



## **Bustan Qaraaqa Annual Report, June 2010**

### **Basic information:**

**Name of Organisation:** Bustan Qaraaqa

**Physical Address:** Wadi Hanna Sa'ad, Beit Sahour, Bethlehem, West Bank, Palestinian Territories

**Postal Address:** P.O. Box 31316, Jerusalem 91002, Israel

**UK Headquarters Address:** The Old School, Lydfords Lane, Gillingham, Dorset, UK

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**Registration:** Branch of the Permaculture Association (UK), Charity no. 1116699

**Bank details:** Bustan Qaraaqa, Lloyds TSB, Gillingham, Dorset, Account no: 0052001, Sort-code: 30-93-45

### **Current Project Staff:**

**Lyra Eisen-Proctor**– Guesthouse coordinator

**Thomas Henderson** – Site manager and volunteer coordinator

**Alice Gray** – Community projects coordinator, project administrator, website developer and fundraiser

CVs of project staff are included in Appendix A.

## **Executive summary:**

Bustan Qaraaqa (the Tortoise Garden) is a community permaculture project, based in the West Bank town of Beit Sahour (Shepherds' Fields), close to the city of Bethlehem. The aim of the project is to propagate a grassroots environmental movement in the Palestinian Territories to address the problems of food insecurity and environmental degradation that threaten the well-being of the population; problems that are going unaddressed as a result of the ongoing Israeli military occupation which impedes effective development.

We feel that where governments and development agencies are failing, perhaps individuals and communities can succeed if only they recognise their own power to deal with the problems that are facing them.

The project was founded in April 2008, with the immediate aim of establishing a model permaculture farm to serve as a centre for experimentation with and demonstration of cheap and easy techniques for sustainable living and food production; and the longer term aim of building relationships with the local community to promote the implementation of these initiatives.

This report covers the period from May 1<sup>st</sup> 2009 to April 30<sup>th</sup> 2010, which is the second year that Bustan Qaraaqa has been in operation.

### **Main Points:**

In our second year, we have made great headway in achieving our objectives. We have developed the site into a working model for sustainability, as well as building a strong network of community partners and useful contacts. Work now falls into two main categories: Site Development and Community Projects. The Bustan Qaraaqa Guesthouse is the money-making, international advocacy and educational mechanism of the project; garnering over half of our total funding, and also providing advocacy and education opportunities as guests learn about the purpose and context of the project.

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## Guesthouse Report:

In the past year, Bustan Qaraaqa has hosted over 100 guests and generated an income of approximately £10,380. Total expenditure on food for staff and volunteers was approximately £5,865; thus the guesthouse generated a surplus of £4,515 to put towards other project overheads.

Guests at Bustan Qaraaqa generally fall into three categories : volunteers, hostellers, and couchsurfers. In addition, the project is supported by a pool of 'part-time' volunteers (both Palestinians and Internationals) who live locally and come to help out at our weekly 'open days' (every Sunday) or at our community projects. These people do not live with us at the farm.



*The Bustan Qaraaqa volunteer dorm*

**Volunteers** are people who have made a commitment to live at Bustan Qaraaqa for a certain amount of time and help us realize the work goals we have set during that period. Volunteers participate in all aspects of farm life, from cooking, cleaning and changing the compost toilet, to planting trees and digging swales (an 'immersion experience' in permaculture living). We also try to ensure that they get something of a 'cultural experience' through working with our community partners on a weekly basis. We ask them to pay us 80 NIS per person/per day, 500 NIS per week, or 1500 NIS per month. The money we collect from them goes to pay our rent, bills, and for food. Volunteers stay in a cave dorm on site, all meals are included, and they have unlimited access to wireless internet in the common room of the house.

**Hostellers** are people who book accommodation at Bustan Qaraaqa online (through Hostelworld or directly through our website) and use the site as a hostel. They are accommodated in the volunteer cave dorm, but are not expected to work while they are here (although many do participate somewhat in the project). We ask 100 NIS per person/per night from hostellers, and they receive all meals included in the rate as well as wireless internet access.

**Couchsurfers** are people who want to participate in the Bustan Qaraaqa project on the same level as volunteers, but might not be able to afford the volunteer rates. We have found that pursuing an inclusive and flexible policy

with regards to payment has yielded a dividend of benefits to the project (i.e. a lot of hardworking and highly motivated people who have helped us enormously with our work). In the case of couchsurfers, we have a policy that those who are not able to pay at all will be accommodated for three days with no charge (apart from a 'food donation') in an out-of-the-way area of the site (e.g. camping in caves or on the roof if weather allows). Others who are able to offer some kind of regular financial contribution are welcome to stay longer. We generally receive couchsurfers through our profile on the Couchsurfing website at [www.couchsurfing.org](http://www.couchsurfing.org) (although sometimes people come through word of mouth). More information about the goals and ideas behind the Couchsurfing project can be found on this website.

We frequently see a high level of guest transition between categories. For example, we have one staff member who was originally a couchsurfer. Frequently, couchsurfers decide to pay the rate and become long-term volunteers. In several instances, short term hostellers have decided to extend their stays and act as volunteers.

#### **Overall Assessment:**

The volunteer program is fundamental to the overall functioning of the project. Not only does it generate a significant proportion of the project income, but it also provides a vital workforce without which it would be impossible to implement the practical elements of the project.

In general, we have been very lucky with our volunteers, many of whom are highly motivated and independent workers. This year, due to understaffing, this has been very important. The time of our 3 staff members is at a premium and it is difficult to supervise and motivate large groups of volunteers who need constant attention. Fortunately, this time deficit has generally been made up by long-term volunteers who are able to take on roles of responsibility. However, occasionally high turnover of short-term volunteers (less than one week), has created problems for us. Due to this, we are considering setting a 'minimum volunteering period' of 1 week.

Periodically, the project goes through 'slow patches' when very few guests or volunteers come, and the guesthouse revenue dips. This creates both practical (no workforce) and financial (no money) problems, and the functioning of the project is impaired. Therefore it is important that we continue to actively develop strategies to attract volunteers, in particular long-term volunteers who give more return to the project for the time we have to invest in training them.

## Site Development Report:

The Bustan Qaraaqa site is the centre of project activity; providing a space for experimentation with techniques for sustainable living and food production, generating resources for community projects (e.g. seeds, trees, experience), providing an educational resource for project volunteers and local groups, and, perhaps most importantly, allowing us as a project to 'practice what we preach' and strive for sustainability in our own lives.



Left: Bustan Qaraaqa site (wadi) as seen from road. Right: Bustan Qaraaqa farmhouse as seen from the wadi.

Areas of activity fall into four distinct but interconnected categories:

1. Household waste management
  - Composting of kitchen wastes
  - Composting of human waste
  - Sorting and storage of reusable rubbish
  - Creative re-use of rubbish in building projects and crafts



Left: The composting toilet; Right: Volunteers build a wall out of tyres stuffed with rubbish

2. Water harvesting and conservation
  - Rainwater harvesting in cisterns and tanks
  - Enhancement of soil water storage using earthworks

- Household practices for water conservation and protection of water quality
- Reuse of household greywater for growing plants
- Drip irrigation systems for trees and vegetable beds



*Top left: drip irrigation system in tree nursery; top right: rainwater harvesting cistern for road run-off (exterior); bottom left: mint growing on greywater system; bottom right: rainwater harvesting cistern (interior)*

### 3. Food production

- Soil improvement
- Maintenance of orchards (pruning and mulching)
- Harvesting of food crops from orchards, vegetable patches and non-cultivated species
- Crop diversification and integration
- Experimentation with minimum irrigation food production systems e.g. trench-beds, drip irrigation, dryland farming etc.
- Organic pest and disease management practices



*Left: Vegetable patches in late spring; right: volunteer tends young lettuces*

#### 4. Agro-forestry

- Collection of seeds of provenance-assured local woody plant species and potentially useful introduced species
- Propagation of germplasm (including developing germination techniques) to create a diverse collection of living trees for distribution
- Experimentation with and development of agro-forestry systems including food forests, alley cropping and bustan (dryland orchards)
- Experimental development of transplantation and irrigation techniques to maximise sapling recruitment rates whilst minimising resource investment



*Top left: Tree nursery in summer 2009; Top right: Bauhinia seedlings in nursery; bottom left: Tree planting in the spring (Pecan sapling); Bottom right: Seed collection mission to the Judean Desert, September 2009*

Work in these endeavours is ongoing throughout the year and is undertaken by Bustan Qaraaqa staff and volunteers, as well as participants in workshops and events that are organised periodically in partnership with local organisations (see Community Projects Report). Activities take the form of continuous maintenance (e.g. sorting rubbish, sowing and harvesting crops) and site development (in bold type in table below) to enhance the capacity and efficiency of the farm (e.g. construction of cisterns and shades, development of irrigation systems etc). In addition, each week there is an 'open volunteer day' for the local community (Palestinians and resident internationals), providing a mechanism whereby anyone who is interested can participate in the project and learn about permaculture.

