Faculty of Life Sciences – Department of Zoology
The Department of Molecular Biology and Ecology of Plants
Faculty of Medicine – Department of Anatomy and Anthropolog

The National Collections of Natural History

Tel Aviv University

Annual Report 2009/2010

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Minister of Science & Technology

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FOREWORD

In recent years scientists and science decision-makers have come to appreciate the importance of unraveling the highest organizational levels in biology – Earth's ecosystems. The now prevailing understanding is that human societies are reliant on this intricate web of life; our livelihoods, health, and culture are dependent upon a myriad of living organisms that form Earth's biosphere. The United Nations declared 2010 to be the International Year of Biodiversity, in celebration of life on earth and of the value of biodiversity for our lives.

One of humankind's greatest challenges is developing the science of maintaining sound, healthy, and economically prosperous human populations by protecting natural ecosystems and ensuring the continuation of their services. Biodiversity research, the study of Earth's most complex biological systems, faces this enormous challenge, and is thus a leading scientific field in the 21st century.

To this end, we must study the species of Israel's biota, their systematics, evolution, ecology, biogeography, and behavioral ecology; we must unravel spatial and temporal patterns in biodiversity, gain insight into the effects of global change, and learn to protect and exploit sustainably this natural treasure for the benefit of our society. Following, the Ministry of Science and Technology considered biodiversity as one of the major fields in it's strategic programs and is involved in financing various infrastructural ecological projects.

The National Collections of Natural History at Tel Aviv University, a National Research Infrastructure, are key to the scientific study of the Israeli biota, to its protection and sustainable use. The collections and their study are crucial for developing modern agriculture, for protecting Israel's threatened habitats, for ensuring sustainable development on land and sea, and for the use of biological compounds in industry. Of equal importance – Israel's biota is part of our national heritage; thus opening these collections to the general public, in particular schoolchildren, is an important endeavor for bringing science and knowledge of our environment to the Israeli public.

The Ministry of Science and Technology is proud of its involvement in this important national project and will continue to be an active partner throughout its development and looks forward to sharing in its achievements.

Sincerely yours,

Prof. Daniel Hershkowitz

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TEL AVIV UNIVERSITY אוניברסיטת תל-אביב
GEORGE S. WISE FACULTY OF LIFE SCIENCES הפקולטה למדעי החיים ע"ש ג'ורג' ס. וייז
DEPARTMENT OF ZOOLOGY המחלקה לזואולוגיה

December 20, 2010

Dear friends and colleagues,

We are pleased to present you with the 8th Annual Report of the National Collections of Natural History at Tel Aviv University.

The past year was full of optimism and promise. In May TAU finally laid the cornerstone to our new building, to be built thanks to the steadfast support of Michael and Judy Steinhardt, special support of the Planning and Budgeting Committee of the Council for Higher Education in Israel (VATAT), and the Ministries of Environmental Protection, Agriculture and Rural Development, Tourism, and Science and Technology. The City of Tel Aviv Yaffo provided us with a wonderful building site, adjacent to the Zoological and Botanical Gardens of TAU, and opposite of the Diaspora Museum, the best location possible.

In the past year we continued with our collections-based research and public education activities, with the ongoing support of Tel Aviv University, VATAT, the Ministry of Science and Technology, and other funding sources. We work under the auspices of 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, the National Council for Research and Development has recognized our collections as a National Research Infrastructure, and we are working with the relevant government agencies to establish longterm and stable support. This is crucial for the development of a project that must strive for academic excellence while fullfilling national goals and providing support to agriculture, environmental conservation, education, infrastructures, planning, health, and defense.

The progress of the Israel Taxonomy Initiative, which we have established as a joint enterprise of the higher education system and the Ministries of Science and Technology, Infrastructures, Agriculture, Environmental Protection, and Health, brings hope that we will be able to save this crucial field of science. In the past year two new faculty members of the Department of Zoology began to serve as Curators in addition to their research program, and a new faculty member has just joined us as Associate Curator. The enthusiasm of these young curators also reflects the significance of of the natural history collections as a research infrastructure for cutting-edge biodiversity research. We also enjoy the continued research and collections development by a dedicated team of VATAT funded experts.

In the past year our activities were led and monitored by our Public and Scientific Council, with a particular focus on developing a new home for this scientific and cultural treasure, that will also allow us to share our knowledge with the public. We are very grateful to many wonderful people who have helped us attain this goal, and look forward to continuing our joint journey of ensuring the future of biodiversity in Israel.

Tamar Dayan
Director, National Collections of Natural History

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Introduction

We are pleased to present the eighth 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 2009/2010 academic year.

A decision made 25 years ago and reaffirmed several times since is that the university collections in Israel fulfill the role of a national museum of natural history. Thus 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 Research & Development 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 provide scientific and expert support to many agricultural, environmental, ecological, evolutionary, and conservation studies of scientists from different institutions from Israel and abroad as well as to government ministries and agencies 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 and the Ministry of Science and Technology we have managed over the past few years to upgrade collections care and digitization quite dramatically. In particular VATAT support allowed us to hire expert collection managers to curate some of our collections, to increase the knowledge of Israeli fauna, and to upgrade the collections as a research infrastructure. We hired an expert for our bee collection, a crucial resource for agriculture as bees provide pollination services; for our ant collection, which increasingly supports our understanding of patterns of species invasions; for our parasitic wasp collection, key for biological control; an expert to study the role of mollusks in the culture of ancient human civilizations; an expert on bryozoa and an expert on sponge systematics and biology who help unravel marine life in the Mediterranean. Two VATAT funded post-docs have trained with us this past year as a springboard for further training abroad and three are expected this year, thanks to VATAT support.

A very optimistic note is the progress 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 ministries and agencies, we aim to improve scientific knowledge of Israel's biodiversity for basic as well as applied purposes and to train the next generation of expert taxonomists. This initiative, funded by a philanthropic foundation, enters its second year, with three post-docs receiving support for training abroad, five doctoral students in Israeli universities, 12 biodiversity surveys conducted to increase the scientific knowledge of Israeli biota, and six courses expected this year by experts from abroad. All this gives us hope that we will not lose knowledge of our country's biota, although challenges remain huge.

Another optimistic note is the hiring last year of two new faculty members by the Department of Zoology and an additional one this year, after many years with numerous retirements and no new recruits. Dr. Shai Meiri serves as

Curator of Higher Vertebrates, Dr. Frida Ben-Ami serves as Curator of Invertebrates, and Roi Holzman as Associate Curator of Fishes.

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 Molecular Biology and Ecology of Plants) 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 2009/2010.

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 and 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

Samuel Hayek

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 to the Budget and Planning Committee of the Council of Higher Education: Yehudith Birk (Chairperson), Tamar Dayan, Yossi Loya, Yael Lubin, Reuven Merhav, Rafi Mechoulam, Oded Navon, Ehud Spanier, Yossi Segal.

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

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

Sponsors' Steering Committee: Yeshayahu Bar-Or (Chair), David Mingelgrin, Miriam Freund, Yael Siman-Tov, 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): Michael Ottolenghi, Yossi Loya, Yael Lubin, Bella Galil, Alan Matthews. Observer: Ran Levy. Tamar Dayan and Menahem Goren direct the initiative.

Museum staff

Tamar Dayan	Department of Zoology	Director

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
Frida Ben-Ami	Department of Zoology	Mollusca
Amnon Freidberg	Department of Zoology	Entomology
Menachem Goren	Department of Zoology	Fishes
Lev Fishelson (emeritus)	Department of Zoology	Fishes
Dorothée 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 Molecular Biology and Ecology of Plants Sciences	Fungi
Margalith Galun (emeritus)	Department of Molecular Biology and Ecology of Plants Sciences	Lichens
Jacob Garty (emeritus)	Department of Molecular Biology and Ecology of Plants Sciences	Lichens
Ya'akov Lipkin (retired)	Department of Molecular Biology and Ecology of Plants Sciences	Algae

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

Silvia Blumenfeld	Department of Molecular Biology and Ecology of Plants Sciences	Fungi
Vladimir Chikatunov	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	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
Bella S. Galil	Israel Oceanographic & Limnological Research - Haifa	Crustaceans
Dan Gerling (emeritus)	Department of Zoology	Hymenoptera
Abraham Hefetz	Department of Zoology	Entomology
Danny Simon	Department of Zoology	Formicidae
Ilan Yarom	Hazeva Research & Development	Diptera
Yael Mandelik	Faculty of Agriculture, Food and Environment	Apoidea
Eli Geffen	Department of Zoology	Molecular Systematics
Elazar Kochva (emeritus)	Department of Zoology	Herpetology
Roi Holzman	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	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

Merav Vonshak

Hadas Steinitz

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
Oz Ritner	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
Bat Sheva Rothman	Content Development
Tovia Eshcoly	Public Programs Coordinator

Part time employees

Gil Wizen	Department of Zoology
Nir Shtern	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

Daniella Bar-Yosef Mayer, PhD	Department of Zoology

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 Molecular Biology and Ecology of Plants 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 is 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 (60,000m²). 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 Environmental Protection, 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 8,678 school children from as many as 88 different schools and in family groups from all around Israel. 8% of the participants were from the Arab sector. Age wise, almost half 49.5% of the participants were children from kindergarten and elementary school, 10.7% were middle school children and 10.2%, 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 2009-2010 393 teachers,

teaching all grades and 396 nature guides of the Society for protection of Nature in Israel participated.

The collections, together with the botanic and zoological gardens serve as an academic teaching infrastructure not only to TAU; 607 students from 12 other higher higher education institutions used these facilities.

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 2,741 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 2009/2010, the Gardens played host to 6,490 visitors comprising groups of schoolchildren, teachers, nature guides, students from other institutions of higher education, and other organized groups. 29 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 Classroom") 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 1,052.

- **Science Camps**. Science camps were 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, 837 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 spans several months to a whole school year:

    - Research workshops. Developed in accordance with the curriculum for 5 credits high school majors in environmental sciences, the program ran for the 5th year. Two workshops took place: biodiversity and ecosystems, 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 the Ironi Yod-Bet request and guided 12 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 403 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). 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 73 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 43 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 28 visitors surf the website every day.

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 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

Throughout the past year the staff members of the TAU Natural History Collections have continued their day-to-day activities. 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 to those requesting them, and assist graduate students, academic courses, and "Nature Campus" activities.

During the academic year 2009/2010 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. Almost 45,000 new specimens were added to the various collections during this year.

The tetrapod collections grow during 2010: 44 amphibians (all collected by Claudia Drees in pitfall traps designed to catch insects, many of them juveniles), 57 reptiles, 62 mammals and only 9 birds collected in 2010 have so far entered the collections. Some specimens which entered the collections this year were collected earlier. Most notable is the donation of just under 100 rodents collected in the last 5 years by Boris Krasnov and Georgy Shenbrot (Ben Gurion Uiversity of the Negev). We saw some major updates to the databases and collection website. With the help of existing (Erez Maza, Arieh Landsman) and new staff (Stanislav Volinchik, Hadas Steinitz, Shai Meiri) we have revised the taxonomy of all amphibian, mammal and reptile database records using the standard taxonomy of AmphibiaWeb (http://amphibiaweb.org/), Wilson and Reeder (2005 "Mammal species of the world"), and the reptile database (Uetz 2010, The reptile database, http://reptile-database.reptarium.cz). All tetrapods entering the collection now get the revised names, and we are slowly updating labels of other specimens. We have deepened the collaboration between the

tetrapod and the soft tissue collections, and as a rule, tissue from every new tetrapod specimen now entering the collection is assigned to the soft-tissue collection. Several new staff members now work in the tetrapod collections. Shai Meiri replaced Professor Yoram Yom-Tov as the Curator. Shai works on reptile and mammal macroecology, biogeography and evolution. He plans to use collection material to revise the taxonomy and reconstruct the phylogeny of all Israeli reptiles, a task long overdue. Stanislav Volinchik, a VATAT supported expert in the reptile collection**,** is now in the process of studying population, geographic, and sexual variation in the collection's most abundant reptile, the Palestine viper (*Vipera palaestinae*, Werner 1938). Stas has studied vipers for his PhD in Russia, and here he also collaborates with Erez Maza and Arieh Landsman in updating and managing the reptile collection. Stas also works with Igor Gavrilov, preparing tetrapod specimens. Another project of Stas, in collaboration with Shai and with Hadas Steinitz, a postdoctoral research associate who started working in the collection as a VATAT supported post-doctoral fellow, involves the study of size variation in Israeli reptiles. This is helped by Hadas's georeferencing the reptile collection localities. Hadas has georeferenced the Israeli mammal collection for her PhD, and now does similar work with the reptiles. This entails much "detective work" in finding obscurely named places, as well as attempts to verify the validity of both taxonomic designations and locality records, as many specimens appear to have been collected outside the species' natural geographic range. Hadas then uses MAXENT to create species-specific climatic and soil-based models for the reptiles of Israel and its surrounding countries, and tries to predict species movements, expansions and extinctions under several scenarios of climate change.

In an effort to enhance knowledge transfer we have updated the collections website, with the work of Erez Maza and Revital Ben David-Zaslow. On our way to on individual-based web-accessible specimens record, we have published the specimen-specific information for all tetrapod type specimens

online. We also now present summary data on the tetrapod collections holdings (# of specimens for all species) with the exception of the bird collection. We will add the bird collection to the website once we finish updating avian taxonomy.

As in previous years, the collections made by 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 then 5,000 samples were transferred to the collections in the present year by students. The students of 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 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. An additional collaboration is being conducted with the laboratory of Yael Mandelik from the Faculty of Agricultural, Food and Environmental Quality Sciences, a collabrorative project

with Tamar Dayan and Abraham Hefetz. The research engages with biodiversity and ecosystem services in the arid agro-natural landscape of the Arava Rift Valley, across the Jordanian-Israeli border. It focuses on the pollinator guilds, specifically bees, and the pollination services they provide to crops and wild plants. Wild and managed bees (*Bombus* and honey bees) are collected, using netting and pan traps (plates filled with soapy water). The museum staff is directing this research, instructing on how to identify the insects and how to conduct a collection. All the Hymenoptera specimens in this research are properly labeled and have a museum catalog number. At the end of this study the items will be incorporated into our collections. Also students of 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 60 shipments of scientific specimens to specialists, mostly overseas, during 2009/10); 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. In the previus year we broadened the system to include the new incoming insects. Each insect gets a unique catalog number immediately when it is incorporated in the collection. During the present year, about 38,000 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 Servicies" (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.

Progress report – Biogeography of alien ants in Israel

Merav Vonshak

I first sorted pitfall traps of an ant survey I conducted in 2005, at 12 localities along the costal plain, comparing the ant community between disturbed and undisturbed habitats. Two types of habitats were compared at each locality: NEAR a village (as close as possible to the edge of the village), and FAR – a similar habitat, at least 500 m away from the village (528 pitfall traps in total).

The pitfall traps were then sorted in the laboratory to four taxonomic groups: ants, spiders, beetles and the rest. While all specimens will be eventually deposited at the zoological collections at Tel Aviv University, the ants, beetles, and spiders will be first identified to the highest resolution possible. By now, together with Armin Ionescu-Hirsh, we have identified almost all ant specimens from to the species level. The beetles and spiders are in the middle of the identification process by the relevant experts: Vladimir Chikatunov and Sergei Zonenstein respectively.

This is the first systematic ant survey conducted in the costal plain. From the results analyzed so far we identified 53 species belonging to 19 genera from 5 subfamilies of ants. From preliminary analysis of the five most dominant ant species (responsible for about 95% of total individuals), some clear trends were: *Monomorium* is the most abundant genus, with about 60% of the total identified individuals. It is by far the most abundant genus in some of the sampling points, when the two most northern points stand out, as no *Messor* or *Cataglyphis* were found there. The genus *Cataglyphis* was more abundant, as expected, in sand

dunes. Differences between the Far and Near habitats are less clear, but we might get a better picture looking at the community structure when all data is obtained.

Four known alien species were found in the survey: *Cardiocondyla emeryi*, *Paratrechina longicornis, Monomorium destructor*, and *Pheidole teneriffana*. A remarkable finding is the identification of *P. longicornis* and *M. destructor*, in an undisturbed natural habitat. So far these species were known only from urbanized habitats in Israel. As a result, these species can now be considered as invasive species in Israel, and not only alien species. A possible implication is an impact on local ant species and other arthropods, as known for other invasive ant species.

