CCME Regional Conference Arava 2018

Coexistence with Wildlife

Hazteva Visitor Center, Hatzeva 11/12/18

10:00 Welcome – Dror Ben-Ami, Oded Keynan, Anton Kalilieh

10:20 Compassionate Conservation perspective on coexistence with wildlife, and in particular on migrant (invasive) species – Dror Ben-Ami

10:40 In situ sterilization of eggs in high nests of Indian House Crows - Yoav Motro

11:00 Proposed mechanism for increased reproductive potential of wild boars under hunting pressure - Achiad Davidson

11:20 Attitudes to wild boars in an urban context – Myri Lew

11:40 Coffee break

12:00 Coexistence with wildlife in the Arava – Oded Keynan

12:20 Regional Climate Change Adaptation Center - Yaara Dalal

12:40 ? Biodiversity hotspots in the West Bank - Banan Al Scheich

13:00 This is the dual nature of nature ethics - Yochay Carmeli

13:20 Lunch

14:00 INRA overview: Management of human-wildlife conflicts in Israel - Noam Leader

14:20 Gazelles in the Arava - Tal Polak

14:40 Wild boars project in Haifa, as an example for conflict mitigation through giving place to the different points of view involved in it - Alexander Eyal

15:00 Status of Nature Conservation in Palestine: Obstacles and Challenges - Anton Kalilieh

15:20 Coffee break

15:40 Compassionate Conservation: Biodiversity Enhancement on Green Roofs
Green Roofs – Leon Blaustein

16:00 Animal Tracking: A Non-invasive Research Tool - Asaf Ben David

16:20 LTSER in the Arava and stakeholder engagement– Jessica Schäckermann

16:40 Jordanian human wildlife conflicts in the Jordan Valley?

17:00 Coffee Break

17:20 The effect of environmental factors and human interference on the population and group dynamics of the cooperatively breeding Arabian babblers – Oded Keynan

17:40 Coexistence with wildlife: lessons from Australia – Arian Wallach

18:00 Damage to *Salamandra infraimmaculata* populations by human activity in creating water pits is a death trap in semi-arid habitats – Gad Deganiab

18:30 Dinner

19:00 Keynote – In search for alternative methods to control the reproduction of the Nutria Nutria management and TIME – Uri Shanas

A compassionate conservation perspective on non-native species

Dror Ben-Ami, Compassionate Conservation Middle East, The Steinhardt Museum for National History, Tel Aviv University, drorbe@post.tau.ac.il

Compassionate Conservation (CC) is a broad area of interest within conservation that has both theoretical and practical dimensions. In relation to non-native (migrant) species CC is non-judgemental about which species occurs where, and is more concerned with the particular functional role of any species within a system.

From a theoretical perspective CC acknowledges the rapid anthropogenic changes to our natural world – the Anthropocene. Although invasion biology necessitates the need to arrest the spread of species across historical geographic and habitat boundaries, there is also mounting evidence that increased movement of species may actually preserve regional biodiversity. CC postulates that the increased occurrence and dispersion of non-native species may be a response mechanism to the Anthropocene brought changes of habitat loss, environmental change and homogenization. Migrant (non-native) species should be observed and studied in the context of their adaptive response to rapid environmental changes and functional role in new environments.

On a practical level, CC seeks to address human-wildlife conflict management in a humane (primarily non-lethal manner). Both conservation and animal protection (from direct human caused harm) are strong social values. Although human-wildlife conflict and harm caused to wildlife by humans has increased in the Anthropocene, there is also increasing public opposition to the harm caused due to wildlife management. CC aims to mitigate this harm through a structured approach to conflict management. Four decision making steps for wildlife management are proposed to match management actions with accepted norms of behaviour towards wildlife, particularly where they apply to non-native species.

In situ sterilization of eggs in high nests – Indian House Crows

Dr. Yoav Motro, Head, Vertebrate and Snail Dept, Plant Protection and Inspection Services, Israel Ministry of Agriculture and Rural Development

The Indian House Crow (*Corvus splendens*) is an invasive bird in Eilat region in southern Israel. In attempt to control its populations, an in-situ egg oiling technique was developed and applied. Egg oiling, using vegetable cooking oil, physically blocks pores in the shell and prevents gas exchange with the environment. This inhibits embryo development, while maintaining the egg's external form. Studies have shown that most birds incubate the sterile, oiled eggs and that replacement clutches are rare. This method is target specific, non-toxic, safe and environmentally friendly.