## The Year at Bustan Qaraaqa, May 2009 to April 2010

Month:	Seasonal notes:	Activities:
May	Temperatures soar Days lengthen Die-back of vegetation	Harvest spring crops Sow summer crops Apricot and peach harvest
June	Water cut-offs become frequent Land baked and cracked Long, hot days Warm evenings	Harvest summer crops <b>Shades for tree nursery and cistern constructed</b> Cistern filled from mains water supply
July	Extreme temperatures Long days, hot nights Water shortage	Fig harvest Harvest summer crops Maintenance of tree nursery (frequent watering required) <b>Solar oven constructed</b>
August	Extreme temperatures Long days, hot nights Extreme water shortage	Fig harvest Grape harvest Maintenance of tree nursery (frequent watering required)
September	Rains begin, days draw in, temperatures drop Muslim holy month of Ramadan	Almond harvest Maintenance of water harvesting infrastructure Take down shades Tree seed collection for nursery
October	Intermittent rainfall Hot short days, long cool nights Migrating birds flying south	Olive harvest Sow winter crops Tree seed collection for nursery <b>Irrigation system for tree nursery installed</b>
November	Intermittent rainfall Winter-deciduous trees (e.g. almonds and apricots) drop leaves Migrating birds flying south	Tree seed collection for nursery Start of tree planting season <b>Irrigation system for vegetable beds installed</b>
December	Winter storms Short days, long cold nights Wild winter greens (rocket, wild mustard, mallow) appear	Olive tree pruning Tree planting Harvest winter crops <b>Irrigation system for trees installed</b>
January	Winter storms Short days, long cold nights	Olive tree pruning Tree planting Harvest winter crops
February	Intermittent rainfall, occasional storms Sunny days, cold nights	Sow spring crops Tree planting Sow seeds in tree nursery Soil improvement (addition of rotten manures and mulching)
March	Spring flowers appear Migrating birds flying north Fruit trees come into blossom	Sow/ harvest spring crops Tree planting Sow seeds in tree nursery
April	End of rainy season Spring flowers prolific Migrating birds flying north Deciduous trees come into leaf	Sow/ harvest spring crops Sow seeds in tree nursery End of tree planting season <b>Tree-irrigation system extended</b>

**Sowing and harvesting calendar for vegetable crops, May 2009 – April 2010:**

<b>Month:</b>	<b>Sow:</b>	<b>Harvest:</b>
May	Tomato Sweet pepper Aubergine Chilli	Chickpea Broad bean French bean Sugarsnap pea Corn
June		Broad bean (foul) French bean Sugarsnap pea Corn
July		Tomato Sweet pepper Aubergine Chilli
August		Tomato Sweet pepper Aubergine Chilli
September		Sweet pepper Aubergine Chilli
October	Spinach Rocket	
November	Cabbage (red and white) Cauliflower Lettuce Chard	
December		Spinach Rocket
January	Spinach Rocket	Spinach Rocket Lettuce
February	Chickpea (hummus) Broad bean (Foul) Lettuce	Spinach Rocket Chard Lettuce Cabbage Cauliflower
March	French bean Sugarsnap pea Corn	Spinach Rocket Chard Lettuce Cabbage Cauliflower
April	Tomato Sweet pepper Aubergine Chilli	Chard Lettuce Cabbage Cauliflower

**Species list for tree nursery:**

<b>Latin name:</b>	<b>Common name:</b>	<b>Native?</b>	<b>Principal uses:</b>
Acacia tortilis	Umbrella thorn	Yes	Animal fodder, bee fodder, fuel, timber, mineral miner
Albizia julibrissin	Persian silk tree	No	Nitrogen fixing, animal fodder, bee fodder, ornamental, facilitator species
Albizia lebbeck	Woman's tongue tree	No	Animal fodder, Nitrogen fixing, bee fodder, fuel, timber, facilitator species
Bauhinia purpurea	Butterfly tree	No	Nitrogen fixing, animal fodder, bee fodder, ornamental, food
Callicarpa americana	American Beautyberry	No	Insect repellent, medicinal, edible berries
Calotropis procera	Sodom apple	Yes	Animal fodder, medicinal, fuel, fibres, latex
Carya illinoensis	Pecan	No	Food (edible nuts)
Cassia fistula	Golden shower	No	Medicinal, edible seeds, Nitrogen fixer
Ceratonia siliqua	Carob	Yes	Food (edible pods), ecosystem restoration, facilitator species
Cercis siliquastrum	Judas tree	Yes	Edible flowers, bee fodder
Chilopsis linearis	Desert willow	No	Medicinal, bee fodder, soil conservation in water courses
Crataegus monogyna	Hawthorn	Yes	Food (edible fruit), medicinal, facilitator species
Delonix regia	Flame tree	No	Bee fodder, fuel, timber, ornamental, Nitrogen fixing, facilitator species
Eriobotria japonica	Loquat	No	Food (edible fruit)
Jacaranda mimosifolia	Brazilian rosewood	No	Bee fodder, timber, fuel, ornamental, medicinal
Leucaena leucocephala	White popinac	No	Nitrogen fixing, animal fodder, fuel, bee fodder, facilitator species
Macademia integrifolia	Australian bushnut	No	Food (edible nuts)
Malus trilobata	Crabapple	Yes	Food (edible fruit), root stock
Moringa peregrina	Cabbage tree	Yes	Food, medicinal, fuel, animal fodder, facilitator species
Pistacia palestina	Palestinian pistachio	Yes	Ecosystem restoration, food, root stock
Pistacia vera	Pistachio	No	Food (edible nuts)
Prosopis juliflora	Mesquite	No	Food (edible pods), Nitrogen fixing, animal fodder, facilitator species
Quercus boissieri	Cyprus oak		Ecosystem restoration, timber, fuel
Quercus calliprenos	Palestine oak	Yes	Ecosystem restoration, timber, fuel
Quercus castaneifolia	Chestnut-leaved oak		Timber, fuel
Rhamnus lycoides	Palestine buckthorn	Yes	Ecosystem restoration, dye from berries, facilitator species
Ricinis communis	Castor bean tree	Yes	Castor oil
Styrax officinalis	Snowdrop bush	Yes	Ecosystem restoration, incense, medicinal, timber
Tamarix aphylla	Tamarisk	Yes	Animal fodder, bee fodder, fuel, timber, medicinal
Tecoma stans	Tecoma	No	Animal fodder, bee fodder, ornamental
Tipuana Tipu	Racehorse tree	No	Nitrogen fixing, bee fodder, fuel, timber, ornamental, facilitator species
Vitex agnus-castus	Chaste tree	Yes	Medicinal, landscape conservation and restoration
Zizyphus spina-christi	Christ's thorn tree	Yes	Food (edible fruit), medicinal, timber, facilitator species

**Overall Assessment:**

Progress on the site this year has been phenomenal, thanks largely to the hard work of the project's many volunteers. The tree nursery has been a major success and has huge potential to generate resources for exciting tree planting projects that we hope to undertake in the coming year. In the past year we successfully produced 2000 trees, 600 of which were planted at the Bustan Qaraaqa site while 400 were donated to community partners (leaving 1000 to plant in the early winter this year). Experimental work with tree planting at the farm is already yielding useful information about the irrigation requirements and ecological tolerances of the trees that we are growing.

We are making considerable headway in our journey towards full sustainability. Our food production is steadily increasing as we bring more of the land under cultivation. In the spring season we are growing approximately half of the vegetables we consume as a household of approximately 10-12 people; and generating surpluses of some crops that we share with our neighbours and exchange for sawdust, manure and other useful materials.

Our water storage capacity is up by 107,000 litres compared to what it was when we started the project. The cistern that we built in our first year has proved to be very effective at harvesting road run-off, and we hope that it will prove to be structurally sound this winter after some leakage problems last year (we have worked hard to reinforce the walls). In winter and early spring we are now able to irrigate our food crops and trees almost exclusively with harvested rainwater. Ideally, we would like to build another cistern (funding permitting) that would enable us to move closer to water independence. We have observed that there are enough opportunities to harvest rainwater onsite to allow all water needs to be supplied from this source if harvesting and storage infrastructure could be improved.

In terms of its potential as a demonstration site for permaculture techniques, the farm is in a period of consistent growth. However, there is always room for refinement in the techniques that we use in our day-to-day lives (composting, water conservation, greywater recycling, etc.), and there is always work to be done to increase productivity, build soil fertility, and enhance biodiversity. Both staff and volunteers are constantly learning; however, as we learn, we remain focused on share our experiences with the local population. We have had some success holding workshops at the farm with various community groups (see Community Projects Report), but we have the potential to do a lot more in this department. We are currently limited by time constraints (understaffing issues) and the language barrier, but this situation could be improved by employing and training an Arabic-speaking facilitator to develop workshop programs and by sending existing staff to language courses.

## Community Projects Report:

Community projects comprise a vital component of the Bustan Qaraaqa project. Through them, Bustan Qaraaqa staff and volunteers are able to:

- connect with local people
- share ideas and techniques for solving environmental problems
- make material contributions to the local community
- educate themselves about the political-environmental situation
- educate themselves about traditional Palestinian farming techniques
- channel positive energy into practical action

Projects fall into 2 main categories:

1. Long-term volunteer support to community partners, including weekly visits by BQ volunteers and staff, tree planting events, building of infrastructure, and maintenance of land (Abed Rabbo, Awad Abu Sway, Paidia).
2. Environmental education workshops (OPGAI, Juzoor, Tent of Nations). These are normally done on an ad-hoc basis, at the request of the partners involved. Events may either be held at the Bustan Qaraaqa site or in the field.