Regarding the native species, distribution data were accumulated as part of this research, and in addition there were some exceptional findings:

Rare species: *Leptanilla male* (LEPTANLLINAE), Gedera, near. 1 specimen; *Bothriomyrmex syrius* (DOLICHODERINAE), Tel Aviv, far (1 specimen); *Anochetus bytinskii* (PONERINAE), Rosh Ha'Ayin, near (4 specimens).

Identification of a new species to Israel: *Monomorium bicolor* (MYRMICINAE), Gedera, Mikhmoret, and Hefzi Bah (79 specimens). In addition there was a specimen from an unidentified genus, that will be sent to identification by experts in the future.

Other services related to the ant collection and professional development: Identifying ant samples for The Israel Nature and National Parks, The Ministry of Environmental Protection, The Ministry of Agriculture, and from exterminators. I gave various lectures to the Israel Nature and National Parks authority, the Society of the Protection of Nature , at a TAU department course, and was invited to chair a session on invasive insects in Israel, at the 28th Annual Meeting of the Entomological Society of Israel. In addition I participated in the ant course, at Portal, Arizona (a workshop designed

primarily for systematists, ecologists, behaviorists, conservation biologists, and other biologists whose research responsibilities require a greater understanding of ant taxonomy and field research techniques. Emphasis is on the evolution, classification and identification of ant genera).

Research activities 2009/10: Report for the Annual Report 2010

Hadas Steinitz

Global climate change has impact on various aspects of the world. Among the expected influences are changes in frequency and magnitude of extreme weather events such as storms, floods prompting changes more fit to the expansion of poverty and disease and damaging infrastructure. Animals are also likely to be affected by global climate change. Although facing already a multitude of problems such as loss of habitats, hunting, outbreak of diseases and species invasions, animals will face a growing need to adapt to a changing habitat, migrate or go extinct.

I used reptile presence data collected over the years in the natural history collections of Tel Aviv University and the Hebrew University. In the first 6 months I matched every location name in the database to a geographic coordinate. In the next 3 months I also downloaded another database from GBIF (Global /diversity information facility) and attached coordinates where they were missing from the online database and expanded the research area to all the countries that border Israel (Lebanon, Syria, Jordan, Saudi Arabia and Egypt). This process is very time consuming as there is no automatic way of doing it and you have to attach the coordinates almost one by one. Georeferencing the data allows us to mount the reptiles' localities on a map of the Mediterranean according to places and names of species or families and to generate a lot of information about the species that we have available.

Another task was to go by the taxonomic definitions and update their taxonomy (this was done by the museum stuff) after that we checked that all the localities fall within the known distribution area of the species. Outliers were double-checked for mistakes in taxonomy and location and if still erroneous were not used in the general pool.

There are currently 19485 records of reptiles with exact geographic coordinates in the database (10666 from GBIF, 8696 from Tau and 122 from Uri Shanes). There are 163 species in the database out of which 96 are known from Israel in the present.

I am still in the process of writing the two papers from my PhD and an additional one from my post-doc.

The first article deals with the effects of GCC on the distribution of mammals in the future at the assemblage level. I show differences in response to different climate change scenarios between different groups of species. In this paper I also show a new way of comparing species richness maps.

The second article shows that there are three types of Reponses to climate change for a species. The types include: “Sensitive species” which will react drastically for even a mild change in climate, “resistant species” which will react (either drastically or moderately) but only after an extreme climate change, and species which show a non logical response (reacting strongly to mild change and lightly to strong change) which might result from a different factor which determines their distribution.

In the past month I prepared the climatic and environmental layers for the Maxent model and Ran the model on the database I collected.

The last two months will be dedicated to analyzing the results from the Maxent run and finishing the writing of the papers.

Exploring biodiversity in Israel - Carabidological survey of Israel using pitfall traps

Claudia Drees, Armin Ionescu-Hirsch, Ariel-Leib-Leonid Friedman, Gil Wizen

1. Project outline and aims

We carry out a pitfall trapping programme covering entire Israel with its steep climatic gradient. Our study has 2 aims: (1) A general exploration of ground beetle biodiversity in Israel with the aim to get more information on species composition as well as distribution and habitat preferences of the ground beetle species – a prerequisite for not only the compilation of a new, actualized check-list (including a key to the genera) but also to enable the use of some ground beetle species as target species e.g. for the efficiency control of nature conservation measures. (2) Investigation of the patterns of carabid biodiversity in the steep climate gradient of Israel. Other groups, such as weevils or scorpions, will be incorporated in this study, thus allowing a multi-taxon-approach to better understand biodiversity patterns of invertebrates in Israel.

2. Methods

Altogether 27 sites spread over whole Israel (Hermon to Mizpe Ramon and Hazeva) are sampled by means of pitfall traps. The sites are chosen to be as natural as possible (i.e. habitat types with the longest continuity, such as pasture areas instead of newly planted forests). A two-factor-ANOVA-Design of trapping sites allows analysis of climatic and soil moisture conditions influencing occurrence of ground beetles and (other soil dwelling arthropods) in Israel (3(climate zones) * 3(moisture types)* 3(replicates)). Each site consists of 6 to 10 pitfall traps and is opened altogether four seasons (spring, summer, autumn and winter). Soil samples will be taken in winter from each site in order to better describe the soil conditions. Factors such as organic carbon content or pH will be incorporated into the analyses. The trapped animals are sorted according to major groups: ground beetles, weevils, other beetles, ants and scorpions.

3. First results

Two trapping seasons were finished. As some sites needed to be changed (i.e. because of repeated disturbance or other influencing factors) there will be some trapping activity also in the coming spring. The project is expected to end August 2011.

The **ground beetle** identification is ongoing. Up to now about 100 species were already found in the traps – the number is expected to increase even further. Material of some species of which the collection holds only a few specimens was caught (e.g. *Anaulacus ruficornis* – up to now only 3 specimens in the collection, or *Chlaenius douei* – up to now only 1 specimen in the collection). *Chlaenius viridis* was caught for the first time in Israel. Several species were recorded from "new" biogeographic regions in Israel. More of such findings are expected. Parts of the material will be sent to experts in order to verify the identifications (partly done already). The shipping of further samples will be prepared soon. Up to now we have found 99 **ant species** in the traps, i.e. about 50% of the known species from Israel. Material of rare species was taken to complement the ant collections (e.g. *Cataglyphis ruber, Aphaenogaster kervillei*). Some specimens are still unidentified (undescribed species?) (e.g. *Temnothorax* sp. from Hermon). The samples contain unreported species from Israel, e.g. *Monomorium fezzanense*, and several records of species from new biogeographic regions in Israel. About 50% of the Israeli **scorpion species** were recorded. 83 **weevil species** were found during the survey so far, some of them rarely taken by sweeping techniques including one remarkable finding from Sede Boqer (maybe new genus). The **other beetle material** will be sent to experts soon (Hamburg Coleopterologists group).

Research activities 2009/10: Report for the Annual Report 2010

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, Tel Aviv University. Those include the study of archaeo-malacological shell assemblages of sites in Israel and in Turkey.

At the Early Natufian site of Hof Shahaf, dated to about 15,000-13,000 years ago, the dating relied on some of the characteristics of the scaphopod shells discovered there, and identified at the TAU natural history collections.

A study of the Late Bronze Age shells from Area G of Tel Dor was conducted in which we discovered many burned shells associated with burning related to metallurgical activities. Holed shells may have been used as ornaments (as body decoration, sewn on to clothes, attached to basketry, etc.), but the bulk were shells collected for use in floor foundations. The possible exploitation of some shell species as a food source should be explored further.

My research at the Neolithic site of Çatalhöyük, Turkey, continued. During this excavation season we continued to identify thousands of micro freshwater molluscs that were embedded in the sediments and reflect the surrounding of the site, including species that were not identified previously at that site. Together with Burçin Gümüs, malacologist at Gazi University in Ankara, and Ms. Aldona Kurzawska of Poznan University in Poland we catalogued these shells and continued to analyze the results. We also investigated the exploitation of the freshwater bivalve *Unio pictorum* at this site. This species was used in several different ways: as raw material for plaster, as inclusions in pottery, as a tool, as an ornament, etc., but the biggest discovery was its use as a food source at the lowermost level of the site. In addition samples were sent to the UK for isotopic analysis that will be used for seasonality and paleo-climatic studies.

Report on the activities in the collection of parasitic wasps (Hymenoptera: Parasitica) of the National Collection of Insects, TAU in 2010

Wolf Kuslitzky

With nearly 22,000 species in 37 subfamilies, the Ichneumonidae constitute one of the largest animal groups. According to the literature 219 species are known from Israel (Bodenheimer, 1937; Aubert et al., 1984; Kasparyan & Kuslitzky, 2008). 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 the last year Ichneumonidae and Braconidae have been collected, mounted on pins and labeled (ca. 2000 specimens). Other Parasitica superfamilies (Bethyloidea, Chalcidoidea, Proctotrupoidea, Ceraphronoidea and Cynipoidea have been collected and preserved in alcohol or mounted (ca. 1.000 specimens). The newly collected material of Ichneumonidae was sorted to subfamilies. The taxonomic treatment of the Campopleginae was continued. The information of the collected specimens during the year was added to the two manuscripts: "The survey of the subfamily Collyrinae" and "Ichneumonidae of Israel: Pimplinae and Xoridinae". The delay in the publication of these manuscripts is due to problems of the co-author (Dr. D. Kasparyan). The following identified colelctions were received: *Netelia* from Dr. G. Broad (England); *Nepiesta, Lemophagus, Nemeritis* from Dr. K. Horstmann (Germany); and part of Braconidae from J. Papp (Hungary). 1000 specimens of Braconidae were sent for identification to Dr. J. Papp. 30 species of Hymenoptera Parasitica were

identified for the Plant Protection and Inspection Services, Ministry of Agriculture and for scientists. Arranging the collection of the subfamily Banchinae and the determined species of the family Braconidae has not yet been completed.

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

Armin Ionescu

The primary function of taxonomy in biology is to describe, order and name species, such as to create the base of scientific communication (alpha-taxonomy). For this purpose is created a catalog of names and descriptions that enables the identification of species. In addition, identification keys are prepared for easy recognition of species by a wide range of biologists.

Although a fundamental feature of taxonomy is stability, in practice classifications are changing due to two main causes: (1) discovery of new species in newly collected material or during routine identification services, so that identification keys must be updated; (2) addition of new investigation tools, such as molecular technique, that enable better resolution of specific relationships among populations. Therefore, alpha-taxonomy includes two main activities:

1. Continuous sorting of unidentified material.
2. Revisions.

Revisional work is hierarchical and the logic of the hierarchy imposes the order of the activities.

- For the ants of Israel the taxonomy must be updated after major world revisions. This implies eventually changes of taxonomic status and reworking of diagnostic characters in some taxa.
- Addition of new taxa (new for the region or for science).

- Re-examination of the species relationships, especially after new techniques become available. This activity is necessary because all current taxonomies are problematic to some degree due to the fact that they are based on morphology alone.

Interim report on the partial revision of the subfamilies Formicinae, Dolichoderinae, Pseudomyrmecinae and the Dorylomorph complex from Israel:

To date all the specimens in TAUI were examined and reidentified according to the latest taxonomic publications. As a result, an updated checklist of the Israeli species was composed and incorporated into an article accepted for publication. The new list of species here revised is appended below. Of the 81 species and subspecies in the list 21 are new records for Israel eleven are identified to genus level only and seven have uncertain status.

Of the eleven taxa identified to genus level six are new to science. The descriptions of five of them were prepared (two species of Camponotus by me, two of Lasius by B. Seifert, one of Cataglyphis by D. Agosti); the description of Aenictus n. sp. is in preparation in collaboration with A. Schulz. For the three Cataglyphis species identified only to genus level and which are not new species I have worked out their morphometry, but a definitive identification needs further comparisons with types. Two species (Acropyga sp. and Bothriomyrmex sp.) are known only from one specimen each, which is insufficient for a reliable identification. Consequently, more sampling is needed in order to identify them.

The seven species with uncertain status were reported from Israel, but specimens could not be located in TAUI. Their inclusion in the list is provisional because, on the one hand, these species were reported also from neighboring countries and so their occurrence in Israel is likely. On the other hand, a critical reidentification of the material is needed in order to confirm the original identifications.

Keys for the identification of the local species of Dolichoderinae, Formicinae, Pseudomyrmecinae and of the Dorylomorph complex were prepared.

In addition to the listed taxa the keys include eight imported species (*Dolichoderus quadripunctatus*, *Tapinoma melanocephalun* (Dolichoderinae), *Brachymyrmex sp.* near obscurior, *Lasius neglectus*, *L. niger*, *L. platythorax*, *Paratrechina bourbonica amia* (Formicinae), and *Tetraponera binghami* (Pseudomyrmecinae)), that were intercepted by the customs authority and are presumably not established in Israel.

Progress Report: Apoidea Collection 2010, Managerial work of the Apoidea collection in TAU collection:

Moshe Guershon

The Apoidea collection at the National Collections of Natural History contains ca. 30,000 specimens, about half of them determined comprising 1,300 species, eight families and approximately 90 genera. The majority of these species are represented by specimens from the Israeli fauna, but the collection also contains a good number of representative specimens from all over the world. Managerial work focused on two main areas: technical arrangement and maintenance, and scientific work, including macro-taxonomy determination and analysis of information from specific groups in the collection.

Managerial work:

- Label data of all the *Xylocopa* specimens in the collection (ca. 530) was digitalized.
- Absorption of Mr. Rani's Kasher collection (aprox 2500 specimens) and literature (several hundreds of articles) is in progress.

Scientific work

Taxonomy:

- Approximately 300 undetermined specimens were determined to genus level.
- Some 50 specimens of *Xylocopa* with wrong determination were correctly determined and located.
- Two specimens of *Xylocopa varentzowi* were determined within the material examined in the collection. This is the first record of this species in Israel. A publication reporting this discovery is in preparation.

Fauna surveys and collecting trips:

- A survey of the Apoidea fauna of the northern Dead Sea area (Nahal Qidron and Nahal Salvador, 2.iii.2010) was performed in collaboration with the Nature and Parks Authority. The work included collection of wild bees and was followed by their arrangement and determination to genus level in the lab (60 specimens).
- Three collecting trips were perfomed to the following sites: Zemah, east Kinneret and Park haYarden (21.iii.2010), Nahal Taninim Reserve and Carmel (5.v.2010), Hermon and Dov mountains (24-25.v.2010). The work included collection of wild bees, followed by their arrangement and determination to genus level in the lab. (ca. 200 specimens).

Identification keys:

- An identification key for the carpenter bees, *Xylocopa*, was prepared for publication (probably in Israel Journal of Entomology)
- The preparation of an interactive identification key for Israeli bees based on the collection and the database, is being continued.

Visiting scientists:

- Mr. Chris O'toole, former Oxford Apoidea expert - Anthophora collection
- Mr. Ahik Dorchin, Graduate student (PhD), Haifa University- *Andrena* collection

Porifera and Bryozoa collections – Annual Report – 2010

Sigal Shefer

The program objectives proposed in August 2009 were as follows:

1. Physical organization, scientific documentation and research of the Porifera and Bryozoa present in the Natural History Collections of Tel-Aviv University.
2. Generating updated collection and database of the Porifera and Bryozoa community along the Mediterranean and Red sea coasts of Israel by collecting new samples in the field.
3. Morphological identification of newly collected Poriferan and Bryozoan samples as well as samples present in the Collections of Natural History at Tel Aviv University.
4. Molecular identification of newly collected Bryozoa samples.

Efforts have been made to make a progress in all the above categories. The work on the Bryozoa collection started in February 2009, and a year later started the work on the sponge collection.

1. Physical organization, and scientific documentation of the Porifera and Bryozoa present in the Natural History Collections

Bryozoa

All samples present at the Bryozoa collections of Tel Aviv University were listed by Noga Sokolover (a Ph.D. student at Micha Ilan's lab) and are now available on a computer file. This file includes sample information (by availability) such as: species identification, museum #, location, depth, date, and collector name. In order to generate this list, data from three sources were merged: Sample documentation, collection archive books and D'hondt (1988) who described the Bryozoa collection that exist in the Zoological collections of Tel–Aviv University. The Bryozoa collection consists of 54 species from the Mediterranean coast of Israel all dated earlier then 1981 and 30 bryozoans from the Red Sea, all dating prior to 1972.

