



פרופ' ראובן יוסף מציג בכנס אילנית 2023

# Bottom-Up PBL based biological research in High Schools



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# • PBL – Project/Place Based Learning

## IS IT A PROJECT OR IS IT PROJECT-BASED LEARNING?

PROJECTS	PROJECT-BASED LEARNING
Can be done alone	Requires collaboration and teacher guidance
About the product	About the process
Teacher-directed	Student-directed
All projects have the same goal	Students make choices that determine the outcome
Products are submitted to the teacher	Products are presented to an authentic audience
Lack real-world relevance	Based in real-world experiences or problems
Occur after the "real" learning	Real learning occurs through the project





## 10th

-Scientific thought & writing  
-Research questions & protocols

10-12<sup>th</sup>  
PBL (avodot gmar)



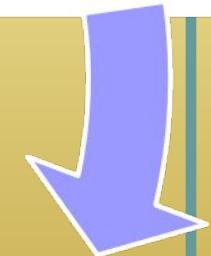
**Equip HS students with:**

- **Scientific tools & thought**
- **Environmental Leadership**
- **Activism**
- **Responsible Citizens**
- **Decision-makers**



9th  
Research Projects

8<sup>th</sup>, 9th  
Ornithology



# 8<sup>th</sup>,9<sup>th</sup> Ornithology & Biological diversity



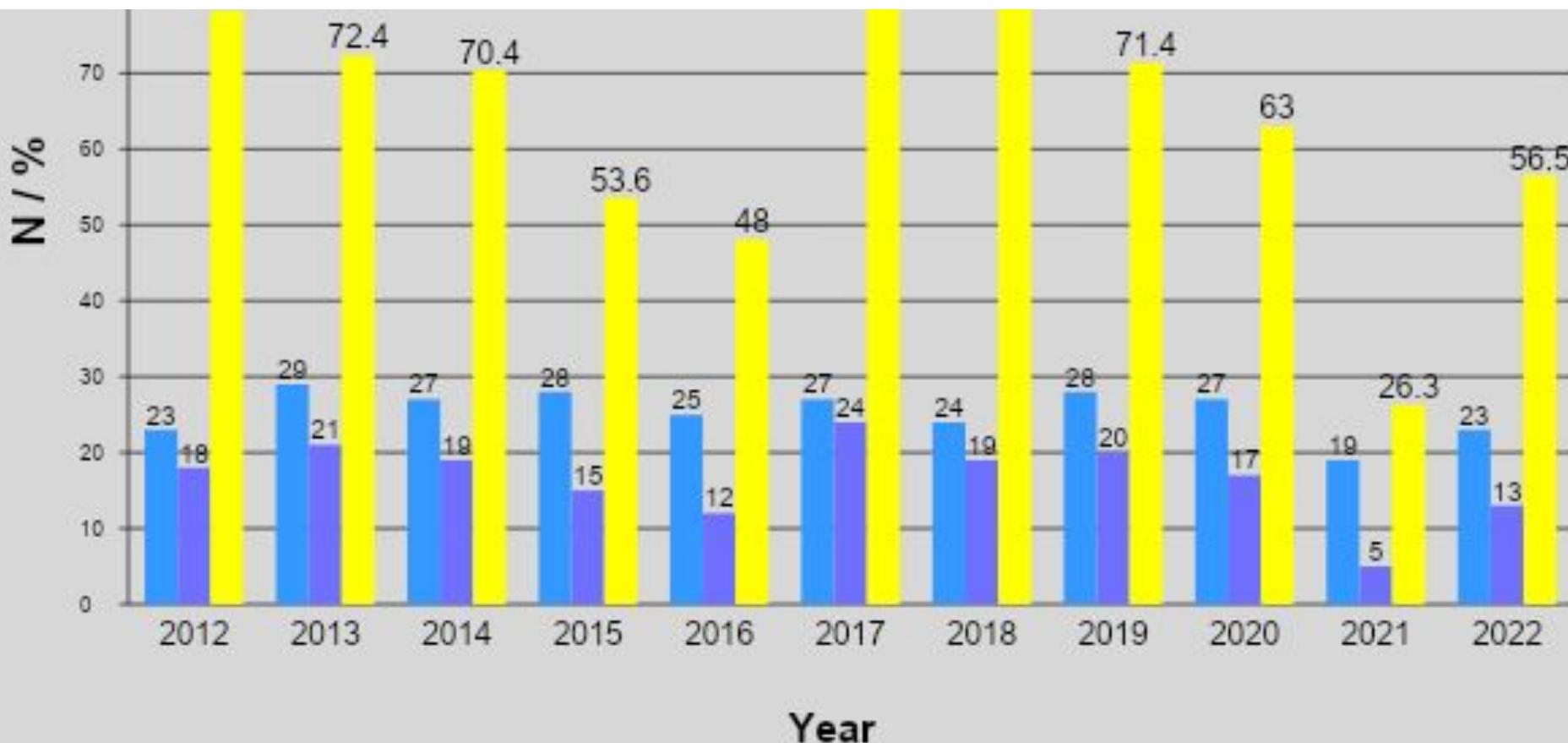




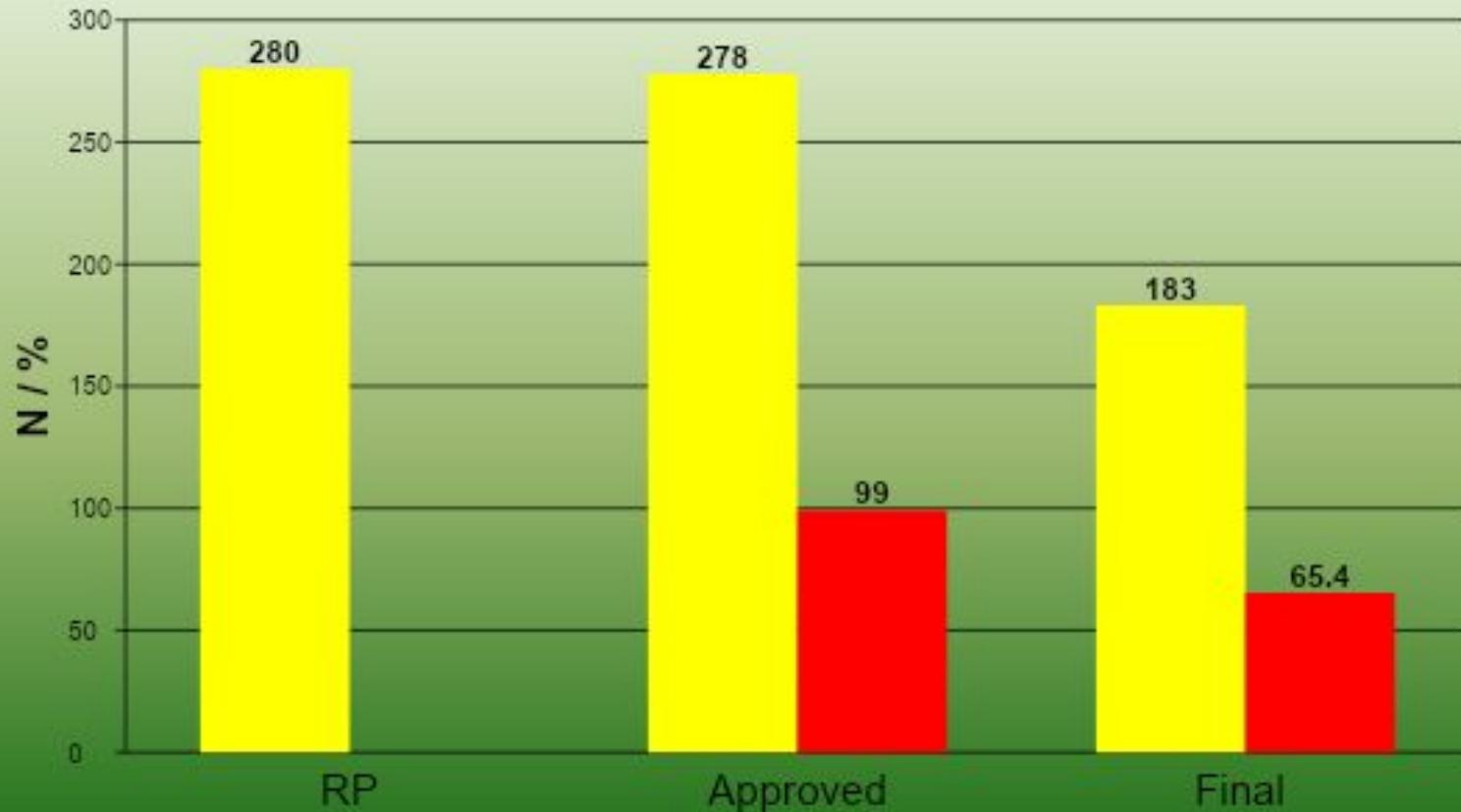
Article

# Effect of COVID-19 Closures and Distance-Learning on Biology Research Projects of High School Students in Israel

Reuven Yosef <sup>1,\*</sup>, Sigal Talker <sup>2</sup> and Irit Sadeh <sup>2</sup>



