

Faculty of Life Sciences – Department of Zoology, Department of Plant Sciences

Faculty of Medicine – Department of Anatomy and Anthropology

The National Collections of Natural History Tel Aviv University

Annual Report 2008/2009

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MINISTER OF ENVIRONMENTAL PROTECTION

22 December 2009
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In a celebration of life on earth, the United Nations declared 2010 as the International Year of Biodiversity. In addition to the spiritual, cultural and aesthetic value of biodiversity, it also embodies a great economic potential in areas such as agriculture, medicine and industry. The biological diversity of genes, species and ecosystems supports a variety of ecological services such as erosion prevention, water purification, pollination, waste detoxification and decomposition and soil formation. These ecological services are essential for human activity and well being

However, despite major efforts to preserve and document biodiversity, many species and ecological systems remain unknown and many others are endangered or threatened with extinction. Current rates of development and population growth are threatening to accelerate this trend.

The situation in Israel is no exception. In order for us to understand, document and preserve our country's rich biodiversity, up-to-date and reliable scientific information is critical.

The Ministry of Environmental Protection is proud to take an active role in the establishment of the Natural History Museum Building at the Tel Aviv University. This new building will provide an adequate home for the university's unique natural history collections and function as a research and teaching center with a public outreach.

I hope such a platform will encourage the expansion of our scientific knowledge for the purposes of preserving and documenting biodiversity in Israel and allow us a greater insight to our natural heritage and the one we will leave to future generations.

Sincerely,

Gilad Erdan

Minister of Environmental Protection

December 30, 2009

Dear friends and colleagues,

We are pleased to present you with the 7th Annual Report of the National Collections of Natural History at Tel Aviv University.

In the past year we continued with our collections-based research and public education activities, with the ongoing support of Tel Aviv University, the Planning and Budgeting Committee of the Council for Higher Education in Israel (VATAT), and the Ministry of Science and Technology. We work under the auspices the Israel Academy of Sciences and Humanities, which views the natural history collections of Tel Aviv University as a national level project and represents us in VATAT. Moreover, recently the National Infrastructures Committee of the National Council for Research and Development has recognized our collections as a National Research Infrastructure. This recognition is crucial for the development of a project that must strive for academic excellence while fulfilling national goals and providing support to agriculture, conservation, infrastructures, health, etc. This is a challenge but we are optimistic that we can meet it. The launch of the Israel Taxonomy Initiative this year with the support of a philanthropic foundation and the hiring of two new faculty members in the Department of Zoology, who in addition to their research programs will also serve as curators, and the progress in finally building a proper museum building for our collections - all these steps allow for a measure of optimism regarding the future of this nationally significant project.

National level support has enabled us to maintain our collections and to provide services to many scientists and organizations within Israel and abroad. National level support for our new building, provided by VATAT and the Ministries of Environmental Protection, Agriculture and Rural Development, and Tourism, will ensure a safe future for this scientific and cultural treasure and will allow us to share our scientific knowledge with the public. We are very grateful to many wonderful people who have helped us attain this goal, and we look forward to continuing our joint journey of ensuring the future of biodiversity research in Israel.



Tamar Dayan
Director, National Collections of Natural History

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Introduction

We are pleased to present the seventh in our series of Annual Reports of the National Collections of Natural History at Tel Aviv University. It details research, teaching, conservation, and public activities of the faculty, staff, and graduate students involved with the National Collections of Natural History at Tel Aviv University during the 2008/2009 academic year.

Our collections, comprising ca. 4 million animal, plant, and fossil specimens, enjoy national recognition: they are considered a project of national significance by the Israel Academy of Sciences and Humanities and the Planning and Budgeting Committee of the Council of Higher Education of Israel (VATAT). They are also considered a Knowledge Center by the Ministry of Science and a National Research Infrastructure by the National Council for R & D. Therefore in Israel the university collections fulfill the role of a national museum of natural history. In recent years we have taken great steps forward thanks to the staunch support of the academic leadership of Israel and to government level support, and to the vision and perseverance of the former Chair of the Board of Governors of Tel Aviv University, Mr. Michael Steinhardt, and Judy Steinhardt.

We, in turn, do our best to serve Israeli society. We lend support to many agricultural, environmental, ecological, evolutionary, and conservation studies of scientists in various institutions of higher education in Israel and abroad as well as government ministries in Israel. We continue to provide identifications and biological knowledge of exotic species that are detected by the authorities and to help monitor the ecosystems of the eastern Mediterranean and the Gulf of Elat. We continue to absorb aliya and have so far absorbed successfully seven new immigrant scientists and three new immigrant expert technicians, thus enriching taxonomic knowledge in Israel.

With the generous support of VATAT we have managed over the past few years to upgrade collections care and digitization quite dramatically, and were able to hire experts for our bee collection, a crucial resource for agriculture in view of the Colony Collapse Disorder; for our ant collection, which increasingly supports our understanding of patterns of species invasions; and for our parasitic wasp collection, key for biological control; and an expert to study the role of mollusks in the culture of ancient human civilizations. We have recently hired two additional experts – on bryozoa and sponge systematics and biology, and expect to promote these two collections accordingly. Two VATAT funded post-docs have trained with us this past year as a springboard for further training abroad and an additional two have just begun their training periods.

A very optimistic note is the establishment of the Israel Taxonomy Initiative, aimed to train the new generation of taxonomists in Israel and to promote biodiversity surveys. Heading a consortium of Israel's higher universities, colleges, research institutes, and government agencies, we aim to improve scientific knowledge of Israel's biodiversity for basic as well as applied purposes. This initiative, funded by a philanthropic foundation, gives us hope that we will not lose knowledge of our country's biota, although challenges remain huge.

Another optimistic note is the recent hiring of two new faculty members by the Department of Zoology, after many years with numerous retirements and no new recruits. Dr. Shai Meiri has already started serving as our Curator of Higher Vertebrates, and Dr. Frieda Ben-Ami, who joins our ranks in a few months, will serve as our Curator of Mollusks.

Nature Campus continues to uphold a longstanding Tel Aviv University tradition of service to the public and school education. The education and public activities of Nature Campus capitalize on Tel Aviv University's unique

research infrastructure, the I. Meier Segals Zoological Garden, the Botanic Gardens, and the teaching laboratories, and open the treasures of the National Collections of Natural History at Tel Aviv University to the public eye. This work is complemented by the development of Hebrew language web-sites on natural resources, ecosystem services, and sustainable development, bridging the gap between science and the public.

Participating in this multidisciplinary project are members of the George S. Wise Faculty of Life Science (Departments of Zoology and Plant Sciences) and the Sackler Faculty of Medicine (Department of Anatomy and Anthropology); some of the laboratories of the Lester and Sally Entin Faculty of Humanities (the Sonia and Marco Nadler Institute of Archeology) are scheduled to join us in the new building.

We also take pride also in our involvement in nature and environmental conservation. Many members are very active in conservation and monitoring projects and on boards of public and environmental organizations, promoting science-based decision making in societal issues. Our report lists some of these activities.

Here we share with you the progress made in the past academic year 2008/2009.

International Scientific Advisory Board

Vicki Buchsbaum, Pearse Institute of Marine Sciences, University of California, Santa Cruz, USA

Jared Diamond, Department of Physiology, University of California, Los Angeles Medical School, Los Angeles, CA, USA

Paul Ehrlich, Department of Biological Sciences, Stanford University, Stanford, CA, USA

Daphne G. Fautin, Ecology and Evolutionary Biology. Invertebrate Zoology University of Kansas, USA

Lord May of Oxford OM AC Kt FRS, Department of Zoology, Oxford University, Oxford, UK

Harold A. Mooney, Department of Biological Sciences, Stanford University, Stanford, CA, USA

Peter Raven, Missouri Botanical Garden, St. Louis, MO, USA

Daniel Simberloff, Department of Ecology and Evolutionary Biology, University of Tennessee, Knoxville, TN, USA

Edward O. Wilson, Museum of Comparative Zoology, Harvard University, Cambridge, MA, USA

Scientific-Public Council

The national collections of natural history and all collections-based activities are recognized as a project of national significance. Therefore we felt that we would do well to have a Scientific and Public Council to represent the public interest, whether in science, education, culture or tourism. We have asked a group of leaders in their respective fields to serve as members of this council; Many members have already supported us over the years, helping out in their different areas of expertise.

Ruth Arnon

Itamar Borowitz

Yehudith Birk

Gedalya Gal

Dan David

Yael Dayan

Ariel Weiss

Yossi Vardi (observer)

Ilan Chet

Yaakov Turkel

Ami Federman

Aaron Ciechanover

Shoni Rivnai

Shimshon Shoshani

Michael Steinhardt

Brian Sherman

Meir Shalev

Scientific and Public Supervision

Steering Committee under the auspices of the Israel Academy of Sciences and Humanities which represents the collections on the Budget and Planning Committee of the Council of Higher Education: Yehudith Birk (Chairperson), Tamar Dayan, Yossi Loya, Yael Lubin, Reuven Merhav, Rafi Meshulam, Oded Navon, Yossi Segal, Ehud Spanier.

Steering Committee of the collections as an information resource of the Ministry of Science: Yehudith Birk (Chairperson), Shai Avriel, Tamar Dayan, Bella Galil, Menahem Goren, Husam Massalha.

TAU Executive Council Steering Committee for the building construction: Alfred Akirov and Ran Croll (EC members) and Mordehai Kohn (TAU D-G).

Architect Selection Committee: David Leviatan (Chairperson), Francine Davidi, Tamar Dayan, Yoram Eldan, Yael Gavrieli, Eldar Kazevith, Ofer Lugassi, Martin Weyl.

Sponsors' Steering Committee: Yeshayahu Bar-Or (Chair), Meirav Peleg, Yuval Eshdat, Yael Siman-Tov, Raanan Rein, Ofer Lugassi, Tamar Dayan.

Steering Committee for the Israel Taxonomy Initiative, consortium of 19 organizations (Ministry of Environmental Protection, Ministry of Agriculture, Ministry of Health, Ministry of Science, universities, Academic Colleges, research institutes, Israel Nature and Parks Authority, Keren Kayemet LeYisrael, Society for the Protection of Nature) under the direction of Tamar Dayan and Menahem Goren: Michael Ottolenghi, Yossi Loya, Yael Lubin, Bella Galil, Alan Matthius. Observer: Ran Levy.

Museum staff

Tamar Dayan	Department of Zoology	Director
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Curators (TAU faculty members)

Shai Meiri	Department of Zoology	Higher Vertebrates
Yoram Yom-Tov (emeritus)	Department of Zoology	Higher Vertebrates
Yehuda Benayahu	Department of Zoology	Invertebrates
Amnon Freidberg	Department of Zoology	Entomology
Menachem Goren	Department of Zoology	Fishes
Lev Fishelson (emeritus)	Department of Zoology	Fishes
Dorothee Huchon	Department of Zoology	Molecular Systematics
Baruch Arensburg (emeritus)	Department of Anatomy & Anthropology	Physical Athropology
Yoel Rak	Department of Anatomy & Anthropology	Physical Athropology
Israel HersHKovitz	Department of Anatomy & Anthropology	Physical Athropology
Nissan Binyamini (retired)	Department of Plant Sciences	Fungi
Margalith Galun (emeritus)	Department of Plant Sciences	Lichens
Jacob Garty (emeritus)	Department of Plant Sciences	Lichens
Ya'akov Lipkin (retired)	Department of Plant Sciences	Algae

Curators (TAU faculty members; new immigrants in various absorption schemes)

Silvia Blumenfeld	Department of Plant Sciences	Fungi
Vladimir Chikatunov (retired)	Department of Zoology	Coleoptera
Vasiliy Kravchenko	Department of Zoology	Lepidoptera
Sergei Zonstein	Department of Zoology	Arachnidae
Andy Lehrer (retired)	Department of Zoology	Diptera
Yuri Katz (retired)	Department of Zoology	Paleontology
Olga Orlov-Labkovsky	Department of Zoology	Micropaleontology

Associate curators (faculty members)

Yossi Loya	Department of Zoology	Stony Corals
Micha Ilan	Department of Zoology	Sponges
Dan Gerling (emeritus)	Department of Zoology	Hymenoptera
Abraham Hefetz	Department of Zoology	Entomology
Bella S. Galil	Israel Oceanographic & Limnological Research - Haifa	Crustaceans
Danny Simon	Department of Zoology	Formicidae
Ilan Yarom	Hazeva Research & Development	Diptera
Eli Geffen	Department of Zoology	Molecular Systematics
Ofer Mokady (retired)	Department of Zoology	Molecular Systematics
Elazar Kochva (emeritus)	Department of Zoology	Herpetology

VATAT supported expert collections managers

Armin Ionescu-Hirsch, PhD	Department of Zoology	Hymenoptera
Daniella E. Bar-Yosef Mayer, PhD	Department of Zoology Institute of Archaeology	Paleontology
Moshe Guershon, PhD	Department of Zoology	Apoidea
Wolf Kuslitzky, PhD	Department of Zoology	Hymenoptera
Stanislav Volynchik, PhD	Department of Zoology	Reptiles
Tamar Feldstein-Farksh, PhD	Department of Zoology	Porifera, Molecular Systematics
Sigal Shefer (Ramati), PhD	Department of Zoology	Porifera, Bryozoa

VATAT supported Post-docs

Claudia Drees

Efrat Gavish-Regev

Noa Shenkar

Merav Vonshak

Technical assistants (assistant curators, collection managers, technicians, taxidermist)

Revital Ben-David-Zaslow, PhD	Department of Zoology
Avigail Ben-Dov	Department of Zoology
Tova Feller	Department of Zoology
Leonid Friedman	Department of Zoology
Igor Gavrilov	Department of Zoology
Armin Ionescu-Hirsch, PhD	Department of Zoology
Reuven Landsman	Department of Zoology
Henk Mienis	Department of Zoology
Tzilla Shariv	Department of Zoology
Alex Shlagman	Department of Zoology
Tirza Stern	Department of Zoology
Erez Maza	Department of Zoology

‘Nature Campus’

Yael Gavrieli, PhD	Director
Anat Feldman	Content Development
Erez Maza	Public Programs Coordinator

Part time employees

Oz Ritner	Department of Zoology
Gil Wizen	Department of Zoology
Bat Sheva Rothman	Department of Zoology
Gai Harlev	Department of Zoology
Tali Kuperman	Department of Anatomy & Anthropology
Michal Gol	Department of Anatomy & Anthropology
Anat Gershuni	Department of Anatomy & Anthropology
Matan Ben-Zion	Department of Anatomy & Anthropology
Vivian Sloan	Department of Anatomy & Anthropology

The Israel Taxonomy Initiative coordinator

Michael Rozenfeld, PhD	Department of Zoology
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Outreach - Nature Campus

Nature Campus is the outreach program of TAU's Natural history Collections together with the I. Meier Segals Garden for Zoological Research, the Botanic Gardens, the Department of Zoology, the Department of Plant Sciences and the Department of Anatomy and Anthropology in the Faculty of Medicine. Its mission is to advance public understanding of science, nature and the environment, and to serve as a bridge between academic research and the general public.

Nature Campus opens to the public TAU rare combination of infrastructures, such that exist in only few places throughout the world. These include the national natural history collections, the zoological research garden that has the largest collection of indigenous fauna, and botanic gardens in which one can experience the landscapes of the country's flora and acquaint oneself with plant life from around the world. In total, Nature Campus operates on an area of about 6 hectares (60,000 sq.m.). In addition, and most importantly, Nature Campus is nurtured by the country's largest and most comprehensive research center in biodiversity and conservation biology.

The activities of Nature Campus open the gates to these treasures of biodiversity at Tel Aviv University, introducing children, teachers, nature guides, and the general public to the world of scientific research into nature and the environment. All guides in Nature Campus guides are graduate students in the Faculties of Life Sciences or Medicine and are engaged in biodiversity research. In addition, senior research scientists supervise the activities of Nature Campus and participate in some of them.

Nature campus offers programs, materials, and services fostering discovery, science literacy and lifelong learning for all audiences of all ages and backgrounds, both within TAU and far beyond it campus.

Nature Campus feels commitment to support the work of schools and is therefore closely aligned with the public education system. We aspire to improve students' learning and performance and teacher effectiveness in the critical areas of science and environmental education through support, professional development and strategic partnership programs.

To advance science-based conservation, Nature Campus partners with many of the organizations that promote of nature conservation in Israel: Ministry of the Environment, the Society for the protection of Nature in Israel, Israel Nature and Parks Authority, the Israel Society of ecology and Environmental Sciences and others.

In the past year Nature Campus has increased its reach and impact of many existing programs, while also breaking new ground to connect audiences with the latest issues and developments in conservation science.

The audience

Nature Campus caters to all sectors of society from all over Israel. Our audience ranges from kindergarten children to senior citizens, from students to decision makers.

During the past year Nature Campus offered service to 6,700 school children from as many as 60 different schools and in family groups from all around Israel. 9% of the participants were from the Arab sector. Age wise, almost half of the participants were children from kindergarten and elementary school, 40% were middle school children and the rest, 15%, were high school students.

In addition to its programs for schoolchildren, Nature Campus also provides professional development programs to educators: teachers and nature guides. These include lectures, guided tours and training seminars that cultivate science-based environmental education. During 2008-2009 400 teachers,

teaching all grades and 100 nature guides of the Society for protection of Nature in Israel participated.

The collections, together with the botanic and zoological garden serve as an academic teaching infrastructure not only to TAU; 640 students from 7 other higher higher education institutions used its facilities Nature Campus to study.

By word of mouth and without any commercial marketing, Nature Campus became a favorite attraction to many: families, senior citizens and many individual groups who looked for educational recreation. During the past year, more than 1,100 people chose to visit and learn at Nature Campus.

Moreover, via the Nature Campus websites, a much wider audience was enriched. The websites outreach the whole Hebrew speaking community, in Israel and abroad. From informal feedback, it is clear that our virtual audiences are high school and undergraduate students, teachers, environmental professionals and interested adults.

Some Highlights

Public programs

- **Guided Tours.** The program offers a two hour activity at the I. Meier Segals Garden for Zoological Research or the Botanic Gardens. During 2008/2009, the Gardens played host to 4,200 visitors comprise groups of schoolchildren, teachers, nature guides, students from other institutions of higher education, and other organized groups. 20 different tour themes were taken; the most popular program at the Zoo was 'The Fauna of Israel' followed by the theme of 'Predators and Prey'. At the Botanic Gardens, the most popular was 'The Flora of Israel'.
- **Science Days.** The program offers a three to four-hour activity for classes at the Natural History Collections (the "Museum Class") as well as at the zoological and Botanic Gardens. Most of the activity at the collections is

based on the collection's artifacts. The themes that are covered are diverse and include, among others, Marine Biology, Nature Conservation, Biodiversity, Reproduction in Nature, Plants and Their Environment, Predators and Prey, Evolution of Man, Adaptation, and Ecology of Temporary Winter Pools. During the past year the number of school children participating was 900.