We developed and implemented a method of real-time nest viewing and egg oiling in-situ without human contact in nests located up to 18m high. The device invented (patented PCT/IL2017/050838) consists of an extending pole with a real-time broadcasting camera on top and an internal tube that dispenses oil simultaneously from the ground.

From 2016 till 2018 we checked all nests found in Israel (300-400 nests) and oiled their eggs (or removed nests with hatched chicks). Of the 91 oiled nests revisited, none (except four nests hatching during treatment) hatched; 45% were abandoned; and in 55% treated eggs were incubated at least three more weeks.

The current crow population is reduced by 19%, compared to population dynamic model predictions. Assuming the younger cohorts are deficient in representation, population decrease will accelerate in the future.

In light of these results, this method was further implemented on Monk Parakeets (*Myiopsitta monachus*) showing good results (87% hatching prevention), but was less effective on Rose-ringed Parakeets (*Psittacula krameri*).

Proposed mechanism for increased reproductive potential of wild boars under hunting pressure

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[3]Biology and Environment, University of Haifa – Oranim

Throughout Europe and Asia, populations of wild boars (*Sus scrofa*) demonstrate a steady increase in recent decades. This results in increased conflicts between wild boars and humans. Culling wild boars is the most widespread management tool throughout the world in attempts to minimize these conflicts. Yet, studies demonstrate that populations of wild boars exposed to high hunting pressure have shorter generation times leading to higher reproduction rates. The mechanism of this phenomenon have not been examined to date, thus favoring the culling practice to go undisturbed. Our research goal is to evaluate the effects of hunting on wild boars population structure, dynamic, behavior and reproduction in four different land uses: urban with and without hunting, non urban (agriculture and nature reserves) with and without hunting. To do so, we are using motion triggered cameras, giving up densities (GUDs) experiments and analysis of stress and reproduction hormones levels in hair. Our results, so far, show striking behavioral differences between boars in urban and open spaces regardless of hunting pressure based on GUD studies and analysis of videos. These experiments suggest a lower perceived risk of humans in urban areas, and putatively affecting the reproduction potential of boars in human vicinity. Furthermore, we found that hunting in non-urbanized lands decreases the dispersal of the yearlings. These herds also showed a high level of vigilance compared to the urban herds. We suggest that the combination of vigilance and low dispersal rates may lead to increased reproductive potential.

Environmental Management: The interaction between wild boars and human-urban spaces

Myri Lew and Daniel Orenstein, Technion University

The city of Haifa lies within a very special environment, with a very thin and almost non-existing line between the urban and the natural spaces. This unique structure comes with its own challenges, one of them is the conflict made by the interaction of the wild boars with humans and the urban textures.

This project included an analysis of the conflict and its different aspects. Through the analysis we visited the neighborhoods most affected, involved the public and stakeholders – with a survey and interviews; built alternatives with different sets of solutions which were evaluated, to finally find the ultimate possible solution and present it to the public involved.

Regional Climate Change Adaptation Center

Yara Dahdal, Nature Palestine Society

The Arava Institute for Environmental Studies (AIES) has launched its “Track II Initiative” in order to stimulate cooperation between Israel, Palestine, and other countries in the region in issues related to environment. Among the projects that are being implemented is the establishment of a Regional Climate Change Adaptation Center (RCCAC); which will enable scientists from the region to work together in the long term on issues of vital concern.

The importance of establishing RCCAC lays in providing the possibility to promote regional cooperation in the domain of climate change, and that the region as a whole will adopt the appropriate adaptation measures to combat climate change disastrous consequences. The center will provide a mechanism which will allow for more effective response to be made in the various affected fields, and seek to influence policy. The specific goals of the center as well as crucial issues related to the location, management, finances, content, and the relations between RCCAC locally, regionally, and internationally with the stakeholders and governments have been set by a group of Israeli and Palestinian professionals.

The center will be a leading program of great importance for the region, despite all the difficulties in bringing stakeholders from the troubled region to address adaptation measures for the unavoidable consequences of climate change.

