material to specialists abroad who were willing to help him. **J.R. le B. Tomlin** (England, 1936–1940) received, for example, marine material from the Eastern Mediterranean; **F. Haas** (U.S.A., 1949) was sent the large freshwater mussels; **L.A.W.C. Venmans** (the Netherlands, 1939–1940 and 1948–1951) studied the *Truncatellina*, *Cecilioides* and *Calaxis* material; and **J.G.J. Kuiper** (the Netherlands, later on France, 1951–1952) organized the small freshwater mussel (*Pisidium*) collection and donated a copy of the much-wanted monograph by **Germain** to **Haas**. In addition, **Haas** corresponded with many other malacologists abroad, who presented him not only with the necessary literature, but also often with material from their respective countries: **G.A. Mavromoustakis** (Cyprus, 1950–1951); **R.A.M. Brandt** (Libya, 1951); **M.K. Jacobson** (Cuba, 1949); **W.J. Eyerdam** (west coast of North America, 1947–1948); **I. Marche-Marchad** (West Africa, 1950–1951); **W. Kühnelt** (some 200 samples of land snails from the Balkan and off-lying islands, 1952) and many others. In the meantime, **Prof. Haas** began to identify material on his own, and in 1947, he published one of the first articles dealing with Lessepsian migrants among the molluscs living along the coast of Palestine.

Israel's War of Independence (1948–1949) left the Mount Scopus campus, where the Department of Zoology was located, a hostage Israeli enclave in the midst of Jordanian territory (until June 1967 [see Y.L. Werner, *Haasiana* 5, pp. 11–12]). From time to time, the Jordanian occupiers allowed **Prof. Haas** and other zoologists associated with the department to inspect and maintain the collections. On returning to the Israeli-controlled part of Jerusalem, they managed to smuggle out items under their thick overcoats, which they wore even during the hot, dry summers. This material was housed temporarily in the Terra Sancta Monastery.

Because of his interest in the marine molluscs of the Eastern Mediterranean, **Prof. Haas** received from **Dr. H. Lissner** and **Mr. A. Virshubsky/Wirszubski** the mollusc material collected by the Sea Fisheries Research Station in Haifa. His preliminary report (1951), constituted the first publication in the series, "Bulletin of the Sea Fisheries Research Station". The activities of his colleague, **Prof. H. Steinitz**, resulted in the addition of numerous samples from the Red Sea Gulf of Aqaba (Elat). Some of that material, especially the micro-mollusc specimens, was sent to **H.A. Rehder** at the Smithsonian Institution in Washington for identification (1949). In the meantime,

Prof.

Haas had managed to acquire many of the classic articles dealing with molluscs from the Red Sea, written by Italian (**Issel**, **Tapparone-Canefri** and **Bisacchi**), Swiss (**Hornung** and **Mermod**) and French authors (**Lamy**), through personal contacts with colleagues at the museums in Genoa, Geneva, and Paris, respectively. In addition, the mollusc material collected before and during the reclamation of the Hula swamps (1940–1956) was obtained. All these additions worked positively on the activities in the field of malacology. **Haas** published not only his revision of the Israeli representatives of the family Clausiliidae, including the description of *Albinaria (Filumna) elonensis* G. Haas, 1951 (now *Cristataria elonensis*), but also a study dealing with the genus *Jaminia*, now *Euchondrus*, in 1955. Both articles were illustrated with his beautifully-executed drawings.



Gastropod drawings by Prof. Georg Haas

Until the beginning of the 1950s, the Mollusc Collection had still a rather local character. That changed radically when the very large shell collection and malacological library of **Giorgio S. Coen** (Venice, Italy) was donated to the University (1953, see Section B1, below). The status of the malacological collection changed immediately to one of international importance. That collection not only contained the type material of the numerous taxa described by **Coen**, but also a large part of the type material from other, even earlier Italian malacologists. Due to the large size of the **Coen** collection, in 1953 the entire mollusc collection was moved to the second floor of an apartment in Mamilla Street, where it remained until 1974. Soon after, the university received for safekeeping the private shell collection and library of **René Neuville**, the archaeologist, palaeontologist and French consul in Jerusalem (see section b2, below).

Members of the university staff also began to collect abroad. In 1950, an expedition to Cyprus was organized by **J. Wahrman**, **G. Haas**, **H. Steinitz**, and others. That was followed by an expedition in 1951 to Turkey (**J. Wahrman**). These expeditions collected mainly land snails and some freshwater molluscs. In 1962 and 1965, the Hebrew University participated in the first and second Israel South Red Sea Expeditions to Eritrea and Dahlak Island, obtaining numerous samples of marine molluscs, particularly from the first expedition. From 1967 to 1969, **Hermann Zinner**, then a Ph.D. student of **Prof. Haas**, travelled on his Austrian passport to Lebanon, Syria, Cyprus, Turkey and Iran, and collected numerous samples of land snails and reptiles. The Hebrew University–Smithsonian Institution Joint Program, “Biota of the Red Sea and the Eastern Mediterranean” (1967–1972), resulted in the addition of numerous marine mollusc samples from the Red Sea coasts of Egypt and Israel, the Suez Canal and the Mediterranean coasts of Israel, and Cyprus.

In 1973, the Mollusc Collection was moved again, this time to the former maternity hospital in the gardens of the Russian Compound, one of the buildings taken over by the Department of Zoology. In 1973, **Prof. Eitan Tchernov** was appointed Curator of the Mollusc Collection, with **Prof. Haas** remaining actively involved. **Prof. Tchernov**, who had been active in the field of malacology, published five important articles (1971–1975). The Recent shells reported in these articles are stored in the University's Mollusc Collection, while the fossil shells form part of the Paleontological Collection.

Two students of **Prof. Haas**, Ms. **Thamnoon Rochanaburananda** from Thailand, an M.Sc. student who studied the anatomy of the *Jaminia* (now *Euchondrus*) species of Israel, and **Prof. Joseph Heller**, whose Ph.D. thesis dealt with the taxonomy of the Israeli species of *Buliminus*, *Pene* and *Paramastus*, contributed hundreds of samples belonging to the family Enidae to the Mollusc Collection.

In 1974, the huge shell collection and malacological library of **Arthur Blok** (Rottingdean, England) was presented to the University (see Section b4, below), and in conjunction with the arrival of the collection, **Henk K. Mienis** was appointed collection manager. Although **Blok's** collection was by far the most important addition to the Mollusc Collection, the Mollusc Collection continued to grow thanks to the collecting by staff of the National Natural History Collections at the Hebrew University of Jerusalem, **Prof. Heller** and his students, **Henk K. Mienis**, **Dr. Chanan Dimentman**, **Dr. Daniel Golani**, **Dr. Nechama Ben-Eliahu**, **Prof. Dov Por**, the late **Dr. Shoshana Ashkenazi**, and by students, e.g., **Ofer Steinitz**, **Oren Kolodny**. Similarly, molluscs collected by **Dr. Reuven Ortal** of the Israel Nature and National Parks Protection Authority were deposited in the Hebrew University Mollusc Collection (all the freshwater molluscs from the Inland-waters Ecological Survey [IES]).

In 1980, **Prof. J. Heller** began to teach the course “Fauna Mollusca” and replaced **Prof. Tchernov** as Curator of the Mollusc Collection. **Prof. Haas** had maintained his interest in micro-shells and, despite his deteriorating eyesight, was always pleased to examine interesting shell grit from the Mediterranean coast of Israel. On September 13, 1981, **Prof. Haas** passed away. We greatly appreciate his 50 years of constant efforts to care for and enlarge the collection that enabled its present state of development!

In 1985, the Mollusc Collection (Recent molluscs) moved for the fourth time to its present location in the Berman Building at the Giv'at Ram Campus of the Hebrew University (room 119). The largest collection of its kind in the Middle East, it is of international importance. The collection contains about 25,000 different species, represented by more than 100,000 samples containing over one million specimens, with more than 3000 samples consisting of type specimens (holotypes, lectotypes, paratypes, paralectotypes and syntypes [formerly cotypes]), while the Paleontological Collections also harbours thousands of fossil samples of molluscs. In addition, the collection also harbours a unique malacological library, the largest in the Middle East, consisting of 1,500 books, 350 volumes of journals and 15,000 reprints.



**Victorian cupboards that house the Blok collection.
The Mollusc Collection, Berman Building, Room 119.**

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1b. FOUR IMPORTANT CONTRIBUTED MOLLUSC COLLECTIONS— THEIR HISTORIES AND CONTENTS¹

1. Giorgio S. Coen (1873–1951) and his mollusc collection

Giorgio Silvio Coen was born in Venice on April 24, 1873, the son of Giulio Coen and Palmira Finzi. After receiving his basic education in Venice, he graduated as a civil engineer from the University of Padua on August 23, 1895. About a year later, on July 23, he married Vittoria Romanin Jacur, whom he met during his studies in Padua. They had three daughters, Maria, Lia, and Eugenia—the latter died at the age of four of diphtheria.

During the First World War, Coen served as a captain in the Engineering Corps of the Italian army (1915–1918). When he was discharged at the end of the war, he had attained the rank of lieutenant colonel. After the war, Coen returned to his work as a civil engineer, which was very important to him as can be seen from the tools figured in his *ex libris*. When he reached the age of 65, it was not due to his age that he had to stop working; he was forced to do so because of the anti-Semitic laws adopted in 1938 by Mussolini's government. Not only was he stripped of his military rank, but, in 1940, his name was removed from the Professional Register of Engineers and from the Auditors Register. In addition, as a Jew, he was no longer allowed to publish anymore in Italian journals (see below).

Since, at that time, Jews were in danger of deportation, Coen and his family went into exile in the small village of Ponzano. Although Coen managed to survive the war, and return with his family to Venice, Coen was no longer the same person. He had become a very sick man, suffering from multiple sclerosis. He died of the disease in his home at San Marco in Venice on September 2, 1951. He was survived by his wife, Vittoria, and his two daughters, Maria and Lia.

Coen and his shell collection

It is not known when Coen's interest in shells began, but without doubt, it began at a very early age. In the beginning of the twentieth century, Coen was in contact not only with local shell collectors, but also with people from abroad who shared the same interest. This is evident from the fact that the English conchologist and shell dealer, Hugh B. Preston, described as *Turbonilla coeni* a new species from Ceylon (=Sri Lanka) as early as 1905! Preston did not state in his publication that this species was named after Giorgio S. Coen, but the reprint he sent to Coen was inscribed "Con *Turbonilla coeni*". In the following years, Preston would honour Coen with three additional species named after him.

The first article on shells written by Coen, which was published in 1914, naturally dealt with the marine molluscs of the Adriatic Sea. It showed clearly that Coen's research was carried out in close cooperation with Tommaso di Maria Allery, Marchese di Monterosato, a famous malacologist from Palermo; Coen had not only published the first valid descriptions of several manuscript names proposed by Monterosato, but also named a species of *Argonauta* after him. Coincidentally, Monterosato (1914) had unintentionally used Coen's manuscript name already several months earlier in his revision of the Mediterranean species of *Argonauta* (Mienis, 1994).

¹ This report on the mollusc collection was written by **H.K. Mienis**.

Coen was in close contact with Monterosato not only by mail, but also through personal visits to Sicily, while Monterosato visited Coen regularly in Venice. From time to time, Monterosato also gave parts of his own collection to Coen because the latter had expressed the intention to donate his private collection to the Museo Civico di Storia Naturale of Venice (Zorzi, 1938). Coen had established that museum on his own initiative (Minio, 1951) in the Fontego dei Turchi, a beautiful palace on the Grand Canal of Venice which still houses the museum. Similarly, Coen obtained much material from other malacologists and palaeontologists, not only from Italy but also from abroad (see “The main components of the Coen collection”, below). By March 1939, all that material was already listed in the two parts of his handwritten catalogue.



Giorgio S. Coen inspecting his handwritten catalogue.
The picture was probably taken before World War II.

In the meantime, Coen continued to publish articles dealing with the molluscs of the Mediterranean Sea in general and the Adriatic Sea in particular. He worked according to the tradition of the French *Nouveau École* (see Dance, 1970), which had also been adopted by Monterosato (Tomlin, 1930). Thus, any slightly different form or colour received a separate name. In this way he created, sometimes unnecessarily, a wealth of varietal names. Unfortunately, Coen also described valid subspecies as varieties. All the new names proposed by Coen (almost 500!) are mentioned under each entry in his list of publications.

Coen published more than 60 malacological articles. Most of them were published in Italy, two in France; however, between 1939 and 1945, most of them appeared in one of the scientific journals of the Vatican! That was due to the racial laws adopted by the Italian government in 1938, in which people of Jewish descent were no longer allowed to publish in Italian journals. However, Coen found a solution: his papers were presented by his friend, Dr. G. Giorgi, himself a shell collector, during scientific meetings of the *Accademia Pontificia* in the Vatican, and thus were published in the *Acta Pontificia Academia Scientiarum* of the Papal Autonomy.

Because of the anti-Semitism prevalent in Italy and the accompanying persecution of Jews there during Mussolini's regime, Coen decided that after his death, the shell collection would not remain in Italy. Therefore, the collection was shipped in 13 crates to Israel and arrived in July 1953 at the Hebrew University of Jerusalem.



Ex libris of Giorgio Silvio Coen

Note that the design incorporates entirely different symbols: calipers, an engineering tool used for measuring technical drawings; and the two hands, positioned for giving the priestly blessing. The symbols indicate that Coen valued both his connection to the engineering world and to his identity as a *kohen* (from Cohen, his name in Hebrew; in Jewish tradition, the name places him among the descendants of Aaron, the brother of Moses and the first Israelite high priest).

The transfer of the Coen collection to Israel caused dismay among the malacological world in Italy. The main reason was that it contained not only Coen's own collection but also a major part of the Monterosato collection, including many of the type specimens, as well as a great deal of material from other collections. Moreover, the transfer of the collection to Jerusalem took place at a time when the remains of the original Monterosato collection were unavailable for study in Italy. That material had been acquired by a private collector, Vito Beltrani. Even after it was finally donated to the Museum in Rome, a study of the material became almost impossible because it was kept locked in the room of Prof. Francesco Settepassi (1886–1982). Only after the latter's death did the remains of the Monterosato collection in Rome become available for study by other students of Mediterranean molluscs. The anger of some malacologists was so great that in 1981, a rather nasty article dealing with Monterosato's material in the Coen collection was published by Piani, who went so far as to accuse Coen of being a kleptomaniac who had taken material without permission from the Monterosato collection during World War II in Rome. As shown by that statement, when Piani wrote the accusation, he apparently knew nothing about what Coen had endured during that time. Even more surprisingly, he knew nothing about what Monterosato had done with his collection. It was a well-known fact that Monterosato had been a fervent supporter of the Red Cross, and before the end of the nineteenth century had begun to sell parts of his huge collection in order to donate the money to the Red Cross. Coen, as an Italian collector, had first choice, but much of the material was sent abroad to collections in Brussels (coll. Dautzenberg), Cardiff (coll. Melvill-Tomlin), Dublin (coll. Scharff), London (coll. Norman), Paris (coll. Locard), Vienna (von Hauer, 1890), Washington (coll. Jeffreys) and probably elsewhere. Interestingly, quite a few samples from the Monterosato collection were discovered in the Blok collection after it arrived in Jerusalem in 1974 (see section b4, below).

Having the Coen collection in Jerusalem proved to be of the utmost importance for the development of malacological studies in Israel. A wealth of material was now available for comparing the local marine molluscs of the Eastern Mediterranean and the Red Sea. Moreover, the much-needed malacological literature had become accessible as well. Since then, Coen's legacy, which has been in constant use both nationally and internationally, has played an important role in bringing malacology in Israel to a higher level.



**Arranging the newly-arrived Coen collection molluscs in drawers,
Mamilla Street, 1953**

The main components of Giorgio S. Coen's collection

The collection contains material of (at least) the following collectors or former owners. (A name preceded by an asterisk [*] indicates that type material of that person is present in the Coen collection); [xx] in dates indicates data not available).

Adami, G.B. (1838–1887). Italian malacologist.

*Adams, A. (1820–1878). Most of Adams' type material is lodged in the Natural History Museum, London (Dance, 1966).

Alzona, C. (1881–1961). Alzona's collection forms part of the Museo Civico di Storia Naturale "Giacomo Doria" in Genoa.

*Ancey, C.M.F. (1860–1906). Ancey's private collection, including the type material, was sold to various purchasers by Geret, a dealer in Natural History objects in Paris (Dance, 1966).

*Aradas, A. (1810–1882). Aradas' private collection was kept in Catania, Sicily (Tomlin, 1930).

*Bavay, A. (1840–1923). Bavay's private collection was dispersed after his death. Some of the types are in the Muséum d'Histoire Naturelle, Paris (Dance, 1966).

Beccari, O. (1843–1920). Beccari's main collection is in the Museo Civico di Storia Naturale "Giacomo Doria", Genoa (Soika, 1950).

Beddome, R.H. (1830–1911). British naturalist who spent part of his life in India. Beddome's main collection was deposited in the Natural History Museum, London.

- Bellini, R. (1880–1926). Professor working in the field of malacology and paleontology.
- *Beltrani, V. Lived in Palermo; purchased what was left of the Monterosato collection (Tomlin, 1930).
- *Benoit, L. (1804–1890). Italian malacologist living in Sicily.
- *Bielz, E.A. (1827–1898). Part of Bielz's private collection is in Bucharest, another part in Hermannstadt (Dance, 1966).
- Bini, G. An Italian zoologist who provided Coen with marine molluscs from West Africa.
- Bisacchi, J. A zoologist who specialized in malacology, the wife of C. Alzona.
- *Bivona Bernardi, A. (Baron) (1774–1837). Italian malacologist.
- Boettger, O. (1844–1910). Boettger's collection is in the Senckenberg Museum, Frankfurt am Main.
- *Bouge, L.J. (1878–1960). French malacologist.
- *Bourguignat, J.R. (1829–1892). Main collection in Geneva, Switzerland.
- *Brugnone, G.A. (also J.) (Abbé) (18xx–1884). A clergyman seriously interested in molluscs. Brugnone's private collection became part of the Monterosato collection (Tomlin, 1930).
- Brunelli, G. Professor at the Royal Central Laboratory for Hydrobiology.
- *Brusina, S. (1845–1909). Brusina's main collection is in the Croatian Natural History Museum in Zagreb.
- Burch, J.Q. (1894–1974).
- *Cafici, Barone C. (18xx–). Cafici lived in Vizzini, Sicily, where he carried out malacological research on land snails.
- *Calcara, P. (1819–1854). Calcara was a private collector whose collection was acquired by Brugnone (Tomlin, 1930).
- Caruana Gatto, A.A. (1868–1926). Private shell collector living on Malta.
- *Caziot, E. (1844–1931). All Caziot's marine molluscs went to Tomlin, whose collection is now in Cardiff.
- Cerio, I. (1841–1921). Medical doctor and private collector of shells in Italy.
- Chaper, M.A. (1834–1896). Chaper's collection forms part of the École des Mines in Paris.
- Chester, W. (1876–19xx). American shell collector.
- Chiamenti, A. (18xx–19xx). Mainly molluscs from the Adriatic Sea. Most of Chiamenti's collection is stored in the Seminario Episcopali, Chioggia (Venice) (Soika, 1950).
- Clench, W.J. (1897–1984). American malacologist. Clench's collection forms part of the Museum of Comparative Zoology, Harvard University, Cambridge.
- *Coen, G.S. (1873–1951). Coen donated his entire private collection.
- *Cook, O.F.

- Cooke, A.H. (1854–1934). British shell collector.
- Cox, F.J. (1915–2000). Australian shell collector.
- *Dall, W.H. (1845–1927). American malacologist. Dall’s main collection is in the Smithsonian Museum, Washington.
- Dal Piaz, G. (1872–1962). Professor in geology at the University of Padua.
- Danilo, F. (1813–xxxx). Danilo & Sandri’s mollusc collection formed part of the Museo Civico di Storia Naturale, Milano, but was destroyed during World War II (Soika, 1950).
- *Dautzenberg, P. (1849–1935). Dautzenberg’s private collection now forms part of the Royal Natural Science Museum of Brussels.
- *Debeaux, G.-E.-A. (1866–1902). France and North Africa.
- De Boury, E.A. (1856–1920). French conchologist who specialized in Epitoniidae.
- De Betta, F.E. (1822–1896). Italian malacologist.
- De Fiore, O. Paleontologist. De Fiore’s collection is probably in Catania.
- *De Folin, A.G.L. (1817–1896). Parts of De Folin’s collection are in the Musée d’Histoire Naturelle, Paris; in the Musée de la Mer in Biarritz; in the Bayonne Museum; and in the Natural History Museum, London (Dance, 1966). In the Coen collection, there is some interesting material dealt with in the “Fonds de la Mer”.
- Del Prete, R. (1850–1939). Italian medical doctor and private collector of shells.
- *Despott, G. (1879–1931). Private collector from Malta.
- *Doria, G. (1840–1913). Doria’s worldwide mollusc collection is stored in the Museo Civico di Storia Naturale in Genoa (Giordani Soika, 1950).
- Dubois (South America).
- *Dupuy, D. (1812–1885). Dupuy’s main collection is in the Toulouse Museum; additional material is lodged in the collection Berillon, which forms now part of the Museum in Bayonne (Dance, 1966).
- Dybowski, B.I. (1834–1920). Russian zoologist. Dybowski’s main collection is stored in St. Petersburg.
- Eyerdam, W.J. (1892–1974). Eyerdam’s private collection is in the Chicago Natural History Museum.
- Fea, L. (1852–1903). Explorer and naturalist. Fea’s collection of West African molluscs is in the Museo Civico di Storia Naturale, Genoa (Soika, 1950).
- *Festa, E. (1868–1939). The material collected during Festa’s various expeditions was lodged in the Museo Regionale di Scienze Naturali in Torino. Some land snails collected by him during his travels through the Middle East and elsewhere are in the Coen collection (Mienis, 1983).
- *Field, M. Naturalist after whom the Field Museum of Natural History, Chicago, is named.
- Fischer, H. [=P.M.H.] (1865–1916). Fischer’s collection is stored in the Natural History Museum in Paris.
- Forti, A.

- *Friele, H. (1838–1921). Friele’s main collection is lodged in the Zoological Museum of the University in Bergen, Norway (Dance, 1966).
- *Fulton, H.C. (1861–1942). Malacologist and shell dealer. Most of Fulton’s type material is lodged in the collection of the Natural History Museum, London (Dance, 1966).
- *Gambetta, L. Gambetta was a malacologist who worked at the University of Turin; part of her collection is in Genoa.
- Géret, P. (1863–1925). A dealer in natural history objects who lived in Paris.
- *Germain, L. (1870–1942). A malacologist whose main collection is in Paris.
- *Giorgi, G. A private shell collector who lived in Rome, where his collection forms part of the Zoological Museum in Rome, Italy (Soika, 1950 & Dance, 1966).
- Gortani, M. (1883–1966). Italian paleontologist.
- Graag, M.J. de (1889–1972). Her private collection was donated to the Naturalis in Leiden.
- *Hedley, Ch. (1862–1926). Hedley’s collection is in the Sydney Museum.
- Hemphill, H. (1830–1917). An amateur shell collector from the U.S.A. The location of Hemphill’s collection is unknown.
- Hesse, P. (1857–1938). The collection is in the Academy of Natural Sciences, Philadelphia.
- Hidalgo y Rodriguez, J.G. (1839–1923). Most of Hidalgo y Rodriguez’s material is in Madrid; some of the types are in Paris.
- Hirase, S. (1884–1939). Most of Hirase’s and his father’s collection was destroyed during the bombing of Tokyo at the end of World War II. About 30 percent is in the Research Institute for Natural Resources in Tokyo.
- *Iredale, T. (1880–1972). Most of Iredale’s material is in the Australian Museum, Sydney.
- *Issel, A. (1842–1922). Issel’s collection went to the museum in Genoa.
- *Jeffreys, J.G. (1809–1885). Part of Jeffreys’ collection is in the Natural History Museum, London; another part is in the Smithsonian Institution, Washington.
- Klećiak, B. (1823–1881).
- *Kobelt, W. (1840–1916). Kobelt’s collection is in the Senckenberg Museum in Frankfurt.
- *Krynicky (Krinitskii), I. (1797–1838). Russian malacologist.
- *Kuščer, L. (1891–1944). Croatian malacologist.
- *Lea, I. (1792–1886). Parts of Lea’s collection are in the American Museum of Natural History in New York, in the Natural History Museum, London, and in the Academy of Natural Sciences, Philadelphia.
- Leonardi, P. (1908–?). Leonardi, a paleontologist, served as director of the Geological Institute of the University of Ferrara.
- Levi, A. Commander of the R.N. *Scilla*, who donated molluscs dredged off the coast of Libya.

- Loria, L. (1855–1913). Italian naturalist and anthropologist, who collected in Papua New Guinea and elsewhere. Loria's main collection is in the Museo Civico di Storia Naturale, Genoa (Soika, 1950).
- *Locard, E.A.A. (1841–1904). Locard's collection is in the Natural History Museum, Paris.
- *Lowe, R.T. (1802–1874). Most of Lowe's types are in the Natural History Museum, London; his material from Madeira is in the Exeter Museum.
- Maura, A.
- Mazzino, M. Roma.
- McAndrew, R. (1801–1873). McAndrew's collection forms part of the zoological collection of the University of Cambridge,
- Modigliani, E. (1860–1932). Modigliani's mollusc collection from Sumatra and the adjacent islands is in the Museo Civico di Storia Naturale, Genoa (Soika, 1950).
- Möllendorff, O.F. von (1848–1903). Möllendorff's collection is in the Senckenberg Museum, Frankfurt am Main.
- Möller, H.P.C. (1810–1845). Part of Möller's collection is in the Copenhagen Zoological Museum; another part is in the Natural History Museum, London.
- *Monterosato, T.M.A. Marchese di (1841–1927). A large part of Monterosato's collection is in the Museum of Rome, but additional parts of his original collection were sold to many museums and private collectors during his lifetime.
- Neumayr, M. von (1845–1890). At least part of Neumayr's collection is in the Palaeontological Institute in München.
- *Nevill, H.L. (1848–1897). Nevill's private collection was dispersed.
- Novak, O.P. (1851–1892).
- Nyst, P.-H. (1813–1880). Nyst's collection is in the Royal Natural Science Museum of Brussels.
- Odhner, N.H. (1884–1973). A Swedish malacologist whose main collection is in Stockholm.
- Orcutt, Ch.R. (1864–1929).
- *Paladilhe, J.J.I. Alcide de (1814–1876). Paladilhe's collection is in the Natural History Museum of Geneva.
- *Pallary, P. (1869–1942). Most of Pallary's types are either in Paris or London, however being also a shell dealer, much of the material was dispersed.
- Palombi, A. (1899–1987). Italian zoologist,
- Paulucci, M.P.X. d'A. (1835–1919). Paulucci's collection is in the Zoological Museum of the University of Florence.
- *Philippi, R.A. (1808–1904). Part of Philippi's types are in the Natural History Museum, London; another part is in Santiago, Chili.
- *Pilsbry, H.A. (1862–1957). Most of Pilsbry's material is in the National Academy of Natural Sciences, Philadelphia.