- **Science Camps.** Science camps were being held during the Hannukah, Passover and summer school vacations. The camp, a 5 days program, offers a scientific exploration of the biosphere to primary school children. Each day is focused on a major phenomenon or process in the living world, for example the food web, behavior and communication, and adaptation. Marketing is only by word of mouth. However, 114 children participated, about half of them returned to more than one camp.
- **Special school enrichment program.** Tailored to the specific needs of each school, several unique programs were developed, each span for several months to a whole school year:
 - Urban Nature. A new program, developed together with the educational team of Ironi Tet at Tel Aviv Yafo, aimed to introduce inner city 9th grade students to the richness of biodiversity at their immediate surroundings – their schoolyard and adjacent parks. It also taught them concepts of ecology and to the scientific thought. The program spans 11 sessions; 54 students participated in it. The program had an impact not only on their scientific knowledge but also on their environmental attitudes.
 - Research workshops. Developed in accordance with the curriculum for 5 credits high school major in environmental sciences, the program ran for the 5th year. Three workshops took place: biodiversity and ecosystems, urban nature and winter pools. Each

workshop spans 4-6, five hour meetings, some at Nature campus, some at school and some at the research field sites. The students learned the scientific background, experienced field research methods and gathered data, processed their data and presented their results in scientific manner.

- Ecotop – environmental research project. The curriculum for 5 credits high school major in environmental sciences requires that each student carry out an independent research project, focused on an environmental issue. Although Nature Campus usually don't mentor ecotops or biotop (the Biology equivalent) research projects, we accepted Ironi Yod-Bet request and guided 10 outstanding students in their projects. The research topics were: environmental issues of Mediterranean streams, Invasive species, ecology of rocky seashore and biological monitoring.
- **Professional Development and Training Days.** Diverse training programs offer conservation biology enrichment for teachers and environmental organizations staff. The professional training program is tailored according to the participants' requirements. This year more than 500 professionals, including teachers, participated in our in-service training programs.

On-Line resources

Since the Collections capacity for public visitation is currently limited, we put special effort in developing our outreach through the Internet:

- Nature Campus website – <http://www.campusteva.tau.ac.il> – which outreaches to the public, and offers, in a language understandable to all, the wealth of scientific research based on the Natural History Collections (Learning resources section). During 2009 the website was redesigned and a new updated version was launched. It includes information about Nature Campus, before and after visits learning resources which are arranged

according to the themes of the programs, a primer on the invasive species of Israel, a gallery of nature photographs and more. About 100 different visitors visit per day.

- EarthWeb: our changing world. An online primer. During 2009 we have redesigned and launched a new version of the website – www.earthweb.tau.ac.il. The website – an online primer, offers information in Hebrew about the Earth systems, ecosystem services and highlight from status reports worldwide. The website was developed with the kind support of the Ministry of Environmental Protection and the Charles and Lynn Schusterman Family Foundation. Additional to being an open website it will also serve in the coming year as a foundation for youth competitions on sustainable development (developed with the Ministries of Education and of Environmental Protection). Over 40 people visit the website each day. The most popular pages are those that offer teaching resources and power-point presentations to teachers and guides.
- The Natural History Collections website - <http://www.mnh.tau.ac.il> was established and launched. The website provides an active, continuously updated, and comprehensive access to the research activities based on the collections. It also offers an on-line exhibition - <http://www.mnh.tau.ac.il/?cmd=collections.73> of the last evidence of many extinct species which are recorded at TAU collections. About 30 visitors surf the website every day, spending on average 5 minutes.

Progress in the natural history collections

Natural history collections are dynamic archives that record biodiversity. As such, they grow annually by new collecting activities and by incorporating smaller private or institutional collections. The collecting activities comprise focused collecting expeditions as well as by the products of numerous field studies carried out by scientists and their graduate students. Moreover, the Israel Nature and Parks Authority rangers collect vertebrate carcasses for the collections. Collecting, incorporating the collections, preserving and digitizing them, as well as managing the collections, the data, and the network of collectors and colleagues, is a formidable job that falls upon the shoulders of the curators, and, even more so, on those of the collections managers, technical assistants, and taxidermist. We are fortunate to have a group of active, knowledgeable, and dedicated technical staff members, who do their best, in the nearly impossible physical conditions and under-staffing, to preserve and expand this priceless record of biodiversity, and to help promote scientific biodiversity research. Their work is highly specialized, their knowledge priceless; almost all have academic degrees, most have either a PhD or an MSc, and all are the crucial backbone of the national collections of natural history at Tel Aviv University.

Our overworked collections managers have also produced this report, and we are particularly grateful to the work of Dr. Revital Ben-David-Zaslow in compiling it. Here they also report a little about the behind-the-scenes of managing the collections: collections news, collecting trips and expeditions, and new collections are reported here in a nutshell.

Collections News – A word from our collection managers

The staff members of TAU Natural History Collections continue their activities to promote and preserve the various collections. As in previous years, we have put much effort into advancing our goals. We continue to collect and preserve new scientific materials, rescue and incorporate important private and historical collections, maintain the existing collections, ship scientific material and data, and assist graduate students, academic courses, and “Nature Campus” activities.

During the academic year 2008/2009 we received and incorporated many specimens of various taxonomic groups collected worldwide by the collection curators and staff, students, rangers from the Israel Nature and Parks Authority, and others. Over 29,000 new specimens were added to the various collections during this year.

We continued organizing the dry vertebrate collection in the new specimen cabinets, purchased with the support of VATAT funds. Some 250 new specimens have been preserved and added to the mammal collection and about 300 to the bird collection. These include specimens collected by rangers from the Israel Nature and Parks Authority. Almost 260 new records were added to the reptile collection this past year. Most of these were collected by graduate students during their field work.

Father Schmitz collection was transferred to our collections during 1999. The collection, as we received it from Jerusalem, included specimens preserved in liquid and dry stuffed material. The material preserved in liquid was already treated. The specimens were transferred to new jars, the preservation liquids changed, the species determination reviewed and the data included in the collection database. In the processes 138 reptiles, 59 fish, and 13 specimens of mollusks were treated. The dry material includes a few hundred specimens of mammals and birds. The material received technical taxidermist treatment. Now the specimens are being taxonomically determined, and the data

integrated into our database. Until now 70 birds and 47 mammals were cared for. Most of the specimens were collected at the beginning of the 20th century in the Middle East and Madeira and the adjacent islands.

The Echinodermata collection was reorganized and now the entire collection is digitized and has new labels. In the collection there are about 2,300 specimens belonging to 200 species and 50 families. Most of them were collected in Israel in the Mediterranean and Red sea.

As in previous years, the collections made by Prof. Yehuda Benayahu have been sorted, preserved, and digitized for future research and identification. The material includes soft corals, sea anemones, sponges, tunicates, nudibranchs, and other invertebrates. As a routine procedure, tissue samples for molecular analysis were taken from most of the soft coral specimens and preserved.

We continue the fruitful cooperation with Tel Aviv University students collecting samples in the field. Collections made by students are immediately digitized in order to facilitate easy transfer of specimens to the museum in the near future. Cooperation between students and staff of the collections is excellent. We give the students support in all fields including preservation, identification, labeling, and cataloguing. Tirza Stern has developed a unique database for this purpose and continues to work with the students, adjusting it to their special needs. More than 3,000 samples were transferred to the collections in the present year by students. The students of Prof. Avital Gasith continue to transfer their collections, consisting of freshwater invertebrates caught in various rivers in Israel, to the National Collections. Together with the samples, the collection managers are provided with the digitized database to assist their incorporation into the National Collections and to help avoid mistakes. Students of Prof. Tamar Dayan have transferred a very large collection to the museum, containing thousands of specimens, of mammals, amphibians, reptiles, and arthropods caught in pitfall traps. The vertebrates among them have been

preserved, identified, digitized, and labeled; the invertebrates were preserved and sorted for future identification. Also students of Dr. Menachem Goren, collecting fish from the Mediterranean and freshwater rivers transferred their samplings together with the collecting data to the museum. Routine work on the insect collection includes absorption and integration of donated collections; labeling and sorting of specimens from collecting trips; identification of and research on select groups (including over 70 shipments of scientific specimens to specialists, mostly overseas, during 2008/9); and preservation activities, such as renewal of naphthalene. Special treatment was required in cases of damage caused by mold and pests. As in past years, we have continued digitizing this collection. Newly, this year we broaden the system to include the new income insects. Each insect gets a unique catalog number immediately when it incorporates in the collection. During the present year, about 19,000 new insects were added to the collection. Vladimir Chikatunov performed an enormous identification work on a beetle collection from pitfall traps and malaise traps in various projects and areas (Upper Galilee, Mt. Carmel, Nizzanim, Adullam, Coastal Plain, Jordan Valley and others). There is a close working relationship between the "Plant Protection and Inspection Services" (PPIS, Ministry of Agriculture) and the insect and arthropoda staff. As in previous years, the collection staff made identifications work and guided the PPIS members.

Sergei Zonstein, curator in the arthropod collection, reports on his work. As in the previous year, field work included about 15 days in the field in central coastal plain sands near Or-Akiva, collecting spiders (Arachnidae) and spider-wasps (Pompilidae). Laboratory work mainly comprised identification of collections made by students, as part of their projects, and establishing a database for these collections.

**Biogeography and taxonomy of sheet-web spiders (Linyphiidae: Araneae)
in Israel**

Efrat Gavish-Regev

Approximately half of the known spider families were recorded from Israel thus far (at least 50 families out of 109 known spider families), and thirteen have been extensively studied by the late Gershom Levy (1937-2009). Yet, there is still a scarcity of knowledge on the taxonomy, biology, and ecology of many of the spider families that occur in Israel and its surroundings. Sheet-web spiders (Linyphiidae) are the second largest family of spiders, with 4,365 species (>10% of all known spider species) in 583 genera. Linyphiids have a worldwide distribution, and are most diverse in the northern temperate regions. The knowledge of linyphiids in semi-arid and arid habitats is limited, and currently only six linyphiid species are reported from Israel. This research project aims to describe and document the linyphiid fauna of Israel, and their geographic distribution ranges.

In the first stage of the project (started at 2008 and still in process) I sorted linyphiid material from the Arachnid Collection of the National Collections of Natural History at Tel Aviv University; the Arachnid Collection of The Hebrew University of Jerusalem; and the research collections of the Ecology Department at Ben-Gurion University of the Negev. The specimens have been identified to species level, when possible. So far we have found 32 linyphiid species; only three were previously reported from Israel. Out of the 32 species, seven are probably new to science and are now being described (Fig. 1). The new species and records are being documented, and figures of some of the specimens were taken using the new stereomicroscope (Discovery V20, Zeiss) that was purchased by the National Collections of Natural History at Tel Aviv University at the end of 2008.

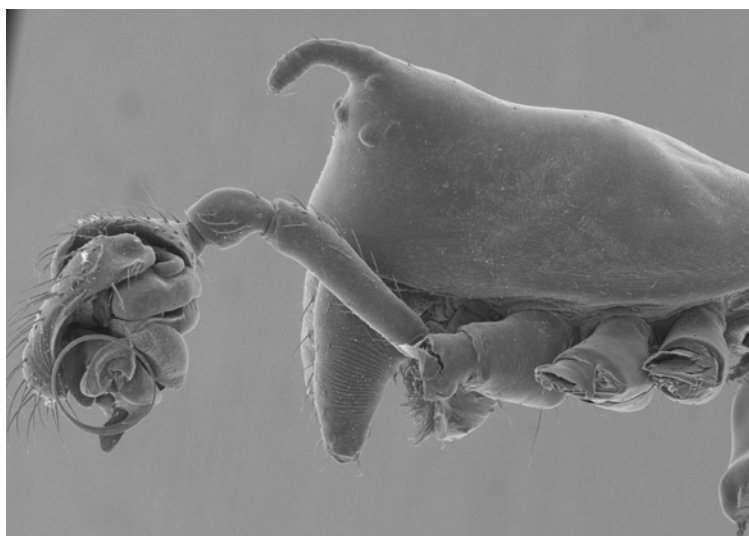


Fig. 1: *Thaumatoncus* sp n 2, SEM: Lateral view of male carapace and left palp. The figure was taken during visit at the Zoological Museum, University of Copenhagen, Denmark.

The spider collection at Tel-Aviv University contains material collected during ecological studies from various regions of Israel by Dr. Yael Mandelik and Arie Landsman (4 linyphiid species so far), Merav Vonshak (9 linyphiid species), Udi Columbus and Tal Levanony, Ina Steinberg, and Orit Skutelsky.

Progress Report: Ascidian Collection 2009

Project: Taxonomic study of the ascidian fauna along the Israeli coasts

Noa Shenkar

Ascidians (Phylum: *Chordata*, Class: *Ascidacea*), or sea squirts, are the largest and most diverse class of the sub-phylum *Tunicata* (also known as *Urochordata*). They comprise approximately 3,000 species found in all marine habitats from shallow water to the deep sea. Despite the enormous progress that has been achieved in the field of ascidian research worldwide, only a few studies have focused on the ascidians of the Red Sea and the Eastern Mediterranean. The current study's main goal is to establish an up-to-date

museum collection of ascidians of these regions, with a focus on documenting the arrival and spread of non-indigenous species along the Mediterranean coast. In order to allow identification of ascidians to species level, the live material must be fixed in formaldehyde, preventing in many cases DNA-based research for most of the ascidian collections worldwide. The uniqueness of the current collection is that it will enable future molecular based studies on material preserved in ethanol together with classic taxonomic studies on the matching species. The collection currently includes more than 500 from the Red Sea and Mediterranean and is expanding. The cytochrome c oxidase subunit I from these samples is being sequenced in a collaborative effort with the Smithsonian Barcoding of Life project <http://www.barcodinglife.org>. To date, 70 specimens have been identified from the Mediterranean coast of Israel, including seven non-indigenous species. In addition, three new species to science have been discovered at the Red Sea coast of Israel. Our final goal is to publish a revision of the ascidian species of the Gulf of Eilat and the Mediterranean coast of Israel.

Ant surveys: The little fire ant (*Wasmannia auropunctata*)

Merav Vonshak

Following the discovery of the little fire ant (*Wasmannia auropunctata*) in Israel at the end of 2005, we conducted a survey, from January 22nd to March 7th 2006, in order to evaluate the extent of the infestation. The ants were found in four out of five of the villages that were examined, in agricultural fields and a nature reserve, implying a much larger infestation. The results were set on GIS maps and transferred to the Ministry of Environmental Protection to aid eradication. We later conducted one-day surveys of newly-discovered infestations in Dafna, Ma'abarot, Tel Aviv, Newe Yaraq, Hod Hasharon, Ramot Hashavim and Savion, between October 2006 and September 2008, in some of which individuals from the Ministry of Environmental Protection or the Israel Nature and National Parks Protection Authority participated. All data regarding

the ants' distribution was shared with the Ministry of Environmental Protection. Additionally, for the past 18 months we received 180 ant samples for identification from The Israel Nature and National Parks Authority, The Ministry of Environmental Protection and from different exterminators.

Research activities 2008/9: Report for the Israel Academy of Sciences

Daniella E. Bar-Yosef Mayer

The past academic year was dedicated to several activities that relied on research in the malacological collections, based at the Natural History Collections. Those include the study of archaeo-malacological shell assemblages of Natufian sites in Israel, and a Neolithic site in Turkey.

The study of shells from two Late Natufian sites, dated to about 13,000 – 11,500 years ago, were part of a study of the exploitation of the earliest marine resources by humans. The shells from the sites of Hilazon Tachtit Cave in the Western Galilee were studied, as were those of Eynan in the Hula Valley. In both sites the dominant species collected from the Mediterranean beaches were scaphopods, primarily *Antalis dentalis* and *Antalis vulgaris* that are not easily found on the shores of Israel today. Those results were presented at the second international conference on the Natufian Culture, held in Paris. The study was done in collaboration with Ms. Aldona Kurzawska of the Polish Academy of Sciences in Poznan, and with Mr. Henk K. Mienis of Tel Aviv University.

Another discovery revealed that at the site of Eynan the Mediterranean bivalve *Cerastoderma glaucum* served for the first time as raw material for the production of disk beads, the earliest ones that are known to be made of mollusc shell. These occur at the same time as the disc beads that were produced from minerals, primarily apatite. The results are being prepared for publications.

Yet a third discovery related to the Natufian culture, relates to the exploitation of fish. While freshwater fishes are known to have been exploited since at least 23,000 years ago, the first evidence for marine fishing comes from Early Natufian sites such as Hayonim Cave in the western Galilee and Kebara Cave in Mt. Carmel. At the same time, edible shellfish were discovered at El Wad Cave in Mt. Carmel, which provides additional support for maritime activities. Further evidence for fishing comes from material culture that includes fishing gear. This study was carried out in collaboration with Dr. Irit Zohar of Tel Aviv University, and was also presented at the second international conference on the Natufian Culture, held in Paris, 11-17 September 2009.

My research at the Neolithic site of Çatalhöyük, Turkey, continued. This excavation season was dedicated primarily for the identification of the fossil molluscan fauna discovered at the site, in collaboration with Dr. Yesim Isalmoglu of the Geological Research Department, Turkish Institute for Mineral Research and Exploration (MTA) in Ankara. Another aspect of the research was dedicated to thousands of small molluscs that were embedded in the sediments and were apparently used to form the mudbricks that make up most of the site. Those are both small (under 0.5 cm) species, and juveniles of larger ones. Together with Dr. Burçin Gümüş, malacologist at Gazi University in Ankara, we catalogued these shells and are currently in the process of analyzing the results. We expect to see changes over time within the site that might reflect environmental changes in the nearby river. In order to understand the role of these shells in the mudbricks we also conducted an ethnoarchaeological study, in which we analyzed the shell species of mudbricks from the nearby village in which the sources of the sediments and the molluscs are known. Those will be eventually compared to the archaeological materials. This project is on-going and results are not yet available.

The results of all the above projects are being prepared for publication. Future plans involve the study of the earliest shells from Palaeolithic sites in the Levant, in relation to thanatocoenoses on the current shores of Israel.

Report on the activities in the collection of parasitic wasps (Hymenoptera: Parasitica) of the National Collection of Insects, TAU in 2009

Wolf Kuslitzky

With nearly 22,000 species in 37 subfamilies, the Ichneumonidae constitute one of the largest animal groups. According to the literature 218 species are known from Israel. However, based on the Tel Aviv University collection (TAU) and extrapolations, this number represents only a small part of the actual Israeli fauna of this family. As parasitoids of other insects, the Ichneumonidae are a major factor in the control of insect populations. In the biocontrol of agricultural and forest pests many successful examples are known of the use of Ichneumonidae, including the introduction and augmentation of local populations. One of the most important prerequisites for the use of entomophagous insects for biocontrol of pests is the knowledge of the parasitoid fauna in the treated area.

In order to establish a full data of the Israeli fauna I started to review and collect new specimens for the TAU collections. Ichneumonidae and Braconidae have been collected, mounted on pins and labeled (ca. 1,500 specimens). Other Parasitica superfamilies (Bethyloidea, Chalcidoidea, Proctotrupoidea, Ceraphronoidea and Cynipoidea) have been collected and preserved in alcohol (ca. 1,000 specimens). The newly collected material of Ichneumonidae was sorted to subfamilies. About half of the Campopleginae have been determined to tribes, genera and species prior to being sent to Dr. Horstmann. The survey of the subfamily Collyriinae in Israel is complete, and a preliminary manuscript has been prepared. A selection of ca. 800 specimens of Proctotrupoidea and Ceraphronoidea have been sent to Dr. L. Masner (Ottawa, Canada) for identification.

