A new course is created: Research, nature conservation and education in zoos

Zoos constitute cultural and educational institutes designated for the general public, as well as important scientific institutes in which diverse studies on wild animals are carried out. Today, more than ever, we understand that we, human beings, are responsible for providing zoo animals with all their needs – physical as well as mental and emotional. This understanding has led to the development of two important fields: animal welfare, and environmental enrichment as a tool for promoting animal welfare.

The new course, being offered to students in the Faculty of Life Sciences, and in collaboration with the university's Unit for Social Involvement, seeks to expose the students to various aspects of the world of zoo animals and to inculcate in them a comprehension of the crucial importance of zoos – to nature, to science, and to human beings in general.

Like other courses that are carried out
with the Unit for Social Involvement, this course too includes practical work. The students work on projects directed at promoting animal welfare in the Zoological Garden.

Forty students are currently participating in the new course; most of them are third-year B.Sc. students. They are carrying out their projects in small groups and in close cooperation with our dedicated animal keepers. The students take part in one of two types of project: planning and implementing enrichment tools; or planning a new exhibition. The students' work on their projects has just begun and we will keep our readers updated in the next "Garden News".

**On coatis and nesting**

Anyone who has noticed our pair of coatis must have wondered how these animals, originating from distant South America, have found their way into our Zoological Garden, which mainly holds animals from our own region. The answer lies in our attempts to cope with the huge nesting burden on the Garden's trees. Our two coatis, now about a year old, arrived here when they were very young. The idea is to deploy them as a deterrent against the herons, egrets and ibises that nest in the trees. When the next breeding season begins we will allow the coatis to climb the Garden's trees every day. We believe that this will deter the birds and cause them to leave the Garden and choose to nest in a safer place.

*Garden news are also available at our [website]*
In the meantime, the coatis are growing up, becoming accustomed to Ehud Katzir, their keeper, and enjoy a variety of enrichment tools that keep them busy and happy.

**A national seminar on reptiles**

On Monday, May 28, 2018, a national seminar on reptiles intended for Israel Nature and Parks Authority (INPA) guides was held in the Steinhardt Museum on Natural History, as preparation for updating the "Red Book". About 50 managers, tour coordinators and guides from INPA education centre in Israel participated in the seminar.

The seminar was opened by Prof. Tamar Dayan, who presented the new museum and welcomed the fruitful cooperation between Tel Aviv University and INPA.

The participants learned about Israel reptiles and discussed various issues relating to reptile conservation: the trade in reptiles as pets and the threat of invasive species that accompanies it; reptile species in danger of local or global extinction; Israel as a habitat for reptiles; and the "do and don’t do" rules when demonstrating reptiles.

As part of the seminar, the participants visited the live reptile collection in the Zoological Garden as well as the "wet" collection of the museum.
A designated feeding apparatus for the northern bald ibises

If you have happened to look recently at the water birds' yard you might have wondered about the purpose of the new apparatus. It's very simple – it's a feeding apparatus for birds! And for which birds? For the northern bald ibises. One of the problems typical of a mixed species yard is not that of food shortage – there is enough food for everyone – but how to make sure that a species with specific dietary needs will be able to obtain the food that is intended solely for it. The solution is a purpose-designed apparatus enabling only an individual of the specific species to reach the food in it. In this case, those with the specific dietary needs are the ibises. The new apparatus is constructed such that the ibises need to insert their long and curved beaks between the mesh wires in order to reach the food that is hidden in the soil that fills the apparatus. The beaks of the other water birds that live in the yard are not suitable for pulling out food from between the mesh wires, and thus only the ibises can eat this food. The new apparatus encourages the ibises to practice their natural foraging behaviour while also allowing us to monitor the food they are eating.

On eggs, neonates, and chicks: The breeding season is on!

Our greylag goose flock comprises seven geese: two breeding pairs and one female, which also breeds. And how does she breed alone? She probably "steals" copulations from one of the two males. From which one we are not sure, and we are not going to take part in gossip!

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The main problem with the breeding geese is the crows, which try to predate the chicks as soon as they hatch. If we do nothing, the survival chances of the chicks on the main grass are zero. As we want our geese flock to grow, we have to watch their nests carefully and take care of the chicks.

Hadar Yosifon, our geese keeper, follows the geese carefully as soon as they start building their nests. When the first eggs are laid they are removed to an incubator. The geese then lay a second clutch and the pair incubates the eggs themselves, under Hadar's watchful eyes. A few days before they hatch, the eggs are checked with a screening device and the fertile eggs are also removed to the incubator. As soon as the chicks hatch they are tended to by Hadar, who serves as an "adoptive mother". Although the chicks become imprinted on Hadar, the imprinting is not too strong as they are raised in pairs. From our past experience with Hawaiian geese, the chicks we raised this way incorporated easily back into the adult flock. We hope this will also be the case with the greylag geese chicks. Every few days Hadar takes the young chicks to the small pond in the thicket aviary, so they can swim. The chicks, however, refuse to enter the water without Hadar and wait for him. Only after Hadar too enters the water do the chicks happily join him.

And another happy occasion: the lesser kestrels have nestlings. They are still very young and hide in their nesting box, but every now and then our keeper gets a glimpse of them.

Garden news are also available at our website
The rock hyraxes too have produced young! They are very shy, but if you stand very still and wait patiently you might see them come out of their hide, start to wander around, and interact with each other.