Sample preservation: all samples present today in TAU collection were fixed in formalin and preserved in ethanol 70%. Following a study visit of Noga Sokolover to the British Natural History Museum (BNHM) in London (see section 3 below), a new protocol for bryozoan samples handling and preservation was adopted according to the one used at BNHM: calcified species (Cheilostomata mainly) are washed and air dried for storage and a portion is bleached for identification if necessary. Soft bodied species (Ctenostomata) are to be fixed in 4% Formaldehyde in sea water for 24 hours and after rinsing will be stored in 70% Ethanol. A portion of each sample is kept in 100% Ethanol at 40C for molecular analysis.

Sample storage: according to the protocols of BNHM samples should be stored warped in acid free paper preferably in non acid cabinets (not wood).

Porifera

Organization of the sponge collection has begun in March 2010. Sponge samples present at the collections of Tel–Aviv University are being listed in order to generate an updated Access file. A protocol has been established for collection and preservation of sponge samples for taxonomic identification using morphological and molecular techniques. This protocol will be confirmed with the protocols used in BNHM in London. I am planning to add new samples that are currently located in Micha Ilan's Lab to the Porifera collection.

2. Biodiversity of sponges and Bryozoan species from the Mediterranean coasts of Israel

Samples were collected during 14 excursions to the following sites (north to south): Achziv and Rosh-Hanikra, Neve-Yam, Sdot-Yam, Michmoret, Hadera (under the electric co. coal conveyor), Herzeliya, Tel Aviv marina; Tel Aviv - Gordon beach, and Ashkelon. The samples were collected from both natural and man-made substrates.

Fifty-five samples of bryozoans were collected. In the latest excursion to Achziv and Rosh-Hanikra on 15.04.2010 11 sponge samples were collected as well.

3. Morphological identification of newly collected Porifera and Bryozoa samples:

Noga Sokolover contacted Dr. Paul Taylor, a leading researcher in the fields of morphology, systematics, ecology and evolution of Bryozoa, working at the NHM in London. He invited her to the NHM in London to learn the techniques used in Bryozoa identification as well as use of the comprehensive library. The visit to the NHM took place during 21.2-5.3.2010 and was supported by the Constantiner travel fellowship. As an outcome of the visit and the use of the Environmental low- vacuum SEM at the NHM, twenty three Bryozoa species were identified (11 of them only to the genus level). The samples represent species from the Cheilostomata and one species of Ctenostomata (none from the Cyclostomata).

Out of the 23 species identified:

1. One species *Drepanophora* sp. is recorded for the first time from the Mediterranean. It is suspected to be a Lessepsian migrant since *'Drepanophora' longiuscula* was described from Suez (P. Bock, Bryozoa Homepage, 2010, http://bryozoa.net).
2. Twelve species are not found in the Zoological Collections of Tel-Aviv University.
3. Two species, Thalamoporella harmelini and Schizoretepora hassi are new Bryozoan species, recently described from Lebanon.

Sponge samples collected during the latest excursion to Achziv and Rosh-Hanikra are processed for morphological identification by histological analysis of skeleton structure, composition, and organization (spicules and fibers). Four samples which belong to three orders were identified to species or genus level: *Cinachyrella levantinensis*, *Petrosia sp.*, *Sarcotragus spinosulus*, and

Psammocinia sp. The latter might be a new species that was not described yet, since it does not resemble any published Psammocinia species.

Tamar Feldstein has determined 18S rDNA and cox1 sequences of three of the above species.

4. Molecular identification of newly collected Bryozoa samples:
DNA was extracted from 15 Bryozoa samples. Amplification of 700 bp region of the cox1 gene was performed. Bugula neritina was amplified and sequenced at the TAU sequencing unit. The sequence showed 99% to genebank sequences. Schizoporella errata was amplified and sequenced at the TAU sequencing unit. The sequence showed 84% identity to genebank sequence of S. errata from San Francisco, USA.

Amplification of cox1 for seven additional species was carried out; however these sequences were probably contaminated as they are not clean sequences.

Molecular collections - Annual Report - 2010

Tamar Feldstein

Activity objectives for 2009-2010:

1. Evaluate protocols for DNA preservation and establish best practice methodology for the molecular collections.
2. Assess the impact of pitfall solutions on the DNA quality of samples collected in wet pitfall-trap.
3. Survey the diversity of Mediterranean calcareous sponges in the frame of the Israel Taxonomy Initiative.

1. Protocol for DNA preservation for the molecular collections
During the academic year 2009-2010 the focus of the activities at the molecular collections was to decide on the most effective way to preserve samples for future molecular analyses. To obtain best practice protocols, I made contact with museum curators. Protocols for DNA preservation of arthropod samples

were requested from Prof. Nikolaj Scharff (curator of the Natural History Museum of Denmark), as well as from Dr. Mauro Mandrioli and Ms Reggio Emilia (Department of Animal Biology University of Modena), .For the fish collection, a literature survey was made (Cooper et al. 2009; Fessler and Westneat 2007; Myia et al. 2010; Poulsen 2009; Sparks and Smith 2004).

The most common DNA preservative is ethanol. In the past, samples were preserved in 70%-95% technical grade ethanol at room temperature. However, DNA quality under these conditions deteriorates within several years, indeed technical grade ethanol contain methanol which deteriorate DNA. Ideally, samples should be preserved in liquid nitrogen, or at -80oC. This way the samples could also be used for RNA and protein analyses.

Based on my survey the following protocols will be applied: samples will be preserved from in 96-100% analytical grade ethanol in freezers (-80oC to -20oC).

However, two problems exist in preserving samples in ethanol:

1. For vertebrate samples- samples are usually too big to preserve whole samples in ethanol.
2. For invertebrate samples- It is impossible to preserve whole samples in ethanol since they will be useless for morphological taxonomy.

In both cases sub-samples are now taken for DNA preservation. For large arthropods it is advised to use legs because legs hold many muscles and little contamination from consumed prey or symbiotic bacteria present in gut or gonades.

Other improvements of the collections:

- Vertebrate collection

  The samples for the vertebrate molecular collection are taken by Mr. Igor Gavrilov, the collection taxidermist. The samples preserved in 1.5 ml tubes with a screw cap, in technical ethanol (96 % ethanol: 4% methanol) at -20^{o}C.

Based on our survey we advised to switch to 100% Ethanol of analytical or molecular grade. Also, current samples are preserved in a very small volume of preservative, relative to sample size. Volume of liquid should be increased significantly.

- Fish collection
  - In the fish collection there are samples from 645 field sessions.
  - Since 1998 the samples are preserved in 70% ethanol (technical grade). In the last few years the room temperature is controlled, and fixed round the year. Before, the storage room was air conditioned during summer time only. We thus advised to assess the quality of DNA from old samples.
  - Until now, samples were taken only from species of interest, and not systematically from all species. Consequently, fresh water fish species are better represented in the collection than marine one. Similarly, Large fish were only preserved in formalin and not in ethanol. In the future, DNA samples should be taken from large fish. As recommended, subsamples for DNA preservation will be preferably taken from muscles in the caudal peduncle area, bellow the lateral line system. If the fish is wounded, the sample will be cut from the wound region, in order to not further damage the sample.
- Invertebrate collection

  A broken -80^{o}C freezer from the Department of Zoology was fixed, and is dedicated for the invertebrate molecular collection. The freezer contains fifty new samples from the phyla Porifera and Bryozoa sampled during the year.

2. Pitfall traps preservatives

There is a growing interest to use specimens collected in pitfall traps for molecular purposes. In the TAU museum there are specimens that were collected in traps which contained an aqueous mixture of 30% ethanol + 10%

acetic acid + 20% ethylene glycol, as well as samples collected in propylene glycol or ethylen glycol solution. A preliminary study conducted on few sample of shrew collected in wet pitfall trap indicate that DNA can be extracted from samples collected in ethylene glycol but that DNA was very poorly preserved from samples collected in the "mixture solution". These results indicate that pit-trap solution might have an impact on DNA quality and that not all samples collect in pitfall trap might be included in the molecular collection.

Recent publications suggest propylene glycol as a preferable preservative for pitfall traps both for molecular and toxicological considerations. (McCravy et al. 2007; Sasakawa 2007; Schmidt et al. 2010; Uchida et al. 2007). An experiment is thus ongoing to examine the quality of DNA extracted from mice and locust tissues preserved in different solutions. The experiment will be completed in September 2010 and an article presenting the result will be written.

3. Israel Taxonomy Initiative (ITI) for Calcarea sponges

A survey of calcareous sponge was conducted in the frame of the Israeli Taxonomy Initiative research grant to Dorothee Huchon. Sponges from the class Calcarea were collected from seven sites along the Israeli Mediterranean coast. Nine different Calcarea species were identified so far using morphological characters and two molecular markers (18S rDNA and the gene coding for ALG11). The preliminary results of this research will be presented to the VIII World Sponge Conference, Girona 2010.

Progress Report for the Paleontological Collection 2009-2010

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).

The material was revised and has been photographed (about 500 pictures) and will be transferred to the Paleontological collection as soon as all the samples have been computerized.

2. The stratigraphy and taxonomy of Carboniferous foraminifers.

These studies support the international project towards a standardization of a globally applicable stratigraphic scale according to the objectives of the International Commission on Stratigraphy (based on materials from Central Asia).

a. During the past academic year she carried out scientific research 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)" (Orlov-Labkovsky, 2009).

b. She cooperated also with Dr. I.M. Nigmadhaznov (Conodonts, Uzbekistan), Dr. S.V. Nikolaeva (Ammonoids, Russia and Great Britain) and Dr. V.A. Konovalova (Ammonoids, Russia) on the project " Correlation and integrated Ammonoid, Conodont and Foraminiferal Stratigraphy in the Paltau Section, Middle Tien-Shan, Uzbekistan.". The results were presented in the article

"Integrated Ammonoid, Conodont and Foraminiferal stratigraphy in the Paltau Section, Middle Tien-Shan, Uzbekistan" (Nigmadhaznov et al, 2010). These results will be presented once more during a Workshop and Field Excursion (GSSPs of the Carboniferous system), which will be held in Nanjing, China on November 21st-30th 2010.

3. The Taxonomy and Biodiversity of the Upper Permian Foraminifers of Israel.

During the past year she started to work on a new project "Foraminifers and algae of the Permian age from borehole - David 1 of Israel" together with Dr. D. Korngreen from the Geological Survey of Israel in Jerusalem.

For that project she prepared so far 67 working-plates with Foraminifera, determined the Foraminifera taxa, composed a list of species and defined the boundary between the Permian-Triassic systems. This work will proceed in the coming year.

Henk Mienis continued to work on the molluscs from the last Inter-Glacial period dated to the MIS 5e isotopic stage collected at 12 sites in Cyprus by Dr. E. Galili (Atlit) and Dr. M. Sevketoglu (International Cyprus University).

The Holocene land- and freshwater molluscs collected by J. Dray during the excavation of the "Cloaca Maxima" in Caesarea has been studied and a report is currently in print (Mienis, December 2010).

A start has been made of a study of Pliocene and Pleistocene marine bivalves collected in the Netherlands and Belgium present in the collection of Derk A. Visker.

New acquisitions

The following new material has been donated to the Paleontological Collection:

J. Dray	Molluscs from the "Cloaca Maxima", Caesarea
E. Galili	Pleistocene (Thyrrenian) molluscs from Cyprus
E. Heyfetz	Cephalopod from Russia
H.K. Mienis	Pleistocene (Eemian) molluscs from the Netherlands

Progress Report: Morphology of Vipera palaestinae in Israel; intraspecific variability and sexual dimorphism.

Stanislav Volynchik

Vipera palaestinae is the most common venomous snake in the Middle East, including northern and central Israel, western Syria, northwestern Jordan and Lebanon. In Israel it occurs in different zoogeographic regions from Beer Sheva in the South (Northern Negev) up to the Northern border including the Hermon Mountain. It is widely distributed in the Mediterranean coastal plains, penetrating also into the Jordan Valley and the Golan Hights.

V. palaestinae, like most other vipers, is a polymorphic species. Despite this, very little is known about the morphology of this snake that has a relatively restricted geographic range. Thus, for example, no detailed data on the body dimensions and scalation pattern of this snake exist, except for the brief information, without any sexual separations, that may be found in local field guides. The scalation it is very important characteristic, has often been used in the literature for the identification of snakes, shows great variation among / within species and between sexes. Until now, there was no detailed information concerning intraspecific and geographical variability, needed for taxonomy and the thorough description of the species. How much variations exist in scalation pattern and body size within each sex? Is there any relationship between number of scales and body dimensions? Between morphological characteristics and environmental conditions? Moreover, the reliable data on sexual dimorphism, including sexual size dimorphism are generally lacking.

The purpose of my study is collecting and publishing of comprehensive data about external morphology, variability and sexual dimorphism of *V. palaestinae* in Israel. These data represent a great interest from the taxonomic, biogeographic, ecological and evolutionary points of view reveal the new information about the natural history of this species.

In total I examined 334 (190 males and 144 females) preserved adult specimens of *V. palaestinae*. These snakes were collected during the years 1947-2010, and deposited in the Natural History Collections of Tel Aviv University.

Scalation and some corporal proportions were measured, corresponding to 19 parameters. For each snake I recorded: collection data (region and locality), sex (detected by tail shape and hemipenis extraction, and in doubtful cases by dissection). Body length (L), tail length (Lcd), head size (length – L.cap., width – W.cap.), interocular distance and body mass were measured; from these, the proportions L / Lcd, L / L.cap. and the relative width of the head were calculated. The number of ventral, subcaudal, circumorbital, sublabial and supralabial scales, midbody scale rows (MSR) were recorded. Analyses are conducted with data for each sex separately. Only adult specimens, defined by a total length >700 mm were included in this research.

At present, morphology, body proportions, intraspecific variations in scalation, geographical variability, presence of sexual dimorphism in different characteristics, its degree among adult specimens of *V. palaestinae* in Israel are investigated. The preliminary results show significant differences between males and females in several traits (number of ventral and subcaudal scales, tail length, L / Lcd). I found a high degree of intraspecific variability on some morphological traits in comparison with the published information. In addition, the newly obtained data revealed important information about some parameters (such as sex and size) that were lacking from the museum database. The missing data were added to the database and erroneous data were corrected.

The Natural History Collections contain a rich material consisting of hundreds specimens of snakes, suitable for the further researches. I plan to perform the similar ecomorphological researches concerning other Middle East snake species, which deposited here. It is important to note that the morphological

traits (scalation pattern, body dimensions, presence of sexual dimorphism, its degree among and within populations) of some species are weak studied or absolutely not studied.

Progress Report for the Mollusc Collection 2009-2010

Henk K. Mienis, Oz Rittner and Revital Ben-David-Zaslow

Research

During the academic year 2009/10 several research projects were carried out in the Mollusc Collection.

A study of the *Murex forskoehlii* populations present in the Red Sea and Eastern Mediterranean revealed that the population living off the east coast of Sinai differs morphologically from populations elsewhere in the Red Sea. The nominal species *Murex forskoehlii* seems to be confined to the northern part of the Red Sea proper, the Gulf of Suez, the Suez Canal and the Eastern Mediterranean (Mienis, 2010), while the population living in the Gulf of Aqaba was described as a new subspecies *Murex forskoehlii spinifer* Heiman & Mienis, 2010.

A further study of samples belonging to the genus *Xerocrassa* revealed the presence of an undescribed species which in form and size resembles the much thicker shelled *Sphincterochila prophetarum* (Bourguignat, 1852). The new species *Xerocrassa shoshanae* Mienis, 2010 was named after the late Dr. Shoshana ("Shosh") Ashkenazi (1948-2010).

All the shell material recovered during the excavation of Yavne Yam by Prof. Moshe Fischer has now been identified and a report about it is in preparation.

The presence of far too many invasive species among the land- and freshwater molluscs of Israel remains a subject of serious concern. The discovery of a huge population of the Giant African snail *Achatina fulica* Bowdich, 1822, Fam.

Achatinidae, in gardens in Rehov Josef Eliahu, Tel Aviv, is alarming. In spite of the fact that inspectors of the Plant Protection and Inspection Services (PPIS) of the Ministry of Agriculture collected by hand hundreds of specimens during several visits to the infected gardens during the past year and placed large amounts of snail baits, additional living specimens are still being located from time to time in numbers.

Additional localities of the highly invasive freshwater gastropods *Tarebia granifera* and *Thiara scabra* are still regularly turning up in the Bet Shean and Jordan Valley.