- Pini, N. (18xx–xxxx). Pini's main collection, which was in the Museo Civico di Storia Naturale, Milano, was destroyed during World War II (Soika, 1950).
- Ponsonby, J.H. (1848–1916). Most of Ponsonby's collection went to the Natural History Museum in London.
- *Porro, C. (1813–1848). Italian malacologist.
- *Powell, A.W.B. (1901–1987). Powell's main collection is in the Auckland Museum. Some types are in the Natural History Museum, London.
- *Preston, H.B. (1871–1945). Most of Preston's types are in the Natural History Museum, London; all the other material was sold to museums or private collectors.
- Priester, L. de (1880–1968). Priester's private collection went to the Zoological Museum in Amsterdam, but was transferred in November 2011 to the mollusc collection in the Naturalis, Leiden, the Netherlands.
- Priolo, O. (1890–1973). Zoologist and malacologist who lived in Catania, Sicily, Italy.
- Raats. A private collector from the Netherlands who sent molluscs from Indonesia to Coen.
- Rigacci, G. (1816–1871). Rigacci's private collection was sent to the Museum in Rome.
- Roberts, S.R. (1845–1928). Roberts' private collection went to the National Academy of Natural Sciences, Philadelphia.
- Rolle, H. (1864?–1929). Most of Rolle's type material is in the Senckenberg Museum, Frankfurt am Main; some types are in the Museum in Berlin and in the Natural History Museum, London. Since he was also a dealer, part of the general material was dispersed.
- Romanin Jacur, M. (1850–1906).
- Ruggeri, G. Italian paleontologist at the Department of Geology and Paleontology of the University of Palermo.
- *Sandri, G. B. The mollusc collection of Danilo & Sandri, which formed part of the Museo Civico di Storia Naturale, Milan, was destroyed during World War II (Soika, 1950).
- Scacchi, A.D. (1810–1893). A zoologist who was working in Naples.
- *Schilder, F.A. (1896–1970). A zoologist and malacologist who specialized in Cypraeidae. Schilder's main collection is in the Museum in Berlin, Germany.
- *Schlesch, H.A. (1891–1962). A large collection is in the Museum of Hull.
- *Schmidt, A. (1806–1889). Schmidt's collection forms part of the Senckenberg Museum, Frankfurt am Main (Zilch, 1967).
- Seguenza, G. (1833–1889). A professor in Geologia and Mineralogy who was living in Messina, Sicily. Seguenza's main collection was destroyed during an earthquake in 1908.
- Selli, R. (1916–1983). The major part of Selli's paleontological collection is in Bologna.

- *Smith, E.A. (1847–1916). Smith’s collection is in the Natural History Museum, London.
- Sowerby, G.B. III (1843–1921). Most of the types are in the Natural History Museum, London. Since Sowerby was also a dealer, much of his collection was dispersed.
- Spinelli, G.B. (18xx–?). A malacologist who worked on the land and freshwater molluscs of Venice.
- *Stalio, L. (1799–18xx). Stalio’s collection of molluscs from the Adriatic Sea and Dalmatia forms part of the Museo Civico di Storia Naturale, Venice (Soika, 1950).
- *Stossich, A. (1824–1900). A malacologist who was associated with Trieste.
- *Sulliotti, G.R. (1859–1925). Sulliotti’s main collection is in the Museo Civico di Storia Naturale, Venice.
- *Tiberi, N. (18xx–1885). Tiberi’s marine molluscs went to the Monterosato collection.
- Tomlin, J.R. le B. (1864–1954). Tomlin’s private collection forms now part of the Museum in Cardiff.
- *Torre y Huerta, C. de la (1858–1950). Torre y Huerta’s non-marine shell collection was divided between Harvard Museum and Museo Poey, University of Havana, Cuba.
- Turton, W.H. (1856–1938). Parts of Turton’s collection went to the Natural History Museum, London, and the Oxford University Museum.
- Vatova, A. An Italian marine biologist who specialized in the fauna of the Adriatic Sea.
- Viglino, A. An Italian private shell collector.
- *Watson, R. Boog (1823–1910). A clergyman seriously interested in the study of molluscs. Some of the types are in the Natural History Museum, London.
- Webb, W.F. (1869–1957).
- *Westerlund, C.A. (1831–1908). Westerlund’s main collection is in Göteborg. Other parts are in Stockholm, Lund, Dublin and the Scottish Museum.
- *Wright (Bedford).
- Zangheri, P. A private collector who lived in Forli, Italy (Soika, 1950).

Malacological publications of Giorgio S. Coen and his new taxa

All malacological papers published by Coen are listed in chronological order and follow the list of Piani, Bouchet and Ghisotti (1990). However, in many instances, especially concerning articles published in the *Acta Pontificia Academia Scientiarum*, corrections have been made. Coen’s papers are signed either G. Coen, G.S. Coen or with the first and/or second personal name spelled out.

New taxa described by Coen are enumerated below each paper. When Coen used a manuscript name by Monterosato or any other malacologist, the name is listed as “Monterosato ms.” Coen. Where a specific, subspecific or varietal name was listed originally by Coen with a capital, e.g., *Monterosatoi*, it is here correctly listed in lower case as *monterosatoi*. Likewise, a specific, subspecific or varietal name originally written by

Coen with two words such as *pes pelicani*, is listed correctly as a single word, *pespelicani*.

Coen, G.S. 1914. Contributo allo studio della Fauna Malacologica Adriatica. Memoria del Reale Comitato Talassografico Italiano, Venezia, 46: 3–34, pls 1–7.

Argonauta monterosati Coen, 1914

Leuconia veneta Coen, 1914

Pseudofusus adustus “Monterosato ms.” Coen, 1914

Nassa (Telasco) vitrea “Monterosato ms.” Coen, 1914

Nassa (Niotha) mammillata var. *abnormis* Coen, 1914

Murex (Bolinus) brandaris var. *ternispinosa* Coen, 1914

Morio adriatica Coen, 1914

Aporrhais perpelicani var. *vinitincta* Coen, 1914

Turritella communis var. *laeviuscula* Coen, 1914

Paludestrina hessei Coen, 1914

Pectunculus (Axinea) violacescens var. *albella* Coen, 1914

Eucardium (Cerastoderma) tuberculatum var. *mutica* Coen, 1914

Eucardium (Cerastoderma) tuberculatum var. *rudis* Coen, 1914

Eucardium (Cerastoderma) tuberculatum var. *lactea* Coen, 1914

Eucardium (Tropidocardium) paucocostatum var. *eburnean* Coen, 1914

Tapes (Amygdala) beudanti var. *elegantissima* Coen, 1914

Donax (Serrula) adriaticus var. *crocea* Coen, 1914

Rissoia (Sabanea) benzi var. *zebrata* Coen, 1914

Ostrea adriatica var. *regularis* Coen, 1914

Ostrea adriatica var. *producta* Coen, 1914

Lucinopsis undata var. *adriatica* Coen, 1914

Coen, G.S. 1915. Nota sui *Cardium* della sezione *Cerastoderma*. Atti dell'Accademia Scientifica Veneto-Trentino-Istria, Padova, 8: 54–62, pls 1–4.

Cerastoderma edule var. *mercatoria* “Monterosato ms.” Coen, 1915

Cerastoderma lamarckii var. *syrtica* “Monterosato ms.” Coen, 1915

Cerastoderma lamarckii var. *incurva* “Monterosato ms.” Coen, 1915

Cerastoderma lamarckii var. *tetragona* “Monterosato ms.” Coen, 1915

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Eucardium (*Rudicardium*) *tuberculatum* var. *spinosa* Coen, 1915
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Haliotis lamellosa var. *convexafluctuosa* "Monterosato ms." Coen, 1933
Haliotis lamellosa var. *crispata* "Monterosato ms." Coen, 1933
Haliotis lamellosa var. *tyrrhena* "Monterosato ms." Coen, 1933
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Trochocochlea turbinata var. *depressa* Coen, 1933
Trochocochlea articulata var. *lignaria* Coen, 1933
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Trochocochlea mutabilis var. *altior* Coen, 1933
Trochocochlea mutabilis var. *depressa* Coen, 1933
Trochocochlea mutabilis var. *acutidens* Coen, 1933
Gibbula magus var. *elata* "Danilo & Sandri ms." Coen, 1933
Gibbula delicata "Monterosato ms." Coen, 1933
Gibbula ardens var. *ornata* "Monterosato ms." Coen, 1933
Gibbula ardens var. *sulcosa* "Monterosato ms." Coen, 1933
Gibbula ardens var. *rudis* "Monterosato ms." Coen, 1933
Gibbula philberti var. *solitaria* "Monterosato ms." Coen, 1933
Gibbula (Adriaria) biasoletti var. *pyramidata* "Danilo & Sandri ms." Coen, 1933
Gibbula (Adriaria) biasoletti var. *magulus* Coen, 1933
Gibbula (Adriaria) biasoletti var. *vulgaris* "Monterosato ms." Coen, 1933
Gibbula (Adriaria) biasoletti var. *ergastica* "Monterosato ms." Coen, 1933
Gibbula (Adriaria) biasoletti var. *purpurea* Coen, 1933
Gibbula (Phorcus) richardi var. *zigzag* "Monterosato ms." Coen, 1933
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Steromphalus divaricatus var. *strangulata* "Danilo & Sandri ms." Coen, 1933
Steromphalus divaricatus var. *regularis* "Monterosato ms." Coen, 1933
Steromphalus divaricatus var. *scalaris* Coen, 1933
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Forskalia fanulum var. *rubropicta* Coen, 1933
Calliostoma conulus var. *tumidula* Coen, 1933
Calliostoma conulus var. *tergestina* Coen, 1933
Calliostoma tornatum Coen, 1933
Calliostoma tornatum var. *fulva* Coen, 1933
Calliostoma dubium var. *concinna* "Monterosato ms." Coen, 1933
Calliostoma dubium var. *superflammulata* "Monterosato ms." Coen, 1933
Calliostoma dubium var. *cinnamomea* "Monterosato ms." Coen, 1933
Calliostoma semisulcatum "Monterosato ms." Coen, 1933
Calliostoma simplex "Monterosato ms." Coen, 1933
Calliostoma bullatum Coen, 1933
Calliostoma maurae Coen, 1933
Calliostoma laugieri var. *viridomarmorata* "Stalio ms." Coen, 1933
Calliostoma laugieri var. *striata* "Monterosato ms." Coen, 1933
Calliostoma (Jujubinus) exasperatum var. *turrita* "Monterosato ms." Coen, 1933
Calliostoma (Jujubinus) exasperatum var. *istriana* Coen, 1933
Calliostoma (Jujubinus) mixtum "Monterosato ms." Coen, 1933
Calliostoma (Jujubinus) igneum var. *coccinella* "Monterosato ms." Coen, 1933
Calliostoma (Jujubinus) goniobasis "Monterosato ms." Coen, 1933
Calliostoma nigrocoeruleum "Monterosato ms." Coen, 1933
Tricolia (Eudora) tenuis var. *meleagris* Coen, 1933

Bolma rugosum var. *turboides* "Monterosato ms." Coen, 1933
Bolma rugosum var. *delphinuloides* "Monterosato ms." Coen, 1933
Scalaria (Clathrus) communis var. *mediterranea* "Monterosato ms." Coen, 1933
Scalaria (Clathrus) communis var. *amabilis* "Monterosato ms." Coen, 1933
Scalaria (Clathrus) communis var. *planciana* "Monterosato ms." Coen, 1933
Scalaria (Clathrus) communis var. *rubeola* "Monterosato ms." Coen, 1933
Scalaria (Clathrus) communis var. *coronata* Coen, 1933
Scalaria (Clathrus) communis var. *nana* "Monterosato ms." Coen, 1933
Rissoia lacunae Coen, 1933
Rissoia (Apicularia) scurra "Monterosato ms." Coen, 1933
Rissoia monodintoides Coen, 1933
Alvania cimex var. *rufafulva* "Stalio ms." Coen, 1933
Assimineia coeni "Monterosato ms." Coen, 1933
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Cerithiosis cornea "Monterosato ms." Coen, 1933 (error)
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Cerithiopsis scalaris "Monterosato ms." Coen, 1933
Cerithiopsis stilifer "Monterosato ms." Coen, 1933
Turritella communis var. *extensa* "Monterosato ms." Coen, 1933
Vermetus (Bivonia) triquter var. *spirorbis* "Stalio ms." Coen, 1933
Cypraea lurida var. *liburnica* Coen, 1933
Cypraea lurida var. *obstructa* Coen, 1933
Cypraea pirum var. *physoides* Coen, 1933
Morio echinophora var. *major* Coen, 1933
Morio echinophora var. *intermediata* Coen, 1933
Morio echinophora var. *policingulata* Coen, 1933
Morio echinophora var. *bonanni* "Monterosato ms." Coen, 1933
Morio echinophora var. *bivaricosa* Coen, 1933
Odostomia litoris Coen, 1933
Pyrgulina denticulus "Monterosato ms." Coen, 1933
Pyrgulina intermixta "Monterosato ms." Coen, 1933
Pyrgulina alabastrum "Monterosato ms." Coen, 1933
Pyrgulina coeni "Monterosato ms." Coen, 1933
Pyrgulina vixstriata "Monterosato ms." Coen, 1933
Pyrgulina brevicula var. *rejecta* "Monterosato ms." Coen, 1933
Pyrgulina canaliculata "Monterosato ms." Coen, 1933
Pyrgulina ordita "Monterosato ms." Coen, 1933
Pyrgulina pyrgulella "Monterosato ms." Coen, 1933
Pyrgulina cylindracea "Monterosato ms." Coen, 1933
Pyrgulina mitis "Monterosato ms." Coen, 1933
Eulimella curtata "Monterosato ms." Coen, 1933
Eulimella flagellum "Monterosato ms." Coen, 1933
Turbonilla (Tragula) fenestrata var. *turbifacta* "Monterosato ms." Coen, 1933
Bolinus brandaris var. *polii* "Monterosato ms." Coen, 1933
Bolinus brandaris var. *longispina* Coen, 1933
Bolinus brandaris var. *fragilis* Coen, 1933
Bolinus brandaris var. *adunca* Coen, 1933
Bolinus brandaris var. *cingulata* Coem, 1933
Bolinus brandaris var. *bicaudata* Coen, 1933
Bolinus brandaris var. *ecaudata* Coen, 1933

Truncularia trunculus var. *aspera* "Monterosato ms." Coen, 1933
Truncularia trunculus var. *bulo* Coen, 1933
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Truncularia trunculus var. *purpurifera* Coen, 1933
Truncularia trunculus var. *nodosa* "Danilo & Sandri ms." Coen, 1933
Truncularia trunculus var. *tetragona* "Stalio ms." Coen, 1933
Muricopsis blainvillei var. *hispida* "Monterosato ms." Coen, 1933
Muricopsis blainvillei var. *horrida* "Monterosato ms." Coen, 1933
Muricopsis blainvillei var. *spinulosa* "Stalio ms." Coen, 1933
Muricopsis blainvillei var. *atra* "Monterosato ms." Coen, 1933
Muricopsis blainvillei var. *oblonga* "Stalio ms." Coen, 1933
Ocinebra erinaceus var. *triquetra* Coen, 1933
Ocinebra erinaceus var. *thersites* Coen, 1933
Ocinebra (Dentocinebra) labiosum var. *fasciata* Coen, 1933
Hadriana brocchii var. *carinatella* Coen, 1933
Columbella rustica var. *flava* "Stalio ms." Coen, 1933
Columbella rustica var. *syriaca* "Monterosato ms." Coen, 1933
Mitrella scripta var. *peculiaris* "Monterosato ms." Coen, 1933
Mitrella vatovai Coen, 1933
Mitrella gervillei var. *aurea* Coen, 1933
Sphaeronassa mutabilis var. *adriatica* "Monterosato ms." Coen, 1933
Sphaeronassa mutabilis var. *rufa* Coen, 1933
Sphaeronassa mutabilis var. *deformis* Coen, 1933
Sphaeronassa mutabilis var. *umbilicata* Coen, 1933
Nassa (Hinia) mammillata var. *bicolorata* "Monterosato ms." Coen, 1933
Nassa (Hinia) mammillata var. *clodiensis* "Monterosato ms." Coen, 1933
Nassa (Hinia) mammillata var. *acutior* Coen, 1933
Nassa (Hinia) mammillata var. *monilifera* Coen, 1933
Nassa (Hinia) mammillata var. *densestriata* "Danilo & Sandri ms." Coen, 1933
Nassa (Hinia) mammillata var. *elegans* "Danilo & Sandri ms." Coen, 1933
Nassa (Hinia) mammillata var. *deformis* Coen, 1933
Nassa (Tritea) limata var. *major* "Monterosato ms." Coen, 1933
Nassa (Tritea) limata var. *albida* "Monterosato ms." Coen, 1933
Nassa (Tritea) limata var. *superba* Coen, 1933
Zeuxis (Hima) pygmaea var. *coeni* "Monterosato ms." Coen, 1933
Amycla corniculum var. *scripta* Coen, 1933
Amycla corniculum var. *luteostoma* Coen, 1933
Cyclonassa neritoea var. *diluta* Coen, 1933
Cyclonassa neritoea var. *fasciata* "Stalio ms." Coen, 1933
Cyclonassa neritoea var. *carinata* Coen, 1933
Pisania maculosa var. *picta* Coen, 1933
Pisania maculosa var. *parva* "Danilo & Sandri ms." Coen, 1933
Pisania maculosa var. *attenuata* "Danilo & Sandri ms." Coen, 1933
Euthria cornea var. *canaliculata* "Monterosato ms." Coen, 1933
Aptyxis syracusanus var. *abbreviata* Coen, 1933
Fusus rostratus var. *albescens* Coen, 1933
Fusus rostratus var. *bicanalifera* Coen, 1933
Conus mediterraneus var. *trunculus* "Monterosato ms." Coen, 1933
Conus mediterraneus var. *interrupta* "Stalio ms." Coen, 1933
Conus (Chelyconus) mediterraneus var. *producta* Coen, 1933

Conus (Chelyconus) mediterraneus var. *turrita* "Monterosato ms." Coen, 1933
Actaeon tornatilis var. *vitrea* Coen, 1933
Haminea navicula var. *ferruginosa* "Monterosato ms." Coen, 1933
Alexia monodon Coen, 1933
Ovatella (Monica) lamellidens Coen, 1933
Anomia ephippium var. *argentaria* "Monterosato ms." Coen, 1933
Barbatia barbata var. *scalpellum* Coen, 1933
Barbatia barbata var. *spatulata* "Danilo & Sandri ms." Coen, 1933
Mytilaster minimus var. *squaloderma* "Danilo & Sandri ms." Coen, 1933
Mytilaster lineatus var. *triangularis* "Monterosato ms." Coen, 1933
Modiola barbata var. *longa* Coen, 1933
Modiola barbata var. *angustata* "Danilo & Sandri ms." Coen, 1933
Chlamys (Proteopecten) glabra var. *torquata* Coen, 1933
Chlamys (Proteopecten) glabra var. *peplumsinense* Coen, 1933
Chlamys (Proteopecten) proteus var. *suffusa* Coen, 1933
Chlamys (Proteopecten) proteus var. *viridis* Coen, 1933
Chlamys (Proteopecten) proteus var. *rudis* Coen, 1933
Chlamys (Proteopecten) proteus var. *praeterita* Coen, 1933
Chlamys (Proteopecten) proteus var. *raremaculata* Coen, 1933
Chlamys (Proteopecten) proteus var. *pallida* Coen, 1933
Chlamys (Lissopecten) hyalina var. *nivalis* "Danilo & Sandri ms." Coen, 1933
Chlamys (Lissopecten) hyalina var. *sericea* "Danilo & Sandri ms." Coen, 1933
Chlamys (Lissopecten) hyalina var. *striata* "Danilo & Sandri ms." Coen, 1933
Chlamys (Aequipecten) opercularis var. *pallida* Coen, 1933
Chlamys (Aequipecten) opercularis var. *auropicta* Coen, 1933
Chlamys (Aequipecten) opercularis var. *rubropicta* Coen, 1933
Pecten jacobaeus var. *trivittata* Coen, 1933
Pecten intermedia var. *apiceaccensa* Coen, 1933
Spondylus gaederopus var. *circularis* Coen, 1933
Spondylus gaederopus var. *subinermis* "Stalio ms." Coen, 1933
Cardita (Glans) trapezia var. *maculata* "Danilo & Sandri ms." Coen, 1933
Cardita (Glans) trapezia var. *imbricata* "Danilo & Sandri ms." Coen, 1933
Astarte fusca var. *rugata* "Monterosato ms." Coen, 1933
Loripes lacteus var. *lenticularis* "Monterosato ms." Coen, 1933
Loripes lacteus var. *squarrosa* "Monterosato ms." Coen, 1933
Loripes desmaresti var. *stalioides* "Monterosato ms." Coen, 1933
Loripes desmaresti var. *aurora* "Monterosato ms." Coen, 1933
Diplodonta rotundata var. *incurva* Coen, 1933
Lepton prismatcum "Monterosato" Coen, 1933
Arcopagiopsis balaustina var. *minor* "Spinelli ms." Coen, 1933
Macoma tenuis var. *rosea* Coen, 1933
Macoma tenuis var. *luminosa* "Monterosato ms." Coen, 1933
Scrobicularia plana var. *ochracea* Coen, 1933
Scrobicularia cottardi var. *alba* Coen, 1933
Donax adriaticus var. *radita* "Monterosato ms." Coen, 1933
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Mactra corallina var. *duplicata* Coen, 1933
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Chione (Ortygia) gallina var. *scripta* "Monterosato ms." Coen, 1933

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Chione (Ventricola) verrucosa var. *corallifera* Coen, 1933
Chione (Ventricola) verrucosa var. *albolimbata* Coen, 1933
Tapes (Pullastra) geographicus var. *ruginosa* Coen, 1933
Tapes (Pullastra) aureus var. *pitarius* “Monterosato ms.” Coen, 1933
Tapes (Pullastra) aureus var. *texturata* mut. *nasuta* “Monterosato ms.” Coen, 1933
Tapes (Pullastra) aureus var. *pulchella* mut. *superba* Coen, 1933
Tapes (Amydala) decussatus var. *tumida* ex col. *albosignata* Coen, 1933
Tapes (Amydala) decussatus var. *dalmatica* “Monterosato ms.” Coen, 1933
Tapes (Amydala) decussatus var. *istriana* “Monterosato ms.” Coen, 1933
Tapes (Amydala) decussatus var. *subtruncata* “Monterosato ms.” Coen, 1933
Eucardium (Cardium) echinatum var. *fasciata* “Spinelli ms.” Coen, 1933
Eucardium (Sphaerocardium) paucicostatum var. *planicosta* “Monterosato ms.” Coen, 1933
Eucardium (Sphaerocardium) paucicostatum var. *rarepartita* Coen, 1933
Eucardium (Rudicardium) tuberculatum var. *angulata* Coen, 1933
Eucardium (Rudicardium) tuberculatum var. *depauperata* Coen, 1933
Eucardium (Rudicardium) tuberculatum var. *multiplicata* Coen, 1933
Eucardium (Rudicardium) tuberculatum var. *acuticostis* “Stalio ms.” Coen, 1933
Eucardium (Rudicardium) tuberculatum var. *coalescens* Coen, 1933
Eucardium (Cerastoderma) lamarckii var. *hemicardiaeformis* Coen, 1933
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Magoforskalia magus var. *alba* Coen, 1937
Magoforskalia magus var. *vulcanica* Coen, 1937
Jujubinus gravinae “Monterosato ms.” Coen, 1937
Osilinus turbinatus var. *strangulatus* Coen, 1937
Osilinus articulatus var. *littorina* Coen, 1937
Osilinus articulatus var. *carinatus* Coen, 1937
Calliostoma virescens var. *flavida* Coen, 1937
Calliostoma dubium var. *pluriflammulata* Coen, 1937
Turboella (Sabanella) opalia “Monterosato ms.” Coen, 1937
Cerithiopsis conica “Monterosato ms.” Coen, 1937
Cerithidium baliolinum “Monterosato ms.” Coen, 1937
Cerithidium venetiarum Coen, 1937
Odostomia litoris Coen, 1937
Naticina alderi var. *alba* Coen, 1937
Trivia dalmatica Coen, 1937
Bolinus brandaris var. *bifida* Coen, 1937
Tritonalia erinaceus var. *convulsa* Coen, 1937
Cyclope neritea var. *vernica* “Monterosato ms.” Coen, 1937
Hima limata var. *minor* “Monterosato ms.” Coen, 1937
Hima (Telasco) costulata var. *candida* Coen, 1937
Pseudofusus dalpiazii var. *acutecostata* Coen, 1937
Pseudofusus dalpiazii var. *gracilis* Coen, 1937
Pecten jacobaeus var. *transiens* Coen, 1937

