

CAPri WORKING PAPER NO. 15

**TRIBES, STATE, AND TECHNOLOGY ADOPTION IN
ARID LAND MANAGEMENT, SYRIA**

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Collective Action and Property Rights**

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JUNE 2001

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ABSTRACT

Arid shrub-lands in Syria and elsewhere in West Asia and North Africa are widely thought degraded. Characteristic of these areas is a preponderance of unpalatable shrubs or a lack of overall ground cover with a rise in the associated risks of soil erosion. Migrating pastoralists have been the scapegoats for this condition of the range. State steppe interventions of the last forty years have reflected this with programs to supplant customary systems with structures and institutions promoting western grazing systems and technologies. Principal amongst the latter has been shrub technology, particularly *Atriplex* species, for use in land rehabilitation and as a fodder reserve. This paper deconstructs state steppe policy in Syria by examining the overlap and interface of government and customary legal systems as a factor in the history of shrub technology transfer in the Syrian steppe. It is argued that the link made between signs of degradation and perceived moribund customary systems is not at all causal. Indeed, customary systems are found to be adaptive and resilient, and a strong influence on steppe management and the fate of technology transfer initiatives. Furthermore, developments in rangeland ecology raise questions about claims for grazing-induced degradation and call for a reinterpretation of recent shifts in vegetation on the Syrian steppe. Given the ineffectiveness of past state interventions, and in view of renewed understanding of customary systems and rangeland ecology, decentralization and some devolution of formal management responsibility is likely to be a viable and an attractive option for policymakers.

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1. INTRODUCTION

Arid rangelands dominate the countries of West Asia and North Africa (WANA). Syria, at the eastern end of the Mediterranean is better endowed with arable lands than most countries in the region but still just over half its area, or 10.2 million hectares, falls below the 200mm *isohyet* and is designated as *badiyah* or 'steppe' where cultivation is outlawed. In the steppe the majority of people are tribally organized and dependent on a migratory pastoral or agro-pastoral economy where mobility and natural resource management are facilitated by extensive customary systems. However, for much of this century, migratory pastoralists have been blamed for being the key instigators of land degradation. Most WANA states won their independence after World War II and pursued policies of nation building and economic growth, neither of which carved out a role for tribes or migratory pastoralism. Not only did the state generally perceive that the tribe and their mobility were divisive and unstable elements in a fledgling nation, they saw customary grazing practices as archaic, inefficient and environmentally exploitative. The tribe was seen as a political and environmental threat that if not eliminated would undermine the new state and stifle economic growth.

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With the assistance of the Food and Agriculture Organization (FAO) of the United Nations and other aid agencies, many WANA states sidestepped and sought to suffocate customary practices, and "green the desert" with the introduction of national rangeland management. Coming in the early years of independence for many of the WANA countries, the dominance of this paradigm had considerable influence on the direction and evolution of state institutions responsible for steppe management. This paper looks specifically at Syria and examines the impact of national policy over the past forty years on the institutions governing range management, as well as how the overlap and interface of the Syrian government and customary legal systems have shaped the history of shrub technology transfer in the Syrian steppe.

2. RANGELAND DEGRADATION: MODELS AND EMPIRICAL EVIDENCE

THEORETICAL MODELS APPLYING TO RANGELANDS

The characterization of moving tribes as creators of desert conditions has a long history among people of the settled areas in the region and further afield (Ibn Khaldun translated in Issawi 1987; Bietenholz 1963). Hardin (1968) described a rationale for this position in his influential "Tragedy of the Commons" paper. He considered the perspective of a rational herder with private ownership of livestock in a pastoral society that is reliant on pastures "open to all". Herders would follow the incentive to increase the number of their herd because they would receive direct benefit but bear only a share of the costs resulting from the delayed impact of their action. Each herder is "locked into a system that compels him to increase his herd without limit—in a world that is limited (Hardin 1968). According to tragedy theorists, effective property rights and rational

rangeland management is not possible without strong state involvement. This theory has formed the rationale for state governance over rangelands and other natural resources in many developing countries.

State programs to assess, manage or increase productivity of steppe areas are also based on a model of how the steppe ecosystem functions. Predominant in rangeland management science for much of this century has been the range succession model, which derives from plant ecology (Westoby et al.1989). It assumes that the livestock sector operates in environments that are largely stable, where weather variability is limited to a narrow range and therefore inconsequential for long-term outcomes. The model supposes that a given rangeland continually returns to a single persistent state (the climax) of vegetation in the absence of grazing. By producing changes in the opposite direction, grazing pressure arising from a set stocking rate can slow or halt the successional tendency, producing an equilibrium in vegetation levels. This theory has guided the principles of the western ranching system, which were subsequently introduced in many parts of Sub-Saharan Africa and WANA to supplant customary practices. These included private rights to graze, rotational or paddock grazing systems, the establishment of water points to spread grazing pressure, the setting of a universal stocking rate, and the reseedling or re-planting of the range with grasses and shrubs.