### Names of main community partners and duration of work undertaken with them

Partner:	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Abed Rabbo												
Awad Abu Sway												
Paidia												
OPGAI												
Juzoor												
Tent of Nations												

### Description of Projects:

#### 1. Abed Rabbo: Weekly farm visits

##### Background:

Abed is a farmer from the village of Al Wallaja near Bethlehem. He owns land close to the Israeli settlement of Gilo. Abed's land is threatened with confiscation by Israeli authorities as part of the Givat Ya'el settlement plan (see Figure 1). For over a decade now, Abed has been resisting land confiscation by

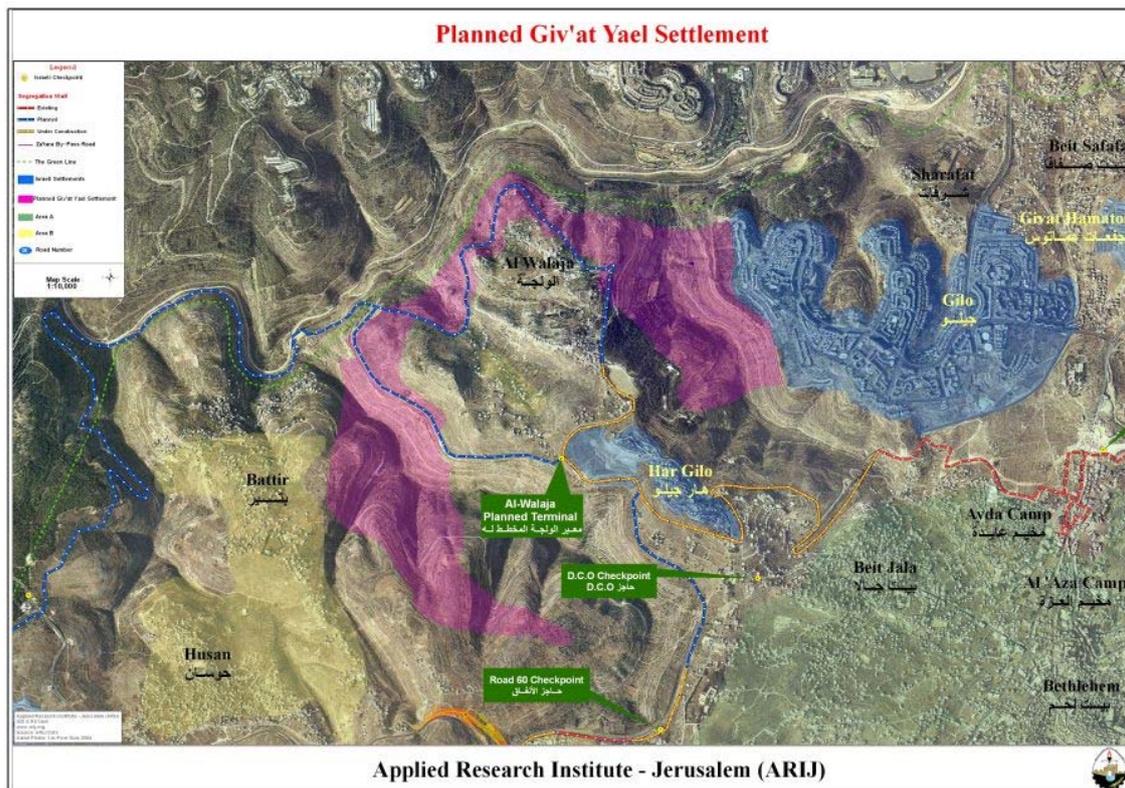


living in a small cave on his land, planting trees, growing food and building relationships with Israelis and Palestinians who want to help him in his struggle to stay on his land.

Since late 2008, Bustan Qaraaqa staff and volunteers have been regular visitors at Abed's farm. Since Abed lives without infrastructure such as piped water, sewage collection or electricity there is enormous scope to help him out by implementing permaculture designs at his site. In addition, because he is farming a large plot (20 dunums or so) without machinery, the extra hands come in very useful in maintaining the land.

**Work undertaken:**

From April to May 2009 we designed and built a composting toilet on his land. From June to September 2009 we cut back weeds, rebuilt water catchments around trees and did a spot of house-sitting to give Abed a break to visit his family etc. From October 2009 to April 2010 we helped install rainwater harvesting infrastructure, fertilized the land and planted trees, as well as donating 2 water tanks, a tarpaulin and 25 trees of 8 different species.



Map of planned Giv'at Yael Settlement and the Wall around Al Wallaja. Abed's land is situated in the pink zone between A Wallaja and Gilo, close to the road.

**Outlook:**

Abed's situation throughout the year has continued to be fraught with uncertainty. Although he has legal papers proving his ownership of the land beyond dispute, Israeli authorities have continued to challenge his right to be physically present there, claiming that it falls within the municipal boundaries

of Jerusalem (and is thus out-of-bounds to West Bank Palestinians). Abed has been arrested and taken in for questioning by the Israeli police on multiple occasions, harassed by real estate developers, and threatened by settlement authorities.

Most recently, work on the Separation Wall has recommenced in Al Wallaja, with an access road for Israeli bulldozers being opened up right along the border of Abed's land. The Wall is planned to pass between Abed and the village of Al Wallaja, placing him on the Israeli side of the barrier and cutting him off from the rest of the West Bank. This may limit the ability of Abed's Palestinian friends to continue to visit him as the area will very likely become off limits to West Bankers.

Abed himself currently has a lawyer working to secure the permissions necessary for him to remain on his land from the Israeli authorities. In addition, Israeli supporters are working to oppose settlement expansion in the area on the basis that it is designated as a 'green zone' under Israeli planning law – and therefore building by either Israelis or Palestinians is forbidden.

Bustan Qaraaqa will continue to support Abed with regular visits, physical labour, awareness raising and material donations in the coming year. Volunteers have gained valuable insight into the Palestinian situation from their contact with him, as well as the opportunity to meet with Palestinian and Israeli activists. From Abed's perspective, our contributions to his struggle have been valued and unique. As the Wall goes up and his isolation increases, visits from internationals may play a vital role in maintaining his presence on the land. Although there is a high risk factor attached to this project (whatever we create with Abed may easily be destroyed, Israeli authorities may confiscate the land, etc.), we believe that this is the nature of working in the Palestinian sector in a situation of military occupation and encroaching colonisation. Therefore, as long as Abed is prepared to resist, we are prepared to support him.

## 2. Awad Abu Sway: Community tree planting

### **Background:**

Awad is a farmer and community organiser from the village of Artas, near Bethlehem. In his time he has seen his own apricot orchards bulldozed and his land confiscated to make way for the Separation Wall (April 2007), and is now an active member of the Popular Committees against the Wall and Settlements.



He also works for the Palestinian Authority Ministry against the Wall and Settlements. In these capacities he networks with Palestinian farmers and tries to connect them with the resources to keep working their land and to develop it in a way that may protect it from confiscation. Awad has been instrumental in organising tree planting events between Bustan Qaraaqa and local farmers.

**Work undertaken:**

We met with Awad in May 2009 and started to pay regular visits to farmers in Artas, helping to bring in the apricot harvest and digging water catchments. This project ground to a halt during the summer months as the heat and shortage of water in the area slowed farming activities for the season, but picked up again in November as the tree planting season got into full swing. Bustan Qaraaqa volunteers participated in approximately 10 events between November 2009 and April 2010, donating over 150 trees to local farmers and planting more than 300 (olive trees were regularly donated by other suppliers as the Bustan Qaraaqa nursery does not stock them).



**Outlook:**

As the summer is upon us, the tree-planting season has concluded. We were very grateful for Awad's help in getting our trees out of the nursery and into the ground this year, and only hope we can expand the scope of this work next year. The main constraint on this project has simply been a lack of time. There is vast potential for Bustan Qaraaqa to plant trees with local farmers; working to protect and improve the land, provide goods and services to people, and resist colonisation. Another constraint has been funding/ lack of means of transporting trees. We could have got considerably more stock out if we had been able to afford to hire trucks to move it. As it was, we could only take the trees that fit in a taxi/ had to rely on other organisations to send transport which made organisation more difficult, and events fewer than we would have liked.

While planting trees with farmers who are in danger of losing their land increases the risk of the trees being eventually uprooted, we see it as serving multiple purposes in line with the objectives of the Bustan Qaraaqa project. In addition to preventing soil erosion and providing food/ shelter/ fodder/ timber/ medicine, trees can alter the legal status of a piece of land such that it is considered 'developed'.

Under Israeli law, land that has been 'abandoned' by its owners is considered to be State property, and may thus be confiscated. In the West Bank, confiscated land is normally used for settlement expansion (illegal under international law), road construction or construction of military infrastructure, all of which are environmentally destructive. Therefore, supporting Palestinian farmers in maintaining or gaining a livelihood from their land has benefits for both people and the environment.

In short, whilst being under threat of land confiscation is not a necessary criterion for a farmer to receive trees and volunteer support from Bustan Qaraaqa, neither is it a detracting factor. Next year we hope to expand our community tree planting operations with the objectives of soil protection, anti-desertification, ecosystem restoration, supporting livelihoods, and resisting colonisation and will be actively seeking partnerships with diverse groups and individuals within Palestinian society to achieve these ends.

3.



### Site development consultancy and volunteer support

#### Background:

Paidia is an American-run NGO that "exists to engage individuals, especially youth, in ethical leadership development, empowering them to transform themselves and their communities." Since Bustan Qaraaqa was founded in 2008, we have worked with Paidia to assist them in developing the environmental aspects of their programs. This year, Paidia has begun developing a new 'leadership centre' that will be the headquarters of their educational activities with Palestinian youth. We are working with them to incorporate permaculture principles into the design of the site, enhancing its capacity as an educational facility that demonstrates practical solutions to commonly experienced problems in the Palestinian Territories (e.g. water shortage and pollution).