For the first time temporary workers arriving from Thailand tried to smuggle living land snails belonging to *Hemiplecta distincta* (Pfeiffer, 1850), Fam. Ariophantidae, into Israel (Mienis, Vaisman & Rittner, 2010). In spite of the fact that these large land snails are well known intermediate hosts of the Rat lungworm *Angiostrongylus cantonensis*, a dangerous parasite of man, it was their intention to grow these snails in Israel for food.

New on the list of land snails intercepted by inspectors of the Plant Protection and Inspection Services (PPIS) is *Otala constantina* (Forbes, 1838), Fam. Helicidae, of which four living specimens were encountered in a shipment of Olive and Pomegranate saplings arriving from Tunisia via Jordan (Mienis, Vaisman & Rittner, 2010). Because of the presence of this potential invasive species the saplings were not allowed to enter Israel.

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 Menachem Goren and Bella Galil, has produced also this year numerous samples of cephalopods. Noteworthy remains the poor representation of gastropods and bivalves among the trawled material. Only two invasive species *Conomurex persicus* and *Murex forskoehlii* are regularly encountered, but also

these never in large numbers. All the studied material is preserved in ethanol for permanent storage.

Since spring 2010 we participate in a study of the land snail fauna of the Evolution Canyon II i.e. Nahal Keziv with a team of Prof. Eviatar Nevo of the Haifa University. The material is primarily collected by members of the Haifa team, but the sorting, identification and permanent storage takes place in the Mollusc Collection of the Tel Aviv University. The most exciting find so far consisted of several excellently preserved specimens of *Acicula palaestinensis* Forcart, 1981, Fam. Aciculidae. This rare species had been recorded so far only from its type locality: a cave between Khirbet Zemach and Hanita and from a poorly localized spot on the north-eastern slopes of the Karmel Mountains opposite Oranim.

This year we identified again large number of littoral Limpet-like gastropods, which had been collected by Dr. E. Shefer (Israel Oceanographic & Limnological Research Institute, Haifa) at permanent stations along the Mediterranean coast of Israel for her research on the presence of residues of heavy metals in the autochthonous species of *Patella* and the allochthonous Lessepsian migrants *Cellana rota* and *Siphonaria crenata*.

Mrs. S. Vaisman brought us for identification some 13 samples of land snails intercepted by inspectors from the Plant Protection & Inspection Services of the Ministry of Agriculture., 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).

Between all these various activities we have maintained our focus on the incorporation of the very large collection of Zvi Orlin into the general Mollusc Collection. More than 4000 samples have now been registered and properly labeled, but it will take still some time till we finish the job. The identifications are being carried out as usual by Henk Mienis, while Oz Rittner is dealing with the computerization and labeling of the material.

At the moment 51073 samples representing 7712 taxa in the mollusc collection have been computerized. Most of the new species and subspecies which we could add this year to the collection (1096) were from the Zvi Orlin collection.

New acquisitions

New material arrived regularly during the past year. All these new samples are immediately identified and prepared for permanent storage.

During the academic year 2009/2010 material has been received directly or indirectly from the following persons:

Name	Brief description of the material
Sh. Ashkenazi	Land snails from Israel
U. Bar-Ze'ev	Land snails from Israel
F. Ben-Ami	Land snails from Israel
S. Berkowicz	Land snails from Chile
S. Davis	Land snails from Greece
A. Dotan	Marine molluscs from Israel
Y. Gabrieli	Land snails from Israel
E. Galili	Land and freshwater molluscs from Israel
J. Gerritzen	Molluscs from Barbados and the Philippines
T. Greenblatt	Land snails from Israel
G. Goodfriend	Land snails from Switzerland
G. Hadas	Molluscs from excavations in 'En Gedi
E. Heyfetz	Freshwater molluscs from Russia
O. Kerman	Land snails from Ethiopia
O. Kolodny	Land snails from Israel and Croatia
B.R. Krasnov	Land snails from Israel
H. Larrain	Land snails from Chile
A. Lerner	Land snails from the Negev
R. Levy	Marine molluscs from Japan

P. Liff-Grieff	Land snails from California
L. Meerema	Molluscs from Barbados and the Philippines
D. Mienis	Land and freshwater snails from Israel and the Netherlands
H.K. Mienis	Molluscs from Israel. the Netherlands and various world wide.
S. Raz	Land snails Evolution Canyon II (Nahal Keziv)
O. Rittner	Land snails from Israel
U. Roll	Fresh water molluscs from Israel
F. Seidl Jr.	Freshwater snails Austria
E. Shefer	Mediterranean Patelliform marine molluscs from Israel
G. Shenbrot	Land snails from Israel
H. Steinitz	Aquarium snails
S. Vaisman	Land snails from France, Israel, Jordan, Thailand and Tunesia

Type Material

Type material of the following two recently described taxa have been lodged in the collection: *Murex forskoehlii spinifer* Heiman & Mienis, 2010 and *Xerocrassa shoshanae* Mienis, 2010.

A list of type specimens present in the Mollusc Collection has been published in the previous report (Mienis, 2010). A collation of additional type specimens located in the collection or received afterwards is given elsewhere in this report.

The Malacological library

The library of the Mollusc Collection, a most important tool for taxonomic and systematic studies, has also grown this year considerably. A second part of the library of Henk Mienis has been transferred permanently to that already present in the collection. Also this year we received numerous journals from Zoological Institutes or Malacological Societies in exchange of "Triton", the malacological journal published by the Israel Malacological Society.

FIRST ADDITION TO THE CATALOGUE OF TYPE SPECIMENS IN THE MOLLUSC COLLECTION OF THE TEL AVIV UNIVERSITY

Henk K. Mienis

Type material of five additional taxa is added here to the provisional catalogue of type specimens present in the Mollusc Collection of the Tel Aviv University (Mienis, 2010a).

GASTROPODA

Family Neritidae

Theodoxus altenai Schütt, 1965
Paratypes TAU MO 68598/6 (alc.): Turkey, Vilayet Antalya, Bunarbaşa Gölü near Yeniköy.

Family Muricidae

Murex foskoehlii spinifer Heiman & Mienis, 2010
Holotype TAU MO 68601: Egypt, Gulf of Aqaba, Dahab (= Di-Zahav).

Family Cerionidae

Cerion marielinum dominicanum Clench & Aquayo, 1951
Paratypes TAU MO 69463/2: Cuba, east side of Boca del Rio Dominica, about 10 km west of Mariel.

Cerion torrei moralesi Clench & Aguayo, 1951
Paratypes TAU MO 69462/4: Cuba, Oriente, Punta de Mulas near Banes.

Family Hygromiidae

Xerocrassa shoshanae Mienis, 2010
Holotype TAU MO 69072: Israel, Central Negev, northern slope of Har Orahot.
Paratypes TAU MO 69071/11: Israel, Central Negev, northern slope of Har Orahot.
Paratypes TAU MO 69070/5: Israel, Central Negev, Nahal Hagor.

References

Clench, W.J. & Aguayo, C.G., 1951. Some new Cerionids from Cuba. Revista de la Sociedad Malacologica "Carlos de la Torre", 8 (2): 69-80, plts. 10-11.
Heiman, E.L. & Mienis, H.K., 2010. *Murex forskoehlii spinifer* a new subspecies from East Sinai. Triton, 21: 5-9.
Mienis, H.K., 2010. New or little known land- and freshwater molluscs from Israel. 1. *Xerocrassa shoshanae*, a new species from the Negev. Triton, 22: 23-26.
Mienis, H.K., 2010a. Provisional catalogue of type specimens in the mollusc collection of the Tel Aviv University. In: The National Collections of Natural History. Annual Report 2008/2009. Tel Aviv University: 43-49.
Schütt, H., 1965. Zur Systematik und Ökologie Turkischer Süsswasserprosobranchier. Zoologische Mededelingen, Leiden, 41 (3): 43-71.

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.

Benthic biodiversity surveys off the Mediterranean coast of Israel

Bella S. Galil

In 2010 ten campaigns was conducted off the Mediterranean coast of Israel in order to sample the benthic biota. Bella Galil, Limor Shoval, Eva Mizrahi, Kinneret Gal, Adina Yukler, Noga Pressman , Cheli Dvir, Orlee Bakarev, Gidi Levi 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, 05.2010, 10.2010, 34-37m depth, box core and trawl samples; off Ashdod, 05.2010, 07.2010, 09.2010, 6-30m depth, grab samples and trawl samples; off the coastal streams, 08.2010, 7-15 m depth, grab samples; off Haifa Port, 04.2010, 10.2010, 5-30m depth,). 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.

Ichthylogical Laboratory

Menachem Goren

As part of the ongoing study on the impact of sea warming and the continuous invasion of Red Sea species into the Mediterranean, we have conducted six research cruises off the coast of Ashdod, using the fishing vessel Motty (a trawler), captained by Mr. Levy Ornoy.

We are currently focusing on examining the relationship between the gradient of water depth and structure of the marine community, and the role that the invasive species play at the different depths. We sampled the biota at depths of 20, 40, 60, 80,100 and 120 m, and found significant differences in their composition at the different depths. The material was brought to the ichthyological laboratory where it was sorted, identified, measured and examined. Some species were studied for stomach content and reproductive stage. Part of the catch has been preserved and deposited in the fish and invertebrate sections of the National Collections. Preliminary findings reveal that over the last two years the alien species have extended their distribution to deeper waters. We intend to continue this research to the end of 2011.

New records for the Mediterranean (reported last year)

Mycteroperca fusca. (TAU – P. 13727). Picture: O. Riter.

Apogon fasciatus (TAU–P. 13581) *Priacanthus sagittarius* (TAU–P. 13670).

Activity report: Soft corals, November 22, 2010

Yehuda Benayahu

1. Comprehensive collection of soft corals of the family Xeniidae was conducted by Y. B. in Yonaguni Island, Ryukyu Archipelago, Japan during July 2010. Ca 60 samples were collected in various sites and habitats there. This trip was an additional survey in the western-most island of Japan, following two previous ones. Its goal was to investigate the xeniid biodiversity in the region after the extreme weather events of the last two decades. The collection obtained a variety of specimens which were preserved for classical taxonomic identification and for DNA sequencing. The results will be used for constructing the phylogeny of the family and in particular to elucidate the taxonomic status of the two closely related genera, Efflatounaria and Cespitularia.

2. Based on a collection conducted in the Ryukyu Archipelago by Y.B. in August 2000, a new taxon of a soft coral, *Yamazatum iubatum* gen. and spec. nov. has been described and depicted. Its features include unique sclerites with previously undocumented surface architecture, comprising of one or several crests and occasionally one or several furrows, differentiating it from all known species of the family Xeniidae

3. During a visit to Leiden Museum (August-September, 2010) the Netherlands soft coral material from Taiwan and Singapore, all deposited at TAU, was investigated. The results of these studies were summarized in two manuscripts describing new species that were submitted for publication.

4. During a visit to the Zoological Museums of Hamburg and Berlin (Germany), Copenhagen (Denmark) and British Museum NH (London, UK) 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.

Collecting trips of the Entomology group

Ariel-Leib-Leonid Friedman

Trips in Israel

A sampling of the insect fauna was performed on 2.iii.2010 in Nahal Qidron spill and in Nahal Salvadora spill along the Zuq He'Eteqim Ridge along the west coast of the Dead Sea. The sampling was performed upon the request of the Israel Nature and Parks Authority. Several rare species of Coleoptera were collected, including a new species of weevil of the genus *Ita*, now being described by a group of foreign specialists.

At the period between ii.2010 and viii.2010 about 15 field trips were conducted, mostly to the northern and central parts of the country, aimed at sampling Ulidiidae (Diptera), as a part of the MSc study of Elisabeth Morgulis (supervisor Amnon Freidberg). During this survey 21 species of Ulidiidae were collected, some of which were previously represented in the collection by only a few specimens.

Sampling of ground beetles of the *Graphipterus serrator* species group and other sand-dwelling beetles was performed by the Ph.D. student, Mr. Ittai Renan (supervisor Amnon Freidberg), during winter and spring 2010 along the coastal plain and in inland sand sites mainly in the western Negev sand dunes Regular collecting trips to various parts of Israel were performed by Mr. A.-L.-L. Friedman and Dr. Claudia Drees as part of a project of collecting beetles in pitfall traps, funded by Israel Taxonomic Initiative (ITI). The traps were placed on Mt. Hermon (2000 m, 1750 m and 1600 m), Mt. Meron, Mt. Tavor and Carmel Ridge, in Hula Reserve, Nahal Keziv, northern and southern coasts of Lake Kinneret, Berekhat Ya'ar swamp, Samaria, Judean Foothills, Judean Desert, Northern and Central Negev, Dead Sea Area and Arava Valley. Much material, primary of beetles, ants and spiders, was collected. The material is still

largely unsorted, but already several rare species of weevils and ants, a new species of ground beetle and a new species of weevil for Israel were collected.

Trips abroad

All the described trips were funded by the travel funds ("Kishre Madda") of the scientists, except the last two travels of ALL Friedman and I. Renan.

Malawi

A trip to Malawi was performed in xii.2009 – i.2010, in order to carry out several studies and to collect material for the National Collection of Insects. The participants were: Amnon Freidberg (studying Diptera) and Mr. A.-L.-Leonid Friedman (studying Curculionoidea), both of TAU, and Dr. Ho-Yeon Han (studying Diptera) from Yonsei University, South Korea. The main goal of the trip was collecting fruit flies (Tephritidae) in alcohol for molecular phylogeny studies. Our route was: Lilongwe – Ntchisi, Ntchisi Forest, Mponela – Jenda, Mzimba, Kasito – Nyika Plateau – Nkhata Bay, Nkhotakota, Salima, Senga Bay – Liwonde – Zomba Plateau, Lake Chilwa, Mount Chiradzulu – Ntcheu, Dedza, Mozambique border – Lilongwe.

Following regions were surveyed: Ntchisi Forest, a residual mountain rainforest; Viphya Plateau, mainly covered by Brachystegia forest; Nyika Plateau (2100-2600 m), comprising mountain grasslands with patches of rainforest, particularly Zovo-Chipolo Forest; Coast of Lake Malawi from Nkhata Bay in the north to Senga Bay in the south, warm humid lowlands disturbed by human activities, partly savanna-like with Acacia and Zyziphus, partly covered by Brachystegia forests; Banks of Shire River, at Liwonde; Zomba Plateau (~2000 m), comprising strongly disturbed montane forest, one day spent on collecting along the shore of Lake Chilwa and one day on collecting in the small rainforest near the top of Mt. Chiradzulu (1773 m). The collecting was performed mostly by sweeping and light trapping. The collecting with Malaise trap was not successful.

Results of the collecting in Malawi.

Coleoptera: Around 5,000 specimens of beetles were collected, at least half of them weevils (Curculionoidea). The rest are mainly leaf-beetles (Chrysomelidae), longhorn beetles (Cerambycidae), Scarabaeidae, and Elateridae. Unusually many ground beetles (Carabidae) were collected, due to the rainy season. A unique specimen of a stag-beetle (Lucanidae) was collected in a light trap. This is an extremely rare family in Africa.

Diptera: Around 6,000 specimens of flies were collected, primarily fruit flies (Tephritidae), but also other families of Tephritoidea, such as Ulidiidae (Physiphora) and Platystomatidae (a nice diversity, including about 10 species of Rivellia). All these will be useful for the study of the Tephritoidea of Israel and for on-going studies of Afrotropical Tephritidae.

Ethiopia

Vasiliy Kravchenko visited Ethiopia twice:

25 ix – 8 xi. 2009. ADDIS ABABA. Meeting with Prof. Emiru Seyoum and Prof. Habte Tekie (Addis Ababa University) and Dr. Girma Balcha, the director of Institute of Biodiversity Conservation and Research (IBCR).

AMBO (WEST SHEWA REGION). Organizing light trapping stations in Ambo, Guder, Wanchi Crater, in cooperation with Ambo Plant Protection Research Center PPRC (Mohammed Dawd) and with Ambo University (Dr. Mulugeta Negeri).

25.vii.– 29.viii.2010, with Dr. Zoya Efremova (Hymenoptera: Eulophidae). ADDIS ABABA. Meeting with Prof. Emiru Seyoum and Prof. Habte Tekie for further research of Ethiopian Lepidotera.

COLLECTING TRIP TO EAST ETHIOPIA (destination – Jijiga region). Light-trapping on the way to Jijiga. Organizing of light-trap and malaise trap stations in Sodere, Nazret, Awash, Jijiga for future collections. Visiting

Haramaya University, meeting with Prof Amare Ayalew, the Dean of Biological Faculty and working in the Lepidoptera collection.