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Ostrea adriatica var. *succinea* Coen, 1937
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Cardium (Acanthocardium) mucronatum var. *hirtissimum* Coen, 1941
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Argobuccinum gigateum var. *curvicauda* Coen, 1941
Argobuccinum gigateum var. *magnifica* Coen, 1941
Argobuccinum gigateum var. *tenuis* Coen, 1941
Argobuccinum gigateum var. *intusdentata* Coen, 1941
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Cypraea (Lyncina) vitellus var. *gibbosa* Coen, 1949
Cypraea (Lyncina) careola [sic!] var. *pretiosa* Coen, 1949
Cypraea (Lyncina) carneola var. *aurea* Coen, 1949
Mauritia (Arabica) arabica var. *dilatata* Coen, 1949
Mauritia (Arabica) arabica var. *gibba* Coen, 1949
Mauritia (Arabica) eglantina var. *aurea* Coen, 1949
Mauritia (Arabica) eglantina var. *rufa* Coen, 1949
Mauritia (Arabica) histrio var. *duploreticulata* Coen, 1949
Luria lurida var. *onycina* Coen, 1949
Luria lurida var. *incrassata* Coen, 1949
Luria lurida var. *badia* Coen, 1949
Luria (Basilitrona) isabella var. *cylindroides* Coen, 1949
Monetaria moneta var. *annulifera* Coen, 1949
Erosaria erosa var. *marginata* Coen, 1949
Erosaria erosa var. *pulchella* Coen, 1949
Erosaria diaphana Coen, 1949
Erosaria lamarcki var. *inocellata* Coen, 1949
Erosaria ocellata var. *fasciomaculata* Coen, 1949
Erosaria acicularis var. *nitidiuscula* Coen, 1949
Erosaria helvola var. *immaculata* Coen, 1949
Erosaria spurca var. *peculiaris* Coen, 1949
Erosaria spurca var. *inflata* Coen, 1949
Erosaria (Ravitrona) caputserpentis var. *albosignata* Coen, 1949
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Staphylaea staphylaea var. *fortis* Coen, 1949
Staphylaea staphylaea var. *nitida* Coen, 1949
Staphylaea staphylaea consobrina var. *lactea* Coen, 1949
Staphylaea staphylaea consobrina var. *grisea* Coen, 1949
Staphylaea limacina var. *ebur* Coen, 1949
Staphylaea limacina var. *nitens* Coen, 1949
Pustularia cicercula var. *purissima* Coen, 1949
Luponia fuscudentata var. *alba* Coen, 1949
Notocypraea angustata var. *lentiginosa* Coen, 1949
Guttacypraea pulicaria var. *candida* Coen, 1949
Zonaria pyrum var. *elongata* Coen, 1949
Zonaria pyrum var. *cruenta* Coen, 1949
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Zonaria pyrum var. *hepatica* Coen, 1949
Zonaria pyrum var. *piperitoides* Coen, 1949
Zonaria pyrum var. *compressa* Coen, 1949
Zonaria pyrum var. *nivosa* Coen, 1949
Zonaria pyrum var. *aurantia* Coen, 1949
Zonaria pyrum var. *minima* “Monterosato ms.” Coen, 1949
Erronea erronea var. *fusca* Coen, 1949
Erronea caurica var. *immaculata* Coen, 1949

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Erronea caurica var. *nitens* Coen, 1949
Erronea caurica var. *caledonica* Coen, 1949
Erronea pseudarabacula Coen, 1949
Blasicrura cylindrica var. *emaculata* Coen, 1949
Palmadusta asellus var. *fusca* Coen, 1949
Palmadusta diluculum var. *magnifica* Coen, 1949
Palmadusta diluculum var. *epunctata* Coen, 1949
Palmadusta (Purpuradusta) fimbriata var. *nitida* Coen, 1949
Siphocypraea mus var. *suta* Coen, 1949
Primovula carnea var. *gibbosa* Coen, 1949
Primovula carnea var. *dorsolirata* Coen, 1949
Primovula carnea var. *major* Coen, 1949
Simnia (Neosimnia) spelta var. *brevis* “Monterosato ms.” Coen, 1949
Simnia (Neosimnia) spelta var. *illyrica* Coen, 1949
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Publications attributed to Giorgio Silvio Coen, perhaps in error

Among Coen’s papers are two anonymously published short notes that appeared in the “Ateneo Veneto”. Although one was included in the list of Coen’s publications by Piani, Bouchet & Ghisotti (1990), it is doubtful that Coen wrote these articles because he never listed them among his publications.

[**Coen, G.**] 1932. Studi di malacologia. *Ateneo Veneto*, 110 (1–2): 246–248.

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Zoological taxa named after Giorgio Silvio Coen

At a rather early stage of his interest in molluscs, Coen already had contacts with numerous malacologists abroad. When Coen was only 33 years old, Preston (1905) had already named a species after him. Also, his “master”, Monterosato, intended to name several new species after his much younger friend in Venice and even sent material to his correspondents with these manuscript names. By using Monterosato’s manuscript names, Coen made at least three of such names available for use in zoological nomenclature. The following twelve taxa that were named after him include Gastropoda, Bivalvia and Insecta. The drawing is of the holotype from the Calabrian (?) of Ladino, Castrocaro, Italy.



Taxa that were named after Giorgio Silvio Coen

Gastropoda

Turbonilla coeni Preston, 1905

Gibbula coeni Preston, 1908

Ennea coeni Preston, 1913

Aegista coeni Preston, 1914

Assimineia coeni “Monterosato ms.” Coen, 1933

Pyrgulina coeni “Monterosato ms.” Coen, 1933

Zeuxis (Hima) pygmaea var. *coeni* “Monterosato ms.”
Coen, 1933

Trophonopsis forestii coeni Ruggieri, 1947

Bivalvia

Mytilus (Mytilaster) minimus var. *coeni* Gambetta, 1929

Cardium glaucum var. *coeni* Mars, 1951

Chlamys bruei coeni F. Nordsieck, 1969

Insecta

Odynerus (Rhynchium) coenii Giordani Soika, 1934

***Trophonopsis forestii
coeni* Ruggieri, 1947.**

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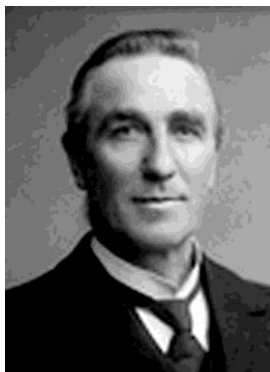
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2. René Neuville (1899–1952) and his mollusc collection

René Neuville was born on October 20, 1899 in Gibraltar, where his father served as the French consul general. He grew up in a deeply religious Catholic family, continuing that tradition in the family he established in what was then Palestine. Following in the footsteps of his father, he received a consular appointment in Ventimiglia, Italy, near the French-Italian border. In 1926, at the age of 27, he became chancellor of the French consulate in Jerusalem, a position he occupied for 11 years. During this period, he was also very active in the field of archaeology and participated in many important excavations which were carried out during that period.



René Neuville

In 1937, Neuville was appointed to a post in Spain (Alicante), followed by one in Gibraltar, and, at the beginning of World War II, served in Morocco. In 1943, he obtained a consular appointment in Algiers, followed by one in Tunis. In 1946, he returned to Jerusalem, where he served as Consul General until his death from an incurable illness on June 23, 1952.

Wherever Neuville was stationed, he served not only the Republic of France, but was also heavily involved with local archaeological and paleontological research that resulted in numerous important publications in those fields. Besides that, he published a lengthy historical review dealing with the joys and tribulations of the French consuls in Jerusalem during the seventeenth, eighteenth and nineteenth centuries.

The shell collection

Most of the shells present in Neuville's collection were collected by himself during his various appointments and travels in the Levant including Sinai (Egypt), North Africa and, of course, France. When he returned to Jerusalem in 1946, he brought the rich collections of mollusc material from North Africa with him. He studied most of that material, e.g., the shells from outcrops of the Last Interglacial or MIS 5e isotopic stage

near Monastir (Tunis). That important material now forms part of the malacological and paleontological collections of the Hebrew University. However, Neuville hardly published the results of all these studies. Nonetheless, other malacologists dealt with his material, such as Lecointre (1951) who reported on part of the quaternary molluscs collected by Neuville in Morocco.

While dealing with the mollusc fauna of the Judean Desert, Neuville became very interested in the variability of *Levantina*. Not only did he collect more than 200 samples of *Levantina* from as many different locations, but he also measured them carefully and noted data for each location, including the mean annual rainfall. In addition, he appointed Mrs. Ruth Abraham to translate from German into French the entire monograph dealing with the *Levantina spiriplana* complex in the Levant written by Pfeiffer (1949). According to his notes and those of his son Pierre, he had intended to write about this subject, but this project was presumably interrupted by his untimely death in 1952.

Pierre Neuville

Included in René Neuville's collection are many samples collected by his son Pierre. As a boy, Pierre occasionally surprised his father with handwritten reports illustrated by his own drawings of finds of stone tools in Morocco, or land and freshwater molluscs of Clermont de l'Oise (1949). Obviously, he wanted to follow in his father's footsteps, not only in the field of archaeology but also as a diplomat. Three years after his father's death, Pierre served at the French legation in Tripoli, Libya (1955). Like his father, he carried out archaeological and paleontological research at the same time and collected *Gyrostomella* land snails, which were reminiscent of *Levantina* in the Levant. In 1956, he was appointed to the French Consulate General in Milan, Italy. But 1959 found him working as an archaeologist in Brazil. The last letter received by Prof. Georg Haas from Pierre Neuville was dated November 27, 1964. In the interim, Pierre had established a kibbutz-style sheep farm, Mont Tabor, near Araquara. Neuville's letter was interspersed with biblical quotations. After that, contact with him was lost. A letter sent to him in 1985 received no reply. The material collected by Pierre Neuville in France and Libya was added to his father's collection.

Transfer of the Neuville mollusc collection and malacological library

The mollusc collection of René Neuville and the accompanying library had been stored temporarily in crates for safekeeping in the office of Prof. Georg Haas since the death of René Neuville in 1952. In 1955, Pierre began to negotiate the sale of these treasures to the Hebrew University. Although Prof. Haas was highly interested in obtaining the material for the mollusc collection in the Hebrew University, it was impossible to obtain the funds for it. However, in a letter dated December 7, 1959, Pierre donated his father's collection to Prof. Haas and it was incorporated into the university's collection.

Although the mollusc collection of René Neuville was rather limited in scope, it contained some important elements, including the previously mentioned collection of *Levantina* samples; a large selection of marine molluscs from Akhziv; and Quaternary and Recent marine molluscs from North Africa. In addition, it included a large part of the private collection of Dom Maur Massé, a Benedictine monk living at the Saint Saviour monastery in Abu Ghosh (see Section 1b3, below).

René Neuville's malacological library

As with Coen's collection, René Neuville's malacological library was donated to the mollusc collection along with his shell collection. It comprised a large number of very important works written in French by such classic authors as Bruguière, Hwass, Lamarck, Draparnaud, Michaud, Bourguignat, Locard, Fischer, de Lamothe, Nobre, Germain and Pallary, but also books written in other European languages by Pfeiffer, Nobre and others. In addition, there were also 57 volumes and 3 indexes of the very important "Journal de Conchyliologie". Neuville's library was an important addition to the malacological library of the mollusc collection of the National Natural History Collections at the Hebrew University of Jerusalem.

Malacological publications by Neuville

As mentioned above, Neuville often worked on molluscs, but the number of his publications in this field was rather low. In fact, there were only three works in which he mentioned molluscs. However, it is possible that Neuville had written articles about molluscs in unavailable paleontological and/or archaeological reports published in Morocco, Algiers or Tunis of which we are unaware.

Neuville, R. & Ruhlmann, A., 1941. La place du Paléolithique ancien dans le Quaternaire marocain. *Hespéris*, 8: 156 pp. Casablanca.

Neuville, R. & Ruhlmann, A., 1942. L'âge de l'homme fossile de Rabat. *Bulletin de la Société d'Anthropologie de Paris*, 1942: 74–88.

Neuville, R., 1951. Mollusques terrestres et fluviatiles. In: Neuville, R. (ed.): *La Paléolithique et le Mésolithique du Désert de Judée*. *Archives de l'Institut de Paléontologie Humaine*, 24: 233–244.

Taxa introduced by René Neuville

Although Neuville had intended to publish the description of two new taxa belonging to *Levantina* and *Loripes* (with the intention of naming the latter after his good friend, Prof. Georg Haas), he never submitted these manuscripts. He described only a single variety of a subterranean land snail, *Calaxis hierosolymarum* var. *languida* Neuville, 1951. The type material from the Oumm-Qatafa cave in the Judean Mountains and Ain Fara in Wadi Kelt, has been recently located among his material and is now stored in the mollusc collection's type collection.

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Perrot, J., 1952. Nécrologie. René Neuville (1899–1852). *Syria*, 29 (3–4): 409–411.

Pfeiffer, K.L., 1949. *Levantina spiriplana* (Olivier). *Archiv für Molluskenkunde*, 77 (1–6): 1–51.

3. Parts of the shell collection of Dom Maur Massé

Among the shells transferred from the collection of René Neuville to Georg Haas at the Hebrew University of Jerusalem were three sub-collections of special interest. These collections were assembled by a Benedictine monk, **Dom Maur Massé**, who belonged to the order of Saint Benoit and lived in the Saint Sauveur monastery in Kariat-el-Anab (the former name of today's Abu Ghosh). These three collections are of such historical, archaeological, zoological and paleontological interest that they are dealt with in detail below. Regrettably, little is known concerning the personal background of the man known to the world as Dom Maur Massé, his name in the Benedictine Order.

The Neolithic shells from Kariat-el-Anab (Abu Ghosh)

The Pre-Pottery Neolithic-B (PPNB) site of Kariat-el-Anab (Abu Ghosh) was discovered by Massé and other monks of the monastery in fields, mainly vineyards, near the monastery. They found flints on the surface and at a depth of some 60 cm in the fields, along with shells with man-made holes. At an unspecified time, these shells were donated to René Neuville, and more than sixty years after their discovery, they were studied by H.K. Mienis (1987). Twenty different species were recognized, of which twelve were from the Mediterranean Sea, seven from the Red Sea and one from the Nile River.

Land snails from Kariat-el-Anab collected by Massé

Neuville also received a collection of the local land snails from Kariat-el-Anab that had been collected by Massé. The shells were glued on a carton board showing the Benedictine cross. This unique item is currently undergoing restoration. The shells were labelled with their scientific names, identified by Paul Pallary from material **Massé** had sent him. Pallary found two new species among the material which Massé had donated to him when they met in 1929. One of these species was described as *Ena enabensis*, which is now considered a junior synonym of *Turanena benjamitica* (Benson, 1859). The other was *Chondrula massei* Pallary, 1939, named in honour of the collector, but, regrettably, that species turned out to be a junior synonym of *Euchondrus chondriformis* (Mousson, 1861). Massé also donated land snails from the vicinity of Abu Ghosh to Philippe Dautzenberg (1849–1935), whose collection forms part of the holdings of the Royal Institute of Natural Sciences of Belgium in Brussels.

The fossil shells collected by Massé on the Mount of Olives in Jerusalem

Since 1899, a Benedictine monastery has been situated on the slopes of the Mount of Olives. Presumably, Massé visited the monastery regularly. He was well aware of the fossil-bearing layers dating to the Campanian period of the Upper Cretaceous epoch. In July 1911, he sent a collection of 13 different species to the French palaeontologist, L. Vignal. That was followed by an additional shipment which contained 39 species. Chavan (1947) carried out a revision of all the available Campanian material from the Mount of Olives that was present in Paris or that had been mentioned previously by other authors. This led to the description of four new genera, four new subgenera, 21 new species and one new variety of which two were named after Massé.

Massé's private collection of Campanian material from the Mount of Olives was present among the material Prof. Haas received from Neuville. It was more or less a duplicate collection of that studied by Chavan but remained still unidentified. Some of Massé's original specimens are of a much better quality than those studied by Chavan.

Thus, although they do not represent type material, this collection enables obtaining better information on the species described by Chavan. Identification of this material is currently in progress.

Taxa named after Dom Maur Massé

Chondrula massei Pallary, 1939: 48, pl. 3, figs. 49–51.

Diptygmendon elliotti var. *massei* Chavan, 1947: 136, pl. II, fig. 7.

Eosolarium massei Chavan, 1947: 162, pl. III, figs. 10–12.

Chondrula massei Pallary, 1939, now *Euchondrus chondriformis* (Mousson, 1861).

Photo: Oz Rittner.



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Mienis, H.K., 1987. A second collection of shells from Neolithic Abou Gosh. *Levantina*, 66: 695–702.

Pallary, P., 1939. Deuxième addition à la faune malacologique de la Syrie. *Mémoires présentés à l'Institut d'Égypte et publiés sous les auspices de sa majesté Fouad Ier, Roi d'Égypte*, 39: 1–141, pls I–VII.

4. Arthur Blok (1882–1974), his shell collection and library

Arthur Blok was born in Stoke Newington, London, on March 20, 1882. His parents were Dr. Maurice H. Blok, M.D., and Helena Pool. He married Buena Sarah Pool in 1907. They had two children: Olive Ruth, who married M. James Pelham, and Geoffrey D.M., who married Hazel Evans. There were two grandchildren, David Pelham and Sarah Block. (Blok was proud of the unorthodox spelling of his family name, Blok, which derived from his father's family from Alkmaar, the Netherlands, but his son, Geoffrey, anglicized the family name to Block).

Blok grew up in London, where he first attended the Brewers Company's School, and subsequently studied at University College in the Faculty of Electrical Engineering, graduating with a B.Sc. degree. Blok became a researcher and personal assistant to Professor Sir John Ambrose Fleming, the inventor of the thermoionic valve (radio tube). In 1901, he operated the instrument that flashed radio signals for the first time in history from Poldhu, Cornwall to the inventor G. Marconi in Newfoundland. Blok made some of the equipment used in that experiment.

For most of his life, Blok worked as a civil servant. From 1902–1916, he worked at the British Patent Office. Due to the First World War, he transferred to the Ministry of Munitions and the Board of Trade (Optical Munitions and Potash Production), but in

1920, he returned to the Patent Office in London. When he retired from that position in 1942, he was a Principal Examiner. This period was briefly interrupted in 1924–1925 when he took a special leave of absence at the explicit request of Lord Samuel, the first High Commissioner for Palestine. During that time in Palestine, Blok dealt with equipping the newly-opened Technion in Haifa, and became its first principal. Subsequently, “Mr. Technion”, as he was nicknamed, served as a member of the Technion’s Board of Governors. After he retired from the Patent Office, Blok transferred to the Ministry of Supply (Department of Scientific and Industrial Research) in the field of atomic energy, where he remained until 1947. In 1945, in recognition of his service to Britain, Blok was awarded the Order of the British Empire. In 1948, he retired to his cottage in Rottingdean, but continued to be a consultant of the Department of Atomic Energy, from which he finally retired in 1954 at the age of 72. On his 90th birthday, in 1972, he was awarded an honorary Ph.D. degree by the Technion.



**Arthur Blok in 1973
during a visit to Avdat**

Despite the fact that Blok had lived only a short period (1924–1925) in Palestine (later Israel), he was a Zionist in heart and soul and was active in many Zionist organisations in England. Blok attended the annual meeting of the Board of Governors of the Technion in Haifa regularly. After he became acquainted with Prof. Georg Haas, he often extended his stays in Israel to visit Jerusalem.

Although Arthur Blok was a very busy man or perhaps because he was a very busy man, he found relaxation in amassing a shell collection in his spare time. After 30 years of collecting, he began to think about what would happen to his beloved collection and accompanying library after his

death. From experience, he knew all too well what might happen to a shell collection after the death of the owner. He had seen too many collections dispersed or even disappear completely. Given his Zionist leanings, he soon reached a decision to donate his collection to one of the academic institutions in Israel, preferably to the Hebrew University of Jerusalem. However, it is best to leave the words to Blok.

Some excerpts of Blok’s letters dealing with the collection

On September 23, 1949, Blok wrote to Sir Leon Simon, Chairman of the Executive Council of the Hebrew University of Jerusalem and a member of the University’s Board of Governors, as follows: “And now I come to the business, which may be a matter on which you cannot give even a tentative reply before consulting some of your colleagues at the University. But let me say that, in any case, I should like to have as early an answer as possible, even if only in general terms, for reasons which will be apparent to you when you know what I have in mind.

I am trying to come to a decision about the disposal of my collection of molluscan stuff when I am called to the great majority and it has always been in my mind to offer substantially all of it to Israel if it should ever grow to be a collection of any real value for the purpose of zoological study. I think that now it may have some value and, although I cannot expect you personally to be enthusiastic about shells, I do know that you will be alive to the question whether my material might be of value to the Hebrew

University.” Blok continued to describe his extensive collection and library in detail and finished with: “If any institution in Israel should desire it after my death, I would willingly consider bequeathing it. I should have to impose certain conditions more or less as follows: the accepting body would have to arrange packing and transport free of cost to my estate within a reasonable time of my death, and would accept the material on the specific understanding that it would be cared for on the usual lines for study material and would be available for study.” (In other words, Blok requested the installation of a manager in the mollusc collection before the transfer of his shell collection [HKM]). “Perhaps this rather wearisome story may enable you at least to say whether Israel is likely to be interested or not, but you will, I think, want to talk to someone in Jerusalem before any final answer is given. I should be grateful for an answer as soon as possible, because if Israel says no (I should in no way be cast down by this), I have alternatives in mind. But I should like Israel to consider it first.”

On October 4, 1949, a copy of this letter was forwarded to the Rector of the Hebrew University, the Public Relations Department of the Hebrew University, Prof. Oskar Theodor and **Prof. Georg Haas**. As Prof. Haas was actually working on molluscs, he took upon himself to carry on the correspondence with Blok. In a letter dated June 2, 1950, Prof. Haas wrote, “Concerning your proposal that a zoologist of this Department should see you personally in England, there is no need to assure how eagerly I should welcome this chance to be shown through your collection by yourself”.

The first actual meeting between Haas and Blok took place in December, 1950, and they immediately became good friends. Correspondence became more intensive and changed from “Dear Prof. Haas” or “Dear Dr. Haas” to “Dear Haas” and, later on, to “Dear Georg”. Each letter contained some information about Blok’s collection or new contacts between Haas and other fellow malacologists.

In his letter of February 24, 1957, Blok wrote fondly about the Dutch malacologist, J.A.W.C. Venmans, who was studying some *Truncatellina* samples sent by Haas, which resulted in the description of *Truncatellina haasi* Venmans, 1957.

On June 6, 1958, Blok wrote to Haas that the Friends of the Hebrew University had generally approved the financial arrangements for packing and sending the collection and library from Rottingdean to Jerusalem.

Blok’s letter of May 7, 1969 is more mollusc-oriented than any other letter he wrote during the previous 10 years: “Forcart is probably the best man you could find to do the Israeli land molluscs. A malacologist mainly, but he makes a job of whatever he tackles and you may be sure that his contribution to the “Fauna” will be of first rank. ... As to my own collection, although a little new material comes in, I am giving a lot of time to revision and tidying up. And with an aggregate of some 13,000 species, you will believe that there is plenty of room for revision. Most of my catalogue needs rewriting because of its messiness, and the cleaning of thousands of glass topped boxes alone is enough for all the wet days in the very wet English calendar. As to my library, it is really worth having, and I am astonished at the way the price of the early classics goes up and up, although I have always bought books as working tools and not as investment.”

In his letter of November 5, 1970, Blok wrote: “Your letter of 24 October gives me the welcome news that Mr. Mienis’ application is formally in and is under consideration. From your account of him, he seems to be the ideal man for the job: and surely if he worked on the Amsterdam molluscs (under Mevr. Van Benthem Jutting?), he should

be well qualified to curate your Coen et al. collections.” (In fact, Mienis had worked on a voluntary basis in the mollusc collection of the Zoological Museum of Amsterdam under the guidance of Dr. H.E. Coomans and later on became an Honorary Associate of that institute [HKM]). On December 14, 1970, Blok continued: “I am indeed glad that you have secured Mr. Mienis’ service for 2 days a week and I congratulate you on the result of your persistence.” (This was in fact the implementation of the condition by Blok to install a manager for the collection [HKM]). “Need I say that I hope to meet Mr. Mienis? There should be a double bond between us, conchologically and ethnic, for my father was a Dutchman.”

On May 8, 1971, Blok wrote to Haas mainly about his library and that of the Hebrew University of Jerusalem (HUJ): “My library, as you know, is quite a sizeable one and I do not want to send the HUJ books that it already has. Could you send to me a list of all the molluscan books that the HUJ already has?” And again on May 26: “My dear Georg. A quick one in order to thank you for the library list that Mr. Mienis has prepared. I see that I duplicate quite a number of your books but will go through the list carefully against my library and bring you my notes in June. But I see already that with your lot and mine the University will ultimately have a very comprehensive and valuable conchological library. Ever yours, Arthur.”

In the same year, Blok changed his plans concerning his shell collection and malacological library. He became eager to see his “shell-stuff”, as he sometimes called it, in Jerusalem. This change in his plans was triggered by a letter which he received in August, 1971 from the President of the Hebrew University. (As this letter might be important for the Mollusc collection in the future, a full copy of it is quoted below.)

Office of the President

Jerusalem, August 13 1971

Mr. Arthur Blok,

With reference to your recent visit to our Department of Zoology, I understand from Professor G. Haas that it is your intention to despatch your Molluscan Collection and Library to this University during the coming months, if this can be arranged by you in collaboration with the Friends of the Hebrew University in England.

This letter confirms that the University is not only willing to accept your gift, but also that we shall indeed be grateful for this addition to our existing Molluscan Collections and other resources.

I understand that you have in mind two conditions in connection with your gift, when it passes into the ownership of the University, namely, that the Collection and the Library will be appropriately housed and curated, and that both the Collection and the Library will each be kept in its integrity, and will not be scattered or dispersed.

On behalf of the Hebrew University, I am happy to be able to give you the assurance that these two conditions will be observed.