The dual nature of nature ethics

Yohay Carmel, Technion University

Our obligation to nature can be based on two separate moral principles. The golden rule, treat others as you'd like to be treated, is a prominent moral stance concerning relationships between humans. It could, and sould, be extended to include sentient animals, and form a robust basis for nature ethics, namely compassion-based ethics. Diversity, on the other hand, has real intrinsic value, being universally superior to homogeneity. Protecting diversity in nature is actually protecting the rare. Protection of sentient animals and protection of rare species may congruent at times, such as in the case of whaling. Yet, often these two value systems may point to opposite directions, as, for example, in the case of domestic cats. Making decisions in such conflicting situations is phylosophically challenging, and will be discussed here briefly.

Management of Human-Wildlife Conflicts in Israel

Dr. Noam Leader, Ecology Department, Science Division, The Israel Nature and Parks Authority

The Israel Nature and Parks Authority (INPA) is responsible by law on the protection of nature in Israel. The INPA applies science-based conservation management for the conservation of wildlife and plants and their natural habitats. In a small and densely populated country such as Israel, this presents many challenges, among them dealing with overabundant or outbreaking animal populations. Species of this category are native species that are well-adapted to the human environment and exploit its resources for establishing large populations, possibly impacting other native wildlife and plant species and often leading to increased conflicts with humans.
In this presentation I will give on overview of the varied human-wildlife conflicts in Israel, and present management practiced by the INPA to mitigate this conflict and its impact on nature.

On the brink: what's going on with the rarest gazelle in Israel

Tal Polak, Eran Hyams, Zohar Ben-Shitrit, Benny Shalmon, Oded Sahar, Asaf Tsoar and Noam Lider

The Acacia gazelle (*Gazella gazella acacia*) was discovered in the 1960s by the zoologist Giora Ilani, in the area of Kiboz Yotveta. The population was never large and even at its peak size it never surpassed 100 individuals, however it did reach lows of 10 individuals. At first the species was considered a sub-species of the Palestine mountain gazelle (*Gazella gazella gazella*) but recent genetic works have discovered that it is a separate species probably endemic to Israel and related to the Arabian gazelle (*Gazella arabica*). Since the population was discovered its numbers have been recorded every year and it is observed weekly by Dr Benny Shalmon since the 1980s.
Today the population is around 30 individuals living in a fenced enclosure, located in the west side of Yotvata nature reserve, to protect them from local predators. Israeli Nature and Park Authority (INPA) is investing many resources and effort to insure the continuance survival of the species. These includes, biannual counts, calculating the enclosures' caring capacity, food augmentation, electric fence maintenance and extraction of individuals from the local enclosed Dorcas gazelle population to reduced foraging competition. The INPA's goal is to bread the population to create at least two breading core populations and two to three sustainable wild populations.
The main hinders to the program's success is the low population growth rate of the species' this in spite of a high breading potential (acacia gazelle females can breed twice a year). This can indicate on a problem with species survival, however the cause is yet unknown. One of the theories is foraging competition with the dorcas gazelle population living in the enclosure, this in spite the fact that it's seems that there is a partial niche separation between the two species. Another reason might be low genetic diversity due to several bottlenecks in the species' past, the most recent in 2013.

The purpose of today's lecture is to present the acacia gazelles' reintroduction program and discuss the knowledge gaps on our understanding of the species biology, genetics, physiology and behavior. Filling these knowledge gaps is crucial for the success of the reintroduction program especially in the light of the low population growth rate and the strong fluctuation in population size along the years.

Wild boars project in Haifa, as an example for conflict mitigation through giving place to the different points of view involved in it

Alexander Eyal, Wild – Humane project, alexander@hazirbar.co.il

The conflict between wild boars and humans in Haifa is a teaching example for several issues:
What happens when an urbanised population comes across nature, and its untamed residents.
Different approaches to face conflict: focusing only on our side's interests and trying to settle the conflict by using power, or understanding the interests of both sides (humans and animals) and striving for a solution that is good for both.
Collaboration between organizations with opposed views on the grounds of common goals.

Haifa is the third biggest city in Israel, and the humane-boars conflict in it is constantly growing. A collaboration between municipality veterinary services and environmental and animal-rights NGOs was established in 2015, to find sustainable and humane tools for dealing with the conflict. Together, we built a joint awareness campaign. Additionally, we prepared a pilot program proposal, with 4 non-lethal management tools, that will be tested for its effectiveness.
The new mayor of Haifa, who was elected recently, is opposed to the killing of boars and is expected to support the non-lethal and sustainable approach that we advised.