COLLECTING TRIP TO SOUTH ETHIOPIA (destination – Jinka region). Light-trapping on a way to Jinka. Organizing of light-trap and malaise trap stations in Sodo, Arba Minch, Jinka. Visiting Arba Minch University, meeting with Gebeyehu – local entomologist. Meeting with Alemayehu Matewos, the director of Mago National Park. Collecting in different biotopes of Mago National park.

Ukraine

Amnon Freidberg and Elisabeth Morgulis visited the Schmalhausen Institute of Zoology of the National Academy of Sciences of Ukraine, Kiev, on 30.viii.-2.ix.2010 for expert counseling and examining Ulidiidae; important consultations were made with the experts, Dr. V. Korneev and Dr. E. Kameneva, about the taxonomic identity of the Ulidiidae species of Israel. E. Morgulis was trained by Dr. Korneev in new photography techniques.

Russia

Vasiliy Kravchenko visited Russia on 20.vi– 11.vii.2010, for work on Noctuidae (Lepidoptera) material from Israel, Middle East, Central Asia and Ethiopia in collections and libraries of following museums: A.N. Severtsov Institute of Ecology and Evolution of the Russian Academy of Sciences, Moscow (pre-habilitation meeting for dissertation thesis); Zoological Museum of Moscow University, Moscow (curator A. Sviridov); The Zoological Museum of the Russian Academy of Sciences, St. Petersburg (work in the Noctuidae collection (curator A. Matov), finalizing of the first review of Microlepidoptera of Israel with the curator of entomological collection (S. Sinev); Russian Institute of Plant Protection, St. Petersburg (meeting with the chief of laboratory of phitosanitaric diagnosis and prognosis, I. Grichanov); Ulyanovsk State Pedagogical University, Ulyanovsk (Volga region) (curator V. Zolotuhin).

Amnon Freidberg and Elisabeth Morgulis visited The Zoological Museum of the Russian Academy of Sciences, St. Petersburg (3.ix.2010), meeting Dr. V. Zaitzev and examining the Ulidiidae collection; 30 specimens were borrowed, 5 of which are paratypes. Amnon Freidberg also visited the Zoological Institute of the Moscow University (8.ix.2010) to meet with Dr. Andrey Ozerov (a colleague and curator of Diptera) and to study the collection. A modest exchnge of tephritoid specimens was initiated.

Turkey

Sergey Zonstein participated in an international collecting trip organized by the Turkish Arachnological Society in 15-28.ix.2010. The members (arachnologists from Turkey, Russia and Israel) visited central and southern Anatolia, and also the Marble Sea region and Uludagh Mountain Ridge near Bursa. Specimens of a potentially new species of the genus Nemesia were collected in the last region (both males and females in great numbers; congeners hitherto were unknown in this country). The same is a true for the poorly known nemesiid Raveniola micropa that todate is only known from the single destroyed holotype female.The unknown males and many females were collected. Some other spider specimens representing the local arachnofauna also were collected.

UK

Mr. A.-L.-L. Friedman visited the Natural History Museum in London in 4-11.vii.2010, working on the collection of Nanophyidae (Curculionoidea). The visit was funded by the SYNTHESYS Project http://www.synthesys.info/ which is financed by European Community Research Infrastructure Action under the FP7 Integrating Activities Programme.. Primary types of Nanophyidae were studied, and material from the TAU collection was identified. Many undescribed species were recognized both in TAU and NHM material, about 600 specimens were borrowed from NHM for further investigation, about 50 specimens of weevils (Nanophyidae, Brachyceridae and Curculionidae) were exchanged with NHM. This visit was particularly

successful in finding and copying of scientific literature, including very rare publications, which resulted in a load of 7.5 kg of paper. Meetings with important taxonomists and leading weevil specialists, namely Dr. Maxwell Barclay (the curator of Coleoptera collection of NHM), Dr. Richard Thompson, Dr. Chris Lyal and Dr. Michael Morris, were carried out.

Sergey Zonstein and Irina Zonstein visited the Natural History Museum in London (NHM) and the Natural History Museum of Oxford University between 16.viii – 5.ix.2010, working on the collections of Araneae (the families Atypidae, Ctenizidae, Cyrtaucheniidae, Dipluridae, Filistatidae, Nemesiidae and Palpimanidae) and Hymenoptera (Pompilidae); the visit was partially funded by KAMEA travel program of Sergey Zonstein. Specimens required for completing taxonomic revisions of the spider genera Entypesa (Nemesiidae), Pholcoides and Filistata (Filistatidae) and Boagrus (Palpimanidae), and also pompilid genera Baguenaja and Gonaporus, were checked and some borrowed. About 30 spider specimens representing described local endemics of the Israeli fauna, as well as 50 wasp specimens representing Central Asian pompilid taxa were donated by TAU to NHM. A good and productive scientific collaboration with NHM curators – Dr. Gavin Broad (Hymenoptera) and Dr. Jean Biccaloni (Araneae) was established.

France

Mr. Ittai Renan visited the Museum National d'Histoire Naturelle in Paris in 27.ix -1.x.2010, working on the collection of Carabidae (Coleoptera); the visit was funded by "Adesman travel grant" (TAU) and Amnon Freidberg. Primary types of Graphipterus serator group were studied, 170 specimens and 2 types were borrowed. Ittai met and consulted Dr. Thierry Deuve, the curator of the Carabidae collection in MNHN.

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

Henk K. Mienis

In the autumn of 2010 I brought again a visit to the Netherlands. During the period 7 Serptember – 8 October fieldwork was carried out in the provinces North-Holland, and Friesland, while the Zoological Museum of Amsterdam was visited two times. On the island Terschelling, Friesland, I got the aid of Dana Mienis.

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 first real winter since about 15 years;
b. A survey of the beaches between Enkhuizen and Medemblik, along the western banks of the IJsselmeer for the presence of the invasive freshwater molluscs *Dreissena bugensis* and *Corbicula fluminea*;
c. A continuation of the general survey of land- and freshwater molluscs in the Waterland region of the province North-Holland;
d. A follow up survey of the land snail fauna of the Jollemabosje on the island Terschelling;
e. A continuation of a general survey of land- and freshwater molluscs of the island Terschelling with special emphasize on the presence of invasive species.

The work at the Zoological Museum of Amsterdam was focused on a study of samples of *Papillifera papillaris*, from localities on the mainland of the Iberian Peninsula.

The fieldwork

A total of 55 localities were sampled for the presence of land- and freshwater molluscs and 7 localities on the presence of marine species. All the collected

data concerning the land- and freshwater molluscs 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 harsh winter of 2009/10. During that winter most of the canals, ditches and lakes were covered with ice for at least a whole month, an event which had not occurred during the last 15 years. In addition again several new localities could be registered of that snail in Purmerend and also one in Monnickendam.
b. The S.E.-Asian invasive mussel species *Corbicula fluminea* was found at three localities between Enkhuizen and Medemblik. At the same localities also *Corbicula bugensis* occurred.
c. During the general survey of land- and freshwater molluscs in Waterland two species of Clausilidae were again found 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. This time 18 additional land snails were also found at that locality.
d. During the general survey of the mollusc fauna of Terschelling the presence of *Limacus flavus* in the garden along the north side of the church in West-Terschelling was confirmed. However, one week later that garden had disappeared and the whole area had been covered with a pavement.
e. On the top of the Seinpaal-dune in West-Terschelling another specimen of the rare colour variety of the common garden snail *Cepaea nemoralis* with transparent spiral bands and a white lip (instead of darkbrown to black

bands and lip) was collected by Dana Mienis. This variety *hyalozonata* has to be considered a very rare colour morph.

f. The invasive land snails *Cepaea nemoralis*, *Cornu aspersum*, *Candidula intersecta* and *Monacha cantiana* were encountered also this time in many places.
g. Another invasive species *Arianta arbustorum* is still present among bushes near Dellewal, West-Terschelling.
h. Although the North-American freshwater gastropod *Haitia acuta* seems to have disappeared from the Doodemanskisten, a small lake in the dunes near West-Terschelling, it has turned up at the place of the so-called ice-track in Noord-Midsland and in a ditch near a garden center in Striep (Seeryp).

The visit to the Zoological Museum in Amsterdam resulted in the registration of some old records of *Papillifera papilliaris* from the east-coast of Spain. The populations present in Spain are most probably dating back to the Roman period.

This was definitively 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 before April 2011.

I would like to thank Mr. Xander Meijers of the "Society for Nature Momuments" for his permission to continue my mollusc survey of Fort Spijkerboor and Fort aan de Jisperweg. I also like to thank my friend and longtime colleague Robert G. Moolenbeek for his hospitality at the Zoological Museum of Amsterdam. A special thanks to my daughter Dana, who once again showed me to have a sharp eye for detecting the unusual among the thousands of common shells.

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 increases 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 Israel's natural assets.

New museum faculty and staff

Shai Meiri

I am fascinated by the different ways animal morphology becomes adapted to their biotic and abiotic environment. Some traits show extreme degrees of lability within species even across very restricted spatial scales (such as a group of islands) and temporal scales. Significant morphological changes can sometimes be detected over the course of a century or so, and presumably, they are evolutionary and adaptive.

I study morphological variation within species at different spatial and temporal scales, and then compare the patterns of variation shown in whole clades or communities, to search for common evolutionary mechanisms that drive them. Much of the evolutionary shifts seen within species result from differences in their biotic environment (such as the presence of absence of competitor, predator and prey species). However, ever since Gleason it has been known that community composition changes in seemingly erratic ways (though some biogeographers and palaeontologists still write about "disharmonic" communities!). I am interested in examining whether there are broad biogeographic patterns in community assembly, where different 'kinds' of animals are relatively more likely to exist in some environments, but not in others.

I mainly use two main model systems (although the word model does in no way mean these groups are not fascinating in their own right!): mammalian carnivores and lizards, although I find it hard to give up looking at other groups (birds, tree-shrews, mammals and squamate reptiles as a whole).

I assembled a large dataset of cranial and dental measurements of carnivores (over 24000 specimens, in collaboration with my former supervisors, Tamar Dayan and Dan Simberloff), which I use to study biogeographic variation, community assembly, and the morphological signature of speciation.

With the help of my present and past students, as well as with David Orme , Richard Grenyer and the members of our Global Assessment of reptile distributions working-group , I try to examine factors that affect the distribution and evolution of lizards. We are mapping lizard distribution in multiple regions (a global map is probably not feasible in the foreseeable future), to study richness patterns, as well as other macroecological phenomena (relationships of features such as body size, range size, range position, etc.).

Some more specific areas of interests include:

- Biogeographic drivers of morphological evolution

In recent years I focused mostly on trying to understand how local conditions affect the evolution of vertebrates across their geographic ranges. For example, I used mammalian carnivores to study the environmental determinants of size evolution. Examining broad patterns of size variation (Bergmann's Rule, the Island Rule) I am able to assess the factors that were thought to drive these trends (such as resource availability, interspecific competition, predation, temperatures and primary productivity).

- Island Biogeography

I study some of the factors that govern species richness and identity of insular carnivores. I examine how different aspects of the insular environment such as area, isolation and community composition influence the variability, body size and sexual size dimorphism of island inhabitants.

- Speciation

I am studying the adaptive radiation of island vertebrates to examine the geographic drivers of speciation (island area, isolation, habitat diversity and climate). Using sister-species comparisons I examine whether there is a limit to the degree of similarity of recently diverged species. I then intend to study whether the degree of observed morphological divergence depends on

functional aspects of species' morphology and on their natural history (e.g., their diet)

- Community assembly

My main research focus (if I can get to it) in the near future will be community assembly. I gather biogeographic and morphological data that, together with natural history data will enable me to examine geographic patterns of functional diversity. I will examine the functional diversity of different reptilian and mammalian assemblages, and compare assemblages to try and identify the forces that promote such diversity. Studying functional diversity and species richness from a different angle I examine the morphological consequences of competition in coexisting animal species to decipher the role of interspecific competition in community assembly and speciation. I will examine how communities differ in accord with their biogeography: while leaving the question of why there are more species in the tropics to many others, I'll try to examine questions such as why (or whether) there are relatively fewer herbivores in temperate areas.

Frida Ben-Ami: Research Interests

My main research interest is Evolutionary Ecology, the study of selective pressures imposed by the environment, and the evolutionary responses to these pressures. I focus on host-parasite coevolution and ask questions about the adaptive consequences of parasite virulence. For example, why do hosts get sick? Is virulence adaptive for the parasite? What is the adaptive significance of genetic variation in hosts and parasites? I am also very much interested in the persistence of sexual reproduction, asking questions such as what is sex good for, if only 50% of a parent's genes are transmitted to its offspring? How can a sexual population compete with an asexual population that, all else equal, produces twice as many individuals? Do coevolutionary interactions between hosts and their parasites account for the widespread occurrence of sexual versus asexual reproduction (Red Queen hypothesis)? What is the role of hybrids in host-parasite interactions?

One of the main difficulties in answering these questions is finding an appropriate experimental system. For instance, to answer questions about the persistence of sexual reproduction, one needs an organism that has the ability to reproduce both sexually and asexually. It turns out that this requirement is very hard to satisfy. The freshwater snail Melanoides tuberculata has this ability, but only in Israel where sexual forms can be found. During my PhD I laid the foundations for utilizing this system for Evolutionary Ecology research. In my lab at Tel-Aviv University I plan to address these questions by carrying out experimental epidemiology and experimental evolution together with substantial molecular and field work. Another interesting freshwater snail is the genus Melanopsis, whose hybrid forms are ubiquitous in Israel. With this novel system I will investigate the role of hybrids in host-parasite interactions, an area that received little if any attention in Evolutionary Ecology. Finally, I will use the well-established Daphnia-microparasites system, with which I worked intensively during my postdoc at Basel University, but focus on Daphnia

species and parasites that are native to Israel and thus have not been studied before.

In summary, I believe that a multi-system approach provides important synergies and insights from one system onto another, and may lead us to a better understanding of the underlying evolutionary patterns and processes.

New collections

The Malacological Collection of Zvi Orlin

Henk K. Mienis

In October 2008 the Mollusc Collection received an enormous boost in the form of the donation of the shell collection of Zvi Orlin, a private collector from Qiryat Motzkin. This world wide marine shell collection contained approximately 9-10 thousand samples and will almost double the number of species in the collection.

Short Biography of Zvi Orlin

Zvi was born in Lithuania on 6 October 1925, but at the age of three he moved, like so many Lithuanians of Jewish descent, with his parents to South Africa. There he received his formal education and also served as a volunteer in the South African army during Worl War II. In South Africa he met also his wife Zvia.

In 1947 they moved to what was then called Palestine and after 11 years on a Kibbutz they settled in Qiryat Motzkin, north of Haifa. By profession he was an economist and was employed most of his life in the export department of the seed-company "HaZera", from which he retired in 1990.

From a young age Zvi (nicknamed "the Desert Gazelle") was interested in nature and always tried to name all the plants and animals which he observed. Soon after his retirement he formed a small group with some of his friends in the Haifa region and carried out hikes with them all over the country. They often walked the beaches north and south of Haifa, where they noticed the large piles of shells especially after the winter storms. From that moment he became interested in molluscs and started to collect shells.

In the beginning the late Prof. Alexander Barash helped him to identify his finds, which task was taken over by Henk Mienis when the health of Prof. Barash deteriorated, however not before Zvi had tried to identify the material by himself. In order to carry out such a difficult task he accumulated a fine collection of modern shell guides and specialized, scientific monographs, which were likewise donated to the library of the National Collections of Natural History of the Tel Aviv University.

Since the Mediterranean Sea was at a stone throw from his apartment in Qiryat Motzkin he was initially mainly working on shells from the Mediterranean Sea. Later on he became extremely interested in the molluscs of the Red Sea in general and those from the Gulf of Aqaba in particular.

A lack of readily available information about the marine molluscs of the Red Sea made him decide to draw up a check list of the Red Sea shells present not only in his own collection, but also in those of several other private collectors in Israel. In order to complete the list, he checked also the collections of the Tel Aviv University and the Hebrew University of Jerusalem and the major museums of various countries. Since Henk Dekker in the Netherlands was working on a similar list, they joint forces, which resulted in the publication of the "Check-list of Red Sea Mollusca" (2000).