Sincerely yours,

Avraham Harman

President

cc: Mr. Bernard Cherrick, Mr. Philip Druiff, Prof. S. Ofer, Prof. G. Haas, Dr. A. Borut

On the one hand, Blok began slowly but steadily to pack up the shells. In a letter sent on October 31, 1973, he wrote: “Most of my collection is packed ready for transport and I hope to finish the job by the end of the year”. On the other hand, Blok continued to update the identifications of samples in his collection. For example, a replacement name introduced by Mienis in the family Neritidae: *Neritina juttingae* Mienis, 1973, was adopted by him and the specimen label in his collection was changed accordingly (HKM).

In July 1974, a message was received that the collection was in the port of London ready for shipment. One month later, the shipment indeed arrived in Haifa where its arrival created unforeseen problems. The university had a longstanding agreement with the customs authority that books might be imported free of import duty. However, that was not the case with the shell collection. According to the customs inspectors, the quantity of shells was so large that it was considered to be a commercial shipment! The university was charged an extremely high customs fee. Many calls and letters went from Jerusalem to Haifa and back. Finally, due to personal intervention by several government ministries, Blok’s treasure was released; it arrived at the Russian Compound where the university’s mollusc collection was then housed. Tragically, in the meantime, Blok had been hospitalized following a stroke, and, on October 14, 1974, he passed away.



Left: *Amphidromus perversus* from Indonesia, Celebes. Note that in a single colony there may be both dextral and sinistral specimens.

Right: *A. versicolor* from Indonesia, Sunda Islands. Photo: Oz Rittner

Blok purchased these *Amphidromus* shells at an auction. They represented the first specimens of his huge collection (see chapter II of his autobiographical sketch, below).

Blok’s dream to help unpack the collection and to install it in the Hebrew University mollusc collection thus remained unfulfilled. On February 5, 1975, an exhibition of the Arthur Blok collection and library took place on the occasion of the opening of the Zoological Museum in the Zoology Department, located at that time in the Russian compound (Mienis, 1975). A large part of the finest books from his library were also exhibited at the Jewish National and University Library in June, 1979 (Haas et al., 1979).

Arthur Blok and the development of his shell collection

A brief review of the development of Blok’s interest in shells and shell-related literature is given in a short autobiographical sketch written in 1964; it is reprinted on the following page:

The Development of the Shell Collection by Arthur Blok

Chapter I

In the late 1890s, under the stimulus of an excellent science master at the Brewers Company's School at Islington, one of the boys became curator of the school museum. It was a well run affair with everything properly labelled with locality, genus, species, author, etc., and with the trivial names of the specimens respectfully placed after the Latin names. On Saturday afternoons, the museum committee took material to the Natural History Museum at South Kensington for identification and of all the zoological miscellanea that filled their satchels, the shells were the school curator's favourites. I was he.

Chapter II

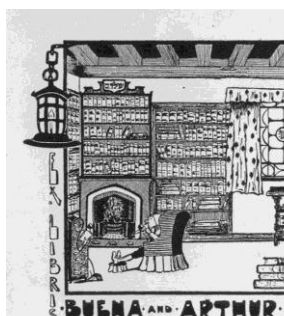
Many years and one world war later. As light relief from a war job, I went occasionally to Stevens' Auction Rooms in Hatton Garden, now, alas, long since closed. The sales there were entertainment without the necessity of paying entertainment tax: the queerest things were offered, one of which happened to be a box of *Amphidromus* shells, a glory of colour and form. I bought it and at that moment the *furor conchyliorum* was re-kindled in me.

Chapter III

Many more years and another world war later. I now have, in 24 cabinets, large and small, nearly 13,000 species (yes, they are all named) and a shell library of some 600 books and more than 3,000 separates.

About Arthur Blok

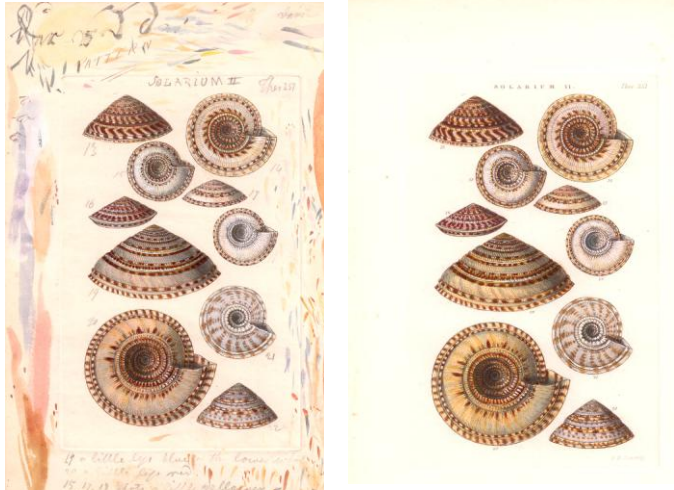
Arthur Blok was not the kind of shell collector who collected most of his treasures by himself in the field. He was more a person willing to take over the assembled material of other fellow collectors who stopped being interested in shells or who passed away. Often, such collections received more attention by Blok than they had ever received in the past, because he was a born curator. Any piece of information, even the most trivial, accompanying the new samples, was checked and retained with the sample for further study or use in articles by other shell-lovers. In this way, we know that he bought a large specimen of the Golden Cowry, *Lyncina aurantium*, collected in Tahiti, for sixpence (Mienis, 1992). This, in spite of the fact that at the time he acquired it, such cowries were usually sold for 200–300 US dollars. Or, that a sample of one of his favourite tree snails, *Amphidromus sinensis vicaria*, a rather rare subspecies from Bhutan in the Himalayan Mountains, had been collected while riding an elephant (Mienis, 1976). However rare or common, each sample received the same meticulous treatment and was stored in self-made glass-topped carton boxes, while all the accompanying data were noted down in a catalogue.



Ex libris used by
Buena and Arthur Blok

From the day he became seriously interested in shell collecting, Blok was always on the lookout for literature. Books, journals and reprints—everything malacological—was most welcome and elicited the same enthusiasm as the shells themselves. In this way, he managed to assemble an excellent conchological library, unique among his fellow private shell collectors. It contained most of the classic works published by such authors as Lister, Gualterius, Rumphius, d'Argenville, the first 12 volumes of Martini and Chemnitz, Perry, Kiener, Quoy & Gaimard, Reeve, the Sowerbys, and many others, most of them with hand-coloured illustrations.

He even managed to obtain several original patterns of Sowerby, prepared for the persons who would colour the plates so they would reproduce the correct colours (figures below, left, example for colouring; and right, coloured, clean plate, respectively).



Left: Original unique handcoloured sample plate (model plate) of the genus *Solarium* (now *Architectonica*) in G.B. Sowerby's (1863) "Thesaurus Conchyliorum". The paint in the margins showed the painters of the plates how to reproduce the correct colours of the specimens.

Right: Finished, clean copy of the plate.

Blok's collection of ethnographic material

Blok was also interested in shell-related ethnographic items. His large reprint library included numerous articles dealing with various uses of shells by human beings:

- As currency: especially Cowries.
- As beads and pendants: any small gastropod and medium sized bivalve.
- As trumpets: *Charonia* and other large gastropods.
- As balers: for example large species of Volutidae.
- As wampum: shell belts used by North American Indians.
- As a pilgrim badge: *Pecten maximus* was used as a badge by those who made the pilgrimage to Santiago de Compostela in the northwest corner of Spain.
- For cutting of cameos: *Cypraeassis rufa* in Italy.

Noteworthy is the fact that in Italy, Blok managed to obtain the original tools of Ronca, one of the last Victorian cameo-cutters, and assembled additional material for an illustrated lecture to the Conchological Society of Great Britain and Ireland in June 1937. On another occasion, he lectured on "Shells and ornaments" and exhibited all kinds of items made of shells, belts, brooches, pins, buttons, cameos, spoons, snuff-boxes, etc., at the Jubilee meeting of the Malacological Society of London on February 1943. Blok's collection of ethnographic material was donated to a local museum in England.

Blok's collecting activities and his sharing of his continually-growing experience on how to build up a shell collection did not remain restricted to his cottage in Rottingdean. In 1924, Blok became an active member of the Conchological Society of Great Britain and Ireland, becoming an honorary member in 1972. In 1930, he also joined the Malacological Society of London. Blok played an active role in promoting

agreement between the two British Societies. When the first joint meeting of these societies took place in 1967, it was Blok who made the welcoming speech.

The main components of Arthur Blok's shell collection

Blok inherited or purchased important parts of other shell collections. These collections are enumerated below in alphabetical order according to the family name of the original collector, the institute, or, if nothing more specific is known, then according to its geographical origin. Many of the secondary collections were purchased at Stevens' Auction Rooms in London, which was well known for natural history sales. The collection contains material of (at least) the following collectors or former owners. Abbreviations used: AB = Arthur Blok; SAR = Stevens' Auction Rooms; xx inserted in dates indicates dates not available.

Aberdeen Collection – A collection of mostly marine and land molluscs collected between 1850 and afterwards. It was once the property of the Marischal College in Aberdeen. AB received this material from his cousin, Phil Orkin, in 1953. Most of the material, which was mounted on carton tablets, was in very poor condition.

Adami, G.B. (1838–1887). Italian malacologist.

Allen Collection – A collection bought by J.C. Dacie (see under that name) from the executors of the late Mrs. Allen, who was a daughter of Mr. Jukes and a cousin of Prof. Jukes Brown. The collection, which was assembled between 1850 and 1920, was rich in Australian material.

Ball – An old collection consisting mostly of marine and terrestrial species purchased through an intermediary from a Mr. Ball of Kensington. Most of the material dates from 1860. According to the labels, some specimens are from A.E. Craven (see under that name). The collection seems likely to have been the working stock of one of the old shell dealers.

Mrs. Bavis – An amateur collector who acquired a number of shells from the collection of the Baroness Burdett-Counts.

Col. R.H. Beddome (1830–1911) – His shell collection was bought by H. Fulton from Beddome's sister, Mrs. Leman. Fulton sold that collection to J.R. le B. Tomlin, from whom Blok received many of Beddome's worldwide Clausiliidae (see under those names).

Wm. Charles Blake – An amateur shell collector from Ross, Herefordshire.

Carl Bülow (18xx–19xx) – German shell collector. Part of his collection was purchased by AB at a sale at SAR; additional samples from that collection were acquired from other sources.

Baroness Angela Burdett-Coutts – Some shells of her private collection were donated to Mrs. Bavis (see under that name).

W. Calleja – An amateur shell collector from Valetta, Malta, who, in 1939, sent AB a small collection of unidentified shells.

D. Carmichael – An amateur shell collector of London who bought most of his shells at SAR. In 1965, AB purchased miscellaneous shells belonging to that collection from Maj. P.K. Earle, who had acquired Carmichael's collection (see under that name).

Henry Champ (18xx–1826?) – A private shell collector whose collection was bought at Stevens' in 1926.

Chelmsford Museum – A collection of duplicate shells were selected by AB from that collection in 1946 after being introduced to it by T. Pain (see under his name), who had previously been a curator there.

William (Bill) James Clench (1897–1984) – See under Harvard Museum.

Maj. Matthew William Kemble Connolly (1872–1947) – A specialist in African land- and freshwater molluscs. Shells were either given to AB when Connolly was working at the Natural History Museum, London or via T. Pain, who received Connolly's duplicates in 1946.

Charles Montague Cooke Jr. (1874–1948) – A malacologist at the Bishop Museum, Honolulu, Hawaii.

James Eddowes Cooper (1864–1952) – A private shell collector from Herne Bay, Kent, who published numerous papers on the land- and freshwater molluscs of Great Britain. Between 1938 and 1941, when he was dispersing his collection, Blok bought parts of it from him.

Alfred Eugene Craven (1849/50–1937) – Material with his original labels is present in a shell collection that had been purchased by AB from a Mr. Ball (see under that name).

John Charles Dacie (1860–1929) – A shell collector from Putney, London. His collection was acquired at SAR in 1929.

John Gordon Dalgleish (1887–1940) – Born in India, where, among other occupations, he was a tea planter near Darjeeling. Later on, he moved to England. He was interested in many aspects of natural history, kept a shell collection, and worked for years in the Brighton Municipal Museum. AB bought Dalgleish's collection in 1941 from his legatee, Miss Harris, of Horsham. Most of the British land- and freshwater molluscs were collected by Dalgleish in Sussex. The collection contains many marine molluscs which had been purchased from S. Hirase (see under that name).

J. Davy Dean (1876–1937) – For many years was the curator of the mollusc collection in the National Museum of Wales, Cardiff. Most of the material obtained from him consisted of land snails from Jamaica collected by G.A. Martin (see under that name).

W. Duncan – See Mauritius Collection.

Major P.K. Earle – Amateur shell collector From Itchen Abbas, Winchester, Hampshire; owner of the Carmichael shell collection (see under that name).

Hugh C. Fulton (1861–1942) – Conchologist and shell dealer from Hammersmith, London, partner of G. B. Sowerby III. Shells were bought either directly from Fulton, or reached the AB collection via other collections.

Gardner – A naturalist who owned a shop in Holborn, London.

Walter John Joseph Gyngell (1857?–1933) – A shell dealer in Scarborough. Parts of his stock were bought at SAR in 1927, 1930 and 1932.

Rev. James Hadfield (1864–1934) and Mrs. Emma Hadfield-Foster – Remains of their collection, mostly shells from Lifu, Loyalty Islands, were acquired at SAR in 1935.

Alfred Hartley – A private shell collector from High Wycombe. AB bought his collection from Hartley's daughter, Mrs. Gander, after his death in 1938.

- Harvard Museum – In 1959 AB received a parcel containing land snails from Dr. Ruth Turner of the Museum of Comparative Zoology, Harvard University. Among the material were some paratypes of *Cerion* species from Cuba described by W.J. Clench.
- Shintaro Hirase (1884–1939) – A Japanese zoologist, the author of the first coloured monograph on Japanese molluscs (1934).
- Arthur Tindell Hopwood (1897–1969) – Paleontologist of the Natural History Museum, London. Donated to AB the residue of his collection of Conidae in 1957.
- L.H. Hunn – A collection of land snails was purchased from Hunn in 1944. According to the labels, most of the material had been collected about 1850. The original collector is, however, unknown.
- R.M. Isaacs – An official at the British Council stationed in Ghana. He donated a collection of West African shells to AB in 1971.
- Kew Collection – A collection of shells from Gare Loch, Scotland was bought about 1924 from H. Ryland of Kew Green, who had purchased the material at an auction.
- Peter Lawson (18xx–19xx) – A collector from Hammersmith, London. His collection was bought at a sale at SAR in 1926, together with a 3-tier large mahogany cabinet.
- L. Lindsay – An amateur shell collector.
- Thomas Lombe Taylor – A private shell collector from Starston, Norfolk. Remains of his collection were purchased at SAR in 1929. Much of his material had been bought originally from Sowerby and Fulton (see under these names).
- George A. Martin (18xx–1926) – Zoologist at the National Museum of Wales, Cardiff. While in Jamaica (1925–1926) he became interested in molluscs, but died unexpectedly during an operation in the Montego Bay hospital.
- Mauritius Collection – In 1924, a collection of marine shells was bought at SAR. The collector of the material is not known but the collection was accompanied by a copy of E. Liénard, 1877, “Catalogue de la Faune Malacologique de l’île Maurice,” and was inscribed “W. Duncan, Port Office Mauritius, 1876.” Therefore, most probably Duncan was the original owner of the collection. If the inscribed date (1876) of Liénard’s book is correct, then most probably it was not published in 1877 but in 1876.
- Hugh McClelland (1864–1943) – He was a private collector of shells living in Birmingham. A large part of his collection was acquired at a sale in SAR in 1937.
- Mogridge – A shell collection bought by T. Pain (see under that name) from a Mr. Mogridge and transferred to AB.
- Tomasso Maria Allery, Marchese di Monterosato (1841–1927) – A well-known Italian shell collector from Palermo, Sicily. Blok received numerous samples from the Monterosato collection via the material from other English collectors.
- Robert Henson Moses (1871–1949) – A nature lover and private shell collector from Tottenham, London. After his death in 1949, AB received part of his shell cabinets. The shell collection went to the Haselmere Educational Museum.
- Rev. E.H. Nash – A private shell collector, who lived at Wetley Rocks Vicarage, Stoke-on-Trent. At his request his collection was distributed among other collectors by J.R. le B. Tomlin (see under that name).

- New Guinea Collection – A small collection of land snails collected by a trade collector named Pratt in New Guinea, purchased at Stevens' in London in 1929.
- Mrs. O'Neill – A private collector from New Zealand. In 1923, Blok purchased a collection of shells from New Zealand which she had collected in the Bay of Plenty and Tautanaga Harbour.
- Thomas (Tom) Pain (1915–2003) – A malacologist from Millbank, London who specialized, among other taxa, in Ampullariidae. He checked all the identifications of material belonging to that family in Blok's collection and added numerous missing species.
- H.W. Parritt (xxxx–1931?) – A private shell collector who lived first in Highgate, London, and later on in Rottingdean, Sussex. His collection was bought at SAR in 1931.
- Lieut.-Col. Alfred James Peile (1868–1948) – An army man with a great interest in natural history in general and in molluscs in particular. He specialized in the study of radulae and published numerous malacological papers. After Peile's death in 1948, Blok received his entire collection of Clausiliidae and Pupillidae.
- F. Pickles (xxxx–1931?) – A private shell collector, whose collection was purchased at SAR in 1930.
- Pratt – A trade collector. See under New Guinea Collection.
- Hugh Berthon Preston (1871–1944/5) – A shell dealer and prolific writer of malacological papers. The remaining stock of Preston's commercial shells was bought from him when he gave up dealing in 1935. It included numerous syntypes of taxa that he described.
- Percy Edward Radley (1861–1927) – Lived at Broxbourne, Herts. His shell collection was acquired via SAR in 1928.
- Mrs. Kay Rutland (xxxx–2004) – An amateur shell collector from Sydney, Australia. AB exchanged molluscs with her from 1964.
- H. Ryland – See under Kew collection.
- Albert Edward Salisbury (1876–1964) – Shells were received by AB as a gift or were acquired after his death.
- Georg Ossian Sars (1837–1927) – A Norwegian zoologist whose collection of Norwegian marine molluscs was found in the collection of H. Worsfold (see under that name). It was accompanied by a manuscript list marked Mr. Mason 1887, and had passed through the hands of R.F. Damon from Weymouth. The original labels by Sars are still in the boxes.
- Sheerness Collection – In 1924, AB bought a shell collection from J. Levy, an auctioneer in Sheerness. This collection was part of Mrs. Turmine's collection of Sheerness.
- Lajos Soós (1879–1972) – Malacologist and curator of the mollusc collection of the Natural History Museum in Budapest. AB obtained a complete collection of land and freshwater molluscs from the Carpathian Basin from him.
- George Brettingham Sowerby III (1843–1921) – Malacologist and author of many shell-related publications. He dealt with Fulton (see under that name) in shells.

- John L. Staid-Staad (1896–1969) – A serious amateur collector who first lived in Regents Park, England, and later on in Rheims, France.
- L. Suggitt – A natural history dealer of Droylesden near Manchester. The collection was purchased from his widow in February 1923.
- John Read le Brockton Tomlin (1864–1954) – The greatest of the latter-day British conchologists donated to AB or exchanged shells with him.
- Canon Henry Baker Tristram (1822–1906) – In 1923, AB bought a part of the original Tristram collection from W. Ternent of Durham. This material included syntypes of *Clausilia genezerethana* Tristram, 1865.
- Mrs. Turmine – A private shell collector from Sheerness. See under Sheerness Collection.
- Ruth Dixon Turner (1914–2000) – See under Harvard Museum.
- W. Tylar – A general dealer from Bournemouth.
- D'Alté Aldridge Welch (1907–1970) – Assistant malacologist at the Bernice P. Bishop Museum, Honolulu, Hawaii, and research fellow of the Department of Mollusks, Academy of Natural Sciences of Philadelphia. A large collection of Achatinellidae were given as a gift to AB; additional samples from him were received via Lombe Taylor, H. Worsfold and SAR (see under these names).
- Guy Lawrence Wilkins (1905–1957) – Zoologist of the Natural History Museum, London. After his death, AB purchased from Mrs. Alison Wilkins part of her husband's private collection.
- John M. Williams (1838–1925) – A private collector from Liverpool whose collection was bought at SAR in 1926.
- Ronald Winckworth (1884–1950) – Well-known British conchologist who donated to or exchanged shells with AB.
- William James Wintle (1861–1934) – Amateur shell collector who specialized in the land- and freshwater molluscs of Great Britain and exotic land snails. After his death, the collection went to AB together with his shell-related books.
- Herbert W. Worsfold (18xx–1943) – A private shell collector from Wandsworth. Blok bought a large part of his collection after his death.
- C.A. Wright – A private shell collector and one time editor of the *Malta Times*. At his request, the collection was dispersed among members of the Conchological Society of Great Britain and Ireland by his sister.
- S. Yamaguti – A private shell collector from Nagasaki City, Japan, who exchanged shells with Blok in 1938.

Authors of type material in the Arthur Blok collection

The following is a list of authors of which at least one sample of type material (paratypes and syntypes) is present in the Arthur Blok collection. The verification, separation and deposition of that material in the type collection of the mollusc collection of the Hebrew University of Jerusalem is currently in progress, but the finalization will take several more years.

César-Marie-Félix Ancey (1860–1906)
Frank Collins Baker (1867–1942)
Joseph Charles Bequaert (1886–1982)
Herbert Edwin James Biggs (1895–1973)
Oskar Boettger (1844–1910)
John Williams Brazier (1842–1930)
Robert Ashington Bullen (1850–1912)
Henry Clifden Burnup (1852–1928)
Eugène Caziot (1844–1931)
William (Bill) James Clench (1897–1984)
Matthew William Kemble Connolly (1872–1947)
Charles Montague Cooke Jr. (1874–1948)
James Eddowes Cooper (1864–1952)
William Healey Dall (1845–1927)
Philippe Dautzenberg (1849–1935)
J. Davey Dean (1876–1937)
Lorraine Screven Frierson (1861–1933)
Hugh Coomber Fulton (1861–1942)
Henry Haversham Godwin-Austen (1834–1923)
Gerard Pierre Laurent Kalshoven Gude (1858–1924)
Gyula Hazay (1842–1887)
Junius Henderson (1865–1937)
Pierre Marie Heude (1836–1902)
Tom Iredale (1880–1972)
Kenneth Hurlstone Jones (1873–1938)
Tokubei Kuroda (1886–1987)
Richard Thomas Lowe (1802–1874)
Edward Henry Madge (1901–1970)
James Cosmo Melvill II (1845–1929)
Tomasso Maria Allery, Marchese di Monterosato (1841–1927)
Laurent-Joseph Morlet (1823–1892)
Geoffrey Nevill (1843–1885)
Hugh Lewis Nevill (1848–1897)
Pierre-Henri Nyst (1813–1880)
Thomas (Tom) Pain (1915–2003)
Paul Maurice Pallary (1869–1942)
Alfred James Peile (1868–1948)
Henry Augustus Pilsbry (1862–1957)
John Henry Ponsoby-Fane (1848–1916)
Arthur William Baden Powell (1901–1987)
Hugh Berthon Preston (1871–1944/5)
Otto W. Rosen (1853–1925)
Georg Ossian Sars (1837–1927)
Michael Sars (1805–1869)

Franz Alfred Schilder (1896–1970)
Hans Andreas Schlesch (1891–1962)
Edgar Albert Smith (1847–1916)
George Brettingham Sowerby III (1843–1921)
Robert Standen (1854–1925)
Ernest Ruthven Sykes (1867–1954)
John Read le Brockton Tomlin (1864–1954)
Carlos de la Torre y de la Huerta (1858–1950)
Henry Baker Tristram (1822–1906)
William Harry Turton (1856–1938)
Bryant Walker (1856–1936)
Robert Boog Watson (1823–1910)
D'Alté Aldridge Welch (1907–1970)
Ronald Winckworth (1884–1950)
Thomas Vernon Wollaston (1822–1878)

Additional type material might be present in the collections of Peile and Wintle forming part of the Arthur Blok collection. Material in these sub-collections had not been catalogued by Blok.

Shell-related papers written by Arthur Blok

Although Blok told many interesting shell-related stories and anecdotes during his visits to Jerusalem, he was far from a prolific writer on shells. Only ten short articles written by Blok could be traced.

Blok, A. 1943. Shells and ornament. Proceedings of the Malacological Society of London, 25 (4): 136–137.

Blok, A. and Pain, T. 1948. Shell collection of the late Revd. E.G. Alderson, with special reference to the genus *Pila* Röding. Journal of Conchology, 22 (12): 299–302.

Blok, A. 1949. Obituary. R.H. Moses. 1871–1949. Journal of Conchology, 23 (3): 89.

Blok, A. 1950. An attached pearl in a *Tellina*. Journal of Conchology, 23 (4): 98.

Blok, A. 1957. Obituary Notice. Guy L. Wilkins, 1905–1957. Proceedings of the Malacological Society of London, 32 (6): 213–214.

Blok, A. 1964. Still more autobiography. The Conchologists' Newsletter, 11: 63–64.

Blok, A. 1969. Book Review [Dance: Report on the Linnaean Shell Collection.] Journal of Conchology, 26 (4): 281.

Blok, A. and Crowley, T.E. 1968. The care of a collection. The Conchological Society of Great Britain and Ireland (Founded 1876) Papers for Students, 10: 1–7.

Blok, A. 1969. How to cook snails—and other mollusks. The Conchologists' Newsletter, 28: 88–89.

Blok, A. 1971. Book Review [Dance: Rare Shells]. Journal of Conchology, 26 (6): 423.

