INCREASING CAPACITY FOR BIODIVERSITY CONSERVATION: Long-Term Integrated Research and Conservation Education Program, Azerbaijan

By Yelena Gambarova
Gobustan National Park (officially Gobustan Rock Art Cultural Landscape) is a hill and mountain site occupying the southeast end of the Greater Caucasus mountain ridge. It is located west of the settlement of Gobustan, about 64 km southwest of the centre of Baku on the west bank of the Caspian Sea.

In 2007 Gobustan was declared a UNESCO World Heritage Site considered to be of “outstanding universal value” for the quality and density of its rock art engravings, for the substantial evidence the collection of rock art images presents for hunting, fauna, flora and lifestyles in pre-historic times and for the cultural continuity between prehistoric and medieval times that the site reflects.
The goal of conservation education program “Monitoring rare vegetation within Buffer zones around Industrial objects using Space technologies” is taking as consideration rare vegetation distribution within “buffer zones” for recent years.

This proposal addresses communities’ recommendation through development of a conservation education program including the implementation of conservation training workshops.
Designing conservation education program

Step 1: Choose Geographic area of interest

Step 2: Choose habitat and group

Step 3: Select conservation threats

Step 4: Identify key concepts to be communicated
Designing conservation education program

Step 5: Choose target audience

Step 6: Plan the program and craft messages

Step 7: Create my own targeted resources
Training Management Cycle

Step 1: Planning

Step 2: Implementation

Step 3: Evaluation
Roadmap

Step 1 Planning

Duration 16-18 weeks
Roadmap

Step 1: Planning

Step 2: Implementation
   Duration: 4-6 weeks
Activities and Methodology

- **Strategy and materials development**
- Training Workshop Implementation
- Monitoring, Evaluation Program
- Reporting, Presentation and Results
Activity 1: STRATEGY and MATERIALS DEVELOPMENT

A common method for reducing or eliminating impacts to rare vegetation from adjacent land uses and other pressures is to maintain "buffer zones" around the resources.

a. Design a capacity building strategy;
b. Identify target audience);
c. Conservation educational program development tool;
d. Design and compile training materials;
e. Design online learning products and services to allow retrieval of training materials.
Activities and Methodology

- Strategy and materials development
- Training Workshop Implementation
- Monitoring, Evaluation Program
- Reporting, Presentation and Results

Activities and Methodology
Activity 2: TRAINING WORKSHOP
Implementation

Conduct training through a two-day workshop “Open Education Initiative - “Open Education Initiative - Space for our young generation”
Activities and Methodology

- Strategy and materials development
- Training Workshop Implementation
- Monitoring, Evaluation Program
- Reporting, Presentation and Results
Activity 3: MONITORING and EVALUATION PROGRAM

a. Make a plan for evaluating the program
b. Feedback and review of the effectiveness of the training
c. Analyze and report results

EVALUATION TOOLS
• Feedback
• Interviews
• Performance records

The results of the training evaluation are reflected in the next phase of training planning to improve future training programs
Activities and Methodology

- Strategy and materials development
- Training Workshop Implementation
- Monotoring, Evaluation Program
- Reporting, Presentation and Results
Phase 1: Planning

- Strategy development
- Intended Audience
- Training Material Development
Phase 1: Planning

- Intended Audience
- Training Material Development:
  - Training Scripts
  - Lesson Plan
  - Presentation
Intended Audience

Students who work with biodiversity data and are interested in developing skills to effectively use spatial analysis programs with GIS applications with a focus on diversity and ecological analyses.
Phase 1: Planning

Intended Audience ➔ Training Material Development: ➔ Training Scripts ➔ Lesson Plan ➔ Presentation
Phase 1: Planning

- Intended Audience
- Training Material Development:
  - Training Scripts
  - Lesson Plan
  - Presentation
Training Test Scripts

- Step-by-step guide for setting up and managing “Monitoring rare vegetation within Buffer zones around Industrial objects using Space technologies” program
- Additional practice scripts for review and skill refinement
Phase 1: Planning

Intended Audience

Training Material Development:

Lesson Plan

Training Scripts

Presentation
Course Objectives

To provide the necessary theoretical and practical training in technical field related to rare vegetation conservation work.

Aim of the Training Program

The aim of this training program is to provide the teaching community an exposure to recent advances in satellite image analysis, dealing with very high spatial resolution images.