EMPIRICAL EVIDENCE

Whereas there are widespread claims for degradation in Syria, only limited inventories and no long-term studies of the steppe flora have been carried out. Despite this, numerous references in the literature attest to the 'degraded' nature of the vegetation. A synthesis of range reports through to the mid-1950s concluded that "without exception,

range management specialists and ecologists have stressed that the range grazing of the steppe and semi desert regions of Syria—is progressively deteriorating as a result of overgrazing" (FAO 1956). A 1985 study of the Syrian rangelands by the Arab Center for the Studies of Arid Zones and Dry lands (ACSAD 1992) suggested that unpalatable shrub species have become "dominant in large areas of the steppe". It went on to estimate that 25% of the steppe is affected by wind erosion to one degree or another, while water erosion affects around 6% of the area. Furthermore, almost all relevant publications issued from the International Center for Agricultural Research in the Dry Areas (ICARDA), which is based in Aleppo, are premised on the assumption of widespread degradation in the Syrian steppe (Rae 1999). Yet, evidence exists to the contrary.

An unpalatable shrub associated with a degraded steppe in Syria and neighboring regions is the spiny *Noaea mucronata*. An ecological study carried out by Deiri (1990) under the auspices of ICARDA, found *Noaea* ubiquitous in the Aleppo steppe, masking the heterogeneity of climate and soil. Apparently, dominance of *Noaea* in some areas is a relatively new phenomenon here (Sankary 1982) and elsewhere (Zakirov 1989; Noy-Mier 1990). Deiri and others have assumed that this shift in floral composition is the result of overgrazing for lack of good management, and that with a reduction in grazing pressure a climax community dominated by the palatable shrub *Salsola vermiculata* would return (Deiri 1990; Sankary 1982). However, the link between cause and effect is not adequately demonstrated.

Indeed, the basis of an alternative interpretation comes from grazing trials carried out by the FAO and the Steppe Directorate in the 1960s at Wadi al-`Azib research station in the Aleppo steppe. Over a three-year period, three sites were fenced off with a

different stocking rate in each (trial A: 9ha per sheep, B: 6ha, and C: 4.5ha). No sizeable differences in average meat production per animal were reported between the three treatments. As for the vegetation, it was noted that plant density "fluctuated more between years than between stocking rate treatments" (FAO 1966), suggesting climate more than grazing determines productivity. The reported vegetation change was, however, unexpected. Spininess in plants is usually interpreted as an anti-grazing adaptation, and it has often been recorded that spiny plants increase under heavy grazing but give way once protected (Noy-Mier 1990). In treatment C, with the highest stocking rate there was a "reduction" in the spiny variety *Noaea* while in treatment A, with the lowest stocking rate, *Noaea* "increased greatly in density" (FAO 1966, 1967). The cause of this vegetation change is not alluded to by either of the reports at hand; *Noaea* is just described as "a spiny, undesirable shrub".

An explanation for the expansion of *Noaea* under reduced grazing pressure is given by another study in the Negev and Jerusalem deserts (Noy-Mier 1990). During certain periods on the open range, *Noaea* are exposed to heavy pressure from herbivores selecting for the rare green material. Even though spines and other types of protection save the plants from local extinction, Noy-Mier asserted they are insufficient to outweigh grazing pressure and are therefore among the first plants to benefit when an area is protected.

The crucial difference between *Noaea mucronata* and other shrubs is its extended growing period. Heavy grazing either end of the green season disadvantages *Noaea*, but when such grazing pressure is relieved the extended growing period becomes an advantage. When camels are removed from the near steppe, the pressure in late spring

and summer is largely removed. Also, whereas as recently as thirty years ago almost all herders wintering (November-February) on the near steppe sustained their flocks entirely from grazing⁶, today almost none do. Instead they feed their sheep on hand-feed generally imported from the settled areas⁷. Thus, rather than being due to overgrazing, the shift to *Noaea mucronata* is a result of changes in the composition of livestock grazing the steppe coupled with the adoption and widespread use of hand feed for winter—something encouraged by the state following the 1958-61 drought (Lewis 1987).

Conclusions like this bring into question the validity of the range succession model in arid environments. Whereas the model predicts that rainfall cycles combined with sustained grazing pressure will keep range vegetation in equilibrium, it is now thought that where droughts or other episodic events are a feature, population fluctuations hinder plants and herbivores from establishing closely linked interactions, and succession is abbreviated or non-existent (Behnke et al. 1993; Scoones 1994). This realization that equilibrium conditions are not met in many instances has led to the development of an alternative paradigm centered around two models: the non-equilibrium model, which deals with population dynamics in uncertain environments; and the state-and-transition model (Westoby, Walker and Noy-Mier 1989). In contrast to the linear succession model, it is argued that rangeland dynamics can be more accurately described by a set of discrete states of vegetation with discrete transitions between them, triggered by natural events, like floods, drought or fire, either alone or in combination with herbivore activity.

⁶ Van de Veen estimates that 58% of the Syrian sheep population, or 3.8 million head, resided in the steppe for winter grazing only shrubs, amongst them *Noaea mucronata* and *Haloxylon articulatum* (FAO 1967).

⁷ In an in-depth two-year study on animal diets of 129 herds frequenting the Aleppo steppe 98% of feed needs came from hand-feeding, the remainder from crop residues. No steppe grazing was reported during the winter months (Wachholtz 1996). Perversely, pressure is relieved on the steppe to the advantage of *Noaea*.

