

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

**Faculty of Medicine – Department of Anatomy and Anthropology**

## **The National Collections of Natural History**

**Tel Aviv University**

### **2005/2006 Scientific Report**

**Submitted to the Steering Committee for the National  
Collections of Natural History, the Israel Academy of  
Sciences and Humanities**



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## **Introduction**

The academic year 2005/2006 was the second in which the natural history collections at Tel Aviv University enjoyed VATAT support. The present report outlines our academic activities during this period, in brief.

Our scientists are still extremely active, more so than ever in collecting, research and teaching. Our new immigrant scientists continue their work, and a new one, a mycologist from Argentina, joined our ranks this past year. Thus many thousands of specimens are collected annually, and each year we continue to absorb whole collections that were donated to us as the national repository.

Our collections are still very dependent on VATAT support. Moreover, the work of the Steering Committee is unfortunately not yet done. If the record and research of nature in Israel are to survive, we will still need to put thought, planning, and hard work into promoting this issue.

Our report focuses only on academic achievements made with the use of the natural history collections at TAU during the academic year 2005/2006. This use ranges from biogeographic collections-based research, to use as comparative materials in zooarcheological research. In some studies it was the taxidermist who provided support for scientific research. In many others the chief contribution was taxonomic identifications carried out by the curators and collections managers, who regularly support much basic and applied research. Loss of this crucial expertise in Israel has been delayed thanks to the Aliya; if we do not use this delay to develop a new generation of taxonomists, systematists, and biogeographers, we will lose our knowledge of Israeli fauna and flora.

Naturally, the focus of the report is on activities carried out within Tel Aviv University. Many colleagues from other universities within and without Israel use the collections for research and teaching, but we did not necessarily manage to receive all relevant materials from all of them in time for this report.

## **Progress at the natural history collections**

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

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

## **Collections news – A word from our collection managers**

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

Over the last three years, the wet museum has suffered from an outbreak of mold. Most of the jars, shelves, covers and walls became covered with mold. This year we finally succeeded in solving the problem and have invested an enormous amount of work in repairing the damage. We have to individually clean every jar and shelf of the collections and replace all the plastic covers. This work is hard and tiring but necessary, and our first priority in order to put an end to the problem once and for all and to save the collections from irreparable damage.

During the academic year 2005/2006 we received and incorporated numerous specimens of various taxonomic groups collected from all over the world by the collection curators and staff, students, rangers from the Israel Nature and Parks Authority, and others. As we reported previously, the reptile collection is now active and almost 200 new records were added this past year. Most of these were collected by graduate students during their field work. A new species of snake, *Micrelaps tchernovi*, was determined by Prof. Yehudah L. Werner, from The Hebrew University, Jerusalem, based also on the collection material.

Much work was done this year in organizing the dry vertebrate collection in the new specimen cabinets purchased with the support of VATAT funds. Some 150 new specimens have been preserved and added to the mammal collection and about 30 to the bird collection. These include specimens collected by rangers from the Israel Nature and Parks Authority.

The amphibian collection is now entirely digitized and, with the help of Dr. Sarig Gafny, we have even succeeded in taxonomically identifying the larvae. About 400 new specimens have been added to the amphibian collection.

During this year we also focused on another, previously inactive collection. The echinodermata collection is now in the process of being digitized, cleaned, replenished or having the preservation liquids changed and transferred samples to better storage containers and relabeled. This collection contains thousands of specimens collected mostly from the Mediterranean and the Red Sea since 1945. So far, almost 1500 specimens have been processed and we are hoping that by next year we will complete our update of the entire collection.

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

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. The students of Prof. Avital Gasith are in the process of merging their collections, consisting of freshwater invertebrates caught in various rivers in Israel, with 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 help avoid mistakes.

Students of Prof. Tamar Dayan have transferred a very large collection to the museum, containing thousands of specimens, belonging to mammals, amphibians, reptiles, and arthropods caught in pitfall traps. The vertebrates among them have been preserved, identified, digitized, and labeled; the invertebrates have been preserved and sorted for future identification.

The archaeozoology collection was in a dreadful condition. It was held in two leaking containers and suffered from damp, rats and other pests. This collection contains numerous bones from some of the most important archeological digs in Israel. The collection has been transferred to two new containers and all the boxes have been replaced.

Yuri Katz, the curator of the paleontology collection, reports on a unique work carried out on the bottom sediment in the Gulf of Aqaba (st.RS-104, 220 m depth). More than 50,000 microfossil specimens have been obtained. From this new collection about 300 species of invertebrate fossils (Sarcodina, Porifera, Coelenterata, Vermes, Brachiopoda, Bryozoa, Echinodermata and Arthropoda) were determined, 224 of them attributed to Pacific foraminifers.

The routine work on the insect collection includes absorption and integration of donated collections; labeling and sorting of specimens brought in from collecting trips; identification and research of select groups (including over 40 shipments scientific specimens to specialists, mostly overseas, during 2006); 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 the digitization of this collection. This year we focused on the Parasitica and Lygaeidae (2000 specimens). New insects caught are immediately given a catalog number and digitized. During the present year, about 11,000 new insects were added to the collection. From his collecting trip, Prof. Dan Gerling collected groups of African and Brazilian whiteflies, which are now being identified. Those already known are: *Aleurotrachelus attratus*

and *Paraleyrodes bondari*. Andy Lerher described the Bengaliidae family as a new family for science. Vladimir Chikatunov performed an enormous identification work on a beetle collection from pitfall traps and malaise traps in various projects and areas (South Arava and South Jordan, Mt. Carmel, Nizzanim, Adullam, Avedat and Lehavim, Coastal Plain, Nahal Shaharut, Jordan Valley and others). There is a close working relationship between the "Plant Protection and Inspection Services" (PPIS, Ministry of Agriculture) and the insect and arthropoda staff. As in previous years, the collection staff performed identification work and guided the PPIS members.

Sergei Zonstein, curator of the arthropoda collection, reports on his work. As in the previous year, field work included about 50 days in the field in various regions of Israel, primarily in the desert (Hazeva and other parts of the Arava and the Rift Valley, as well as the 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 for the Mollusc Collection 2005-2006**

#### **Henk K. Mienis**

During the past Academic year we continued the revision of the dry mollusc material in the various extra-university collections in order to unite them in one large, systematically arranged general collection. The identifications were again carried out by Henk Mienis, while Revital Ben-David Zaslow took care of entering all the relevant data of these samples in the computer. During the Revital's maternity leave, we received great help from Larissa Lerner. Chemda Zigman divided her part of the work equally over the wet and dry collection. At the moment 34,000 samples in the mollusk collection have been completely digitized.

### **New acquisitions**

New material continued to arrive in the collection. Of special importance was the arrival of the private shell collection of the late Kalman Illes Hertz (see elsewhere in this report).

During the academic year 2005/2006 new material has been received from the following persons:

Name	Brief description of the material
U. Bar-Zeev	Terrestrial mollusks from Israel
O. Caro	Various marine and freshwater mollusks world wide
B. Galil	Marine mollusks dredged in the Eastern Mediterranean
A. Glazer	Marine mollusks from cooling channels of Power Stations near Haifa and Ashqelon
E.L. Heiman	Cypraeidae type material
J. Inchaustegui	Marine mollusks from the fish market in Houston, Texas, U.S.A.
D. Mienis	Terrestrial snails from Nahal Oren and Horvat Shallala
H.K. Mienis	Terrestrial and freshwater snails from Israel and the Netherlands; Miscellaneous world wide material ex-collection Mienis
Sh. Moran	Terrestrial and freshwater snails intercepted by inspectors of the Plant Protection and Inspection Services, Ministry of Agriculture
R. Ortal	Marine mollusks from Aquaculture, Elat
Y. Sharon	Marine mollusks from the Power Station Hadera
E. Sheffer	Marine mollusks from the Mediterranean coast of Israel
Y. Sinai	Terrestrial snails from Israel
B.S. Singer	Terrestrial snails from former Yugoslavia
Y. Weiss	Kalman Illes Hertz Collection (see elsewhere in this report)

### **Type material**

Several samples consisting of type-material of taxa described by J.J. van Aartsen & J. Goud (Bivalvia: Diplodonta) and E.L. Heiman (Gastropoda: Cypraeidae) were received for permanent storage in the collection.

### **Material sent on loan**

All the material belonging to the marine gastropod family Triviidae has been sent on loan to D. Fehse (Germany) and J. Grego (Slovakia); these specialist are revising this family on a world wide base.

The Cypraeidae in the collection are regularly studied by Dr. E.L. Heiman (Rehovot) and data are used in his numerous publications.

### **Mollusc conservation**

The Pagoda snail *Xerocrassa davidiana picardi* (F. Haas, 1933) is an endemic subspecies confined in its distribution to several kurkar outcrops (a local sandstone formation) in the Ramat Gan and Givatayim. Due to ever increasing urbanization of the area only one population still exists on the so-called "Givat HaAntennot" in Givatayim.

In the winter of 2005 surveyors started working on the hill and after questioning it appeared that there are plans to turn the hill into a building plot.

In order to save this tiny snail, named after the well-known Israeli geologist Prof. L. Picard, from extinction, some 250 living snails were collected and released on a kurkar outcrop in the Botanical Garden of the Tel Aviv University.

