שאלון מנהלי אוספי הטבע בעבור מיפוי והכרת הצרכים במדינת ישראל בתחום אוספי הטבע הלאומיים

מונתה ועדה מטעם האקדמיה הלאומית הישראלית למדעים אשר תפקידה לבחון את מצב השימור, הטיפוח והמחקר באוספי הטבע הלאומיים.

השאלון להלן מופנה אליך כאל מנהל אוסף טבע אשר יכול לעזור לנו להכיר טוב יותר את הצרכים הללו. מילוי השאלון הינו אחד הכלים החשובים שלנו לזהות מהו הצורך, ונודה לך אם תוכל לסייע לנו בנידון.

השאלון נכתב בלשון זכר מטעמי נוחות בלבד, אך מופנה למנהל ולמנהלת ללא כל אבחנה באותה מידה. את השאלונים המלאים נבקש להחזיר למוסד, לכתובת דרכה קבלתם את השאלון

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1. תיאור מצאי הפריטים באוסף.
2. תיאור תהליכי איסוף פריטים נוספים לאוסף.
3. טכניקות שימור הפריטים (ניתן ורצוי לצרף תמונות).
4. כוח האדם הטכני העומד לרשות האוסף והרכבו של כוח האדם
5. קטלוג ומאגרי המידע הזמינים לחוקרים על האוסף
6. התשתיות הפיסיות העומדות לרשות האוסף.
7. קהילת החוקרים העושים שימוש באוסף, הן מהמוסד שלכם, הן ממוסדות אחרים בארץ ומחו"ל.
8. מדיניות השימוש למשתמשים חיצוניים (דרך הבקשה, זמינות המוצגים, עלויות וכדומה).
9. שיתופי פעולה של האוסף עם אוספים דומים מחו"ל.
10. ארגונים בין-לאומיים בהם חבר האוסף.
11. דוגמאות למחקרים מצטיינים אשר עשו שימוש באוסף- נא לציין מאמרים אשר פורסמו בעיתונות מדעית מובילה ב- 5 השנים האחרונות.
12. אנא הוסף כרצונך על הצרכים ועל נושאים נוספים שהיית מעוניין בהם בהקשר מצב השימור, הטיפוח והמחקר באוספי הטבע הלאומיים.

1. The Zoological Research Garden in Tel-Aviv University are the only academic collection of live indigenous animals in Israel. The Garden aims to maintain a collection of most Israeli vertebrate fauna. They currently inhabit ~100 bird species, ~40 mammalian species and ~80 species of reptiles and amphibians housed in an area of ~28 dunam.

The main aims of the collections are: (1) Enabling scientific research on Israel's wild fauna. There is no other option today in the Israeli academy to work with wild animals in the institutional level. Researchers working with classic animal models (e.g., rats and mice) can purchase their laboratory animals from commercial companies (which breed and supply animals for research), and they can house them in animal facilities which exist in all research institutes in Israel. There is no equivalent for wild animals. The Garden provides all facilities and manpower allowing such research. Our doors are open to researchers from all research institutes in Israel and abroad (see more below). (2) Conservation – over the years, the Garden has taken part in several successful conservation projects such as: [a] the recent creation of a reproduction kernel of the endangered Syrian spadefoot toad and the release of hundreds of

its tadpoles which hatched in the Garden in the wild, [b] participation in the reintroduction program of the Griffin vulture led by the Nature Reserve Authority and more. (3) Education – The Garden is the best collection of Israeli fauna in the country and accordingly, they host hundreds of groups yearly from kindergarten children to University students. The stream of visitors is expected to increase by 10-folds in the next few years with the opening of the Steinhardt Natural History Museum nearby.

2. Animals are brought in from several sources including the veterinary hospital for wildlife in Ramat-Gan and rangers of the National Park Authority. Mostly, only species that are not already held in the Garden or species of special interest will be collected, as we are limited in the number of specimens that we can maintain per species.

3. Because the Garden aims to enable research with live animals, they must be kept alive, what requires a lot of 'know-how'. The Garden is a hub of knowledge regarding how to hold and breed Israel's wild fauna. This includes an understanding of what to feed them, of what environment to provide and how to enrich them. In order not to lose it, this knowledge-base must be continuously preserved by transferring it between generations of animal-experts, as it is not documented anywhere and hard to re-develop once lost.

4. The Garden's manpower is composed of 8 animal-care workers and a manager who is also a vet with expertise in wild animals. Many of the workers spend a good part of their career in the Garden and thus develop expertise in animal-maintenance that are hard to match. They are each in charge of part of the animals taking part of both the daily maintenance duties and special tasks such as renovating cages. They are all highly skilled in this domain and can quickly thus take-over new missions such as the Syrian spadefoot toad kernel (see above).

