



PRESERVING *HIGH ATLAS* CULTURAL HERITAGE AND BIODIVERSITY : A VISUAL STORY BOOK



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Front Cover: Amazigh woman preparing fire for bread making. ©Ibtissam Bouseta.

Back Cover: Amazigh woman spreads bread dough on heated rocks. © Badr El Hardag.

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INTRODUCTION

Since the creation of the Moroccan Biodiversity & Livelihoods Association in 2014, we have been committed to support conservation efforts in the High Atlas mountains, to restore ecological balance, document and promote traditional conservation practices and support agriculture-based rural economies.

Through our long-term collaboration with the Global Diversity Foundation and with the support of generous donors including the MAVA Foundation, we launched the High Atlas Cultural Landscapes program to support rural Amazigh communities to increase their resilience and food security, protect their natural and cultural diversity and enhance their livelihoods.

This publication tells the story of the people, animals and plants that shape these High Atlas Cultural Landscapes, while shining a light on the practices that maintain local biodiversity and the potential of sustainable plant commercialization initiatives to support local livelihoods.



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LANDSCAPES AND CULTURAL PRACTICES OF THE HIGH ATLAS

The High Atlas Mountains stretch along 560 kilometres through central Morocco, separating the heartland of Moroccan economic activity to the north from the Saharan influence to the south. These mountains are characterized by a rich biodiversity conserved primarily by local communities through a system of participatory environmental management that is deeply rooted in Amazigh cultural beliefs, knowledge and practices.

Unfortunately, local biodiversity and traditional knowledge and practices are threatened by changing climatic, economic and social realities. Increasing droughts, and decreasing monetary rewards from traditional agriculture and pastoralism are contributing to massive rural exodus and the erosion of traditional knowledge.

The challenges of making a sufficient income are leading to unsustainable resource use, reduction of biodiversity and a decrease in knowledge transmission to younger generations.

In order to achieve continuity of traditional practices and the ecological regeneration they engender, we document these practices, carry out community-based research and organize inter generational workshops to support knowledge exchange.

In partnership with local communities, we carry out initiatives and trainings to maintain the traditional practices and unique biodiversity of High Atlas landscapes, while ensuring sustainable incomes for local communities.

Zaouiat Ahensal is positioned at a height of 1700 m in the center of the High Atlas, which is still wild and unspoiled. The Ahansal wadi provides the village's orchards and a spectacular natural landscape below. In the valley, traditional agricultural activities is prevalent.

©Ilyas Nazih





Traditional agroecosystems are represented by these landscapes, which are built around small walled terraces where orchards and crops are cultivated. Through traditional water, soil, plant, and livestock management, Amazigh communities have created resilient refuges against waves of aridity.

Even though agricultural terraces located in a valley sometimes cover no more than 10 ha, they are vibrant ecosystems accompanied by bird song and sounds of human and animal activity.



Photos of agricultural terraces in Imegdâl, Oukâïmeden, by Aakairi Meryem, Inanc Tekguç, Pommélien Da Silva Cosme

Ichou, a nomad from the Ait Atta tribe, looking out over the landscape between Saghrou Mountain and Igourdane's agdal.

©Inanc Tekguç.



Transhumant journey of Ben Youssef family, by Inanc Tekguç.



Agdals are communally governed pasture lands that regulate access to resources. These areas are shared by various tribes, managed by customary law (*Al ourf*), and passed down along family lineages. Building, planting, and cutting trees within the grazing area is forbidden. The *agdal* practice contributes to the conservation of biodiversity as it is closed each year during the development phase of local vegetation (spring), and reopens in summer for the grazing season. Involved tribes choose an "Adouab" (old name of guardian) to guard the pastureland while it's closed. Failure to comply with *agdal* rules results in a fine and penalties.

Maintaining the *agdal* system can not only help conserve the high biodiversity and ecological value of the High Atlas, but also the cultural integrity of local indigenous communities and mobile pastoralists. There are various communal *agdals* located in the High Atlas region including Igourdane, Talmest, Allouz, and Oukaïmeden.



The Ben Youssef family, members of the Ait Atta nomadic tribe, have guided their herds to the lush, high altitude grasslands of Igourdane for as long as they can remember. We documented their annual transhumant journey from the desert-like landscape of Nkob to the green pastures of *agdal* Igourdane in the documentary film "Ait Atta: Nomads of the High Atlas".