# Total Proposals submitted (280), approved (278), & completed (183)

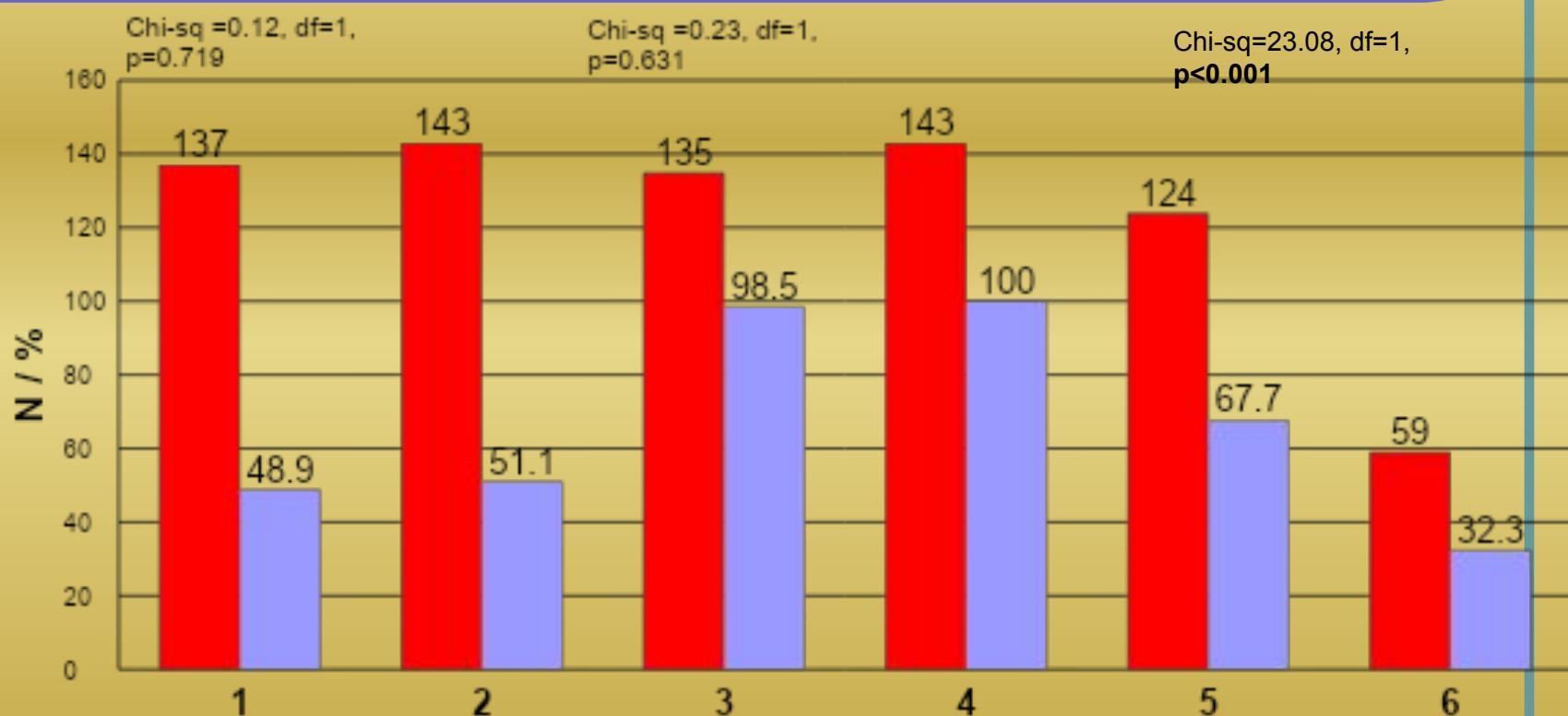


[submitted vs approved] Chi-sq =0.007, df=1, p=0.932 (with Bonferroni correction)

