

Augusto, 2025

ASSESSMENT OF THREATENED USEFUL TREES AND SHRUBS IN PUNTLAND
Ecological Importance, Community Knowledge, and Conservation Priorities



SPECIES SAVIOUR INITIATIVE SSI
Garowe, Puntland, Somalia

1. Introduction

The flora of northeastern Africa, particularly the Somali xeric eco-region, is globally recognized for its rich biodiversity and high rate of endemism. Within this landscape, Puntland stands out as a botanical hotspot, hosting an estimated 3,000 vascular plant species—around one-quarter of which are endemic to the region. For generations, local communities have maintained a deep interdependence with these plants, relying on them for shelter, fuelwood, medicine, fodder, food, and spiritual or cultural practices that shape social identity and resilience.

In recent decades, however, escalating environmental pressures have placed many of these species at risk. Deforestation, unsustainable harvesting, overgrazing, invasive alien species, and the intensifying impacts of climate change have led to alarming declines in native tree and shrub populations. This loss not only undermines ecological stability but also threatens the cultural heritage and livelihoods of pastoralist and agro-pastoralist communities who depend on these plants for survival.

Recognizing this urgent situation, the Species Saviour Initiative (SSI) conducted a regional assessment from **February to July 2025** to document and understand the current status of threatened useful trees and shrubs in Nugaal, Gardafu, Bari and Sanaag regions of Puntland state of Somalia.

The study aimed to:

- **Document** key tree and shrub species that hold ecological, economic, and cultural importance.
- **Assess** their occurrence, abundance, and natural regeneration patterns.
- **Record** traditional ecological knowledge related to their uses, habitat preferences, and perceived threats.

2. Research Methodology

The assessment adopted a **participatory and multi-method approach**, combining both qualitative and field-based data collection to ensure a comprehensive understanding of species distribution and community perceptions.

Key components included:

- **Key Informant Interviews (KIIs):** Conducted with elders, traditional healers, and local conservationists who possess in-depth indigenous knowledge of local flora, their uses, and historical abundance.
- **Semi-Structured Questionnaires:** Administered to focus groups comprising pastoralists, agro-pastoralists, women's groups, and nursery operators to gather insights on resource use trends, species decline, and local conservation initiatives.
- **Field Observations:** Undertaken to directly verify the presence, condition, and regeneration status of target species across ecological zones.
- **Controlled Intuitive Surveying:** Used to locate rare or localized species based on prior ecological knowledge and historical distribution records.

Respondent composition was dominated by **elderly participants (85%)**, whose experiential knowledge provided invaluable historical baselines, while **younger participants (15%)** contributed observations reflecting current environmental and socio-economic realities. This blend of generational perspectives helped bridge traditional ecological knowledge with modern conservation understanding.

3. Study Area and Sample Coverage

The fieldwork was carried out across representative ecological zones within Puntland, following the **vegetation classification of Hemming (1966)**. The study area encompassed both coastal and inland habitats, capturing the ecological and altitudinal diversity of the region.

Key ecological zones surveyed include:

- **Coastal and Sub-Coastal Plains** – *Bargal and Qandalla districts*, characterized by xerophytic shrubs and salt-tolerant species.
- **Vachellia bussei and Vachellia etbaica Open Woodlands** – Semi-arid landscapes supporting multipurpose species vital for grazing and charcoal production.
- **Evergreen Scrub and Juniperus Forests** – Found at higher elevations in parts of the *Sanaag region*, representing remnants of once-extensive dry montane forests.
- **Calmiskaad-Type Mixed Bush and Gypseous Plains** – Typical of the interior plateaus, hosting drought-tolerant shrubs and aromatic resins of commercial significance.

Sampling locations were selected based on vegetation richness, accessibility, and community dependence on natural resources. In hard-to-reach or insecure zones, **telephone interviews** and local collaborator inputs were used to supplement field data.

This coverage provided a representative picture of the status and pressures affecting threatened useful flora across Puntland's major ecological systems.

4. Key Findings

4.1 Ecological and Socio-Economic Significance of Trees

Trees and shrubs in Puntland are the backbone of both ecological balance and community wellbeing. They perform vital **environmental, economic, and cultural functions** that sustain life and livelihoods in a fragile semi-arid environment.

Their key roles include:

- **Ecological services:** Oxygen production, carbon sequestration, microclimate regulation, soil stabilization, erosion control, and water retention.
- **Biodiversity support:** Providing habitats and food sources for pollinators, birds, and small mammals, maintaining ecosystem resilience.
- **Socio-economic and cultural functions:** Supplying food, fodder, medicine, firewood, timber, charcoal, gums, and resins, while also serving as traditional meeting points and spiritual symbols in Somali pastoral life.

The study reaffirms that the **lives of Puntland's communities are deeply intertwined with the health and availability of native vegetation**. Any decline in these species directly undermines household economies, pastoral productivity, and traditional knowledge systems.

4.2 Causes of Decline

The assessment revealed that the decline of useful trees and shrubs results from a combination of **human-induced pressures** and **environmental stressors**, interacting over decades.