#### Work undertaken:

Starting in September 2009, we began offering practical assistance and consultancy in transforming the new Paidia site from a dilapidated and abandoned restaurant and park to a functioning and vibrant educational centre. Our first



project was to design and build a composting toilet out of tyres stuffed with rubbish and plastered with earth. In addition we have offered advice on the design of a food garden; and helped to build paths, paint buildings and construct walls around the site. Volunteers have been involved in this work on a regular basis, although recently visits have been less frequent as Paidia's own volunteer base has expanded.

**Outlook:**

Work progressed slowly in the first months of 2010 as Paidia experienced staffing difficulties. Their Program Director was unable to obtain a visa from the Israeli authorities and was forced to leave the country, whilst their site manager was away in the States for a long time due to a personal bereavement. We were glad to be able to support Paidia during this period, ensuring steady – if at times slow – progress on the site, and the pace picked up considerably in April with return of their site manager and an influx of volunteers. Recently, we have taken a step back from the practical implementation of projects as we have much work to do on our own site. However, we continue to support Paidia in a consultative capacity, as well as passing on a \$50 donation from Seeds of Change to develop the food garden, and we hope to be involved in the youth programs as the new leadership centre begins to function.

**4. Occupied Palestine and Golan Advocacy Initiative (OPGAI):  
Summer Camp**

**Background:**

OPGAI is a coordinating mechanism for civil society actors in Palestine and the Golan heights, seeking to promote the adoption of shared principles and core values so that groups may better cooperate in working towards common goals. They also organise events such as conferences and summer camps that bring together individuals and organisations to share information and resources.

**Work undertaken:**

In August 2009 we were proud to participate in OPGAI's first ever summer volunteer camp, hosting youths from all over the West Bank in a series of 3 workshops where we discussed the environmental crisis in Palestine, introduced them to the concept of permaculture, and did some practical activities building beds out of rubbish-stuffed tyres and earth render at the Bustan Qaraaqa site.



**Outlook:**

It was a pleasure to work with OPGAI and we will be happy to participate in any future events that they organise upon request.

**5. Juzoor Foundation for Health and Social Development: Tree Planting Workshops****Background:**

Juzoor is a Palestinian NGO based in East Jerusalem working at the grassroots level to develop community-led solutions to social, environmental and political problems. They have a long history of working with women's groups and last year (2009) they began European Union-funded program called the 'Youth Parliament' working with East Jerusalem schools.

**Work undertaken:**

In October 2009 we were approached by Juzoor to host a series of environmental workshops for 140 school-children between the ages of 11 and 18. This coincided perfectly with the start of the tree planting season so from mid-October until the end of November we held a total of 6 tree-planting events at which we introduced the children to the idea of permaculture and to some Palestinian native trees, and planted about 60 trees at Bustan Qaraaqa.

**Outlook:**

It was a pleasure to work with Juzoor and we expect to organise more workshops together in the future. This summer we will definitely be doing some events, and we hope that in the autumn we may be able to organise some tree planting events at the children's schools in Jerusalem. Because Juzoor is funded by the European Union, they were able to pay us a small fee for the workshops, making this a particularly sustainable partnership, as we were able to use that funding to grow more trees for future events.

**6. Tent of Nations: Tree Planting Workshop for International Women's Week****Background:**

The Tent of Nations is a Palestinian initiative that promotes sustainable living and peace-building activities. It is based in the village of Nahhalin, near Bethlehem, on the land of the Nassar family. Nahhalin is surrounded by four settlements, and the land is threatened with annexation. The Tent of Nations works with the surrounding community, international volunteers, and Israeli activists to find creative solutions to the problems facing the local population.

**Work undertaken:**

In April 2010 we were invited to participate in the Tent of Nations' 'International Women's Week' program, giving a workshop on propagation and planting of native trees. This workshop was attended by 15 women from Nahhalin and 6 internationals and included a question and answer session, a lecture, and a practical activity as the group planted trees together.

**Outlook:**

We were very happy to work with the Tent of Nations on this small project as we are long-term admirers of their work. We have always intended to cooperate more closely with this organisation, but time constraints on both sides have so far prevented us from realizing this aim. We would be happy to participate in any future events, and in addition, the director has expressed an interest in setting up his own tree nursery. We very much hope that we may be able to help him to implement this idea and intend to meet with him to discuss it in the near future.

**Overall Assessment:**

We have made great progress in the past year, forming strong and durable partnerships with local individuals and organisations to realise the aims of the Bustan Qaraaqa project. In the late winter to early spring season we were devoting 3 days per week of volunteer time to our community projects. Even so, there are more people who are eager to work with us than we can practically support at any one time.

One limiting factor on this part of the project is a staffing issue. Currently, this facet of the project is coordinated by Alice Gray, who is also fulfilling the roles of Project Administrator, Fundraiser, Communications Secretary and Website Developer (in addition to teaching one day a week at Al Quds University, continuing with site development work and helping to run the guesthouse). Time is short, and in addition, Alice's Arabic skills are not yet strong (although developing).

So far, Alice has made good use of networking opportunities to ensure that this work progresses. Nonetheless, the tree-planting season was a frustrating time for us as we lacked the time and funding to coordinate as well as we might have done, and half our stock stayed in the nursery. In addition, it has not always been easy to get volunteers to commit to community projects (whether through lack of interest or communication problems/ lack of coordination).

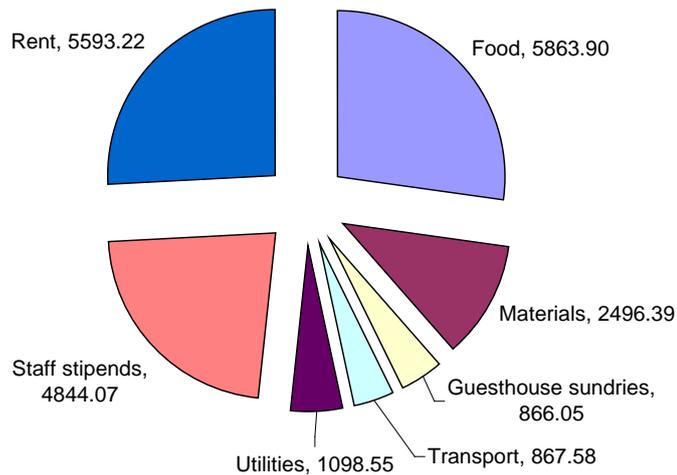
These problems could be overcome in a number of ways. It has always been our intention to employ a Palestinian field worker to help to coordinate and implement community projects. This person could devote a good deal of

their time to networking with local organisations and seeking partnerships, whether as consultancies or volunteer projects. They could then coordinate volunteer involvement. This would have the added advantage of enhancing our connection to the community, improving communication, and bringing a Palestinian into a key position on the Bustan Qaraaqa team. Our problem until now has been a lack of funding to pay such an additional team member.

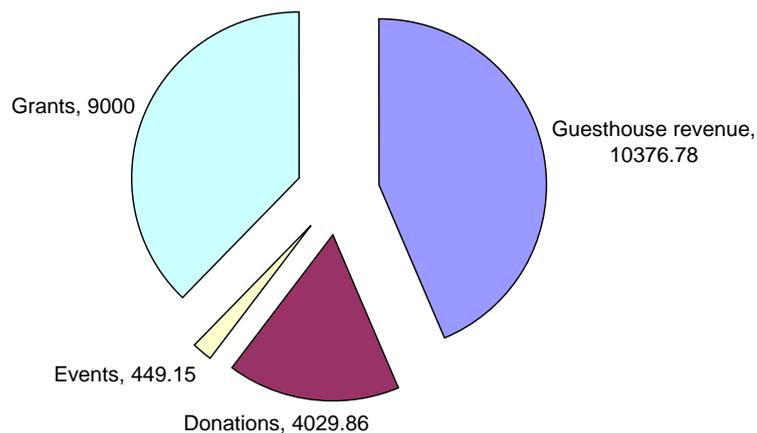
As ever, we are committed to moving forward with the resources on hand and are confident that we will do some good work in the coming year whether we are able to expand our team or not. Nevertheless, there is a feeling of unrealized potential as our small team struggle to turn great ideas into realities on the ground, and this situation would doubtless be improved by taking on additional staff/ delegating more responsibility to capable volunteers.

## Financial Report:

The total expenditure of the Bustan Qaraaqa project from May 1<sup>st</sup> 2009 to April 30<sup>th</sup> 2010 was approximately £21,630 divided as follows:



The total income of the Bustan Qaraaqa project from May 1<sup>st</sup> 2009 to April 30<sup>th</sup> 2010 was approximately £23,860 divided as follows:



A detailed version of the accounts is attached to this report. Our balance going in to the coming year is £3,355, and in addition we have recently been

promised a second grant of £5000 from the British Shalom-Salaam Trust, which is expected to arrive shortly.

Our major financial contributors over the past year were:

- The British Shalom-Salaam Trust (£5000)
- The Sydney Franklin Deceased Trust (£1000)
- The LUSH Charity Pot (£3000)
- Roger and Sylvia Storey (£1000)
- The Chapout family (£834)
- Imogen and Colin Bright (£500)

In addition, we received many generous individual contributions from ex-volunteers and general well-wishers adding up to a total of over £1000.