During rainy days in the winter of 2006/2007 we will evaluate the current state of that artificial colony. If necessary we will transfer additional snails to the botanical garden.

Participants in this project are: Dr. M. Sternberg on behalf of the Botanical Garden of the Tel Aviv University, Dr. R. Ortal, Dr. Y. Malihi and Mr. O.

Harari, all on behalf of the Israel Nature Reserves and National Parks Authority, Mr. U. Bar Zeev (associated with the Israel Malacological Society) and Mr. H.K. Mienis (as initiator of this project on behalf of the National Collections of Natural History, Tel Aviv University).

### **Progress Report for the Fungi Collection 2006**

#### **Project: Biodiversity and conservation of Higher Basidiomycetes in Israel**

**Silvia Blumenfeld**

#### **Study of biodiversity of higher Basidiomycetes of Israel**

In Israel, the situation of taxonomic and ecological studies of higher fungi is rather critical. Since publications of Binyamini (1975, 1984, 1987, 1993), there are no records of this type of studies of such groups. Based on the Fungal Herbarium of Tel Aviv University, which has 3762 specimens, collection that was developed by Prof. Nissan Binyamini during the last 40 years, I have made a critical revision of the two main Orders of Higher Fungi: Agaricales and Aphyllophorales. All the specimens were revised, and we made the corrections, when appropriate, for example changing some classification features. We started with a screening of the toxic mushrooms and their mycotoxin groups. From the TAU database of mushrooms, we found 31 species of toxic mushrooms, 19 of them are toxic, 9 are suspicious to be toxic and 3 are mortal. From the database we also summarized the date of collection of all the records.

#### **Fungal culture collection**

The utilization and study of mushrooms involves the use of living cultures and the development of regional gene banks. Mushroom collections that maintain strains in pure culture, stable and viable conditions can contribute valuable knowledge in areas such taxonomy, management and sustainable use of mushrooms. Proper conservation and management of germplasm require knowledge not only of the mushrooms themselves, but also of their growth and

preservation techniques, properties and potential applications, as well as the provision of an exchange service with other academic units wide world. In the last years we see a heightened awareness of the value of mushroom culture collections both in the conservation of genetic resources and biodiversity, and further, in providing biological certified material for research projects and industries (Labarere, 2000). The TAUFCC will provide to our researchers with a reliable place to deposit the voucher specimens, since in general, Israeli scientists usually deposit, even type native species, in international collections outside Israel (Steiman et al., 2000). I have continued to add new strains of filamentous fungi of Israel and other countries, collection that I have started in 2003 in Israel. At the present we have records of 51 species and 30 genera.

We affiliated the collection to the World Federation of Culture Collections (WFCC), and to the World Directory of Collections of Culture of Microorganisms (WDCM), since there is no Israeli collection of higher fungi in such international institution, which holds the world database of microorganisms. All the fungal collections associated to the fungal herbaria at the universities are members of the WFCC. Up to now, in Israel there were only 2 affiliated collections: WDCM 295, collection of bacteria from the Central Lab. of the Ministry of Health in Jerusalem, and WDCM 144, Center Rhizobium Collection of the Volcani Institute. The acronym of our collection is TAUFCC (Tel Aviv University Fungal Culture Collection) and its registration number is 899 (WDCM, 2006. [www.wdcm.org/CCINFO/CCINFO.xml?899](http://www.wdcm.org/CCINFO/CCINFO.xml?899)).

### **Chemotaxonomy of wood- rotting fungi**

There is a very interesting field in chemotaxonomy of wood-rotting fungi, according to our patent (Blumenfeld and CONICET, 1998). We made a screening of the enzymes of the wood-rotting fungi. Cultures are deposited as voucher specimens at the Fungal Culture Collection of Tel Aviv University (TAUFCC, World Data Centre for Microorganisms, 2006). According to the

TAU fungal database (3762 specimens) there are records of 112 species belonging to 47 genera of wood-rotting fungi. Enzymes that breakdown lignin are by far, one of the most important chemotaxonomical application of such fungi.

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## **Collecting trips and expeditions**

A dynamic archive, our natural history collections grow annually through donations, research projects, and collecting trips and expeditions. Many research projects add numerous specimens to our collections; other collections benefit from focused collecting trips. Here we report some of the new collecting activities of our scientists.

### **Collecting trips of the Entomology**

#### **Amnon Freidberg**

#### **Cyprus**

In spring 2006 my wife and I spent five days in the Greek part of Cyprus mostly collecting insects. The official excuse for this trip was to collect specimens of a new species of *Dorycera* (Diptera: Ulidiidae), a genus of picture-winged flies that was recently revised by Hanan Ackerman, a M.Sc. student of mine. We had specimens from the island, mostly collected in April, that we borrowed from European collections and we wanted to collect additional specimens before we describe this species as new. So we spent about three days at the central southern part of the island, especially up north to the peak of Mt. Olympus (nearly 2000m) of the Troodos Mountains, and some distance north of the peak, and about a day at the north-western corner of the island at or near sea level. The landscape and vegetation reminded us much of Israel, and many species are the same. However, Cyprus is noted for its high rate of endemism, and we did collect several species that apparently are endemic. Of our focal species we only collected one female, and we assume that we came a little too late in the season. Due to previous contacts of Leonid Friedman, we have established good relationships with two amateur naturalists, Mr. Christodolus Makris and Dr. Yannis Christofides, who were very helpful during the visit, but were also mobilized to help collect picture-winged and related flies for us. Altogether, about 1500 pinned specimens were brought back.

## **Orient**

In conjunction with the 6th Congress of Dipterology, that took place in Fukuoka, Japan, my wife and I also made collecting trips to the Philippines and southern India. While I was interested in collecting all flies (Diptera), my specific objectives were focused on fruit flies belonging to three groups: bamboo flies (tribe Gastrozonini), Acanthaceae-feeding flies (tribe Tephrellini), and Asteraceae-feeding flies of the tribe Schistopterini, all groups on which I have on-going research. I did get representatives of all three groups, although not always in large numbers. Gastrozonini and other bamboo flies are best collected by baits. The baits comprise of cut bamboo shoots, preferably of the growing tips. You cut a large shoot and slice it into smaller pieces both transversely and longitudinally, leaving it in different positions at a more or less exposed place for some time. Flies are attracted usually within an hour or so, although sometimes within minutes, and keep flying in the whole day. These flies are collected, sometimes with difficulties, using a sweeping net. In the Philippines, only three species were collected, including a giant species of *Enicoptera*, a genus especially characteristic of that country. I collected a good series, but also observed them during mating and oviposition. In India, I collected about ten species, some on a small, shrubby bamboo, but mostly on a giant bamboo (*Dendrocalamus strictus*), that attains 15-20 m in height. In India, I also collected a species of *Sundaresta* that breeds in the pods of *Strobilanthes* (Acanthaceae), a showy shrub (known as Kurinji) that bloom once every 12 years. I also collected and reared from its host plant a species of *Rhabdochaeta* (apparently *R. pulchella*; Schistopterini) that was known from Java and East Africa, and the present finding is an important link within the disjunct distribution of this species. Beside these interesting collections, it was also extremely interesting to stay at a Raja (king) home in Kukkal, and to observe the mixed culture, especially of the Maharaja's happy and partly lost days of hunting with the replacing awareness for the protection of the environment. Altogether about 2,500 specimens were brought back.

## **Benthic biodiversity surveys off the Mediterranean coast of Israel**

**Bella S. Galil**

In 2006 eight campaigns have been conducted off the Mediterranean coast of Israel to sample the benthic biota. Bella Galil, Mel Cooper, Limor Shoval, Sima Usvyatzov, 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**, 14.09.2006, 37m depth, box core and trawl samples; 26.05.2006, 37 m depth, box core and trawl samples; 13.09.2006, 60-64 m depth, box core and trawl samples; 25.05.2006, 60 m depth, box core and trawl samples; off **Ashdod**, 17.09.006, 12 m depth, box core samples; 24.05.006, 12 m depth, box core samples; 17.09-19.09.2006, 5 m depth, box core samples; off **Eratosthenes seamount**, 20-22.06.2006, 1023-1424 m depth, box core and trawl samples. The macrofaunal samples – several hundred specimens – include rare records and species unknown before from the Israeli coast.

All the material is currently kept in the Zoological Museum, Department of Zoology, Tel Aviv University, Israel.

## **Biodiversity surveys of the Penghu Island, Taiwan**

**Yehuda Benayahu**

Comprehensive collections of soft corals were conducted by Prof. Yehuda Benayahu in Penghu Island, Taiwan. Over 125 samples were collected in various reef sites there. This was the first ever conducted soft coral survey in these remote reefs. In conjunction with the field work taxonomical octocoral workshop was organized by Prof. Benayahu with a dozen of participants from Taiwan and Hong Kong.

## **New museum faculty and staff**

This year, the national collections welcomed one addition to its staff.