Major causes include:

- **Over-exploitation:** Unsustainable harvesting for charcoal production, lopping for fodder, bark stripping for medicine, and uprooting for roots and branches.
- **Environmental Degradation:** Increased soil erosion, drought, and reduced rainfall have led to habitat fragmentation and loss of regeneration niches.
- **Overgrazing:** High livestock densities, especially goats, damage young saplings and prevent natural regeneration cycles.
- **Invasive Species:** *Prosopis juliflora* and *Parthenium hysterophorus* are aggressively spreading across rangelands, suppressing native flora and altering soil chemistry.
- **Loss of Pollinators:** Linked to the misuse of pesticides in irrigated agricultural zones, reducing natural seed dispersal and regeneration potential.
- **Weak Regulation and Limited Awareness:** Absence of effective governance systems and low awareness of plant conservation among rural populations exacerbate degradation.

These pressures are compounded by **climate change**, which intensifies droughts, alters seasonal patterns, and reduces recovery periods for already stressed vegetation systems.

4.3 Threatened Useful Trees and Shrubs

The study identified **23 useful woody species** (19 trees and 4 shrubs) in noticeable decline across Puntland. These species are vital for livelihoods, ecological balance, and cultural identity. Many are endemic or regionally restricted, making their loss particularly consequential.

Below is a condensed selection of key examples:

Species	Vernacular Name	Key Uses	Typical Habitat
<i>Sterculia africana</i>	Qarari / Qararo	Fodder, rope-making, medicinal gum, household tools	Rocky escarpments of Golis Range
<i>Ficus ingens</i>	Lafo	Edible fruits, wood for utensils, malaria treatment	Rocky outcrops, seasonal streams
<i>Olea somaliensis</i>	Weger / Ajarse	Medicine, durable wood, cultural tools	Golis Mountains
<i>Delonix elata</i>	Lebi	Camel bells, tools, ornamental planting	Golis Range & Hawd areas
<i>Mimusops angel</i>	Canjeel	Edible fruits, potential for domestication	Watercourses, open stands
<i>Terminalia brownii</i>	Woob	Medicinal bark, fodder, utensils, shade	Mountain areas
<i>Acacia albida (Faidherbia albida)</i>	Garbi	Soil enrichment, fodder, shade	Valley bottoms
<i>Ximenia americana</i>	Malluug	Edible fruit, hedging, ornamental use	Golis Range
<i>Grewia pencilliata</i>	Hohob	Edible fruit, livestock feed	Rocky dry bushland
<i>Vachellia seyal</i>	Waadhi	Gum for food/medicine, rope fibre, charcoal	Southern woodlands
<i>Pappaea capensis</i>	Adadag	Edible fruit, medicinal bark, livestock forage	Seasonal watercourse banks
<i>Celtis africana</i>	Dhebi-boodaar	Timber, medicinal bark, palatable leaves	Golis Mountain Range
<i>Erythrina melanacantha</i>	Yooco	Shade, soil improvement, handicrafts	Nugal Valley
<i>Cadaba heterotricha</i>	Higlo	Soil protection, erosion control	Widespread drylands
<i>Boscia minimifolia</i>	Maygaag	Fibre, disinfectant, fodder	Various zones
<i>Commiphora gileadensis</i>	Qadhoon-Madow / Dhaseyno	Incense, perfume, tanning, medicine	Hawd, Nugaal, Golis Range
<i>Vepris nobilis</i>	Barrow / Barrow-Madow	Fruits, tools, medicine, spears	Rocky hills & mountains
<i>Mytenus undata</i>	Uloyar / Soolo	Medicinal roots, utensils, forage	Rocky hillsides
<i>Blepharispermum fruticosum</i>	Gahaydh	Livestock feed, thatching material	Lowland dry areas
<i>Rothmannia (Rotherca) myricoides</i>	Tiire	Medicinal roots (postpartum recovery)	Golis Range & Hawd

5. Conservation Priorities and Recommendations

The assessment underscores that the survival of Puntland's threatened trees and shrubs depends on an integrated approach combining **ecological restoration, traditional knowledge, scientific research, and livelihood resilience**.

The following priorities and recommendations are proposed to guide sustainable action at local and regional levels:

5.1 *In-Situ Conservation and Habitat Protection*

- Establish **community-managed conservation zones and protected areas** in regions of high plant diversity such as the Golis Range, Calmiskaad, and Nugaal Valley.
- Designate **grazing reserves** to allow natural regeneration of key species while maintaining pastoral access through rotational systems.
- Implement **controlled access measures** to reduce overharvesting and unregulated cutting, particularly in ecologically sensitive sites.
- Promote **natural regeneration and assisted replanting** using locally adapted and native seeds sourced from remnant populations.
- Conduct a **comprehensive study on vegetation dynamics**, examining spatial and temporal patterns of disturbance and their impacts on biodiversity, to guide long-term restoration and management strategies.

