Excursion Report: Ecosystem Services and Nature Conservation in Armenia

Introduction

Armenia, with its diverse natural landscapes and rich cultural heritage, offers a unique perspective on the relationship between humans and the environment. This excursion (see the map below) covered key locations that highlight the essential ecosystem services nature provides—such as water regulation, biodiversity conservation, climate regulation, and cultural enrichment—while exploring efforts in nature conservation.

Map of the excursion route in Armenia

Participants:

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1. Yerevan – the capital of Armenia: A City of Resilience

Yerevan, the capital of Armenia, is one of the world's oldest continuously inhabited cities, dating back to 782 BC. Rich in history, it blends ancient heritage with modern urban life. Landmarks such as Republic Square and the Cascade Complex reflect its dynamic transformation over the centuries.

A defining moment in Yerevan's and Armenia's recent history was the 1988 earthquake, which reshaped the country's urban landscape. While Yerevan was less affected than northern cities like Spitak and Gyumri, the disaster spurred widespread reconstruction efforts, influencing urban planning and resilience strategies.
In the early 1990s, Armenia faced multiple crises—earthquake recovery, war, and economic turmoil. Harsh winters led to severe deforestation as people cut trees for survival, depleting Armenia's forests.

Today, Yerevan prioritizes urban green spaces, with tree-planting initiatives and new parks aimed at improving air quality and public well-being. Despite efforts, green space has declined due to rapid urbanization, leaving only 8 m² per capita, unevenly distributed across districts. Policies such as the “3-30-300 rule” seek to restore greenery, though challenges remain.

Photo: Yerevan from the Cascade with the Opera house (left), the monument of Charles Aznavour (right) and Ararat in the background, by Ralf-Uwe Syrbe

Photo: Place of Republic in Yerevan with music-lightening fountains in the evenings, by Ralf-Uwe Syrbe

The city faces extreme climate conditions, with +40°C summers, -20°C winters, and a 9% drop in precipitation, making it one of the driest urban areas in the South Caucasus. Heavy traffic, industrial pollution, and landfill waste exacerbate air quality issues.

Armenia is a leader in natural gas transport, with over 80% of vehicles running on natural gas as of 2022. While this reduces greenhouse gas emissions, traffic congestion remains a concern, as Yerevan's growing population increases reliance on personal vehicles. The metro system has not kept pace with the city's expansion, yet ongoing infrastructure projects aim to improve public transport efficiency and sustainability.

Despite these challenges, Yerevan continues to seek sustainable solutions, enhancing urban greenery, optimizing water management, and expanding climate-resilient infrastructure to ensure a more sustainable future.

Photo: Traffic jam in Yerevan during peaking hours, by Ralf-Uwe Syrbe

2. Surenavan village: near the Wetland and Pond Ecosystem –Water Birds

Surenavan, known for its wetland and pond areas, plays a crucial role in biodiversity conservation, particularly for water birds such as white storks, herons, and pelicans. These wetlands act as natural water filters, regulating water quality, and serve as breeding and resting grounds for migratory species. Additionally:

- Wetlands help absorb excess floodwaters, reducing soil erosion and maintaining the local hydrological balance.
- They provide habitats for amphibians, fish, and aquatic plants, promoting local biodiversity.
- Preserving these wetlands is crucial for maintaining ecological balance, ensuring healthy bird populations, and sustaining the broader food web.

Photo: Storks nest and solar hot water system in the village Surenavan, by Han Tran

3. Yeghegnadzor: WWF Nature Protection Station and Local Conservationists

At the WWF nature protection station in Yeghegnadzor, we gained insights into Armenia’s conservation efforts. This station works to:

- Monitor endangered species like the Caucasian leopard, Armenian mouflon, and brown bear.
- Implement reforestation projects to restore degraded landscapes and combat climate change.
- Promote environmental education through community and youth engagement.

Meeting local nature conservationists allowed us to understand the challenges they face, such as habitat fragmentation, illegal hunting, and climate change impacts. Their dedication showcases the importance of scientific research, legislative measures, and community involvement in safeguarding Armenia’s ecological treasures.

Photo: K. Grunewald talks with the staff of nature protection center in Yeghegnadzor, by Ralf-Uwe Syrbe

Photos: WWF office and the surrounding, by Han Tran, Ralf-Uwe Syrbe

4. Noravank Monastery: A Historic Spiritual Site in a Rich Natural Environment

Nestled among dramatic red rock cliffs, Noravank Monastery exemplifies cultural ecosystem services—the spiritual and aesthetic benefits provided by nature. The interplay between architecture and nature is evident in:

- The monastery's location in a rugged, naturally fortified valley, enhancing its spiritual atmosphere.
- Surrounding rock formations, which have protected the site for centuries from erosion and external threats.
- Diverse flora and fauna, contributing to ecotourism and scientific research in the region.