Objectively apportioning responsibility for perceived or actual changes in steppe vegetation composition is therefore difficult. Grazing inevitably has an impact on shrub communities, but the nature of this impact is unclear, particularly when causes arise from a conjunction of other factors in addition to grazing. Indeed, some speculate that the landscape may in some sense be 'adapted' to grazing pressure. That is, either less resistant shrub species have been eliminated long ago or the species in these communities have adapted to grazing pressure. There is even some evidence to suggest that a certain amount of grazing pressure on arid rangelands maintains or even enhances floral species diversity (Olsvig-Whittaker et al. 1993; Perevolotsky 1995). In the case of the transition to *Noaea mucronata*, it seems likely that this was actually brought about by a reduction in grazing during critical times of the year.

Despite the lack of a clear consensus on the best model for predicting the extent and causes of rangeland degradation, the Syrian government, aided by international research and development institutions, has undertaken several measures to bring about a change in rangeland management for the stated purpose of improving environmental outcomes. Actions have reflected a persistent adherence to 'tragedy of the commons' and rangeland succession models. They span from centralizing the governance and enforcement of rangeland management to introducing new technologies designed to enhance the quantity and quality of rangeland vegetation. The following section will discuss shrub and plantation technologies that have been developed, extended, and often imposed on herders occupying the Syrian steppe. Despite more than 50 years of technological efforts, however, technology uptake has lagged far behind expectations. Subsequent sections elaborate on the institutional changes preceding and accompanying

technical solutions that demonstrate the important role played by customary institutions in steppe management and shed light on the underlying reasons for the lack of adoption success.

3. PERFORMANCE OF TECHNOLOGIES AIMED AT IMPROVING RANGELAND CONDITIONS

ATRIPLEX SHRUB TECHNOLOGY

From its creation in 1961, the Steppe Directorate (SD) of the Syrian government was given responsibility for range management, range and pasture research, management and expansion of government wells, and organization of emergency feed during times of drought. With the assistance of the FAO, the SD embarked on a highly centralized range management initiative, setting the tenor for all future interventions. Part of this initiative included trials to identify rain-use efficient, edible plants to re-vegetate the steppe and act as a drought feed store. This was deemed necessary, for though the successional model predicted natural regeneration towards a climax community, climatic variability and the unpredictable recurrence of devastating droughts meant that natural regeneration could be a long time coming. Shrub planting would fill this temporal gap, check soil erosion and provide a source of animal feed during drought. The trials concluded in the late 1960s recommending Atriplex, a shrub species already favored by range managers elsewhere around the world, most notably Australia, South Africa and the United States (Houerou 1995).

Le Houerou, one of the most influential people involved in rangeland management and rehabilitation in the WANA region over the last thirty years, describes the planting of Atriplex species as "one of the most efficient ways to reclaim [arid lands],

if not the only one" (Le Houerou 1992). The shrubs can prevent wind and water erosion and are efficient users of water (McKell 1975). They could also serve as a feed reserve in years of drought. There are around 400 species of *Atriplex* in the world, most in mid-latitude temperate, sub-tropical and Mediterranean zones. Though many *Atriplex* species exist in the Mediterranean region, their use in arid land stabilization and rehabilitation began with the introduction of the Australian variety *Atriplex nummularia* into Tunisia in the last years of the 19th century (McKell 1975). The introduction of this and other varieties from Australia continued after World War I in Tunisia and Morocco. By the 1950s, *Atriplex* was being recommended for steppe rehabilitation in FAO circles, and from the 1960s introductions took place throughout the WANA region and further afield. Although many trials of non-indigenous species showed limited promise, Omar Draz, FAO's chief advisor to the Syrian government on rangeland issues, conducted trials in 1968-69 with *Atriplex nummularia* that produced successful outcomes in an agricultural district of Aleppo (FAO 1974).

With the support of Draz and a wider scientific consensus for the technology, the Syrian authorities initiated programs to transfer *Atriplex* on the steppe. History of this intervention in Syria can conveniently be divided into two phases: 1) encouraging and later obliging agro-pastoralists to plant a part of their area with *Atriplex*; and then 2) the establishment of government-run fodder shrub plantations from 1987. The first phase envisaged that agro-pastoralists would forego barley cultivation over a portion of their licensed steppe area and plant *Atriplex* in its place. In hindsight poor adoption rates for *Atriplex* were a foregone conclusion. Barley is nutritious and palatable, while post-harvest stubble can be used for grazing. During drought, it can be grazed in-situ. By

contrast, it can take between three and five months for sheep grazing *Atriplex* to get used to consuming and digesting it. Oxalates in the plant are potentially toxic to some ruminant microorganisms and can form stones in the urinary tract (Goodchild & Osman 1993). Furthermore, to compensate for the high salt content of the plant, the animal must drink between 6 and 12 liters of water day (depending on the heat of the day), twice the normal levels (Le Houerou 1992; Nordblom et al. 1995). Nor does *Atriplex* fit comfortably in the bedouin farming system. The "proper" time to harvest most *Atriplex* used in Syria is late summer and early autumn, a period when most sheep are grazing nutritious cotton residues in the settled areas (Wachholtz 1996). Not surprisingly, only a fraction of those cultivating in the steppe actually planted *Atriplex*, and of those all but a handful ensured their private plantation survived, the others—with the shrubs gone—again cultivated barley (Leybourne et al. 1993).

