

# PALESTINE INSTITUTE FOR BIODIVERSITY & SUSTAINABILITY PALESTINE MUSEUM OF NATURAL HISTORY

ANNUAL  
REPORT  
2017



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# **PREFACE**



The Convention on Biological Diversity adopted at the Earth Summit conference in Rio de Janeiro, Brazil, in 1992 (CBD 1992) highlighted three key principles: conservation of biological diversity, sustainable use of nature, and fair and equitable sharing of the benefits. In fact, in 1948 the Universal Declaration of Human Rights had already declared that “Everyone has the right freely to. . . share in scientific advancement and its benefits” (The Universal Declaration of Human Rights, UN 1948). The situation of Palestine, however, as a nascent state still under occupation, is unique. The current institutions of the Palestinian Authority are under severe threat, and the Palestinian economy is heavily dependent on foreign aid. Under these conditions, issues such as biodiversity, conservation, and sustainable development have low priority. The question before us is whether we can afford to wait on these issues during the time it takes to finally end the occupation and allow Palestine freedom and independence. The answer we Palestinians have given is: no.

The Palestine Institute for Biodiversity and Sustainability (PIBS) and its Palestine Museum of Natural History (PMNH) were initiated at Bethlehem University and opened their doors to the public in April 2017. This report highlights only select accomplishments in the 2017 calendar year. Examples of achievements not listed include: our participation and invitations for presentations at International Conferences in several countries; our contracts and projects that are critical for Palestine such as participation in the national strategy committee; and our key study on Palestinian Protected Areas in Palestine. Surveying these accomplishments in education, conservation, research, and community service shows incredible achievements with very limited resources. Our 2017 revenues and expenses were \$164,144 and \$131,204, respectively.



***We are grateful to the funders (individuals and institutions), BU administrative offices, staff (Khawla AbuAlia, Mohammed Abusarhan, Jessie Chang, Elias Handal, Mohammad Najajreh, Reena Saeed), volunteers (32 Palestinians and 51 international volunteers from 14 countries), and partners (in governmental and nongovernmental agencies). We also thank the young people (school and university students and other youth) with whom we worked and who taught us so much about hope and the future.***

A blue ink signature of Mazin Qumsiyeh.

Prof. Mazin Qumsiyeh  
Director



The Palestine Institute for Biodiversity and Sustainability (PIBS) and its Palestine Museum of Natural History (PMNH) at Bethlehem University are national institutions that work to research, educate about, and conserve our natural world, culture and heritage. We strive to use knowledge in promoting responsible human interactions with our environment.

- ▶ To explore the diversity of the fauna, flora, and human ethnography of Palestine via collections and scientific research that includes morphology and genetics.
- ▶ To promote environmental protection and responsible interaction between people and the environment.
- ▶ To promote science education using the knowledge gained from the museum's collections, books, and databases
- ▶ To develop and increase respect: a) for ourselves (self-empowerment), b) for our fellow human beings regardless of background, and c) for all living creatures and our shared earth.
- ▶ To promote sustainable communities, focusing on marginalized communities, using our research results in areas such as biodiversity, history, culture, permaculture and biological control





## MUSEUM PUBLIC OPENING

We opened the Palestine Museum of Natural History and its botanic gardens (part of the Palestine Institute of Biodiversity and Sustainability at Bethlehem University) to the public at an official ceremony on Wednesday, 12 April, 2017, attended by University officials, dignitaries, and partners. Since then, the museum has become a major attraction in the Bethlehem region without any formal advertising. For more see: [www.palestinature.org/opening](http://www.palestinature.org/opening)





**CANADIAN FUNDED “MODELS OF SUSTAINABILITY AT BETHLEHEM UNIVERSITY”**

Bethlehem University and the Canadian government worked together on a project to promote innovative models of sustainability, which we implemented here at the PMNH. Through this collaboration, we:

- ▶ constructed a functioning educational garden that was used as a module to teach participants how to plant organically and increase knowledge about the importance of school gardens. This will have a long-term impact beyond the life of this project;
- ▶ installed solar panels to generate electricity and to provide an example of using alternative energy to safeguard our environment;
- ▶ held seven workshops and provided guidance on how to establish school environmental clubs. A total of 66 people were directly benefitted, trained, impacted, or influenced by this project including 40 school students and 26 others (i.e. teachers and volunteers);
- ▶ some of the schools started composting their organic waste to create natural fertilizers to be used in their school garden;
- ▶ supported schools in reducing waste production by creating a recycling area of solid and liquid waste including composting, the reuse of plastic bottles in planting, and the reuse of kitchen water for irrigating plants;
- ▶ met our initially proposed outcomes of establishing environmental awareness and education by instilling values of promoting biodiversity (e.g. habitat destruction, climate change, etc.), mitigating threats to the environment by our own actions as individuals within our communities.



### **USA FUNDED “EMPOWERING YOUTH IN ENVIRONMENTAL STEWARDSHIP”**

The main objectives of this project were to develop and implement educational modules about environmental protection, waste recycling, and volunteerism for 9<sup>th</sup> and 10<sup>th</sup> grades school students in the Bethlehem District. Members of PMNH/PIBS teamed up with Bethlehem University students and museum volunteers to develop the modules. The modules featured creative activities to facilitate participatory learning about local problem solving and behavioral change in our society. The empirically-tested modules were designed to be applicable for education about waste reduction, recycling and upcycling in urban areas and refugee camps. The trained school students were empowered to share their newly-acquired knowledge with their schools and communities by establishing environmental clubs in their schools and sharing knowledge. Students became active stewards of the environment. This project addresses several priorities of the US Consulate Small Grant Program: youth engagement, civic activism, volunteerism, and the environment. School students produced online newsletters sharing their experiences with their peers. The PMNH/PIBS team in cooperation with both school and university students produced a brochure to be distributed to school environmental clubs, creating a ripple effect in the community. Similarly, a [video](#) was produced and shared widely, thus helping the influence of this project go beyond the initial envisaged period.

### **UNDP/GEF/SGP FUNDED “ACTIONS FOR ENVIRONMENTAL SUSTAINABILITY IN WADI AL-ZARQA”**

The United Nations Development Programme (UNDP), the Global Environment Faculty (GEF), and Small Grants Program (SGP) funded a project in Wadi Al-Zarqa that furthered PMNH/PIBS goals of environmental research, education, and sustainability. Through this project, we:

- ▶ collected data in relation to geology, geography, flora and fauna, threats to biodiversity, etc. The team was able to observe and record many threats/risk factors in the area ranging from hunting, overgrazing, airplane noise pollution, solid waste dumping, burning, and some invasive species. A strength-weakness-opportunity-threat (SWOT) analysis and a prolific amount of recommendations capped a technical report of over 130 pages;
- ▶ worked with five local municipalities (Deir Ballout, Bruqeen, Kufr Deik, Deir Ghassaneh, Salfit), the Ministry of Education, the Environmental Quality Authority, and the Governorate of Salfit to create a management plan and to ensure appropriate follow-up in implementing the plan of valley conservation;
- ▶ conducted workshops for local school students from the five surrounding towns and villages (more than 50% of them female) and helped create environmental awareness. Several schools started environmental clubs at their schools;
- ▶ made a brochure about the Wadi Al-Zarqa area and locally distributed 6000 copies.



Eco Pond System



Compost



View from the Entrance of the Exhibit Hall

# **INFRASTRUCTURE**

## **GARDEN**

PMNH developed 12 dunams (three acres) at the Mar Andreas Campus of BU into an oasis for local wildlife and local people. It is now a rich area in fauna and flora in the middle of a densely populated neighborhood. After four decades of disuse, our team has made significant improvements. In 2017, we:

- ▶ adjusted the pool system to collect rain water and adjusted other areas of the landscape to reduce erosion and build the soil's organic content;
- ▶ developed a Food Forest (biotope) area using permaculture design methods;
- ▶ developed two compost stations in the garden;
- ▶ planted a variety of indigenous trees;
- ▶ developed a vertical garden;
- ▶ delineated a walking trail in the garden and planted rosemary along its path.