The interest of Zvi for shells did not stop at the borders of Israel. With his wife he traveled to numerous destinations abroad and from all those journeys he returned with new additions to his fast growing collection. Another way to enrich his collection was the exchange of material with other collectors all over the world, and he established contacts in many countries for this purpose..

His collection got another boost when he was offered the private shell collection of the late Josef Goldstein of Kibbutz Sarid. In this way he managed to amass in a relatively short time, about 15 years, a huge well documented collection, of which he computerized all the relative important data.

Zvi did not stick to simply collecting but wrote also some 31 mainly popular articles and book-reviews in journals published in Australia, Indonesia, Israel, Italy, the Netherlands, New Zealand, South Africa, Uruguay and the U.S.A. Many were reprinted in other journals and therefore the full list contains 67 entries. His last articles were an autobiographic one about his shell collecting activities (Orlin, 2009) and another on "Living Fossils". The former article was translated into Chinese by He Jing, a shell-dealer, and appeared on the latter's website, as he thought it very suitable for the Chinese shell collectors (www.ganvana.com/newsView.asp?id=947).

Already several years ago he decided that at some time he will donate his collection to an institute for higher learning in Israel. In 2008 he decided in favour of the Tel Aviv University and as mentioned above in October 2008 the collection was transferred to Tel Aviv. Without doubt this was not an easy decision for Zvi, but now he knows at least that a further generation of students and zoologists in general and hopefully malacologists in particular can use his collection and library for their studies.

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Eponym: taxon honouring Zvi Orlin

Lunulicardia orlini Mienis, 2009 (Mollusca, Bivalvia, Cardiidae)

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

The Mollusc Collection of Derk A. Visker

Henk K. Mienis

In the middle of August 1969 the Department of Zoology received two large boxes containing the former shell collection and the shell-related books of Derk (Dick) Adriaan Visker of the Hague, the Netherlands. This unique contribution: the first donation of a complete collection from abroad, arrived with a delay of one year. In fact it was the intention of Derk to present his collection during the 20th anniversary of the State of Israel.

Brief Biography of Derk A. Visker

Derk A. Visker was born in 1915 and celebrated recently (in 2009) his 94th birthday. He served for most of his life in the Dutch Army, during which he was stationed for a considerable time in the Dutch East Indies. After the independence of Indonesia he moved to Dutch New Guinea (1949-1955). In New Guinea he was also one of the founders of the Radio Service New Guinea (RONG).

After his retirement he became more and more interested in the history of the Dutch East Indies and especially in the genealogy of the Dutch-Indian families about which he wrote several classic books. In 1972 he founded the "Indisch Familie Archief", which turned into the "Foundation of Dutch East-Indies Family Archive" (SIFA) in the Hague.

Material in the collection Visker

Derk Visker started collecting molluscs in 1954 when he was stationed in New Guinea, now Irian Jaya, Indonesia. After his repatriation to the Netherlands he settled with his family in the Hague. In 1956 he became member of the Dutch Malacological Society. In the Netherlands he collected recent material not only in the vicinity of the Hague: Scheveningen, Voorburg, Wassenaar and Hook of

Holland, but also in Barendrecht, Bergen op Zoom, Woensdrecht, Kruiningen and on the Wadden Island Ameland.

Abroad he collected among others in Croatia (then still part of Yugoslavia), Spain and France. He was also interested in fossil shells and collected material from the Pleistocene-Eemian in the surroundings of Amsterdam, Pliocene material near Antwerp, Belgium and Miocene and Eocene material throughout France. During the years 1965-1968 he visited the following quarries in France: Damery, Pourcy, Chalons sur Vesle, Ermenonville, Trigny and Hermonville, often in company of B. van der Most, another member of the Dutch Malacological Society.

The collection Visker contains not only self collected material but also shells which he received by means of donation or exchange. His collection contains material from the following collectors (in alphabetical order):

Arndt, Mrs. Cecy, Bakersfield, U.S.A.:Italy (Pliocene material), Mexico and U.S.A. (recent material from Alabama, Florida, California and Washington, and fossil materiaal from California);
Beyst, Genese, Belgium: Japan;
van Campen, the Netherlands: Spain (Mediterranean sea shells);
Drijver, J.,Wageningen, the Netherlands: Japan and the Philippines;
Entrop, B, Scheveningen, the Netherlands: North Sea and South Africa;
Graf, G.J., Lakewood, U.S.A.: U.S.A (California);.
Gramberg, Mrs. M. the Netherlands: the Netherlands and Indonesia;.
Haandrikman, A., Goes, the Netherlands: France (fossil material);
Higgins, H.C., U.S.A.: Unionidae from the U.S.A.;
Kolkman, Miss, Hilversum, the Netherlands: France;
Leger, the Netherlands: the Netherlands (Terschelling).
Mienis, H.K., at that time Amsterdam, the Netherlands: chiefly Neritidae world-wide.
Minedt, Mrs. the Hague, the Netherlands: France and Algeria;
Mulder, J.Th., the Hague, the Netherlands: France, Trinidad, Cuba, Brazil, Mauritius, Philippines, Japan, Australia and New Zealand;
Muller, P. the Hague, the Netherlands: Italy and Tunisia (material collected by the Geological Department of the Shell-Company);
Most, B. van der, Schiedam, the Netherlands: France (fossil material – Miocene and Eocene), "Yugoslavia", Kenia, the Netherlands (Pliocene material from Domburg), Belgium (Pliocene material from Antwerp), Spain (Mallorca) and Indonesia;

Riet, van der J., Solomon Islands: marine molluscs Solomon Islands;.
Smeets, Dr. J.W., Naarden, the Netherlands: world-wide.
Smits, D., the Netherlands: Indonesia (New Guinea, Bay of Seroei).
Staid-Staadt, J.L., Rheims, France: recent material world-wide and fossil material from France;
Taal: South Australia.
Visker, Miss W.R., Amsterdam: the Netherlands, France and Spain.;
Visker, R., Antwerp, Belgium: Mediterranean Sea, U.S.A. (Florida) and West Indies.

Most of the material, except the fossils, has now been computerized and forms part of the general scientific mollusc collection.

Malacological publications of Derk A. Visker

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Many friends of the National Collections joined us in the groundbreaking ceremony last May, including MK Gideon Ezra and MK Raleb Majadele who as ministers supported our project. We are very grateful to them all for coming to share our joy and thank Minister Ze`ev Binyamin Begin and Chair of the Knesset Science Committee MK Meir Sheetrit for their words in the ceremony.

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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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21. Mizrachi,I., Y. Loya, M. Rosenfeld, E. Kramarski- Winter, R. Yam and A. Shemesh. 2010. The stable isotope composition of newly formed skeleton in the stony coral Porites spp. Geochimica et Cosmochimica Acta.
22. Rittner, O., Sabatinelli, G. The Genus *Oxythyrea,* Mulsant in Israel. Israel Journal of Entomology.
23. Rittner, O., Sabatinelli, G. The Genus *Tropinota* in Israel. Israel Journal of Entomology.
24. Rotics, S., Dayan, T. and Kronfeld-Schor, N. 2010. Light masking in the field: an experiment with nocturnal and diurnal spiny mice. Chronobiology International.
25. Rotics, S., Dayan, T. and Kronfeld-Schor, N. 2010. The effect of artificial illumination on temporally partitioned spiny mice. Journal of Mammalogy.

26. Schleyer, M.H. and Benayahu, Y. 2010. Pre- and post -1998 ENSO records of shallow-water octocorals (Alcyonacea) in the Chagos Archipelago. Mairne. Pollut. Bull.(doi:10.1016/j.marpiolbul.2010.08.019).

27. Tauzin, P., Rittner, O., Sabatinelli, G. The Cetoniinae of Levant: Choroligical general survey. Lambillionae.

28. Vonshak, M. and Ionescu-Hirsch, A. A checklist of the ants of Israel (Hymenoptera: Formicidae). Israel Journal of Entomology, 39.

29. Vonshak, M. and Shlagman, A. A *Camponotus fellah* queen sets a record for Israeli ant longevity. Israel Journal of Entomology, 39.

30. Vonshak, M., Dayan, T., Foucaud, J., Estoup, A. and Hefetz, A. 2010. The interplay between genetic and environmental effects on colony insularity in the clonal little fire and *Wasmannia auropunctata*. Behavioral Ecology & Sociobiology.

31. Yom Tov, Y. and Geffen, E. Recent spatial and temporal changes in body size of terrestrial vertebrates: probable causes and pitfalls. Biological Review.

Chapters in books

1. Drees, C., Matern, A., Reimann, T., von Oheimb, G. and T. Assmann 2010. Multiple glacial refugia of unwinged ground beetles in Europe - molecular data support classical phylogeographic models. In: Survival on changing climate - phylogeography and conservation biology of relict species (eds. Habel, J.C. & T. Assmann). Springer, Heidelberg.

2. Matern, A., Drees, C., Vogler, A.P. and T. Assmann. 2010. Linking genetics and ecology: reconstructing the history of relict populations of an endangered semi-aquatic beetle. In: Survival on changing climate - phylogeography and conservation of relict species (eds. Habel, J.C. & T. Assmann). Springer, Heidelberg.

3. Meiri, S. 2009. Pages 492-496 in R. G. Gillespie and D. A. Clague (editors). Encyclopedia of Islands. University of California Press, Berkeley.

4. Meiri, S. and Raia, P. 2009. Dwarfism. Pages 235-239 in R. G. Gillespie and D. A. Clague (editors). Encyclopedia of Islands. University of California Press, Berkeley.

5. Plotkin, M., Volynchik, S., Bergman, D.J. and Ishay, J.S. 2009. Thermoregulation in a hornet Nest, *Vespa orientalis* (Hymenoptera: Vespinae): The interaction between workers and the pupal brood. In: Body Temperature Regulation. Chap. XV. Nova Science Publishers Inc.

Accepted for publication

1. Plotkin, M., Volynchik, S., Hiller, R., Bergman, D.J. and Ishay, J.S.. The Oriental Hornet *Vespa orientalis* (Hymenoptera: Vespinae) Cuticular Yellow Stripe as an Organic Solar Cell: A Hypothesis. In: Photobiology: Principles, Applications and Effects. Nova Science Publishers Inc.
2. Safi, K., Meiri, S. and Jones, K. E. Body mass evolution in bats. In: Body Size: linking pattern and process across space, time and taxonomic group (editors: F. A. Smith and S. K. Lyons). University of Chicago Press, Chicago.

Papers presented in scientific meetings

2010 Ecological and sociobiological aspects of the little fire ant invasion in Israel. The 16th IUSSI's (International Union for the Study of Social Insects) Annual Meeting, Copenhagen, Denmark (Vonshak, M., Dayan, T. & Hefetz, A.).

2010 Technological changes in shell bead production in the Levant. Posters: The Micro-Fresh Water Mollusc Remains from Çatalhöyük, Turkey. ICAZ (International Council for Archaeo-Zoology), Paris (Bar-Yosef Mayer, D.E. and B.A. Gumus).

2010 Scaphopod shells in the Natufian Culture. ICAZ (International Council for Archaeo-Zoology), Paris (Bar-Yosef Mayer, D.E., A. Kurzawska and H.K. Mienis).

2010 Between Superstition and Science: Beads of Foragers, Farmers, and Pastoralists in the Levant.ICAANE: International Conference on the Archaeology of the Ancient Near East. Participated in Workshop: Beads and Personal Ornaments in the Ancient Near East: Technologies, Styles, Social Significance (Bar-Yosef Mayer, D.E).

2010 Beads in Farming Societies and their meaning. The Thirty Sixth Archaeological Conference in Israel (Bar-Yosef Mayer, D.E).

2009 Natufian green stone pendants from el-Wad: characteristics and cultural implications. The Natufian Culture in the Levant II, Paris (D. Bar-Yosef Mayer, N. Porat, and M. Weinstein-Evron).

2009 Aquatic exploitation by the Natufian's in light of recent finds from Eynan. The Natufian Culture in the Levant II, Paris (I. Zohar and D. E. Bar-Yosef Mayer).

2009 Scaphopod shells in the Natufian Culture. The Natufian Culture in the Levant II, Paris (A. Kurzawska, D. Bar-Yosef Mayer and H. K. Mienis)

2010 17th International Conference on Aquatic Invasive Species (ICAIS), San Diego, USA, August 29 - September 2. (Goren M.)

2010 The Indo-Mediterranean: The emergence of a man-made biogeographical province. 39th Congers of the CIESM (The Mediterranean Science Commission). 10-14 May. Venice, Italy (Goren M., Yokes M.B., Galil, B.S., Diamant A., and Stern, N.).

2010 Rapid expansion of recently introduced species populations off the Mediterranean coast of turkey. 39th Congers of the CIESM (The Mediterranean Science Commission). 10-14 May. Venice, Italy (Yokes M.B., Goren M., Karhan, S. D., Demir V., Kalkan, E., Galil, B.S. and Diamant A.).

2010 The prevalence of an alien rhizocephalan parasite at the southern and northern limits of its introduced range. 39th Congers of the CIESM (The Mediterranean Science Commission). 10-14 May. Venice, Italy (Innocenti, G., Galil, B.S., Yokes M.B., Diamant A. And Goren M.).

2010 Parasites of Red-Med immigrant and native Mediterranean coastal fish species: new observations from the Israeli and Turkish coasts. 39th Congers of the CIESM (The Mediterranean Science Commission). 10-14 May. Venice, Italy (Diamant A., Goren M., Galil, B.S., Yokes M.B., and Y. Klopman.).

2009 A method for detecting character displacement when size clines are present. International Biogeography Society (Meiri, S.)

2009 British Ecological Society (Meiri, S. and Roll U.)

2009 Is size evolution on islands special? International Symposium on Islands and Evolution, Mahon, Menorca, Spain (Meiri, S., Raia, P. and Phillimore, A. B..).

2009 Allometry and evolution of lizard reproductive investment. The 45th Annual Meeting of the Zoological Society of Israel, Haifa, Israel (Meiri, S., Sibly, R. M., Van Damme, R. and Brown, J. H.)

2009 Questioning the great biological diversity of Israel. The 45th Annual Meeting of the Zoological Society of Israel, Haifa, Israel (Roll, U., Stone, L. and Meiri, S.)

2009 The consequences of double infections by different parasite species with conflicting transmission strategies on the expression and evolution of virulence. BS-ZH Joint Meeting IX, Basel, Switzerland (F. Ben-Ami).

2009 The Impact of the Environment on Innate Immunity, Obergurgl, Austria (F. Ben-Ami).

2009 The consequences of double infections by different parasite species with conflicting transmission strategies on the expression and evolution of virulence. 12th Congress of the European Society for Evolutionary Biology, Torino, Italy (F. Ben-Ami).

2009 Resurrection Ecology Symposium, Herzberg, Switzerland (F. Ben-Ami).

2010 Fulbright Program Conference for the Middle East and North Africa, Cairo, Egypt (invited to speak in a panel) (T. Dayan).

2009 The taxonomy of the genus *Crocidura* (Insectivora: Soricidae) needs to be revised in Israel. 46th meeting of the Zoological Society of Israel. Haifa, (Israel) (Yanai Z., Spivak M., Levanony T., Landsman A. Huchon D. Dayan T. and Meiri S).

2010 Three novel nuclear markers for sponge phylogeny. SMBE 2010 - Annual meeting of the Society for Molecular Biology and Evolution. Lyon, (France) (Huchon D., Gil N., Goldfarb I., Feldstein T., Belinky F. Szitenberg A. and Ilan M.)

2010 Novel nuclear coding genes for sponge phylogeny. VIII world sponge conference. Girona, (Spain). (Huchon D., Gil N., Goldfarb I., Feldstein T., Belinky F. and Ilan M.).

2010 The *cox1* gene of Tetillidae: a hot spot for mitochondrial intron insertions. VIII world sponge conference. Girona, (Spain). (Szitenberg A., Rot C., Ilan M. and Huchon D.).

2010 Revision of Israeli calcareous sponges (Porifera, Calcarea) using molecular and morphological characters. VIII world sponge conference. Girona, (Spain). (Feldstein T. and Huchon D.).

2009 Organizer of a joint workshop of the Australian Research Council (ARC) Center of Excellence(CoE) for Coral Reef Studies and the Interuniversity Institute for Marine Sciences in Eilat (IUI): "Coral reefs of the Indo-Pacific in an era of global change" held at IUI, Eilat, Israel (Loya, Y.).