THE PLANTATION APPROACH

The poor success of government initiatives to encourage or require private adoption of range technology led directly to the 'plantation concept'. Here, the government effectively privatizes an area of steppe with a trench, plants the enclosure with shrubs, and after a period of establishment permits range users restricted access under contract and on payment of a grazing fee. The idea is not unique to Syria. In the last two decades, 470,000 ha have been taken for plantations in Tunisia, 133,000 ha in Iran, 33,000 ha in Algeria, and there are many others (World Bank 1995). In Syria, the plantations have been at the heart of state intervention in the steppe since the late 1980s and by 2000 occupied 220,000 ha.

The plantation concept came after a generation of frustrated state intervention in rangeland management and technology transfer. It represented a significant step against the tide of devolution in natural resource management elsewhere, and instead advocated centralization as a solution for sustainable development in arid regions. The actual presence on the steppe of the plantations, coupled with the fact the state had tilled and planted the land (i.e. invested), brought the formal legal system and state authorities into direct conflict with the customary land tenure system like never before.

Plantations are supposedly located where Steppe Directorate (SD) officials judge the steppe to be degraded. Only private steppe land (approximately 2%) cannot be included within a plantation; otherwise all other land (including cultivated fields and cooperative pastures) is technically state land, and can therefore be appropriated, despite the fact that customary institutions have governed land tenure for centuries. Once the site and size are determined, a committee is appointed within the Ministry of Agricultural and Agrarian Reform (MAAR), to produce a technical and economic feasibility study for the proposed plantation⁸. Socio-economic or environmental impact assessments are not regularly carried out. If the committee gives the go ahead, MAAR provides financial support for plantation establishment.

After a period of shrub establishment, averaging five years, the plantations are opened under contract for use during restricted periods, generally a couple months each in the winter and spring. Enforcement of plantation rules is the prime responsibility of the Steppe Directorate but the rules themselves are decided on at the provincial level by

⁸ The committee is composed of an agricultural economist, a geologist, and representatives from the provincial departments of the MAAR and the Steppe Directorate.

the Agricultural Council⁹ and hence vary. However, the following rules are broadly applicable. The carrying capacity of all the plantations was set at three head-of-sheep per hectare in 1995, and has not changed since. In line with the succession model of plant ecology, if the SD officials feel that grazing is insufficient in a particular season, access to the plantations is delayed, truncated, or denied completely. Firewood collection, camping, milking and watering are prohibited in the plantations during leasing. A deposit on the contract is also required in some provinces, including Aleppo, and where this is the case each contract is clearly designated an allotted area. The cost to a herder for a spring contract is harmonized across the country, at 125 Syrian Lira (SL) (\$2.25) per hectare per month.

On the frontline of plantation rule enforcement are year-round resident guards. Those caught trespassing in Aleppo province are fined 5,000 SL, the equivalent of around \$100 or the price of a two-year old ewe. The official number of trespassers prosecuted in the country since the plantations were first opened in 1995 is estimated around a thousand, the vast majority of them reportedly at two plantations in the Aleppo steppe¹⁰.

⁹ The Agricultural Council is chaired by the provincial governor and includes provincial heads for Agriculture, Finance, the Ba`th Party, and the Peasants' Union.

¹⁰ Conversation with staff at Steppe Directorate Head Quarters, Palmyra: 4th July 1999

TECHNOLOGICAL OUTCOMES, RANGELAND MANAGEMENT AND INSTITUTIONS

Syrian authorities have sought to transfer shrub technology to the steppe through a variety of institutional arrangements, all of which have discounted customary land tenure and property rights. The underlying premise for the state approach is rooted in the 'tragedy of the commons' model of pastoral society, which hinges on the assumption of non co-operating herders and eventual degradation.

While many researchers and rangeland scientists implicate government policy itself for the decline of customary systems, a pervasive perception is that the system is unable to adapt to changing socio-economic conditions (FAO 1967; World Bank 1995; Ngaido 1997).

Customary systems in Syria, as elsewhere, have been perceived as being unable to regulate pasture use in the face of pressures from increasing human and animal populations, and a diminishing range area. Some have felt that the organizational and institutional basis on which the customary system relies is in a process of irreversible decline as an inevitable consequence of modernization (UN 1955; Abu Jaber 1966). That is, tribes weaken as they become superfluous in the presence of a maturing and ubiquitous judiciary and civil administration system.

Research on customary control and access systems in Syria is noticeable for its absence. The tribes have been identified as the cause of degradation by a process of deductive reasoning from ecology and political science theories, and re-enforced by ambivalent attitudes held by policymakers towards migratory groups. Herders' resistance to adoption of technologies and institutions imposed by government authorities is not well understood, and often attributed to irrational behavior. However, a more accurate

understanding of the institutions governing rangeland management and the incentives underlying adoption behavior necessitates a detailed appreciation of the customary system, state centralization, capitalist penetration and the evolution of these institutions in Syria during the 20th century.