### **Dr. Silvia Blumenfeld**

#### **Amram Eshel**

We are proud that Dr. Silvia Blumenfeld joined the team of curators of the botanical collections. In 2002 Dr. Blumenfeld immigrated to Israel from Argentina where she had a long and successful career as a professor of Mycology and Biotechnology of Filamentous Fungi. Dr. Blumenfeld received her academic education at the University of Buenos Aires. From 1980 she served as a member of the *Carrera del Investigador Científico y Tecnológico* of the National Research Council of Argentina (CONICET) until her departure for Israel. Dr. Blumenfeld was also a member of the faculty at *Universidad Nacional del Comahue, Faculty of Agronomy, Cinco Saltos, Rio Negro, Argentina* where she held the rank of Assistant Professor in Phytopathology since 1986 and was promoted to Full Professor in Biotechnology of Filamentous Mushrooms in 1995. On April 1995 Dr. Blumenfeld received the Argentine National Prize José Antonio Balseiro, one of the most prestigious scientific awards in Argentina, awarded by the Argentinean President and the Forum of the Science and Technology.

During her career Dr. Blumenfeld published more than 30 articles in Scientific Journals in subjects of fungal ecology, phytopathology and fungal taxonomy. Moreover, Dr. Blumenfeld published four books on fungi production and phytopathology. In her capacity as faculty member Dr. Blumenfeld taught many courses in Mycology and Fungal Biotechnology.

Dr. Blumenfeld served as a consultant of the microbiological industrial laboratory *IMEXTRADE S.A., Cinco Slatos, Rio Negro, Argentina*. In this capacity she developed a process for production of edible mushrooms on

industrial waste that was patented in February 1998 (Argentinean Institute of the Industrial Property, INPI, record # 329860/91, shared with CONICET, Pat. No. 251.648).

After her arrival in Israel Dr. Blumenfeld worked for two years at the Golan Research Institute at Kazerin, Ramat Hagolan, as a phytopathologist in charge of identification of molds, yeasts and mushrooms and isolation of local strains, and identification of fruit and post-harvest diseases in vineyards.

At Tel-Aviv University, Dr. Blumenfeld assumed the role of curator of the mycological collection. This collection was founded by Prof. Nissan Benyamini, who is now retired. Building on their former scientific acquaintance, Dr. Blumenfeld established warm relationships with Prof. Benyamini. We are confident that this will ensure a smooth transition. In her capacity as the curator of the Mycological collection Dr. Blumenfeld has been revising the classification of the items in this collection according to the new developments in fungal taxonomy and preparing a new classification of the toxic mushrooms of this country.

## **New collections**

### **The Malacological Collection of Kalman Hertz (1921-2006)**

**Henk K. Mienis**

On 25<sup>th</sup> July 2006 the Mollusc Collection received an important addition to its holdings: the collection of the late Kalman Hertz. This small but well documented shell collection was donated to the Tel Aviv University on behalf of the family by his long standing partner Mrs. Yehudit Weiss.

#### **Short Biography of Mr. Kalman Hertz**

Kalman Illes Hertz was born on 19th October 1921 in Arad, Transylvania. He received his formal education in Romania, where he began to study the mechanics of electricity.

During World War II he was imprisoned and sent to a Work Camp, but he managed to escape and joined a group of other young Jews. Together they made their way to Austria, but were arrested as illegal residents. After another escape he managed to cross the border of Switzerland where he met members of the Jewish Brigade. They helped him to cross into Italy and arranged a place for him on a boat taking illegal immigrants to Palestine. He got ashore in 1946 and joined almost immediately the nascent Israel Defense Forces. During the War of Independence he suffered a wound to one of his eyes.

After his recovery he completed his studies in Electrical Engineering in Israel and worked in that profession until his untimely death on 8 March 2006. Professionally he was involved in several large projects in Israel, notably the building of the Habima Theater and the "Hechal Hatarbut" (the Cultural Center). Later on he started his own company and specialized in making control boards for electronic systems. In 1994, at the age of 73, he was involved in a work accident: he fell in an elevator shaft and smashed both his knees. He decided to give up physical work and since then earned his living as a consultant.

His interests in shells developed while working on electrical installations in Sharm el Sheik, Sinai. He enjoyed scuba diving and this gave him the impetus to start his first collection. This one was lost when his marriage broke up. After some time he started again to assemble a collection. Every time he visited a beach he did not leave it without a bucket or two of shell grit. Micro shells became his specialization. After he published several short notes in a journal for shell collectors in Germany, he became an enthusiastic member of the Israel Malacological Society. He was also a regular visitor in the Mollusc Collection of Tel Aviv University.

While his local shell collection was donated to the university, his show collection of large foreign shells, assembled during his various visits to the Far East, will be taken care of by his family in Givatayim as a memento to him and his passion.

### **His Malacological Collection**

The collection donated to the Tel Aviv University is made up of about 1500 samples. Each lot consists of a single species represented in most cases by numerous specimens and is supplied with full information concerning the locality and the date of collection. About 90% of the samples originate from places along the Mediterranean coast of Israel: Palmahim, Yafo-south, Tel Barukh, Herzliyya, Mikhmoret and Shiqmona. The remaining 10% of the samples had been acquired during his various journeys to Slovenia, Croatia, India & Sri Lanka, Philippines and other areas in the Far East. Noteworthy is the almost complete absence of samples from the Red Sea.

Marine shells form the major part of his collection; land- and freshwater mollusks are represented by less than 100 samples. The marine material collected on the Mediterranean beaches is rich in Lessepsian migrants and other invasive species from the Indo-Pacific. Numerous micro-shells belonging to such genera as *Cerithiopsis*, *Zafra* and *Chrysallida*, are included. They form an

important addition to the mollusk collection. The mollusk collection received also a small collection of shell books, of which 15 turned out to be important additions to the malacological library.

At this moment the whole collection is being revised, catalogued and prepared for permanent storage. Within another few months all the data from his collection will be available in electronic form.

### **Acknowledgements**

We thank Mrs. Yehudit Weiss for donating this important collection to the university and Mr. Uri Bar Zeev for his role as a middleman and for the transfer of the material to Tel Aviv University.

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Mienis, H.K., 2004. New data concerning the presence of Lessepsian and other Indo-Pacific migrants among the molluscs in the Mediterranean Sea with emphasize on the situation in Israel. In B. Öztürk & A. Salman (Eds.): 1<sup>st</sup> National Malacology Congress Proceedings, 1-3 September 2004. Turkish Journal of Aquatic Life, 2 (2): 117-131.

Mienis, H.K., 2006. A first record of *Amathina tricarinata* from the Mediterranean coast of Israel. Triton, 14: 3.

Mienis, H.K., 2006. A rectification concerning the presence of *Cantharus tranquebaricus* in the Eastern Mediterranean. Triton, 14: 4.

## **The Entomological Collection of Prof. Jacob Wahrman (1924–2005)**

### **Ariel Leib Leonid Friedman**

Prof. Jacob Wahrman was born in Frankfurt am Main, Germany, into a family that had emigrated from Galicia, in the Austro-Hungarian Empire. At the age of 10 he arrived in Palestine. His family lived in Jerusalem and he attended the Gymnasia Rehaviya high school. He went on to study at the Hebrew University of Jerusalem, where he received his Ph.D. in 1955; his dissertation was on the genetics of the Mantidae. He remained at the Hebrew University, first as a lecturer (from 1956), then as an associate professor (from 1966) and finally as a full professor (1972-1993). Concomitantly he held external academic positions as an associate researcher at Berkley, USA and as a guest professor at Karolinska Inst., Stockholm, Sweden and at Yale University, USA. He officially retired in 1993, but continued his diverse researches up until his untimely death in 2005.

Prof. Wahrman's main interest lay in the field of genetics. He was a pioneer in the study of chromosomes of a wide range of organisms, devoting a large part of his genetic research to this subject: chromosome evolution; occurrence and mechanism of Robertsonian changes; the extent, kinds and function of heterochromatic segments; mechanism of meiosis; fine structure of chromosomes; gene expression during spermatogenesis; and chromosome-derived male sterility. His studies were carried out on a wide range of living organisms: insects, fish and mammals. He studied the sex mechanism of the darkling beetle genus *Blaps* and of different Mantidae, as well as performing research on the chromosomes and evolution of rodents (*Spalax*, *Gerbillus*), gazelles (*Gazella gazella* and *G. dorcas*) and on the fish genus *Tilapia*. The first studies of human cytogenetics in Israel were performed in his laboratory, where he also trained most of the first generation of Israeli human cytogeneticists.

Prof. Wahrman was fond of nature and history of the Holy Land. He amassed a collection of books and photographs on the subject that is probably unparalleled even in major research libraries. He published several articles on various topics on the history of the Holy Land and indeed completed his final paper (together with his son) only days before he passed away.

Prof. Wahrman's diverse interest in nature, especially in the nature of the Land of Israel, turned him into one of the most important collectors of representatives of Israeli fauna, especially insects. His collection activities spread over 50 years, in Israel (mostly in the Judean Hills and the southern part of the country), and in Turkey and Cyprus. Nine species of insects (an apterygot, a termite, two crickets, a hunting bug, two bees, a wasp and a fly species), one species of pseudoscorpion, one species of isopod and one species of Triassic ammonite have been described under the name "wahrmani" in his honor; most of which he had collected himself.

The first part of his collection (mostly beetles, flies, termites, bugs and hymenopterans) was transferred to TAU about 12 years ago. After his death the second half (10 collection cabinets), including Orthoptera (Acrididae, Gryllidae), Blattoidea (Blattidae and Mantidae), Coleoptera (Tenebrionidae), Hemiptera, Neuroptera and Dermaptera, was delivered to TAU. The collection includes numerous rare species and type material.

## 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 very important 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.