Progress Report: Apoidea Collection 2009, Managerial work of the Apoidea collection in TAU collection:

Moshe Guershon

Following last year is preliminary inventory, we know that this important collection contains about 30,000 specimens, with about half already determined and classified within 1,300 species, which are distributed among eight families and approximately 90 genera. The majority of these species are composed of specimens from the Israeli fauna, but it also features a respectable number of representative specimens from all over the world. Managerial work during last year focused on two main areas: technical work of arrangement and maintenance, and scientific work including macro-taxonomy determination and analysis of information from specific groups in the collection.

Technical-maintenance work:

- Aprox. 150 items that returned from determination to species level by experts abroad were positioned in their correct place in the collection.
- Collection data (place and date) of all the Osmia specimens determined to species in the collection were digitalized. In total data were gathered from 1088 specimens, belonging to 122 species of this genus

Scientific work

- 1057 undetermined specimens were determined to the genus level.
- The digitized data for the Osmia species include records starting from 1932 and until 1991, from circa 150 locations from Mount Hermon in the north to Yotvata in the south. This extremely important data are being analyzed for determination and comparison of spatio-temporal distribution of the different species.
- A survey of the Apoidea fauna of the Nahal Teko'a Reserve was performed in collaboration with the Nature and Parks Authority. The work included collection of wild bees their arrangement and future determination to genus level.

The development of an interactive practical identification key for Israeli bees, which was started last year based on the collection and the data base, is being continued.

Interim report on the partial revision of the genus *Cataglyphis* and the associated curation activity

Armin Ionescu

Until now I prepared a provisional annotated list of the *Cataglyphis* species of Israel (with synonyms, previous records, notes and material examined) and a key to all these species. The annotated list was composed after the examination of all the TAU specimens and a review of the relevant literature. The number of *Cataglyphis* species of the Israeli fauna has increased from 11 (Kugler, 1988) to 18, and there is a questionable 19th species. The annotated list is written as a first draft of an upcoming paper, which should be ready for submission before December. The following items will also be included:

- A detailed description of 7 species.
- A discussion of the zoogeographic affinities of the Israeli *Cataglyphis* fauna.
- Figures – drawn by an illustrator based on the photos in the key.

The list and identification key may be subject to slight modifications according to the future availability of types for comparison. Nevertheless, I should stress that the fact that some types might not be available for study will not impede the future submission of the MS for publication.

During the work the identification of each specimen in collections was checked. About 500 ants that were considered representative for intra-specific variability were measured and photographed. These specimens form the basis of the new arrangement of the *Cataglyphis* species in TAU.

Progress Report for the Paleontological Collection 2008-2009

Olga Orlov-Labkovsky and Henk K. Mienis

During the past academic year Olga Orlov-Labkovsky continued to work on:

1. The preparation of fossil material present in the Paleontological Collection, the organization of a Database for fossils; the description of taxa and the detailed documentation of taxonomic lineages.

She continued to work on thin-sections of Foraminifera from assemblages of the Visean and Serpukhovian deposits of the Carboniferous system (Upper Paleozoic) in the Middle Tien-Shan (Central Asia, Uzbekistan and Kazakhstan).

This material was revised and has been photographed (about 500 pictures). It will be transferred to the Paleontological Collection as soon as all the slides have been computerized.

2. The stratigraphy and taxonomy of Carboniferous foraminifers. These studies support the international project for a standardization of a globally applicable stratigraphic scale according to the objectives of the International Commission on Stratigraphy (based on materials from Central Asia).

During this period she carried out scientific research work for the project "Discussion about Regional Central Asia unified stratigraphical scheme of the Carboniferous and Permian systems". The results were presented in the article "On Regional Stratigraphy of the Bashkirian and Moscovian Stages in South Tien-Shan (Central Asia)".

Henk Mienis worked on molluscs from the last Inter-Glacial period dated to the MIS 5e isotopic stage which had been collected at 12 sites in Cyprus by Dr. E. Galili (Israel Antiquities Authority) and Dr. M. Sevketoglu (International Cyprus University). So far he managed to identify 217 samples. Part of the results were presented by Ehud Galili during the "15th Annual meeting of the European Association of Archaeologists" (15-20 September 2009, Riva del Garda, Italy).

The numerous samples of fossil molluscs which formed part of the Derk A. Visker Mollusc Collection have been transferred to a separate cupboard. This cupboard contains also the rich material of fossil freshwater molluscs from Kos and Rhodes from the former collection of Prof. Hanan (Hans) Bytinski-Salz. The latter material will be studied in the coming academic year. The speciation which took place among the Melanopsidae and Viviparidae on those Mediterranean islands is rather similar to that of the same families present in the sediments of Gesher Benot Ya'aqov, which material is currently being studied by Henk Mienis and Dr. Shoshana Ashkenazi at the Hebrew University of Jerusalem.

New acquisitions

The following material was donated to the Palaontological Collection:

Name	Brief description
Y. Aderet	Molluscs from Har Karmel
B. Dell'Angelo	Molluscs from the Pliocene of Italy
E. Galili	Mollusc from the Pleistocene of Cyprus
O. Karmon	Molluscs from the Negev
H.K. Mienis	Echinodermata from the Negev

Progress Report for the Mollusc Collection 2008-2009

Henk K. Mienis and Revital Ben-David-Zaslow

Research

During the academic year 2008/9 several research projects were carried out in the Mollusc Collection. A revision of the Cardiidae occurring in the Gulf of Aqaba by Henk Mienis resulted in the description of two new taxa: *Lunulicardia orlini* and *Lyrocardium anaxium dekkeri*. Dirk Fehse (Germany) and Jozef Greco (Slovakia) finished their revision of the Mediterranean and Erythraean Triviidae present in the collection. This has led among others to the description of a new species *Trivirostra dekkeri*.

All possible type samples have been separated from the general collection. The status of that material has been checked with the original descriptions. Holotypes, paratypes and syntypes are now stored in a separate cupboard. A few type specimens seem to be either missing from or misplaced in the collection. In the coming year we will try to locate them.

The presence of far too many invasive species among the land- and freshwater molluscs of Israel remains a subject of serious concern. Two recently discovered tropical freshwater gastropods in Israel: *Tarebia granifera* and *Thiara scabra*, have now been found to live together in 'En Saharon, Emeq Bet Shean by Yaron Krotman and Guy Harlev (Mienis, Krotman & Harlev, 2009).

Temporary workers arriving from Thailand continue their attempts to smuggle living freshwater gastropods into Israel including taxa not encountered before by inspectors of the Department of Plant Protection & Inspection Services of the Ministry of Agriculture (Mienis, 2009). Of the Giant African snail *Achatina fulica* viable populations have been found in gardens in Tel Aviv.

Attention was also given to the arrival of new Lessepsian migrants in Israel. Among the molluscs collected in a former saltpan near Atlit Kfir Gaier found three Nudibranchs, which had not been reported before from the Mediterranean coast of Israel: *Melibe viridis* (= *fimbriata*), *Philinopsis cyanea* and an unknown Indo-Pacific species of *Elysia*.

Like in previous years the Mollusc Collection played an important role in the study of archaeomalacological material not only from Israel but also from abroad. These studies are being carried out by Henk Mienis and Dr. Daniella Bar-Yosef Mayer (see her own report), while advice is regularly being given to Mrs. Inbar Ktalav, an independent worker on archaeomalacological material. Numerous samples of shells from archaeological excavations were compared with contemporary material in the shell collection in order to verify the identifications.

Two reports concerning the excavation of Horvat Shallale in the Carmel Mountains, authored by Henk Mienis, appeared in a book edited by the excavator Prof. Shimon Dar (2009): Shallale: Ancient city of Carmel. A report on the shell and crab remains found during the excavation of the Acropolis of Aphek-Antipatris by the late Prof. Moshe Kochavi, has also been finely published (Mienis, 2009).

The cooperation between Henk Mienis and Dr. Burçin Aşkim Gümüş of the Gazi University in Ankara, Turkey on the distribution of the Clausilid land snail *Papillifera bidens* outside its native range, has resulted in another paper on the presence of that species at ancient sites. This time the North-African coast was subject of a short paper.

However, the recent collection played a major role in solving a problem concerning the proper identities of some shell beads excavated at several Middle Paleolithic sites in Morocco. The results of that multi-national study were incorporated in a special feature issue of the Proceedings of the National Academy of Sciences (of North America) under the title: Out of Africa: Modern Human Origins (D'Errico, et al., 2009).

Currently the archaeomalacological material of several other sites are being studied or the results are being prepared for publication: Tel Malhata (Excavator: Prof. Itzhaq Beit-Arieh), Yavne-Yam (Excavator: Prof. Moshe Fischer), Derekh Namir, Tel Aviv (Dr. Edwin C.M. van den Brink) and others.

Another chapter concerning the distribution of *Papillifera bidens* at ancient sites, this time along the east coast of the Adriatic Sea, is also underway (Gümüş & Mienis).

New material, identification and computerization

The ongoing research project dealing with "The impact of biological invasions and climatic change on the biodiversity of the Mediterranean Sea", carried out

by Dr. M. Goren and Dr. B.S. Galil, has produced also this year numerous samples of cephalopods. Noteworthy is the poor representation of gastropods (except for the exotic species *Conomurex persicus* and *Murex forskoeihlii*) and bivalves among the trawled material. All the studied material is preserved in ethanol for permanent storage.

This year we identified again a large number of littoral molluscs, which were been collected by Dr. E. Shefer (Israel Oceanographic & Limnological Research Institute, Haifa) at permanent stations scattered along the entire Mediterranean coast for her research on the presence of residues of heavy metals in autochthonous species of *Patella* and the Lessepsian migrant *Cellana rota*.

Dr. S. Moran and Mrs. S. Vaisman sent us for identification some 20 samples of land snails intercepted by inspectors from the Plant Protection & Inspection Services of the Ministry of Agriculture & Rural Development, which were found on imported and exported agricultural and horticultural merchandise. Mrs. Vaisman is a regular visitor of the mollusc collection in order to become more acquainted with the land- and freshwater molluscs of Israel, with special emphasis on the economically important species among them

New material was also regularly received from colleagues and friends in Israel and abroad (see new acquisitions). Especially noteworthy was the recent arrival of some 650 samples of gastropods belonging to the family Neritidae, which were donated by Mr. Gary Gordon from Warner Robins, Georgia, U.S.A.

Between all these various activities we have focused our efforts especially on the incorporation of the very large collection of Zvi Orlin, a private shell collector from Qiryat Motzkin, into the general Mollusc Collection. It will take at least another year before all his material will be registered and properly labeled. The identifications are being carried out by Henk Mienis, while Revital

Ben-David Zaslow, Avigail Ben-Dov and especially Oz Rittner is dealing with the computerization and labelling of the material.

At the moment 45561 samples representing 6616 taxa in the mollusc collection have been digitized. Most of the new species and subspecies which we could add this year to the collection (1131) were from the collection Orlin.

New acquisitions

New material has continued to arrive. All these new samples are immediately identified and prepared for permanent storage.

During the academic year 2008/2009 material was received directly or indirectly from the following persons:

Name	Brief description of the material
M. Adler	Land snails from Germany
P. Bailey	Marine molluscs world wide
U. Bar-Ze'ev	Land snail from Israel and Croatia
B. Dell'Angelo	Marine molluscs from Italy, Corsica, France, land snails from Italy and Ukraine
B. Dharma	Neritidae from Indonesia
K. Dhondt	Marine molluscs from various localities
A. Dolev	Freshwater molluscs Israel
A. Dotan	Marine molluscs Bay of Akko
K. Gaier	Marine molluscs from Atlit and Mihmoret
B. Galil	Marine molluscs from the Eastern Mediterranean
A. Gasith	Marine molluscs from the salt ponds of Atlit Freshwater molluscs from Israel
G. Gordon	Neritidae world wide
M. Goren	Marine molluscs from the Eastern Mediterranean
E.L. Heiman	Cypraeidae
E. Heyfetz	Marine molluscs from the Black Sea (Ukraine)
M. Keppens	Marine molluscs from various localities
D. Mienis	Land snails from Israel
H.K. Mienis	Land snails from Israel; large selection of world-wide Neritidae
E. Orbach	Land snails from Israel
O. Orlov-Labkovsky	Land snails deom Austria
T. Piersma	Freshwater mussels from the Netherlands

O. Rittner	Land snails from Israel, France and Czechia
G. Sangioulouglou	Land snails from Greece
E. Schwabe	Neritidae from Western Samoa
E. Shefer	Patelli-form Mediterranean marine molluscs from Israel
Y. Sinai	Land snails from Israel
B.S. Singer	Marine molluscs from the Gulf of Aqaba
M. Weisz	Marine molluscs fouling Elat
S. Vaisman	Molluscs intercepted by inspectors of PPIS, Ministry of Agriculture

Type Material

Type material of the following six, recently described taxa have been lodged in the collection: *Diminovula fainzilberi* Fehse in Lorenz & Fehse, 2009, *Homalocantha anatomica elatensis* Heiman & Mienis, 2009, *Ipsa childreni leforti* Heiman, 2009, *Lunulicardia orlini* Mienis, 2009, *Lyrocardium anaxium dekkeri* Mienis, 2009 and *Pustularia cicercula avrilae* Heiman, 2009.

A full list of type specimens located so far in the Mollusc collection is presented elsewhere.

The Malacological library

The library of the Mollusc Collection, a most important tool for taxonomic and systematic studies, has grown this year considerably. After the donation of his private shell collection in September 2008, Mr. Zvi Orlin donated this year 54 modern malacological works to the library. A large part of the library of Henk Mienis has also been received, while most of the shell related journals, which the Israel Malacological Society receives on a regular base, found also a permanent place in the premises of the Mollusc Collection. In this way we are on the right way of becoming less dependant on libraries elsewhere.

**PROVISIONAL CATALOGUE OF TYPE SPECIMENS IN THE
MOLLUSC COLLECTION OF THE TEL AVIV UNIVERSITY
Henk K. Mienis**

During the ongoing computerization of the Mollusc Collection 65 type samples belonging to 49 different taxa have been located so far in the National Collections of Natural History of the Tel Aviv University. This type material, consisting of holotypes, paratypes and syntypes, is listed here in systematic order.

MOLLUSCA

LORICATA

Family Ischnochitonidae

Cryptoplax enigmaticus Leloup, 1980

Holotype TAU MO 7158: Gulf of Aqaba, Israel, Elat, on Acropora.

GASTROPODA

Family Scissurellidae

Sinezona tricarinata Yaron, 1983

Paratype TAU MO 44595: Gulf of Aqaba, Egypt, Nabek, Shurat el Gharqana.

Family Trochidae

Clanculus (Clanculopsis) korkosi Singer, Mienis & Geiger, 2000

Paratype TAU MO 42905: Gulf of Aqaba, Egypt, Dahad, Blue Hole.

Gibbula (Colliculus) virescens F. Nordsieck, 1972

Paratypes TAU MO 58870/5: Israel, Shiqmona.

Gibbula (Magulus) apicalis F. Nordsieck, 1972

Paratypes TAU MO 58871/8: Israel, Shiqmona.

Family Neritidae

Nerita adenensis Mienis, 1978

Paratypes TAU MO 65196/3: Yemen, Aden, Crater Beach east of the isthmus.

Nerita ascensionis deturpensis Vermeij, 1970

Paratypes TAU MO 65315/2: Brazil, Fernando de Noronha, Baia de Sueste, south coast Ilha, lava.

Neritina valentina Graells, 1846

Syntype TAU MO 62430: Spain, Valencia, Venta del Conde.

Theodoxus altenai Schütt, 1965

Paratype TAU MO 65195: Turkey, Vilayet antalya, Bunarbaşa Gölü near Yeniköy.

Family Cerithiidae

Gourmya (Gladiocerithium) argutum barashi F. Nordsieck, 1972

Paratypes TAU MO 58865/50+: Israel, Shiqmona.

Gourmya (Thericium) aluchensis F. Nordsieck, 1972

Paratypes TAU MO 58864/2: Israel, Shiqmona.

Family Bithyniidae

Bithynia pseudemerica Schütt, 1964

Paratypes TAU MO 55548/4 and 62775/4: Turkey, Lake Bunarbaşa near Yeniköi.

Family Hydrobiidae

Belgrandiella pageti Schütt, 1970

Paratypes TAU MO 63547/15: Croatia, cave near the source of the Rudnica near Ogulin.

Family Pyrgulidae

Chilopyrgula zilchi Schütt, 1964

Paratypes TAU MO 62634/5: Turkey, Lake Bunarbaşa near Yeniköi.

Family Rissoidae

Putilla (Globisetia) ovulata F. Nordsieck, 1972

Paratype TAU MO 42473/1: Israel, Shiqmona.

Setia levantina Bogi & Galil, 2007

Paratype TAU MO 52282: Israel, off Tel Aviv, depth 20-25 mm.

Family Strombidae

Euprotomus aurora Kronenberg, 2002

Paratypes TAU MO 30015/3: Gulf of Aqaba, Israel, Elat.

Family Cypraeidae

Ipsa childreni leforti Heiman, 2009

Paratypes TAU MO 62626/5: Tahiti, Huahine.

Lyncina carneola titan Schilder, 1962

Paratype TAU MO 42904: Kenya, Shimoni.

Pustularia cicercula avrilae Heiman, 2009

Paratypes TAU MO 62623/2: Tuamotu Islands, Takapoto.

Family Ovulidae

Diminovula fainzilberi Fehse in Lorenz & Fehse, 2009

Paratype TAU MO 42521: Eritrea, Dahlak Arch., 015°08'N 040°18'E, depth 9 m.

Primovula eilatensis Cernohorsky, 1972

Paratype TAU MO 42906: Gulf of Aqaba, Israel, Elat, depth 15 m.

Remark: The holotype of *Primovula eilatensis* should also be in the TAU collection according to the original publication, however, so far we failed to locate it.

Family Triviidae

Trivostra dekkeri Fehse & Grego, 2009

Paratype TAU MO 42433: Gulf of Aqaba, Israel, Elat.

Paratype TAU MO 47152: Red Sea, Egypt, Sinai, Ras Umm Sidd, under stone.

Family Muricidae

Drupa ricinus hadari Emerson & Cernohorsky, 1973

Paratypes TAU MO 42408/3: Gulf of Aqaba, Israel, Elat.

Homalocantha anatomica elatensis Heiman & Mienis, 2009

Holotype TAU MO 61533: Gulf of Aqaba, Israel, Elat.

Paratype TAU MO 61532: Gulf of Aqaba, Israel, Elat.

Muricopsis atra F. Nordsieck, 1972

Paratypes TAU MO 58866/2: Israel, Shiqmona.

Muricopsis spinulosa obsoleta F. Nordsieck, 1972

Paratypes TAU MO 58867/4: Israel, Shiqmona.

Family Coralliophilidae

Latiaxis (Babelomurex) fearnleyi Emerson & d'Attilio, 1965

Paratype TAU MO 41882: Australia, Queensland, Cooktown.

Family Nassariidae

Naytiopsis granum flammulata F. Nordsieck, 1972

Paratypes TAU MO 58868/25+: Israel, Shiqmona.

Nassarius jeanmartini Kool & Dekker, 2006

Paratypes TAU MO 58900/2: Reunion, Baie de St. Paul, depth 40-60 m.

Family Buccinidae

Cantharus scabrum unicolor F. Nordsieck, 1972

Paratype TAU MO 58872/1: Israel, Shiqmona.