4. PROPERTY RIGHTS IN SYRIA: AN HISTORICAL OVERVIEW

Modern-day Syria is a relatively new phenomenon. It was originally carved out of two Ottoman Provinces after World War I and placed under French Mandatory rule before the country won its independence in 1944. A judicial-political division, called the 'steppe line', was inherited by the French and subsequently by the nationalists. It was first defined in state law in 1870 by a centralizing Ottoman government wanting to encapsulate and subject the moving camel and sheep rearing tribes of the desert interior. Within the steppe line, the state recognized the authority of customary law and courts in regulating the activities of tribal society, including land tenure issues. What amounted to a "state within a state" remained ostensibly unchanged following independence, but it was an obvious anathema to a fledgling nation, and within fourteen years customary law and tribes were formally abolished, and the steppe areas nationalized. This was of historic importance for it was the last legislation to deal specifically with the tribes and marked the final act in the long struggle by central governments to eliminate the tribes and *shaykhs* as rivals to their own power and jurisdiction.

Key to understanding property rights in Syria is the concept of legal pluralism. For a long time the formal legal system of the state, the *qanun*, co-existed with tribal customary law, *`urf*. Whereas the *qanun* is by definition written, the *`urf* is largely unwritten. Often the *qanun* has confirmed existing local custom, as custom is recognized

as one of the sources of Islamic law, *shari`a*, itself a pillar of the *qanun* (Heyd 1973). The moving tribes were rarely subject to *qanun* prior to 1958. Amongst them customary law prevailed in all matters including marriage, divorce, homicide and property rights. These tribal legal institutions have been described as "remarkable for their sophistication, and a central feature of the culture" (Stewart 1995).

The question of property rights in the steppe area was not of much concern to the authorities prior to the 1940s. Historically, the government's principal interest in rural property rights has been in regulating and taxing cultivation. The authority of the state has broadly correlated with the extent of cultivation, and both have waxed and waned at various times in history. Cultivation's most recent expansion began in the 1840s with impetus from world trade and later a growing domestic human population. For a century this expansion was mostly accommodated within the steppe line, particularly south of Aleppo City and the Euphrates River. Rising international and local demands were also encouraging expansion of sheep numbers in the steppe. These two forces of expanding cultivation and growing sheep numbers converged along the margins of the steppe in the early 1940s, raising land scarcity and precipitating dramatic developments in both the statutory and customary land tenure systems.

THE STATUTORY TENURE SYSTEM

In Islamic law and prevalent in Syria until the 1950s, the uncultivated steppe was categorized *mawat*, or dead land. On *mawat* land no taxes were claimed by the state and all persons could "cut for fuel and for building—or collect herbage—without anyone being able to prevent him" (Ottoman Land Code 1858). As for cultivation, Sunni jurists considered vivification of *mawat* land as desirable and an activity that should be

encouraged (Maktari 1971), although the state retained the right to demand consent prior to cultivation in lieu of a fee. This said, such consent was largely academic in the steppe prior to state expansion in the late 19th century and was never fully enforced thereafter. Prescriptive rights and the ancient category of *mawat* were eventually abolished in the first years of independence (1952), and all such land was re-classed as state land (*amlak dawlah*). *Mawat* was seen as a legitimization of open access and the destructive habits that this in principal engenders amongst resource users.

Nationalization not only underscored the authority of the state to regulate land use but also provided the state a tool with which to further reduce tribal power. The law, however, failed to make a material impact until 1958 when the sway of customary law among the tribes was officially abolished and a government more bent on state-led steppe development, the Socialist Ba`th Party, came to power in 1963. They originally espoused "pragmatism and evolutionism within the national framework" (Abu Jaber 1966) and advocated the dispersal and sedentarization of moving tribes in order that individual loyalty could be redirected toward national goals. The Ba'thist constitution states:

Nomadism is a primitive social state. It decreases the national output and makes an important part of the nation a paralyzed member and an obstacle to its development and progress. The party struggles for the sedentarization of nomads by the grants of land to them [and] for the abolition of tribal custom (Art.43)

The abolition of tribal rights coincided with the start of a severe drought (1958-1961) that destroyed herds on an unprecedented scale. According to official estimates, 80% of the camel population was killed while the sheep population dropped from 6 million in 1957 to 3.5 million in 1961 (FAO 1967). The single most important government response to the drought was the establishment of the Steppe Directorate

within the MAAR to take on range management and alleviate the impact of future droughts. With virgin cultivable land in the country now thought to be exhausted, considerable state resources were redirected to steppe management and animal husbandry in the hopes of stabilizing and expanding meat production. FAO had charged that overgrazing, absence of grazing control mechanisms, expansion of cultivation, and the uprooting of shrubs had together "resulted in the grazing capacity of the steppe being seriously depleted" (FAO 1973). These factors, along with the current breeding system and the region's susceptibility to drought, were implicated in adversely affecting the nation's terms of trade and balance of payments, since livestock meat and grains tended to be exported at low prices and imported at high prices.

