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Developing Institutions that Serve National Goals: Case Study of the Palestine Institute for Biodiversity and Sustainability

REVIEW

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A B S T R A C T

Biodiversity conservation and sustainable use of natural resources are difficult to manage in light of global and local threats ranging from climate change to Israeli colonization activities. Yet there is increased national awareness of the need to tackle the threats while also engaging in resistance and simple survival activities (sumud). We also must expand research in those areas and bridge the science-policy-practice gaps. These issues are discussed using the case study of the Palestine Institute for Biodiversity and Sustainability (PIBS) at Bethlehem University, an institute that serves national goals of respecting and protecting nature through research, education and conservation. Recommendations are made for establishing more institutions and better networking and prioritization based on national strategies.

Keywords: Palestine, biodiversity, sustainability, insitute for biodiversity and sustainability

Introduction

Most people now have come to realize what biologists and demographers have been saying since the 1950s: that the trend of relationship of humans to nature is unsustainable. In the late 20th century, the conservation of biological diversity became an urgent issue for humanity. This is largely due to the scientific observation of the significant decline in biodiversity accompanying the industrialization that spread widely in the 19th and 20th centuries. The Convention on Biological Diversity (CBD) adopted in 1992 highlighted three key principles: conservation of biological diversity, sustainable use of nature, and fair and equitable sharing of the benefits. Biodiversity is considered at various levels: species diversity, genetic diversity, and ecosystems diversity. Both human diversity and biodiversity are key to stability of human and natural communities. Yet, threats to biodiversity expanded from human population expansion, misguided economic policies, rampant consumerism, and a culture of unsustainable growth, among others resulting in lack of sustainability (Montgomery, 2002). Responding to threats require strong institutions that work in context of the national situation. Here we wanted to highlight a one such institution but drawing more general lessons about sustainability in Palestine.

Case Study

Most of the modern scientific knowledge of nature (fauna and flora) of Palestine was developed by Europeans and later Israeli scientists (e.g. Tristram 1884; Zohary 1966). In the 1960s a young scientist by the name of Sana Atallah (my maternal uncle) became the first Palestinian to get a PhD in Biology. He used to take me as a child to the field to explore nature. Part of his collection was used in the 1970s to educate school students (over 60 school groups visited 1978 and 1979) and was loaned in 1998 to the Lutheran school to help start an environment education center (by my late

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uncle Yaqoub Qumsiyeh, brother in law of Sana). This small snowball grew to several NGOs and institutions engaged in children education and awareness about nature. But there was a deficit in research and conservation related to biodiversity both globally (Liu et al. 2011; Fazey et al. 2020) and locally (Qumsiyeh and Isaac 2012; Isaac et al. 2019). The Applied Research Institute-Jerusalem (ARIJ) was founded in 1990 with a mission of "promoting sustainable development in the occupied Palestinian territories and the self-reliance of the Palestinian people through greater control over their natural resources." But there was a need for better integration of research and increased focus on biodiversity. Conservation and sustainability can not be managed without baseline data on biodiversity. Thus, some fellow researchers, volunteers and students embarked on careful planning for a national institute that addresses this need.

PIBS was started with land and a building provided by Bethlehem University and donations from Prof. and Mrs. Qumsiyeh and from other individuals to provide essential initial infrastructure (Figure 1).

Figure 1: The botanic garden is for both in situ and ex situ conservation and has 382 species of plants

In the transitionary period from 2014-2017, PIBS relied heavily on volunteers and on the generosity of individuals and continued to welcome theirs and your support. The institute grew rapidly and achieved its first five-year plan (2014-2019) earlier (2017) and then reset a new five year strategy which was just concluded (2017-2022). The accomplishments can be seen in the annual reports posted at (https://www.palestinenature.org/annual-reports/). These included three main areas:

Research

We cannot do education or conservation without proper research. For example, educating children on climate change required first doing studies on the available data of climate change and testing best modules for transmitting data on climate change (Qumsiyeh et al. 2022a). Over 100 research papers were published in five years ranging in areas of agriculture, biodiversity, taxonomy, genetics, and education. The research is done collaboratively for example with master students (two masters' students published over 15 papers between them even before graduating). Many interns and volunteers did significant research at PIBS that contributed to our understanding of Palestinian biodiversity (e.g. Adawi et al. 2017; Sawalha et al. 2017; Thaler et al. 2020; Mourad Hanna et al. 2021; Pahl and Qumsiyeh 2021; Al-Sheikh and Qumsiyeh 2021; Sanchez 2022)

Education

Tens of thousands of youth (both school and university students) benefitted by visiting PIBS's Palestine Museum of Natural History (including botanic garden) and through hundreds of activities and workshops covering areas like reducing waste, recycling, composting, respecting nature, biodiversity, critical thinking, science, anthropology, ecotourism, and more. PIBS developed multiple interactive educational modules to use in these activities and collaborated with the ministry of education to review the curricula, as well as extracurricular activities (e.g. environmental clubs and field trips). PIBS also used a mobile educational unit (museum on wheels) to reach to marginalized communities across the West Bank (Figure 2).