Noravank stands as a symbol of Armenia's intertwining history with its natural landscape, making conservation of its surroundings essential for both cultural preservation and ecological balance.

 

Photos: Novarank monastery, by Han Tran

5. Geghard Monastery and Valley: Nature's Symbolism in Architecture

Geghard Monastery, partly carved into the cliffs, exemplifies how nature and spirituality are intertwined in Armenian heritage. The monastery's rock-hewn churches and symbolic engravings reflect the role of natural elements in spiritual inspiration:

- The use of caves and rock formations symbolizes protection and endurance.
- Decorative elements depict animals, plants, and celestial bodies, emphasizing human-nature connections.
- The valley itself serves as a natural fortress, reinforcing its historical and religious significance.

The surrounding protected area ensures that both the cultural site and biodiversity remain intact, illustrating a successful model of heritage conservation alongside environmental preservation.

6. Garni Gorge: Geological Monument – The Symphony of Stones

The Symphony of Stones in Garni Gorge presents a striking geological formation of basalt columns, formed through volcanic activity. This site showcases:

- Armenia's geological history, offering insights into rock formation processes.
- The role of erosion and weathering in shaping landscapes.
- The scientific and aesthetic value of natural monuments, making them vital for geoconservation.

The gorge’s designation as a natural monument ensures its protection from human-induced damage, such as mining and urbanization.

Photos. The “Symphony of stones” in the Garni gorge and the roman temple, by R.-U. Syrbe

7. Garni Temple: Roman Influence in a Natural Setting

Garni Temple, a 1st-century Greco-Roman structure, highlights the historical connection between Armenia and the Roman Empire. Its placement within a scenic valley shows how spiritual and cultural sites have long been integrated with nature. The temple:

- Represents Armenia's ties with European civilization.
- Showcases the importance of geology and topography in cultural development.
- Reinforces the concept of cultural ecosystem services, where nature enhances historical and spiritual experiences.

8. Lake Sevan: Armenia's Largest Water Ecosystem

Lake Sevan, the largest freshwater lake in Armenia, plays a critical role in water regulation, biodiversity conservation, and climate stabilization. This vital aquatic ecosystem:

- Controls regional water resources, supplying drinking water and irrigation.
- Serves as a habitat for fish species such as the endemic Sevan trout.
- Supports local and international ecotourism, contributing to socioeconomic development.

Conservation efforts focus on preventing water pollution, managing fisheries, and adapting to climate change, ensuring its sustainability.

Photo. Lake Sevan, by Karsten Grunewald

9. Dilijan National Park: Haghartsin Monastery in a Forested Landscape

Dilijan National Park, a biodiversity hotspot, provides essential ecosystem services including carbon sequestration, soil conservation, and recreational opportunities. The park houses Haghartsin Monastery, demonstrating:

- The historical value of forests in Armenian culture.
- The relationship between architecture and nature, fostering spiritual well-being.
- The role of protected areas in balancing cultural heritage with conservation.

Photo: Haghartsin Monastery, by Han Tran

10. Dilijan National Park: Deer Breeding Station and Lake Parz

The deer breeding station supports the reintroduction of the Caucasian Red Deer, contributing to:

- Restoration of ecological balance, improving biodiversity.
- Species conservation, preventing extinction.
- Wildlife education, raising awareness about Armenia’s fauna.

The program exemplifies successful conservation initiatives, promoting sustainable wildlife management.

Lake Parz is a high-altitude freshwater lake, playing a role in:

- Water filtration and climate regulation.
- Supporting aquatic biodiversity, including fish and amphibians.
- Ecotourism and recreation, encouraging sustainable engagement with nature.

Photo: Deer breeding station, by Ralf-Uwe Syrbe

11. Dilijan Old Town

Dilijan's Old Town showcases cultural ecosystem services through its historic architecture, traditional craftsmanship, and connection to nature. Regional stone and wood, such as tufa, basalt, and carved timber, are used in building materials. The town's proximity to Dilijan National Park enhances air quality, biodiversity, and climate regulation.

Photo: Many buildings feature hand-carved wooden balconies, doors, and decorative elements, reflecting Armenian craftsmanship, by Han Tran

Conclusion

This excursion demonstrated the interconnectedness of nature, conservation, and cultural heritage in Armenia. From wetlands and forests to geological landmarks and historic monasteries, the journey underscored the necessity of preserving Armenia's natural landscapes. Ongoing conservation efforts will ensure that these treasures remain for future generations, maintaining the balance between biodiversity, ecosystem services, and cultural legacy.

Note: the two excursion days (19./23. May 2025) were organized and sponsored by BCC Armenia.