In terms of the overall self-sufficiency of the project, rent and food are effectively covered by the guesthouse revenue (£10,380 last year). This means that project expenses (staff stipends, utility bills, materials and transport) are still covered by charitable donations. Realistically, this is likely to continue to be the case in the coming year, since we are loathe to increase the volunteer rates, and do not have the staff (or the inclination) to manage a larger volunteer team. It is possible that we may be able to generate some additional income through workshops at Bustan Qaraaqa (e.g. the Juzoor partnership), but this is by no means certain, and therefore we should plan to increase our funding base.

Over the coming year we intend to seek project funding to allow us to expand our operations to have a greater impact in the community. If resources allow, we would also like to increase the stipends of existing staff.

## **Self-Assessment:**

### **Staffing changes:**

#### **Project team at time of previous annual report (May 2009):**

**Rania Al Qass-Collings** – Community liaison and eco-handicrafts expert (part time)

**Steven Collings** – Site development coordinator (organic gardening and companion planting systems) and volunteer coordinator (part time)

**Lyra Eisen-Proctor**– Guesthouse coordinator

**Thomas Henderson**– Site development coordinator (agroforestry and livestock) and volunteer coordinator

**Alice Gray** – Community projects coordinator, project administrator, web developer and fundraiser

**Roman Gawel** – Site development coordinator (structural development), community projects assistant, and fundraiser

Our current team consists of just 3 people: Lyra Eisen-Proctor, Thomas and Alice Gray. This is a reduction on last year's team of one full-time and two part-time positions.

This 'stream-lining' occurred in October 2009 Roman Gawel was refused entry to Israel whilst attempting to get a new visa at the Taba border crossing and in November 2009 when Steve and Rania Collings made the decision to move to Wales.

We did not immediately replace these team members because we were not in a financial position to do so at the time, and we also felt that we should experiment with running the project at lower staff numbers. In addition, Roman Gawel was committed to attempting to return – this attempt failed in February 2010, when he was deported from Ben Gurion airport after flying in from London, UK.

Lyra, Tom and Alice are a strong team – the achievements of the project over the course of the last year speak for themselves – but we have been extremely stretched, as is consistently apparent from a reading of the attached reports. Indeed, perhaps the least sustainable element of our project at this time is the level of pressure on staff members, the low salaries and the visa insecurity.

Suggested expansions to the team include a grant-writer and administrator (to seek and administer funding); a workshop facilitator and community outreach person (to develop an on-site workshop program); and a field worker (to facilitate planned expansions in off-site community projects).

In the short-term, we are expecting the arrival of Lorena Viladomat and Philip Jones who are currently travelling from the UK to Palestine by bike to join the team and try to implement a fish-farming project in cooperation with Bustan Qaraaqa on arrival (for more information visit [byspokes.org](http://byspokes.org)). Lorena and Phil will seek their own funding sources to implement this project (See Appendix C for proposal), and plan to stay with us for 2 years if all goes as planned.

**Visa situation:**

Alice and Tom currently hold positions as part-time Environmental Studies teachers at Al Quds-Bard College in Abu Dis. We hope that, through the university, they will be able to secure long-term work visas (they were able to secure permission to remain and teach for the duration of the Spring semester this year; and the university has recently extended their contracts). Lyra currently has the status of 'resident alien' in Israel and so is not in imminent danger of deportation.

In the long-term it seems that a gradual 'handing over' of the project to Palestinian management is the best strategy to ensure its longevity.

**Funding:**

In order to sustain and expand the project, and to realise the potential that we have been building up over the past 2 years, we will need to seek additional forms of funding. Until now, the project has been possible due to the generosity of a few small grant-making organisations; the dogged determination of the project staff; and the kind contributions of volunteers.

At this level of funding, we are able to maintain and develop the project site and make a limited contribution to supporting Palestinian farmers and promoting sustainable living initiatives via our Community Projects. We could do much more, but we need to expand our team which will require funding - and in addition we would like to be able to pay existing staff decent salaries (instead of the 'pocket money' we are currently able to offer).

In the coming months we will be seeking both core and project funding. Sample proposals are included in Appendix B.

## Objectives for the coming year:

- Onsite developments:
  - Sustainable building
    - Build new compost toilet
    - Build new conservatory/ shower block
    - Renovate a cave to act as an 'overflow dormitory'
  - Livestock
    - Develop fish farming in cistern
    - Integrate chickens into farming practices
    - Experiment with bee keeping
  - Trees
    - Restock and expand tree nursery
    - Plant 50-100 additional trees at Bustan Qaraaqa
  - Water infrastructure
    - Expand water storage facilities (build new cistern)
    - Build overflow system for existing cistern
  - Agroforestry/ landscape restoration/ food production
    - Develop alley-planting system
    - Test no-plough soil conservation strategies for olive farming
    - Develop intercropping systems with olive trees and other orchard specie
    - Continue food forest experiments
  
- Community projects:
  - Tree planting
    - Plant at least 2000 trees with community partners at 10-20 different sites
  - Fish farming
    - Develop community aquaculture projects in at least 5 Palestinian communities
  - Consultancies
    - Continue Paidia consultancy
    - Develop other partnerships with schools and community centres
  - Workshops
    - Continue Juzoor partnership – try to expand sphere of activities to include tree planting workshops at Palestinian schools
    - Widen network for both onsite (at Bustan Qaraaqa) and offsite workshops
  - Support to farmers
    - Continue support to Abed Rabbo

- Continue to work with Awad Abu Swai to network with farmers for tree planting and other projects (e.g. water catchment)
    - Seek networking opportunities with other organisations (e.g. Palestinian Agricultural Relief Committees (PARC), YMCA, Ministry of Agriculture)
  - Volunteer program
    - Host at least 100 guests and volunteers at the farm
    - Try to get more long-term volunteers (stays of 1 month and more)
  - Staffing
    - Try to get funding to employ at least 2 Palestinian team members in full or part time positions by the end of the year (workshops facilitator and community projects field worker)

**Sketch budget for core and project costs in the coming year (in an ideal world):**

Item	Total cost (NIS)	Total cost (£)~
Site rent	36000	6315
Staff stipends:		
Guesthouse Coordinator	36000	6315
Site Development Coordinator	36000	6315
Community Projects Coordinator	36000	6315
Workshops facilitator	36000	6315
Field worker	36000	6315
Grant writer/ Administrator	36000	6315
<b>Total#</b>	<b>216000</b>	<b>37890</b>
Utilities	6500	1140
Guesthouse/office sundries	5000	880
Site development (new cistern, seeds, tools etc)	25000	4385
Existing community projects (materials and transport)	10000	1755
Tree planting project (materials and transport)*	326500	57280
Fish farming project (materials and transport)*	65700	11525
Workshops program (materials and transport)*	25000	4385
<b>Grand total</b>	<b>715700</b>	<b>125555</b>

#Some funding for staff salaries may come from successful project proposals

\* See Appendix C for project proposals

~Based on an exchange rate of 5.7 NIS/£

## **Appendix A: Staff CVs**

### **Lyra Eisen-Proctor**

DOB: 03/08/1977

PERMENANT ADDRESS: 2174 Keith Way, Eugene, Oregon, 97401 USA

PERMENANT PHONE NUMBER: 001-541-343-4878

PHONE NUMBER IN PALESTINE: 02- 274- 8994

#### **WORK EXPERIENCE**

Bustan Qaraaqa, Beit Sahour, Palestine 05/2009-current  
Position: Guesthouse Coordinator

My duties here at Bustan Qaraaqa are varied, but fall mainly into the sphere of guesthouse management. They include answering emails from potential volunteers and dispensing information about the project, being the first contact person who greets new volunteers and explains what they can expect, keeping a record of which volunteer is supposed to arrive on what day, keeping the guesthouse tidy and the sheets clean, and doing roughly half of the commual cooking per week. In addition, the bottom line cleanliness of the house (and washing the dishes) is my respnsibility.

Edom Hotel, Wadi Musa, Jordan 10/2007-04/2009  
Position: Office Manager

At Edom Hotel, I was responsible for all aspects of magagement in the bookings office. This included determining availability in the hotel, relaying information to tour operators and individual guests, confirming guest lists in order to determine available rooms and food preraration needs, and networking with domestic and international tour operators to ensure continued support and mutual needs. In addition, I was soley responsible for resolving customer service issues within native english speaking tour groups.

Carson Dining Hall, Eugene, Oregon, USA 09/2003-05/2007  
Position: Dishwasher/Lead Dishwasher

At Carson Dining Hall, I ended my term of employment as the lead dishwasher for a busy university restaurant which served up to 3,000 students per dinner shift. My duties were to wash and sanitize both kitchen dishes and dinnerwear, organize up to 5 support dishwashers per shift, and safely resolve any health and safety issues which might occur. In the term of my employment I received a position promotion and 3 salary raises.

Greenhouse Youth Services, Portland, Oregon, USA - 02/2000-06/2003  
Position: Youth Advocate

At Greenhouse, I was responsible for ensuring the safety of up to 100 at-risk youth in the drop-in day center. My duties included informal counseling, networking with community agencies to meet each youth's needs, cooking lunch for up to 100 youth per day, and enforcing agency guidelines for behavior within the center. In addition, I was responsible for providing informal medical services and issuing medical referrals.