## **PMNH & PIBS**

In 2017, we also dramatically improved our museum and research facilities. The PMNH and PIBS now has:

- ▶ an exhibit hall complete with a variety of fauna, flora, and habitats, as well as explanations of ethnology, geology, paleontology, human development, and evolution;
- ▶ a children's learning corner in the hall;
- ▶ a newly equipped laboratory (i.e. microscopes) where we can perform cytogenetic work and various experiments to further advance the museum's research and education.





Mural Painted by US Volunteer Artist

## OTHER INFRASTRUCTURE

- ▶ A resting area made from repurposed tires.
- ▶ A biogas unit created by local volunteers.
- ▶ A tool shed, small apartment, and kitchen area created from empty cargo containers.
- ▶ Two insect hotels that enrich our garden biodiversity.
- ▶ A hideaway structure for watching the numerous migrant birds that had started visiting our pool and other enriched habitats.
- ▶ Magnificent murals and other paintings of natural scenes created by a professional US volunteer artist.
- ▶ Detailed blueprints for a new museum building and garden made by collaboration between student and professional architects along with a \$400,000 commitment from the Munib R. Masri Development Foundation for phase one of construction.

## CONSERVATION & SUSTAINABILITY

PMNH & PIBS is dedicated to innovative models of sustainability. Our facility functions smoothly via biogas and solar energy, and our organic gardening is made possible through composting, aquaponics, and rain harvesting systems. We shared this knowledge with farmers and agriculture engineers. For example, 12 people from Gaza came to learn about aquaponics. We also worked with the Environmental Quality Authority to create a management plan for the Wadi Al-Quff protected area and are working now on a similar plan for Wadi Al-Zarqa al-Ulwi near Salfit. The Environmental Impact Assessment Unit of PIBS does consultancy work with a number of local and international institutions on issues of conservation and education. PIBS/PMNH worked with the EQA, Ministry of Agriculture, and a number of local and international NGOs (e.g. Hanns Seidel Foundation) to map out the status of the protected areas and their status of environmental protection.



Rooftop View of Solar Panels and Eco Pond

# **EDUCATION & WORKSHOPS**

- ▶ PMNH hosted dozens of schools and conducted workshops to educate our youth on areas like reducing waste, recycling, composting, respecting nature, biodiversity, critical thinking, science, anthropology, ecotourism, and more. We also worked with university students and faculty not just at our own Bethlehem University but also at other universities in Palestine and abroad. Throughout 2017 workshops were held ranging from taxidermy to math in nature to recycling. We are working on establishing a new interdisciplinary bachelor's degree under the auspices of the Faculty of Science and the Palestine Institute for Biodiversity and Sustainability at Bethlehem University.
- ▶ We mentored graduate and undergraduate students at Bethlehem University and three other Palestinian universities (PPU, HU, BZU) on senior thesis and graduate research.
  - ▶ Many won top awards, like students in architecture at PPU who won first place in their class for the design of a new PMNH building.
- ▶ Many undergraduate and graduate students did their theses at the PIBS facilities. In 2017, 11 students at the bachelors level and three students at the masters level did their research work with us. Workshops were held that focused on building human capacity (see TABLE 1).

**TABLE 1**

*(Some of the workshops were held on the campus of PIBS/PMNH. Many others were held outside.)*

<b>NAME</b>	<b>DATE</b>	<b>CONTENT</b>	<b>FACILITATOR</b>
<b>Environmental Awareness Workshops (on our campus)</b>	Jan. - Dec. 2017	Fifteen workshops for school students as part of projects to build environmental awareness	
<b>Taxidermy and Scientific Sample Preparation</b>	5 Jan. 2017	Tools, methods/techniques for preparing animal specimens for exhibits and for scientific studies	Prof. Mazin Qumsiyeh and Prof. Zuhair Amr
<b>Research Methods (four workshops)</b>	14 Jan. - 18 Feb. 2017	Critical reading of literature, conceptualization of research ideas, hypothesis formulation and testing, data collection and analysis and writing and publishing	Prof. Mazin Qumsiyeh
<b>Peace and Justice and Unity with Nature</b>	6 Aug. 2017	Harmony between people and with nature, meditation, peace gardens	Japanese Group
<b>Introduction to Biogas System</b>	30 Aug. 2017	How to construct a system that uses organic material to produce combustible gas from anaerobic bacteria and how to take care of the system	Majd Salsaa