2009 Reproductive Patterns of Fungiid Corals in Okinawa, Japan. The 12th Japanese Coral Reef Society meeting. Memorial lecture in the honor of Professor Kiyoshi Yamazato. 28-29 November, Okinawa, Japan (Loya, Y.).

2010 Fungiid corals: ideal model organisms to study evolution of coral productive traits. 11th International Symposium on Spermatology Satellite Symposium, 30th June, Motobu, Okinawa, Japan (Loya, Y.).

2010 Reproductive Patterns of Fungiid Corals in Okinawa, Japan. Coral reefs in a changing environment on 7th and 8th October in Canberra (Loya, Y.)

2010 13th International Symposium on Marine Natural Products (Phuket, Thailand) (Ilan, M.).

2010 9th International Marine Biotechnology Conference (Qingdao, China) (Ilan, M.).

2010 8th World Sponge Conference (Girona, Spain) (Ilan, M.).

2010 Octocorals of the Penghu reefs (Taiwan): unique species composition. 2nd Asia Pacific Coral Reef Symposium, Phuket, Thailand (Y. Benayahu, L.P. van Ofwegen, K. Soong, T.-Y. Fan, C.-F. Dai, A.C. Chen, M.-S. Jeng, H.J. Hsieh).

2010 Learning Marine Biology Using Qualitative Modeling Interactive Environment. 7th annual conference of the Israeli Association of Aquatic Studies. Eilat, Israel (D. Mioduser, R. Nachmias, Y. Benayahu, R. Zuzovsky, M. Leiba, D. Zurel, J. Ram).

Graduate students

Much active scientific research is conductedby 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

2000- Reuvat Nitzan (T. Dayan and A. Ar)
Population dynamics of the chukar partridge in 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- Liat Gahanama (A. Freidberg)
A revision of the *Schistopterum* clade of Schistopterini.

2004- Constantin Grach (A. Freidberg)
Ecology and biology of costal 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 D. Blihoghe (M. Ilan)
Natural products from sponge associated miscroorganisms.

2005-2009 Motti Charter (Y. Leshem)

2005- 2009 Edith Katsnelson (A. Lotem)
Social and individual learning of foraging strategies.

2005-2010 Ofir Levy (T. Dayan and N. Kronfeld-Schor)
Modeling climate effects on temporally-partitioned rocky desert rodents: from basic principles to community structure.

2005-2009 Yoav Motro (Y. Yom-Tov and R. Nathan)
Regulation of rodent populations by barn owls and its effects on agricultural yield.

2005-2010 Orit Skutelsky (T. Dayan and E. Feitelson)
Biodiversity conservation in biosphere reserves of Israel: the switch from a market led to conservation oriented agriculture.

2005-2010 Assaf Zevoluni (Y. Loya)
Coral community dynamics in bleached and non-bleached coral reefs (Zanzibar vs. Elat).

2005- Rachel Armoza (Y. Loya)
Ecological and physiological aspects of sex hormones in corals.

2005 - M. Haber (M. Ilan)
Biosynthesis and function of Natural products from sponge associated miscroorganisms.

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.

2006-2010 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 Levanite site.

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- 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 (D.E. Bar-Yosef Mayer and A. Marciniak)
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- Roee 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- 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- Anat Feldman (S. Meiri)
Snake Macroecology. Tel Aviv University.

2009- Keren, R. (M. Ilan)
Acquisition of sponge-associated bacteria

2009- Ittai Renan (A. Freidberg)
To be determined.

2009- Doron Shulz (Y. Benayahu)
Sport fishing: ecological and economic implications.

2010- Anna Halaz (Y. Benayahu)
Phylogeny of octocorals, family Xeniidae.

2010- Liron Goren (F. Ben-Ami)
The evolutionary ecology of *Daphnia* and its microparasites in Israel.

2010- Nir Stern (Goren M.)
To be determined.

MSc students

2004- Daniel Yashunski (M. Goren)
Succession of fish community in planted corals in Elat.

2005-2009 Ayelet Dadon (Y. Loya and M. Fine)
Mechanisms of bleaching in the Mediterranean coral *Oculina patagonica*.

2005-2009 Nimrod Lazarus (Y. Loya)
Induction of metamorphosis in nudibranch larvae.

2005- 2010 Osnat Maor (M. Goren)
Reproductive biology the cyprinid fish Garra rufa in the Jordan River basin.

2005- Kfir Gaier (M. Goren)
The impact of grazing fish on invertebrate communities in eastern Mediterranean.

2006-2009 Gilad Friedman (Y. Yom-Tov and Y. Leshem).
The biology of the long-legged buzzard *Buteo rufinus* in Israel.

2006-2010 Tali Kuperman (I. Hershkovitz)
Pottery Neolithic populations.

2006- 2010 Bat Sheva Rotman (M. Goren)
The biology the balitorid fish Nemacheilus jordanicus in the Jordan River basin.

2006-2009 Denise Samsonovich (Y. Benayahu and G. Zilman)
Hydrodynamics and settlement of marine larvae.

2006-2010 G. Tirosh (M. Ilan)
Sponge community in the Israeli Mediterranean coast.

2007-2010 Hagit Alphandary (M. Goren and Prof. Henig)
Analysis of decision making process in the case of Kishon River

2007-2010 Yaara fine (M.Goren)
The impact of anthropogenic activity on cichlid nesting in Lake Kinneret.

2007-2010 Naomi Shifris (Bar-Yosef Mayer, D.E. and A. Gilboa)
The Phoenician Iron Age II bead assemblage: The Achziv Cemeteries as a Test case.

2007-2010 Nir Stern (M.Goren)
Invaders fish – native fish relationship in Eastern Mediterranean.

2007-2010 Nir Ezra (D. Huchon)
Phylogeny and evolution of the demosponge family Poescilosclerida.

2007-2010 Dafna Aharonovich (Y. Benayahu)
Soft corals of the family Xeniidae at Eilat.

2007 -2009 Shachtman, Y. (M. Ilan)
Sponge associated *Archaea*

2007 - 2009 Sieradzki, E. (M. Ilan)
Sponge pathogenic microorganisms

2007- Hagar Ben-Bassat (D.E. Bar-Yosef Mayer, 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- Yael Klopman (M.Goren)
Some ecological aspects regarding the interaction of Red Sea fish invaders and their parasite".

2007- Tamar Marcus (T. Dayan)
Spatial aspects of climate change and conservation.

2007- Thehila Nagar (M.Goren)
Feeding habits in some freshwater fishes in Israel.

2007- Miri Taub (M.Goren)
The impact of recreation activity on the biota in inland aquatic habitats.

2008-2010 Naama Gil (D. Huchon)
Identification of new markers to solve demosponge phylogeny.

2008-2010 Ashton J. Spatz (D.E. Bar-Yosef Mayer,)
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- 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- Hila Lahav (T. Dayan and A. Hefetz)
Ant communities under different land management practices.

2008- Roni Lee (M.Goren)
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- D. Stein (I. Hershkovitz)
3D-Reconstruction of the vertebral epiphyseal ring.

2009- 2010 Itzhak Hoskin (Y. Loya)
Coral community structure and diversity in protected vs. non-protected coral reefs in Zanzibar

2009- Eran Amichai (Y. Yom-Tov and N. Kornfeld)
The biology of *Asellia tridens* in the Jordan Valley, Israel.

2009- Daniel Berkowic (S. Meiri and S. Markman)
Egg size and body size changes in cuckoos and hosts in response to climate change.

2009- Ana Halasz (Y. Benayahu)
Phylogeny of octocorals, family Xeniidae

2009- Dolev Kastin (M. Goren)
reproductive and growing biology of the cyprinid fish Garra rufa.

2009- Itay Katz (A. Freidberg)
The Tephritoidea (Diptera) of Israel

2009- Yaarit Litav (M. Goren)
Invaders fish – native fish relationship along depth gradient in Eastern Mediterranean.

2009- Hadas Marshall (T. Dayan and Y. Mandelik)
Bee communities in the Arava Rift Valley.

2009- Roee Maor (T. Dayan)
To be determined.

2009- Elizabeth Morgulis (A. Freidberg)
The Ulidiidae (Diptera) of Israel

2009- Ateret Shabtai (Y. Benayahu and G. Rilov)
Population dynamics of the invasive oyster *Spondylus spinosus* in the Israeli Mediterranean coast.

2009- Natalie Shalev (Y. Benayahu and G. Rilov)
Development of benthic communities on a planned artificial reef at Eilat.

2009- Maya Spivak (S. Meiri and D. Huchon)
Phylogeny and Taxonomy of Israeli shrews.

2010- Ram Baranin (Y. Loya)
Legislation of Marine Protected Areas in Israel: Mediterranean and Red Sea Reproductive strategies of deep reef (60 m depth) corals.

2010- Yael Dagan (F. Ben-Ami)
The evolution and maintenance of sexual reproduction in the Melanoides-trematodes model host-parasite system.

2010- Gal Eyal (Y. Loya)
Settlement and recruitment of scleractinian corals along a depth gradient (0-60 m).

2010- Lee Eyal (Y. Loya)
Legislation of Marine Protected Areas in Israel: Mediterranean and Red Sea Reproductive strategies of deep reef (60 m depth) corals.

2010- Dana Genosar (T. Dayan)
To be determined.

2010- Ariel Kedem (T. Dayan with N. Kronfeld-Schor)
To be determined.

2010- Yael Mandelberg (Y. Benayahu)
Collagen producing octocorals of the genus Sarcophyton.

2010- Shimon O. (M. Ilan)
Biotechnlogy of *Chondrosia reniformis* and *Chondrilla nucula*.

2010- Zohar Yanai (T. Dayan with A. Gasith)
To be determined.

2010- Yaniv M. (M. Ilan)
Ecology of *Chondrosia reniformis* and *Chondrilla nucula*.

Post-doctoral fellows

2009- Claudia Drees

2009- Merav Vonshak

2009- Hadass Steinitz

2010- Ofir Levy

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. Guldberg).

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).

2006- 2010 Sponge (Metazoa: Porifera) phylogenetics using novel molecular markers. The Israel Science Foundation (NIS 270,000 per year). (D. Huchon).

2006-2010 Israel Science Foundation (M. Ilan, S. Carmeli and O. Yarden).

2006-2010 Israel Science Foundation research grant. Animal bones, ancient populations, and site formation processes: A test case of Dor, a coastal Levanite site (3 year grant; 225,000 NIS [ca. $50,000] per annum) (T. Dayan and G. Bar-Oz C.I.)

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).

2008-2009 Workshop grant, NERC Centre for Population Biology, (S. Meiri); 30,000£

2008-2009 Yeshaya Horowitz Association. Research Project: A novel source of scaffolding material for tissue engineering ($100,000) (Benayahu Y.).

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 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.).

2008-2011 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- SYNTHESIS grant, Museum für Naturkunde, Berlin (S. Meiri with S. Markman)

2009- SYNTHESIS grant, University of Copenhagen (S. Meiri with S. Markman); 4000€

2009/10 A survey of fish communities along a depth gradient off the Israeli Mediterranean shore. Israel Taxonomy Initiative (Goren, M.).

2009/10 A survey of of the Entiminae (Curculionidae) of Israel. Israel Taxonomy Initiative (Goren, M.).

2009-2010 ITI - Israel Taxonomy Initiative, Revision of Israeli calcareous sponges (Porifera, Calcarea) using molecular and morphological characters, $ 6,850 (Huchon D.).

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)

2009-2011 Grantor IITA; topic Novel Strategies for Managing Whiteflies on Cassava; duration: 2 years, 25.000$ (D. Gerling).

2009-2012 EU project (Technology Enchanced Learning), DynaLearn: Engaging and informed tools for learning conceptual system knowledge (Benayahu Y. with collaborators EURO 3,193,495.00).

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 Hydrodynamics of contact of larvae with substrate (Benayahu Y. with G. Zilman, Faculty of Engineering, TAU, NIS 594,000)

2009-2013 Israel Science Foundation, with M. Kam ($240,000) (E. Geffen).

2009-2013 United States-Israel Binational Science Foundation (BSF). Research project: Phylogeny of the octocorals (phylum Cnidaria), family Xeniidae: Application of molecular and morphology based approaches (Benayahu Y. with C. McFadden, Harvey Mudd

College, Claremont, CA and R. Toonen, University of Hawaii, $ 160,000).

2010 Grantor FAO Eritrea Topic: Field collection, rearing of the biological control agent: insect *Cales noacki* in support of the international efforts for biological control. Duration 6 months. 5000$ (D. Gerling).

2010 -2012 Examining the impact of fisheries management on the Lake Kinneret ecosystem by developing and applying a fisheries based model. (Goren, M with G. Gal - Israel Oceanographic and Limnological Research institute). - Israel Water Authority.

2010- John S. Latsis Public Benefit Foundation grant, (S. Meiri with Panayiotis Pafilis and Efstratios Valakos); 8000€

2010-2012 ODEMM – Options for Ecosystem-based Marine Management - EU7 (Goren, M.).

2010-2013 European FP7 Cooperation Work Programme: Food, Agriculture and Fisheries, and Biotechnology (Brussels, Belgium) (Ilan, M.).

2010-2013 ISF - Israel Science Foundation, Analysis of four nuclear and mitochondrial myxozoan genomes, NIS 234,000 (D. Huchon (P.I.).

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 (I. Hershkovitz).

1981- Israel Society for Anatomical Sciences (I.Hershkovitz).

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 (D.E. Bar-Yosef Mayer,).

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 (I. Hershkovitz).

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 (D.E. Bar-Yosef Mayer,).

1991- Member of the Society of Bead Researchers (D.E. Bar-Yosef Mayer,).

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 (I. Hershkovitz).

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 (I. Hershkovitz).

1994- Member of the American Association of Anatomists (L. Fishelson).

1994- Member of the Corriculum Committe (Y. Rak)

1994- Research Associate of the Oceanographic Research Institute, Durban, South Africa (Y. Benayahu).

1995- American Associations of Physical Anthropology (I. Hershkovitz).

1995- Human Biology Association (I. Hershkovitz).

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 (D.E. Bar-Yosef Mayer,).

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 progremme 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 Expementalis 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 (D.E. Bar-Yosef Mayer,).

1999- Member of the Society for Molecular Biology and Evolution (D. Huchon).

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 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).

1999-2009 Member of the Board of Directors of the Inter-university Institute (IUI), Elat (Y. Benayahu).

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 (D.E. Bar-Yosef Mayer,).

2000- Member of the Israel Malacological Society (D.E. Bar-Yosef Mayer,).

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).

2000- Member of the Zoological Society of Israel (S. Meiri).

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 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).

2001-2009 Member of the Chair of the Israel MAB (Man and Biosphere) UNESCO Committee (T. Dayan).

2001-2009 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 Sociéta 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 (S. Zonstein,).

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 (D.E. Bar-Yosef Mayer,).

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 American Society of Naturalists (S. Meiri).

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 American Society of Mammalogists (S. Meiri).

2004- Member of the Central Nomination Committee of Tel Aviv University (Y. Loya).

2004- Member of the Ecological Society of America (S. Meiri).

2004- Training 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 International Biogeography Society (S. Meiri).

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 American Society of Ichthyologists and Herpetologists (S. Meiri).

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 Society for the Study of Evolution (S. Meiri).

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 (D.E. Bar-Yosef Mayer,).

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 Societas Europaea Herpetologica (S. Meiri).

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- Associated editor for Mammal Review (S. Meiri).

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- Associated editor for Journal of Animal Ecology (S. Meiri).

2008- Elected to the Israel Academy of Sciences (Rak, Y.).

2008- Member of the Editorial Board of the Open Ecology Journal (T. Dayan).

2008- Reviewer for Biological Invasions (Vonshak, M).

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- Representative of TAU Senate in TAU Board of Governors (Y. Benayahu).

2009- Curator of Tetrapoda collections, Tel Aviv University, Natural History Museum, (S. Meiri).

2009- Editor-in-Chief, Mammalian Biology (T. Dayan).

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 British Ecological Society (S. Meiri).

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).

2009- Representative of TAU Senate in University-Central Committee (Y. Benayahu).

2010- Associated editor for Asian Herpetology Research (S. Meiri).

2010- Chair of the Incumbent- The Israel Cohen in Environmental Zoology (Y. Benayahu).