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- Anonymous** 1973. Souvenir brochure of the annual Technion dinner 1973 honouring Arthur Blok, O.B.E. B.Sc., in his 91st year and nearly 50 years of dedication and service to the Technion, 7 pp.
- Emanuel, R.** 1974. Obituary Arthur Blok. B'nai B'rith Journal, Winter 1974: 10.
- Haas, G., Mienis, H.K., Rosenthal, M. and Tchernov, E.** 1979. Selected fossils from the Palaeontology Section. Molluscs: three hundred years of illustration. Occasional Publication, 4: 1–23 (English) & 1–12 (Hebrew).
- Mienis, H.K.,** 1973. Notes on recent and fossil Neritidae. 3. *Neritina juttingae*, new name for *Nerita aculeata* Gmelin, 1791, not Müller, 1774 (Mollusca, Gastropoda). Basteria, 37 (1–2): 39–40 and 37 (3–4): 93 (Erratum).
- Mienis, H.K.** 1975. Arthur Blok. In: Anonymous: An exhibition of the Arthur Blok Collection and Library on the occasion of the opening of the Zoological Museum. 5 February 1975: 6 pages, English text and 5 pages, Hebrew text. The Hebrew University, Jerusalem.
- Mienis, H.K.** 1976. Op slakkenjacht per olifant. Correspondentieblad van de Nederlandse Malacologische Vereniging, 171: 561.
- Mienis, H.K.** 1992. A Golden Cowry for a mere trifle. Levantina, 72: 3.
- Pain, T.** 1976. Obituary Arthur Blok, 1882–1974. Journal of Conchology, 29: 67–68.
- Venmans, L.A.W.C.** 1957. A new *Truncatellina* from Palestine. Basteria, 21 (1–2): 12–13.

Summary

In summary, the collections of **Coen, Neuville, Massé, and the Blok collection and Blok's library** were invaluable contributions to the Mollusc Collection of the Hebrew University of Jerusalem and brought the collection to its present high level. The shell collection is now by far the largest shell collection, and the library the most extensive malacological library, in the Middle East.



Henk K. Mienis sampling the lower course of the Zaki River, Golan Heights, for aquatic molluscs. September 11, 2011.
Photo: Oz Rittner

1c. THE REPORT OF THE SECTION¹

Staff

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General remarks

Work in the collection continued to the same extent as in previous years—i.e., only two days a week. The collection manager dealt with all the technical work involved in maintaining the collection—for example, shipment of material. In the past period, requests for loans of material were very time-consuming. At present, all the samples of the *Dolomena plicatus* complex from the Red Sea are being revised by **H. Dekker** and **A.M. Dekkers** from the Netherlands. A revision of the *Casmaria ponderosa* complex in the Red Sea by **J. Buyse** and **H. Dekker** from the Netherlands, partly based on material in the HUI-collection, has not yet been published.

Routine work

Hundreds of new samples were identified and registered (see under new acquisitions). In addition, the nomenclature of numerous samples in the former **G.S. Coen** and **A. Blok** collections was revised.

New mollusc taxa

From material found in the Hebrew University collection, the following taxa have been reported as new to science (by H.K. Mienis).

Yaronia Mienis, 2011: a new genus for a Red Sea species in the family Turbinidae.

Mercuria tchernovi Mienis, 2011: a new name for *Pseudamnicola solitaria* Tchernov, 1971, a preoccupied name.

Xerocrassa shoshanae Mienis, 2010: a new species from the central Negev.

Xerocrassa simulata lothari Mienis, 2011: a new subspecies limited in its distribution to kurkar ridges in the southern Shefela.

Samarangia lewinoehni Mienis, 2011: a new venerid species from the Red Sea.



Yaronia gestroi (Caramagna, 1888)

Computerizing the mollusc collection

Mrs. N. Sivan updated the digitalization of a major part of the collection of terrestrial snails from Israel.

¹ The report on the mollusc collection was written by **H.K. Mienis**, supplemented with sections in pp. 57–62 by **Prof. J. Heller**, under his name, describing his collection-based research.

Type material

During the past two years, additional samples consisting of type material were located in the former collections of **Giorgio S. Coen** and **Arthur Blok**. In addition, we could add the following recently described new taxa: *Samarangia lewinsohni* Mienis, 2011, *Xerocrassa shoshanae* Mienis, 2010 and *Xerocrassa simulata lothari* Mienis, 2011 to the collection of type material.

New acquisitions

New samples were received for permanent storage in the collection. This new material was mainly received from:

Ch. Dimentman – Freshwater molluscs from the Hula region.

D. Golani – Marine molluscs from the Mediterranean Sea off Israel and Red Sea off Elat.

J. Heller – Land snails from Israel and fossil Viviparidae and Melanopsidae.

O. Kolodny – Land and freshwater snails from Israel.

H.K. Mienis – Land and freshwater molluscs from Israel and the Netherlands.

A. Shmida – Land snails from Jordan.

The malacological library

For the National Natural History Collections in general and the Mollusc Collection in particular, we received numerous journals published by similar institutes abroad. These journals are received in exchange for *Haasiana* and, to a lesser degree, for *Triton*, a journal published by the Israel Malacological Society. In addition, some 300 articles dealing with molluscs were added to the reprint collection of the Mollusc Collection.

- Upon his retirement, **Prof. J. Heller** donated all his shell-related reprints to the mollusc collection.
- In the summer of 2011, the library of the Department of Geology moved to the Harman Library of Life Sciences. Some several hundred books dealing with fossil molluscs were obtained for the library of the mollusc collection.

Research carried out in 2010 and 2011 by Prof. J. Heller

- **Land snail taxonomy, biogeography and conservation**

Israel is exceptionally rich in terrestrial gastropods and our mollusc collection has been the source of many studies concerning taxonomic revisions. This effort culminated in a book, “**Land Snails of the Land of Israel**”, the first ever on the land snails of Israel, in which all terrestrial gastropod species of Israel are described and illustrated, including detailed distribution maps. All the data in this book are from the National Mollusc Collection of the Hebrew University. Further, the one hundred (approximately) hand-painted illustrations of species in the book are, all of them, of specimens in the National Mollusc Collection of the Hebrew University.

Some distribution patterns were found to bear indirect evidence of an ancient fauna that once reached Israel from the north and that today remains in a few tiny, isolated pockets in the Negev and Sinai.

The database of this taxonomic-distributional study served to develop a new biogeographic methodology for modelling faunal responses to climatic gradients (with **R. Kadmon**). Using land snails as a case study, we found that the integration of a modern computerized technology with multivariate techniques is suitable for the identification and interpretation of biogeographic patterns at the level of an entire fauna because it enables the simultaneous analysis of the distributions of several species. This opens new possibilities for biogeographic analysis. In taking this matter a step further, we explored whether in land snails, models of similarity in species composition could be used as effective surrogates for real similarity data. Variation-partitioning analysis revealed that a considerable amount of the variation in compositional similarity could be separated into “pure” geographical versus “pure” environmental components.

The taxonomic-distributional database of the mollusc collection also served for the development of a new conservation methodology, unique in that it is group-oriented. Again, using land snails as a case study, **Prof. U. Safriel** and I developed a priority scale for conservation based on three groups of criteria:

1. Range-related vulnerability. Species with narrow global distribution get higher conservation priority than those with broad distributions; within a country, higher priority goes to species with very narrow ranges.
2. The genus. High conservation priority goes to species of a genus with few species; within a country, priority goes to a species of a local genus.
3. Pragmatic considerations. (Unusual features should increase conservation priority). For each species, priority within each of these criteria is expressed in numerical values and the higher the total score, the higher its conservation priority. This priority scale is simple, straightforward, makes full use of museum material, can be applied within a short time, updated by the addition of new records and adjusted to fit current developments in taxonomy. Since most criteria are objective scientific records, they are exposed, as such, to standard scientific criticism.

- **Freshwater snails: taxonomy and faunal evolution**

Freshwater gastropods differ from terrestrial gastropods in that, as they are abundant in fossil assemblages, they bear direct evidence of the faunal history of a region. Furthermore, many freshwater gastropods can be classified to species level on the basis of shell alone; in reconstructing palaeo-biogeography and in combining it with evidence from Modern fresh water biogeography, the gastropods therefore offer more detailed information than, say, fishes, which in fossil material can usually be classified only down to family or genus level.

Biogeography studies can be no better than the taxonomy on which they are based. Consequently, as a first step, the species-level taxonomy of the Modern and fossil species of Israel was investigated in detail in a detailed quantitative study of shells in the national mollusc collection, in fresh material collected and added to the collection, and also of the radula, sperm and isozymes of living freshwater groups of the Levant. These resulted in several taxonomic revisions. Only when this was

completed did the next step come: of reconstructing the faunal history of the Levant.

The thesis is presented (Heller 2010) that aquatic faunal origins of the Land of Israel include northern elements coming from a vast province that began to evolve in southern Eurasia during the early Miocene some twenty million years ago, when faunal connections existed between the Levant and Spain (yet circumventing mainland Italy). Palaeo-tropical elements possibly reached Anatolia from the Orient, from where they eventually spread southward into the Levant; alternatively, they may have reached the Levant from Africa. Accepting an ancient historic biogeography dating back to the Miocene would explain faunal similarities between Anatolia and Iberia. It would also explain the absence of this fauna in northeastern Africa, and would explain the faunal gap in southern Europe. (Furthermore, in the terrestrial environment, it would leave time for the deep penetrations of land snails into southern regions of Arabia).

Ever since its formation, this aquatic fauna was subject to constantly fluctuating environmental conditions which applied rapidly shifting selective pressures. At first, the faunas of the Euphrates, Orontes and Jordan formed one common faunal pool, but already by 4 million years ago the fauna of the Jordan had diverged from that of the Orontes. By the early Pleistocene (1.4 million years ago), the fauna of the Levant consisted of both ancient Pliocene survivors and new Pleistocene species. The mid-Pleistocene (780,000 years ago) witnessed an exceptionally diversified fauna with many new, northern elements and considerable endemism. Eventually not a new wave, but elements from within the ancient Pleistocene fauna, took over, becoming the dominant Modern fauna of the Jordan Valley. Many mid-Pleistocene taxa did not survive to recent times, while others are scattered as relicts throughout the Levant. Today's distribution of species and subspecies in the Land of Israel may reflect a very ancient palaeo-hydrographic landscape (Heller 2010).

We should note that among Modern species of freshwater gastropods, hybrids were found. Also, fossil hybrids were found at 780,000-year-old and 1.4 million-years-old sites of the Rift Valley. This is the earliest direct evidence of hybridization among molluscs (among all animal groups?) in nature. It is still going on today in the same region and aquatic system, among the same species. Classic evolutionary theory argues that hybrids are unfit and therefore doomed to become extinct once reproductive isolation is completed. Hence (it is argued that) hybridization, when found, represents either young species, between which the process of hybridization has not been completed, or old species, that lived in distant areas for most of their evolutionary history and rarely experienced any selection against interbreeding. The fossil hybrids of the Rift Valley pose a gap between this classic evolutionary theory on the one hand and the reality of nature on the other. If this observation of hybridization going on for 1.4 million years turns out to be a general picture, then the phenomenon of hybridization is left without a central evolutionary theory.

- **For the community: Marine Snails of the Land of Israel, a Natural History**
Some seven hundred species of molluscs are recorded from the Mediterranean shores of Israel, and another seven hundred from the Gulf of Aqaba. The recently published book on the natural history of the mollusc groups occurring along the shores of Israel, *Marine Snails of the Land of Israel, A Natural History* (2011, in

Hebrew [see Section IV, Publications]), presents ways by which each group, along its own unique evolutionary pathways, copes with the problems of defending itself, moving about, feeding and reproducing. It is written for the nature-loving community in Israel in the hope of furthering affection for (and conservation of) our marine fauna. All the hand-painted illustrations in the book, approximately 250—are of specimens in the National Mollusc Collection of the Hebrew University.

In this book, molluscs are compared to such other large groups as corals, crabs and worms. Then the natural history is presented of a rich variety of snails, bivalves, cephalopods and other groups. Only few groups of marine molluscs have invaded the fresh water, and pre-adaptations required for this invasion are also presented, alongside the common fluviatile molluscs of Israel. Snail-Man links are the subject of chapters describing damaging effects of pollution on the sex of sea snails; sea snails as the source of the sacred biblical purple *tekhelet* and *shekhelet*, as objects of magic and as money in distant cultures; and as a source of precious pearls.

Throughout the book, all names are those recently approved by the Academy of the Hebrew Language.

- **For the community: data concerning conservation versus urban development of endemic species.**

There are plans to develop and expand the settlements of Mi'ilya-Tarshicha northwards, towards Goren. This area is home to the endemic land snail, *Pene galilaea*, the global distribution of which is restricted to just a few square kilometres, in precisely this area. To prevent development that would cause extinction of *Pene galilaea*, we have, upon request, supplied the authorities with all precise coordinates available in the National Mollusc Collection concerning the distribution of this species.

- **Molecular mechanisms: stress proteins in land snails**

The ability of land snails to colonize and survive terrestrial habitat conditions depends on a range of behavioural and physiological adaptations for coping with problems of maintaining water, ionic and thermal balance. These adaptations also include annual cycles of activity and aestivation. In early studies, **Prof. Z. Arad** (Technion, Haifa) and I found that *S. zonata*, a desert-dwelling species of the genus *Sphincterochila*, is more resistant than Mediterranean species of this genus to desiccation and heat. It is well established that all living cells respond to stress by induction of stress-related proteins (SRPs) or heat shock proteins (HSPs). Accordingly, we used this species that is naturally selected for heat and aridity to analyze its tissue expression of HSPs and to compare these gene products with those of the Mediterranean-type, congeneric *S. cariosa*.

In contrast to many other studies, we found that the desert-adapted species had lower standing stocks of stress proteins and a delayed response to desiccation stress, suggesting that evolution in harsh environments would result in selection for reduced HSP expression. Although stress and HSP expression are potentially major factors in determining species distribution and abundance, systematic studies of HSP expression and underlying stress across a species' range are sparse. The prospect of global climate change further increases the importance of such studies.

We also tested whether the reproductive cycle of land snails affects the endogenous levels of heat shock proteins, and their involvement in the reproductive process *per se*. Our study suggests that heat shock proteins play important roles in the reproductive process and the survival strategy of land snails during the early life stages. We propose that parental provision of heat shock proteins may be part of a “be prepared” strategy of various land snail species and that the pattern of HSP expression in the eggs may reflect the past history of each species.

Ongoing activities of Prof. J. Heller

- **Stress proteins in land snails**

Our present study plans to test heat-shock proteins on an intra-specific basis by comparing the stress response in populations of the Mediterranean, sand-dwelling land snail, *Theba pisana*, in a climatic gradient along the Israeli coast (700–200 mm rain annually). Tissues from field samples during the annual activity/aestivation cycle and from experimentally heat-exposed and desiccated snails will be analyzed for the presence and quantity of various HSPs. We hypothesize that: stress-related proteins will be expressed in correlation with the hydration state of the snails in the field; entrance and exit from metabolic depression (aestivation) necessitate (up and down-regulation) of HSPs; differences in response patterns to desiccation, rehydration and heat among populations will be revealed; the expression patterns of HSPs will be correlated with the climatic gradient along the Israeli coast.

By understanding the limits of phenotypic plasticity, the cellular mechanisms’ functioning and the cellular indices for natural annual cycles of activity and aestivation in land snails, we may gain insight into adaptations required for the predicted global climate changes.

Research grant funding the above research

2011–2012 grant from the Israel Science Foundation (ISF), The expression of stress proteins in land snails along a climate gradient: intra-specific variability, with **Prof. Ze’ev Arad**, Technion.

- **An invasive species around Lake Kinneret**

This study, in collaboration with **Dr. Tamar Zohary** and **Gideon Gal** of the Kinneret Laboratory, originally intended to record the abundance and density of native snails around Lake Kinneret. It turned out that, actually, it recorded the dispersal around the lake of an alien snail, *Thiara scabra* Müller (Thiaridae), first spotted in the lake in the mid-2000s and identified by our mollusc curator, **Henk Mienis**. Dispersal around the lake took just one year (2010), by the end of which nineteen out of twenty snails in Lake Kinneret were of this invasive species.

Factors contributing to the rapid spread of *Thiara scabra* are

- That when the invasion had occurred, the native snail fauna of Lake Kinneret was very impoverished.
- The tendency of young *T. scabra* individuals to float by hanging upside down from the water film, enabling them to drift passively to new shores.

- The flexibility of *T. scabra* as to various types of substratum and its ability to exist on boulders, rocks, and inside soft sediments.
- Its ability to reproduce asexually, so one individual can colonise and establish a new population at a new dispersal site.
- Its viviparous mode of reproduction.

Whether a faunal balance will be gained between the native fauna and the alien snail, and of what nature it will be, remains to be seen. This study is now in an advanced stage.

- **For the international community: Sea Snails, a Natural History**

This book, on the natural history of the many sea snail groups, is being written for the nature-loving community worldwide, in hope of furthering affection (and conservation) of marine animals throughout the world. It is an expansion of one chapter of the book in Hebrew. The majority of the approximately three hundred fifty hand-painted illustrations in the book will be of specimens in the National Mollusc Collection of the Hebrew University.

This book is now in form of an advanced draft that has already undergone editing. It is written with two main readerships in mind. First, it is for the marine biologist who seeks general knowledge about sea snails. As such, it is for the biology teacher, the field-school instructor, the interested pupil and the amateur and keen naturalist. It is for this readership that the book is broad in scope and contains the more abundant snail groups, those one is likely to stumble across while strolling along the shore, while diving into the sea, or diving into the literature; it is for these readers that I have also made every attempt, throughout the book, to avoid heavy terminology and needless technical descriptions.

The book is also for advanced students taking their first steps into the study of sea snails and who, while delving into one rather limited topic, feel they would like to complement their focal interest by gaining a broader perspective, a panoramic view of the group as a whole and of major evolutionary trends within it. It is for this reader that the book refers, besides to abundant snail groups, to some rarely encountered groups such as those of the deep sea, and those found only inside the bodies of other organisms. It is for this reader that the book contains a few strokes of functional morphology, mainly from an evolutionary perspective.

The first chapters of the book present general background information about snails. The following chapters present primitive, predominantly grazing, sea snails; then advanced snails, herbivores, filter-feeders and predators. Two chapters are about two groups of sea snails that have abandoned the traditional lifestyle, each in its own way: the opisthobranchs (sea slugs and relatives), which have abandoned the mechanical defence strategy of a thick shell and shifted to chemical defence mechanisms; and the pulmonates, which have crawled out of the sea, adapted to breathing fresh air, and then conquered land. Additional chapters describe the damaging effects of pollution on the sex of sea snails; sea snails as sacred artefacts, objects of magic and money, and a source of the sacred royal dyes of purple and blue.

Current research of H.K. Mienis

Since his appointment as advisor of the mollusc collection at the Steinhardt National Collections of Natural History at Tel Aviv University, most of the research by **H.K. Mienis** has been carried out in close cooperation with that institute.

- Taxonomy, nomenclature and distribution of the recent and fossil freshwater and terrestrial molluscs of Israel (also, **J. Heller**).
- Alien land- and freshwater molluscs of Israel and the Netherlands. Spread of the invasive bivalve, *Sinanodonta woodiana*, in Europe.
- Natural enemies of land- and freshwater molluscs in Israel and the Netherlands.
- Distribution of land- and freshwater molluscs of North Holland and the Isle of Terschelling, the Netherlands, in cooperation with the “Atlasproject Nederlandse Mollusken/EIS-Nederland”.
- Taxonomy, nomenclature and distribution of Mediterranean and Red Sea molluscs.
- Lessepsian migration and settlement of other Indo-Pacific molluscs in the Eastern Mediterranean.
- Molluscs from archaeological excavations.
- Shells from the paleontological and archaeological sites of Gesher Benot Ya’aqov.

Monitoring the invasion of the Eastern Mediterranean by Lessepsian and other Indo-Pacific molluscs

Over the past two years, at least three additional migrants were discovered for the first time along the Mediterranean coast of Israel. Most of these discoveries were the result of recent fieldwork carried out by colleagues at the Tel Aviv University.

Gastropoda

Family Neritidae

***Smaragdia souverbiana* (Montrouzier, 1863)**

Rothman & Mienis (2011) reported the presence of a single specimen of *Smaragdia souverbiana* in the intestines of *Callionymis filamentosus*, a Lessepsian migrant fish species that had been caught in Haifa Bay in 1987. This tiny neritid species had been recorded previously from the Eastern Mediterranean from Turkey, Rhodes (Greece) and Cyprus, all based on material collected at least five years after the first specimen from Israel had been collected; the record was documented belatedly.

Family Aplysiidae

***Aplysia dactylomela* Rang, 1828**

The spotted Sea Hare, *Aplysia dactylomela* Rang, 1828, has been observed and photographed for the first time from Israeli waters near Akhziv in September 2010 (Pasternak & Galil, 2010). Since 2003, it was already known to occur in the Mediterranean Sea off Lampedusa Island, Italy (Trainito, 2003). Since then, it has been reported from numerous localities in Cyprus, Turkey, Greece—including some of the Aegean Islands; in Croatia, Italy and Malta (see Pasternal & Galil, 2010).

Family Chromodorididae

Chromodoris annulata Eliot, 1904

A specimen of this beautiful chromodorid opisthobranch from the Red Sea had been observed for the first time in the Mediterranean Sea at Salamina Island, Gulf of Saronikos, Greece, in August 2004. In the following years it was also recorded from several places along the south coast of Turkey, while it was also found on Cyprus in 2009.



Chromodoris annulata

During fieldwork carried out in 2009, Y. Lavi photographed a specimen near Caesarea, while in 2011, specimens were collected or observed in chronological order off Sedot Yam, Mikhmoret, Ma'agan Mikha'el, Akhziv, Yafo, HaBonim, south of Haifa and near Bat Yam. At the moment, this species may be considered as rather common all along the Mediterranean coast of Israel at depths of 1–5 meters (Pasternak et al., 2011).

Bivalvia

Family Tellinidae

Valves belonging to a species of *Pseudometis* reported from off Yafo (Mienis, 2010) continued to turn up in the nets of fishermen working in the area between Bat Yam and Herzliya in 2010 and 2011. This species is identical to specimens from the Red Sea, and there is no doubt that we are dealing here with a Lessepsian migrant. However, the puzzle concerning its correct name has not yet been solved. Another puzzle: why is it absent from the by-catches of fishermen working south or north of the area between Bat Yam and Herzliya?

Additional observations

At least two other Lessepsian migrants have recently been collected along the Mediterranean coast of Israel: a species belonging to the Mangeliidae and another one belonging to the Pectinidae. Since these new records have not been published yet, they will be dealt with in the next issue of Haasiana.

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Public outreach and activities – participation in congresses and meetings

Most of the research was carried out as teamwork. The presenter at the meeting is indicated.

- 11th International Congress of Archaeozoology, Paris, August 23–28, 2010. **A. Kurzawska, D.E. Bar-Yosef Mayer & H.K. Mienis**: Scaphopod shells in the Natufian culture. (Presenter: **A. Kurzawska**)
- Seminar in memory of Dr. Shosh Ashkenazi, Institute of Earth Sciences, Hebrew University of Jerusalem, April 7, 2011. **H.K. Mienis**: Shosh.
- XVIII. INQUA Congress in Bern, July 21–27, 2011. **E. Galili, M. Sevketoglu, A. Salamon, D. Zviely, H.K. Mienis, B. Rosen, and S. Moshkovitz**: Late Pleistocene beach deposits, tectonics and sea-level changes on Cyprus, and their possible association with Neolithic colonization and settlements.
- INQUA 501 Seventh Plenary Meeting and Field Trip, Odessa, Ukraine, August 21–28, 2011. **E. Galili, M. Sevketoglu, A. Salamon, D. Zviely, H.K. Mienis, B. Rosen, and S. Moshkovitz** Coastal morphology, Late Quaternary beach deposits, tectonics and sea-level changes in Cyprus and their possible implications on early colonists. (Presenter: **E. Galili**).

Research visitors to the collection since 2010

- **Dr. D.E. Bar-Yosef Mayer**, Tel Aviv University. Identification of archaeomalacological material from excavations in Israel.
- **Dr. F. Bocquentin**, Centre de Recherche Français à Jérusalem. Molluscs from the new excavation of Beisamoun.
- **Dr. Edwin van den Brink**, Israel Antiquities Authority. Identification of molluscs from various Chalcolithic and Early Bronze sites.
- **Dr. Ch. Dimentman**, Hebrew University. Identification of molluscs from the Hula Valley and Upper Galilee.
- **Z. Dvira (Zweig)**, Jerusalem. Mollusc remains from archaeological dumps of the excavations of the City of David, the Franciscan Garden, the Kidron Valley and the Temple Mount.
- **Dr. Y. Edelman-Furstenberg**, Geological Survey of Israel. Miocene molluscs.
- **Dr. H. Geva**, Israel Exploration Society. Molluscs from the excavation conducted by Nahman Avigad in the Jewish Quarter of the Old City of Jerusalem.
- **M. Goldstein**, Hebrew University. Molluscs from Gesher Benot Ya'aqov.

- **Dr. O. Gutfeld**, Israel Antiquities Authority. Molluscs from the excavation of Horbat Bet Loya.
- **Dr. E.L. Heiman**, Israel Malacological Society. Study of recent Cypraeidae.
- **I. Ktalav**, Freelance archaeomalacologist: Identifications of shells from archaeological sites.
- **Dr. R. Ortal**, Israel Nature and National Parks Protection Authority. Identification of molluscs collected or confiscated by rangers of the INNPPA.
- **D. Shaham**, Hebrew University. Identification of shell material from excavations in Nahal Hilazon and Nahariya.
- **D. Shaked**, Hebrew University and Israel Geological Service. Miocene molluscs.
- **Prof. A. Shmida**, Hebrew University. Identification of land snails from **Jordan**.

1d. A list of additional type specimens recently deposited or located in the National Mollusc Collection of the Hebrew University of Jerusalem¹

In the period 2010–2011, type material belonging to 20 taxa has been located or lodged permanently in the National Mollusc Collection. For previous lists of types in the Mollusc Collection, see *Haasiana* nos. 2, 3, 4 and 5 (2004, 2006, 2008 and 2010, respectively).

GASTROPODA

Turritellidae

***Turritella turbona* Monterosato, 1877**

Syntype: HUI 52922 (=Coen 7095). Italy, off Civitavecchia.

Remark: This is the specimen originally figured by Monterosato (1877: 420).

Physidae

***Physa acuta* var. *brevispira* Paulucci, 1882**

Syntype: HUI 52926 (=Coen 1625a). Italy, Sardinia, Cagliari.