Prof. Mazin Qumsiyeh Hosting an Educational Workshop



A Greenhouse Aquaponics System which Arose from a Masters Student's Research



Taxidermy and Scientific Sample Preparation Workshop on 5 Jan. 2017

## VISITORS

- ▶ Over 45 teams of international visitors representing over 35 countries visited the museum in 2017 (over 1200 visitors).
- ▶ Over 40 local delegations of schools, universities, and adults plus hundreds of individuals visited (over 2500 visitors).



Young Visitor Fascinated by Taxidermic Bird



## MEDIA

PIBS/PMNH has produced multiple videos which have reached thousands of people:

- ▶ open call for volunteers (Arabic and English)
- ▶ general promotion (English, Arabic, French)
- ▶ educational program at PMNH (English, Arabic).

Our website and Facebook are active ways to engage with the museum and a great resource for people to learn about what we are doing. Our instagram (@palestinemnh) is increasingly becoming a fun way for people to engage with the day-to-day life here at PMNH.

The PIBS Director and team have been on national and international media over 55 times:

- ▶ Palestine TV
- ▶ Al Hurra TV
- ▶ MAAN News Agency
- ▶ Wafa News Agency
- ▶ Watan News
- ▶ Donia Al-Watan Newspaper
- ▶ Al Hadath Newspaper
- ▶ Dissident Voice Newsletter
- ▶ Al Monitor Website

# **RESEARCH**

For the past 3 years PIBS has focused on researching biodiversity (fauna and flora), genotoxicity, cytogenetics, permaculture, museology, and sustainability. In 2017, we published 10 articles in peer-reviewed journals and we submitted 12 research works (see below). For more information about our research see: [www.palestinenature.org/research/](http://www.palestinenature.org/research/)

## **PUBLISHED IN 2017**

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- Amr, Z. S., Mohamad H. Najajreh, Mubarak Zawahreh, Eike Neubert, Elias N. Handal, Mohamad A. AbuBaker and Mazin B. Qumsiyeh. 2017. **Diversity and Ecology of the land snails of the Occupied Palestinian Territories.** *Zoology and Ecology*, In Press
- Anabtawi, R.H. and M.B. Qumsiyeh .2017. **Sustainable Development under Political Stress: Permaculture in Palestine as a Model.** Submitted.
- Handal, E.H. and Z. S. Amr. 2017. **Additional localities for the Flower chafers (Coleoptera: Scarabaeidae: Cetoniinae) from the Palestinian Territories (West Bank).** *Jordan Journal of Biological Sciences*, Submitted.
- Handal, E. N., Aysha M. Al Wahsh , Zuhair S. Amr , Roberto Battiston, Mazin B. Qumsiyeh. 2017. **Mantids (Dictyoptera: Mantodea) from the Palestinian Territories with an updated list.** *Articulata*, In Press.
- Khalilieh, A. 2017.**Fauna of Wadi Al-Quf: Birds.** *Jordan Journal of Natural History*, Volume 3, In Press
- Kilani A, K. Abualia, and MB Qumsiyeh. 2017. **Incidence and types of chromosome abnormalities in a cohort of leukemic patients in the occupied Palestinian Territories.** Submitted
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# **SPECIAL THANKS**



## **DONORS**

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## **PARTNERS**

- ▶ Palestine Ministry of Agriculture
- ▶ Palestine Environmental Quality Authority
- ▶ Palestine Ministry of Tourism and Antiques
- ▶ Palestine Ministry of Education and Higher Education
- ▶ Bethlehem University – Institute of Community Partnership
- ▶ Bethlehem University – Faculty of Science
- ▶ Birzeit University
- ▶ Qattan Foundation
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- ▶ Al- Nayzak
- ▶ Rotary Club Bethlehem
- ▶ Many Public and Private Schools
- ▶ Many Municipalities



Compost Viewed from Above