[approved vs final] Chi-sq =19.57, df=1, **p=0.01** (with Bonferroni correction)

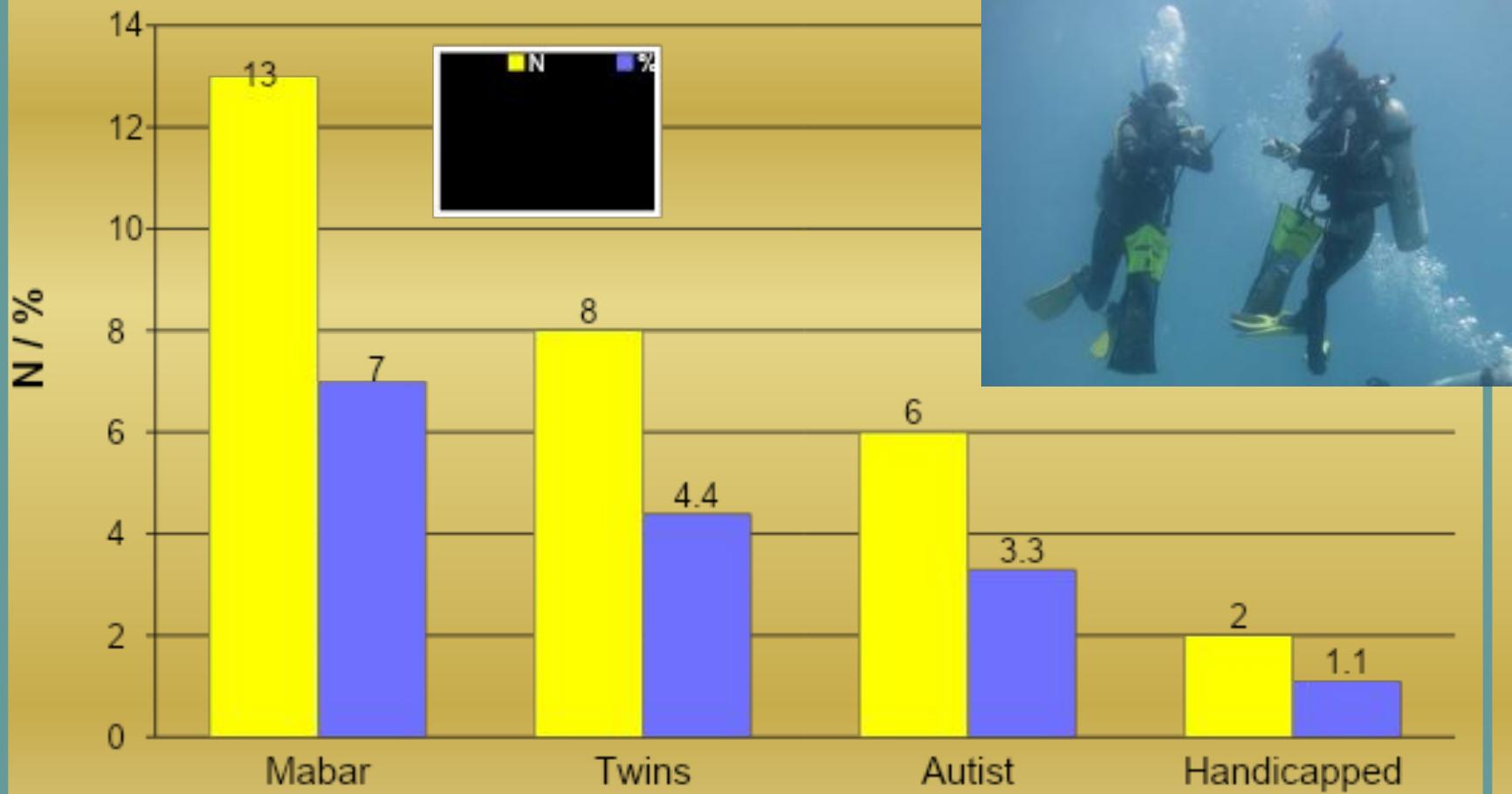
[submitted vs final] Chi-sq =20.32, df=1, **p=0.001** (with Bonferroni correction)