Intended Audience

This Training Lesson Plan is intended for students who work with biodiversity data and are interested in developing skills to effectively use spatial analysis programs with GIS applications.
Phase 1: Planning

Intended Audience

Training Material Development:

- Training Scripts
- Lesson Plan
- Presentation
Presentations:

Subject: Rare Vegetation response to Industrial development
Indication of the “Industry object 1” and “Industry object 2” on satellite imagery
Indication of the “Industry object 1” and “Industry object 2” on satellite imagery
Rare vegetation classification within the “Buffer zone 1”
Rare vegetation classification within the “Buffer zone 2”
Rare vegetation classification within the “Buffer Zone 1” and “Buffer Zone 2”

2004

2012

Tamarix
Suaeda dendroides
SalNod-ArtemL-SalDend
Bare ground
Alhagi-pseudoalhagi
Rare vegetation degradation within the “Buffer zone”

- **2004**
  - Area (ha): 250
  - Area (ha): 150

- **2010**
  - Area (ha): 400
  - Area (ha): 300

- **2012**
  - Area (ha): 350
  - Area (ha): 250

Legend:
- Alhagi pseudoalhagi
- Tamarix
- Suaeda Dendroides
- Salsola Nodulosa/Artemisia Lerchiana/Salsola Dendroides
- Bare ground
Geographical Data Base (GDB)
Geographical Data Base (GDB) with classification results
Rare vegetation classification within the Sensitive area
Rare vegetation classification within the Sensitive area
Vegetation response to Industrial development


Legend:
- Tamarix
- Suaeda dendroides
- SalNod-ArtemL-SalDend
- Bare ground
- Alhagi-pseudoalhagi
The aim of this training is to provide the community an exposure to recent advances in satellite image analysis, dealing with very high spatial resolution images.

The participants have been provided with course materials and demo versions of image analysis software. Suitable laboratory sessions are organized to complement the classroom lectures.
Collaborating with lecturers of Universities

Working with lecturers gives our education program the greatest impact. During developing the education program, we ask lecturers to review materials for accuracy, up-to-date information, and appropriate use of terms.
Lesson Structure: 4 stages with details

**Introduction:**
- Importance of rare vegetation conservation in Azerbaijan
- Information about the threats to rare vegetation, rare vegetation monitoring, species identification and Field Surveys and Data Recording
- Vegetation response to industrial development: Assessing protected area effectiveness using surrounding (buffer) areas environmentally similar to the target area

**Geographic Information Systems (GIS): Knowledge Base**
- Basic GIS introduction;
- ESRI ArcGIS: Tools and Functionality;
- Map Queries and Navigation. Spatial Filtering;
- Geospatial Analysis
- Practical work

**GPS machines:**
- Buttons & Pages in GPS
- Getting to know the basic GPS terms
- Set Up
- Entering a grid reference
- Routes & Information the GPS provides

**Remote Sensing (RS) Technologies:**
- Introduction to Remote Sensing
- Overview of Satellite Image Processing
- Satellite Image Classification
Training workshop implementation
Training Management Cycle

Phase 3: Evaluation

REVIEW OF THE EFFECTIVENESS OF THE TRAINING.

Graph showing evaluation scores for various aspects.
Experiences Gained, Recommendations and Lessons Learnt from the Training Workshop

In general, the workshop appears to have been highly successful. While some tentative recommendations might be made for future training programs of this type – the evaluation capacity-building project should include two workshops: the first – at the beginning of the project, the other - at the end of the project, one year later.

Creation of Evaluation Team - A training outcome evaluation requires engagement from several stakeholders (e.g. external evaluator, representative from the training institution) and ideally they should all be represented in the evaluation team.

Results of the Training Outcome Evaluation should be measured on four levels: the event and the participants’ immediate reactions, the participants’ learning, the participants’ job performance, and the organizational performance.
Public Awareness and Understanding for Conservation

http://www.science-community.org/ru

Journal of Earth Science & Climatic Change

Research Article

Rare Vegetation Degradation within “Buffer Zones” In Gobustan State National Park, Azerbaijan

Yelena M. Gurbanova and Adil Y. Gurbanov

Abstract

This paper investigates the spatial change of rare vegetation cover of Gobustan, Azerbaijan. The Gobustan State National Park (Conservation Area) is a nationally important desert area located west and south-west of Baku, Azerbaijan. In 2007 Gobustan was declared a UNESCO World Heritage Site considered being of “outstanding universal value” for the quality and density of its rock art engravings. The Study Area of Gobustan contains a wealth of historical and archaeological sites and is also known for its rare vegetation. This investigation involves monitoring the existing threats to rare vegetation (Global Climate Change, oil and gas exploration, overgrazing of winter and summer pasture by domestic sheep, goats and cattle, pollution, etc.) as well as the processing of remote sensing data to produce thematic vegetation indicators.

This study has shown that oil and gas infrastructure, in an ecologically important semi-arid region, has a negative effect on species abundance and cover of vegetation.

Rare vegetation distribution within a buffer zone indicates that plant cover has decreased in the buffer zone and is higher than the “Safeguard Area”. Salt ground has increased dramatically in the buffer zone whereas in the “Safeguard Area” it has decreased slightly.
Development and Implementation of the project have been carrying out with support from:

- The Rufford Small Grants Foundation
- PLANET ACTION
- SPOT IMAGE
- ESRI