With the guiding principles of import substitution and food security through self-sufficiency, the authorities devised a four-point plan for steppe development with assistance from the FAO, the impact of which continues to be felt today. It proposed to regenerate the steppe through controlled grazing, increase local production of forage, create feed supplies to meet emergencies caused by drought, and improve sheep fattening. Their target was 11 million sheep by 1985, which would contribute to a desired increase in per capita meat consumption and at the same time continue the valuable export trade for which there was a large demand in neighboring countries (FAO 1967). To fulfill these ambitious objectives, the Steppe Directorate initiated research in shrub technology for range rehabilitation and initiated in 1968 a rotational grazing scheme within a co-operative model termed Hema to supplant the tribal system. Showing little resemblance to a perceived indigenous mechanism of controlled grazing that inspired it, the stringency of Hema cooperative rules, the corruption of cooperative

structures for political ends, and the government's inability to supply credible grazing management institutions and structures undermined the cooperative approach.

THE CUSTOMARY TENURE SYSTEM

The prevailing assumption of the inadequacy of the tribal system to manage steppe resources supposedly stems from the failure of the tribes to either evolve their institutions to adapt to changing socio-economic conditions or to resist suppression by a nationalist state. Evidence uncovered from examining the case of tribes and land tenure in the northern region of the Syrian steppe reveals an alternative history for the customary system. Indeed, there is clear indication of an evolving, resilient customary system here, one that has not only endured repression by the state but has obliged government authorities to resume a positive and active role in its institutions.

All Arab tribal individuals belong to a particular tribe, which imparts an authenticity of descent and a quality of honor that sets them apart from non-tribal society (Dresch 1993; Hourani 1991). Individual families form larger groups, called *`quam* (*sing. qom*), the fundamental organizing units within a tribe. A collection of *`quam* forms a maximal lineage or clan, called *fakhdh*. Families within a clan rely on group collective action and commonly hold water and pastures together (Wilkinson 1983). Generally, a council of elders guides the clan, and in many instances there is a well-respected individual amongst them, a *mukhtar* or *wajih*, who can speak for the group as a whole. A tribe is much larger, often comprising several villages or herding groups. Common to many tribes and clans is the ethno-political ideology of patrilineal descent or shared ancestry. The language of common descent does not necessarily reflect fact but is better

understood as a metaphor for signifying notions of closeness (LaBianca 1990). In the wider region, most tribes also have had long histories of a specific territorial identity¹¹.

Tribal society has a wealth of social capital: the social relations and norms embedded in the structures of their society that regulate interactions. Things do change over time, but given that individuals involved in any of these social structures will engage in repeated interactions, each relationship is guided by expectations of predictable behavior, leading to trust and reciprocity. Such trust underpins the customary land tenure system and its flexibility. The fact that the state has had to take overt actions to break up customary systems and as yet remains unable to do away with them attests to the strength and utility of these social capital networks.

A group associated with a territory holds the exclusive right to invest in land, such as digging a well, building a house, or cultivating a field. They also hold the right to graze and exclude others, but given the nature of an arid environment and the size of any one territory, herders inevitably need to maintain flexible, reciprocal arrangements with other groups to maintain mobility. Hence, social capital is a critical ingredient upholding such arrangements and assuring mutual compliance. Events that transpired at the turn of the 20th century in the Aleppo steppe illustrate the important role played by such adaptive customary institutions in the face of resource competition.

Before the arrival of trucks, the broad region in which a tribe migrated throughout the year was (and sometimes still is) known as the *dirah*. It represented a functional area of habitual use composed of water holes and associated pastures to which the group held rights. In drought years when parts or all of a *dirah* were affected, families, groups or

¹¹ In Sinai, Stewart (1986); In Yemen, Dresch (1993); Hourani (1991).

larger parts of a tribe sought water and pastures through social networks in the *dirah* of other tribes.

At the turn of the 20th century the Aleppo steppe was dominated by two neighboring sheep herding tribes, the Hadidiyin and the Mawali, and a powerful camel-herding tribe called the Sba`ah. The size of the *dirah* depended on the herding animal, with camels-herders having substantially larger *dirah* and venturing deeper into the desert than their brethren, the sheep and goat herders. These latter herders were restricted by the water dependency of their animals to the desert fringes where water sources were more frequent and plentiful. The Sba`ah spent their winter and early spring around wells of Wadi Hauran and its environs in modern-day western Iraq, 500 km southeast of the Aleppo steppe line. In spring the Sba`ah migrated to the Aleppo steppe where they stayed the summer occupying water points and pastures just vacated by the sheep herding tribes, the Hadidiyin and the Mawali. There, they traded with the settled areas, and grazed their animals on steppe shrubs largely unpalatable to sheep. This complementary and non-exclusive use of water and pastures between the sheep and camel rearing tribes has an ancient history in the region, with rights to waters and pastures in the near steppe and the time windows on seasonal movement acknowledged in a written tribal treaty signed in the last years of the Ottoman Empire (1907-1918) (Zakrya 1947).

This agreement lasted until the 1940s. In the meantime, cultivation in Syria trebled to 2.1 million ha, sheep numbers also trebled to 3.4 million head, while camels started to give way to tractors and trucks (Issawi 1951; Widmer 1936). Sba`ah households were adapting to the changing demands in the market place. Whereas they owned no sheep in 1920 they reportedly held some 80,000 ten years later (H.C.R.F.