# Gender statistics (N = 11 years)



75% between 90-100; Average grade 93.4; National = 93

# Others deserve a chance too!!



# Public activities/activism



# National Competitions



Weizmann Institute



Green Campus, Ben Gurion Univ.

Adam ve Yam, Herzliya





מכון ויצמן למדע

# National Competitions

המעצה הירוקה  
אל אקספלור-ריבון-ריבון-ריבון

ליכון ע"ש יצחק רבין, אילת  
על מנת ליצור שול  
ונדרוג פיתול ספקט  
בלוי פורט ראנט יוסוף

במקום הראwan  
בחירות ארוכת של עשרה שנים  
העוסק בלבביה וקיימות  
העצה

בנין דוד  
ללא גדרות  
ללא גדרות



המעצה הירוקה  
אל אקספלור-ריבון-ריבון-ריבון

על ציונה במקומן החלוץ  
בחירות ארוכת של עשרה שנים  
העוסק בלבביה וקיימות  
העצה



המעצה הירוקה  
אל אקספלור-ריבון-ריבון-ריבון

על דוד ריבון מנהלה  
בנין דוד ריבון ריבון ריבון  
על דוד ריבון מנהלה  
בחירות ארוכת של עשרה שנים  
העוסק בלבביה וקיימות  
העצה