Planorbidae

***Physa meneghiniana* Paulucci, 1882**

Syntypes: HUI 52927/3 (=Coen 6107). Italy, Sardinia, Rio Sixerri near Siliqua.

***Physa saepusana* Paulucci, 1882**

Syntypes: HUI 52928/5 (=Coen 1611). Italy, Sardinia, near Flumendosa (Sarrabus).

Cerionidae

***Cerion alberti* Clench & Aguayo, 1949**

Paratypes: HUI 53447/3 (=Blok 12170). Cuba, the “El Fuerta” cape, entrance of Banos Bay, Ramon Antilla Peninsula.

***Cerion huntingtoni* Clench, 1938**

Paratypes: HUI 53448/7 (=Blok 12171). Bahamas, SE-tip of Cat Island, Columbus Point.

¹This report on the Mollusc collection was written by **H.K. Mienis**.

***Cerion (Strophioops) malonei* Clench, 1937**

Paratypes: HUU 53449/6 (=Blok 12164). Bahamas, Long Island, 3½ miles SE of Simms.

***Cerion marielinum dominicanum* Clench & Aguayo, 1951**

Paratypes: HUU 53453/8. Cuba, East side Rio Dominica, 10 km West of Mariel.

***Cerion (Strophioops) paucicostatum* Clench, 1934**

Paratypes: HUU 53450/5 (=Blok 12162). Bahamas, South Eleuthera, Miller's Hill.

***Cerion paucicostatum indianorum* Clench, 1934**

Paratypes: HUU 53451/8 (=Blok 12161). Bahamas, South Eleuthera, Wemyss Bight.

***Cerion paucicostatum indianorum* Clench, 1934**

Paratypes: HUU 53451/8 (=Blok 12161). Bahamas, South Eleuthera, Wemyss Bight.

***Cerion (Strophioops) pepperi* Bartsch, 1913**

Paratypes: HUU 53459/3 (=Blok 6710). Bahamas, Andros Island, 2 miles of Mastic Point.

***Cerion piraticus* Clench, 1937**

Paratypes: HUU 53452/3 (=Blok 12172). Bahamas, East End Mariguana, Valsey Wells.

Cerion ramsdeni (de la Torre in) Welch, 1934

Paratypes: HUU 53456/3 (=Blok 3927). Cuba, Playa Rincon, Ensenada de Mora, Oriente.

***Cerion ramsdeni portillonis* Welch, 1934**

Paratypes: HUU 53455/3 (=Blok 3928). Cuba, along the shore road about 10 km east of Ensenada de Mora, near Portillo, Oriente Province.

***Cerion russelli* Clench, 1938**

Paratypes: HUU 53458/4 (=Blok 7089). Bahamas, Cat Island, Turtle Cove.

***Cerion torrei moralesi* Clench & Aguayo, 1951**

Paratypes: HUU 53454/6 & 53457/2 (=Blok 11407). Cuba, Punta de Mulas, Banes Oriente.

Ferussaciidae

***Calaxis hierosolymarum* var. *languida* Neuville, 1951**

Holotype: HUU 53485. Israel, Oumm Qatafa.

Paratypes: HUU 53486/7. Israel, Ain Fara.

Hygromiidae

***Xerocrassa shoshanae* Mienis, 2010**

Paratypes: HUU 52573/4. Israel, Negev, Har Orahot.

***Xerocrassa simulata lothari* Mienis, 2011**

Paratypes: HUU 11863/40 & 53118/37. Israel, kurkar hill between Azriqam and Be'er Toviyya.

BIVALVIA

Veneridae

***Samarangia lewinsohni* Mienis, 2011**

Paratypes: HUU 53127/1 & 53128/1.

Israel, Gulf of Aqaba, Elat, off

Coral Beach Reserve, 30 m.



Snails from the central Negev

Figs. 1a–d: *Xerocrassa shoshanae* Mienis, 1910.

Figs. 2a–d: *Sphincterochila prophetatum* (Bourguignat, 1852). Photo: Oz Rittner

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THE HERBARIUM¹

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Prof. A. Shmida

Dr. J. Ziffer-Berger (Postdoctoral student)

Introduction/General remarks

The Herbarium cooperates with about 30 other institutions throughout the world on identification of problematic groups (e.g., *Ambrosia*, *Cyperus*, Pteridiophyta), loans, exchanges and gift material. It serves as a teaching tool for university courses as well as other courses. The Herbarium serves as the reference and documentation center for botanical research in other academic institutions in Israel and for the Israel Gene Bank, Israel Ministry of Agriculture, and provides taxonomic guidance to these institutions.

Structure of the Herbarium collections

The collections at the Herbarium comprise ca. 700,000 specimens subdivided into the following sections:

- Plants of Israel, the Middle East and the Mediterranean region, comprising ca. 400,000 specimens of vascular plants
- Worldwide reference plant collection
- Cultivated plants of Israel
- Bryophytes
- Algae (mainly marine)
- Fungi (mainly plant pathogens)
- The vascular plants collection of A. Aaronsohn
- The Scandinavian vascular plants collection of S. Johansson
- The medicinal plants collection of D.V. Zaitschek
- Voucher specimens of the Israel Gene Bank
- The seed collection (mainly *Leguminosae*)
- The collection of wood sections of Prof. A. Fahn

¹ This report on the Herbarium was written by **H.V. Leschner**.

The Herbarium library

The Herbarium library comprises ca. 3,500 books and microfiches, and about 120 periodicals. The library is a branch of the Harman Library.

Acquisitions in 2010–2011

Some 5,000 new specimens, mainly of rare and protected plants from Israel acquired from various sources, and ca. 1,500 voucher specimens of the Israeli Gene Bank.

Activities

Computerization of the Herbarium

Computerized cataloguing and verification of the Herbarium collection has been carried out in stages since 1998. The first, current stage focuses on the plants of Israel and Mt. Hermon, comprising some 300,000 specimens. About 60,000 specimens of vascular plants were verified and catalogued during the first phase in the years between 1998 and 2003.

- **Vascular plants:** The cataloguing and verification of the determination of the specimens continues on a small scale. About 200 specimens have been catalogued with the revised system in 2009–2012, and some 40,000 verified specimens await cataloguing. The following scientists deal with the following taxa: **Dr. M. Avishai** (*Quercus*, *Fraxinus*; and *Iris*); **Dr. J. Ziffer-Berger** (*Raphanus*, *Alyssum*, *Nigella*, *Picris*); **Dr. O. Fragman-Sapir** (The Botanical Garden at Givat Ram – *Colchicum*, *Crocus*, *Allium*, rare plants); **H. Leschner** (rare plants, Gene Bank vouchers); **Dr. A. Sukhorukov** (Moscow University – Chenopodiaceae, mainly *Atriplex*).
- **Bryophytes:** **Dr. I. Herrnstadt-Haas** continues identifying undetermined specimens of Israel and the adjacent regions. Apart from the taxonomic and ecological data, the data comprise a full record of the geographic distribution of Israel's Bryophytes. About 100 Bryophyte specimens were identified, verified and catalogued since 2009. The computerization of the Bryophytes continues as specimens are verified.

The Israel Gene Bank, Ministry of Agriculture

The Israel Gene Bank is an ongoing project carried out by the Ministry of Agriculture in the Volcani Institute, Bet Dagan with the Herbarium. It aims to preserve the genetic varieties of wild progenitors and wild relatives of cultivated plants, as well as traditional food crops. With respect to this project, the Herbarium acts as a reference collection, a documentation centre and a guidance centre for the collectors.

The voucher specimens of the Gene Bank are verified, mounted and deposited in the Herbarium. Processing of about 1,500 voucher specimens was completed during 2009–2011, mostly by **Ms. M. Marmelstein** of the Volcani Institute. The project is funded by a grant from the Ministry of Agriculture.

Creating an updated name list for the wild plants of Israel

A new updated list of the names of Israel's wild plants (ca. 3,000 species) which was created last year, was made available to all the academic institutions of Israel, the Israeli Gene Bank, the Volcani Institute, and the Ministry of Agriculture. The list contains updated scientific name, synonyms, Hebrew name and common names. In the future, it will be revised and updated every year. This project was funded by the Israeli Gene Bank.

Revising and upgrading of type specimens

Upgrading involves locating the specimens, carrying out a taxonomic verification, updating names when necessary, updating reference literature, supplementing missing data, and adapting the data to the current, modern, computerized format of the Herbarium. When needed, the specimen is refreshed and remounted. This project continues on a small scale. About 50 type specimens were located and upgraded in 2009–2011. During this project, we located some type specimens which had been “lost” for decades (i.e., not recognized as types) and located some very important specimens from type localities.

New plant records for Israel

- **Dr. A. Sukhorukov** from the herbarium of the University of Moscow visited the herbarium and revised our **Chenopodiaceae**, specially the genus *Chenopodium*. He described a new species of *Chenopodium* from material in our collection, and verified the identification of all our specimens.
- **Dr. O. Fragman-Sapir** is a member of a group working on the genus *Allium*. The newly described species, *Allium basalticum* Fragman & R.M. Fritsch, sp. nova; *Allium meronense* Fragman & R.M. Fritsch, sp. nova; *Allium israeliticum* Fragman & R.M. Fritsch, sp. nov. The type specimens are deposited in the HUJ Herbarium; the article describing the species is in press, to be published in April 2012.



Allium israeliticum Fragman & R.M. Fritsch, sp. nov.

The *Allium israeliticum* was photographed near Lahav, in the southern lowlands (Shfela) by Prof. A. Danin. The habitat is open batha on Loess soil.

- **Prof. A. Danin** is working on the genera *Capparis*, *Portulaca* and *Phragmites*, mainly describing cryptic species of our region. New species of the first two genera have been published: *Capparis ramonensis* Danin; *Portulaca cypria* Danin; *Portulaca granulostellulata* (Poelln.) C. Ricceri & P.V. Arrigoni; *Portulaca nitida* (Danin & H.G. Baker) C. Ricceri & P.V. Arrigoni; *Portulaca trituberculata* Danin, Domina & Raimondo; *Portulaca papillatostellulata* (Danin & H.G. Baker) Danin; *Plantago sabulosa* Danin et Raus.



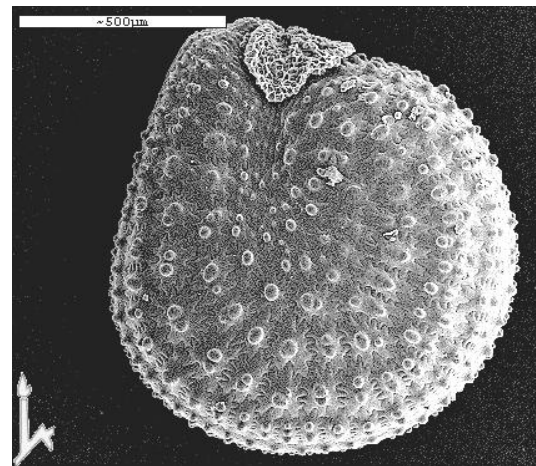
***Portulaca oleracea* L.
(common purslane).**

Distribution:
worldwide.

Habitat: irrigated
gardens and fields.

Photograph: A. Danin

Diagnosis of the *Portulaca* species is partly based on structure of the seed.



Scanning electron micrographs of *Portulaca* seeds. Note differences in fine structure of the seed coat. Left: Seed of *Portulaca oleracea* L. Right: Seed of *Portulaca cypria* Danin. Photos: A. Danin (see website: <http://flora.huji.ac.il/>).

Research projects

Systematic work

The systematic work in the Herbarium deals with the description of new taxa and the revision of existing ones, using herbarium specimens and the library. The work is all done by Emeriti and visiting scientists.

- **Dr. M. Avishai** – the Mediterranean species of the genus *Quercus*.
- **Prof. A. Danin** – flowering plants of Israel and Jordan, currently working on revision of the genera *Portulaca* and *Phragmites*. **Dr. O. Fragman-Sapir** – revising the Genus *Silene* in the Middle East; **Liliales** of Israel and adjacent countries; endangered species of Israel.
- **Dr. D. Heller** – Leguminosae; Flora Palaestina.
- **Dr. Y. Melamed** – Archaeobotany; Carpology; Utility plants. Dr. Melamed studies the wild relatives of the cultivated **Legumes** of the Levant.
- **Prof. U. Plitmann** – taxonomy of **flowering plants; utility plants**.
- **Dr. E. Ramon's** research deals with Marine Algae. She published the first article regarding the marine algae *Sargassum*. She is now further into her work on the revision of this genus in the Mediterranean Basin, with another article submitted, and two more in preparation.
- **Prof. A. Shmida** – **Rare plants** of Israel; flora of Jordan; pollination mechanisms.
- **Dr. Sukhurakov** of the Moscow herbarium reviewed our Chenopodiaceae, mainly the genera *Chenopodium*, *Atriplex* and *Salsola*.
- **Dr. J. Ziffer-Berger** from the H.U.J. Herbarium is currently working on revision of Cruciferae (Brassicaceae), particularly on the genera *Raphanus* (Brassicaceae), *Alyssum* (Brassicaceae) and *Crepis* (Asteraceae).

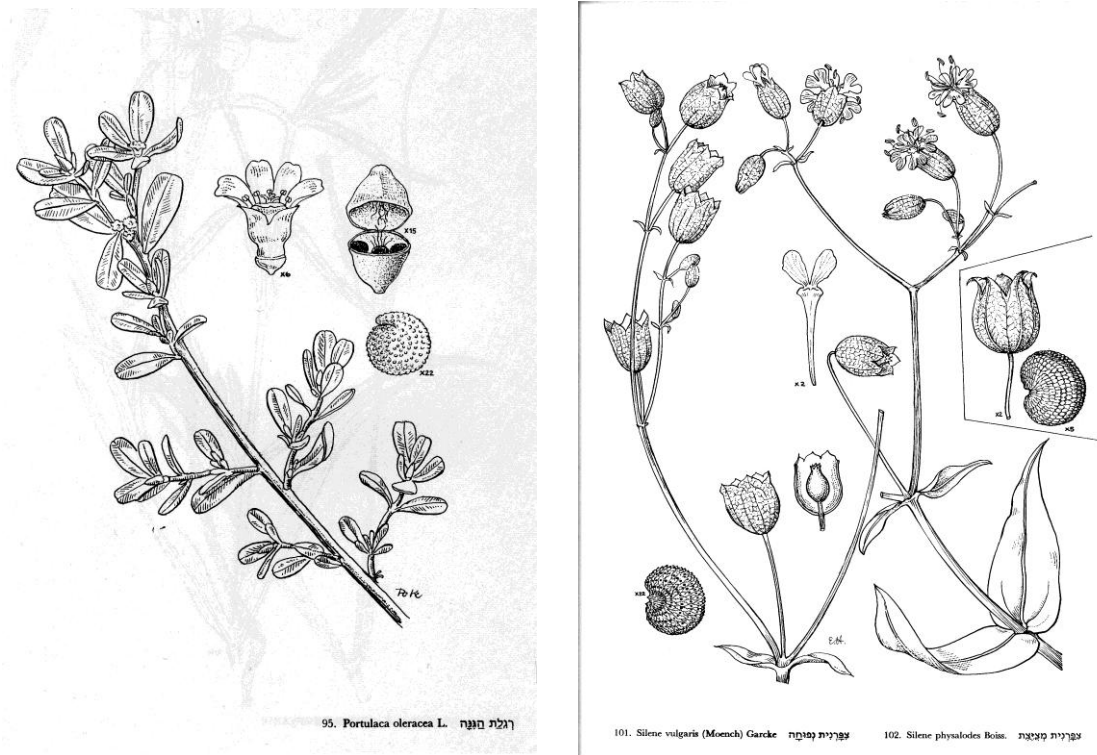
Eco-Forestry project

- **Dr. J. Ziffer-Berger** is conducting research on the regeneration of *Cupressus sempervirens* in the reforestation projects of the Jewish National Fund (Keren Kayemet LeYisrael) forests in Israel. This is a joint project with Dr. Y. Osem of the Volcani Institute.

Flora projects

- The new edition of **the Conspectus Florae Orientalis Series**, edited by **Dr. D. Heller**, is in press; published by the Israel Academy of Sciences Humanities. The new edition comprises a hardcover book and CD.

- Work on a revised online edition of the **Flora Palaestina** was begun in the beginning of 2009. The first volume of this monolithic work of the late **Profs M. Zohary** and **N. Feinbrun-Dothan**. Flora Palaestina, was published by the Israel Academy of Sciences and Humanities) in 1966 and the last (fourth) volume in 1986, nearly 25 years ago. Since then, many species have been discovered and described and the systematics of the plant world has undergone major changes, requiring a revision. The editorial board of the revision comprises **A. Danin, D. Heller, O. Fragman-Sapir, M. Kislev, H. Leschner, H.** and **U. Plitmann**. **Dr. J. Ziffer-Berger** is also participating. The first part, **PART 1. FERNS, GYMNOSPERMS, ANGIOSPERMS: SALICACEAE – PORTULACA CACEAE**, is accessible online as separate entries for each taxon at <http://www.tropicos.org/Project/Palaestina>.



Plates from the first edition of the Flora Palaestina (Zohary & Feinbrun-Dotan, 1966)

Left: Plate 95, *Portulaca oleracea* L. Right: 101. *Silene vulgaris* (Moench) Garcke.

102. *Silene physalodes* Boiss.

- **Prof. A. Shmida** is currently working with **Prof. R. Prasse** of Hannover University, Germany, on updating the flora of Jordan. Plants collected in Jordan are compared with the existing herbarium specimens and incorporated into the main collection of the Herbarium.

Cooperation with other projects and institutes

The Herbarium of the Hebrew University, the only scientific botanical collection in an academic institution in Israel, is used by scientists from many other institutions as a source of botanical knowledge and advice. To name a few:

- **GLOWA** – an international project focusing on the impact of Global Warming on the Environment along the Jordan River uses our premises to study the flora of Israel and Jordan, and we help their team identify plants.
- Fungi from the Herbarium are used for a joint project of the Institute of Evolution in Haifa University and the University of Kiev, Ukraine.
- Herbarium material is used as reference material for the preparation of the Black Data Book on the invasive plants in Israel by **Dr. J-M Dufour-Dror**, on behalf of the NPA ([Israel Nature and Parks Authority](#)).
- Researchers of The Rare Plants Survey conducted by the NPA ([Israel Nature and Parks Authority](#)) consult the herbarium specimens and staff.
- **Prof. A. Shmida, Dr. G. Polak and Dr. O. Fragman-Sapir** published (2011) the second volume of Israel Red Data Book of endangered plants, which is widely based on specimens deposited in the Herbarium. **Ms. Hagar Leschner** was the scientific editor.

Participation in international activities

- Members of the Herbarium staff and associate researchers are active in OPTIMA (the Organization of the Phyto-Taxonomic Investigation of the Mediterranean Area) meetings and field excursions on a regular basis.
- **Ms. H.V. Leschner**, the Collection Manager of the herbarium, participated in a three-week summer school course, “Flora and Vegetation of the High Mountains of the Mediterranean area”, organized by OPTIMA in Sicily. During this course, she lectured on Israel’s rare plants project and the Red Data Book, and the determination of the red number—the number of endangered species—for plants.

Visitors to the collection 2010–2011

Prof. S. Abbo, Faculty of Agriculture, The Hebrew University: Legumes, *Linum*.

Ms. Y. Avraham, Faculty of Agriculture, The Hebrew University: **Hepaticaceae**.

Dr. T. Berger, Dept of Chemistry, Bernard College, N.Y., N.Y., USA: coastal algae of Jaffa, seaweeds for the traditional mattress industry.

Dr. I. Blecher, Arad: Flowering Plants of the Dead Sea area, scientific drawings of plants.

Dr. M. Blecher, Israel’s Authority of Nature Protection and National Parks: Flowering Plants of the Dead Sea area.

Dr. V. V. Byalt, Komarov Botanical Institute, St. Petersburg, Russia: **Crassulaceae**.

Dr. Jean-Marc Dufour-Dror, Jerusalem: invasive plants of Israel.

Dr. E. Emanuelsson, Swedish Nat. Hist. Museum, Phanerogams Herbarium, Stockholm, Sweden: studies in the genera *Andrzeiowskia* and *Chilidenus*.

Dr. O. Fragman-Sapir, The Botanical Garden of Givat-Ram: the genus *Allium*, Geophytes of the Middle East, rare plants of Israel.

Dr. Nicolay Friesen, University of Osnabruck, Germany: the genus *Allium*.

Prof. E. Gabrielian, Institute of Botany, Armenian Academy of Sciences, Erevan, Armenia: Studies of the genera *Tamarix*, *Centaurea* and *Ornithogalum*.

Dr. G. Hartman, Dept. of Anthropology, University of Connecticut, USA: study of Israeli wild plants along precipitation gradient.

Dr. Amanda Henry, Max Planck Institute for Evolutionary Anthropology, Germany: Starches in phytolithes.

Dr. S. Katz, The Hebrew University: history of the University.

Prof. M. Kislev, Bar-Ilan University: Archaeobotany.

Mr. T. Naor, Kibbutz Yotvata: **Frankincense**.

Mr. O. Pery, Israel: the genera *Bellevalia* and *Colchicum*.

Dr. Y. Portal, Faculty of Agriculture, The Hebrew University: **Cruciferae**.

Prof. R. Prasse, University of Hannover, Germany: Flora of the Middle East.

Dr. Y. Sapir, Botanic Garden, Tel Aviv University: Ecology and Taxonomy of the genus *Iris*; Ecology and Taxonomy of the genus *Helianthemum*.

Mr. A. Shifman, Moshav Merhavia: **Orchidaceae** of the Middle East.

Dr. A. Sukhorukov, Moscow State University, Russia, visited the herbarium twice: **Chenopodiaceae**.

Mr. Joshua Sulman, University of Wisconsin, Madison, USA: the genus *Sparganium*.

Prof. K. Tielbörger, University of Tübingen, Germany: Flora of the Middle East.

Ms. Yif'at Yair, Tel Aviv University: the genus *Ambrosia* in Israel.

Dr. D. Yoel, Israel Agricultural Research Authorities, Neve-Ya'ar: adventive plants of Israel.



Hagar Leschner enjoying teaching the group about Mediterranean plants in the desert: *Narcissus tazetta*

Nahal Hatsos, near Sede Boqer, Feb. 27, 2012.
Photo: A. Kenossov

III-3. PALAEOLOGY, ARCHAEOZOOLOGY AND COMPARATIVE OSTEOLOGY COLLECTIONS OF MAMMALS AND BIRDS

Staff

Dr. R. Rabinovich, Curator and Scientific director, <rivka@vms.huji.ac.il>¹

Ms. G. Beiner, Conservator, MA (ACR) (1/2)

Ms. T. Bar-El, M.Sc., Academic Technician (part-time)

Student staff

Ms. R. Biton

Ms. T. Steiner

Associated Researchers

Dr. L.K. Horwitz

Dr. I. Zohar

Introduction/General remarks

Located in the Berman Building on the Edmond J. Safra Campus, the Section of Palaeontology, Archaeozoology, and Comparative Osteology Collections of Mammals and Birds has specimens of recent, historic, prehistoric and geological origin. The collections are constantly growing from recent surveys and excavations that add specimens that contribute to our understanding of the recent and past environments in the area. Recently we began cooperating with the amphibian and reptiles section to create an osteological collection of these groups.

The maintenance of the collections is an ongoing process. The Paleobiological collections are a constant source for research for both local and foreign researchers and students. As every year, numerous visitors used both the paleobiological and osteological collections for specific research tasks. We aim to continue to provide an appropriate environment to host research for all parties and to attract more Israeli students to the fields of taxonomy and palaeontology. In most cases, research in these fields involves the study of the paleo-collections verified or examined against the recent osteological collections.

The Paleontological Collection

Invertebrate Paleontological Collection and Vertebrate Paleontological Collection

Miocene fauna is being catalogued and all data available from Miocene localities in Israel are being recorded. New samples from a research project on the Santonian sediments are being added to the collection.

Recent Collections

We continued to label, mark, and record the specimens in the osteological collections. Numerous skeletons of the recent fauna (such as rodents and birds of prey) were verified and re-labelled. Each specimen is cleaned and every element is marked, wrapped in protective styrofoam, and packed in perforated plastic bags. Included with each specimen is data on its geographical collection point, sex, age, and any individual special character; this information is also computerized.

¹This collection report was written by **Dr. R. Rabinovich**.

This procedure is essential for collections that serve archaeozoologists and paleontologists, who require exact detailed anatomical features for definition.

As part of this process, **S. Puter**, **T. Bar-El** and **T. Steiner** cleaned, catalogued, organized, marked, and recorded specimens of the osteological collections of mammals and birds. **R. Biton** is continuing to compile an osteological collection of amphibians and reptiles together with the curator of the herpetology collection, **Dr. B. Shacham**. It will comprise all the extant species in Israel and will be the most detailed of its kind.

The Paleobiology Collections – research projects being carried out by the staff and students¹

- **Paleogeographic reconstruction of Tethys Sea margins during the Santonian age based on marine reptiles, limestone concretions and unconformities in rocks in the Menuha formation (Southern Negev).** Together with geologists **Dr. H. Ginat** and **Dr. Y. Avni**, **Dr. R. Rabinovich** is taking part in a project that combines the geological field observations and the paleontological study of marine reptiles. New beds with fossils have been discovered. An enormous amount of laboratory preparation is required in order to be able to study this paleontological material.
- **Animal resources and environment during the Natufian at Eynan, Hula Valley.** A group studying the fauna of the Eynan site is directed by **Dr. A. Bridault** (CNRS, France) together with **Prof. T. Simmons** (UK), **Dr. R. Rabinovich**, **Dr. I. Zohar**, and **R. Biton**. The subjects being studied include animal exploitation modes, hunting, and butchery.
- **Nahal Mahanayim Outlet (NMO) – The fauna from the Mousterian Site.** The excavations at the Nahal Mahanayim Outlet Mousterian site by **Dr. G. Sharon** are still taking place. The material, studied by **R. Rabinovich**, **I. Zohar**, and **R. Biton**, comprises numerous animal remains that reveal the conditions of the site ca. 70,000 years ago.
- **The elephant fauna from Revadim, late Lower Paleolithic site.** The ongoing project of cleaning and restoration of the elephant specimens from Revadim (by **G. Beiner**, see below) is an essential stage prior to any taphonomical study being carried out by **Dr. R. Rabinovich**. The Revadim faunal assemblage is unique; it is the only one in the southern Levant with numerous elephant post-cranial elements, permitting a comprehensive study on the characteristics of the species and its paleoecological background.
- **Microvertebrate paleoecology and taphonomy.** The study of Microvertebrates as environmental indicators requires determining their taxonomic identification first, followed by the taphonomic observations. Ms. M. Goldstein submitted her M.A. thesis on this aspect from the Gesher Benot Ya'aqov site.

