



Agro-Pastoralists' Wrath for the Prosopis Tree: The Case of the Il Chamus of Baringo District, Kenya

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Indigenous to Peru, Chile, and Argentina, the woody plant called Prosopis juliflora (also known by the American common name of "Honey Mesquite") has spread world-wide in recent decades, including rangelands throughout Latin America, North America, south and central Asia, Australia, and sub-Saharan Africa. A species known for rapid establishment, high adaptability, and fast rates of growth, its dispersal has primarily been a consequence of intentional introduction by well-meaning "technical experts" who wanted to provide a new source of fodder, fuel wood, or a means to combat desertification in arid and semi-arid lands. One problem, however, is that unless Prosopis receives careful management, it can invade and degrade ecosystems. Here we report on interviews conducted among rural residents of central Kenya where Prosopis was first introduced over 20 years ago. The respondents contend that Prosopis has greatly undermined their livelihoods, and they want to see it eradicated.

Background

Prosopis juliflora, henceforth referred to here as *Prosopis*, is a moderately sized tree that also has a shrub-like form in some situations. It has root nodules that can absorb nitrogen from the atmosphere, and thus the species may supplement soil fertility in some instances. It has an extensive lateral root system that can help reduce soil erosion. It quickly establishes from seed and has a long taproot that enables the plant to access ground water deep below the surface when rainfall is scarce.

Prosopis was first introduced to eastern Africa in the 1970s through collaborative projects involving local governments and outside agencies. Initially, *Prosopis* was seen as an appropriate prescription for the environmental woes of dry lands. *Prosopis* could provide leafy fodder and pods for livestock feed, fuel wood, and erosion protection for denuded areas.

Prosopis, however, reportedly had some negative attributes. It was known to be a strong competitor with other plants for soil moisture. More recent research suggests it may also exude toxins that inhibit growth of under-story vegetation.

Here we examine the attitudes of some local residents from Baringo District concerning their experience with the ecology and management of *Prosopis*. We compare and contrast these views with other information about

the species from literature and expert opinion. Our data are based on 73 interviews conducted among the Il Chamus people, who tend to practice agro-pastoralism in Baringo District.

Findings

The Il Chamus we interviewed were very familiar with the botanical and ecological features of *Prosopis*. On the positive side, the respondents confirmed that *Prosopis* provides nutritious fodder for small stock, the nectar is useful for making a white honey, and the quality of wood products is high. The latter includes wood used for construction and household items. The quality of fuel wood is good. The plant has an excellent ability to re-grow after stems are cut and harvested, and this is referred to as coppicing.

Our respondents, however, were much more adamant about the negative aspects of *Prosopis*. Overall, they regarded the species as highly aggressive and invasive, forming impenetrable thickets that choke out other plants. When it occurs near watercourses, it can clog irrigation schemes. It is considered to be resilient and very regenerative, out-competing and eliminating other plants. It is actually thought to encourage erosion because the under-story of herbaceous plants can be eliminated; impacts on reducing biodiversity can be severe. By

Prosopis in seasonal grazing area in Ngambo, Baringo District, Kenya. Photo by Peter Little, June 2004.



extensively drawing on ground water, dense stands of *Prosopis* are also thought to lower water tables. Although the seedpods are indeed palatable to livestock, the chemical content is thought to cause tooth problems for goats. A diet high in pods can reportedly cause mortality in sheep and goats due to digestive problems like impaction; even cattle can die if it feeds heavily on *Prosopis* leaves over a prolonged period of time—this is perceived to be due to toxicity. Finally, the pollen of *Prosopis* is speculated to cause human allergies, asthma, and lung inflammations.

Some of our results confirm earlier work by Lenachuru (2003). He found that Il Chamus people he surveyed thought that *Prosopis* had proven to be the “worst enemy” of the local people over the past 20 years. The Il Chamus have now decided to “wage war” against *Prosopis*, calling for its complete and unconditional eradication. The Il Chamus have even threatened to take legal action against the Kenya Government for environmental damages caused by the tree.