- 1999-2006 The Ministry of the Environment and the Israel Nature and Parks Authority: Breeding of *Acanthobrama telavivensis* in captivity (M. Goren).
- 2001- Tobias Landau Foundation. Research project: Colonization of artificial reefs in Elat (Red Sea) (Y. Benayahu). -20% allocated for collections-based research.
- 2001-2005 Joint German – Israeli Research Project (BMBF and MOS). Anthropogenic impact on fish biodiversity in the Jordan River basin (M. Goren).
- 2002- On-going grant from the Nature and Parks Authority to "rescue" insects on the Golan and Hermon (V. Chikatunov and A. Freidberg).
- 2002-2005 Research grant from the Israeli Ministry of the Environment. Ecological impact assessment: Tools for evaluating the effects of development on biodiversity (three year grant at 80,000 NIS (ca. \$18,000) per annum) (T. Dayan and Y. Mandelik).
- 2003-2005 Ministry of Environment (P.I). for coordinating the committee and writing a National plan for biodiversity education. (40,000 NIS ca. \$8,900) (Y. Gavrieli).

- 2004-2007 Grant from the Israel Scientific Foundation. Exploitation and hunting patterns of Mountain Gazelle (*Gazella gazelle*) and Persian Fallow Deer (*Dama mesopotamica*) during the Late Pleistocene - Early Holocene of the Southern Levant: Testing the hypothesis of cultural control (3 year grant; ca. \$30,000 per annum (G. Bar-Oz and T. Dayan [C.I.]).
- 2004-2007 USAID-CDR, Research Project: Scientifically based framework for conserving and monitoring the Eritrean coral-reefs (Y. Benayahu).
- 2005 Ministry of Justice: Department of the Public Trustee and the Official Receiver (P.I.). For science for all publications on the internet. (80,000 NIS ca. \$18,000) (Y. Gavrieli).
- 2005 The Antiquities Authority research grant: Ongoing analysis of the faunal remains from the Neolithic of Motza (22,000 NIS [ca. \$5000]) (T. Dayan).
- 2005-2006 Pharma Mar, Spain. Research project: Collection of marine invertebrates from the coral reefs of Kenya (Y. Benayahu). -80% allocated for collections-based research.
- 2005 Ministry of Science (P.I.). For science for all program – Arab and Jewish children and Parents from Lod visiting Nature Campus. (15,000 NIS ca. \$3,300) (Y. Gavrieli).
- 2005-2006 Israel Nature and National Parks Protection Authority (P.I.). For developing booklet and lesson plans on nature and antiquities conservation for Israel Defense Forces. (20,000 NIS ca. \$4,400) (Y. Gavrieli).
- 2005-2007 Grant from the USDA (and other donators) to develop the Parasitica collection (D. Gerling).
- 2005-2007 International Arid Lands Consortium (IALC) (\$100,000) (E. Geffen and G. Roemer).
- 2005-2007 Porter School of Environmental Studies in collaboration with the Italian Ministry of the Environment: Artificial Marine Structures (AMS): Multifunctional Tool for Research and Environmental Management in the Mediterranean and Red Sea (MED- RED) (Y. Benayahu, Y. Loya and A. Abelson) -20% allocated for collections-based research.

- 2005-2007 Resolving the higher-level phylogeny of rodents using nuclear genes and SINEs retrotransposons. The United States-Israel Binational Science Foundation (start-up grant program) (\$30,000 per year) (D. Huchon and R.W. DeBry).
- 2005-2008 GLOWA Jordan River research grant: Modeling the impact of global climate change on terrestrial biodiversity in the Jordan River Basin: Testing planning scenarios and climate change scenarios (3 year grant; ca. EURO 35,000 per annum) (T. Dayan, P.I. of subproject).
- 2005-2009 The Israel Science Foundation (488/05); 4 years. Vocalization as an indicator of individual quality in the rock *hyrax* (\$180,000) (O. Mokady, E. Geffen and M. Kam).
- 2006 Mekorot. Bio-management of water quality in reservoir (M. Goren).
- 2006 Ministry of Environment (P.I.). For developing an interpretation kit on Biodiversity for teachers. (35,000 NIS ca. \$7,800) (Y. Gavrieli).
- 2006 Ministry of Environment (P.I.). For developing learning resources for the public on issues of Sustainable Development on the Internet. (150,000 NIS ca. \$33,300) (Y. Gavrieli).
- 2006 Nature Reserves Authority. Biological documents and management programs of eight marine reserves along the Mediterranean coast of Israel (M. Goren).
- 2006 Grants from the Ministry of the Environment and the Israel Nature and Parks Authority "Survey of the little fire ant in Israel" (total of 45,000 NIS [ca. \$10,000]) (T. Dayan and A. Hefetz).
- 2006 Ministry of Environment (P.I.). For developing an Internet site on Invasive Species of Israel. (20,000 NIS ca. \$4,000) (Y. Gavrieli).
- 2006 Population identification of the migrating waves of three species of songbirds using molecular markers. German-Israeli Foundation (35,000 Euro) (D. Huchon).
- 2006 Sloan Foundation – The roots of violence (I. Hershkovitz).
- 2006-2007 Government Advertising Agency – Lapam (P.I). For developing Nature's Resources on the Web (150,000 NIS ca. \$35,000) (Y. Gavrieli).

- 2006-2007 Has habitat fragmentation and rainpools geographic distance caused genetic variation among populations of the Syrian spadefoot toad *Pelobates syriacus syriacus* in Israel? Israel Nature Reserve and Parks Authorities. 80,000 NIS (S. Gafny and A. Freidman).
- 2006-2007 The effect of aquatic recreation activity on macroinvertebrate and fish assemblage in water bodies of the Hula Valley. Israel Nature Reserve and Parks Authorities. 80,000 NIS (S. Gafny and M. Goren).
- 2006-2008 Bridging the Rift Foundation research grant. Biodiversity in human-dominated landscapes in the Arava Rift Valley \$50,000 (T. Dayan and Y. Mandelik).
- 2006-2008 German-Israeli Foundation for Scientific Research and Development grant: Patterns of biodiversity in natural and cultural landscapes: a model Mediterranean forest ecosystem (3 year grant; total sum EURO 158,000) (T. Dayan and T. Assmann).
- 2006-2009 Israel Science Foundation research grant. Animal bones, ancient populations, and site formation processes: A test case of Dor, a coastal Levantine site (3 year grant; 225,000 NIS [ca. \$50,000] per annum) (T. Dayan and G. Bar-Oz C.I.)
- 2006- 2010 Sponge (Metazoa: Porifera) phylogenetics using novel molecular markers. The Israel Science Foundation (NIS 270,000 per year). (D. Huchon).

## Graduate students

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

## PhD students

- 1999- Liora Glass (E. Geffen and T. Dayan)  
The ecology of jungle cats in natural and anthropogenic habitats in Israel.
- 2001-2006 D. Ezra (I. Hershkovitz)  
Aging of the cervical spine.
- 2001- Tamar Feldstein (O. Mokady)  
Molecular level markers for biomonitoring the coastal environment.
- 2001-2006 Lee Koren (E. Geffen and O. Mokady)  
Vocalization as an indicator of individual quality in rock hyrax.
- 2001-2006 Shimrit Perkol (Y. Benayahu)  
Spatial and temporal interactions between artificial and natural reefs.
- 2002- Hadass Schteinitz (Y. Yom-Tov and T. Dayan)  
Estimating the effect of global warming on the distribution of Israeli animals.
- 2003- Andrey Aaronov (M. Goren)  
Ecology of fishes in Mediterranean rocky habitats.
- 2003- B. Bahaa (I. Hershkovitz)  
Macro and microstructure of the annulus fibrosus.
- 2003- Noa Shenkar (Y. Loya)  
Bioactivity of Mediterranean and Red sea tunicates.

- 2003- Merav Weinstein (T. Dayan and A. Hefetz)  
Invasive ants of Israel.
- 2004- G. Dar (I. Hershkovitz)  
Spondyloarthropathy.
- 2004- Liat Gahanama (A. Freidberg)  
A revision of the *Schistopterum* clade of Schistopterini.
- 2004- Efrat Gavish (Y. Lubin, Ben Gurion University)  
Description of new spiders species from the family Linyphiidae.
- 2004- Constantin Grach (A. Freidberg)  
Ecology and biology of costal dune insects.
- 2005- Motti Charter (Y. Leshem)
- 2005- Yaron Krotman (M. Goren)  
Fish biodiversity and ecology in oasis habitats in the Dead Sea Valley.
- 2005- Tal Levanony (T. Dayan)  
Patterns of biodiversity in natural and cultural landscapes: a model Mediterranean forest ecosystem.
- 2005- Ofir Levy (T. Dayan and N. Kronfeld-Schor)  
Modeling climate effects on temporally-partitioned rocky desert rodents: from basic principles to community structure.
- 2005- R. Sarig (I. Hershkovitz)  
Interproximal wear.
- 2005- Amy Shlesinger (Y. Loya)  
Predator-prey interactions between nudibranchs and their sea-anemone prey.
- 2005- Orit Skutelsky (T. Dayan and E. Feitelson)  
Biodiversity conservation in biosphere reserves of Israel: the switch from a market led to conservation oriented agriculture.
- 2005- Assaf Zevoluni (Y. Loya)  
Coral community dynamics in bleached and non-bleached coral reefs (Zanzibar vs. Elat).
- 2006- Eran Levin (Y. Yom-Tov and N. Kornfeld).