המעצה הירוקה  
של אוניברסיטת בן-גוריון ביבר  
נאום גלעדי קדרה ו-

ליכון ע"ש רבין, אילת  
על החינוך וההנחייה

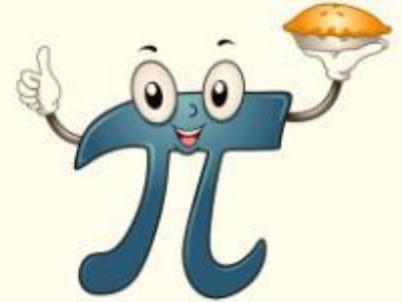
שר פורט, שר פיתול ספקט פיטרמן

בלוי פורט ראנט יוסוף  
בחירות ארוכת של עשרה שנים  
העוסק בלבביה וקיימות  
העצה



לץ פזד קיסרין  
ללא גדרות

# In-house Research Day -



# National Environmental Activism





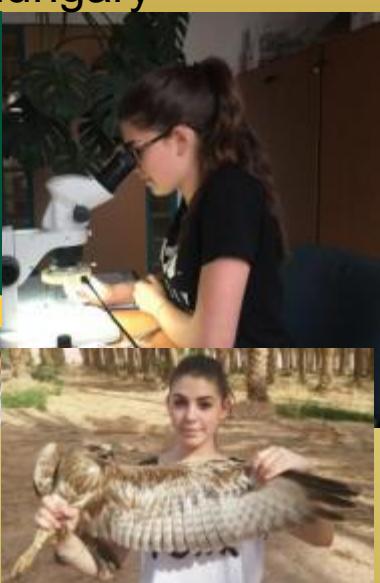
# International collaborations



Cyprus



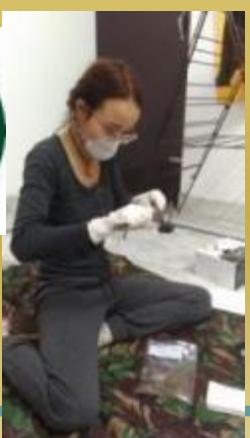
Hungary



Greece



India



Poland



Aqaba, Jordan

Aristotle University of  
Thessaloniki

# Peer-reviewed publications

Behavioural Processes 158 (2010) 113–116  
Contents lists available at ScienceDirect  
**Behavioural Processes**  
journal homepage: [www.elsevier.com/locate/behavproc](http://www.elsevier.com/locate/behavproc)

Footedness in Steppe Buzzards (*Buteo vulpinus*)  
Contents lists available at ScienceDirect  
**Journal of Veterinary Behavior**  
journal homepage: [www.journalvetbehavior.com](http://www.journalvetbehavior.com)

Canine Research  
Directional preferences of dogs' changes in the presence of a bar magnet: Educational experiments in Israel

Contents lists available at ScienceDirect  
**Journal of Environmental Management**  
journal homepage: [www.elsevier.com/locate/jenvman](http://www.elsevier.com/locate/jenvman)

Research article  
Ecotourism affects breeding in sergeant major damselfish (*Abudefduf saxatilis*)

Contents lists available at ScienceDirect  
**Marine Policy**  
journal homepage: [www.elsevier.com/locate/marpol](http://www.elsevier.com/locate/marpol)

Short communication  
Anthropopause positively influenced Red Sea Clownfish (*Amphiprion bicinctus*) populations but not the host sea anemone (*Actiniaria* spp.) in Eilat, Israel

Contents lists available at ScienceDirect  
**Biological Conservation**  
journal homepage: [www.elsevier.com/locate/biocon](http://www.elsevier.com/locate/biocon)

Short communication  
Anti Covid-19 face-masks increases vigilance in Nubian ibex (*Capra nubiana*)

Reuven Yosef<sup>a,b</sup>, Michal Hershko<sup>b</sup>, Piotr Zdziarski<sup>c,\*</sup>

<sup>a</sup> Ben Gurion University of the Negev, Eilat Campus, P.O. Box 272, Eilat 88106, Israel

Contents lists available at ScienceDirect  
**Journal of Arid Environments**  
journal homepage: [www.elsevier.com/locate/jaridenv](http://www.elsevier.com/locate/jaridenv)

Behavioural and reproductive flexibility of an invasive bird in an arid zone: A case of the Indian House Crow (*Corvus splendens*)

Reuven Yosef<sup>b,c</sup>, Piotr Zdziarski<sup>b,\*</sup>, Yelena

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<sup>c</sup> Department of Avian Biology and Ecology, Faculty of Biology, Adam