Family Fasciariidae

Fusinus (Barbarofusus) suturalis F. Nordsieck, 1972

Paratypes TAU MO 58869/7: Israel, Shiqmona

Family Turridae

Mangelia melitensis Cachia & Mifsud, 2008

Paratypes TAU MO 57001/3: Malata, off Rdum id-Delli, depth 50 m.

Family Pyramidellidae

Odostomia (Auristomia) barashi Bogi & Galil, 1999

Paratypes TAU MO 42903/2: Israel, Haifa Bay, depth 22 m.

Family Ringiculidae

Ringicula barashi Di Geronimo, 1974

Paratypes TAU MO 49641/25: Israel, off Dor, depth 48 m.

Paratypes TAU MO 49642/15: Israel, off Atlit-Dor, depth 48 m.

Paratypes TAU MO 49643/21: Israel, off Bat Yam-Asdod, depth 37 m.

Paratypes TAU MO 49644/13: Israel, off Bat Yam, depth 27-36 m.

Paratype TAU MO 49645: Israel off Dor, depth 37 m.

Family Siphonariidae

Siphonaria acmaeoides paulae Christiaens, 1980

Paratype TAU MO 50433: Hong Kong, Ping Chau.

Family Enidae

Paramastus edentatus zilchi Brandt, 1958

Paratypes TAU MO 57652/5: Lybia, Cyrenaica, Wadi el Gattara and Wadi Tuega.

Family Clausiliidae

Albinaria (Filumna) elonensis G. Haas, 1951

Paratypes TAU MO 59420/6: Israel, Elon.

Elia (Elia) moesta georgi Forcart, 1975

Paratypes TAU MO 25778/5: Israel, Karmel Ridge.

Paratypes TAU MO 25779/2: Israel, Karmel Ridge.

Paratypes TAU MO 25780/12: Israel, Haifa.

Paratype TAU MO 25781/1: Israel, Hanita.

Cyclonena geertsi Grego & Szekeres, 2004

Paratype TAU MO 48978: Peru, Dept. Amazonas, Prov. Luya, Quisango, SW of Chachapoyas, 2800 m.

Cyclonena sanmarcos Grego & Szekeres, 2004

Paratype TAU MO 48979: Peru, Dept. Amazonas, Prov. Luya, Quisango, SW of Chachapoyas, 2650 m.

Family Agriolimacidae

Agriolimax (Agriolimax) jordanicus Wagner, 1940

Paratypes TAU MO 59133/2:

Family Hygromiidae

Trochoidea (Xeroclausia) gharlapsi Beckmann, 1987

Paratypes TAU MO 59289/2: Malta, Ghar Lapsi, on the steep slopes of the Dingli Cliffs.

Trochoidea (Xeroregima) davidiana yedabiana Brandt, 1959

Paratypes TAU MO 64638/6: Lybia, 2 km from Agedabia.

BIVALVIA

Family Pectinidae

Mirapecten yaroni Dijkstra & Knudsen, 1998

Paratype TAU MO 16473: Egypt, Tiran Island, depth 68 m.

Paratype TAU MO 28536/1 valve: Israel, Elat, off Old Port, depth 121 m.

Family Ungulinidae

Diplodonta moolenbeeki van Aartsen & Goud, 2006

Paratype TAU MO 1422: Egypt, Ras Muhammad.

Paratypes TAU MO 30011/2: Eritrea, Dahlak Arch., Museri Island.

Paratype TAU MO 30012: Eritrea, Dahlak Arch., Museri Island.

Family Cardiidae

Lunulicardia orlini Mienis, 2009

Holotype TAU MO 59149/1: Gulf of Aqaba, Israel, Elat,

Paratype TAU MO 28008: Gulf of Aqaba, Israel, Elat.

Paratypes TAU MO 41705/11: Gulf of Aqaba, Israel, Elat.

Lyrocardium anaxium dekkeri Mienis, 2009

Paratypes TAU MO 41693/3: Gulf of Aqaba, Israel, Elat.

Paratype TAU MO 62176: Gulf of Aqaba, Israel, Elat, depth 25 m.

Paratypes TAU MO 62177/2: Gulf of Aqaba, Israel, Elat, depth 20 m.

Family Octopidae

Octopus nanus Adam, 1973.

Holotype TAU MO 902307: Eritrea, Dahlak Arch., Cundabilu Island.

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Collecting trips and expeditions

A dynamic archive, our Natural History Collections grow annually through donations, research projects, and collecting trips and expeditions. Many research projects have added numerous specimens to our collections, while other collections have benefited from focused collecting trips. Here we report on some of the new collecting activities of our scientists.

Ichthyological Laboratory

Menachem Goren

Since January 2008 we carry out a research on “The impacts of biological invasions and climate change on the biodiversity of the Mediterranean Sea”. The project is being carried out within a cooperative framework between the Porter School of Environmental Studies and the Italian Ministry of the Environment, Land and Sea. The project is coordinated by M. Goren (TAU) in cooperation with B. Galil and A. Diamant (ILOR). As part of the research we have carried out to date twelve collection cruises along the Israeli coast of the Mediterranean and in Antalya and Iskenderun Bay (Turkey,) where

we enjoyed the collaboration of Dr. Baki Yokes and his students and the invaluable help of local fishermen. Hundreds of thousands of specimens were sorted and examined and many have been preserved and deposited in the collections of fishes and invertebrates. Unfortunately, the extreme shortage of space in the collection halls has severely limited our ability to retain a sufficient number of samples.



Collecting trips of the Entomologists

Ariel-Leib-Leonid Friedman

Israel

Regular samplings were performed during 2008-2009 on Mount Hermon and on Golan Heights, in Upper Galilee, Jordan Valley, Dead Sea, Negev and the Coastal Plain (particularly in the Nizzanim dunes).

Dr. Wolf Kuslitzky performed massive collecting with Malaise traps, mainly in the Coastal Plain (Ma'agan Mikha'el, Bet Dagan, Giv'at Brenner, Mishmar Dawid, Rehovot, Nizzanim Dunes) and in the Foothills of Judea (Hulda), which resulted in many interesting and rare species, particularly of Diptera and Hymenoptera. The finding of the tiny scuttle-fly, *Rhynchomicropteron* sp. (Diptera, Phoridae), is particularly remarkable, hence since this peculiar (brachypterous) species was found in Israel for the first time, and because of the peculiar biology of this genus, living in intimate symbiosis with termites (Isoptera).

A special sampling of the insect fauna was performed on 31.III.2009 in the Nahal Teqoa' Natural Reserve situated in the Judean Desert. The sampling was performed upon the request of the Israeli Nature and Parks Authority, resulting in around 800 specimens of insects, predominantly Diptera, Hymenoptera and Coleoptera. Several rare species of Diptera, Coleoptera and Formicidae were collected and recorded, including three species of beetles new to the Jordan Valley.

Africa

Dr. Vasiliy Kravchenko performed two collecting trips to Ethiopia, in April-May 2009 and in October-November 2009. Dr. Kravchenko was collecting moths with light traps in the Central Ethiopia, around and south-west to Addis Abeba.

Europe

Dr. Amnon Freidberg performed a trip to Italy and Germany, primarily for working in the insect collections in Verona, Frankfurt and Bonn, but also for collecting in Northern Italy and near Bonn, which resulted in ca. 700 specimens, primarily Diptera.

Benthic biodiversity surveys off the Mediterranean coast of Israel

Bella S. Galil

In 2009 thirteen campaigns was conducted off the Mediterranean coast of Israel in order to sample the benthic biota. Bella Galil, Mel Cooper, Limor Shoval, Eva Mizrahi, Kinneret Gal and Guy Paz participated in the cruises that took place aboard the R/V Shikmona and Etziona of the National Oceanographic Institute, IOLR. The surveys were conducted as part of baseline studies or monitoring surveys (off Palmahim, 05.2009, 09.2009, 37m depth, box core and trawl samples; off Ashdod, 05.2009, 08.2009, 12m depth, grab samples; off the coastal streams, 08.2009, 7-15 m depth, grab samples; Deep Sea, 07.2009, 1300 m depth, box core and trawl samples). The macrofaunal samples – several hundred specimens – include rare records for the Israeli coast and new records of alien species (in press). The material is housed in the Natural History Collections, Department of Zoology, Tel Aviv University, Israel

Activity report: November 1, 2009

Yehuda Benayahu

1. Comprehensive collection of soft corals was conducted by Y. B. in Taiwan including Kenting National Park, Penghu Is. and NE Taiwan during July-August 2008. Ca 200 samples were collected in various reef sites and habitats there. This trip was an additional survey in Taiwan, following 4 previous ones, conducted in an attempt to investigate the soft coral biodiversity in the region and to characterize the faunistic differences between sites. A previous collection conducted at Penghu Is. (2006) yielded 11 new species (not described yet) and it is anticipated that the current collection contains additional ones.
2. Based on a collection conducted in Hong Kong by Y.B. in December 1999 which is deposited at ZMTAU, three new species of soft corals were described. The new species belong to the genera *Paraminabea rubeusa* (Benayahu & Fabricius, 2009), *Sarcophyton tumulosum mortoni* (Benayahu & Ofwegen, 2009) and *Lobophytum* (Benayahu & Ofwegen, 2009). Two publications which summarize the findings of this survey have already been accepted for publication.
3. During a visit to Leiden Museum, the Netherlands soft coral material from La Reunion, Taiwan and Singapore, all deposited at TAU, was investigated. The results of these studies will be published later during 2010.
4. During a visit to Senckenberg Museum, Frankfurt, Germany (March, 2007). Y.B. examined all type material of the soft corals, family Xeniidae, which is deposited there. All types were photographed. Small pieces were removed from them and later will be used for preparation of permanent slide mounts to be used as reference while identifying material of that genus.

The International field meeting of the I.U.G.S. Subcommittee on Carboniferous Stratigraphy in Russia

Olga Orlov-Labkovsky

Recently I was invited to participate in the International field meeting of the I.U.G.S. Subcommittee on Carboniferous Stratigraphy "The historical type sections, proposed and potential GSSP of the Carboniferous in Russia" 11-19 August 2009 (Moscow –Ufa – Sterlitamak -Sibai).

The principal objectives of the excursion were to examine the key Carboniferous sections in the south part of the Moscow Basin (August, 11-12) and southern Urals (Bashkiria) (August, 13 - 19). During the excursions we paid attention to the lithology and biostratigraphy of the Carboniferous sections and intra- to interbasinal correlations; shallow and deep-water carbonates; paleosols, bioherms and cephalopod-rich facies; an overview of the Carboniferous fossil record in Russia including a discussion of major zonal schemes and their correlation; and examination of Carboniferous GSSP candidate sections. The Scientific meeting was held in Sibai (Southern Urals) on 17 August.

The meeting started in Moscow (on August, 11-12th). The Moscow Basin is the type area of the Global Serpukhovian, Moscovian, Kasimovian and Gzhelian Stages of the Carboniferous system. During two days, we visited the Novogurovsky Quarry (Upper Visean – Serpukhovian deposits), the Zaborie section (the lectostratotype of Serpukhovian Stage), the Domodedovo section (the neostratotype of Moscovian Stage and Myachkovian substage, Kasimovian Stage) and the Gzhel section (the stratotype of the Gzhelian Stage).

After the flight from Moscow to Ufa, we continued our trip concerning the sections of Bashkiria. During two days (13-14 August), we examined the key sections in the Western Urals: the Basu Section (the Moscovian age of the carbonate deep-water succession with Conodonta and Fusulinida), the Usolka

Section (a potential GSSP locality for the base of the Gzelian Stage), the Sikaza and Zigan Sections (Devonian – Carboniferous transition).

15-19 August. Our trip proceeded on the route Sterlitamak - Sibaj through the Southern Ural Mountains with a stop in order to examine the Serpukhovian terrigenous - carbonate sediments in the Kugarchi section near the village of Kugarchi (the Central Urals structural zones). Near Kugarchi we approached the mountain pass in the Ural Mountains. The road crosses the Central Uralian, Uraltau and Main Uralian Fault zones, the Magnitogorsk zone and the East Urals. We examined the following key sections in the East Urals: the section Verkhnyaya Kardailovka near the village of Verkhnyaya Kardailovka, which is a candidate for the Viséan-Serpukhovian boundary GSSP and includes deep-water carbonates containing abundant ammonoids; the section Khudolaz – in order to examine the Viséan, Serpukhovian and Bashkirian shallow-water carbonates with corals and brachiopods; the sections Bolshoi Kizil, along the Bolshoi Kizil River (tributary of the Ural River) in order to examine the Viséan shallow-water carbonates, the Serpukhovian algal and coral bioherms and the Bashkirian bioherms.

The conference session was held in the Sibai Hotel on August, 17th. I had a poster-presentation with the theme "The Visean/Serpukhovian boundary and foraminifers in the Middle Tien-Shan".

During the fieldwork sessions I managed to collect a few very interesting samples.

The following International field meeting of the I.U.G.S. Subcommission on Carboniferous Stratigraphy will take place in China in November 2010 (Yashui section, Guizhou, South China).

Collecting in the Netherlands and a visit to the Zoological Museum of Amsterdam

Henk K. Mienis

In the autumn of 2009 I brought again a visit to the Netherlands. During the period 15 September – 16 October fieldwork was carried out in the provinces North-Holland, Flevoland and Friesland, while the Zoological Museum of Amsterdam was visited three times.

The fieldwork was carried out with the following objectives:

- a. The evaluation of the status of populations of *Hygromia cinctella*, an invasive land snail, in Purmerend, North-Holland, after the "icy" winter of 2008/9;
- b. A survey of the beaches along the western banks of the IJsselmeer for the presence of the invasive freshwater molluscs *Dreissena bugensis* and *Corbicula fluminea*;
- c. A follow up survey of the land- and freshwater molluscs of "Fort Spijkerboor", a fortification belonging to the former defense line of Amsterdam;
- d. A general survey of land- and freshwater molluscs in the Waterland region of the province North-Holland;
- e. A follow up survey of the freshwater molluscs living in drainage ditches in the dunes N.E. of Oosterend, on the island Terschelling;
- f. A continuation of a general survey of land- and freshwater molluscs of the island Terschelling belonging to the province Friesland.

The work at the Zoological Museum of Amsterdam was focused on:

- a. A study of samples of *Papillifera bidens*, from localities outside the native range of that Clausiliid land snail;
- b. A further study of the literature dealing with the allochthonous presence of *Papillifera bidens* along the east-coast of the Adriatic Sea.

The fieldwork

A total of 86 localities were sampled for the presence of land- and freshwater molluscs. All the collected data were transferred to the database of the project "Mapping of the Molluscs in the Netherlands".

Part of the collected mollusc material has been lodged permanently in the Mollusc Collection of the National Collections of Natural History of the Tel Aviv University.

The main results of the fieldwork were as follows:

- a. Already known populations of the Mediterranean invasive land snail *Hygromia cinctella* in Purmerend, did not show any negative effects of the relatively "icy" winter of 2008/9. During that winter most of the canals, ditches and lakes were covered with ice for at least a few days, an event which had not occurred in the last 10 years. In addition several new localities could be registered of that snail in Purmerend and Monnickendam.
- b. The S.E.-Asian invasive mussel species *Corbicula fluminea* was found at eight localities along the IJsselmeer-coast of North-Holland and at one locality in Flevoland; while *Corbicula bugensis*, a species native to the river Bug in Ukraina, was collected at five beaches along the IJsselmeer in North-Holland and one in Flevoland.
- c. In the autumn of 2008 35 species of land- and freshwater molluscs were found on Fort Spijkerboor. This year the fortification was searched for several species supposed to be present due to the fact that they are known from areas in the vicinity of it. In this way nine additional species were located including the freshwater snail *Bathyomphalus contortus*, a species not recorded from any of the additional four fortifications situated in the Beemster.
- d. During the general survey of land- and freshwater molluscs in Waterland two species of Clausilidae were found under pieces of poplar-wood in a former wooden-shoe factory in Monnickendam: *Alinda biplicata* and

Clausilia bidentata. The latter is a very rare species in that area of North-Holland.

- e. In 2008 the water in the drainage ditches of the dunes N.E. of Oosterend, Terschelling, varied from 0.5-1.5 m depth. This year most of the ditches were completely dried out. Here and there pools were present with a depth of 1-10 cm. Interestingly even in the smallest puddle (100x30 cm) with a water level of just over 1 cm specimens of the three-spined stickleback *Gasterosteus aculeatus* were still present. At least the bivalves *Sphaerium corneum* and a *Pisidium* species formed new records for this area.
- f. During the general survey of the mollusc fauna of Terschelling the presence of *Anodonta anatina*, an introduced freshwater mussel, was confirmed. On a slope of the dunes near West-Terschelling a curious color variety of the common garden snail *Cepaea nemoralis* with transparent spiral bands and a white lip (instead of darkbrown to black bands and lip). This variety *hyalozonata* has to be considered a very rare colour morph.

The visit to the Zoological Museum in Amsterdam resulted in many additional records of *Papillifera bidens* from countries along the Eastern Adriatic, Greece, Spain and some from North-Africa. In its very rich library also several old works were located dealing with the fauna of former Yugoslavia and Albania.

Unfortunately this was most probably my last visit to the mollusc collection of that institute, which I have visited regularly since 1958 and of which I became an Honorary Associate in 1971. All the collections in Amsterdam will be transferred to the "Naturalis" in Leiden very soon and the first one will be the mollusc collection.

I would like to thank Mr. Xander Meijers of the "Society for Nature Monuments" for his permission to continue my mollusc survey of Fort Spijkerboor. I also like to thank my friend and longtime colleague Robert G. Moolenbeek for his hospitality at the Zoological Museum of Amsterdam.

The Israel Taxonomy Initiative

Conservation of biodiversity – the variety of life forms on earth – depends on scientific knowledge and expertise. Government agencies, research institutes, and conservation organizations around the globe have identified an alarming gap between existing taxonomic knowledge of biodiversity and the need for this information to guide conservation practices. In order to identify the great majority of living organisms, to understand the evolution of life, and to halt the loss of species, taxonomic research is essential, but the state of the discipline is presently inadequate. Currently many tools – morphological, biochemical, and genetic – as well as sophisticated models and software, are available for taxonomists, but basic research lags seriously behind needs. The Millennium Ecosystem Assessment – a UN taskforce to review the trends and implications of changes in global ecosystems - identifies the lack of knowledge of species and their distributions as one of the impediments to sustainable development; the international treaty of the Convention on Biological Diversity initiated the Global Taxonomy Initiative in an effort to remedy this situation.

In Israel, where geographic, topographic, and climatic conditions have produced amazing and unique diversity of life, taxonomic research is dwindling severely. A recent report submitted to the Israel Academy of Sciences and Humanities demonstrated that within 10 years, the average period required to train a young taxonomist, Israel would have no scientists in research or teaching positions who can train the next generation of taxonomists. Thus, a major and urgent effort is required to salvage this field and to ensure the continuation of a critical discipline.

In addition to nature and environmental conservation, taxonomic research has applied implications for agriculture the economy, human welfare and health; it is therefore crucial that it remains viable in face of fleeting fashions in scientific research.