EDUCATION:

MA in History  
University of Oregon, Eugene, Oregon 2007

AAS Social Service  
Lane Community College, Eugene, Oregon 1999

\*\*\*\*References available upon request\*\*\*\*

# Thomas Henderson

24 October 1981 – British - Male

**Email:** tom@bustanqaraaqa.org

**Tel:** +972 22748994

## WORK EXPERIENCE

**Environmental Studies Lecturer** 2009-present  
Al Quds-Bard College, Abu Dis, West Bank, Occupied Palestinian Territories  
Designing and teaching an environmental studies course at undergraduate level; developing the syllabus for a 'major' in environmental studies at the Honors College.

**Permaculture Designer and Educator** 2008-present  
Bustan Qaraaqa, Bethlehem, West Bank, Occupied Palestinian Territories  
Design and implementation of permaculture design of model farm and community outreach program.

**Marine Benthos and macrofauna processor** 2006-07  
Hebog Environmental Ltd., Bangor, UK.  
Technical responsibilities included: sediment granulometry, sediment organics, macrofaunal processing, data entry and general laboratory skills.

**Project Coordinator** 2002-05  
University of California, Los Angeles  
Researching independently and with the UCLA team I was contracted to oversee various projects in the Mache-Chindul Ecological reserve, Ecuador.

- *A study of the ecology and reproductive behaviour of the long-wattled umbrellabird (Cephalopterus penduliger)*
- *Post-dispersal seed fate and natural regeneration of plant species of the Chocó*
- *Long term study of the avian community of Estación Ecológica Bilsa*
- *Evaluation of carbon credit reforestation versus natural regeneration*
- *Spacio-temporal analysis of avian frugivore abundance in response to forest patch fruit availability*

Both academic and leadership skills were required to coordinate resources; manage projects; train colleagues; design and develop sampling techniques and implement novel methodologies for data collection; and to compile, preserve and identify biological specimens.

**Principal Ecologist** 2003-05  
Ocean Marine Research Ltd., Bangor, UK

Part time marine ecologist studying marine mammals and birds, onboard the RV Barynthus during phase II of offshore windfarm construction around the UK

**Project Leader** 2001

Picaflor Research Centre, Parque Nacional Tambopata, Peru  
 Involved: Biotope mapping of the reserve, cataloguing of animal and bird species, development of trail network to increase accessibility of this remote site to researchers.

**Other research positions held include:**

Permacultural techniques in arid regions of costal Manabí, Ecuador  
 Distribution of speciation of *Lepanthes* orchids in over 3000m in the Ecuadorian Andes  
 A study of *Rhizophora* mangrove forest biomass accumulation rates, Kenya  
 Ornithological surveys conducted of: Turkana Desert and Samburuland (Kenya); Gazi Bay (Kenya); Jatun Sacha Reserve (Ecuador); Guandera Reserve (Ecuador); Hacienda Don Juan (Ecuador); Reserve Bilsa (Ecuador).

**EDUCATION**

**B.Sc. (Hons) Ecology (First)** 2001-2005

University of Wales, Bangor, UK  
 Erasmus student of University of Barcelona, Spain.  
 Thesis: *Spacio-temporal analysis of avian frugivore abundance in response to forest patch fruit availability.*

<b>Practical Skills</b>	<b>Theoretical Skills</b>
Botanical field identification and sample preservation Mist net sampling	Botanical Systematics
Bird handling, identification, ringing, bleeding Point count and transect sampling	Avian community structure and spatio-temporal fluctuation of abundance Population size and structure, species habitat selection
Focal sampling	Avian community structure and spatio-temporal fluctuation of abundance Evolution of lek mating behaviours, multispecific foraging dynamics
Radio telemetry	Habitat selection, interspecific and intraspecific interaction, Population demography and community structure
Habitat description and biotope mapping	Phenology and frugivore tracking of resource abundance
Phenology and fruit production	Community regeneration: Seed dispersal, Seed fate, Recruitment.
Seed trapping, seed mortality trials	

## **OTHER INFORMATION**

PADI certified 'advanced scuba diver'

BIM accredited First Aid at Sea and Safety at Sea

Basic First Aid (Red Cross)

Competent computer skills: Microsoft office suite, Primer, ArcView, SPSS, Web search engines etc.

Fluent English and Spanish, Intermediate German, French, Portuguese. Basic Quechua, Chapalati, Ki-swahili and Arabic

## **PEER REVIEWED SCIENTIFIC PUBLICATIONS**

"Spacio-temporal analysis of avian frugivore abundance in response to forest patch fruit availability". Thesis. University of Wales, Bangor.

"Welsh status and distribution of the Balearic Shearwater *Puffinus mauretanicus*" Cambrian Birds 2005.

## **NON PEER REVIEWED PUBLICATIONS**

*"Guía fotográfica de los árboles maderables del Chocó Ecuatoriano"*

*"The birds of Bilsa: an avifauna of the Mache-Chindul Mountains"*

**References available upon request**

## Alice Gray

**Date of Birth:** 22/09/80

**Home address (UK):** The Old School, Lydfords Lane, Gillingham, Dorset, SP8 4NJ, UK

**Work address:** Bustan Qaraaqa, P.O. Box 348, Jerusalem 91002, Israel

**Work telephone:** +972 (0)2 2748994

**e-mail:** [alicegray1980@gmail.com](mailto:alicegray1980@gmail.com)

### **Current Employment:**

#### **Bustan Qaraaqa Permaculture Farm and Guesthouse**

**2008 – present**

Beit Sahour, Bethlehem, West Bank, Palestine

Community Projects Coordinator, Fundraiser, Administrator

#### **Al Quds-Bard College**

**2009 – present**

Abu Dis, West Bank, Palestine

Environmental Studies Lecturer

### **Employment History:**

<b>Dates:</b>	<b>Employer Name and Address:</b>	<b>Job Description:</b>
04/2007 – 07/2008	<b>LifeSource</b> Main Street Al-Ram West Bank Occupied Palestinian Territories  website: <a href="http://www.lifesource.ps">www.lifesource.ps</a>	<b>Project Organizer:</b> As a founding member of LifeSource, I played a key role in shaping the project concept, building up a network of partners and contacts, recruiting staff and volunteers and fundraising for the project; in addition to carrying out research and publishing reports, papers and articles.
04/2006 – 09/2006 <i>and</i> 02/2007 – 04/2007	<b>Applied Research Institute of Jerusalem (ARIJ),</b> P.O. Box 860, Caritas Street, Bethlehem, West Bank, Occupied Palestinian Territories  website: <a href="http://www.arij.org">www.arij.org</a>	<b>Research Assistant:</b> During my time at ARIJ I worked as a member of the Water and Environment Unit (WERU); carrying out research into the Palestinian environmental sector (focussing mainly on water) and producing reports and papers (including writing a chapter for the Status of the Environment Report, 2007); working as a member of a consulting team for the Austrian Development Cooperation; assisting in ARIJ research projects (e.g. the Dead Sea Project) and editing the work of other members of staff.
02/2006 – 03/2006 <i>and</i> 09/2006 – 01/2007	<b>Orchard Park Garden Centre</b> Shaftesbury Road, Gillingham, Dorset, SP8 5JG, UK	<b>Cook:</b> At the start of my employment, Orchard Park was a relatively new business. My job entailed helping to develop the café, designing the menu and ordering ingredients (focussing on acquiring locally or ethically produced products); as well as preparing high quality hot and cold meals.

### **Education:**

- 11/2003 – 12/2005: **University of Wales, Bangor; School of Biological Sciences**

MPhil in Plant Science

Project Title: Developing a new technique for measuring root turnover and plant-soil carbon dynamics using dual labelling with <sup>14</sup>C and <sup>36</sup>Cl.

- 10/1999 – 06/2003: **University of Durham**

BSc Honours Degree in Ecology, 2.1

- 1993 – 1998: **St Mary's School**, Wantage, Oxon

A-levels: Biology (A), Mathematics (A), Chemistry (B), Politics (C)

GCSEs: 10 Grade A\* - B

### Recent Publications:

#### Online Articles:

- Gray A (2008) The Colour of Water – Thirst in the Palestinian Territories. Alternative Information Centre ([www.alternativenews.org](http://www.alternativenews.org)), July 2008.
- Gray A (2008) A History of Water in the Palestinian Territories and Israel. LifeSource ([www.lifeforce.ps](http://www.lifeforce.ps)), January 2008.
- Gray A (2007) Environmental Justice for Palestine. Countercurrents ([www.countercurrents.org](http://www.countercurrents.org)), March 2007.

#### Journal Articles:

- Gray A (2008) Water development in the Palestinian Territories since Oslo. *Water Policy*, *in press*.
- Gray A (2007) Environmental dimensions of Zionism in the Negev and West Bank. *Babylon: Tidsskrift om Midtøsten og Nord-Afrika*. Volume 5, Number 2, pp 68-77.
- Gray A (2006) “Positive Conditions” – The water crisis in Gaza. *News From Within*, Volume 22, Number 7, pp 30-33

#### Book Chapters:

- Gray A and Hilal J (2007) Water and Security for Palestine. *In* Lipchin C, Pallant E, Saranga D and Amster A (eds.) *Integrated Water Resources Management and Security in the Middle East*. Springer (in cooperation with NATO Public Diplomacy Division), pp 99-120.
- Hill P W, Farrar J F, Boddy E L, Gray A M and Jones D L (2006) Carbon Partitioning and Respiration – Their Control and Role in Plants at High CO<sub>2</sub>. *In* Nösberger J, Long S P, Norby R J, Stitt M, Hendrey G R and Blum H (eds.) *Managed Ecosystems and CO<sub>2</sub>: Case Studies, Processes and Perspectives*. Springer, Berlin Heidelberg.