Status of Nature Conservation in Palestine - Obstacles and Challenges

Anton Khalilieh, Nature Palestine Society, anton.sunbird@gmail.com

After the Oslo Accords (1993-1994), the newly established Palestinian National Authority attempted to deal with environmental problems and identify stakeholders authorized to manage environmental matters. The first time Palestine represented at the international level regarding the environmental issues was on the 7th Special Session of the Governing Council/Global Ministerial Environment Forum in Cartagena, Colombia, 2002. In 2012, Palestine has been recognized as a permanent, non-member observer state at the United Nations. Therefore, the Palestinian Authority has begun perceiving and presenting itself internationally as the State of Palestine. As such, the PA has signed international conventions including environmental agreements and treaties related to natural resources. The most recent report on the conservation of biodiversity and conservation was issued by the Environmental Quality Authority (EQA) in compliance with the Convention on Biological Diversity, 2015. In this report, the EQA summarized a conclusive range of future objectives, gaps, and obstacles, including the focus on biodiversity and conservation, emphasizing the lack of primary scientific data, information and documentation on biodiversity in Palestine, lack and/or limited human resources, weak legislations and enforcement, inadequate awareness and commitment to biodiversity, and the effect of the current political situation on data collection, conservation, and enforcement of existing law. Despite that, the EQA, in cooperation with the Ministry of Agriculture and other governmental bodies and local institutes and organizations have done several large scale project in the field of biodiversity and conservation. However, conservation actions are still at the childhood state in the Palestinian Territories.

Compassionate Conservation: Biodiversity Enhancement on Green Roofs

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Background/Questions/Methods

Green roofs may provide opportunities to enhance biodiversity in urban areas. Island biogeography theory (IBT) predicts that diversity decreases with both increasing horizontal distance from green areas and vertical distances (building height) and increases with increasing plot size. Habitat heterogeneity on green roofs may also influence species richness and species richness may also act as a barrier against invasive species. We address these questions with a number of experimental studies: (1) effects of identical arrays of plants on roofs of varying horizontal and vertical distances on arthropod diversity; (2) assessing plant species richness as a function of plot size; (3) effects of inorganic substrate and organic heterogeneities on species richness; (4) effects of plant species richness on invasive plant colonization; (5) bird species, plant species and arthropod species colonizing green roof habitats.

Results and Conclusions

Our studies yielded the following results: (1) arthropod diversity decreased with increasing distance from green areas and increasing vertical distance supporting Island Biogeography Theory (IBT). Roof plots and adjacent yards had low community overlap suggesting that green roof habitats are unique habitats in urban areas; (2) diversity increased with increasing plot size, also supporting IBT; (3) increased fine-scale heterogeneity did not increase plant or arthropod richness. Fine-scale heterogeneity may result in small populations which increases the probability of local species extinctions; (4) increased plant species richness served as a barrier against invasive plants; (5) Birds utilize these green roof habitats; (6) Storm water drainage refers to reducing storm water. This result is consistent with many other studies demonstrated a lack of successful invisibility when species richness is high. Overall, our studies suggest that green roofs can contribute to higher diversity in highly urban systems.

Animal Tracking: A Non-invasive Research Tool

Asaf Ben-David, Department of Zoology, Tel Aviv University, Tel Aviv, Israel, Phone: +972 535 223053; Email: asafbd@gmail.com

Since the dawn of humanity, from hunter gatherer societies to herders and farmers, tracks and field marks have served as a tool for understanding and monitoring the environment. Modern ecological research needs to incorporate a great number of variables and gather a large amount of field sightings while often the research subjects are nocturnal, reluctant to trap or shy away from human presence.

Tracking requires high skill abilities and good quality documentations of tracks and field marks, a factor which has inhibited the development of these methods in the past. But in the last decade, professional communities are developing worldwide, committing to international standards for data collection and valuation of the tracker's professional capabilities.
A great deal of information can be gathered from tracks, scats and territorial markings during a short time period and at a high resolution. Incorporating tracking with modern research tools such as camera traps, machine learning, biomechanics, genetics and forensics, create powerful tools for understanding the environment.

In this talk I shall present the foundations of tracking, which data can be collected from the field and current research which uses tracking as a tool for ecological studies. I shall present two surveys: one of the Stone marten (Martes foina) and one of the Desert monitor (Varanus griseus), two elusive species, which by means of tracking, for the first time, provide a tool for population size estimation through non-invasive methods.

Finally, I shall review the activity done in Israel to promote the field of tracking and plans for building biodiversity monitoring communities.