Figure 2: Mobile educational unit

Conservation

An animal rehabilitation unit was created that managed to treat or rescue and release over 20 injured animals including hyenas, eagle owls, golden eagle, snake, kestrels, and foxes among others. The most

important aspect of conservation is working with national authorities and other stakeholders to provide effective area-based management including both in situ and ex situ conservation thus bridging science-policy-practice (this is covered in the section below).

Serving the national interest

The National Policy Agenda for the state of Palestine emphasized three themes: working towards independence, improving public service, and sustainable development. In 2015, the state of Palestine signed a number of conventions and treaties related to the environment and sustainable development including the Convention on Biological Diversity (CBD) and the Climate Change Convention (UNFCC). PIBS developed strong relationship with key governmental bodies related to biodiversity and sustainability. The Environment Quality Authority (EQA) is the focal point for the CBD and responsible for the preparation and updating of the National Biodiversity Strategy and Action Plan (NBSAP) and submitting the national reports. The NBSAP helps integrate the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programs, strategies and policies. The first NBSAP was written in 1999 but Palestine, like other countries failed to achieve the set targets (called Aichi targets). PIBS led the effort in 2022 to create a new NBSAP that is realistic and achievable. It includes 17 targets and 76 action plans.
PIBS worked with the International Union of Nature Conservation (IUCN) in 2014 to develop the first management plan for a protected area in Palestine, Wadi Al-Quff. The resulting data were published in a special issue of the Jordan Journal of Natural History (Al Sheikh & Mahassneh 2016; Khalilieh 2016; Qumsiyeh, 2016a,b; Qumsiyeh et al. 2016). In the 1990s, a list of supposed "protected areas" were turned over to the nascent Palestinian authority. The designated 51 areas from 2000-2021 were reduced to 50 (49 in West Bank and one in Gaza). Due to limited capacity and involvement of many external actors in the process, there was never a real (re)evaluation of these areas or attempts at studying other potential areas worthy of conservation. In an analysis carried out on the ground in 2022 PIBS partnered with IUCN and the EQA to examin all 50 areas plus 8 more potential areas. Criteria were developed with stakeholder consultation. Twenty-two did not receive a high score to be included. These included 10 that were apparently designated by the Israeli authorities for political purposes, nine that offer no biodiversity value (small patchy remains or plant covers of no significance to PAN), and three that are of similar habitat to other areas (other areas allow for a strong PAN without those). As a result of that analysis, some areas were combined and others were adjusted for borders to arrive at a list of 27 areas worthy of real protection. The total protected land mass increased from 9% to 11%. We then commenced intensive surveys (currently five of the 27 have management plans). If managed well, the new areas would help protect the most vulnerable fauna and flora of Palestine while also contributing to the local population via ecosystem services. On the ground, we succeeded in protecting some areas based on research. For example, the first micro reserve to protect endangered Syrian spade-foot toad and plants in a vernal pool (Qumsiyeh et al. 2022b) and new laws are being drafted now as well as better enforcement mechanisms based on the new NBSAP.

Conclusions and Recommendations

Institutions like PIBS are critical for environmental conservation especially in developing countries (Qumsiyeh 2017; Qumsiyeh et al. 2017). The brief review above highlights role of PIBS in national strategies and action plans including in protected area management and in response to both global threats (like Climate change) and local threats (like Israeli occupation and colonization, socioeconomic deprivation). This is the essence of bridging the science-policy-practice gap. Adaptation and mitigation of threats like climate change and pollution is not merely a technical issue but is also an issue connected to socio-political challenges (Jarrar, 2015; EQA 2016).

Recommendations based on the above:

1) Implement the new NBSAP which has SMART action plans in it
2) Strengthen other existing institutions (NGOs, governmental and academic centers) in areas of biodiversity and network all together
3) Build similar institutions in other parts of Palestine
4) Leverage the new rich available resources for dealing with global and local threats (Climate Change, Habitat Destruction, Pollution, Invasive Species, Overexploitation, and Colonization/ Occupation)
5) Palestine should sign Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Convention on Wetlands (RAMSAR), and Convention on Migratory Species (CMS, Bonn Convention) among others. However, there should be consideration of both benefits and obligations of all signed treaties (Jaradat anfd AwadAllah 2015)

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