1930). As all three tribes now had sheep in large numbers but still broadly lacked the ability to truck water, conflict arose between Sba`ah and the old sheep herding tribes over water and pastures in the near steppe during winter and spring months.

Together with an expansion of agriculture, the rising sheep numbers demanded changes in the customary land tenure system, at least in the near steppe. Of immediate concern to the Hadidiyin, the Mawali and the Sba`ah, was an untangling of their overlapping *dirah* in the near steppe and the establishment of discrete tribal territories as a basis for access rights to natural resources. Once this was achieved, investment either in water or agriculture could be undertaken without risk of inter-tribal disputes. To facilitate this shift, the disputing tribes sought an agreement through customary channels and under the auspices of the state. By far the most important of such agreements was the Damascus tribal treaty of 1956, which divided over 500,000 ha of the Aleppo steppe among the three tribes, although pre-existing claims to water and pasture were kept intact. The political process used in this treaty, and other similar ones before and after it, was based on tribal custom.

In 1958, when the role of customary law and structures was formally abolished in Syria, the Damascus treaty and others like it were automatically annulled. The authorities assumed full responsibility for rangeland management, placing it with the Steppe Directorate from 1961. Nevertheless, customary institutions continued to exert authority over rangeland management and tribal control. Documented evidence, such as that described below, shows that substantial cooperation to regulate control and access to steppe resources persisted among herders from different tribes, despite the hostile

political environment, including a significant level of tribal corporate activity in protecting rights.

In 1958, large numbers of the Sba`ah left Syria for Saudi Arabia following the abolition of tribal rights. With most of Sba`ah gone, Ghanatsah (a faction of the Hadidiyin) took the opportunity to reoccupy and claim for themselves a portion of the treaty lands called Abu al Naytel and Dayl`. They went unchallenged for more than a decade, but in 1974 Muharrab al-Rakan, a son of the supreme shaykh of Sba`ah, "and the members of Sba`ah represented by him," (SAR 1975) returned to Syria and immediately laid a claim on the Abu al-Naytel well and the lands of Dayl`.

Ghanatsah took the matter to the state authorities. The head (*mudir*) of the Palmyra administrative district carried out preliminary consultations with the disputing tribes and visited the questioned site. The "final meeting" (SAR 1975) to resolve the problem was convened on the 10th of February 1975. The decision went in favor of Ghanatsah and the old mutual border from the 1956 treaty was adjusted to the new agreement. The legal precedent for the decision was adverse possession, i.e. undisputed occupation of property for a given period of time becomes the property of the occupant.

Six years later, the situation flared up again when Muharrab attempted again to extend his area of control by cultivating his shared border with Ghanatsah in an area referred to as the "airport". This was land Ghanatsah believed was theirs. Another round of resolution talks was held. The settlement reached went again in favor of Ghanatsah. Muharrab was allowed to reap his crop "as he had ploughed and planted it" but afterwards the land would revert to Ghanatsah.

This agreement, like many others¹², was extraordinary considering the Ba`thist constitution and ideology. The decision had been reached with the full participation of the state authorities. As far as the written law was concerned the disputed land was state land and, since it was not part of a cooperative, was technically open to all Syrian citizens and their livestock. The *shaykhs'* intermediary roles were formally terminated in 1958, but two decades later little had changed in practice. Indeed, customary institutions remain the principal mechanism regulating access to steppe resources on a day-to-day basis, while the state continues to implicitly recognize and endorse tribal customary rights and practices, with high officials and Party cadres guaranteeing agreements and signing documents in the name of the state. It is important to note, however, that the Steppe Directorate of the Ministry of Agriculture, with statutory responsibility for steppe resource management, was not involved in this particular agreement. It was seen instead as a political not a land management problem per se.

CONFLICTS BETWEEN STATUTORY AND CUSTOMARY TENURE ON THE PLANTATIONS

That violations of plantation rules of access are a particular problem in Aleppo is at least partially explained by the overlap of tribal territories. Both plantations discussed below form a group of four located on lands held by the Abraz clan of the Hadidiyin.

¹² Additional post-1958 documented territorial treaties have come to light. The dates of these agreements include 1962, 1983, 1989, and 1992.

A guard at one of these plantation suggested he had turned over for prosecution no less than 200 Abraz herders in five years in addition to the "many others caught but not charged" (Conversation with the guard: Maraghah, Syria, 21st June 1999). Faysal, the shaykh of Abraz, puts the number of Abraz prosecuted as a whole at 370. Evidence from official communications on a proposed fifth plantation in the Abraz area strongly suggests that appropriation of land for the plantations was causing serious pasture shortages for the clan. Upon hearing of the proposed plantation in early 1995, Faysal wrote to the Aleppo Governor:

Once these lands are annexed and the said plantation is established ... we would no longer have lands for our sheep to graze. We were moved from `Ein al-Zarqah and Maraghah where two plantations were established. To the north of us is the al-Haib tribe—with whom we have a bloody dispute—[and consequently] we are not welcome on their pasture. Moreover, the establishment of the plantation would cause hundreds of herders to move away, many of whom have houses in the area.¹³

As a result, the proposed plantation was abandoned, although the reason given was that the site was in fact "one of the good sites in our steppe in terms of plant cover." This episode demonstrates that past decisions for plantation location failed to assess the implications of customary land tenure and the inevitable impact this would have on the household economy of local range uses.