In the middle of April our females tortoises started to lay eggs. Their keeper, Barak Levi, encircled the eggs with netting to prevent the crows from reaching the eggs and the young when they hatch. We are now waiting patiently for the hatching, due about 90 days after the eggs are laid.

At the beginning of May another young animal joined our Garden: a female mole-rat about three months old. She had been found in Holon's sand dunes and was brought to the Garden. It was impossible to return her to her natural habitat so we have gladly adopted her. We are hoping to build her a spacious exhibition in the near future, so she will feel at home and we will be able to show our visitors the tunnel system that she digs in the soil.
As they do every year in this season, the yellow-legged gulls are nesting on the main grass. The first chicks can be seen wandering around the Garden.

A confused breeder...! This sweet motherly hen in the photo found a hidden peahen nest, and decided to adopt the nest and the eggs. Andy why? Who can guess what goes on in a hen's head? And what will happen to the chicks? We shall wait and see, and maybe they'll become the Garden's version of the Ugly Duckling?....
And finally, a small and cheerful news item

Our Caucasian squirrel, which we transferred to the thicket aviary about three months ago, is enjoying his large and varied new environment. He has got used to his keeper, Hadar Yosifon, and bravely climbs on his leg, takes peanuts from his hand and buries them in the ground. The squirrel has also got used to the visitors and can now be seen from a short distance. There is no doubt that he feels comfortable in his new home.
Botanical Gardens festival

“The Botanical Gardens Day” was celebrated three days before Passover. On this day, all around the country, eleven such gardens opened their gates and welcomed everybody to enjoy a day of fun activities.

Many families, adults and young alike, arrived at Tel Aviv University’s Botanical Garden and took part in the various activities: guided tours, challenging riddles, special exhibitions of carnivorous plants and geophytes; and a fascinating display of live insects, presented by their researcher Levona Ler (courtesy of Alex Shlagman, director of the live insect collection at the Natural History Museum).

Visitors to the Gardens all around the country voted with their feet, and we hope to make this day a national spring tradition.
Fruitful Jack

Have you ever heard of a tree called *Artocarpus heterophyllus*? And what about the Jackfruit tree? *Artocarpus heterophyllus* is a tropical tree from the Moraceae family. The genus Artocarpus’s Latin name means “breadfruit”, and many of the plants in this genus are utilitarian plants. Among them, *Artocarpus altilis* the breadfruit tree is considered a staple food in many tropical regions due to its carbohydrate-rich fruit.

The Jackfruit tree is cultivated and well distributed across the Tropical belt, although it probably originated from South-East Asia. In addition to its edible fruit, which is considered as the largest of all cultivated fruits, the tree is also used for woodwork and medicinal purposes.

In the Botanical Garden you can find a Jackfruit tree in the Many-Ellern utilitarian plant collection greenhouse. Its fruits are still small, no bigger than a fist, whereas in nature they can reach 35 kg and almost one meter in length. The Jackfruit tree is located in the northern part of the greenhouse, in the middle of a flowerbed near other interesting trees such as the Teak tree (*Tectonia grandis*), Marula (*Sclerocarya birrea*) and Commiphora habessinica, a close relative of the species from which the oil of persimmon (oil of balsam) was produced.

Follow-up

Harvest time

At the beginning of May we started harvesting the Tef plot (*Eragrostis tef*). Harvesting is performed manually using traditional methods, a sickle, and in a gradual manner so that not all the field
is harvested at once. To our relief, the late spring rain and even the hail in the middle of May do not appear to have significantly damaged the crops. We will be able to determine the final outcome only after the threshing has taken place.

"Land of Wheat"

In the previous "Garden News" we wrote about the "Land of Wheat" project, in which we planted several traditional wheat varieties (land races) alongside modern cultural wheat. At the beginning of May, harvest time, we collected seeds from six of the seven varieties. The differences between them were already clearly noticeable when collecting the seeds. The domesticated wheat, which is shorter than most of our other varieties, was first to ripen and most of the spikes were empty at the time of collection. It seems that the ants had been ahead of us.

Surprisingly, wild wheat (Triticum dicoccoides) and emmer (Triticum dicoccum), the oldest wheat varieties, were the most convenient to collect. The wheat had remained high and erect, and the spikelets, surprisingly, remain full of seeds. The spelt (Triticum spelta) wheat seeds ripened later and remained green. The Garden’s volunteers will clean the seeds and prepare them for sowing in the coming autumn.

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A safety fence and bio remediation in the oasis plot

A new safety fence has been erected around the water pond in the Oasis (Ein Gedi) plot. The Garden’s team, led by Haim Kahalani, installed a light fence that enables comfortable and safe observation of the water plants.

Numerous tiny units of *Lemna minor* floating in the water create a dense green cover. This perennial plant, belonging to the Araceae family (sub. Lemnoideae), has flowers and tiny fruit and, is considered the smallest higher plant in the world. *Lemna minor* is distributed worldwide in freshwater bodies and slow-running streams, being transferred via the legs of aquatic birds. This small plant is also considered a utilitarian plant, being used to feed fish and livestock, as well as for the bioremediation of aquatic bodies, due to its ability to adsorb heavy metals in low concentrations.

Around the Garden’s Oasis pond several trees typical to this habitat are thriving: *Ziziphus spina-christi, Balanites aegyptiaca, Cordia sinensis*, all of a Sudanian chorotype.