### Other Experience:

#### Voluntary Work:

- 05/2004 – 09/2005: Secretary and Treasurer of the Bangor UNYSA; a student society promoting awareness of global issues and organising fundraising events for a variety of charitable organisations.
- 12/2002 – 10/2003: Logistics Officer, Treasurer and Researcher on Project Tany Tsilo; an ecological and anthropological research expedition to the Spiny Forest of Madagascar.
- 07/2002 – 08/2002: English teacher at a language camp in Kalisz, Poland organised by the Anglo Polish Academic Association.
- 07/2000 – 08/2000: Volunteer on an orphanage renovation project in Minsk, Belarus organised by the League of Voluntary Youth Service.
- 09/1998 – 12/1998: Volunteer for St David’s Africa Trust at an orphanage and at a centre for disabled children in Morocco.

#### Referees:

Professor John Farrar  
School of Biological Sciences  
University of Wales, Bangor  
Deiniol Road  
Bangor  
Gwynedd  
e-mail: [j.f.farrar@bangor.ac.uk](mailto:j.f.farrar@bangor.ac.uk)  
Tel: +44 (0)1248 382527

Dr Clive Lipchin  
Arava Institute for Environmental Studies  
Kibbutz Ketura  
D.N. Hevel Eilot 88840  
Israel  
e-mail: [clipchin@gmail.com](mailto:clipchin@gmail.com)  
Tel: +972 (0)528 964992

## **Appendix B: Sample proposals**

### **Safeguarding the functional ecological integrity of the Palestinian land base for future community prosperity**

#### **Rationale**

The Palestinian natural land base is suffering from unprecedented environmental degradation. Overgrazing by ungulates, farmed in increasing densities to meet an ever rising demand for dietary protein, is one of the principal causes of loss of vegetative cover and thus regional desertification. Land use conversion resulting in habitat loss and degradation, coupled with widespread overgrazing preventing regeneration of native ecosystems together result in rapid loss of biodiversity of the region, much of which is endemic. In addition, the heavy reliance on ploughing in agriculture further contributes to soil erosion, breaking up soil structure and causing valuable nutrients to be removed by the action of wind and rain, while trapping other soil nutrients deep beneath the plough-pan.

Loss of natural water storage capacity in the soil, and a recent cultural move away from rainwater harvesting systems, has caused a dependence on irrigation from groundwater to make land productive. Now soil conditions are such that rainwater runs-off land almost as soon as it lands, allowing this precious resource to flow unimpeded to the Dead Sea or other areas inaccessible to Palestinian communities, while exacerbating rates of soil erosion. Most farmers are therefore dependent on incredibly unreliable and expensive municipal water resources in order to meet irrigation needs. The infrastructure of water delivery is, in turn, largely controlled by Israel. Reduction in soil fertility has caused an increase in the use of inorganic fertilisers which, coupled with irrigation, can lead to soil salinization and loss of essential soil microbial communities. In addition, the practice of establishing crops under plastic, which later photodegrades and is ploughed into soil, causes widespread pollution of agricultural lands.

The purpose of this project is to stop the current trend of environmental degradation, reverse the loss of soil fertility and humidity, and enhance water availability through rehabilitating and developing rainwater catchment systems. In this manner we hope to increase long term environmental prosperity and productivity, thus reducing the susceptibility of Palestinian communities to Israeli control of resources and imports.

#### **Project outline**

##### **Developmental outcomes - combating desertification and landscape ecology restoration**

- Reverse soil erosion and loss of vegetative cover
- Enhance soil humidity, structure and fertility (soil wealth protection)
- Maximise rainfall interception, infiltration and utility
- Forage substitution and enhanced agricultural diversity to reduce grazing pressure
- Create wildlife habitats to slow the rate of loss of biodiversity
- Re-introduction of locally extinct, but historically economically significant plant species

- Direct products: Food (Fruits, nuts, seeds, leaves, oil); building materials (timber, fibre); fuel (firewood, charcoal, oil);
- Indirect products: Meat, dairy and honey (by providing animal forage);
- Services: microclimatic improvement; improvement of soil structure and fertility; protection of biodiversity; rainwater catchment enhancement.

### Strategies

- Planting of appropriate dryland tree crops
- Erosion prevention earthworks (swales, terraces, gabions)
- Development/rehabilitation of rainwater catchment systems (swales, cisterns)
- Integration of aquaculture in cisterns

### Matrix showing developmental goals achieved by each strategy

	Reverse soil erosion and loss of vegetative cover	Enhance soil humidity, fertility and structure	Maximise rainfall interception, infiltration and utility	Forage substitution and enhanced agricultural diversity	Create wildlife habitats to slow the rate of loss of biodiversity	Re-introduce locally extinct plant species	Create sustainable prosperity
Planting of appropriate native tree crops	√	√	√	√	√	√	√
Erosion prevention earthworks	√	√	√		√		√
Development of rainwater catchment systems	√	√	√		√		√
Integration of sustainable aquaculture		√		√	√		√

### Beneficiaries

The proposed project focuses in communities in the Bethlehem vicinity. The initial phase of community consultation will yield project partners soliciting involvement. Involvement will be restricted to enthusiastic participants with access to requisite resources/infrastructure:

### Pre-requisites

- Potential water resources to allow for watering of trees to establishment (1<sup>st</sup> two summers)
- Live on site, to prevent grazing of young trees
- Enthusiasm and time to commit to the project
- Partners who are reliant on pastoral and agricultural produce for economic security

We aim to target about 20 locations, based on an average area of 5 dunums, but including partners with more restricted land access. Tree planting will be at the rate of 100 per dunum.

### Project schedule

Autumn/winter 2010: Plant stock development: germplasm propagation in plant nursery

Identify community partners.

Spring/summer 2011: Rainwater harvesting infrastructure and earthworks development

Autumn/winter 2011: Tree planting

Spring/summer 2012 Development of irrigation and aquaculture systems

## **Project budget**

### **Project duration: 24 months**

The greatest part of resource investment in this project comes from the community partner in the form of time and management of the design, implementation and maintenance of the system. Material resources are also principally sourced on-site at no financial cost, for example rocks and soil for sculpting the landscape for enhanced rainwater harvesting, and manure and water necessary in the establishment of trees.

### **Staffing costs:**

Project manager (US\$ 12,000pa)	US\$ 24,000
Botanical technician (US\$ 12,000pa)	US\$ 24,000
Workshop facilitator and translator (part time, US\$ 5,000 pa)	US\$ 10,000

### **Logistical costs:**

Contracted labour:	
20 sites, 4 person-days at each site, 200 ILS/day	US\$ 4,705
Heavy machinery hire	
20 sites, 4 days per site, 200 ILS/day	US\$ 4,705
Cistern construction and rehabilitation cost (labour and materials, target 4 sites max 20,000 ILS per site)	US\$ 23,529
Irrigation infrastructure expenses	
Pump, drip irrigation system and sediment trap 1,100 ILS/site	US\$ 6,470
Transport	
Pickup hire 20 days (tree delivery to each site)	US\$ 2,000
Car hire 40 days (site visits)	US\$ 1,200
Fuel 200 ILS/day	US\$ 3,520
Tree procurement	
10,000 saplings, 10ILS each (100/dunum over 100 dunums)	US\$ 29,000
Total	US\$ 132,929
Contingency (10%)	US\$ 13,293
<b>Grand total for 24 month project duration</b>	<b>US\$ 146,222</b>

## **Conclusion**

Soil erosion, overgrazing, the loss of vegetative cover, loss of local biodiversity and the drying of regional climate are all mutually causal factors in the cycle of decline which is regional desertification. Desertification imperils the environmental resource availability required to support healthy communities in the long term. Without a healthy landbase any community becomes vulnerable to exploitation by exterior agencies; this is especially pertinent in the context of the Israeli occupation of Palestine whereby control of natural resources is used coercively to implement a political agenda. If water and food security are to be attained in the Occupied Palestinian Territory (OPT), communities shall necessarily adapt to accessing natural resources such as clean water, biodiversity and fertile soils by all available means. This project introduces such means, sharing experiences across the community and building the capacity for accessing these vital resources and safeguarding them for future generations.

Successful implementation of this project prepares the ground for further opportunities to enhance profitability of land management, for example the potential to introduce apiculture, and greater habitat and forage resources for migratory passerines popularly hunted in the OPT. Diversification of produce invariably confers greater economic security.

# Trialling techniques for protein harvesting from existing cisterns

## Rationale

Water insecurity threatens the stability and prosperity of all communities in the Occupied Palestinian Territories (OPT). Due to the universal undependability of piped water supplies (where present), and the resurgent culture of rainwater harvesting to alleviate hardship, water storage infrastructure is an ubiquitous feature of modern Palestinian culture. In addition to providing access to sanitary water resources for water-stressed communities, water tanks and cisterns offer unrealised potential for protein production through domestic scale aquaculture developments.