Long Term Socio Ecological Research: Applied science for nature and humans

Jessica Schaeckermann, Dead Sea Arava Science Center, jessica@adssc.org

Long Term Socio Ecological Research (LTSER) platforms support interdisciplinary research that stretches over decades, connects humans with nature and finds applicable solutions to natural and ecological problems presented by stakeholders of the area. These research platforms stretch over big areas to cover entire regions and ecosystems. The Arava LTSER platform covers an area between the Dead Sea and the Red Sea and includes research from different scientific fields mainly in Ecology and Sociology. The scientific committee of the Arava LTSER did stakeholder mapping and uses cognitive approaches to interview all stakeholders of the area to gain knowledge about the concerns and problems stakeholders face in the area and which are connected to nature and the ecosystem. We did Ecosystem Service (ES) mapping and use these ES to link nature and humans and to enable applied research towards a sustainable desert community that coexists with the desert ecosystem with minimal impact on wildlife.

The effect of environmental factors and human interference on the population and group dynamics of the cooperatively breeding Arabian babblers

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In cooperatively breeding species, where some individuals delay their own dispersal and take care of young that are not their own, the group may serve as a buffer between the individual and the environment. Though studies have shown that cooperative breeding may serve as an adaptation to temporally variable, but seasonal, environments, the relative importance of environmental factors and of human interference on group dynamics in cooperative breeders is not well understood. This is perhaps owing to a paucity of long-term databases that cover a wide variation of environmental extremes. A 35-year continuous, comprehensive life history database for cooperatively breeding Arabian babblers (Turdoides squamiceps) was used to investigate how social and environmental factors affect population and group-level demographics such as reproductive success, recruitment rates, the likelihood of group extinction and the existence of Allee effects. Both social and environmental factors were found to influence group dynamics and that Allee effects (component and demographic) exist in the population. It would seem that human interference, mainly agriculture, plays an important role on population dynamics and group demography of Arabian babblers. Though further research is needed in order to understand the effects of environmental factors and human interference on the population, there is no doubt that long term research on the babblers provides a significant overview of the entire regional ecological system.

Damage to Salamandra infraimmaculata populations by human activity in creating water pits is a death trap in semi-arid habitats

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Abstract

The different breeding sites of Salamandra infraimmaculata on the southern border of its distribution were examined and mapped in order to estimate the damage caused by water holes that could represent death traps for salamanders in xeric habitats. Among the various types of breeding sites (springs, streams, water holes, winter pools and reservoirs), the larvae of salamanders were detected in high numbers in springs and streams (503) and water holes (48), and in relatively low numbers in winter pools. Two water holes were examined in detail to estimate the damage caused to S. infraimmaculata where breeding places are limited. During the winter, both males and females enter a water hole for breeding. The percentage of males in and around the water hole was 42% and that of females 29%. After the salamanders' oviposition in the water, they try to return to terrestrial habitats, but are unable to do so and lose weight and die. The body mass index (BMI) of salamanders decreases from winter (December) after they move to the water hole to spring (April), when they are found in the water hole. The estimation of potential damage is about 300 mature salamanders annually.

In search for alternative methods to control the reproduction of the Nutria and TIME

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The Nutria (*Myocastor coypu*) is a large rodent that has been widely introduced around the world. In all places where its populations were established (including Israel) it is considered as a pest and it has been included in the list of 100 worst invasive species of IUCN. Much of the damage nutria causes is in consuming agricultural products and in digging burrows that lead to banks collapse of pools, rivers and artificial channels. The nutria is a social rodent, with a polygamous male and several females controlling a territory that holds several burrows and from which they expel the young males. The common management of nutria populations around the world is mainly reducing the population through trapping and culling, but in most cases (including Israel) due to the enormous economic costs there is a limited success to this method. In Israel, hundreds of nutria killed every year in the Hula valley. Our study aims to better understand the behavior of this species and find alternative methods to the current culling campaigns.

Introducing TIME - This is My Earth (TiME) was established in 2016 as an international organisation that supports land purchases in biodiversity hotspots around the world using crowdfunding. TiME is novel as it promises a very affordable membership (starting from only $1), a democratic platform (every member can vote on our website where they want TiME to invest), equal (all votes are equal regardless of donation amount), honest (100% of donations go to land purchasing; we take no overhead; lands are bought by local organisations and remain in their legal hold), and professional (supported by an international scientific committee and board of directors). I will describe our success in land purchasing and the educational platforms we developed and the challenges we face.