Ecophysiology of free-tailed bats.

- 2006- Uri Roll (T. Dayan).  
The influence of roads on the fauna and flora of Israel.
- 2006- Lidar Sapir (T. Dayan and G. Bar-Oz, University of Haifa).  
Animal bones, ancient populations, and site formation processes:  
A test case of Dor, a coastal Levantine site.

### **MSc students**

- 2001-2006 N. Bachrach (I. Hershkovitz)  
The last Natufian inhabitants from El-Wad Terrace:  
Anthropological study.
- 2001-2006 G. Samora (I. Hershkovitz)  
Cribra orbitalia in historic populations.
- 2002- 2005 Ifat Guata (M. Goren)  
Energy flow in anthropogenic affected fish communities in  
Jordan River Basin.
- 2002- 2006 Neta Dasa (M. Goren)  
Reproductive aspect in riverine fish.
- 2002-2006 Arian Wallach (M. Inbar and U. Shanas, Oranim Academic  
College)  
Re-introduction of Roe Deer.
- 2003-2005 Zohar Leader (Y. Yom-Tov and Uriel Safriel).  
The diet of the long-eared owl (*Asio otus*) and the barn owl (*Tyto  
alba*) in the Negev.
- 2003- 2005 Lior Shine (J. Garty and A. Hochman)  
The biochemical and physiological response of lichens to air  
pollution.
- 2003-2006 Nili Angelister (Y. Yom-Tov and Uzi Motro).  
The effect of human disturbance on rodent communities in the  
southern coastal plain.
- 2003- Shunit Gal (D. Gerling)  
Variations within a species - *Bemisia tabaci* (due to parasitic  
bacteria).

- 2003- Amir Gur (M. Ilan)  
Iron deposition in sponges.
- 2003- Larisa Lerner (A. Freidberg)  
Studies of Carpomyia (Tephritidae).
- 2004-2006 Yotam Bar (M. Goren)  
Stability of fish community in Shiqmona.
- 2004-2006 Allen Daniel (Y. Loya)  
Community structure of deep (50 m) scleractinian corals in Elat, Red Sea.
- 2004-2006 Ronit Justo-Hanani (T. Dayan and A. Tal)  
Comparative legislation of invasive species.
- 2004-2004 Sara Cohen (M. Goren)  
Diversity and dynamic of fish catch by trawlers off the Mediterranean Israeli coast.
- 2004-2006 Jonathan Sharon (Y. Benayahu with Prof. Y. Loya)  
Benthic communities associated with an invasive bivalve in the Israeli Mediterranean Sea.
- 2004- Haim Biala (V. Soroker, The Agricultural Research Organization of Israel)  
Ants associated with banana aphids.
- 2004 Inbal Ginsburg (Y. Benayahu)  
Farming of soft coral for reef rehabilitation purposes.
- 2004- Ariella Gotlieb (T. Dayan)  
Ecological restoration of the Ze'elim wadi bed, near the Dead Sea.
- 2004- Michal Meir (A. Freidberg and M. Sternberg)  
Flower color variation in the thistle, *Syllibum marianum*.
- 2004- Adi Ramot (E. Groner and P. Bar, Ben Gurion University)
- 2004- Shachar Samra (A. Freidberg and D. Gerling)  
Biology and taxonomy of selected Parasitica (Hymenoptera).
- 2004- Ido Sella (Y. Benayahu)  
Cultivation of the soft coral *Sarcophyton glaucum*.

- 2004- Daniel Yashunski (M. Goren)  
Succession of fish community in planted corals in Elat.
- 2004- Yael Zaldam (Y. Benayahu)  
Colonization of fixed and floating artificial marine structures at Elat (Red Sea).
- 2005- J. Abass (I. Hershkovitz)  
Ligamentum flavum and spinal stenosis.
- 2005- Kfir Gaier (M. Goren)  
The impact of grazing fish on invertebrate communities in eastern Mediterranean.
- 2005- Gali Gingold (Y. Yom-Tov and E. Geffen)  
The effect of dogs on gazelles in the Golan Heights.
- 2005- Michal Grosovich (Y. Benayahu)  
Habitat partitioning of three azooxanthellate soft corals in Elat (northern Red Sea).
- 2005- Nimrod Lazarus (Y. Loya)  
Induction of metamorphosis in nudibranch larvae.
- 2005- Mustaga Mahagna (D. Gerling)  
Identity of the whitefly *Aleurolobus marlatti* in Israel and its relationship with *A. niloticus*.
- 2005- Osnat Maor (M. Goren)  
Reproductive biology the cyprinid fish *Garra rufa* in the Jordan River basin.
- 2005- H. May (I. Hershkovitz)  
Hyperostosis Frontalis Interna.
- 2005- Erez Maza (T. Dayan)  
Climate and land-use patterns in biodiversity.
- 2005- Keren Shachar (Y. Benayahu)  
Initial colonization phases of fixed and floating artificial marine structures at the Israeli Mediterranean coast.
- 2005- Oren Shelef (E. Groner and M. Shachak, Ben Gurion University)

- 2005- Tamir Shelhav (E. Groner and M. Shachak, Ben Gurion University)
- 2005- Ophir Shneor (Y. Yom-Tov and D. Huchon).  
The origin and timing of some migratory birds passing through Israel.
- 2005- Ina Stierberg (T. Dayan)  
Climatic gradients in biodiversity.
- 2005- Kineret Toktan (Y. Yom-Tov )  
Phylogeography of the orange-tufted Sunbird *Nectarinia osea*.
- 2005- Rafi Yaabetz (Y. Loya)  
Reproductive cycle of a nudibranch.
- 2006- Frida Belinky (D. Huchon and A. Lotem)  
Metazoan phylogeny and its implications for genome evolution.
- 2006- Z. Kochva (M. Ilan)  
Sponge associated bacteria and their role in production of natural products.
- 2006- Bat Sheva Rotman (M. Goren)  
The biology the balitorid fish *Nemacheilus jordanicus* in the Jordan River basin.
- 2006- Raj Singh (D. Huchon, Visiting Phd student)  
Mitochondrial genome of Sylvioidea.
- 2006- Karin Tamar (T. Dayan).  
Archeozoology of Tel Bet Shemesh.
- 2006- G. Tirosh (M. Ilan)  
Sponge community in the Israeli Mediterranean coast.

### **Post-docs**

- 2006-2007 Yael Mandelik (T. Dayan)
- 2006 P. Sauleu (M. Ilan)
- 2004- Noam Leader (Y. Yom-Tov)

## 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
2005-2006	Y. Nagar	Israel Antiquity Authority	Israel	Anthropology
2005 Dec	U. Bar-Ze'ev	I.M.S.	Israel	Molluscs
2005 Dec	H. Lubinevsky	University of Haifa	Israel	Molluscs
2005 Dec	O. Hazofe	Israel Nature and Parks Authority	Israel	Birds
2005 Dec	R. Milgalai	Hebrew University	Israel	Birds
2006 Jan	Y. Sinai	Israel Nature and Parks Authority	Israel	Molluscs
2006 Jan	T. Pavlicek	University of Haifa	Israel	Molluscs
2006 Jan	U. Galili	Israel Antiquity Authority	Israel	Molluscs
2006 Jan	Z. Brosh	Israeli Air Force	Israel	Birds
2006 Feb	N. Lev-Tov	Hebrew University	Israel	Anthropology
2006 Feb	U. Galili	Israel Antiquity Authority	Israel	Molluscs
2006 Feb	D. Zvieli	The Israeli Navy	Israel	Molluscs
2006 Feb	A. Gorzalczany	Israel Antiquity Authority	Israel	Molluscs
2006 Feb	Y. Nechushtai	Hebrew University	Israel	Invertebrates

Date	Name	Institute	Country	Taxonomic group
2006 Feb	O. Hazofe	Israel Nature and Parks Authority	Israel	Birds
2006 Mar	E. Sheffer	IOLR - Haifa	Israel	Molluscs
2006 Mar	D. G. Furth	National Museum of Natural History, Smithsonian Institution	USA	Entomology
2006 Mar	Y. Sinai	Israel Nature and Parks Authority	Israel	Molluscs
2006 Mar	R. Ortal	Israel Nature and Parks Authority	Israel	Molluscs
2006 Mar	Z. Brosh	Israeli Air Force	Israel	Birds
2006 Apr	U. Galili	Israel Antiquity Authority	Israel	Molluscs
2006 Apr	J. Webo	Leo poldina Hospital	Germany	Anthropology
2006 Apr	B. Rosen	University of Haifa	Israel	Molluscs
2006 May	K. Szpila	Nicolaus Copernicus University, Toruń	Poland	Entomology
2006 May	C. Bystrowski	Forest Research Institute, Warsaw	Poland	Entomology
2006 May	T. Kurz		Israel	Reptiles
2006 May	Y. Shrir	University of Haifa	Israel	Mammals
2006 May	A. Retner	University of Haifa	Israel	Mammals
2006 May- Jun	D. Radovcic	University of Michigan, Department of Anthropology	USA	Anthropology
2006 Jun	R. Pinhasi	School of Human & Life Sciences, Roehampton University, London	England	Anthropology
2006 Jun	P. Shur	Israel Antiquity Authority	Israel	Birds
2006 Jun	Y. Ben-Michael	Israel Antiquity Authority	Israel	Birds
2006 Jun	G. Bar-Oz	University of Haifa	Israel	Mammals
2005 Jun	A. Stutz	University of Michigan	Israel	Mammals