It is an unwritten rule within the Steppe Directorate that first refusal on plantation leases goes to local herders and clans, despite formal claims that the steppe and the plantations are open to all. Problems of who can have access to a plantation do not generally arise when the site is located entirely within a particular clan territory.

¹³ Letter to H.E. The Governor of Aleppo from Faysal al-Nuri and companions on behalf of the Abraz tribe: 13.2.1995.

However, when the plantation border cuts across tribal territories, or unwelcome groups from far afield attempt to purchase a lease on a local plantation, then the incongruence of tenure systems can result in some very serious problems. Of the four plantations under study by ICARDA in 1996, two plantations fell wholly within clan territories but the other two did not. In the latter, disputes over access between neighboring groups resulted in considerable difficulties for the authorities.

Such was the case when two clans, Bu Hasan and Jimlan (both of the Hadidiyin), attempted to gain access to the plantation and establish de facto possession of land originally held by three tribal territories: the Bu Salah of Abraz, the Twimat of Ghanatsah, and the Ma`atah, all three of which are also part of the Hadidiyin. In the previous two leasing seasons, the plantation had been leased predominately by the Bu Salah, Abraz, which had also secured the vast majority of leases for that season. The only other group to have grazed the plantation in previous seasons, and who were there again in 1996, was that led by members of Bu Kurdy (Ghanatsah) who neighbored the reserve to the north. When Bu Hasan and Jimlan also lodged requests for licenses, all applications were approved. Both Bu Kurdy and Bu Salah, however, felt that Jimlan and Bu Hasan had no right to any leases on the plantation, as their tribal grazing grounds at Hrabjah were unaffected by the plantation. They took their grievance to the plantation guard who cancelled Jimlan's and Bu Hasan's leases on the spot.

Aggrieved, Jimlan and Bu Hasan took their protest to the authorities, reiterating the formal position that any Syrian could legally take out a lease. The Hama Governor

went with the heads of the provincial Steppe Directorate and Peasants' Union¹⁴ office to Abu al-Fayad to settle the dispute. The resolution went in Jimlan's and Bu Hasan's favor. The authorities hired a local tractor and ploughed a boundary line within the plantation to separate the disputing parties. As compensation, Bu Salah and Bu Kurdy were released from all plantation rules: firewood could henceforth be collected, sheep numbers would be unregulated, and camping, watering and milking could take place in the plantation. The Head of the Steppe Directorate protested strongly against the decision but was ultimately unsuccessful in changing it. Within a few days, instead of the 22,000 sheep paid for by the Bu Salah and the Bu Kurdy groups there were now 40,000 in the plantation. The plantation was shut down after three weeks.

5. CONCLUSIONS AND POLICY IMPLICATIONS

The above discussion demonstrates the value of customary institutions supportive of herder mobility, reciprocal arrangements with respect to resource use, and inter-tribal conflict resolution mechanisms when it comes to rangeland management. Contrary to popular belief that they have broken down and disappeared, many customary institutions in Syria remain strong and continue to be influential in the property rights domain. Their inherent flexibility means they are usually better suited to the prevailing non-equilibrium environment of the Syrian rangelands when compared to the rigid statutory laws and inappropriate technologies imposed by the state. Imposition of technologies will not succeed unless tribal land tenure and institutions are taken into account. Customary institutions represent a superior foundation for an integrated and inclusionary resource

¹⁴ The Peasants' Union is an arm of the ruling Ba'th Party and took control of co-operatives from the MAAR in 1974.

management system. The continuing existence of these institutions contradicts Hardin's assumption of the inability of resource users to coordinate their actions to avert over-exploitation. It is not possible to prove that these customary methods are environmentally sustainable since ecological studies based on the new paradigms in the field have yet to be conducted. But what these institutions do represent are the foundations of a sustainable system by reducing transaction costs and affording local legitimacy.

Past policies centralizing rangeland management were founded on misplaced assumptions about the physical dynamics of the steppe environment as well as the capacity of herders to cooperate together and regulate their use of pastoral resources. Shrub technologies like *Atriplex* have proven ill-suited to livestock as well as incompatible with herders' socioeconomic realities. Plantations likewise conflict with mobility objectives and customary land tenure, fueling the incidence of tribal conflict. In contrast to this failed top-down approaches are the enduring customary institutions whose sensitivity to the physical and social environment and inherent legitimacy have enabled them to overcome statutory abolition, even to the extent of obliging the authorities to recognize customary agreements.

With a fresh understanding of arid environments and the customary system, there are new opportunities for rangeland management in Syria. Tribes no longer represent a political threat as they once did, but they do represent irreplaceable social capital. With doubts raised about imported shrub technologies, plantations, and steppe policy more broadly, existing tribal systems offer a solid foundation on which to build an effective and efficient administration of steppe management and conservation. The task that now

faces the authorities in Syria and elsewhere in the region is to respond to this latent opportunity and enter into a genuine partnership with the steppe users for the management and conservation of steppe resources.

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