Practical Implications

The *Prosopis* dilemma in Baringo is only one example of the many problems brought about by the introduction of new species without proper scientific study concerning their long-term effects on the environment, preferred management, and optimal forms of utilization. Unfortunately, practical experiences from many parts of the world have now shown that complete eradication of established *Prosopis* is virtually impossible. It is clear from our interviews that the species is considered a major threat to rural society by the Il Chamus.

There is a need to find ways of better utilizing and managing

Prosopis in Baringo, with an eye towards controlling its spread. Successful interventions would require extensive collaboration among government and non-government groups. These efforts require a multi-pronged approach involving policy and technical aspects.

The scope for addressing *Prosopis* problems via government policies and legislation is vast. Local enforcement of regulations is also vital. The legality of introducing alien species should be addressed. The process of land adjudication and promotion of appropriate land use needs urgent attention. Improved management and control of *Prosopis* requires organized efforts in terms of public education and public awareness-raising. This includes promotion of how *Prosopis* products could be best harvested and used. In other developing countries economic value has been added to some types of *Prosopis* products, and this involves comprehensive efforts incorporating product certification and marketing. Success stories revolving around wood prominently include firewood, charcoal, building materials, floor tiles, furniture, and handicrafts. Other opportunities involving non-wood products include processing for livestock feed, human food (toasted seeds), possible medicinal values, gum production, and tannin extraction.

Thinking about how to engage communities and build capacity in a process of ecological restoration of *Prosopis*-affected sites also merits attention. There are situations where the ability of the species to add nitrogen to the soil and protect badly eroded sites against further ecological damage still matter.

Mobilizing people to better deal with *Prosopis* is a large problem. It would require full appreciation of constraints and opportunities imposed by socio-economic features of local societies. These include attitudes and values

with respect to community participation in resource management issues, problems that poverty imposes on people's priorities, conflicts in land use, land tenure, the role of rural insecurity in resource use, and constraints in the availability of labour. We also advocate that research is needed to assist this process. This could include policy analysis and studies devoted to verifying attributes of *Prosopis* noted in our interviews. There is also a need to carefully document success stories and constraints in the harvest, processing, and marketing of promising *Prosopis* products.



Prosopis and other vegetation surround Il Chamus homestead, Sintaan, Baringo District, Kenya. Photo by Peter Little, June 2004.

Further Reading

Choge, S.K. and B.N. Chikamai (eds.) 2003. *Proceedings of a Workshop on Integrated Management of Prosopis Species in Kenya*. Jointly published by the Global Environmental Facility (GEF), the Kenya Forestry Research Institute (KEFRI), and the Kenya Forest Department (FD), Nairobi.

Choge, S.K., Ngujiri, F.D., Kuria, M.W., Basaka, E.A, and J.K. Muthondeki. 2002. *Status and Impact of Prosopis in Kenya*. Kenya Forestry Research Institute (KEFRI), Nairobi.

Lenachuru, C. 2003. "Impacts of Prosopis species in Baringo District." In: S.K. Choge and B.N. Chikamai (eds) *Proceedings of Workshop on Integrated Management of Prosopis Species in Kenya*. Jointly published by the Global Environmental Facility (GEF), the Kenya Forestry Research Institute (KEFRI), and the Kenya Forest Department (FD), Nairobi.

McCabe, S. and P. Kisoyan. 2004. *A Preliminary Assessment of the Socioeconomic Impact of Prosopis juliflora (Honey Mesquite) in the Ng'ambo Area, Baringo District*. UNOPS, Nairobi.

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The GL-CRSP Pastoral Risk Management Project (PARIMA) was established in 1997 and conducts research, training, and outreach in an effort to improve welfare of pastoral and agro-pastoral peoples with a focus on northern Kenya and southern Ethiopia. The project is led by Dr. D. Layne Coppock, Utah State University, Email contact: Lcoppock@cc.usu.edu.



The Global Livestock CRSP is comprised of multidisciplinary, collaborative projects focused on human nutrition, economic growth, environment and policy related to animal agriculture and linked by a global theme of risk in a changing environment. The program is active in East Africa, Central Asia and Latin America.

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