The Israel Taxonomy Initiative is a consortium of government ministries and agencies, research universities and higher education institutions that aims to promote training of taxonomists and basic knowledge of Israel's biodiversity by:

- Providing doctoral and post-doctoral fellowships;
- Providing funding for overseas training for graduate students;
- Providing funding for biodiversity surveys;
- Inviting taxonomists from the international scientific community to teach short courses on local species groups.

Our goal is to save Israeli taxonomy and increase our knowledge of biodiversity, thus promoting science and the conservation of Israel's ecosystems, providing support for Israel's agriculture, and developing the sustainable use of Israel's natural assets.

Chapters in the history of the National Collections of Natural History of Tel Aviv University

We continue in our tradition of honoring our scientific forefathers.

Pater Ernst Schmitz (1845-1922)

Shai Meiri

The last specimens of many now extinct Israeli animals were collected not by scientists, professional collectors or hunters, but by a catholic monk, who came here to head German catholic institutions in the Holy Land. His name was Ernst Schmitz, although he is better known simply as Pater Schmitz (18.5.1845, Rehydt, Germany - 3.12.1922, Haifa). As a catholic



priest (he was ordained in 1869 and made inspector of the academy in 1873) Schmitz was forced into exile by Otto von Bismarck's 1871-1878 "Kulturkampf" which was directed at reducing the secular power of the catholic church in Germany. Schmitz first moved to Funchal, on Madeira (1874), then to Braga, on mainland Portugal, in 1875, and then again, in 1879, to Funchal, where he headed a hospice and later a theological college. In parallel Schmitz, whose training in natural history we know very little about, started collecting local and foreign animals, and established the first natural history museum on the island. He remained in Madeira until 1908 (except for a four year period, 1898-1902, in which he was active in the German Marianum Vincentians in Theux, Belgium). In Madeira Schmitz's collections were

assembled by him to reflect his interest in a number of different areas of natural history. He specialized in the flora and fauna indigenous to these islands. New and rare species were assembled, classified and collected by the vice rector. His other area of specialization was ornithology. But he also had great interest in the study of insects, marine and terrestrial mollusks, fish, corals and marine vegetation including algae. In 1908 he was chosen to succeed the Vincentian priest Wilhelm Schmidt (1833-1907) as director of the establishment in Palestine of the "Deutschen Verein vom Heiligen Lande", a German Catholic organization that kept hospices and supported centers for pilgrims in the Holy Land. In September of that year he moved to Palestine, to direct the Hospice of St. Paul in Jerusalem, where he remained until 1914.

In the hospice he founded a natural history museum, with a section for the specimens collected in Palestine and other specimen brought from other regions, which included 45 stuffed birds and 157 plant samples brought from Madeira. To enlarge his collection he organized field trips and asked students and locals (whom he paid handsomely) to bring him animal and plant specimens. He specialized in vertebrates, especially mammals, but also dedicated much time to other organisms, collecting, for example, about 40 different genera, species and subspecies of ants including 10 species new to science. Several new taxa were described in his honor like a new ant species which was called *Hagioxenus schmitzi* Forel; subspecies of caracal the type of which was collected for Ernst Schmitz in Wadi Kelt was named *Felis caracal schmitzi* Matschie, as was a subspecies of Madeiran barn owl, *Tyto alba schmitzi* (Hartert).



Schmitz published many scientific and anthropological papers, mainly in the journals *Ornithologische Jahrbuch* ("Ornithological Yearbook", actually a quarterly), *Ornithologische Monatsberichte* ("Ornithological Monthly Reports") and, especially, "*Das Heilige Land*" (the Holy Land). With the outbreak of World War I, he was forced to go to Damascus, where he remained until he could return to Palestine. Since 1920 he ran the Hospice of San Carlos, in Haifa. He died in Haifa, and was buried in the crypt of the convent of the German religious of Mount Carmel.

Schmitz sent many of the specimens he collected back to Europe, mainly to Germany. Some specimens he sent to be expertly stuffed in Germany, and then returned to him in Palestine. They were almost lost until found in the late 70s by Yossi Leshem. The collection now resides at The National Collection of Natural History at Tel Aviv University.

Collection Nowadays

As one of the few collectors and chroniclers of the early 20th century in Israel he has witnessed a period where, but undoubtedly as a result of the increasing population size and increased use of firearms, many of the large and charismatic land vertebrates went extinct. Schmitz's papers detail the hunting of brown bears (*Ursus arctos*), cheetahs (*Acinonyx jubatus*), brown fish owls (*Ketupa zeylonensis*), Lammergeiers (*Gypaetus barbatus*) and crocodiles (*Crocodylus niloticus*), all of which are now extinct in Israel and its near neighborhood. He also mentions animals that are nowadays exceedingly rare, such as the black vulture (*Aegypius monachus*), leopards (*Panthera pardus*), and Verreaux's Eagle (*Aquila verreauxii*). His papers, and the specimens he has collected, are often the last records we have for the existence of these animals in Israel.

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Publications

The national collections of natural history are an important research infrastructure, used by scientists within and outside of the university. Over a decade ago we compiled the list of publications based on our natural history collections, and arrived at over 1200 publication produced by over 550 scientists. This list was incomplete, for technical reasons related to reconstructing this record, and because it did not include the sizable list of publications based upon the anthropological collections. Our current list of the 2008/2009 publications, alas, is also incomplete; it includes all publications of TAU members affiliated with the collections (whether they are directly collections-based or not), and under-represents publications of individuals from other institutions, since our follow-up is far from complete.

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Chapters in books

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1. Bar-Yosef Mayer, D.E. Chapter 12: The Stone Beads of the Gilgal Sites. In Gilgal: Early Neolithic Occupations in the Lower Jordan Valley, The Excavations of Tamar Noy. Edited by Bar-Yosef, O., Goring-Morris, A.N. and Gopher, A. Brill, Boston.
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The Excavations of Tamar Noy. Edited by Bar-Yosef, O., Goring-Morris, A.N. and Gopher, A. Brill, Boston.

3. Geffen, E. and Peters, G. *Vulpes cana*. In The Mammals of Africa, Vol. 4, Kingdon, J. and Butynski, T. (eds.). Academic Press, New York.

Papers presented in scientific meetings

- 2008 Biogeography and habitat preference of the sheet-web spiders (Linyphiidae) from agroecosystems in the North-Western Negev desert. First International Middle Eastern Biodiversity Congress (Jordan) (Gavish-Regev, E., Pluess T., I. Opatovsky, Schmidt, M. H., and Lubin, Y.)
- 2008 Host feeding in the parasitoid *Eretmocerus mundus* (Hymenoptera: Aphelinidae). Israel Journal of Entomology 38:164. Proceedings of the 26th conference of the Entomological Society of Israel (Akiva I, Gerling D and Guershon M)
- 2008 Hyperostosis Frontalis Interna: A Social Marker. 17th European Meeting of the Paleopathological Association "Diseases of the Past". Copenhagen, Denmark (May H, Peled N, Dar G, Hay O, Abbas J, HersHKovitz I.).
- 2008 Israel spider atlas: advantages and disadvantages. The 3rd meeting of the Israeli Association of Arachnology (Gavish-Regev, E.)
- 2008 Mortality factors affecting populations of *Bemisia tabaci* on cassava in Uganda. Journal of Insect Science 8: 6-6 (Asiimwe P, Ecaat JS, Otim M, Gerling D, Guershon M, Kyamanywa S and Legg JP)
- 2008 Multiple Enthesopathies in the human skeleton: what do they tell us about spinal diseases? 17th European Meeting of the Paleopathological Association "Diseases of the Past". Copenhagen, Denmark (Dar.G, Peleg S, Masharawi Y, Steinberg N, May H, HersHKovitz I.)
- 2008 Pioneer of Paleopathology in Israel. 17th European Meeting of the Paleopathological Association "Diseases of the Past". Copenhagen, Denmark (HersHKovitz I.).
- 2008 Prostate Cancer & Hyperostosis Frontalis Interna. 16th Congress of the European Anthropological Association. Odense, Denmark (May H, Peled N, Dar G, Abbas J, Sarig R, HersHKovitz I.).
- 2008 Sheet-web spiders (Linyphiidae) research in Israel. The 27th annual meeting of the Entomological Society of Israel (Gavish-Regev, E.).

- 2008 Spider assemblage in arid agroecosystem: patchy landscape, functional groups and spatial movement patterns. The Negev meeting for Agricultural Research and Development (Gavish-Regev, E.).
- 2008 The Coral Reefs of Eilat-past present and future. First International Congress Documenting, Analyzing and Managing Biodiversity in the Middle East. Aqaba, Jordan (Y. Loya).
- 2008 When science based conservation meets ethics. At the Middle East Program Regional Meeting of the Quebec-Labrador Foundation/Atlantic Center for the Environment, 26-29 October 2008, Kaş, Turkey (Y. Gavrieli).
- 2008 Bidirectional sex change in fungiid corals. The 11th International Coral Reef Symposium, June 7-11, Miami, Fort Lauderdale, USA (Y. Loya).
- 2008 1st International Congress Documenting, Analysing and Managing Biodiversity in the Middle East, Aqaba, Jordan (T. Dayan).
- 2008 Drylands, Deserts and Desertification Conference, Sede Boqer Campus, Ben Gurion University, Israel (chaired a desert ecology session) (T. Dayan).
- 2008 Patterns of biodiversity in natural Mediterranean landscapes and pine plantations in Israel. German-Israeli Agro-Forestry Mini Symposium, Weizmann Institute, Rehovot (invited lecture) (T. Dayan).
- 2008 Reconstruction of sponge phylogenetic relationships using a new molecular marker. 45th meeting of the Zoological Society of Israel. Michmoret, (Israel). December 28. (Feldstein, T., Goldfarb, I., Belinky, F., Ilan, M. and Huchon, D.)
- 2008 Sede Boqer Workshop on hierarchical complexity approach to desertification (co-chair of a session and invited lecture) (T. Dayan).
- 2008 The ecological consequences of ant invasion: The impact of *Wasmannia auropunctata* on ant species diversity in its invasive range. Proceedings of the 4th European Meeting of the IUSI (International Union for the Study of Social Insects), La Roche en Ardenne, Belgium. (Vonshak, M., Dayan, T. and Hefetz, A.).
- 2008 The influence of aquaculture on the phylogeography of *Tilapia zillii*. 45th meeting of the Zoological Society of Israel. Michmoret, (Israel). December 28. (Shitenberg, A., Goren, M. and Huchon, D.).
- 2008 The Middle Palaeolithic Shell Beads of Qafzeh Cave, Israel. Annual meeting of the Israel Prehistoric Society. (Bar-Yosef Mayer, D.E.).

- 2008 Wasmannia auropunctata's impact on local ant species in its invasive range. Proceedings of the 23rd International Congress of Entomology, Durban, South Africa. (Vonshak, M., Dayan, T. and Hefetz, A.).
- 2008 Non-indigenous ascidians along the Mediterranean coast of Israel The Zoological Society of Israel, Annual Conference, Michmoret, Israel (Shenkar, N.).
- 2009 A tale of two seas: ecological aspects of the ascidian community along the coast of Israel. Sixth international conference on marine bioinvasions, USA (Shenkar, N.).
- 2009 Repeated sex change in mushroom corals. International Okinawa Churaumi Aquarium Symposium on "Reproduction of marine organisms", Okinawa, Japan (Y. Loya).
- 2009 Tel Aviv Science, Technology, and Defense Workshop, 43rd meeting (invited lecture) (T. Dayan).
- 2009 74th meeting of the Israel Chemical Society (Tel Aviv, Israel) (M. Ilan).
- 2009 Anatomy and Darwinian medicine. 17th Congress of the International Federation of association of Anatomists, Cape Town, SA (Hershkovitz I, Dar G.).
- 2009 Biodiversity Hotspots – Evolution and Conservation, National Museum of Natural History, Luxembourg (invited keynote lecture) (T. Dayan).
- 2009 Biological invasions of fishes in eastern Mediterranean. The 2nd Workshop IBICC-BIOMED “The impacts of biological invasions and climate change on biodiversity of Mediterranean Sea” Lecce, Italy, 3-5 April 2009. (Goren M., Galil, B.S. and Diamant A.).
- 2009 Competitive displacement mechanisms by the little fire ant, in the Tenth Symposium in Memory of Merav Ziv – “Animal Behavior and Conservation Biology”. Abstract booklet, Blaustein Institute for Desert Research, Ben Gurion University. (Vonshak, M., Dayan, T. and Hefetz, A.)
- 2009 Coral reefs of the Indo-Pacific in an era of global change (Eilat, Israel) (M. Ilan).
- 2009 Knee injuries in young dancers: anatomical consideration. 17th Congress of the International Federation of association of Anatomists, Cape Town, SA (Steinberg N, Siev-Ner I, Peleg S, Dar G, Masharawi Y, Hershkovitz I.).

- 2009 MRI-histology based investigation of the annulus fibrosus microstructure and novel insights on its failure mechanics in the light of evolutionary medicine. 17th Congress of the International Federation of association of Anatomists, Cape Town, SA (Stein D, Abbas J, Medlej B, Cohen H, May M, Hay H, Dar G, HersHKovitz I.).
- 2009 North West Developmental Society annual meeting, USA (Shenkar, N.).
- 2009 Paleoanthropology and Darwinian Medicine, Internationaler Kongress der Gesellschaft für Anthropologie (GfA), Munich, Germany (I. HersHKovitz).
- 2009 Quaternary beach deposits, coastal morphology, tectonics and sea-level changes, on the coast of Northern Cyprus, and their possible implications on Neolithic colonization. In A. Sagy, S. Bookman, Y. Hamiel, A. Mushkin, Y. Nahmias, B. Medvedev and A. Heimann (Eds.): Israel Geological Society 2009 Abstracts 51. (Galili, E., Sevetoglu, M., Salamon, A., Zviely, D., Mienis, H.K., Rosen, B., Moshkovitz, S.)
- 2009 Sacral orientation and spondylolysis in light of Darwinian medicine. 17th Congress of the International Federation of association of Anatomists, Cape Town, SA (Peleg S, Dar G, Steinberg N, Masharawi Y, Abbas J, Peled N, HersHKovitz I.).
- 2009 Sexual dimorphism in the thoracic and lumbar vertebrae as a morphological adaptation to lumbar hyperlordosis during pregnancy. Eight annual meeting of the Israeli Physiotherapist Society (IPTS), Israel (Masharawi Y, Dar G, Peleg S, Bechar A, Steingberg N, Medlej B, Abbas J, May H, HersHKovitz I.).
- 2009 Shell Bead Technology from the Palaeolithic through the Iron Age in the Levant. Bead technology workshop, British Museum, London. (Bar-Yosef Mayer, D.E.).
- 2009 Spinal involvement in Schmorl's nodes. Sixth Faculty Research Fair, Faculty of Social Welfare & Health Studies, Haifa University (Dar G, Peleg S, Masharawi Y, Steinberg N, May H, HersHKovitz I.).
- 2009 The anatomy of the hip joint: its association with femoral head-neck lesions. 17th Congress of the International Federation of association of Anatomists, Cape Town, SA (Medlej B, Masharawi M, Dar G, Stein D, Steinberg N, Abbas J, May H, Cohen H, HersHKovitz I.).
- 2009 The aquatic resources of the Natufian culture. Annual meeting of the Israeli Association for Aquatic Sciences. Mikhmoret. (Bar-Yosef Mayer, D.E.).

- 2009 The clinical significance of Hyperostosis Frontalis Interna. 17th Congress of the International Federation of association of Anatomists, Cape Town, SA (May H, Dar G, Abbas J, Hay J, Medlej B, HersHKovitz I.).
- 2009 The falsely of paleopathology, Seoul International Conference on Ancient DNA and Paleopathology, Seoul, Korea (I. HersHKovitz).
- 2009 The new Mediterranean - the impact of biological invasions and climate change on the biodiversity of the Mediterranean Sea. 13th European Congress of Ichthyology. 6–12 September. Klaipeda, Lithuania, (Goren M., Yokes M.B., Galil, B.S. and Diamant A.).
- 2009 The phylogeny and ontogeny of disc herniation: Schmorl's nodes as a case study. 17th Congress of the International Federation of association of Anatomists, Cape Town, SA (Dar G, Peleg S, Masharawi Y, Steinberg S, May H, HersHKovitz I.).
- 2009 The scientific background for preservation of endangered fishes – the Yarqon bleak (*Acanthobrama telavivensis*) as a test case. International Workshop on the Restoration of Fish Populations 1-4 September. Düsseldorf Germany. (Goren M.).
- 2009 Why we get sick? The anatomical perspective, The Annual meeting of the Korean Association of Anatomists Association, Daegu, Korea (I. HersHKovitz).

Graduate students

Much active scientific research is conducted by graduate students. Here we list the graduate students of faculty members affiliated with the National Collections of Natural History at Tel Aviv University. We list also a few graduate students from other institutions of higher education, but names and affiliations of many others from Israel and abroad who used the collections are unknown to us.

PhD students

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| 2000- | Reuvat Nitzan (T. Dayan and A. Ar)
Population dynamics of the chukar partridge in Israel. |
| 2002-2009 | Hadass Steinitz (T. Dayan and Y. Yom-Tov)
Species and community level investigation of the environmental factors which affect mammal distributions in Israel. |
| 2003-2009 | Merav Weinstein (T. Dayan and A. Hefetz)
Invasive ants of Israel. |
| 2003- | B. Bahaa (I. HersHKovitz)
Macro and microstructure of the annulus fibrosus. |
| 2003 - | Leon Novak (M. Ilan)
Engineering a bacterial expression system to produce large amounts of known and of modified naturally occurring bioactive compounds of pharmacological interest. |
| 2004- | Shai Barkan (Y. Yom-Tov and A. Barnea).
Memory of resident and migratory birds. |
| 2004-2008 | G. Dar (I. HersHKovitz)
Spondyloarthropathy. |
| 2004- | Liat Gahanama (A. Freidberg)
A revision of the <i>Schistopterum</i> clade of Schistopterini. |
| 2004- | Constantin Grach (A. Freidberg)
Ecology and biology of coastal dune insects. |

- 2004- Mati Halperin (Y. Benayahu)
Genetic diversity, demography and behavior of the three-spot dascyllus, *Dascyllus trimaculatus* Rüppell, in the northern Gulf of Eilat (Red Sea).
- 2004 - Boaz Mayzel (M. Ilan)
Magnetoreception in sponges.
- 2005-2009 Amy Shlesinger (Y. Loya)
Predator-prey interactions between nudibranchs and their sea-anemone prey.
- 2005- Rachel Armoza (Y. Loya)
Ecological and physiological aspects of sex hormones in corals.
- 2005 - D. Blihoghe (M. Ilan)
Natural products from sponge associated microorganisms.
- 2005- Motti Charter (Y. Leshem)
- 2005 - M. Haber (M. Ilan)
Biosynthesis and function of Natural products from sponge associated microorganisms.
- 2005- Edith Katsnelson (A. Lotem)
Social and individual learning of foraging strategies.
- 2005- Irina Khalfin (M. Ilan)
Function of natural products from sponge associated fungi.
- 2005- Yaron Krotman (M. Goren)
Fish biodiversity and ecology in oasis habitats in the Dead Sea Valley.
- 2005- Tal Levanony (T. Dayan)
Patterns of biodiversity in natural and cultural landscapes: a model Mediterranean forest ecosystem.
- 2005- Ofir Levy (T. Dayan and N. Kronfeld-Schor)
Modeling climate effects on temporally-partitioned rocky desert rodents: from basic principles to community structure.
- 2005- Yoav Motro (Y. Yom-Tov and R. Nathan)
Regulation of rodent populations by barn owls and its effects on agricultural yield.