The Ben Youssef family watching the screening of their movie and sharing testimonies on their nomadic life with attendees of the High Atlas bio-cultural festival, July 2022.

Aâzib is a typical seasonal summer shelter that is frequently seen close to a mountaintop. These traditional structures are built using rocks and local by-products such as straw, clay soil and tree trunks and provide refuge for pastoralists and their families during the grazing season. The *Aâzban* (plural of *Aâzib*) are found in most of the High Atlas' *agdals*.

Location: Agdal Oukaïmeden



Traditional aâzib in Oukaïmeden,
by Pommélien da Silva Cosme



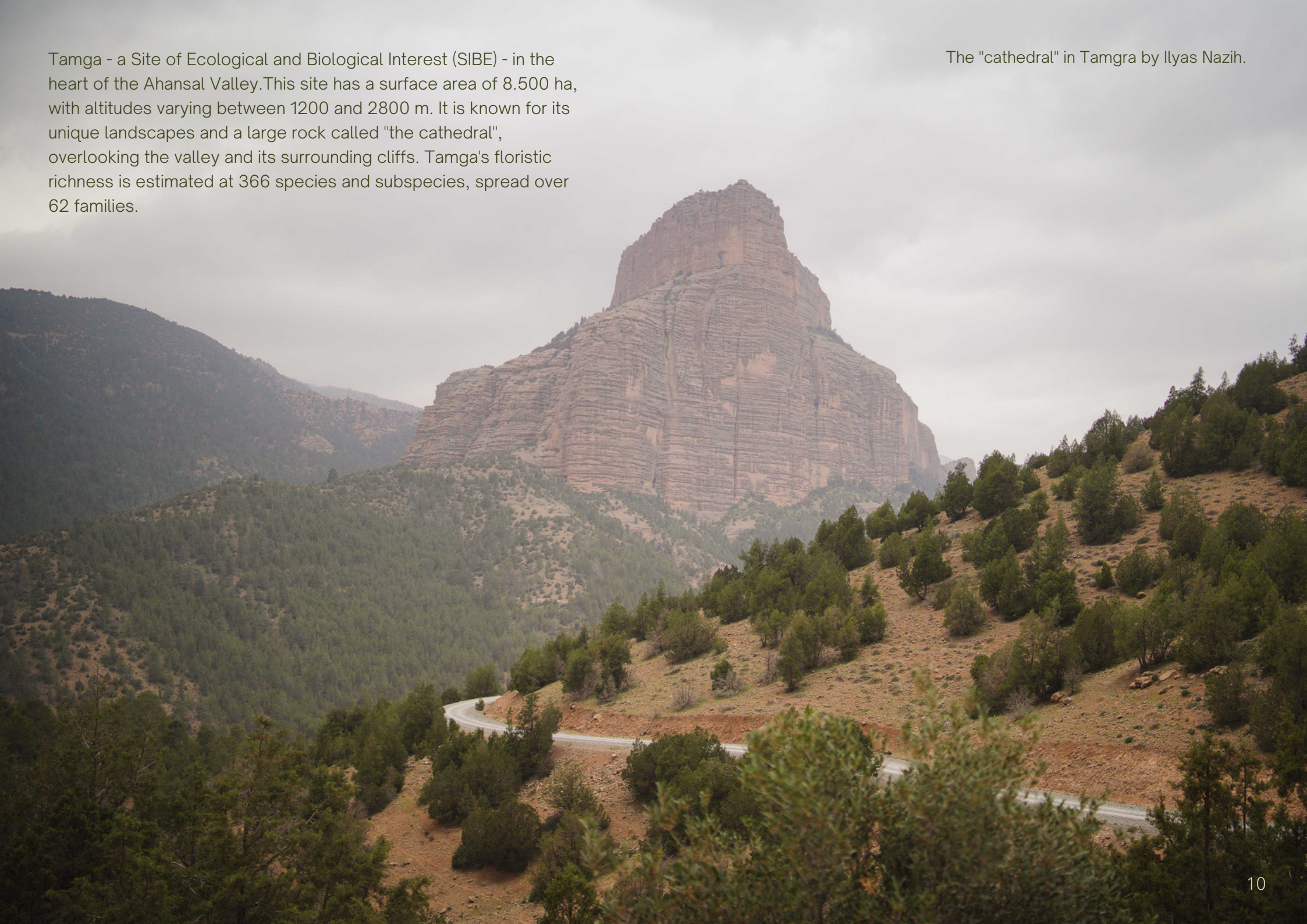
Tawala N Anrar is a traditional management system for threshing (i.e. separating the grain or seeds from hay in cereals and or other crops). Once the cereal has been harvested and dried on the rooftops, community members collaborate for the threshing of each other's grain production. This activity requires a number of donkeys and mules, each contributed by the participating households.