5.2 *Restoration and Alternative Livelihoods*

- Introduce **alternative livelihood options** to reduce pressure from charcoal production and overgrazing. Promising approaches include:
 - **Cash-for-work programs** engaging local people in building soil and water conservation structures such as terraces, bunds, and check dams.
 - **Beekeeping initiatives** within protected or restored areas, offering income generation compatible with tree conservation.
- Implement **compensatory support programs** for communities that voluntarily protect rangelands or restrict charcoal production, ensuring their short-term income security.
- Provide **training on sustainable harvesting techniques** for non-timber forest products (NTFPs), such as gums, resins, and medicinal bark.
- Encourage **agroforestry and dryland farming practices** that integrate multipurpose native species, improving both household food security and ecosystem stability.

5.3 *Ex-Situ Conservation and Species Recovery*

- Develop **ex-situ conservation centers** dedicated to the propagation and genetic preservation of threatened native species. These could include:
 - **Specialized nurseries** within universities, vocational schools, and government research facilities.
 - **Community seed banks** to safeguard genetic diversity and supply restoration efforts.
- Establish **botanical gardens and arboretums** in key urban centers such as Garowe, Bosaso, and Qardho, serving as living repositories for rare and endangered plants as well as public education spaces.
- Promote the **domestication of threatened species** by integrating them into urban landscapes as ornamental, shade, and avenue trees in parks, streets, and commercial areas.

- Encourage **scientific collaboration** with regional and international botanic institutions for seed exchange, propagation trials, and research on climate adaptation traits.

5.4 Policy, Governance, and Invasive Species Management

- Strengthen **forestry and biodiversity legislation** to regulate the cutting, transport, and trade of native species, while recognizing traditional governance systems that promote resource stewardship.
- Support **district-level bylaws** empowering local councils and elders to enforce conservation rules and resolve land-use conflicts through community dialogue.
- Implement targeted **management programs for invasive species** such as *Prosopis juliflora* and *Parthenium hysterophorus*, using a combination of ecological control and economic utilization (e.g., charcoal briquettes, biofuel, fodder processing).
- Integrate **rangeland restoration and invasive species management** into Puntland's broader climate resilience and land degradation neutrality strategies.

5.5 Education, Awareness, and Community Empowerment

- Launch **awareness campaigns** through schools, mosques, radio, and community forums emphasizing the ecological, cultural, and economic value of native trees.
- Integrate **environmental education** on endangered and invasive species into **school curricula** and youth programs, nurturing a new generation of conservation champions.
- Strengthen **community-based organizations and women's groups** as key actors in tree nursery management, ecological monitoring, and restoration planning.
- Encourage **youth participation** through volunteer tree-planting clubs, eco-innovation competitions, and training in nature-based enterprises such as sustainable resin harvesting.

5.6 Research, Monitoring, and Knowledge Integration

- Establish a **long-term monitoring framework** to assess vegetation trends, regeneration rates, and the effectiveness of restoration interventions.
- Promote **applied ecological research** on species-specific propagation, phenology, and adaptive responses to climate variability.
- Foster collaboration between **traditional ecological knowledge (TEK)** holders and scientists to co-design restoration and management practices.
- Create an **open-access database** documenting threatened species distribution, regeneration status, and conservation actions to guide future interventions.

5.7 Cross-Sectoral and Institutional Collaboration

- Facilitate coordination among the **Ministry of Environment, universities, NGOs, and local communities** for coherent policy implementation and technical exchange.
- Engage **private sector and development partners** to invest in green jobs, sustainable wood alternatives, and market incentives for ecosystem-friendly products.
- Advocate for **regional collaboration** on transboundary species and shared ecosystems, aligning with national biodiversity strategies and global conservation goals.

6. Conclusion

The assessment of threatened useful trees and shrubs in Puntland provides a crucial insight into the state of plant diversity and the interdependence between ecological stability and human wellbeing in the region. The findings reveal that many historically abundant and culturally significant species are now in steady decline due to a convergence of pressures including over-exploitation, habitat degradation, climate stress, and the spread of invasive plants. These factors have disrupted natural regeneration processes and weakened the ecological foundations upon which pastoral and agro-pastoral livelihoods depend.

Despite these challenges, the study underscores a strong foundation for recovery and resilience. Local communities possess a deep reservoir of traditional ecological knowledge and remain closely connected to their natural environment. When appropriately engaged, they can serve as custodians of native flora through community-based conservation initiatives and sustainable resource governance. Integrating this knowledge with scientific research and policy reform offers a powerful pathway to restore ecosystems and safeguard biodiversity.

The proposed conservation priorities — spanning in-situ and ex-situ interventions, livelihood diversification, policy enhancement, and environmental education — provide a strategic roadmap for action. Protecting and regenerating the vegetation wealth of Puntland will require collaboration among government agencies, universities, civil society, and local communities. Equally important is ensuring that conservation efforts are economically viable for those who depend on the land, through incentives such as alternative livelihoods, compensatory support programs, and capacity building.

Ultimately, conserving these threatened trees and shrubs is not merely an ecological responsibility but a moral and cultural imperative. They represent the living memory of Somalia's natural heritage and the ecological foundation for a resilient future. Revitalizing this heritage will contribute to climate adaptation, economic stability, and social cohesion — reaffirming the profound link between people, nature, and peace in Puntland and beyond.