Date	Name	Institute	Country	Taxonomic group
2005 Jun	N. Munro	University of Connecticut	Israel	Mammals
2005 Jun	R. Shafir	University of Haifa	Israel	Mammals & Birds
2006 Jul	E. Heiman	I.M.S.	Israel	Molluscs
2006 Aug	F. Bocquentin	CNRS University of Bordeaux	France	Anthropology
2006 Aug	I. Baruch	Israel Antiquity Authority	Israel	Molluscs
2006 Aug	A. Glaser	Israel Electricity Company	Israel	Molluscs
2006 Aug	D. Kerem	University of Haifa	Israel	Mammals
2006 Sep	U. Bar-Ze'ev	I.M.S.	Israel	Molluscs
2006 Sep	D. Teger	Eretz Israel Museum	Israel	Mammals
2006 Sep	R. Rabinovich	Hebrew University	Israel	Mammals
2005 Sep	O. Hazofe	Israel Nature and Parks Authority	Israel	Birds
2006 Sep	M. Kovacic	Natural History Museum Rijeka	Croatia	Fishes
2006 Sep	D. Golani	Hebrew University	Israel	Fishes
2006 Oct	M. Wastaway	Department of Archaeology and Anthropology Australia National University	Australia	Anthropology
2006 Oct	L. Cowgill	Washington University st. Louis Department of anthropology	USA	Anthropology
2006 Oct	A. Oren	Faculty of Agricultural, Food and Environmental Quality Sciences	Israel	Mammals
2006 Dec	R. Pinhasi	School of Human & Life Sciences, Roehampton University, London	England	Anthropology

## 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	Tel Aviv University	Birds, Amphibia, Taxidermist and Museum Class
Systematic of Beetles	T. Assmann and C. Drees	Tel Aviv University Ben Gurion University	Entomology
Insects the Flagship of Biodiversity (academic course)	A. Freidberg and D. Simon	Tel Aviv University	Entomology
Faunistica (academic course)	M. Inbar	Technion	Birds, Mammals and Museum Class
Vertebrates Anatomy (academic course)	D. Eilam, M. Ovadia and U. Oron	Tel Aviv University	Reptilia, Mammals and Taxidermist
Introduction to Animal Kingdom: Invertebrates and Vertebrates (academic course)	M. Ovadia and A. Gasith	Tel Aviv University	Mammals and Entomology
The Invertebrates: Comparative Functional Biology (academic course)	M. Ilan, Y. Benayahu and A. Abelson	Tel Aviv University	Invertebrates, Entomology and Histology
Osteology And Anthropology (academic course)	I. Hershkovitz	Tel Aviv University	Anthropology

Purpose	Name	Institute	Taxonomic group
Physical Anthropology (academic course)	Y. Rak	Tel Aviv University	Anthropology
Human Evolution: fossil evidences (academic course)	Y. Rak	Tel Aviv University	Anthropology
Chapters in Human Evolution (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
Bird Fauna (academic course)	N. Leader	Open University	Birds and Museum Class
Guiding Students	G. Bar-Oz	University of Haifa	Mammals and Museum Class
Bird-Watching	T. Shariv	Avshalom Institute	Birds and Museum Class
Various seminars	North District	Israel Nature and Parks Authority	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. Spriarsky	PPIS of the ministry of Agriculture	Entomology
Taxonomy Identification	A. Gasith	Tel Aviv University	Entomology and Invertebrates
Taxonomy Identification	E. Nevo & T. Pavlicek	University of Haifa	Entomology
Taxonomy Identification	M. Finkel	University of Haifa	Entomology
Taxonomy Identification	M. Vonshak	University of Haifa	Entomology
Taxonomy Identification		Plant Protection and Inspection Services	Entomology
Taxonomy Identification		Israel Nature and Parks Authority	Entomology
Taxonomy Identification	E. Groner	Ben-Gurion University	Entomology
Taxonomy Identification	I. Hoffman	Ben-Gurion University	Entomology
Taxonomy Identification	I. Renan	Ben-Gurion University	Entomology
Taxonomy Identification	U. Shanas	Oranim Academic College	Entomology
Taxonomy Identification	M. Inbar	Oranim Academic College	Entomology
Taxonomy Identification	E. van dan Brink	Israel Antiquity Authority	Molluscs

Purpose	Name	Institute	Taxonomic group
Taxonomy Identification	U. Galili	Israel Antiquity Authority	Molluscs
Taxonomy Identification	R. Ortal	Israel Nature and Parks Authority	Molluscs
Taxonomy Identification	T. Oron	Israel Nature and Parks Authority	Molluscs
Taxonomy Identification	S. Moran	Plant Protection and Inspection Services	Molluscs
Taxonomy Identification	A. Glaser	Israel Electricity Company	Molluscs
Taxonomy Identification	E. Sheffer	IOLR - Haifa	Molluscs
Taxonomy Identification	M. Charter	Tel Aviv University	Molluscs
Taxonomy Identification	North Distric	Israel Nature and Parks Authority	Fishes
Taxonomy Identification	I. Zohar	Tel Aviv University	Fishes
Taxonomy Identification	M. Sade		Birds
Taxidermist services	D. Eilam	Tel Aviv University	Birds, Mammals and Taxidermist
Taxidermist services	A. Lotem	Tel Aviv University	Birds and Taxidermist
Taxidermist services	Y. Leshem	Tel Aviv University	Birds and Taxidermist
Taxidermist services	Nature Campus	Tel Aviv University	Mammals, Birds and Taxidermist
Taxidermist services	O. Hazofe	Israel Nature and Parks Authority	Birds and Taxidermist
Photography	Israeli television	Arutz 2 News	All Collections
Photography for the Public Affairs Administration	Rava Eleasari	Tel Aviv University	All Collections
Electronic Data	B. Shaham	Hebrew University	Reptilia
Electronic Data	Neil	University of Malasia	Reptilia

Purpose	Name	Institute	Taxonomic group
Electronic Data	G. Kachila	Hebrew University	Mammals
Electronic Data	R. Rabinovich	Hebrew University	Mammals
Electronic Data	U. Motro and Y. Leshem	Hebrew University and Tel Aviv University	Birds
Electronic Data	M. Fain	University of Haifa	Invertebrates
Electronic Data For Biologic survey of 12 Marine Reserves	Science Division	Israel Nature and Parks Authority	Fishes and Invertebrates
Data and Tissue Samples	N. Leader	Tel Aviv University	Birds, Reptalia and Mammals
Shipment of Tissue Samples	R. W. DeBry	University of Cincinnati, Ohio	Molecular Systematics
Shipment of Tissue Samples	J. Schmitz	University of Muenster, Germany	Molecular Systematics
Shipment of Tissue Samples	R. Barrientos	Spain	Molecular Systematics
Shipment of Tissue Samples	S. Willows-Munto	Evolutionary Genomics Group, South Africa	Molecular Systematics
Shipment of Specimens	A. Driskell	Smithsonian Institution, USA	Invertebrates: Tunicates and Molecular Systematics
Shipment of Specimens	R.M. da Rocha	Universidade Federal do Parand', Brasil	Invertebrates: Tunicates
Shipment of Specimens	X. Turon	University of Barcelona, Spain	Invertebrates: Tunicates
Shipment of Specimens and Tissue Samples	R.J. Toonen	University of Hawaii at Manoa	Invertebrates: Soft Corals and Molecular Systematics
Shipment of Specimens	I.M. Mendez	Department of Cell Biology, Spain	Invertebrates: Soft Corals
Shipment of Specimens	A. Andouche	Museum National d'Histoire Naturelle, France	Invertebrates: Soft Corals

Purpose	Name	Institute	Taxonomic group
Shipment of Specimens	C-f. Dai	Institute of Oceanography, Taiwan	Invertebrates: Soft Corals
Shipment of Specimens	Y. Benayahu	National Museum of Natural History, Leiden, Netherlands	Invertebrates: Soft Corals
Shipment of Specimens	L. van Ofwegen	National Museum of Natural History, Leiden, Netherlands	Invertebrates: Soft Corals
Shipment of Specimens	F.Monniot	Museum National d'Histoire Naturelle, France	Invertebrates: Tunicates
Shipment of Specimens	R. van Soest	Zoological Museum, University of Amsterdam	Invertebrates: Sponges
Shipment of Specimens	J.-P. Legrand	France	Entomology
Shipment of Specimens	K. Nadein	Universitetskaya nab, Russia	Entomology
Shipment of Specimens	Ho-Yeon Han	Yonsei University, Korea	Entomology
Shipment of Specimens	O. Lonsdale	University of Guelph, Canada	Entomology
Shipment of Specimens	B. C. Schlick-Steiner and F. M. Steiner	Universitaet fuer Bodenkultur, Austria	Entomology
Shipment of Specimens	A. Tinaut	Facultad de Ciencias, Spain	Entomology
Shipment of Specimens	P. Brandmayr,	Universita della Calabria, Italy	Entomology
Shipment of Specimens	R. Fabbri	Museo Civico di Storia Naturale Via De' Pisis, Italy	Entomology
Shipment of Specimens	D. K. McAlpine	Australian Museum, Australia	Entomology
Shipment of Specimens	P. Chandler	England	Entomology
Shipment of Specimens	J. Pelletier	France	Entomology