While the men carry out the work collectively in *Tiwizi*, women prepare food to feed the helpers.

Pictures of *tawala n anrar* practiced in Imegal, by Inanc Tekguç.

Tamga - a Site of Ecological and Biological Interest (SIBE) - in the heart of the Ahansal Valley. This site has a surface area of 8.500 ha, with altitudes varying between 1200 and 2800 m. It is known for its unique landscapes and a large rock called "the cathedral", overlooking the valley and its surrounding cliffs. Tamga's floristic richness is estimated at 366 species and subspecies, spread over 62 families.

The "cathedral" in Tamgra by Ilyas Nazih.



GASTRONOMY AND FOOD PRACTICES



In Ourika's all-girls boarding school, we established a botanical garden which has hosted our environmental education program since 2014. We facilitate interactive workshops designed to develop the girls' skills and knowledge of plant conservation, plant uses, permaculture techniques, and traditional conservation practices.



©Ibtissam Bouseta

The girls plant and cultivate thousands of seeds in the garden's greenhouse, which they share with their families, friends, and communities. Most importantly, they reap the rewards of their hard work by harvesting delicious fruits and vegetables that sustain the school's meals for 130 resident students and staff.



©Fabien Tournan





Seed planting workshop and art activity to celebrate Earth Day at Dar Taliba

©Pommelien da Silva Cosme © Ibtissam Bouseta





Livestock plays a significant role in local communities as it produces an important supply of food products such as butter, cheese, and milk. It also provides a significant source of income through the sale of animals, meat, and wool. These factors make livestock farming one of the key activities contributing to the food security of High Atlas communities.



©Ilyas Nazih



Preparing traditional bread or 'Aghroum' has been an essential part of Amazigh daily life for well over 10,000 years. *Aghroum* is a symbol of Amazigh culture, a food that carries a history of rural women's creativity.



Then, the dough is carefully placed on the hot stones, after which the heat transfers directly to the bottom of the bread, resulting in a delicious crunchy crust.



To make fresh daily 'Aghroum' in an outdoor wood fire, women use kindling wood to preheat the baking stones prior to baking. After the baking stones have reached the right temperature, they use plants to clean the surface of the stones and remove the ashes.



Preparing 'Aghroum' in Ait M'hamed during the Bio-cultural festival by Badr El Hardag.

FOODS FROM ALL AROUND THE HIGH ATLAS REGION

Our most recent biocultural festival in July 2022 provided an incredible experience of Amazigh's food rich heritage through a culinary competition. Twenty women participated in the event, aimed at valorizing and celebrating high atlas traditional gastronomy and cultural practices. The competition focused on the history and practices surrounding cooking and eating in the high atlas mountains.



© Badr El Hardag





Women play an important role in Amazigh culture and their identity is expressed through food, clothing and a unique combination of jewelry. They are our biggest source of inspiration. Saadia from Tilgouite won first place with her 'couscous n tmzin', a traditional celebration dish made with couscous and fava beans.



©Badr El Hardag



Amazigh women traditionally pass down jewelry pieces from mother to daughter in order to remain strongly connected to their ancestors and origins.



Participating women wore a beautiful collection of Amazigh jewelry during our culinary competition. Amazigh jewelry is thought to protect the wearer from the evil eye, bring prosperity, and ensure fertility.



Amazigh woman wearing a handmade necklace of cloves and silver coins







The *Tizwite* dance group from Kelaat M'gouna is known to perform a traditional folk dance called the dance of the bee. This dance symbolizes the woman in bee and the man in beekeeper.