- 2005- Orit Skutelsky (T. Dayan and E. Feitelson)
Biodiversity conservation in biosphere reserves of Israel: the switch from a market led to conservation oriented agriculture.
- 2005- Assaf Zevoluni (Y. Loya)
Coral community dynamics in bleached and non-bleached coral reefs (Zanzibar vs. Elat).
- 2006- Frida Belinky (D. Huchon and A. Lotem)
Multiple approaches to solve basal metazoan phylogeny and its implication on intron evolution.
- 2006- O. Hai (I. HersHKovitz)
Spinal evaluation in Lower Back Pain.
- 2006- Eran Levin (Y. Yom-Tov and N. Kornfeld).
Ecophysiology of free-tailed bats.
- 2006- Lidar Sapir-Hen (T. Dayan and G. Bar-Oz, University of Haifa)
Animal bones, ancient populations, and site formation processes: A test case of Dor, a coastal Levantine site.
- 2006- R. Sarig (I. HersHKovitz)
Interproximal attrition.
- 2006- Yoni Vortman (A. Lotem)
Mate choice and multiple sexual signals in the Barn Swallow *H. r. transitive*.
- 2006- Chen Yoffe (Y. Benayahu)
Symbiont transmission in cnidarian hosts: integrated processes and mechanisms determine specificity.
- 2007- Y. Aluma (M. Ilan)
Environment impact on sponge-fungi association.
- 2007- Emmanuelle Cohen-Shacham (T. Dayan)
Policies for managing ecosystem services
- 2007- G. Ibrahim (I. HersHKovitz)
Whiplash.
- 2007- Ronit Justo-Hanani (T. Dayan)
Legal and administrative aspects of genetically modified organisms in Israel.

- 2007- Aldona Kurzawska (Bar-Yosef Mayer, D.E. and M. Kobusiewicz)
Insight into Hunter-Gatherers' Life: The Role of Dentalium Shells in Late Epipalaeolithic Sites of the Levant.
- 2007- Ido Sella (Y. Benayahu)
Biomaterial from a soft coral
- 2007- Roe Segal (Y. Loya)
Toxicological effects of heavy metals on reef organisms.
- 2007- Amir Shitenberg (D. Huchon and M. Ilan)
Phylogeny and evolution of demosponges.
- 2007- Dror Zurel (Y. Benayahu and U. Gofna)
Lessapsian migrant species as vectors for dispersal of marine bacteria
- 2007- Maaya Weizel (Y. Loya)
Novel technology for establishment of totipotent tissues and "immortal" lines of a unique model system.
- 2008- J. Abass (I. HersHKovitz)
- 2008- Ada Alamaro (Y. Loya)
Evolutionary implications of sex change in fungiid corals
- 2008- Iris Bernstein (T. Dayan)
Landscape planning for ecological corridors and biodiversity conservation in peri-urban environments: The case of Modiin Forest Corridor.
- 2008- H. Cohen (I. HersHKovitz)
Fracture characteristics
- 2008- Ariella Gotlieb (T. Dayan and Y. Mandelik)
Agriculture and conservation in the Arava Valley
- 2008- Martinez, S.
Biology of sponges from the deep East Mediterranean
- 2008- H. May (I. HersHKovitz)
- 2008- Ilana Pizer-Mason (T. Dayan)
The macroecology of activity patterns.

- 2008- Tali Reiner-Brodezky (A. Lotem)
Mate choice and recognition in the barn swallow
- 2008- Shay Rotich (T. Dayan)
To be determined.
- 2008- Noa Sokolover (M. Ilan)
Bryozoans ecology
- 2009- Omri Bronstein (Y. Loya)
Bioerosion of reef corals by sea urchins.
- 2009- Keren, R. (M. Ilan)
Acquisition of sponge-associated bacteria
- 2009- Ittai Renan (A. Freidberg)
To be determined.

MSc students

- 2004-2009 Haim Biala (V. Soroker, The Agricultural Research Organization of Israel)
Ants associated with banana aphids.
- 2004-2008 Noam Cohen (M. Inbar and I. Izhaki, Oranim Academic College)
The effects of secondary metabolites in nectar on ants.
- 2004-2008 Adi Ramot (E. Groner and P. Bar, Ben Gurion University)
- 2004- Daniel Yashunski (M. Goren)
Succession of fish community in planted corals in Elat.
- 2005- 2008 Michal Grosovich (Y. Benayahu)
Habitat partitioning of three azooxanthellate soft corals in Elat (northern Red Sea).
- 2005-2008 Rosin Shemesh (Y. Loya and E. Rosenfeld)
Possible causes of white band disease in Faviid corals at Elat.
- 2005-2009 Itay Goldfarb (D. Huchon and M. Ilan)
Identification of new nuclear markers to solve sponge phylogeny.
- 2005-2009 Kineret Yoktan (Y. Yom-Tov)
Phylogeography of the orange-tufted Sunbird *Nectarinia osea*.

2005-2009	Oren Shelef (E. Groner and M. Shachak, Ben Gurion University)
2005-2009	Tamir Shelhav (E. Groner and M. Shachak, Ben Gurion University)
2005-2008	J. Abass (I. HersHKovitz) Ligamentum flavum and spinal stenosis.
2005-	Ayelet Dadon (Y. Loya and M. Fine) Mechanisms of bleaching in the Mediterranean coral <i>Oculina patagonica</i> .
2005-	Kfir Gaier (M. Goren) The impact of grazing fish on invertebrate communities in eastern Mediterranean.
2005-	Nimrod Lazarus (Y. Loya) Induction of metamorphosis in nudibranch larvae.
2005-	Osnat Maor (M. Goren) Reproductive biology the cyprinid fish <i>Garra rufa</i> in the Jordan River basin.
2005-	Ina Stierberg (T. Dayan) Climatic gradients in biodiversity.
2006-2009	O. Bergman (M. Ilan) Sponge farming for natural products.
2006-2009	Yael Hollender ((T. Dayan and Y. Mandelik) The interaction of commercial pollinators and natural bee communities in the central Arava region.
2006-2009	Z. Kochva (M. Ilan) Sponge associated bacteria and their role in production of natural products.
2006-2009	Shay Rotich (T. Dayan) The effect of artificial illumination on a rocky desert rodent community.
2006-2009	Karin Tamar (T. Dayan) Archeozoology of Tel Bet Shemesh.

- 2006-2009 Michal Weis (Y. Benayahu)
Bivalves as colonizers of artificial marine structures at Eilat (Red Sea).
- 2006- Gilad Friedman (Y. Yom-Tov and Y. Leshem).
The biology of the long-legged buzzard *Buteo rufinus* in Israel.
- 2006- Tali Kuperman (I. HersHKovitz)
Pottery Neolithic populations.
- 2006- Bat Sheva Rotman (M. Goren)
The biology the balitorid fish *Nemacheilus jordanicus* in the Jordan River basin.
- 2006- Denise Samsonovich (Y. Benayahu and G. Zilman)
Hydrodynamics and settlement of marine larvae.
- 2006- G. Tirosh (M. Ilan)
Sponge community in the Israeli Mediterranean coast.
- 2007-2009 Slava Feldman (Bar-Yosef Mayer, D.E. and S. Shalev)
Connections between Cyprus and the Levant during the Pre Pottery Neolithic B based on beads movements.
- 2007-2009 Omri Bronstein (Y. Loya)
Morphological and molecular aspects of sea urchins (genus *Echinometra*) from Okinawa, Zanzibar and Eilat
- 2007- Hagit Alphandary (M. Goren and Prof. Henig)
Analysis of decision making process in the case of Kishon River
- 2007- Hagar Ben-Bassat (Bar-Yosef Mayer, D.E. and A. Gilboa)
Beads and Pendants at Tel Dor During the Early Iron Age: Origin, Technology and Social Perspectives.
- 2007- Eyal Bloche (T. Dayan)
The effects of physical state perception on decision making in foraging.
- 2007- Nir Ezra (D. Huchon)
Phylogeny and evolution of the demosponge family Poecilosclerida.
- 2007- Tamar Marcus (T. Dayan)
Spatial aspects of climate change and conservation.

- 2007- Dafna Meirovich (Y. Benayahu)
Soft corals of the family Xenidiidae at Eilat.
- 2007 - Shachtman, Y. (M. Ilan)
Sponge associated *Archaea*
- 2007 - Shiratzki, E. (M. Ilan)
Sponge pathogenic microorganisms
- 2007- Naomi Shifris (Bar-Yosef Mayer, D.E. and A. Gilboa)
The Phoenician Iron Age II bead assemblage: The Achziv Cemeteries as a Test case.
- 2007- Miri Taub (Goren M.)
The impact of recreation activity on the biota in inland aquatic habitats.
- 2008- Albag, O. (M. Ilan)
Biology of *Topsentia aqabaensis*.
- 2008- Aviv Avisar (T. Dayan and U. Shanas)
Assessing the impact of visitor pressure in nature reserves.
- 2008- Matan Ben Ari (D. Gerling)
Bionomics of the whitefly *Dialeurolobus rhamni* in the Judean hills.
- 2008- Itai Berger (Y. Yom-Tov, Y. Leshem and S. Markman)
Parental behavior of the orange-tufted.
- 2008- Yasmin Gabay (Y. Benayahu)
Effect of seawater acidification on xeniid soft corals.
- 2008- Naama Gil (D. Huchon)
Identification of new markers to solve demosponge phylogeny.
- 2008- Hila Lahav (T. Dayan and A. Hefetz)
Ant communities under different land management practices.
- 2008- Roni Lee (Goren M.)
Comparative study of reproductive aspects of invaders and native fish in Eastern Mediterranean.
- 2008- Y. Paker (Y. Yom-Tov, A. Barnea and T. Alon-Mozes)
The wildlife in urban gardens.

- 2008- Yahel Porat (T. Dayan and Y. Carmel)
Different land management practices and their impact on reptile communities.
- 2008- Ashton J. Spatz (Bar-Yosef Mayer, D.E.)
Ornamental marine mollusc shells from the Pre-Pottery Neolithic B site of Ayn Abu Nukhayla, Southern Jordan, and implications for exchange networks in the Southern Levant.
- 2008- D. Stein (I. HersHKovitz)
3D-Reconstruction of the vertebral epiphyseal ring.
- 2009- Eran Amichai (Y. Yom-Tov and N. Kornfeld)
The biology of *Asellia tridens* in the Jordan Valley, Israel.
- 2009- Itzhak Hoskin (Y. Loya)
Coral community structure and diversity in protected vs. non-protected coral reefs in Zanzibar
- 2009- Itay Katz (A. Freidberg)
The Tephritoidea (Diptera) of Israel
- 2009- Hadas Marshall (T. Dayan and Y. Mandelik)
Bee communities in the Arava Rift Valley.
- 2009- Roe Maor (T. Dayan)
To be determined.
- 2009- Elizabeth Morgulis (A. Freidberg)
The Ulidiidae (Diptera) of Israel

Post-doctoral fellows

- 2008-2009 Efrat Gavish
- 2008-2009 Tiratha Raj Singh
- 2008-2009 Noa Shenkar
- 2009- Claudia Drees
- 2009- Merav Vonshak
- 2009- Hadass Steinitz

Fellowships and grants

Support for collections-based research is provided by fellowships and grants. Here we list the fellowships and grants of faculty members of Tel Aviv University who are affiliated with the collections. Needless to say, the many colleagues from other research institutions in Israel and abroad also receive fellowships and grants that hinge, at least in part, on work in the natural history collections. These data, however, are not available to us.

While these fellowships and grants and others cannot support collections maintenance, they are crucial for collection development since they provide the funds for active collecting, which are otherwise unavailable in the State of Israel. We do our best to help scientists use the collections and to promote collections-based biodiversity research.

2002- On-going grant from the Nature and Parks Authority to "rescue" insects on the Golan and Hermon (V. Chikatunov and A. Freidberg).

2003-2010 The World Bank/UNESCO/IOC International Targeted Group of Experts on "indicators of coral bleaching". A group which is composed of 15 scientists as follows: from USA (3) Hawaii (1), England (2), Australia (2), Kenya (3), Israel (1), Philippines (1), Mexico (1) and France (1). The group meets and works together 2-3 weeks every year at 4 reef sites: Heron Island (Great Barrier Reef, Australia), Puerto Morelos (Mexico), Philippines (exact location to be determined) and Zanzibar (Y. Loya Co-Chairman with Prof. O. H. Guldborg).

2004-2008 BSF - US - Israel Binational Scientific Foundation (Jerusalem, Israel). (M. Ilan and J. Aisenberg).

2004-2008 Marie Curie European Research Training Network (M. Ilan and Y. Loya).

2004-2008 Israel Science Foundation (ISF). "The isotopic composition of Eilat's corals: basic aspects of signals buildup and tracing anthropogenic stress. (Co Y. Loya and A. Shemesh).

- 2005-2008 GLOWA Jordan River research grant: Modeling the impact of global climate change on terrestrial biodiversity in the Jordan River Basin: Testing planning scenarios and climate change scenarios (3 year grant; ca. EURO 35,000 per annum) (T. Dayan, P.I. of subproject).
- 2005-2008 Ministry of Agriculture, Milk Board grant to work on *Atherigona soccata*, a pest of sorghum (3 years) (A. Freidberg).
- 2005-2009 Israel Science Foundation: The Emergence of Stone Beads at the Dawn of Farming: Raw Materials, Technology, Chronology and Exchange (Bar-Yosef Mayer, D.E.).
- 2005-2009 The evolutionary ecology of social and self learning: theory and experiments in house sparrows. The US-Israel Bi-National Science Foundation (BSF). (A. Lotem, M. Feldman and U. Motro).
- 2005-2009 The Israel Science Foundation (488/05); 4 years. Vocalization as an indicator of individual quality in the rock *hyrax* (\$180,000) (E. Geffen and M. Kam).
- 2005-2009 Yad Hanadiv: The Emergence of Stone Beads at the Dawn of Farming: Raw Materials, Technology, Chronology and Exchange (Bar-Yosef Mayer, D.E.).
- 2006- 2010 Sponge (Metazoa: Porifera) phylogenetics using novel molecular markers. The Israel Science Foundation (NIS 270,000 per year). (D. Huchon).
- 2006-2008 Bridging the Rift Foundation research grant. Biodiversity in human-dominated landscapes in the Arava Rift Valley (2 years of post-doctoral fellowship [T. Dayan and Y. Mandelik] at \$22,000 per annum plus \$25,000 per annum for research).
- 2006-2008 German-Israeli Foundation for Scientific Research and Development grant: Patterns of biodiversity in natural and cultural landscapes: a model Mediterranean forest ecosystem (3 year grant; total sum EURO 158,000) (T. Dayan and T. Assmann).
- 2006-2009 Israel Science Foundation research grant. Animal bones, ancient populations, and site formation processes: A test case of Dor, a coastal Levantine site (3 year grant; 225,000 NIS [ca. \$50,000] per annum) (T. Dayan and G. Bar-Oz C.I.)
- 2006-2010 Israel Science Foundation (M. Ilan, S. Carmeli and O. Yarden).
- 2007-2008 The Nature and Parks Authority, Israel (\$20,000) (E. Geffen).

- 2007-2009 Phylogenomics of Urochordata and its application for detecting evolutionary shifts in vertebrate proteins. The High Council for Scientific and Technological Cooperation between France-Israel (#3-3449) [(P.I., NIS 217,500 for two years) D. Huchon and Y. Loya and Emmanuel J. P. Douzery (P.I. € 60,000 for two years)].
- 2007-2010 Israel Science Foundation (ISF). Inferring the phylogeography and colonization history of the orange-tufted sunbird. (Y. Yom-Tov).
- 2007-2010 Ministry of Science, Culture and Sport grant for establishing knowledge center at the national collections of natural history (3 year grant; total of 1,900,000 NIS [ca. \$500,000]) (T. Dayan).
- 2007-2011 Israel Science Foundation (ISF), Etiology of Black Band Disease (BBD) (Y. Loya and R. Rosenberg, TAU).
- 2007-2011 Mate choice and the evolution of phenotypic diversity: the unique sexual signals of the East Mediterranean Barn Swallow. The Israeli Academy of Science and Humanities (A. Lotem and R. Safran).
- 2008 Dan David prize to outstanding post-doctoral students of exceptional promise given for the future time dimension in the field of geosciences (Shenkar, N.).
- 2008 Yad Hanadiv grant. Taxonomy for a sustainable future: Promoting biodiversity research in Israel. (5 year grant; total of \$ 1,480,000) (T. Dayan and M. Goren leading a consortium of Israeli universities and government agencies)
- 2008 Yad Hanadiv grant (1 year grant; \$5500) (T. Dayan).
- 2008 Misliya cave project: Dan David Foundation (I. HersHKovitz).
- 2008 The root of violence: Israel Palestinian Science Foundation (I. HersHKovitz).
- 2008 The structure and function of the vertebral epiphyseal ring: Israel Science Foundation (I. HersHKovitz).
- 2008-2010 Israel-Italy R&D project. The impacts of biological invasions and climate change on the biodiversity of the Mediterranean Sea (Goren, M. and Galil, B.).
- 2008-2010 Ministry of Agriculture and Rural Development Research grant (3 year grant; 240,000 NIS) (T. Dayan and R. Justo-Hanani).

- 2008-2011 Israel Science Foundation (ISF). Energetic factors affecting seasonal migration , sexual segregation in free-tail bats. (Y. Yom-Tov and Kronfeld-Schor, N.).
- 2008-2011 Israel Science Foundation, with Drs. M. Kam, A. Degen and B. Krasnov(\$175,000) (E. Geffen).
- 2008-2011 The Israel Academy of Sciences and Humanities, centers of Excellence. Climate changes on the environment and human society in the upper Jordan Valley. (Y. Yom-Tov).
- 2009-2011 GLOWA Jordan River research grant. Modeling the impact of global climate change on terrestrial biodiversity in the Jordan River Basin: Testing planning scenarios and climate change scenarios (3 year grant; *ca.* EURO 84,000 total) (T. Dayan P.I. of subproject)
- 2009-2012 Israel Science Foundation research grant. The evolution of activity patterns of mammals: a macroecological and macroevolutionary perspective (3 year grant; *ca.* \$ 40,000 per annum) (T. Dayan).
- 2009-2013 Israel Science Foundation, with Dr. M. Kam (\$240,000) (E. Geffen).

Public service

- 1953- Member of the Zoological Society of Israel (L. Fishelson).
- 1965- Member of the Zoological Society of Israel (Y. Yom-Tov).
- 1969- National Representative in Scientific Committee of Oceanographic Research (SCOR) (L. Fishelson).
- 1970- Member of the American Society of Ichthyologists and Herpetologists (L. Fishelson).
- 1970- Member of the Israel Ecological Society (M. Goren).
- 1970- Member of the Zoological Society of Israel (M. Goren).
- 1971- Curator Mollusc Collection, Dept. Evolution, Systematics and Ecology, Hebrew University of Jerusalem (H.K. Mienis).
- 1971- Honorary Associate, Dept. of Malacology, Zoological Museum Amsterdam, Amsterdam, the Netherlands (H.K. Mienis)
- 1972- Member of the Entomological Society of Southern Africa (A. Freidberg).
- 1973- Member of the IAL (International Association for Lichenology) (J. Garty).
- 1973- Member of the Israel Zoological Society (Y. Benayahu).
- 1973- Member of the The Israel Ecological Society (J. Garty).
- 1975- Member editorial board 'Malacologia', U.S.A. (H.K. Mienis).
- 1975- Member of the Israel Ecological Society (L. Fishelson).
- 1976- Curator of the Fish collection, Zoological Museum, Tel Aviv University (M. Goren).
- 1976- Member editorial board 'Malacological Review', U.S.A. (H.K. Mienis).
- 1976- Member of the Entomological Society of Israel (A. Freidberg).
- 1977- Member of the Sociedad Argentina de Botánica (S. Blumenfeld).