¹ The conservator's report, by **G. Beiner**, pp. 81–83, illustrates the treatment used to preserve some of the specimens, enabling their study.

- **The effect of climate change on the environment and hominins of the Upper Jordan Valley between ca. 1 Ma years ago as a basis for prediction of future scenarios.** Study of the fauna and analysis of cores from the Upper Jordan Valley, funded by Center of Excellence, Israel Science Foundation; directed by **Prof. N. Goren-Inbar I**, with **Dr. R. Rabinovich** as head of the Zoology group. Participants: **Dr. I. Zohar, R. Biton. M. Goldstein.**

Using the paleobiological collections for teaching university courses

- The collections are a constant part of various courses that are using the space and the specimens for teaching courses. To mention but a few: Evolution – **Dr. A. Chipman**; Biogeography – **Dr. G. Kahila-Bar-Gal**; Introduction to Archaeozoology – **Dr. R. Rabinovich**; Introduction to Paleontology – **Dr. R. Rabinovich.**



Students in the laboratory class “Introduction to Archaeozoology”

Educational activities

- **Program on the nature and methodology of science, given to secondary school students from selected schools.** The program is directed by **Prof. J. Camhi**, who chose this laboratory for teaching high school students the nature of empirical science. The visits are part of a larger educational unit that includes materials and methods of teaching the students in their classrooms before and after their visit to the research laboratories. As part of their preparation prior to the visit, the students read relevant material, develop question sets, and so on. This is part of a research project to determine the extent to which this overall process (i.e., exposure to science in action) enhances the understanding of the students of the nature of science, including the inquiry process, and arouses their interest in pursuing science as compared with their interest before participating in the program.

Public outreach and activities

Organization of seminars and meetings

- One Day Symposium – Memorial to Dr. S. Ashkenazi, April 7, 2011. Organizers, **Dr. R. Rabinovich** and **Prof. A. Matthews**. Location: The Institute of Earth Sciences.
- ICAZ Fish Remains Working Group, 16th Meeting, October 23–30, 2011. Fish and Fishing, Archaeological, Anthropological, Taphonomical and Ecological Perspectives. Organizing committee: **I. Zohar, N. Goren-Inbar, R. Rabinovich, D. Bar-Yosef Mayer, A. Belfer-Cohen**.

Visitors and research scholars and their projects

- **Dr. Lutz Christian Maul**, Head of Section Quaternary Micromammals, Senckenberg Research Institute and Natural History Museum, studied and measured *Microtus* from numerous Pleistocene sites for biostratigraphy and palaeoecological research.
- **Dr. Natalie D. Munro** (Department of Anthropology, University of Connecticut, USA), spent four months (February, June and July, 2009, July 2010) working with the HUJI collections on Late faunal Pleistocene assemblages (Late Natufian site, Hilazon Tachtit, Hayonim Terrace, Nahal Ein Gev).
- **Adam Allentuck** (Ph.D. student), Department of Anthropology, University of Toronto. His project is focused on issues of taphonomy and architectural diversity at Horvat 'Illin Tahtit (HIT), a small village that dates to the Early Bronze I period (c. 3100 cal. BC).
- **Dr. Gideon Hartman**, Unit 2176, University of Connecticut, is working on the reconstruction of paleoenvironment and dietary adaptation of Neanderthals from Amud cave using the $\delta^{15}\text{N}$ and $\delta^{13}\text{C}$ values of bone collagen remains extracted from herbivore bones.
- **Prof. Haskel Greenfield** (Manitoba, Canada) and **Tena Greenfield** used the collections for the study of the Tel es-Safi EBA zooarchaeological assemblage. They focused mostly on large and medium mammals, but also on birds and fish.
- **Chad Hill**, Dept of Anthropology, University of Connecticut, Ph.D. student, working on Chalcolithic and Early Bronze sites.
- **Prof. Tal Simmons**, School of Forensic and Investigative Sciences, UCLAN, conducted research in the collections as part of a sabbatical funded by the Lady Davis Fellowship. During this time, she made extensive use of the avian comparative collections as well as several of the previously identified archaeological collections .
- **Dr. Irit Zohar** works on the fish osteological collection and analysis of fish remains from: Gesher Benot Ya'aqov (0.8 my); samples of fish remains recovered from 'Ubediya site (1.5 my); samples of fish from Epi-paleolithic to Neolithic sites; and also from various additional sites.

- **Prof. M. Caldwell**, Department of Biological Sciences, Edmonton, Alberta and **Prof. R.L. Nydam**, Midwestern University, Glendale, Arizona, examined the Ein Yabrud fauna.
- **Prof. Hussam Zaher**, Museu de Zoologia, da Universidade de Sao Paulo, examined the Ein Yabrud fauna.
- **Dr. Liora Kolska Horwitz** is engaged in ongoing research using the collections of Carnivora, Hyracoidea, Perissodactyla, Artiodactyla, Lagomorpha, Rodentia and Aves, primarily as a reference collection to facilitate identification and analysis of archaeozoological assemblages. during this time.

The 2011 Conservation Activity Report ¹

This year we were faced with the effects of the uncontrolled storage environment in our collections. Fluctuations in environmental conditions within our storage spaces required treatment of affected objects. Aside from formulating recommendations and plans for correcting the situation, actual treatment involved removal of salts and consolidation of specimens damaged by the salt efflorescence.



Specimens in our drawers during the year 2011: efflorescence of mineral salts, caused by changing humidity levels, resulted in dramatic “special effects”.



A specimen from the geological fossil collections before and after treatment.

¹ The report was written by **G. Beiner**.

Other projects included dealing with previous treatments. This involved removal of old fill materials, cleaning and new re-structuring of specimens.

Elephant tusk from the site of Be'eri, with old fill material that needed removing before the structure could be restored.



In process after removal of old fills

Planning the re-structuring of the specimen



After treatment



Yet another aspect of work focused on treating finds from excavations. In some cases, the excavation team removed entire blocks of earth with specimens buried within them. These required specific work processes in the lab. Other cases required complete restructuring after arriving in small fragments.



This donkey skull from Ashqelon arrived encased in a plaster block. The block was removed and then the earth matrix excavated while gradually cleaning and consolidating the bone until the entire skull could be seen.



This year, we continued working with finds from the Revadim excavation site. Finds from Revadim range from very large to quite small, and the required treatments were highly varied.



This elephant tusk arrived in a very fragmented state, buried in blocks of earth which were themselves breaking apart.



The matrix had to be very carefully removed and the tusk consolidated. Then a support system had to be devised for turning the tusk parts over and working on the underside.



Tusk after treatment



The **bone object** on the left was believed to have been used as a tool by **prehistoric hominids in Revadim**. Gradual consolidation and cleaning enabled researchers to evaluate this hypothesis.



Another find was indeed confirmed to have been used as a tool.

Photos from the site of the Nahal Mahanaim Outlet (NMO) excavation, 2011 season



A general view of the excavation



A lower jaw of a wild pig



A piece of wood removed from the excavation

III-4. AQUATIC INVERTEBRATES COLLECTION, WITH THE ARACHNID AND MEDICAL PARASITOLOGICAL COLLECTIONS¹

Staff

Dr. A.D. Chipman, Director and Curator, <chipman@cc.huji.ac.il>

Prof. F.D. Por, Director (Emeritus)

Dr. M.N. Ben-Eliahu, Curator and Collection Manager (Emerita)

Ms. T. Bar-El, M.Sc., Academic Technician (part-time)

Ms. I. Musseli, Academic technician in the arachnid collection (from Sde Boker)

Field technician: Mr. M. Wolfson

Database assistant: Mr. D. Schneider

Technical assistant: Ms. M. Moalem

Student staff

Ms. N. Arazy, Ms. M. Doody, Ms. G. Yardeni

Associated Researchers

Dr. Ch. Dimentman (Emeritus), Department of Evolution, Ecology and Behaviour

Dr. H. Bromley-Schnur, The Entomology Laboratory, Ministry of Health

Dr. M. Tsurnamal

Activities

Collection organization and cataloguing

- The computerization of the invertebrate collection, which is proceeding rapidly, is nearing completion. Only two or three major taxonomic groups remain to be catalogued in the main collection. Several groups that were catalogued within old database systems need to be reviewed. The arachnid collection is within weeks of being fully computerized. The parasitological collections remain uncatalogued.
- **Ms. Gil Yardeni** continues to computerize the late **Dr. Gershom Levy's** written catalogues. There remain only several hundred specimens to be done; it should be completed by the end of the winter semester. Ms. Yardeni will then start analyzing the database as part of a guided undergraduate research project.
- Maintenance and administration of the arachnological collection was done by **Ms. Iris Mosseli** from Sde Boker as part of an agreement with Prof. Yael Lubin. Her responsibilities have now been taken over by **Dr. Efrat Gavish-Regev**.
- **Dr. Chipman** travelled to Bucharest to repatriate a collection of centipedes collected by **Dr. Stefan Negrea** in the 1990s. Most of these specimens had already been described and published, but had not been returned to Jerusalem. Unfortunately, specimens of the order Geophilomorpha, which were of special interest, were not in the collection that was returned, and their whereabouts are unknown, presumed lost. The returned collection, together with the

¹ This collection report was written by **Dr. A. Chipman**.

renewed sampling, has more than doubled the number of centipede samples in the collection, and has significantly increased the list of species known from Israel.

- **Mr. Daniel Schneider** completed the cataloguing of the plankton collection. He then carried out a major research and organization project in the collection, identifying almost all of the samples to specific research projects and collecting expeditions, adding specific literature references to each. This large, highly complicated and important collection is now easily accessible and comprehensible. The database has also been sent to the international plankton database COPEPOD.
- **Mr. Schneider** catalogued and computerized the collection of Cirripedia (with assistance from **Prof. Yair Achituv** from Bar-Ilan University), and the Bryozoa collection.
- **Ms. Theodora Bar-El** has completed the computerization of all of the Crustacea, both macrobenthos and meiobenthos (see photographs below).



Some computerized decapod crustaceans. Note specimen and sample code labels.
a. Locust lobster, collected during Anton Bruun Indian Ocean expedition in 1964 by **F.D. Por**.
b. Hermit crab, *Dardanus lagopodes* (Forskål), from Gulf of Aqaba-Elat.
c. Crab, *Carpilius convexus* (Forskål) from G. Elat (some legs missing); b and c collected during project, "Biota of the Red Sea and Eastern Mediterranean".
Taxon labels: DECA=Decapoda; ANOM=Anomura; BRAY=Brachyura.

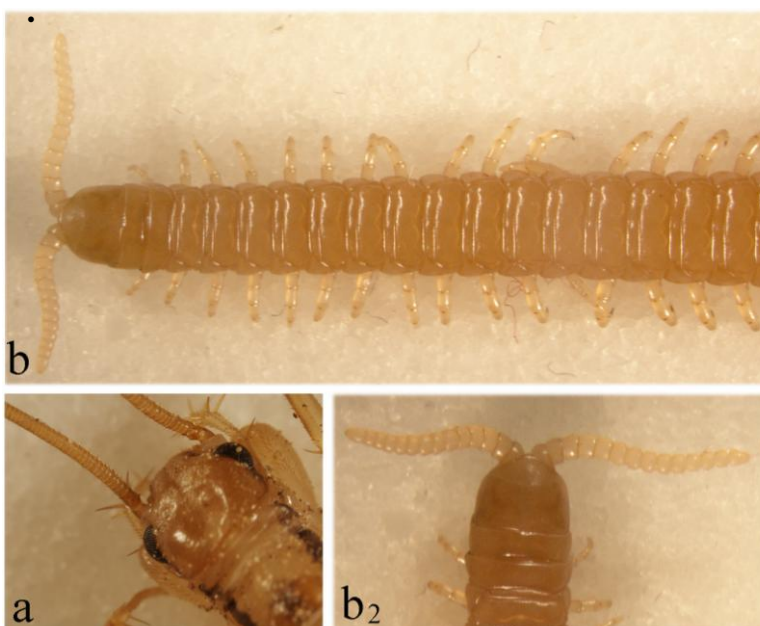
Photos: R. Jaskow

Acquisitions

Prof. Yair Achituv donated additional samples of **Cirripedia** from his research.

Research Projects

- **Dr. Nechama Ben-Eliahu**, who continues her work on Serpulidae of the Mediterranean, has begun collecting new specimens for preservation in 96% ethanol to enable future DNA analysis. The intention is to parallel the extensive morphological collection stored under conditions that do not allow DNA extraction. To obtain additional material, she has also been removing serpulids from mollusc shells and debris collected in fishermen's trawls (termed "reject"). These cover depths of 20–40 meters, which will not be covered by the systematic coastal survey (see next point). Dr. Ben-Eliahu has also made several visits to the mollusc collection at Tel Aviv University and removed encrusted serpulids from the shells.
- An Israel Taxonomic Initiative (ITI)-funded project on changes in serpulid diversity along Israel's Mediterranean coast, coordinated by **Drs. Chipman** and **Ben-Eliahu**, started in the winter of 2010–2011, but was put on hold over the past year. It is expected to be carried out during the spring of 2012.
- **Dr. Ariel Chipman** has been coordinating an ITI funded research project on sampling and identifying the centipede fauna of Israel. Within the framework of this project, a field assistant, **Mr. Michael Wolfson**, has carried out approximately 30 days of field work and recovered close to 100 specimens of centipedes of various species. Specimens of two major groups have been sent for identification to experts abroad. The Geophilomorpha were sent to **Dr. Lucio Bonato**, of the University of Padua in Italy. The Scolopendromorpha were sent to **Dr. Stylianos Simaiakis** of the Natural History Museum in Crete who already returned the specimens. There were several interesting identifications, including a species not previously known from Israel, and additional specimens of a rare species that seems to be endemic to Israel and the Palestinian Territories. A third-year student, Ms. **Neta Arazy**, carried out a guided research project under Dr. Chipman's supervision on the diversity of leg-bearing segment numbers in geophilomorph centipedes.



a – A scutigermorph centipede (probably *Scutigera coleoptrata*). The scutigermorphs are a group of cursorial predators. Note the large compound eyes and many sensory bristles.

b – A geophilomorph centipede (*Bothriogaster signata*). This group, which is adapted for subterranean habitats, is typified by long, thin bodies (b) and no eyes (b₁). Photos: A. Chipman

Some characters of scutigermorph and geophilomorph centipedes



Scale: 1 cm
for both a and b

The scolopendromorph centipede, *Scolopendra cingulata*—two different colour morphs: a) dark head, dark antennae, and anal cirri. b) reddish-brown head and reddish-brown antennae and anal cirri. Photos: M. Wolfson

Research Projects (continued)

- **Dr. Chanan Dimentman** continues to work on the fauna of the Hula Basin. Dr. Dimentman is monitoring hydrobiological parameters and faunal composition in the various aquatic habitats of the Hula Basin.
- Research into the evolution of segmentation and body plan generation in arthropods and in other segmented taxa continues in **Dr. Ariel Chipman's** laboratory.
- **Prof. Dov Por** continues his research on the ecology and evolution of the world's cave faunas.

Public outreach and activities

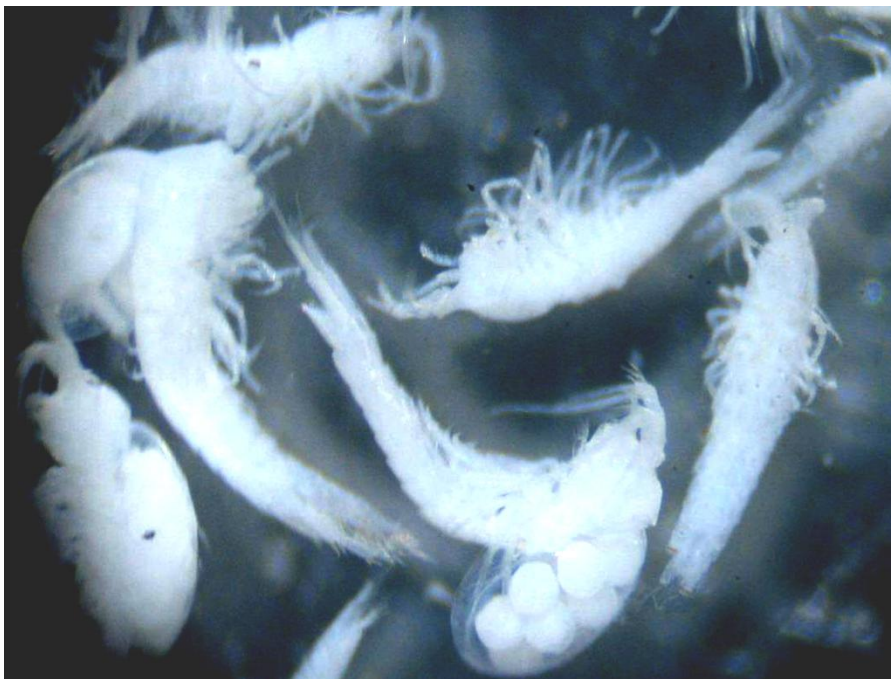
- **Dr. Chipman** has been serving as a board member of the Zoological Society of Israel since 2009.
- **Dr. Chipman** gave several talks on arthropod segmentation. At the annual meeting of the Society for Integrative and Comparative Biology (Seattle, January 2010) – “Blastoderm Patterning and Gap Gene Interactions in the Milkweed Bug *Oncopeltus fasciatus*”; two talks at the meeting of the European Society for Evolution and Development (Paris, July 2010) – “Blastoderm Patterning and Gap Gene Interactions in the Milkweed Bug *Oncopeltus fasciatus*”, “Genes involved in the development of the head in the Milkweed Bug *Oncopeltus fasciatus*”; at the Israeli Society for Experimental Biology meeting (Elat, February 2011) – “The Evolution of Early Embryonic Patterning – Why Are Bugs and Flies Not Alike?”; at the meeting of the Society for invertebrate Morphology (Harvard University, June 2011) – “Blastoderm patterning in the milkweed bug *Oncopeltus fasciatus* – head, trunk and ‘tail’”; and at the annual meeting of the Society for Integrative and Comparative Biology (Charleston, South Carolina, January 2012) – “The origin of insect terminal patterning pathways – insights from the holometabolous milkweed bug, *Oncopeltus fasciatus*”.

- **Dr. Chipman** taught an undergraduate introductory zoology course, “An introduction to Organismic Biology” – lecture & laboratory), in which he used material from the invertebrate teaching collection (2010 and 2011).
- **Dr. Chipman** taught a Master’s level course, “The Evolution of the Animal Kingdom”, in which he used material from the invertebrate collection as well as from the paleontological collection (2010 and 2011).
- The collections, together with the Department of Ecology, Evolution & Behavior, hosted the 47th meeting of the Zoological Society of Israel in December 2010. **Dr. Chipman** was one of the main organizers.
- **Prof. Por** gave a lecture, “Tabha and Ayalon—Life in the Ophel Kingdom” at the annual meeting of the Zoological Society of Israel at the 47th Meeting of the Zoological Society of Israel, Jerusalem, Israel, December 5, 2010. Abstracts (in Hebrew), p. 53.
- **Dr. Ben-Eliahu** presented a poster co-authored by **G. Rilov, M.N. Ben-Eliahu and H.A. ten Hove**, “A Lessepsian migrant population explosion: *Pomatoleios kraussii*, an intertidal tubeworm, is forming reefs and encrusting pilings in Haifa Bay”, at the 47th Meeting of the Zoological Society of Israel, Jerusalem, Israel, December 5, 2010. Abstracts, p. 72.
- The collection hosted **Dana Arielli-Berkovich**, a photographer from the Bezalel Academy of Arts and Design, who took some photographs to be used in an exhibition she is planning (January 2011).
- **Dr. Chipman** gave a talk introducing the invertebrate collection and discussing the computerization project at a meeting dedicated to the memory of the late Dr. Shosh Ashkenazi (April, 2011).
- **Dr. Ben-Eliahu**, who serves as a member of the Board of Directors of the Tisch Family Zoological Gardens in Jerusalem, participated in the international workshop to expand the zoo several years ago, and in December 2011, in the sessions to plan the zoo’s new aquarium.
- **Prof. Por** is preparing a panel discussion entitled “The Future of Animal Evolution under the Human Aegis” with international participation (as part of the 21th International Congress of Zoology in Haifa, September 2012).
- The invertebrate collection employed a young man who suffers from Asperger’s syndrome. This was done in coordination with the Beit Ekstein center for employment placement for people with special needs.

Visitors to the collection

- **Prof. Victor Fet** visited the collection in November 2010 to look at the enigmatic samples of scorpion cuticles (*Akrav israchanani*) from the Ayalon cave. He took detailed photographs and measurements of the samples. He also discovered preserved tissue, which can be used for DNA extraction, and a single specimen of a scorpion embryo.

- Three visitors from the collection in Tel Aviv University – **Dr. Sigal Shefer, Dr. Tamar Feldstein** and **Noga Sokolover** – visited in December 2010, looked at sponge and bryozoan samples, and borrowed several specimens for further analysis.
- **Dr. Lorenzo Prendini** of the American Museum of Natural History visited Israel in August 2011 as part of a worldwide survey of scorpion fauna and a revision of scorpion taxonomy. In addition to field work, he spent some time at our collection and looked at the scorpion samples and at our catalogue. In addition, he spent time analyzing the Ayalon scorpion, *Akrav israchanani*.
- **Dr. Sergei Zonstein** of Tel Aviv University visited the collection several times to continue work on *Akrav* (in collaboration with Dr. Viktor Fet, who visited earlier), and to look at specimens of the spider collection.
- **Ms. Tharina Bird** of the Denver Museum of Nature and Science visited the collection together with **Dr. Prendini**. In addition to assisting him in field work, she went over our collection of Solifugae (camel spiders), identifying many of them to family level. Dr. Bird was the first specialist on the group to look at the collection, which has never been studied seriously.
- **Dr. Kosta Mumcoglu** of the Hadassah Medical School visited the collection in July 2011 to look at the late **Dr. B. Feldman-Muhsam**'s mite collection. He was then joined by **Dr. Dimitri Apanaskevich** of the US National Tick Collection. They used specimens from the collection for an ITI- funded course on tick taxonomy.
- **Asaf Tsoar** from the Nature and Parks Protection Authority visited the collection to look at scorpion specimens as part of a project to create a scorpion field guide for park rangers.



***Tethysbaema ophelicola* Wagner, a relic subterranean crustacean from the Ayalon cave, Israel (Por, 2012).**

III-5. THE FISH COLLECTION¹

Staff

Dr. Daniel Golani, Curator and Director, <dgolani@cc.huji.ac.il>

Description of the Hebrew University Fish Collection

The Fish Collection of the Hebrew University of Jerusalem is the largest and the most comprehensive collection in the Middle East. It contains the richest selection of fish specimens from the Red Sea and the Eastern Mediterranean. Both regions are of the utmost importance for ichthyological, zoogeographical and biodiversity research. The Red Sea was the first tropical region where ichthyological research has been carried out in modern times (from the 18th century onward). More recently, it has received global attention due to the ongoing phenomenon of Lessepsian bioinvasions via the Suez Canal into the Mediterranean.

The Hebrew University Fish Collection was founded in the early 20th century by **Prof. I. Aharoni**, followed in turn by **H. Steinitz**, **A. Ben-Tuvia** and **D. Golani**. It includes over 100,000 specimens in 22,000 lots, among them the type specimens of 102 species. The contents of the entire collection have been computerized in an online database. Most of the specimens have been preserved in 70% ethanol while some are preserved dry.



Israel Aharoni
(1882–1946)

Recently the Fish Collection has inaugurated a collection of fish tissues preserved in alcohol, as well as their voucher specimens, available for molecular study. This tissue collection is comprised of several hundreds of samples which have already led to a number of scientific publications. This is in addition to the hundreds of publications based on material preserved in the Hebrew University Fish Collection, including four books and two monographs.

Research projects and collaborations

- The Hebrew University Fish Collection has continued to serve a central role in research on the Mediterranean and Red Sea ichthyofauna. Brief publications are continuously published, with the cooperation and participation of **Dr. O. Sonin** and **Mr. P. Salameh** of the Department of Fisheries of the Israeli Ministry of Agriculture, **Mr. D. Edelist** of Haifa University and **Mr. Y. Levy** of the Nature Protection Authority (see list of publications below). In addition, cooperation has begun with **Dr. L. Lipej** of the Marine Biology Station, Piran, Slovenia and **Dr. J. Dulcic** of the Institute of Oceanography and Fisheries, Split, Croatia, regarding joint research on fish invasions in the Mediterranean.
- Participation in the program of genetic barcoding of the Israeli ichthyofauna with **Prof G. Hulata** of the Volcani Institute and **Dr A. Shirak** of the Faculty of Agriculture, The Hebrew University of Jerusalem. The objective of this program is to characterize the fish of the marine and freshwaters of Israel genetically.

¹ This report on the Fish Collection was written by **Dr. D. Golani**.