The biocultural festival attracted hundreds of visitors from neighbouring villages, who enjoyed performances of local music and traditional horsemanship (*Tbourida*).



© Pommélien da Silva Cosme



© Badr El Hardag

Local artisans hosted festival stands to display their traditional crafts and sell their products.



© Badr El Hardag



A close-up photograph of a green, rounded flower cluster, likely a herb, with many small white blossoms. The background is a soft, out-of-focus green. The text 'FLORA AND FAUNA' is overlaid in white, bold, sans-serif font on the right side of the image.

FLORA AND FAUNA



We established four thriving community plant nurseries in Imegdâl, Aït M'hamed, Oukaïmeden and Zaouiat Ahansal. We cultivate endemic, endangered and economically valuable plant species which we distribute to local community members to reduce harvesting pressure on wild populations, while supporting local livelihoods.



Euphorbia resinifera is an endemic plant to Morocco. It grows abundantly in the Azilal region, protecting the mountains from soil erosion. Although this is a highly toxic species for humans and mammals, honey bees liked to feed on this plant.



©Inanc Tekguç



Salvia taraxacifolia is a strict endemic species to Morocco, found in two major floristic divisions: the High-Atlas and Anti-Atlas mountains. This species is classified as endangered (EN) by The International Union for Conservation of Nature (IUCN). Climate change is one of the factors causing a sharp decline in the population size of this species.

Therefore, we carried out a targeted conservation project in 2021 by collecting new data on its locations, population size and traditional uses. We also collected plant samples, carried out germination tests and planted seeds, which resulted in the cultivation of 4000 seedlings which were planted in the wild in the Imegdal region.



Field work to find undocumented locations of *Salvia taraxacifolia*.
©Pommelién da Silva Cosme



Thymus broussonetii Boiss. is an endemic aromatic plant to Morocco that belongs to the Lamiaceae family and is locally known as "Za'atar Essaouiri". You can identify this plant by its pleasant smell and vibrant purple flowers. This species has different culinary, aromatic and medicinal uses. It is used to treat diarrhea, fever, coughs, infections and wounds.





©Pommélien da Silva Cosme



Butterflies are an important indicator of ecosystem health. We started monitoring butterfly populations to measure change in the environment as well as the state of plant habitats in the High Atlas. Collecting data on butterflies allows us to identify which plant species exist in certain areas and assess their density.