- 1977- Member of the Intecol - International Ecological Society (L. Fishelson).
- 1978- Member of the La Societe Francais d'Ichthyologie (M. Goren).
- 1979- Member of the editorial board of Marine Ecology Progress Series (Y. Loya).
- 1979- Member of the Entomological Society of Washington (A. Freidberg).
- 1980- Member of the International Crustacean Society (B.S. Galil).
- 1980- Ministry of Agriculture, Plant Protection Department, Bet Dagan, identification of intercepted mollusca (H.K. Mienis).
- 1981- Israel Anthropological Society (Hershkovitz I.).
- 1981- Israel Society for Anatomical Sciences (Hershkovitz I.).
- 1981- Member of the Israel Society for Electron Microscopy (J. Garty).
- 1982- Member of the Advisory Board of the Israel Journal of Zoology (Y. Yom-Tov).
- 1982- Member of the European Ichthyological Union (M. Goren).
- 1982- Member of the European Union of Ichthyologists (L. Fishelson).
- 1983- Curator of the Invertebrate collections, Zoological Museum, Tel Aviv University (Y. Benayahu).
- 1983- Scientific Advisor of the Israel Nature and Parks Authority (M. Goren).
- 1984- Member of the Israel Zoological Society (M. Ilan).
- 1984- European Anthropological Association (I. Hershkovitz).
- 1984- Israel Prehistoric Society (I. Hershkovitz).
- 1985- Member of the Israel Prehistoric Society (Bar-Yosef Mayer, D.E.).
- 1985- Curator of the Entomological collections, Zoological Museum, Tel Aviv University (A. Freidberg).
- 1985- Member of the Biological Society of Washington (B.S. Galil).

- 1985- Member of the Committee for Fauna and Flora of Israel - The Israel Academy of Sciences and Humanities (M. Goren).
- 1985- Member of the Israel Society for Aquaculture (M. Goren).
- 1986 - Member of the Board of the Regional Central Asia Committee of Stratigraphy (O. Orlov-Labkovsky).
- 1986- Member of the editorial board of Marine Biology (Y. Loya).
- 1986- Member of the International Society for Reef Studies (Y. Benayahu).
- 1986- Member of the Israel Society for Ecology and Environmental Quality Sciences (B.S. Galil).
- 1986- Member of the the Botanical Society of Israel (J. Garty).
- 1986- Member of the Zoological Society of Israel (T. Dayan).
- 1987- Curator of Birds and Mammals, Zoological Museum, Tel Aviv University (Y. Yom-Tov).
- 1987- Member of the Asociacion Argentina of Micología (S. Blumenfeld).
- 1987- Member of the Israel Society of Prehistory (T. Dayan).
- 1988- Member of the International Society for Reef Studies (USA) (M. Ilan).
- 1988- Member of the Ecological Society of America (T. Dayan).
- 1988- Member of the Fauna and Flora Committee, Israel Academy of Sciences and Humanities Curator of Birds and Mammals (Y. Yom-Tov).
- 1988- Member of the Israel Society for Ecology and Environmental Quality (Y. Benayahu).
- 1988- Member of the Society of Invertebrate Reproduction (Y. Benayahu).
- 1989- Paleoanthropology Society (Herskovitz I.).
- 1989- Pre-clinical Advisor for New York Program medical students (Y. Rak)

- 1989- The Willi Hennig Society (elected fellow) (A. Freidberg).
- 1990- Deutsche Gesellschaft für Tropenoekologie (A. Freidberg).
- 1990- Member of the American Society of Mammalogists (T. Dayan).
- 1990- Member of the Entomological Society of Israel (A. Ionescu)
- 1990- Member of the International Council of Archaeozoology (T. Dayan).
- 1990- Member of the International Ornithological Committee (Y. Yom-Tov).
- 1990- Member of the Pacific Science Association (Y. Benayahu).
- 1990- Member of the Society of Vertebrate Paleontology (T. Dayan).
- 1990- Member of the Zoological Society of Israel (B.S. Galil).
- 1991- Member of the Sociedad Chilena de Fitopatología (S. Blumenfeld).
- 1991- Member of the Society for American Archaeology (Bar-Yosef Mayer, D.E.).
- 1991- Member of the Society of Bead Researchers (Bar-Yosef Mayer, D.E.).
- 1991- Smithsonian Institution Entomology, Research Associate (A. Freidberg).
- 1991- Member of the Ichthyological Society of Japan (M. Goren).
- 1991- Member of the scientific council of MEDIFAUNE (Mediterranean fauna data bank), Universite de Nice, France (B.S. Galil).
- 1992- Member of the Society for Research on Coelenterates (USA) (M. Ilan).
- 1992- Member of the Board of Publications, Senckenberg Institute, Germany (L. Fishelson).
- 1992- Member of the Editorial Board of "Vie Marine" (B.S. Galil).
- 1992- Member of the Israel Society of Ecology (T. Dayan).
- 1993- Member of the Ecology Graduate Program Committee, Faculty of Life Sciences, Tel Aviv Univ (T. Dayan).

- 1993- Member of the Israel Society for the Study of the Origin of Life (IL-SOL) (J. Garty).
- 1993- Member of the IUCN Canid Specialist Group (E. Geffen).
- 1993- Paleopathology Association (Hershkovitz I.).
- 1993- Scientific Advisor to the Yarqon River Authority (M. Goren).
- 1994- Member of the Asociacion Latinoamericana de Micología (S. Blumenfeld).
- 1994- Member of the Asociacion Micológica Carlos Spegazzini (S. Blumenfeld).
- 1994- Dental Anthropology Association (Hershkovitz I.).
- 1994- Member of the American Association of Anatomists (L. Fishelson).
- 1994- Member of the Curriculum Committe (Y. Rak)
- 1994- Research Associate of the Oceanographic Research Institute, Durban, South Africa (Y. Benayahu).
- 1995- American Associations of Physical Anthropology (Hershkovitz I.).
- 1995- Human Biology Association (Hershkovitz I.).
- 1995- Member of the American Society for Integrative and Comparative Biology (Y. Benayahu).
- 1995- Member of the Director of the National Collections of Natural History at Tel Aviv University (T. Dayan).
- 1995- Member of the Fisheries Society of Africa (M. Goren).
- 1995- Member of the Societa Italiana di Biologia Marina (B.S. Galil).
- 1996- Editor of the Journal of International Wildlife Law and Policy, Corresponding (M. Ilan).
- 1996- Curator of the Crustaceans Collection, Zoological Museum, Tel Aviv University (B.S. Galil).
- 1996- Member of the American Microscopical Society (Y. Benayahu).
- 1997- Member of the International Society for Research on Symbiosis (USA) (M. Ilan).

- 1997 – Member of the Paleontological Society of Uzbekistan (O. Orlov-Labkovsky).
- 1997- Member of the scientific steering committee of the Institute for Nature Conservation Research (M. Ilan).
- 1997- Member of the The Bead Study Trust (Bar-Yosef Mayer, D.E.).
- 1997- Adopting a scientist for a Shapiro Stipend, Prof. A. Lehrer (A. Freidberg).
- 1997- Chair of the Raynor Chair for Environmental Conservation Research, Tel Aviv University (Y. Loya).
- 1997- Member of the Advisory Board of “Tropical Zoology” (B.S. Galil).
- 1997- Member of the British Ornithologists' Union (Y. Yom-Tov).
- 1998- Scientific co-convenor of DIVERSITAS (An international programme of Biodiversity Science) STAR element 9 on “Inventory and Monitoring of Inland Water Biodiversity” (M. Goren).
- 1998- Israel Journal of Entomology, Editorial board (A. Freidberg).
- 1998- Member of the American Fisheries Society (M. Goren).
- 1998- Member of the Departmental Committee, Department of Zoology, Tel Aviv University (T. Dayan).
- 1998- Member of the Entomological Society of Israel (M. Guershon).
- 1998- Member of the Societas Internationalis Limnologiae (SIL) (M. Goren).
- 1998- Member of the Zootherapy Organization of Israel (M. Guershon).
- 1998- Scientific Reviewer for Entomologia Experimentalis et Applicata (M. Guershon).
- 1998- Scientific Reviewer for Journal of Applied Entomology (M. Guershon).
- 1998- Scientific Reviewer for Phytoparasitica (M. Guershon).
- 1999- Co-Chair of the committee for Fauna and Flora of Israel - The Israel Academy of Sciences and Humanities (M. Goren).
- 1999- Member editorial board ‘Triton’, Israel. (H.K. Mienis).

- 1999- Member of the American School of Oriental Research (Bar-Yosef Mayer, D.E.).
- 1999- Member of the Society of Systematic Biologists (D. Huchon).
- 1999- Appointed incumbent of the Igor Orenstein Chair for the Study of Aging (Rak, Y.).
- 1999- Member of the Board of Directors of the Inter-university Institute (IUI), Elat (Y. Benayahu).
- 1999- Member of the Committee for terms in ecology and environmental quality, The Academy for Hebrew Language (Y. Benayahu).
- 1999- Member of the Editorial Board of "Biological Invasions" (B.S. Galil).
- 1999- Member of the International Society for the Study of the Origin of Life (ISSOL) (J. Garty).
- 1999- Member, National Committee for the environmental curriculum in high schools (L. Fishelson).
- 2000 - Member of the steering committee of the Department of Biology, Israel Oceanographic and Limnological Research, Haifa (M. Ilan).
- 2000- Member of the International Council for Archaeozoology (Bar-Yosef Mayer, D.E.).
- 2000- Member of the Israel Malacological Society (Bar-Yosef Mayer, D.E.).
- 2000- Member of the Japanese Coral Reef Society (Y. Benayahu).
- 2000- Adopting a scientist for a Gil'adi program (A. Freidberg).
- 2000- Director of Nature Campus, Tel Aviv University, Tel Aviv (Y.Gavrieli).
- 2000- Member of the Academic Planning Committee, Tel Aviv University (Y. Loya).
- 2000- Member of the Academy of Sciences Fauna Committee (A. Freidberg).
- 2000- Member of the Adam Tevah V'din – The Israel Union for Environmental Defense (Vonshak, M).

- 2000- Member of the Board of Directors of the Inter-university Institute (IUI), Elat (Y. Loya).
- 2000- Member of the International Society of Arachnology (Zonstein, S.).
- 2000- Member of the Israel Society for Oxygen and Free Radical Research (J. Garty).
- 2000- Member of the Scientific Advisory Board of the International Institute (Peoples) (T. Dayan).
- 2000- Member of the Scientific Review Board - Coral bleaching Project, Research Institute for the Subtropics (RSI), Okinawa, Japan (Y. Loya).
- 2000- Member of the Zoological Society of Israel (R. Ben-David-Zaslow).
- 2001- Member of Man and Biosphere Committee, UNESCO (Y.Gavrieli).
- 2001- Member of the European Union of Geosciences (O. Orlov-Labkovsky).
- 2001- Co Chairman -International Targeted working group on coral bleaching under the auspices of the World Bank, in collaboration with IOC/UNESCO (Y. Loya).
- 2001- Educational Advising Committee, Society for the protection of Nature in Israel (Y.Gavrieli).
- 2001- Head of the National Center for High Throughput Screening of Novel Bioactive Compounds (M. Ilan).
- 2001- Member of the Board of Directors, Society for the Protection of Nature in Israel (Y. Yom-Tov).
- 2001- Member of the Chair of the Israel MAB (Man and Biosphere) UNESCO Committee (T. Dayan).
- 2001- Member of the International Council of Museums (Y. Gavrieli).
- 2001- Member of the Israel Council of Museums (Y. Gavrieli).
- 2001- Member of the Israel IGBP (International Geosphere Biosphere Program) Committee (T. Dayan).

- 2001- Member of the Museum Committee (Chair), Department of Zoology, Tel Aviv University (T. Dayan).
- 2001- Member of the Steering Committee for Nature Campus, Public Programs, Exhibitions and Education at the National Collections of Natural History, the I. Meier Segals Garden for Zoological Research and the Botanic Gardens (T. Dayan).
- 2001- Member of the The Zoological Society of Israel (Vonshak, M).
- 2001- Member of the UNESCO World Heritage Committee, Israel (T. Dayan).
- 2002- Board member of the Water Environment Forum, Israel Water Association (S. Gafny).
- 2002- Member in the European Society of Arachnology (ESA) (E. Gavish-Regev).
- 2002- Member in the International Society of Arachnology (ISA) (E. Gavish-Regev).
- 2002 - Member of the Geological Society of Israel (O. Orlov-Labkovsky).
- 2002 – Member of the International Paleontological Association (O. Orlov-Labkovsky).
- 2002- Member of the Società Lichenologica Italiana (Honorary member) (J. Garty).
- 2002- Educational Advising Committee, Nature Center, Ramat Hanadiv (Y. Gavrieli).
- 2002- Member of the Department Committee in the Department of Zoology (Y. Benayahu).
- 2002- Member of the editorial board of Marine Pollution Bulletin (Y. Loya).
- 2002- Member of the Entomological Society of Israel (Zonstein, S.).
- 2002- Member of the Society for Conservation Biology (T. Dayan).
- 2003 – Liaison of the Archaeo-malacology Work Group to the Executive Committee of International Council for Archaeozoology (Bar-Yosef Mayer, D.E.).

- 2003- Curator of the Molecular Systematics collections, Zoological Museum, Tel Aviv University (D. Huchon).
- 2003- Chair of the National Biodiversity Planning sub-committee for education and public awareness. (Y. Gavrieli)
- 2003- Elected Council Member, Society for the Protection of Nature in Israel (Y. Gavrieli).
- 2003- Member of the Board of Directors of the Nature and National Parks Protection Authority of Israel (INPA) (B.S. Galil).
- 2003- Member of the Great Rift Valley task force of the UNESCO World Heritage Committee (T. Dayan).
- 2003- Member of the Israeli Society for aquatic research (M. Goren).
- 2004 - Member of the Society for Conservation Biology (Y. Gavrieli).
- 2004 - Correspond- member of the Subcommission on Carboniferous Stratigraphy of the International Commission on Stratigraphy (O. Orlov-Labkovsky).
- 2004- Chair of the Strategic Planning Committee for the Open Lands Institute on behalf of Yad Hanadiv Foundation (T. Dayan).
- 2004- Editor in Chief of Electronic Journal of Ichthyology (M. Goren).
- 2004- Member of the Advisory Committee on "Man and the Environment", Yad Yizhak Ben-Zvi (T. Dayan).
- 2004- Member of the Central Nomination Committee of Tel Aviv University (Y. Loya).
- 2004- Training Mrs. Valeria Spliasky of The Plant Protection and Inspection Services in taxonomy and taxonomic methodology of Aleurodidae. Jointly launching a website on the Aleurodidae of Israel (Presently only in the PPRI site, in the future it will also appear in our museum's site) (D. Gerling).
- 2004-2008 Head, Department of Anatomy and Anthropology, Sackler Faculty of Medicine, Tel Aviv University (Rak, Y.).
- 2005- Member in the Israeli Association of Arachnology (ILAA) (E. Gavish-Regev).
- 2005- Member in the The Zoological Society of Israel (E. Gavish-Regev).

- 2005- Chair, Council for the Open Lands Institute on behalf of Yad Hanadiv Foundation (T. Dayan).
- 2005- Chief-editor of the Electronic Journal of Ichthyology, The bulletin of the European Ichthyological Society (M. Goren).
- 2005- Co-chair (with J. Gershoni) of the Nature Campus Science Committee, TAU (T. Dayan).
- 2005- Head of the Faculty of Life Sciences Graduate School (M. Ilan).
- 2005- Identification of whiteflies for the Plant Protection Service. (D. Gerling).
- 2005- Member of the Invasive Species Scientific Committee, IUCN (B.S. Galil).
- 2005- Member of the steering committee for the National Collections of Natural History, under the auspices of the Israel National Academy of Sciences and Humanities (T. Dayan).
- 2005- Member of the The Entomological Society of Israel (Vonshak, M).
- 2005- Member of the The Society for the Protection of Nature in Israel (Vonshak, M).
- 2006- Chairman- Scientific Board of the Australian Research Council (ARC) Centre of Excellence on coral reef research (Y. Loya).
- 2006 - Member of the national committee for an interuniversity M.Sc. program in Marine Sciences (M. Ilan).
- 2006- Member of the review committee, Ford Motor Company Conservation and Environmental Grants (Y. Gavrieli).
- 2006- Member of the Zoological Society of Israel (D. Huchon).
- 2006- Co-chair, Forum on Biodiversity and the Environment, under the auspices of the Israel Academy of Sciences and Humanities (T. Dayan).
- 2006- Editor of - Israel Journal of Ecology and Evolution (M. Ilan).
- 2006- Member of CenSeam: a Global Census of Marine Life on Seamounts (part of the worldwide Census of Marine Life, CoML (B.S. Galil).

- 2006- Member of the American Society of Limnology and Oceanography (M. Ilan).
- 2006- Member of the Editorial Board of "Aquatic Invasions" (B.S. Galil).
- 2006- Member of the European Society for Marine Biotechnology (M. Ilan).
- 2006- Member of the review board of Molecular Ecology (E. Geffen).
- 2006- Member of the Teaching committee of the Inter-University Institute - Eilat (M. Ilan).
- 2007- Member in the The Entomological Society of Israel (E. Gavish-Regev).
- 2007 - Member of Editorial Board, Recanati Institute of Maritime Studies Newsletter (Bar-Yosef Mayer, D.E.).
- 2007- Member of the Research and Monitoring team of the Biodiversity subcommittee of the Director-Generals' committee on Sustainable Development (T. Dayan).
- 2007- Editor of - Open Oceanography Letters (M. Ilan).
- 2007- Editor of - Open Oceanography Reviews (M. Ilan).
- 2007- Editor of - The Open Oceanography Journal (M. Ilan).
- 2007- Head of the Department of Zoology (M. Ilan).
- 2007- Member of a Public Council for the Environment to work in conjunction with the Environmental Lobby of the Knesset and member of the Steering Committee of this Council (T. Dayan).
- 2007- Member of a team to provide guidelines to the Israeli government on biodiversity and adaptation to climate change (T. Dayan)..
- 2007- Member of the Editorial Board of the Open Ecology Journal (T. Dayan).
- 2007- Member of the The Society for Conservation Biology (Vonshak, M).
- 2007- Member of the Zoology Departmental technical committee (A. Freidberg).