Purpose	Name	Institute	Taxonomic group
Shipment of Specimens	W. N. Mathis	Smithsonian Institution, Washington,, USA	Entomology
Shipment of Specimens	O. Karlsholt	Zoological Museum, Denmark	Entomology
Shipment of Specimens	L. Voronyanskogo	Belarus	Entomology
Shipment of Specimens	M. Fibiger	Denmark	Entomology
Shipment of Specimens	M. Gates	Smithsonian Institution, Washington,, USA	Entomology
Shipment of Specimens	W. Speidel	Zoologisches Forschungsinstitut und Museum, Germany	Entomology
Shipment of Specimens	P. Oosterbroek	Universiteit van Amsterdam Zoölogisch Museum, Netherlands	Entomology
Shipment of Specimens	B. R. Stuckenberg	Natal Museum, South Africa	Entomology
Shipment of Specimens	A. Emeljanov	Universitetskaya nab, Russia	Entomology
Shipment of Specimens	L. Ronkay	Hungary	Entomology
Shipment of Specimens	R. zur Strassen	Forschungsinstitut Senckenberg Entomologie, Germany	Entomology
Shipment of Specimens	C. Bystrowski	Forest Research Institute, Poland	Entomology
Shipment of Specimens	K. S. Nicolaus	Copernicus University Institute of Ecology and Environmental Protection, Poland	Entomology
Shipment of Specimens	M.A. Ashraf	Plant Protection Research Institute, Egypt	Entomology
Shipment of Specimens	B. Pakyürek	Üniveritesi Fen-Edebiyat, Turkey	Entomology
Shipment of Specimens	Y. G. Arzanov	Russia	Entomology
Shipment of Specimens	D. W. Dunckerstr	Germany	Entomology

Purpose	Name	Institute	Taxonomic group
Shipment of Specimens	A. H. Kirk-Spriggs	Albany Museum, South Africa	Entomology
Shipment of Specimens	Y. Dorchin	Israel	Entomology
Shipment of Specimens	M. Langer	Germany	Entomology
Shipment of Specimens	M. Ebejer	England	Entomology
Shipment of Specimens	I. MacGowan	Scottish Natural Heritage Battleby, Scotland	Entomology
Shipment of Specimens	B. Merz	Muséum d'histoire naturelle, Switzerland	Entomology
Shipment of Specimens	G. Alziar	Muséum d'Histoire Naturelle, France	Entomology
Shipment of Specimens	K. Schön	Czach Republic	Entomology
Shipment of Specimens	S. Ziani	Italy	Entomology
Shipment of Specimens	A. Velázquez	Spain	Entomology
Shipment of Specimens	M. Kovacic	Natural History Museum Rijeka, Ceoatia	Fishes
Shipment of Specimens	R. Winterbottom	Department of Natural History, Canada	Fishes
Shipment of Specimens	J. Freyof	Leibniz Institute of Freshwater Ecology and Inland Fisheries, Germany	Fishes
Shipment of Specimens	C. Almada	Unidade de Investigacao em Eco-Etologia, Portugal	Fishes
Shipment of Specimens	J. E. Randall	The state museum of natural and cultural history, Hawaii	Fishes
Shipment of Specimens		J.L.B. Smith Institute, South Africa	Fishes

## Publications

The national collections of natural history are an important research infrastructure, used by scientists within and without the university. Approximately 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 since it did not include the sizable list of publications based upon the anthropological collections. Our current list of the 2005/2006 publications, alas, is also incomplete; it includes all publications of TAU members affiliated with the collections and under-represents publications of individuals from other institutions, since our follow up is far from complete.

## Refereed articles

1. Ahyong, S.T., and Galil, B.S., 2006. First Mediterranean record of the Indo-West Pacific mantis shrimp, *Clorida albolitura* Ahyong and Naiyanetr, 2000 (Stomatopoda, Squillidae). Aquatic Invasions 1(3):191-193.
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3. Bar Zeev, U. and Singer, S., 2006. The micro-shell collection of Kalman Hertz is donated to Tel Aviv University. Triton 14:6.
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5. Cannicci, S., Garcia, L., and Galil, B.S. 2006. Racing across the Mediterranean – first record of *Percnon gibbesi* (Crustacea: Decapoda: Grapsidae) in Greece. Jornal of Marine Biology Association U.K. 2
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25. Goren, M., Mienis, H.K. and Galil, B.S., 2006. Not so poor – more deep-sea records from the Levant Sea, Eastern Mediterranean. Journal of Marine Biology Association, UK – Biodiversity Records 1-4. <http://www.mba.ac.uk/jmba/jmba2biodiversityrecords.php?5520>
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28. Heiman, E.L., 2006. Variability of Cowry populations 24. *Luria lurida* (Linnaeus, 1758). Triton 14:12, 15-17.
29. Heiman, E.L., 2006. Variability of Cowry populations 25. *Erronea walkeri* (Sowerby, 1832). Triton 14:18-21.
30. Heiman, E.L., 2006. Variability of Cowry populations 26. *Palmadusta fimbriata* (Gmelin, 1791). Triton 14:19, 22-26.
31. Heiman, E.L., 2006. Variability of Cowry populations 27. *Erosaria miliaris* (Gmelin, 1791). Triton 14:27-30.
32. Heiman, E.L., 2006. Variability of Cowry populations 28. *Palmadusta clandestine* (Linnaeus, 1758). Triton 14:29, 31-33.
33. Heiman, E.L., 2006. Variability of Cowry populations 29. *Erronea ovum* (Gmelin, 1791). Triton 14:29, 34-35.
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- 2006 Coral inhabiting barnacles from the Gulf of Eilat- Phylogenetic aspects. Workshop on the High Biodiversity of the Gulf of Aqaba (Eilat): Origins, Dimensions and Protection. Jerusalem-Eilat, (Israel) (Simon-Blecher N., Brickner I., Huchon D. and Achituv Y.).
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- 2006 Did the small-bodied Hominins from Flores (Indonesia) suffer from a molecular defect in the growth hormone receptor (Laron Syndrome). Resresearch summaries: The most groundbreaking studies presented during the endocrine society 88th annual meeting, ENDO 06, p. 7 (Z. Laron, L. Korenreich, I. Hershkovitz).
- 2006 Dynamic and fish community on fixed and floating artificial reefs in the northern Gulf of Eilat (Red Sea). The 42<sup>nd</sup> Conference of the Zoological Society of Israel. January, 1<sup>st</sup>, Rehovot, Israel. (Halperin M., M. Goren and Y. Benayahu).
- 2006 Facet and interfacet shape and orientation in spondylolysis: a skeletal study. The SSE Annual Meeting EuroSpine; Istanbul, Turkey (Masharawi Y; Dar G; Peleg S; Steinberg N; Medleg B; Ezra D; Alperovitch-Najenson D; Hershkovitz I.).
- 2006 Facet and interfacet shape and orientation in spondylosis: a skeletal study. Sevens Research Fair, Sackler Faculty of Medicine, Tel-Aviv University ( Masharawi Y, Dar G, Peleg S, Steinberg N, Medlej B, Ezra D, Alperovitch-Najenson D, Hershkovitz I.).
- 2006 Feeding strategy of fishes in the Jordan River system. The 42<sup>nd</sup> Conference of the Zoological Society of Israel. January, 1<sup>st</sup>, Rehovot, Israel. (Gueta Y. and M. Goren.)
- 2006 Muscle atrophy and low back pain: A CT study.\_The Radiological Society of North America (RSNA) meeting. Nov (Alperovitch-Nejenson D, Peled N, Masharawi Y, Robinson D, Kalichman L, Steinberg N, Hershkovitz I.).
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- 2006 Red Sea Fish Biodiversity. International Workshop on the High Biodiversity of the Gulf of Aqaba (Eilat): Origins, Dimensions and Protection. (Jerusalem-Eilat, 16-23 October) (Goren, M.).
- 2006 Rhynchitidae and Attelabidae (Coleoptera: Curculionoidea) of Israel. The 25-th Meeting of the Entomological Society of Israel. Hebrew University, Rehovot, Faculty of Agriculture. (Friedman, A. L. L. and Legalov A. A.).
- 2006 Sacroiliac joint fusion: clinical implications. The Israel Radiological Association Conference (Peled N, Gaspar T, Dar G, Peleg S, Masharawi Y, Steinberg N, Hershkovitz I.).
- 2006 Seasonal and spatial distribution of Noctuidae Moths (Noctuidae: Lepidoptera) in Northern and Central Arava Valley, Israel. The 25<sup>th</sup> Meeting of the Entomological Society of Israel. 18.10.2006, Hebrew University, Rehovot, Faculty of Agriculture. (Kravchenko, V., Müller, G., Freidberg, A. and Yarom, I.).
- 2006 The ecology of the Plusiinae (Lepidoptera: Noctuidae) of Israel with special reference to pest species. The 25<sup>th</sup> Meeting of the Entomological Society of Israel. 18.10.2006, Hebrew University, Rehovot, Faculty of Agriculture. (Seplyarsky, V., Kravchenko, V. and Müller, G.).
- 2006 The effects of competition and predation risk on the foraging behavior of three species of rocky desert rodents. 42<sup>nd</sup> meeting of the Zoological Society of Israel, Rehovot, Israel (Levy, O., T. Dayan, and N. Kronfeld-Schor).
- 2006 The faunal remains from the Early Pre-Pottery Neolithic site of Motza – gazelle hunting and exploitation patterns. 42<sup>nd</sup> meeting of the Zoological Society of Israel, Rehovot, Israel (Sapir, L., G. Bar-Oz, and T. Dayan).
- 2006 The performance of small “Non-carbon-dioxide” mosquito-traps under in and out-door conditions. Poster on 72<sup>nd</sup> Annual Meeting (February 26—March 2, 2006) of the AMCA (The American Mosquito Control Association) in Detroit, Michigan, USA. (Müller G., Junnila A., Kravchenko V., and Schlein Y.).
- 2006 The shape of the neural arch as a causative factor in the isthmus spondylosis: characterization and biomechanical implications. Physical Therapy in Sport-International Conference; Birmingham, UK (Masharawi Y, Alperovitch-Najenson D, Dar G, Peleg S, Steinberg N, Salame K, Hershkovitz I.).