The Palestinian population is well placed to benefit greatly from domestic scale aquaculture: The requisite infrastructure is widely available, thus reducing the need for initial capital investment. Domestic production of protein can subsidise household economies and improve diet, while reducing the dependency on an unsustainable meat producing agricultural industry, itself contributing to environmental degradation and regional desertification. When integrated with irrigation systems, aquaculture causes nutrient enrichment of the water and so reduces the dependency on inorganic fertilisers, thus reducing cost, preventing soil salinization and protecting soil health. In an urban setting, aquaculture can be combined with plant growth (aquaponics) to yield additional vegetable crops. The OPT suffer from an already identified fish production deficit, with the shortfall being made up from imports from Israel and further afield.

Domestic scale aquaculture in existing water tanks/cisterns could, therefore, play an important role in breaking the cycle of decline and economic dependence on the occupying state, Israel, whilst increasing domestic productivity in the context of mass unemployment.

## Project outline

The proposed project aims to utilise the standing water resources created by extant water storage infrastructure to develop low input, low technology, sustainable and affordable aquaculture systems. Focusing on both agricultural (irrigation) cisterns, and rooftop water tanks we aim to develop the most appropriate systems to benefit both rural and urban dwellers. In each instance, present use of the water resource must be maintained, and the technological, financial and labour inputs will be taken into account and compared to yields and benefits.

Blue tilapia (*Oreochromis aureus*) and carp (*Cyprinus carpio*) have been selected as appropriate fish species for culture; both are resilient and relatively fast growing, and have a high level of consumer acceptance (particularly tilapia). Furthermore, we have located a supplier in Israel that is happy to assist us in this project by providing juvenile fish of these species.

The project nucleus is Bustan Qaraaqa permaculture farm in Beit Sahour; working with existing and new community contacts, and students of Environmental Sciences at the al-Quds Bard Honors College, we shall help individuals to establish personal

aquaculture projects. By working in this manner, not only do we ensure that the necessary skills and knowledge to develop and maintain the systems can be transferred to the end user, but also we can take advantage of replicate systems to use a scientific and socioeconomic process to ascertain which is the most appropriate. By taking advantage of existing infrastructure, and keeping systems low-tech, we ensure that initial investment remains within everyone's reach.

### **Project Schedule**

The project has already commenced: at Bustan Qaraaqa we are conducting an initial pilot study in an irrigation cistern to study growth rates in a "zero input" system, and to develop techniques to enhance winter survival of tilapia.

Present - December 2010:	Continue with trial at Bustan Qaraaqa; assess tilapia overwintering and develop low-tech means to increase winter water temperature; Identify individual participants; develop low-tech aquaponic setup.
December 2010:	Drain, clean and prepare cisterns; commence tilapia fry production; first workshop.
January 2011:	Fill cisterns (rainwater); stock carp (and tilapia if temperature permits).
March 2011: workshop.	Stock remaining tilapia for growout; 2 <sup>nd</sup>
June/July 2011: workshop.	Commence tilapia harvesting; 3 <sup>rd</sup>
September 2011:	Commence carp harvesting; final workshop.

### **Workshop themes**

- 1: Aquaculture: introduction and considerations
- 2: Growout phase: potential problems, and different techniques
- 3: Harvesting protocols and experience sharing
- 4: Looking forward: Independent preparation for the next season

From the outset, the project will include both community participants and students of environmental studies at Al-Quds Bard College. In addition to active involvement with the project, a series of strategic workshops will ensure that participants have the skills necessary to maintain and develop their own systems independently. Looking beyond the immediate benefits, these individuals will also be well placed to assist in the wider propagation of sustainable aquaculture systems, rendering long term external involvement obsolete. We aim to deliver the workshops to 20 participants, all those participating in trials and also interested students.

## Project budget

**Project duration: 12 months**

### Staffing costs:

Project manager	US\$ 12,000
Systems developer	US\$ 12,000
Workshop facilitator and translator (part time, 104 days)	US\$ 5,000

### Logistical costs:

Transport	
Pickup hire for 10 days (livestock delivery)	US\$ 1,000
Car hire for site visits, 2 days/month	US\$ 1,000
Fuel, 200 ILS/day	US\$ 2,000
Field water testing equipment (Parameters: Oxygen, nitrate, ammonia, pH, TDS)	US\$ 2,000
Cost of fingerlings	US\$ 500
Capacity building workshops (x4):	
Participant transport costs (50 ILS/capita/workshop)	US\$ 1,176
Food (50 ILS/capita/workshop)	US\$ 1,176
Overnight expenses (100 ILS/capita/workshop)	US\$ 2,353
Education and training materials	
Printing costs and books 85ILS/participant	US\$ 500
Modifications to trial cisterns (x6)	
Shade cloth, greenhouse cover, plumbing modifications	US\$ 1,200
Cost of building trial aquaponic setups (x6)	US\$ 600
Total	US\$ 42,505
Contingency (10%)	US\$ 4,250
<b>Grand total</b>	<b>US\$ 46,755</b>

## Conclusion

Food and water security are vital to survival of the Palestinian community. The proposed project has the potential to not only safeguard natural resources, but improve quality of life of a people living under occupation.

## **Outreach workshops: Capacity building to mitigate current environmental trends in Palestine.**

### **Rationale**

Management of the Palestinian environment presents many challenges shared by the global community. For example: land use conversion resulting in the loss of habitats; contamination of natural resources through inadequate waste management; and global climate change result in loss of biodiversity and compromise essential environmental services. The ability of the Palestinian community to address and mitigate these global environmental challenges is impeded by restrictions imposed by the ongoing Israeli military occupation.

The state of the environment in the Occupied Palestinian Territories (OPT) is in crisis. Notwithstanding the global issues listed above, the accelerating rate of environmental degradation in the OPT is exacerbated by current land management practices which result in soil erosion, overgrazing, the loss of vegetative cover, loss of biodiversity and the drying of regional climate, all mutually causal factors of regional desertification.

Although never sustainable, agricultural techniques developed in the Levant have provided for prosperous communities for millennia. However, inherited agricultural practices' appropriateness cannot keep pace with changing circumstances.

This project aims to capacity build skills and knowledge within Palestinian communities in order to promote better understanding of the ecological processes occurring, the causal link between human activity and environmental functions, and to thus empower development of land management techniques that can keep pace with, or even mitigate, the current environmental trends.

The project aims to deliver a practical syllabus covering environmental issues - causes, functions and outcomes. The learning outcome expected for participants of the syllabus is to broaden understanding of their role as an individual in the context of local environmental trends (for example: climate change, desertification, resource contamination and colonialism). By raising awareness of resources they currently have, and providing the knowledge required to tackle problems as individuals, as families or as community organisations, individuals will become empowered to try to achieve protection of, and access to, environmental resources now and for the long term.

### **Project outline**

The project aims to bring together a diverse group of stakeholders in the Palestinian environment ranging from farmers and pastoralists through university students and popular committee members to NGO professionals and municipal employees (e.g., PARC, Friends of the Earth, ARIJ, Zeitun, Trees for Life, ActionAid).

As well as providing first hand contact to give understanding of the processes occurring in real time (education), the course creates the opportunity for a forum of knowledge and idea sharing from stakeholders at all levels. Recognition and demonstration of the diverse approaches and ingenious and resourceful solutions to

widespread environmental challenges encourages horizontal skill and knowledge transfer.

### **Process**

- Identify 3 eco-regions within the West Bank with similar environmental, agricultural and economic characteristics to ensure syllabus remains locally relevant.
- Advertise, identify and gain consent of participants within each region, and provide study packs needed for each workshop.
- Identify, invite and prepare facilitators for each subject workshop.
- Identify sites for field visits within each region. To ensure excursions remain convenient and accessible to all participants, demonstration locations are local and accessible to them and are selected to minimise expense and logistical difficulties.
- Design study days and site visits, each day being a self-contained workshop in which the subject be a resource (for example: soil fertility; soil water; biodiversity, etc.). The object of each day is to frame each resource in its ecological and political context, giving familiarity with designs, materials and techniques locally pioneered to mitigate degradation and to access the resource through sustainable exploitation.
  - Study ecological processes which provide and maintain the resource for the community
  - Examine problems of continued resource provision and resource access
  - Identify which human activities affect the resource's availability and quality
  - Discuss possibilities for maximising the communities sustained resource access
  - Illustrate by visiting places and people where these problems are being tackled in a productive and innovative manner.

In each of the three eco-regions, one day workshops will be held twice monthly, targeting 10 individuals. The initial project duration is therefore 6 months, 3 months for preparation and 3 months of workshops.

- 1) Groundwater: Minimising consumption, maximising utility; greywater and black water; compost toilets and considerations for irrigation from re-used water; contamination
- 2) Rainwater: Harvesting, storage and utilisation (swales, cisterns, soil water)
- 3) Soil: Structure and fertility; contamination; restoration.
- 4) Biodiversity: Products and services; habitat protection/creation.
- 5) Agricultural diversification: aquaculture; appropriate tree crops; resource sustainability
- 6) Domestic planning: resource conservation; affordable and appropriate vernacular architecture using locally available materials; retrofitting for increased efficiency (acclimatisation)

## **Project budget**

**Project duration: 6 months**

### **Staffing costs:**

Project manager	US\$ 6,000
Workshop facilitator and translators x2 (12 days a month)	US\$ 7,000

### **Logistical costs:**

Transport	US\$ 4,000
Education and training materials	US\$ 1,000
Printing costs of study booklets	
Translating certain materials to Arabic	

Total	US\$ 18,000
Contingency (10%)	US\$ 1,800

**Grand total** **US\$ 19,800**