- 2008 - Member of the expert team prepared the Mediterranean marine Fish Red List organized by IUCN (The World Conservation Union) (Goren M.).
- 2008 - Head of the steering committee of the national interuniversity center of excellence in Marine Sciences (M. Ilan).
- 2008- Member of the Ecological Society of America (Y. Gavrieli).
- 2008- Elected to the Israel Academy of Sciences (Rak, Y.).
- 2008 Organizing committee of Drylands, Deserts and Desertification 2008, an international congress at the Sde Boqer Desert Research Insitute (T. Dayan).
- 2008- Reviewer for Biological Invasions (Vonshak, M).
- 2008-2009 Member of the editorial board of The Open Ecology Journal (T. Dayan).
- 2009- Member of the Israel Chemical Society (M. Ilan).
- 2009- Member of the national steering committee of the Inter-University Institute – Eilat (M. Ilan).
- 2009- Member of the Science Division of the Israeli Academy of Sciences and Humanities (Y. Loya).
- 2009 Member of a committee convened by the National RandD to review the Agricultural Research Organization of the Ministry of Agriculture and Rural Development (T. Dayan).
- 2009- Member of the Board of Directors of the Society for the Protection of Nature in Israel (SPNI) (T. Dayan).
- 2009- Member of the editorial board of Mammalian Biology (T. Dayan).
- 2009- Member, Editorial board, Journal of Ecology and Environment (Y. Gavrieli).

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Visiting scientists at the National Collections

The attached list includes visitors from institutions **other than** Tel Aviv University who came personally to use the natural history collections of Tel Aviv University in the past academic year. Much use is made of the collections by additional scientists who did not visit them in person. Some scientists get identification services for their research projects and others have lists of specimens and locations mailed to them for various types of research. Moreover, during this period numerous parcels containing scientific materials were mailed abroad for researchers in their home institutions.

Date	Name	Institute	Country	Taxonomic group
2008 Nov	Z. Brosh	Israeli Air Force	Israel	Birds
2008 Dec	M. Fischer	Tel Aviv University	Israel	Molluscs
2008 Dec	U. Bar-Ze'ev	IMS	Israel	Molluscs
2008 Dec	E.L. Heiman	IMS	Israel	Molluscs
2008 Dec	J. Ktalav	Israel Antiquity Authority	Israel	Molluscs
2008 Dec	K.B. Hilkanp	Michigan University	USA	Mammals
2008 Dec	H. Jablonka	Tel Aviv University	Israel	Mammals
2009 Jan	Z. Brosh	Israeli Air Force	Israel	Birds
2009 Jan	E.L. Heiman	IMS	Israel	Molluscs
2009 Jan	E. Sheffer	IOLR - Haifa	Israel	Molluscs
2009 Jan	M. Moris	IOLR - Haifa	Israel	Molluscs
2009 Feb	U. Bar-Ze'ev	IMS	Israel	Molluscs
2009 Feb	Z. Orlin	IMS	Israel	Molluscs
2009 Feb	S. Vaisman	Ministry of Agriculture	Israel	Molluscs
2009 Feb	M. Zordan	University of Chile	Chile	Mammals
2009 Feb	R. Shafir	University of Haifa	Israel	Mammals
2009 Mar	D. Furth	National History Museum, Smithsonian Institution, Washington	USA	Entomology

Date	Name	Institute	Country	Taxonomic group
2009 Mar	R. Shafir	University of Haifa	Israel	Mammals
2009 Mar	H. Cohen	Tel Aviv University	Israel	Mammals
2009 Mar	D. Chadash	University of Haifa	Israel	Birds
2009 Mar	S. Vaisman	Ministry of Agriculture	Israel	Molluscs
2009 Mar	E. Sohroden	University of Bonn	Germany	Molluscs
2009 Mar	U. Galili	Israel Antiquity Authority	Israel	Molluscs
2009 Mar	I. Ktalav	Israel Antiquity Authority	Israel	Molluscs
2009 Apr	R. Preiss		England	Entomology
2009 Apr	N. Preiss		England	Entomology
2009 Apr	R. Shafir	University of Haifa	Israel	Mammals
2009 Apr	Z. Brosh	Israeli Air Force	Israel	Birds
2009 Apr/ May	O. Gorbunov	Institute for Problems of Ecology and Evolution, Moscow	Russia	Entomology
2009 May	M. Seizmair	Munich Entomological Society, Munich	Germany	Entomology
2009 May	A. Dotan		Israel	Molluscs
2009 May	U. Galili	Israel Antiquity Authority	Israel	Molluscs
2009 May	Y. Sinai	Israel Nature and Parks Authority	Israel	Molluscs
2009 May	A. Roulin	University of Lausanne	Switzerland	Mammals
2009 May	Z. Brosh	Israeli Air Force	Israel	Birds
2009 May	P. Cerretti	Universita di Roma	Italy	Entomology
2009 May- July	S. Bleicher	Campus of the Enviromental Forestry, Mississippi	USA	Entomology
2009 Jun	L. Maul		Germany	Mammals
2009 Jun	S. Vaisman	Ministry of Agriculture	Israel	Molluscs
2009 Jun	Y. Sinai	Israel Nature and Parks Authority	Israel	Molluscs
2009 July	Z. Brosh	Israeli Air Force	Israel	Birds

Date	Name	Institute	Country	Taxonomic group
2009 July	O. Hazofe	Israel Nature and Parks Authority	Israel	Birds
2009 July	S. Vaisman	Ministry of Agriculture	Israel	Molluscs
2009 Aug	S. Vaisman	Ministry of Agriculture	Israel	Molluscs
2009 Aug	Maja Seselj	University of New York	USA	Athropology
2009 Sep	D. Berkovich	Tel Aviv University	Israel	Birds

Support for academic and other courses

The natural history collections are university-based and, as such, their role is also to promote higher education. Some courses are TAU courses, several of which are our compulsory first and second year courses, taught to hundreds of students; however, other universities (Technion, University of Haifa, Open University) use our facilities for their specialized courses, as does the Avshalom Institute. Many Nature Campus activities also take place using the collections for varied audiences.

Purpose	Name	Institute	Taxonomic group
Faunistica of Mammals (academic course)	Y. Yom-Tov	Tel Aviv University	Mammals, Taxidermist and Museum Class
Insects the Flagship of Biodiversity (academic course)	A. Freidberg and D. Simon	Tel Aviv University	Entomology
Faunistica (academic course)	Z. Arad	Technion	Birds, Mammals and Museum Class
Faunistica (academic course)		Open University	Birds, Mammals and Museum Class
Vertebrates Anatomy (academic course)	D. Eilam, M. Ovadia and U. Oron	Tel Aviv University	Reptilia, Mammals and Taxidermist
Animal Behavior	I. Golani	Tel Aviv University	Mammals and Museum Class
Introduction to Animal Kingdom: Invertebrates and Vertebrates (academic course)	M. Ovadia and A. Gasith	Tel Aviv University	Mammals and Entomology
The Invertebrates: Comparative Functional Biology (academic course)	M. Ilan, Y. Benayahu and A. Abelson	Tel Aviv University	Invertebrates, Entomology and Histology

Purpose	Name	Institute	Taxonomic group
Osteology And Anthropology (academic course)	I. HersHKovitz	Tel Aviv University	Anthropology
Physical Anthropology (academic course)	Y. Rak	Tel Aviv University	Anthropology
Chapters in Human Evolution (academic course)	Y. Rak	Tel Aviv University	Anthropology
Human Evolution: fossil evidences (academic course)	Y. Rak	Tel Aviv University	Anthropology
Ichthyology (academic course)	M. Goren	Tel Aviv University	Fishes and Museum Class
Biology and Systematic of Marine Invertebrates: (academic course)	Y. Benayahu	Interuniversity Institute for Marine Sciences	Invertebrates
Guiding Students	D. Bar-Yosef	University of Haifa	Molluscs
Bird-Watching	T. Shariv	Avshalom Institute	Birds and Museum Class
Bird-Watching		Israeli Air Force	Birds and Museum Class
Bird-Watching		The Society for the Protection of Nature in Israel	Mammals, Birds and Museum Class
Various seminars	Nature Campus	Tel Aviv University	Mammals, Birds, Entomology and Museum Class
Guided tours to schoolchildren	Nature Campus	Tel Aviv University	Mammals, Birds, Entomology and Museum Class

Support for various individuals and organizations

The TAU natural history collections function as a national collection, by providing services to the scientific committee, as well as to other organizations and, to the best of our abilities under currently constrained conditions, also to the general public. Here we list **a sample** of the services provided by the collections in the past academic year. We apologize that the list is not full, but in the current conditions of under-staffing we are unable to dedicate the human-power to monitor and record all such activities.

Purpose	Name	Institute	Taxonomic group
Taxonomic guidance (learning the procedure)	V. Sepiarsky	PPIS of the ministry of Agriculture	Entomology
Taxonomy Identification		Plant Protection and Inspection Services	Entomology
Taxonomy Identification		Israel Nature and Parks Authority	Entomology
Taxonomy Identification		Ministry of Environmental Protection	Entomology
Taxonomy Identification		Ministry of Helth	Entomology
Taxonomy Identification	A. Gasith	Tel Aviv University	Entomology and Invertebrates
Taxonomy Identification	E. Groner	Ben-Gurion University of the Negev	Entomology
Taxonomy Identification	M. Golan	Ben-Gurion University of the Negev	Entomology
Taxonomy Identification		Municipality of Haifa	Entomology
Taxonomy Identification		Municipality of Tel Aviv	Entomology
Taxonomy Identification		Mifaley Hhaemek, The Valley Agricultures Center	Entomology

Purpose	Name	Institute	Taxonomic group
Taxonomy Identification	O. Shelef	Ben-Gurion University of the Negev	Entomology
Taxonomy Identification	E. van dan Brink	Israel Antiquity Authority	Molluscs
Taxonomy Identification	U. Galili	Israel Antiquity Authority	Molluscs
Taxonomy Identification	S. Vaisman	Plant Protection and Inspection Services	Molluscs
Taxonomy Identification	E. Sheffer	IOLR - Haifa	Molluscs
Taxonomy Identification	Z. Orlin		Molluscs
Taxonomy Identification	G. Fleminger	Tel Aviv University	Invertebrates: Spiders
Taxonomy Identification	Campus Teva	Tel Aviv University	Invertebrates: Spiders
Taxonomy Identification	North Distric	Israel Nature and Parks Authority	Fishes
Taxonomy Identification	I. Zohar	Tel Aviv University	Fishes
Taxidermist services	A. Lotem	Tel Aviv University	Birds and Taxidermist
Taxidermist services	E. Geffen	Tel Aviv University	Mammals and Taxidermist
Taxidermist services	B. Waynes	University of California, Los Angeles	Mammals and Taxidermist
Taxidermist services	Nature Campus	Tel Aviv University	Mammals, Birds and Taxidermist
Taxidermist services		Israel Nature and Parks Authority	Birds and Taxidermist
DNA Shipment	E. Gefen	Tel Aviv University	Mammals
DNA Shipment	B. Waynes	University of California, Los Angeles, USA	Mammals
Electronic Data	A. Boskila	Ben-Gurion University of the Negev	Reptile

Purpose	Name	Institute	Taxonomic group
Electronic Data	B. Shacham	Hebrew University	Reptile
Electronic Data	E. Ratner	University of Haifa	Mammals
Electronic Data	D. Hadash	University of Haifa	Birds
Electronic Data	T. Harpaz	Faculty of Agriculture, Food and Environment	Entomology
Electronic Data	Y. Mendelik	Faculty of Agriculture, Food and Environment	Entomology
Electronic Data	Nature Campus	Tel Aviv University	All collections
Shipment of Specimens	Zachos F. E.	Christian Albrechts University, Keiel, Germany	Mammals
Shipment of Specimens	T. Pietsch	School of Aquatic and Fishery Sciences, University of Washington, USA	Fishes
Shipment of Specimens	B. Yokes	Halic Universitesi, Molekuler Biyoloji ve Genetik Bolumu, Istanbul , Turkey	Fishes
Shipment of Specimens	D. Golani	Hebrew University, Israel	Fishes
Shipment of Specimens	P. Berrebi	Universite Montpellier, France	Fishes
Shipment of Specimens	P. Berrebi	Universite Montpellier, France	Fishes
Shipment of Specimens	K. Dubula	The South African Institute for Aquatic Biodiversity, South Africa	Fishes
Shipment of Specimens	A. Andouche	Museum National d'Histoire Naturelle , Paris, France	Invertebrates: Soft Corals
Shipment of Specimens	B. Cauvin	GIP Réserve Nationale Marine de la Réunion, La Réunion	Invertebrates: Soft Corals

Purpose	Name	Institute	Taxonomic group
Shipment of Specimens	C. S. McFadden	Harvey Mudd College, Claremont, USA	Invertebrates: Soft Corals
Shipment of Specimens	F. Stefani	University of Milano-Bicocca, Milan, Italy	Invertebrates: Soft Corals
Shipment of Specimens	L. van Ofwegen	National Museum of Natural History , Leiden The Netherlands	Invertebrates: Soft Corals
Shipment of Specimens	M. Tessier	GIP Réserve Nationale Marine de la Réunion, La Réunion	Invertebrates: Soft Corals
Shipment of Specimens	Y. Benayahu	National Museum of Natural History , Leiden The Netherlands	Invertebrates: Soft Corals
Shipment of Specimens	B. Swalla	University of Washington, USA	Invertebrates: Tunicates
Shipment of Specimens	A. Driskell	Smithsonian Institution, USA	Invertebrates: Tunicates
Shipment of Specimens	X. Turon	Center for Advanced Studies of Blanes, Blanes, Spain	Invertebrates: Tunicates
Shipment of Specimens	A. Herrmann	Germany	Entomology
Shipment of Specimens	A. B. Biscaccianti	Italy	Entomology
Shipment of Specimens	A. H. Kirk-Spriggs	National Museum, Bloemfontein, South Africa	Entomology
Shipment of Specimens	E. Scheuchl	Germany	Entomology
Shipment of Specimens	A. Laforgue	Lavaur, France	Entomology
Shipment of Specimens	G. Evans	Systematic Entomology Laboratory, Beltsville, USA	Entomology
Shipment of Specimens	A. Matalin	Moscow State Pedagogical University, Russia	Entomology
Shipment of Specimens	H. Dathe	Entomologisches Institut, Germany	Entomology

Purpose	Name	Institute	Taxonomic group
Shipment of Specimens	A. Müller	Scientific Curator Entomological Collection, Switzerland	Entomology
Shipment of Specimens	H.-Y. Han	Department of Life Science, Yonsei University, Korea	Entomology
Shipment of Specimens	I. Grichanov	Institute of Plant Protection, Russia	Entomology
Shipment of Specimens	I. Winkler	North Carolina State University, USA	Entomology
Shipment of Specimens	A. Pauly	Institut royal des Sciences naturelles de Belgique, Belgique	Entomology
Shipment of Specimens	A. Schulz	Germany	Entomology
Shipment of Specimens	A. Velázquez de Castro	Spain	Entomology
Shipment of Specimens	A. Z. Lehrer	Israel	Entomology
Shipment of Specimens	B. Feldmann	Germany	Entomology
Shipment of Specimens	B. Merz	Muséum d'histoire naturelle, Switzerland	Entomology
Shipment of Specimens	B. Seifert	Staatliches Museum für Naturkunde Görlitz, Germany	Entomology
Shipment of Specimens	C. Muster	Germany	Entomology
Shipment of Specimens	M. Barták	Czech University of Agriculture, Czech Republic	Entomology
Shipment of Specimens	Ch. Xiaolin	National Museum of Natural History, Washington	Entomology
Shipment of Specimens	Ch. Xiaolin	Chinese Academy of Sciences, China	Entomology
Shipment of Specimens	M. Fibiger	Denmark	Entomology
Shipment of Specimens	D. Benyamini	Israel	Entomology

Purpose	Name	Institute	Taxonomic group
Shipment of Specimens	D. Gibbs	England	Entomology
Shipment of Specimens	M. Schwarz	Austria	Entomology
Shipment of Specimens	M. Terzo	U.M.H., Laboratoire de Zoologie, Belgique	Entomology
Shipment of Specimens	D. Michez	Laboratoire de Zoologie, Belgique	Entomology
Shipment of Specimens	D. R. Smith	National Museum of Natural History, Washington	Entomology
Shipment of Specimens	D. W. Wrase	Germany	Entomology
Shipment of Specimens	P.A. Pedata	Istituto per la Protezione delle Piante, Italy	Entomology
Shipment of Specimens	E. Palevsky	Israel	Entomology
Shipment of Specimens	S. Risch	Germany	Entomology
Shipment of Specimens	G. D. Lengyel	Hungarian Natural History Museum Budapest, Hungary	Entomology
Shipment of Specimens	R. Preiss	United Kingdom	Entomology
Shipment of Specimens	G. J. Kergoat	Centre de Biologie et de Gestion des Populations, France	Entomology
Shipment of Specimens	R. Szadziwski	University of Gdańsk, Poland	Entomology
Shipment of Specimens	S. D. Gaimari	Plant Pest Diagnostics Lab, California Department of Food and Agriculture	Entomology
Shipment of Specimens	T. Pape	Zoologisk Museum, Denmark	Entomology
Shipment of Specimens	S. Patiny	Entomologie fonctionnelle et évolutive, Belgium	Entomology
Shipment of Specimens	H. Schnee	Germany	Entomology

Purpose	Name	Institute	Taxonomic group
Shipment of Specimens	T. Dikow	Division of Invertebrate Zoology, American Museum of Natural History, New York	Entomology
Shipment of Specimens	I. MacGowan	Scottish Natural Heritage, Scotland	Entomology
Shipment of Specimens	J. Papp	Hungarian Natural History Museum Budapest, Hungary	Entomology
Shipment of Specimens	J. Roháček	Silesian Museum, Czech Republic	Entomology
Shipment of Specimens	J. Ware	American Museum of Natural History, New York	Entomology
Shipment of Specimens	L. Davis	Florida	Entomology
Shipment of Specimens	L. Masner	Agriculture & AgriFood of Canada, Canada	Entomology
Shipment of Specimens	M. Carles-Tolra	Spain	Entomology
Shipment of Specimens	M. Cerny	Czech Republic	Entomology
Shipment of Specimens	M. Seizmair	Munich Entomological Society, Germany	Entomology
Shipment of Specimens	N. Dorchin	Museum Koenig Adenauerallee, Germany	Entomology
Shipment of Specimens	O. Gorbunov	Institute of Animal Morphology & Ecology, Russia	Entomology
Shipment of Specimens	P. Cerretti	Università degli Studi di Roma "La Sapienza", Italy	Entomology
Shipment of Specimens	N. P. Hidalgo	University of Leon, Spain	Entomology
Shipment of Specimens	N. L. Evenhuis	Bishop Museum, Hawaii	Entomology

Purpose	Name	Institute	Taxonomic group
Shipment of Specimens	R. Beck	Germany	Entomology
Shipment of Specimens	P. H. van Doesburg	National Natural History Museum, The Netherlands	Entomology
Shipment of Specimens	R. Wahis	Faculté universitaire des Sciences agronomiques, Belgique	Entomology
Shipment of Specimens	S. Klopstein	Natural History Museum, Switzerland	Entomology
Shipment of Specimens	S. Witnterton	Dept. of Primary Industries & Fisheries, Australia	Entomology
Shipment of Specimens	S. Ziani	Italy	Entomology
Shipment of Specimens	V. Tolkanitz	Institute of Zoology, Ukraine	Entomology