- 2006 The zoogeography and habitat preferences of the Catocalinae (Lepidoptera: Noctuidae) of Israel. The 25<sup>th</sup> Meeting of the Entomological Society of Israel. 18.10.2006, Hebrew University, Rehovot, Faculty of Agriculture. (Seplyarsky, V., Kravchenko, V. and Müller, G.).
- 2006 Aleurodid fauna of Israel - commercially important species (a poster). Annual meeting of the Israeli Entomological Society (Gerling, D.).
- 2006 Identification of mitochondrial introns in sponges (Porifera). 42<sup>th</sup> meeting of the Zoological Society of Israel. Rehovot, (Israel) (Huchon D., Rot C., Goldfarb I. and Ilan M.).
- 2006 The 4th International Workshop on Biomonitoring of Atmospheric Pollution (with emphasis on trace elements). Agios Nikolaos, Greece (Garty, J.).
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- 2005 How do point sources affect simple community structure parameters of stream macroinvertebrates? Proceedings of the 2005 ASLO summer meeting. Santiago de Compostela, Spain (Gafny, S., Solimini, A., Gerino, M., Marti, E., Battin, T., Morais, M., Pusch, M., Puig M.A., Sabater, F. and Voreadou C.).
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## **Public programs - Nature Campus**

On its sixth year of operation, Nature Campus continued in its activities to advance communication of science about the natural history and living environment of Israel to children, teachers, nature guides, and the general public. In some programs, natural history collections play a key role, while in other programs artifacts such as skulls, bones, nests, eggs, live insects and stuffed animals are integrated into the learning experience.

Programs based on the natural history collections:

### Public programs:

A new scientific committee was established, with scientists representing all Life Sciences departments as well as the Jaime and Joan Constantiner School of Education and the Sonia and Marco Nadler Institute of Archaeology. The scientific committee provides fresh perspectives on environmental issues along with better cooperation with Nature Campus partners at TAU.

Nature Campus has matured and entered into a phase of ongoing activity. As part of its routine, it has continued to develop new programs, partnerships, and projects. Worthy of special mention is the further expansion of research workshops, Urban Nature programs, Nature on the Web, Zoo On-Line, and the Invasive Species Website.

During the summer of 2006, when many families from the North of Israel arrived in the center of the country, Nature Campus joined the initiative of Tel Aviv University and hosted groups and individuals at the Zoological and Botanical Gardens.

The TAU Price-Brodie initiative in Jaffa has been our partner from day one and our first educational activity. During the past six years we developed together many programs, which have since evolved to become our 'flagship' projects: the research workshops at Ironi Yod-Beit Arab High School and Urban Nature at

all Arab and Jewish public elementary schools. In the past year, Price- Brodie policy has changed from full sponsorship to partial support. The remaining cost was covered by the schools, which had to choose between different projects. We are proud that all but one, (9 schools in all), chose to continue Nature Campus programs.

As of the summer of 2006, upon the request of the Botanical Gardens and the Department of Plant Sciences, Nature Campus received full responsibility for all public programs at the Botanical Gardens. This reorganization has enlarged Nature Campus's range of activities, without increased staff or budget. In the following months, Nature Campus team has put a special effort into developing, upgrading, and adapting programs for activities at the Botanical Gardens. We find that the present operation better suits our mission statement.

Ongoing programs based on the natural history collections:

Public programs:

- **Guided Tours.** This program offers a two-hour activity at the I. Meier Segals Garden for Zoological Research or the Botanic Gardens. During 2005/2006, a new tour theme was developed – Urban Nature – and was well received by the audience.

During the summer war, Nature Campus contributed to the national effort and opened the zoo gates to the general public; this operation required special adaptation of our visitor services. However, once the war was over, we returned to our routine policy of group visitations only. With the support of the Ministry of Science and the City of Lod, 500 children from this city took part in a three-hour tour. The Ministry covered the expenses of the tour while the municipality paid for the transportation. Thus, underprivileged youth, from Arab and Jewish schools, at times in mixed groups, were able to enjoy this activity. Their

visits were a special experience for them as well as for our staff - their interest, enthusiasm, and excitement inspired us all.

- **Science Days.** The program offers a three to four-hour activity for classes at the Natural History Collections as well as at the Gardens. Most of these activities are based on the collection's artifacts. The covered themes are diverse and include, among others, Marine Biology, Nature Conservation, Biodiversity, Reproduction in Nature, Plants and their Environment, Predators and Prey, Evolution of Humans, Adaptation and Ecology of Temporary Winter Pools.

As part of our special effort to develop programs on urban nature, we developed a science day on this issue as well. This new program has received a very positive feedback.

- **Research Workshops.** A series of 3-6 science days centered on one theme, targeted for environmental or biology high-school students, is integrated into their school studies. The first workshop developed was the 'winter pool' workshop, which was a pilot in 2003/2004 and then in 2004/2005 as an upgraded program. Following its success, two additional workshops were developed: Ecosystems and Urban Nature. The workshops were concluded with a celebrative event in the presence of the students' parents. The students then presented their work in posters and gave short lectures. We find that this mode is especially beneficial in teaching the theme of the program as well as scientific way of thinking.
- **Urban Nature enrichment program.** This program, in its third year now, with the cooperation of the TAU Price-Brodie initiative in Jaffa elementary schools, continues to receive very positive feedbacks. The program comprises of 9-10 activity sessions at the school and its yard and 3-4 additional activities at the Zoo and the Botanic Gardens. The program focuses on the living world in the immediate environment of

the children. For the children of Jaffa, a typical inner-city sector, the program reveals a new dimension in their otherwise very urban surroundings and nurtures new attitudes towards nature.

- **Science Camps.** Science camps were held during the Hanukah, Passover, and summer school vacations. The camp, a 4-5 days program, offers scientific exploration of the biosphere for elementary school children. Each day is focused on a major phenomenon or process in the living world; for example the food web, behavioral communication, and adaptation.
- **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's highlight was the course of the Society for the Protection of Nature in Israel: a 50-hour program in which over 100 new guides participated and leading TAU researchers gave lectures. This year's course was especially rewarding, as alumni from previous courses returned to hear lectures and/or expand their knowledge in new topics that they had missed in the past. The feedback was outstanding and we look forward to the next courses.

#### On-Line resources

Because the Collection's capacity for public visitation is very limited, we have made a special effort to develop the Nature Campus website – [www.campusteva.tau.ac.il](http://www.campusteva.tau.ac.il). This site reaches out to the public, and offers, in a language understandable to all, the wealth of scientific knowledge based on the Natural History Collections (Learning resources section).

- **Zoo On-Line** is a joint project with the I.Meier Segals Garden for Zoological Research. 6-8 cameras continuously broadcast the sights from the Zoo. The pictures are accompanied with information, updated by the Nature Campus webmaster, on the Zoo's inhabitants. The project is supported by the Israel Electric Company and Moked Emun security company.
- **Nature on the Web.** During 2005/2006, we began developing a new website and its first stage of development will be completed by February 2007. It will offer information in Hebrew about Earth systems, ecosystem services and highlights from status reports worldwide. In addition to being an open website, it will also serve as a foundation for youth competitions on sustainable development (developed with TAU's Science Oriented Youth Unit and the Ministries of Education and of Environmental Protection).

## **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 Robert May, Department of Zoology, Oxford University, Oxford, UK

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

## Museum staff

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

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

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

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

**Associate curators** (faculty members)

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

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

Ann Belinsky	Department of Zoology
Revital Ben-David-Zaslow, PhD	Department of Zoology
Vered Eshed, PhD	Department of Anatomy & Anthropology
Tova Feller	Department of Zoology
Leonid Friedman	Department of Zoology
Igor Gavrilov	Department of Zoology
Ermin Ionescu, PhD	Department of Zoology
Henk Mienis	Department of Zoology
Reuven Landsman	Department of Zoology
Tzilla Shariv	Department of Zoology
Nili Shinnar	Department of Zoology
Alex Shlagman	Department of Zoology
Tirza Stern	Department of Zoology
Chemda Zigman	Department of Zoology

**‘Nature Campus’**

Yael Gavrieli, PhD	Director
Anat Feldman	Content Development
Neta Servi	Public Programs Coordinator