Mickie Senior School, 51 Yotam Street, P.O. Box 88104, Eilat, 88000

EJE 2018, 462: 131–133, doi:10.1016/j.ejore.2018.06.002

**OPEN** Adjusting risk-taking to the annual cycle of long-distance migratory birds

Arieh Dvir<sup>a</sup>, Tomáš Albrecht<sup>b,1</sup>, Jánka Jániková<sup>b</sup>, Mária Láska Kainzová<sup>b</sup>, Irena<sup>b</sup>, Andrej Pepe Matler<sup>b</sup>, Piotr Tryjanowski<sup>b</sup>, Beata Šrámková<sup>a</sup>,&

**EUROPEAN JOURNAL OF ECOLOGY**

**Effects of recreational activity on Acorn Barnacle (*Tetraclita squamosa rufotincta*) in the Red Sea**



*Israel Journal of Ecology and Evolution*, 2023  
<http://dx.doi.org/10.1163/22244662-bja10045>

**Laterality of shell formation differs in two sympatric gastropod species: mulberry shell (*Tenguella granulata*), and strawberry topshell (*Clanculus pharaonius*)**

Reuven Yosef<sup>1,2</sup>, Tamar Kadosh<sup>2</sup> and Jakub Z. Kosicki<sup>3,\*</sup>

INFESTATIONS OF LICE OF STEPPE BUZZARDS (*BUTEO BUTEO VULPINUS*) DIFFER FROM THOSE OF COMMON BUZZARDS (*BUTEO BUTEO BUTEO*)

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Ben Gurion University of the Negev – Eilat Campus, P.O. Box 272, Eilat 88106, Israel  
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OFR STRUTZER AND REUT TABRI  
Rabin High School, 51 Yotam Street, Eilat 88104, Israel

LAJOS RÓZSA<sup>1</sup>  
Evolutionary Systems Research Group, MTA Centre for Ecological Research, Hungarian Academy of Sciences,  
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and  
MTA-ELTE-MTM Ecology Research Group, Budapest, Hungary

<sup>1</sup>Ben Gurion University of the Negev, Eilat Campus, P.O. Box 272, Eilat 88106, Israel

# Red Sea Ghost Crabs (*Ocypode saratan*)



Article

## Does Size Matter? The Case of the Courtship Pyramids in Red Sea Ghost Crabs (*Ocypode saratan*)

Reuven Yosef <sup>1,\*</sup>, Michal Korkos <sup>2</sup> and Jakub Z. Kosicki <sup>3</sup>

<sup>1</sup> Eilat Campus, Ben Gurion University of the Negev, P.O. Box 272, Eilat 8810001, Israel

<sup>2</sup> Rubin High School, 51 Yotam Street, Eilat, Israel

<sup>3</sup> Department of Avian Biology and Ecol. University of Poznań, ul. Umultowska 89, 61-614 Poznań, Poland

\* Correspondence: ryosef6@gmail.com



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Article

## Individual Laterality in Ghost Crabs (*Ocypode saratan*) Influences Burrowing Behavior

Reuven Yosef <sup>1,2,\*</sup>, Michal Daraby <sup>2</sup>, Alexei Semionovikh <sup>2</sup> and Jakub Z. Kosicki <sup>3</sup>

Marine Policy 138 (2022) 104986

Contents lists available at ScienceDirect

Marine Policy

journal homepage: [www.elsevier.com/locate/marpol](http://www.elsevier.com/locate/marpol)



ELSEVIER

Anthropogenic beach-activities influences the endemic Red Sea Ghost Crab (*Ocypode saratan*)

Reuven Yosef <sup>a,b,\*</sup>, Veronica Spivak <sup>b,1</sup>, Shalev Edelman <sup>b</sup>, Jakub Z. Kosicki <sup>c</sup>

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<sup>b</sup> Rubin High School, Yotam Street 51, Eilat 88104, Israel

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# 2019 Eilat Education Award

All research projects are highlighted on NG Open Explorer website

<https://openexplorer.nationalgeographic.com/expedition/redsea>

"Rabin High School children research and evaluate human impact on the environment - terrestrial and marine."

**!!Thank you for your attention**