- Continued study with **Prof. K. Matsuura** of the National Museum in Tokyo on the Lessepsian (Red Sea) pufferfishes that have invaded the Eastern Mediterranean. The pufferfishes (Tetraodontidae) have the largest number of Lessepsian migrants of any family (5 species). An article from this ongoing study has already been published (Matsuura et al, 2011 [see Publications below]). Results of DNA analysis indicate that the earliest Lessepsian migrant of the family Tetraodontidae was previously misidentified. Analysis of the genetic and morphological data of other Lessepsian members of this family is being conducted.
- Participation in a research group conducting molecular study of several Mediterranean and Indo-Pacific populations of the Lessepsian migrants, *Callionymus filamentosus* and *Plotosus lineatus* (led by **Dr. G. Bernardi**, University of California, Santa Cruz). An article on *C. filamentosus* is in press. We have commenced an additional study on *Pomadasys stridens*. Molecular studies provide an advanced approach to research on the colonization dispersal of invading species.
- With **Dr. Y. Tokachinski** of the Maritime College, Michmoret, and **Prof. U. Motro**, the Hebrew University of Jerusalem, a study of various populations of the Silver sillago, *Sillago sihama*. This was previously believed to be a single species with a very wide distribution range from Taiwan, Hong Kong, the southern and northern Red Sea and migration into the Mediterranean via the Suez Canal (Lessepsian migrant). However, the results have been surprising; it appears that the southern Red Sea population belongs to a different species from that found in the Mediterranean. In addition, the Mediterranean population shows a very strong bottleneck effect; all 44 examined specimens belonging to a single haplotype. This study has been submitted for publication. Another study with Dr. Tokachinski on the Lessepsian migrant, *Saurida undosquamis*, is almost completed. Although this species was also considered as having a wide Indo-Pacific distribution, our results revealed that the Red Sea population represents a separate species that may be as yet undescribed.
- Collaboration with **Dr. H. Motomura** and **M. Yamashita** of the University of Kagoshima, Japan, on the taxonomy of Goatfishes (Mullidae), resulting in a description of a new species of the genus *Upeneus* (see Publications below).
- The cooperation with **Prof. Lev Fishelson** of Tel Aviv University and **Dr. Barry Russell** of the University of Darwin, Australia, on various aspects of the histology of the family of Lizardfishes (Synodontidae) has led to three papers (one published and two accepted for publication).
- The collaboration on a “classical” taxonomy study with **Dr. R. Fricke** of the Staatliches Museum für Naturkunde, Stuttgart, Germany, continues. A taxonomic paper with **Dr. Yaron Tikochinski** of the Ruppin Academic Center has been published and an additional manuscript on this subject is in the final stages of preparation. Another paper, describing a new species for science from the Red Sea on the Sand-diver, *Limnichthys* n. sp., by Fricke and Golani, has been accepted for publication.

Grants

- Ecological indicators of overfishing in the Israeli trawl fishery. Ministry of Environment (with **Prof. E. Spanier** and **D. Edelist**, Haifa University).
- The impact of mariculture on the natural populations of *Sparus aurata* in the Mediterranean and the Red Sea. Yad Hanadiv (with **Prof. Y. Zohar**, Department of Marine Biotechnology [UMBC] and **Dr. Y. Tikochinsky**, Ruppin Academic Center).
- Survey of the exotic fish species in the freshwater ecosystem of Israel. The Department of Fisheries, the Ministry of Agriculture (with **A. Geva**, Department of Fisheries).

Development plans for 2012–2013

In addition to the ongoing development of computerization, including the Collections Website, together with safety and health precautions, there are two other main topics that should receive attention and funding:

- Allocations for expeditions, especially deepwater expeditions, the ichthyofauna of which are still not completely known in our region.
- Allocations for the establishment of a collection or collections of tissues, preserved in alcohol, for future molecular research, which is in the vanguard of taxonomic and systematic research. In order to achieve this goal, **D. Golani** has already begun collecting and storing fish tissues in alcohol, which will serve as the seed collection of a comprehensive collection for future research.

Participation in scientific workshops and meetings

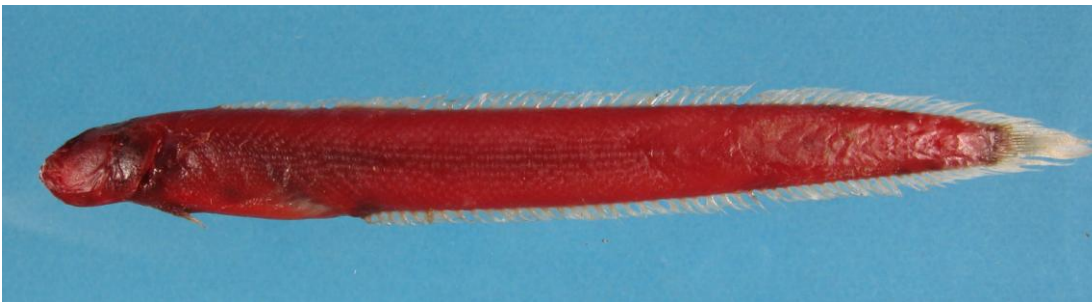
- **Dr. Daniel Golani** participated in the Commission Internationale Scientifique de la mer Méditerranée (CIESM) 39th Congress, May 10–14, 2010 in Venice, Italy. His lecture: “The impact of the CIESM Atlas of Exotic Species (Fishes) in the Mediterranean”.
- **Dr. Daniel Golani** was part of the organizing committee of the 47th Annual Meeting of the Zoological Society of Israel, which took place on December 5th, 2010 at the Hebrew University of Jerusalem. He also lectured at the meeting: “Invasive species in the marine environment – the phenomenon of accommodation”. Abstract (in Hebrew), p. 18.
- **Edelist, D., Sonin, O. Golani, D., Rilov, G. and Spanier, E.** 2010 (same meeting as above). Lecture: Lessepsian migration seen through the “lens” of the trawl fishery (lecture, **D. Edelist**, presenter). Abstracts (in Hebrew), p. 2. Israel Journal of Ecology and Evolution (in press).
- **Dr. Golani** participated in the 7th International Conference on Marine Bioinvasions that was held on August 23–25, 2011 in Barcelona, Spain, and presented a lecture, “Do zoogeographic affinities of Lessepsian migrant fish correlate with successful colonization?”
- **Dr. Golani** assisted the organizing committee of the 16th Meeting of the ICAZ Fish Remains Working Group that was held in Jerusalem on 23–27 October 2011, by providing fishes and other material to ca. 20 international researchers who used the facilities of the Hebrew University Fish Collection.

Research visitors to the HUI Fish Collection in 2010–2011

- **Mr. O. Gon** of the South African Institute for Aquatic Biodiversity (SAIAB), Grahamstown, S.A.
- **Dr. R. Fricke**, Staatliches Museum für Naturkunde, Stuttgart, Germany
- **Dr. A. Baranes**, Interuniversity Institute for Marine Science, Elat
- **Dr. M. Goren**, Tel Aviv University
- **Dr. A. Diamant**, Israel Oceanographic & Limnological Research National Center for Mariculture, Elat
- **Dr. N. Stambler**, Bar-Ilan University
- **Ms. B. Rottman**, Tel-Aviv University

First records of three Red Sea Fishes from the Mediterranean coast of Israel in 2010

An elongated bright red specimen of the Burrowing Goby *Trypauchen vagina* (Bloch et Schneider, 1801), family Gobiidae



This fish was collected on Dec. 1, 2009 from a trawl catch operating on silty substrate between Atlit and Hadera at a depth of 90 m (Salameh et al., 2010).

The Slender Ponyfish, *Equulites elongatus* (Günther, 1874), family Leiognathidae



A single specimen (HUI 20072) was collected on May 27, 2011 from a trawl catch operating at a depth of 35 m in the vicinity of Tel-Aviv (Golani et al., 2011).

**An Orangeface Butterflyfish, *Chaetodon larvatus*
Cuvier, 1831, family Chaetodontidae.**



This beautifully-coloured specimen (HUI 20053) was collected by spear-gun on January 15, 2011 near Shiqmona, the southern part of Haifa Bay at a depth of 10 m (Salameh et al. 2011).

First records of three Red Sea fishes from the Mediterranean coast of Israel in 2011



**A Spotbelly Batfish, *Platax teira*
(Forsskål in Neibuhr, 1775), family
Ephipidae.**

A single specimen (HUI 20014) was collected on October 12, 2010 by trammel net near Ashdod at a depth of 8 m (Golani et al., 2011).

**The Spiny Blaassop, *Tylerius spinsissimus* (Regan, 1908),
family Tetraodontidae**



A small specimen (HUI 19946) was collected on May 5, 2010 from a trawl catch between Ashdod and Tel Aviv at a depth of 120–140 m (Golani et al. 2010).

**The Yellowbar Angelfish, *Pomacanthus maculosus* (Forsskål in Neibuhr, 1775)
family Pomacanthidae**



A single specimen (HUJ 20102) was collected by spear-gun on July 26, 2011, near Shiqmona, the southern part of Haifa Bay, at a depth of 10 m (Salameh et al. [in press]).

A fish named in honor of Dr. Daniel Golani

Holotype of *Saurida golanii* Russell, 2011, Family Synodontidae



This fish (HUJ 14018) was collected in Elat by trammel net at depth of 300 m. It was named *Saurida golanii* in honor of Dr. Daniel Golani by **Prof. Barry Russell**.

III-6. THE HERPETOLOGY COLLECTION – AMPHIBIANS AND REPTILES¹

Staff

Dr. D. Hawlena, Curator (from Oct 1, 2011), <dror.hawlena@mail.huji.ac.il>

Prof. Y.L. Werner Curator (Emeritus), <yehudahw@vms.huji.ac.il>

Dr. B. Shacham, Collection Manager, <boazs@vms.huji.ac.il>

Associated Researcher

Dr. H. Seligmann, <podarcissicula@gmail.com>

General information and collection holdings

The Herpetology Collection comprises just over 23,000 catalogued specimens of amphibians and reptiles from all over the world. Most of the specimens in the collection are from Israel and Sinai. The collection is considered the most extensive regional record of Levant taxa. The major part of the inventory (ca. 85%) is stored in methylated ethanol; the minor part consists of stuffed or dry specimens, skeletons and skins. Since the early 1990s, several hundred tissue samples from fresh specimens have been preserved separately and stored in absolute ethanol for future DNA analysis. Several hundred uncatalogued items (shed skins, faeces, shells of reptile eggs, fragments of animals, and donated specimens waiting to be catalogued) are also included in the collection.

This collection is a much-used research tool. The specimens, which are individually tagged with the main collection data, are assembled in jars with the list of specimen numbers. Specimens too large for storage in glass jars are stored in large tanks (100 litre volume) equipped with wheels, which are stowed under the collection shelves and rolled out for inspection or maintenance. The HUI Herpetological Collection is the most comprehensive collection of Israeli herpetofauna in existence.

Activities

- **Computerization of the Herpetology Collection.**
The collection is almost fully catalogued by hand (hardcopy). Of the slightly more than 23,000 herpetological specimens in the collection, about 95% of the records have been digitized. These are currently being verified and corrected prior to uploading the computerized catalogue to the National Natural History Collections of the Hebrew University Hebrew website. In the past, approx. 2,500 catalogue items from the Herpetology Collection data were integrated into the BioGIS project, a web-based application for public access to the scientific databases (botanical and zoological) of Israel (see website: <http://habitat.bot.huji.ac.il/biogis>).
- **Tissue samples for genomic analysis.**
In addition to the tissues for genetic analysis collected in recent years from voucher specimens, the collection houses dozens of new tissue samples from an ongoing field study in the Nizzanim sand dunes, southern coastal Israel. The samples are from toe clippings of lizards captured and released as

¹ This report on the Herpetology Collection was written by **Dr. B. Shacham**.

part of the Ph.D. study of **Dr. B. Shacham**, begun in mid-2004, under the supervision of Prof. A. Bouskila, Ben-Gurion University of the Negev. The remains collected as part of this study and subsequent similar samples are deposited in the herpetology collection.

- **Collaboration with local and international research.**

The herpetological collection cooperates and collaborates with researchers and institutions seeking material for morphological and genetic studies. Material from the collection is either shipped on loan or examined *in situ* by visiting researchers. Often these efforts result in scientific publications which include results derived from HUI specimens.

- **Comparative herpetological material.**

The herpetology collection is cooperating with the archaeozoological collection (**Dr. R. Rabinovich**, Curator), in building a comprehensive comparative osteological collection of Recent amphibian and reptile species from Israel and its environs to assist with the identification of animal remains from archaeological sites. For this purpose, dozens of suitable specimens have been transferred (on permanent loan) to the archaeozoological collection. This is an ongoing project.

Sources of new material in the Herpetology Collection

For several years, the collection has reduced the number of new accessions from deliberate collecting in the field. Most new material, approximately 250–300 specimens each year, is obtained through donations from various sources:

- Local donations from the Israel Herpetological Information Center (IHIC) of the Society for the Protection of Nature in Israel (SPNI); park rangers of the Israel Nature and Parks Authority (INPA); students; and the general public. The majority of this material consists of roadkill collected at random.
- Local field surveys and projects that involve collection of remains of animals (e.g., animals that fell into the pitfall traps of the Nizzanim Sand Dune Management Project, collected by **Dr. Shacham** and colleagues since 2004).
- Researchers, private breeders and enthusiasts outside Israel.

News from the Herpetological Collection

The endemic Hula painted frog, *Discoglossus nigriventer*, has been rediscovered in the Hula Valley. The species, which was feared extinct due to draining of the Hula wetlands during the 1950s, had not been observed since 1955. It was officially pronounced extinct by the International Union for Conservation of Nature (IUCN) during the 1990s. Live specimens of this frog were recently found (November 2011) in the Hula Nature Reserve by **Yoram Malka**, an Israel Nature & Parks Authority (INPA) ranger (see photographs below). Until this surprising discovery, the only known specimens were the type specimens and an additional specimen, collected during 1940 and 1955, respectively, housed in our herpetology collection. This dramatic discovery ignited a search for additional survivors of this species. Fellow herpetologists from various countries have offered information and assistance in this search, culminating in a visit to Jerusalem by **Dr. Miguel Vences** and **Dr. Frank Glaw** to examine the type specimens (see below).



The newly rediscovered live specimen of *Discoglossus nigriventer*
Dorsal and ventral views (top and bottom, respectively).

Photo: B. Shacham

Projects using the Herpetology Collection

Projects of research students

- **G. Sion**, Ph.D. student. Advisors: **Profs Y.L. Werner** and **U. Motro**.
The thesis, “Directional asymmetry and decision making in the gecko *Ptyodactylus guttatus*”, addresses the ecological behaviour of the gecko *Ptyodactylus guttatus*, including morphological variables. Recent studies link minor directional asymmetry (DA) with fitness because tail injury correlates with minor DA in assorted characters within taxa of Lepidosauria. The present study is consistent with these findings. It differs from previous studies by observing live animals in their natural habitat (rather than only measuring preserved specimens), thus adding a new behavioural angle. We link minor shifts in bilateral asymmetry of eye diameter with behavioural patterns such as dominance behaviour and foraging risk-taking strategy using the gecko, *Ptyodactylus guttatus*, as a model animal. Interestingly, this study is consistent with recent findings on the link between dominance and risk-taking tendencies of humans and brain laterality. Further study on the lizard brain could unravel whether the similarity is more than mere coincidence or derived from a joint evolutionary process.



- **Roy Talbi**, Ph.D. student. Advisor: **Prof. Y.L. Werner**.
The thesis, “Speciation of the hardun, *Laudakia stellio*, in the Levant, focusing on Israel”. The hardun, *Laudakia stellio*, a conspicuous lizard in the landscape, is distributed from Greece to Egypt and eastward to northern Iraq and northern Arabia. Several subspecies have been described, but the focal area between south Anatolia and the Negev is unstudied. We have planned and started to study subspeciation in this area and throughout the range using morphometric, behavioral and genomic characters.



The hardun, *Laudakia stellio*

Photo: B. Shacham

- **Identification key for snake remains (Dr. Boaz Shacham and Rebecca Biton, and side project with G. Friedemann).** Identifying reptiles to a specific or at least a generic level is important for various fields of science, especially archaeozoological reconstruction of faunas as well as for ecological and inventory studies of modern fauna. As part of **R. Biton's** Ph.D. project (archaeozoology laboratory, supervised by **Dr. R. Rabinovich**), **Dr. B. Shacham** and **R. Biton** are constructing a key for identifying modern snake remains, mainly from skeletons. This effort also includes collaboration with **Guilad Friedemann**, a Ph.D. student at Tel Aviv University, with the key enabling identification of reptile remains (skeletons and skins from pellets) collected by him from nesting sites of raptors in the Judean mountains and lowlands.

Additional projects using the Herpetology Collection

- **Physiological aspects of micro-evolution in Israeli fan-toed geckos, genus *Ptyodactylus*, in relation to body size.** Body size is a key factor in the life history and physiology of animals. When the specimens used in physiological experiments are preserved, the relationship between performance and size can be investigated long after the physiological research has been completed. The auditory acuity of three species of *Ptyodactylus* geckos was tested electro-physiologically to determine whether the ear is tuned to hear conspecific calls better than heterospecific ones. Although the results indicated a negative answer, they also confirmed that auditory sensitivity improves with increased size, as found previously. Since we also consider the effects of temperature on auditory sensitivity, we are presently exploring the effects of size on preferred body temperature. From theory and one report, the auditory sensitivity should be lower and is predicted to be lower in smaller individuals or species. (**Prof. Y.L. Werner** and **A. Goldenzweig**, student assistant).

- **Speciation of the house gecko, *Hemidactylus turcicus*, in Israel and Sinai.** The common house gecko of Israel, which occurs throughout the country on buildings, rocks and trees (they show slight differences between them) is traditionally considered as the circum-Mediterranean species *Hemidactylus turcicus*. A pholidosis difference between northern and southern Israel has been known to us for decades. Recently, Baha El Din described *H. mindiae* from the south Sinai mountains; afterwards, it was reported by Amr et al. from southern Jordan (Wadi Ram). Now, Moravec et al. (2011) have carried out a genomic analysis for *Hemidactylus* in the Middle East (excluding Israel) and split the species into several species, so which species are actually present in Israel? Our biometry database of some hundreds of geckos revealed that cluster analysis is needed for defining populations and identifying them. Preparations for carrying out this analysis are now underway (**Prof. Y.L. Werner and O. Gajst**, student assistant).
- Sexual dimorphism in snakes with emphasis on eye size (**Prof. Y.L. Werner** with **Dr. G. Babocsay** (Budapest), **R. Faiman** (Parasitology), **E. Razzetti** (Pavia), and **Dr. H. Seligmann**).
- Identification and distribution of some Israeli *Acanthodactylus* lizards (**Prof. Y.L. Werner** with **O. Gajst**, student research assistant).
- Morphological and genetic variation in sand-dwelling reptiles along an eco-geographic gradient in Israel (**Drs. B. Shacham and G. Kahila Bar-Gal**).

Public outreach and activities

- **Tours of the collection.** The Herpetology Collection participates in the Nature Park & Galleries project, offering limited guided tours of the collection. These tours, which are limited to a maximum of 15–20 participants at a time, depending on group demographics, usually last 35–60 minutes. The Collection Manager, the Professor Emeritus or guest researchers guide these tours, depending on their availability. The collection also serves as a platform for specific seminars for the student guides of the Nature Park & Galleries, providing the guides with a basic herpetological background and help with guided projects.
- **Educational outreach by the collection.** The Collection assists concerned members of the public by identifying reptiles, particularly snakes, and educating about them. There has been a slow but steady increase in the number of young herpetologists from various Near East countries, including Iran, who consult the collection staff (mainly by e-mail) or request data.
- **Werner, Y.L.** 2010. – Interviewed by **Victoria Neblik**: Professor Yehudah Werner on Israeli herpetofauna and geckos. *Practical Reptile Keeping*, December 2010: 59–61.

Participation in scientific workshops and meetings

- **Meiri, S., Itescu, Y., Shacham, H., and Werner Y.L.** 2010. What tortoise is *Testudo floweri*, named by Bodenheimer (1935) from the Negev? The 47th Meeting of the Zoological Society of Israel, Jerusalem, Israel, December 5, 2010 (poster). Abstract (in Hebrew), p. 43. Israel Journal of Ecology and Evolution (in press).
- **Shacham, B., Cohen, O., Shlomo, A. and Malihi, Y.** 2010. Who moved my gerbil? Interim conclusions from relocation of rodents and reptiles in a coastal sand ecosystem. The 47th Meeting of the Zoological Society of Israel, Jerusalem, Israel, December 5, 2010 (lecture, **B. Shacham**, presenter). Abstracts (in Hebrew), p. 186. Israel Journal of Ecology and Evolution (in press).
- **Sion, G.** 2010. Directional Asymmetry in lateral eye diameter and risk-taking strategy of the gecko *Ptyodactylus guttatus*. The 47th Meeting of the Zoological Society of Israel, Jerusalem, Israel, December 5, 2010 (lecture). Abstracts (in Hebrew), p. 78. Israel Journal of Ecology and Evolution (in press).
- **Werner, Y.L., Montgomery, L.G. and Saunders, J. C.** 2010. Does temperature affect middle-ear function in gekkonid lizards? Abstract, Journal of Basic & Clinical Physiology & Pharmacology, 21: 263.
- **Werner, Y.L. and Ventura, L.** 2010. Sexual dimorphism in colubrid snakes (Reptilia: Ophidia: Colubridae) of Israel: Body size, frequency of occurrence, and their inter-relations. The 47th Meeting of the Zoological Society of Israel, Jerusalem, Israel, December 5, 2010 (poster). Abstracts (in Hebrew), p. 30. Israel Journal of Ecology and Evolution (in press).
- **Shacham, B., Cohen, O., Shlomo, A. and Malihi, Y.** 2011. Relocation of rodents and reptiles from doomed dunes: Testing the feasibility of a “mobile eco-corridor”. The 39th Meeting of the Israel Society of Ecology and Environmental Sciences (ISEES), Megiddo Local Council, Israel, June 28, 2011 (lecture, **B. Shacham**, presenter). Abstracts: http://www.isees.org.il/convhtml/2011FTP/ISEES%20Conf_2011_program%20with%20abstracts.pdf.
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- **Sion, G.** 2011. Can minor directional asymmetry predict behavior? The gecko, *Ptyodactylus guttatus*, as a model animal. The 17th European Meeting of Ph.D. students in Evolutionary Biology, Portugal, August 2011 (lecture). Abstracts, p. 79.
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- **Shacham, B.** 2011. *Acacias* as focal points of faunal presence and activity in the Arava: Reptiles as a test case. The 1st Annual Meeting – *Acacia* in the Arava: Past, Present and Future. Hazeva, Israel, November 1, 2011 (lecture).
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- **Werner, Y.L., O. Gajst and U. Motro.** 2011. What species of house gecko (Squamata: Gekkoninae: *Hemidactylus*) occurs or occur in Israel? The 48th Meeting of the Zoological Society of Israel, Tel Aviv, December 25, 2011 (poster). Abstracts (in Hebrew), p. 8, Israel Journal of Ecology and Evolution (in press).
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Visitors to the collection since 2010

- **Guilad Friedemann**, Department of Zoology, University of Tel Aviv, Israel
- **Dr. Frank Glaw**, Department of Vertebrates, Zoologische Staatssammlung München, Germany
- **Dr. Hervé Seligmann**, Center for Ecological and Evolutionary Synthesis, Department of Biological Sciences, University of Oslo, Oslo, Norway
- **Dr. Miguel Vences**, Division of Evolutionary Biology, Zoological Institute, Technical University of Braunschweig, Braunschweig, Germany
- **Prof. Hussam Zaher**, Museu de Zoologia, da Universidade de São Paulo, São Paulo, Brazil

In the field



Dr. Boaz Shacham holding a gachmen snake (*Coluber rubriceps*), caught under a rusted tin sheet on March 12, 2011, Gan Soreq, coastal plain, Israel.

Photo: Tamar Shacham

IV. PUBLICATIONS SINCE 2010

BOOKS AND MONOGRAPHS



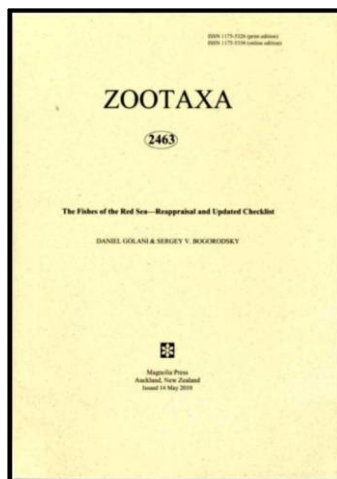
Heller, 2011



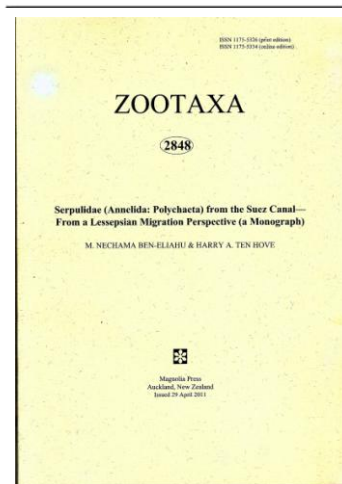
Shmida et al., 2011



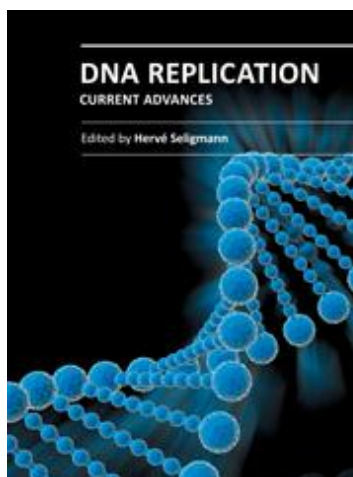
Danin, 2010



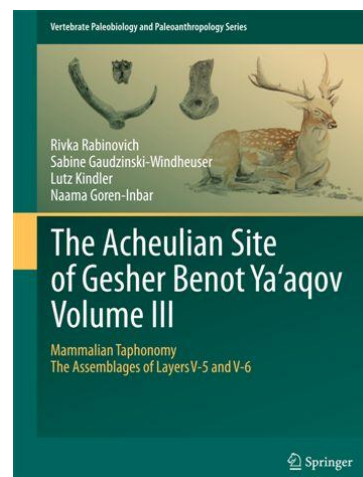
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Rabinovich et al., 2011

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