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
2009 Oct	S. Vaisman	Ministry of Agriculture	Israel	Molluscs
2009 Oct	N. Ben-Eliahu	Hebrew University	Israel	Molluscs
2009 Oct	A. Barash	Tel Aviv University	Israel	Mammals
2009 Oct	E. Been	Tel Aviv University	Israel	Mammals
2009 Nov	S. Vaisman	Ministry of Agriculture	Israel	Molluscs
2009 Nov	Y.L. Werner	Hebrew University	Israel	Reptilia
2009 Nov	C. O'Tool	Oxford University	UK	Entomology
2009 Nov	P. Zumstein	Institute of Zoology, Leuphana University, Lueneburg	Germany	Entomology
2009 Nov	G. Sabatinelli	Amman	Jordan	Entomology
2009 Nov	T. Assmann	Institute of Zoology, Leuphana University, Lueneburg	Germany	Entomology
2009 Dec	S. Vaisman	Ministry of Agriculture	Israel	Molluscs
2009 Dec	N. Ben-Eliahu	Hebrew University	Israel	Molluscs
2009 Dec	H.-Y. Han	Department of Life Science, Yonsei University, Maeji-ri Wonju-si	South Korea	Entomology

Date	Name	Institute	Country	Taxonomic group
2010 Jan	Z. Brosh	Israeli Air Force	Israel	Birds
2010 Jan	S. Vaisman	Ministry of Agriculture	Israel	Molluscs
2010 Jan	N. Ben-Eliahu	Hebrew University	Israel	Molluscs
2010 Jan	E.L. Heiman	IMS	Israel	Molluscs
2010 Feb	A. Barash	Tel Aviv University	Israel	Mammals
2010 Feb	E. Been	Tel Aviv University	Israel	Mammals
2010 Feb	S. Vaisman	Ministry of Agriculture	Israel	Molluscs
2010 Feb	T. Nizan	University of Haifa	Israel	Molluscs
2010 Feb	S. Raz	University of Haifa	Israel	Molluscs
2010 Feb	W. Starke		Germany	Entomology
2010 Feb	A. Assmann	Institute of Zoology, Leuphana University, Lueneburg	Germany	Entomology
2010 Mar	M. Cohen-Levi	Tel Aviv University	Israel	Birds
2010 Mar	S. Vaisman	Ministry of Agriculture	Israel	Molluscs
2010 Mar	E. Sheffer	IOLR - Haifa	Israel	Molluscs
2010 Mar	Z. Efremova	Ulyanovsk State Pedagogical University	Russia	Entomology
2010 Apr	S. Vaisman	Ministry of Agriculture	Israel	Molluscs
2010 Apr	M. Staner	Ministry of Agriculture	Israel	Fishes
2010 Apr	S. Ziani	Meldola	Italy	Entomology
2010 Apr	H. Schnee	Markkleeberg	Germany	Entomology
2010 Apr	B. Striganova	Institute of Animal Morphology & Ecology, Moscow	Russia	Entomology
2010 Apr	T. Triseleva	Institute of Animal Morphology & Ecology, Moscow	Russia	Entomology
2010 Apr	M. Kirshenbaum	Channel 10, Israeli TV	Israel	Birds
2010 Apr	H. Christie		Israel	Birds
2010 Apr	D. Shtein	Tel Aviv University	Israel	Mammals

Date	Name	Institute	Country	Taxonomic group
2010 May	M. Aviram	University of Haifa	Israel	Mammals
2010 May	E. Haddad	Israel Nature and Parks Authority	Israel	Mammals
2010 May	D. Burckhardt	Naturhistorisches Museum Augustinergasse 2 CH-4001 Basel	Switzerland	Entomology
2010 May	A. Ben-Dov	University of Haifa	Israel	Birds
2010 May	S. Raz	University of Haifa	Israel	Molluscs
2010 May	S. Vaisman	Ministry of Agriculture	Israel	Molluscs
2010 May	D. Korngreen	Geological Survey of Israel	Israel	Fossil
2010 May	S. Almecija	University of Autonoma, Barcelona	Spain	Athropology
2010 May- Jun	V. Springer	Texas A&M University	USA	Athropology
2010 Jun	E. Haddad	Ben-Gurion University of the Negev, Eilat Campus	Israel	Mammals
2010 Jun	M. Bahagan	Israel Nature and Parks Authority	Israel	Mammals
2010 Jun	M. Aviram	University of Haifa	Israel	Mammals
2010 Jun	S. Vaisman	Ministry of Agriculture	Israel	Molluscs
2010 Jun	S. Raz	University of Haifa	Israel	Molluscs
2010 Jun	D. Radovcic	Michigan University	USA	Athropology
2010 July	H. Bohn	Zoologische Staatssammlung Muenchen	Germany	Entomology
2010 July	O. Givoli	Lugi Channel, Israeli TV	Israel	Mammals, Birds
2010 July	M. Aviram	University of Haifa	Israel	Mammals
2010 July	S. Vaisman	Ministry of Agriculture	Israel	Molluscs
2010 July	A. Dotan		Israel	Molluscs
2010 Aug	M. Aviram	University of Haifa	Israel	Mammals
2010 Aug	S. Vaisman	Ministry of Agriculture	Israel	Molluscs
2010 Aug	V. Eshed		Israel	Athropology

Date	Name	Institute	Country	Taxonomic group
2010 Aug	C. Brown	University of California	USA	Athropology
2010 Sep	A. Vujic	University of Novi Sad	Serbia	Entomology
2010 Sep	D. Krasic	University of Novi Sad	Serbia	Entomology
2010 Sep	S. Veselic	University of Novi Sad	Serbia	Entomology
2010 Sep	U. Roll	Tel Aviv University	Israel	Mammals
2010 Sep	D. Korngreen	Geological Survey of Israel	Israel	Fossil
2010 Sep	S. Vaisman	Ministry of Agriculture	Israel	Molluscs
2010 Sep	E. Azzuro	The Natural Science Museum of Barcelona,	Spain	Fishes

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
Faunistics of birds and Amphibian (academic course)	Y. Yom-Tov and E. Geffen	Tel Aviv University	Birds, Amphibia, Taxidermist and Museum Class
Insects the Flagship of Biodiversity (academic course)	A. Freidberg and D. Simon	Tel Aviv University	Entomology
Macroecology (academic course)	S. Meiri	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

Purpose	Name	Institute	Taxonomic group
The Invertebrates: Comparative Functional Biology (academic course)	M. Ilan, Y. Benayahu and A. Abelson	Tel Aviv University	Invertebrates, Entomology and Histology
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
Shells in Archaeology (academic course)	D.E. 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. Sepliarsky	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	A. Gasith	Tel Aviv University	Entomology and Invertebrates
Taxonomy Identification	E. Groner	Ben-Gurion University of the Negev	Entomology
Taxonomy Identification	E. van dan Brink	Israel Antiquity Authority	Molluscs
Taxonomy Identification	A. Gasith	Tel Aviv University	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	Campus Teva	Tel Aviv University	Molluscs

Purpose	Name	Institute	Taxonomic group
Taxonomy Identification	North Distric	Israel Nature and Parks Authority	Fishes
Taxonomy Identification	A. Deidun	Physical Oceanography Unit, University of Malta, Malta	Fishes
Taxidermist services	Y. Leshem	Tel Aviv University	Birds and Taxidermist
Taxidermist services	D. Eilam	Tel Aviv University	Mammals and Taxidermist
Taxidermist services	Nature Campus	Tel Aviv University	Mammals, Birds and Taxidermist
Taxidermist services		Safari, The Zoological Center Tel Aviv - Ramat Gan	Mammals and Taxidermist
DNA Shipment	P. de Knijff	Forensic Laboratory for DNA Rsearch ,Leiden University Medical Center, The Netherlands	Mammals
DNA Shipment	G. Csorba	Hungarian Natural History Museum, Budapest, Hungary	Mammals
DNA Shipment	J. Schmitz	Institute of Experimental Pathology, University of Muenster, Germany	Mammals
DNA Shipment	F.E. Zachos	Zoological Institute, Christian Albrechts University Kiel, Germany	Mammals
DNA Shipment	E. Geffen	Tel Aviv University	Mammals
DNA Shipment	Y. Yom-Tov	Tel Aviv University	Mammals
Electronic Data	A. Uzan	Israel Nature and Parks Authority	Molluscs
Electronic Data	Y.L. Werner	Hebrew University	Reptile

Purpose	Name	Institute	Taxonomic group
Electronic Data	S. Raz	University of Haifa	Molluscs
Electronic Data	E. Hadad	Israel Nature and Parks Authority	Mammals
Electronic Data	S. Pekarski	Hebrew University	Birds
Electronic Data	E. Boakes	Imperial College of London, UK	Birds
Electronic Data	Nature Campus	Tel Aviv University	All colections
Shipment of Specimens		Safari, The Zoological Center Tel Aviv - Ramat Gan	Mammals, Birds and Taxidermist
Shipment of Specimens	The Film and Television Department	The Natural Science Museum of Barcelona, Spain	Reptilia
Shipment of Specimens	Y.L. Werner	Hebrew University	Reptilia
Shipment of Specimens	E. Azzuro	The Natural Science Museum of Barcelona, Spain	Fishes
Shipment of Specimens	P.C. Heemstra	South African Institute for Aquatic Biodiversity, South African	Fishes
Shipment of Specimens	F. Krupp	Senckenberg Museum, Germany	Fishes
Shipment of Specimens	J. Freyhof	Leibniz Institute of Freshwater Ecology and Inland Fisheries, Berlin, Germany	Fishes
Shipment of Specimens	B. Yokes	Halic Universitesi, Molekuler Biyoloji ve Genetik Bolumu, Istanbul , Turkey	Fishes
Shipment of Specimens	P. Keeling	Canadian Institute for Advanced Research, Botany Department, University of British Columbia, Canada	Invertebrates: Soft Corals

Purpose	Name	Institute	Taxonomic group
Shipment of Specimens	K. Lim	Raffles Museum of Biodiversity Research Department of Biological Sciences National University of Singapore, Singapore	Invertebrates: Soft Corals
Shipment of Specimens	C.S. McFadden	Department of Biology Harvey Mudd College Claremont, CA, USA	Invertebrates: Soft Corals
Shipment of Specimens	P. Keeling	Canadian Institute for Advanced Research, Botany Department, University of British Columbia, Canada	Invertebrates: Soft Corals
Shipment of Specimens	R. Toonen	Assistant Research Professor, University of Hawaii at Manoa, School of Ocean and Earth Science and Technology, The Hawai'i Institute of Marine Biology Coconut Island, USA	Invertebrates: Soft Corals
Shipment of Specimens	L. van Ofwegen	National Museum of Natural History , Leiden The Netherlands	Invertebrates: Soft Corals
Shipment of Specimens	M. TURKAY	Forschungsinstitut Senckenberg Senckenbrganlage 25, Germany	Invertebrates: Soft Corals
Shipment of Specimens	P.J. Scembri	Department of Biology Faculty of Science, Univeristy of Malta, Malta	Invertebrates: Crustaceans
Shipment of Specimens	C. O'Tool	Oxford UK	Entomology
Shipment of Specimens	M. De Meyer	Royal Museum for Central Africa, Tervuren, Belgium	Entomology

Purpose	Name	Institute	Taxonomic group
Shipment of Specimens	M. Kuhlmann	The Natural History Museum, London UK	Entomology
Shipment of Specimens	M. Marini	Universita di Bologna, Bologna, Italy	Entomology
Shipment of Specimens	R. Caldara	Milano, Italy	Entomology
Shipment of Specimens	R. Jordana	University of Navarra, Pamplona Spain	Entomology
Shipment of Specimens	B. Korotyaev	Zoological Institute RAS, St. Petersburg, Russia	Entomology
Shipment of Specimens	G. Sabatinelli	Amman, Jordan	Entomology
Shipment of Specimens	P. Moulet	Museum Requien, Avignon France	Entomology
Shipment of Specimens	S. Sinev	Zoological Institution RAN, St. Petersburg, Russia	Entomology
Shipment of Specimens	P. Bialooki	Sopot, Poland	Entomology
Shipment of Specimens	H.-Y. Han	University, Wonju-si, South Korea	Entomology
Shipment of Specimens	C. Xiaolin	Institute of Zoology, Chinese Academy of Sciences, Beijing, China	Entomology
Shipment of Specimens	H. Beck	Naturwissenschaftliche Samlungen Bayerns, München, Germany	Entomology
Shipment of Specimens	G.A. Evans	USDA, Beltsville, MD, USA	Entomology
Shipment of Specimens	J. Papp	Natural History Museum, Budapest, Hungary	Entomology
Shipment of Specimens	K. Horstmann	Lehrstuhl Zoologie III, Würzburg, Germany	Entomology
Shipment of Specimens	P. Stys	Charles University, Praha, Czech Republic	Entomology

Purpose	Name	Institute	Taxonomic group
Shipment of Specimens	R. Zahiri	University of Turku, Finland	Entomology
Shipment of Specimens	J. Růžička	University of Life Sciences, Praha, Czech Republic	Entomology
Shipment of Specimens	D. Gibbs	Bristol, UK	Entomology
Shipment of Specimens	H. Schnee	Markkleeberg, Germany	Entomology
Shipment of Specimens	M. Nabozhenko	Southern Scientific Centre, Russian Academy of Sciences, Rostov-on-Don, Russia	Entomology
Shipment of Specimens	C. Rollard	Muséum national d'Histoire naturelle, Paris, France	Entomology
Shipment of Specimens	Y.M. Marusik	Museum, University of Turku, Finland	Entomology
Shipment of Specimens	J. Pelletier	Monnaie, France	Entomology
Shipment of Specimens	P.J. Schwarz	University of California, Irvine, CA, USA	Entomology
Shipment of Specimens	Z. Efremova	Ulyanovsk State Pedagogical University, Russia	Entomology
Shipment of Specimens	T. Assmann	University of Lueneburg, Germany	Entomology
Shipment of Specimens	N. Dorchin	Museum Koenig, Bonn, Germany	Entomology
Shipment of Specimens	M.V.L. Barclay	Natural History Museum, London, UK	Entomology
Shipment of Specimens	M. Morris	Natural History Museum, London, UK	Entomology
Shipment of Specimens	H. Bohn	Zoologische Staatssammlung Muenchen, Germany	Entomology

Purpose	Name	Institute	Taxonomic group
Shipment of Specimens	C. Giusto	Museo Civico di Storia Naturale "Giacomo Doria", Genova, Italy	Entomology
Shipment of Specimens	M. Meregalli	University of Torino, Italy	Entomology
Shipment of Specimens	S. Ryder	Natural History Museum, London, UK	Entomology
Shipment of Specimens	J. Beccaloni	Natural History Museum, London, UK	Entomology
Shipment of Specimens	A. Dorchin	Institute of Evolution, Haifa University, Israel	Entomology
Shipment of Specimens	J. M. Carpenter	American Museum of Natural History, New York, NY, USA	Entomology
Shipment of Specimens	M.L. Chamorro	National Museum of Natural History, Smithsonian Institution, Washington, USA	Entomology
Shipment of Specimens	I. Brake	The Natural History Museum, London, UK	Entomology
Shipment of Specimens	A.Z. Lehrer	Israel	Entomology
Shipment of Specimens	M. Vonshak	Stanford University CA, USA	Entomology
Shipment of Specimens	P. Bialooki	Sopot, Poland	Entomology
Shipment of Specimens	O. Gorbunov	Institute of Animal Morphology & Ecology, Moscow, Russia	Entomology
Shipment of Specimens	O. Merkl	Hungarian Natural History Museum, Budapest, Hungary	Entomology
Shipment of Specimens	S.M. Blank	Senckenberg Deutsches Entomologisches Institut Müncheberg Germany	Entomology

Purpose	Name	Institute	Taxonomic group
Shipment of Specimens	Y. Nazarenko	Schmalhausen Institute of Zoology, Kiev, Ukraine	Entomology
Shipment of Specimens	C. Taylor	The Natural History Museum, London, UK	Entomology
Shipment of Specimens	K. Horstmann	Lehrstuhl Zoologie III, Würzburg , Germany	Entomology
Shipment of Specimens	M. Zerova	The I. I. Schmalhausen Institute of Zoology, Kiev, Ukraine	Entomology
Shipment of Specimens	A. Kotenko	The I. I. Schmalhausen Institute of Zoology, Kiev, Ukraine	Entomology
Shipment of Specimens	D. Kasparyan	Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia	Entomology
Shipment of Specimens	E.M. Zhukovets	Minsk, Belarus	Entomology
Shipment of Specimens	A. Vujic	University of Novi Sad, Serbia	Entomology