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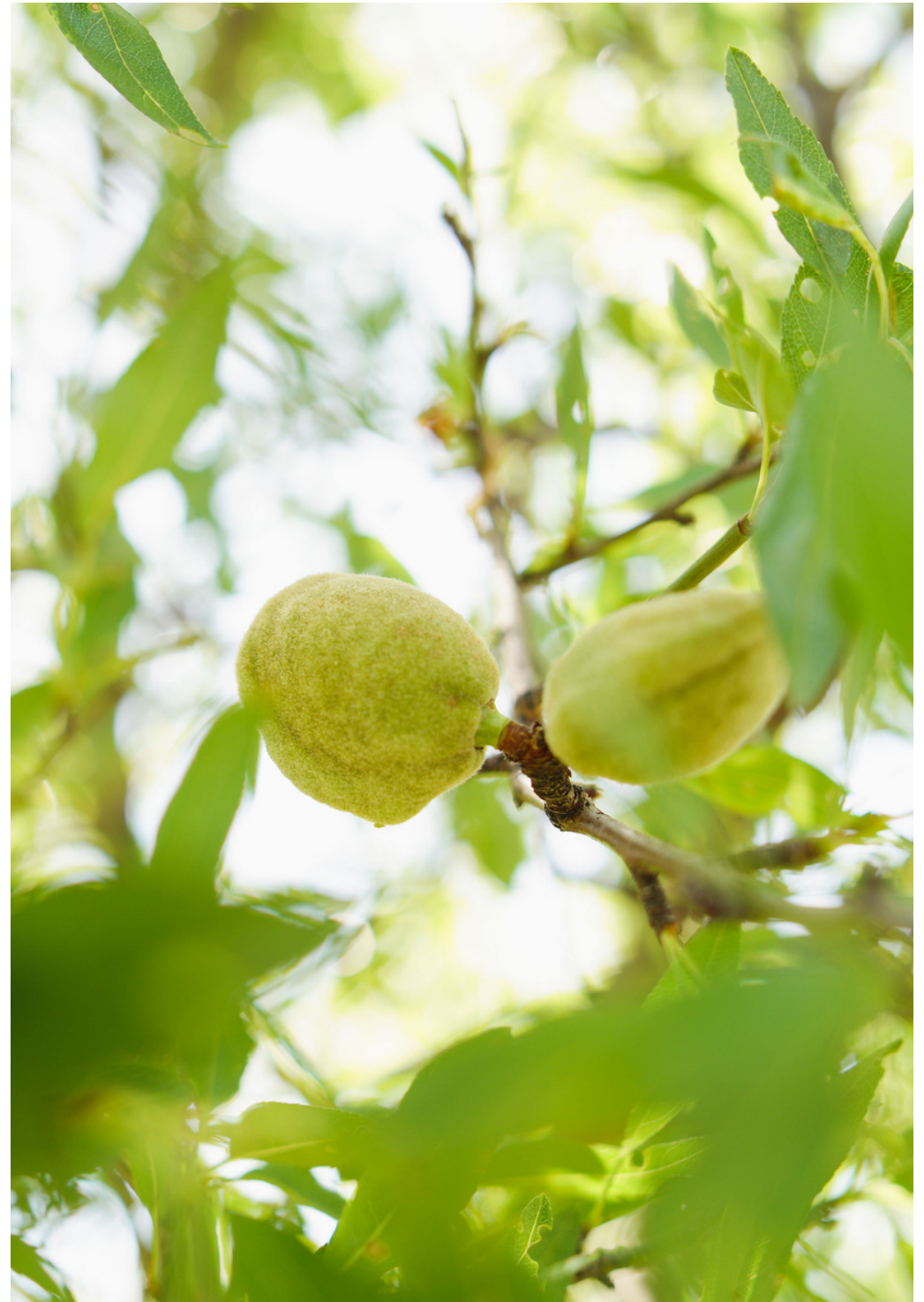
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Left: Marbled white butterfly (*Melanargia galathea*)
Right: Common blue butterfly (*Polyommatus icarus*)



Arboriculture plays an important role in the agricultural activities of High Atlas communities, including the cultivation of almond, walnut, apple, pear and even plum trees. Fruit trees represent an important source of food and economic income for local households. In addition, local farmers and cooperatives can produce and sell high-quality products from these fruit trees.





Saffron aka "Red gold", is experiencing an expansion of production in the Moroccan High Atlas, given its favorable growing conditions (altitude, climate, type of soil). It rapidly became a Highly valuable product in some regions of the High Atlas, where local farmers are producing it at large scales.

COOPERATIVES FROM THE HIGH ATLAS

The cultivation of rural prosperity is core to our vision of a world where people and nature thrive in harmony, and so we recognize that rural livelihoods and ecosystem protection are inextricably intertwined. Our efforts have long included smallholder farmers, forest communities, agricultural cooperatives and end customers.

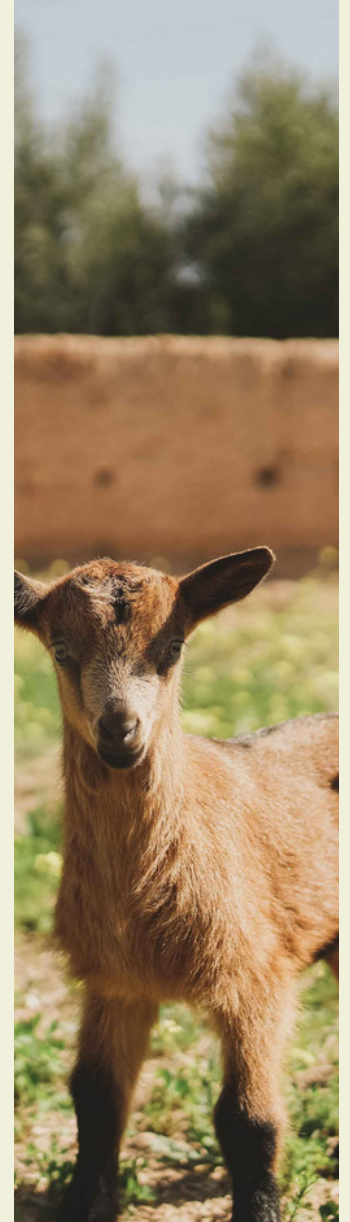
To achieve our mission to support local livelihoods, we launched a local product commercialization program focused on collaborating with local cooperatives to increase their revenues.