5. A full list of the animals in the Garden can be found on-line: http://zoo.tau.ac.il/eng/content/our-animals.

6. The Garden is located in central Tel-Aviv on an area of 28 dunam. This relatively huge space allows proper housing for the animals, but more importantly, it allows establishing new experimental setups based on the needs of the researchers. While University animal facilities are usually extremely space-limited providing very little space for experiments in freely behaving animals, the zoological Garden enables the design and development of large experimental set-ups under pseudo-natural conditions. Some recent examples include: a water-pool for studying the bio-mechanics of bird diving bio-mechanics, a pseudo-natural experimental setup for studying the long-term effects of light pollution on rodents and a facility for studying whole-brain neural activity in reptiles.

7. Around 20 researchers use the Garden regularly. Most of these researchers are the members of the School of Zoology in Tel-Aviv University (TAU), however, in recent years we have made it our goal to open this unique facility for researchers from all-over Israel and from around the world. Indeed, there are now four experimental setups running in the Garden led by researchers from other Schools in TAU and from other universities (e.g., The open University, Bar-Ilan and BJU and soon Weizmann). We are also constantly approached by researchers in Israel and abroad who are interested in running studies on wild species and cannot do so in their own institutes due to lack of space and maintenance knowledge. With the rapid increase in interest in new (non-conservative) animal models we expect the Garden to provide research opportunities to many researchers in the next years. Importantly, we

focus on Israeli fauna, but our infrastructure and knowledge-base can also be used to design experimental setups with non-Israel animals.

8. We are currently in the process of making the Garden available to any researcher from around the world. Interested researchers must submit a request (through mail) describing their needs – animals, space and period. The managing committee of the Garden will then discuss their needs and see if they can be met. The payment is calculated according to the costs of housing the requested animals. Researchers who are not from the School of Zoology (from other schools or institutes) pay an additional 50% overhead which is used to improve the Garden's facilities.

11. Selected recent publications (from the past 3 years) that relied on the Garden for performing the study:

- Rabi, C. Zadicario, P., Mazon, Y., Wagner, N., and Eilam, D. The response of social and non-social rodents to owl attack .*Behavioral Ecology and Sociobiology* 71 , 131 (2017)
- Eilam, D .The cognitive roles of behavioral variability: Idiosyncratic acts as the foundation of identity and as transitional, preparatory, and confirmatory phases .*Neuroscience & Biobehavioral Reviews* 70–55 (2015) 49 ,
- Truskanov, N. & Lotem, A., 2017, Trial-and-error copying of demonstrated actions reveals how fledglings learn to 'imitate' their mothers**.** *Proc. R. Soc. Lond. B* 284, No. 1849, p. 20162744.
- Truskanov, N. & Lotem, A., 2015. The importance of active search for effective social learning: an experimental test in young passerines. *Animal Behaviour*. 108, 165-173
- L. Harten, Y. Matalon, N. Galli, H. Navon, R. Dor, Y. yovel (2018) Persistent producer-scounger relationships in bats. *Sci. Adv.* 4: e1603293
- Prat Y, Azoulay L, Dor R, Yovel Y (2017) Crowd vocal learning induces vocal dialects in bats: Playback of conspecifics shapes fundamental frequency usage by pups. *PLOS Biology* 15(10): e2002556
- S. Danilovich, A. Krishnan, W. J. Lee, I. Borrisov, O. Eitan, G. Kosa, C. F. Moss, Y. Yovel (2015) Bats regulate biosonar based on the availability of visual information *Current Biology* 25(23), 1107-1125
- Levin E, Plotnik B, Amichai A, Braulke L.J, Landau S, Yom-Tov Y, and Kronfeld-Schor N. (2017) Subtropical mouse-tailed bats use geothermally- heated caves for winter hibernation. *Proceedings of the Royal Society of London B.*
- Tal - Krivisky K, Kronfeld-Schor N. and Einat H. (2015) Voluntary exercise enhances activity rhythms and ameliorates anxiety- and depression-like behaviors in the sand rats' model for circadian rhythms related mood changes. *Physiology & Behavior*.151:441-447.
- Ben-Hamo, M., K. Tal, R. Paz-Cohen, N. Kronfeld-Schor and H. Einat (2016). "Differential effects of photoperiod length on depression- and anxiety-like behavior in female and male diurnal spiny mice." *Physiol Behav* 165: 1-6.
- Danon G., Ben-Shlomo R., Keidar N., and Dorchin N. (2017) Geographic and behavioral isolation promote the differentiation of parapatric host forms in bud-galling midges. *Biological Journal of the Linnean Society*. **121**: 163-173.
- Karameta, E., Gourgouliani, N., Kouvari-Gaglia, D., Litsi-Mizan, V., Halle, S., Meiri, S., Sfenthourakis, S. and Pafilis, P. (2017) Environment shapes the

digestive performance in a Mediterranean lizard. *Biological Journal of the Linnean Society.*

- Ribak G., Dafni E., and Gerling D. (2016). Whiteflies stabilize their take-off with closed wings. *Journal of Experimental Biology* 219, 1639-1648 doi:10.1242/jeb.127886