Based on specific criteria, we identified 15 cooperatives to participate in our activities, and this number will increase significantly as we expand our program. We particularly focus on female cooperatives, as they offer important opportunities for rural women to participate

in economic activities outside of their household, while contributing to the financial sustainability of their family and wider community.

Most High Atlas cooperatives are dependent on natural resources and use local biodiversity to produce their products. We offer technical trainings to not only strengthen cooperative member's skills in management, marketing, and pricing, but also to ensure production is sustainable and does not harm the environment.

The different products produced by local cooperatives demonstrates the rich biodiversity and culinary traditions the High Atlas harbors: from dried aromatic and medicinal plants to honey, goat cheese, essential oils, amlou (almond paste), couscous, and more.



Naima Laasri was inspired to create more job opportunities for young people in her region when she founded the Oulfa cooperative in 2011 with 7 local women.

The cooperative is based in Lalla Takerkoust, a 40-min drive from Marrakech, where agriculture and tourism are the main economic drivers. Naima decided the cooperative should combine both tourism and agriculture when they chose to produce goat cheese. Their pasture-raised Alpine goats contributed to creating cheese tourism in the region.

Today, the cooperative receives many tourists as well as local customers from surrounding areas who are interested to learn more about the cheese making process.

Among the products they currently produce are fresh goat cheese, marinated greek feta cheese, and a fresh cream cheese spread.





©Ilyas Nazih





© Ilyas Nazih



In his hometown of Foug Jomaa, Amine al Habib, who comes from a line of expert beekeepers, uses his farming skills and extensive knowledge of local flora to produce exceptional quality honey from a number of endemic and local species. Together with six members of his community, he founded the Manahil Al Magreb cooperative and received trainings on product quality, hive management, extraction tactics and hygiene measures.

©Ilyas Nazih







After the success of their honey products, they decided to add *amlou* to their product line. Amlou is a thick paste with a texture similar to peanut butter which is produced by grinding roasted almonds and mixing them with honey and argan oil. To ensure the highest quality available, they purchase the almonds and argan nuts separately, and produce the oil themselves.



© Ilyas Nazih

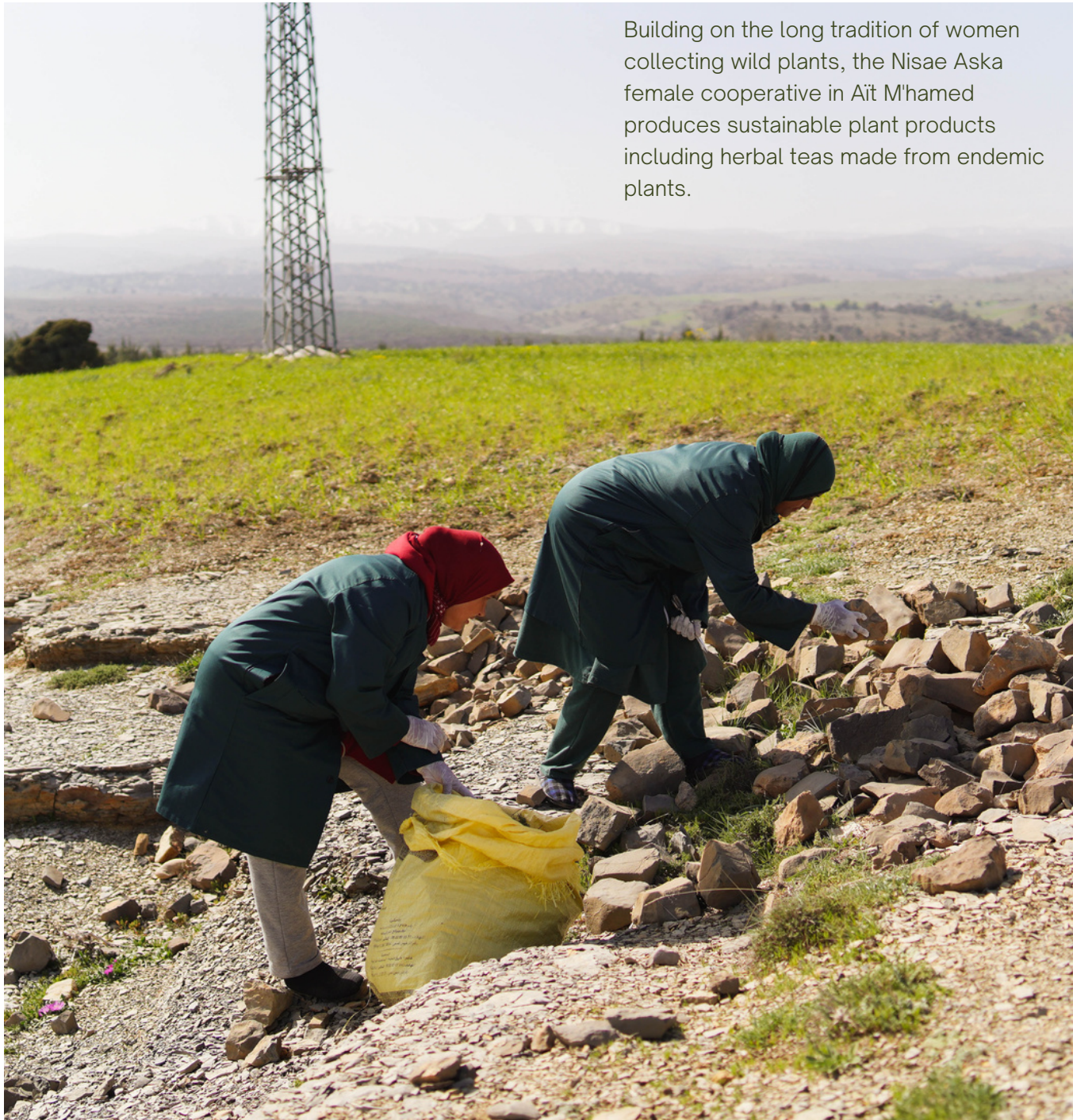


Amlou production.



Honey harvest.

Building on the long tradition of women collecting wild plants, the Nisae Aska female cooperative in Aït M'hamed produces sustainable plant products including herbal teas made from endemic plants.



Building on the long tradition of women collecting wild plants, the Nisae Aska female cooperative in Aït M'hamed produces sustainable plant products including herbal teas made from endemic plants. The women also grow their own plants in a nursery to promote regeneration of local plants species, and biodiversity conservation.



After harvest, the plants are dried in a local facility managed by the women of the cooperative.



The dried plants, including thyme, rosemary, oregano and others, are cleaned and prepared for packaging.

©Ilyas Nazih



The Taytmatine cooperative is based in Ait Attab, and was created in 2011 by seven recently graduated and courageous women. They were the first all-female cooperative in the region, which made it challenging to recruit local women as people were unfamiliar with this concept and needed time to adjust to the idea of a 100% female run cooperative.

When they started, Taytmatine focused on two key local products that shape the region's natural landscapes: olives and almonds. Today, they are well known for the high quality of their products, and added walnuts, walnut oil, almond oil, sesame oil and cosmetics to their product line.



© Ilyas Nazih

Taymatine respects and takes care of the natural resources of the region as some of the walnut, olive and almond trees they harvest from, were planted by their ancestors, some of them dating back to 300 years.



Almond harvest.
©Ilyas Nazih







© Ilyas Nazih



Established in 2015, Yamna Cooperative is based in Zaouiat Cheikh and is run by a team of 35 women. The women of Yamna have chosen to focus their products on couscous and *zmita* as a way to promote and preserve their culinary heritage.

Couscous is a traditional meal in Morocco, a part of the country's identity. In 2020, couscous was added to the Intangible Cultural Heritage list by UNESCO - recognizing the cultural value of this traditional food.

Given its cultural value and significance, couscous is traditionally prepared in a joyful and loving environment, and eaten during special occasions and celebrations, such as welcoming a new born and religious holidays.

Handrolling couscous requires specific skills. One team of 6 or 7 women can produce up to 100 kg of couscous every day, which does not include the drying which can take up to 1 or 2 days.

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The full production process from handrolling the couscous to drying it naturally under the sun.

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