Wildebeest and livestock grazing in the wet season in the grazing area (Guy Western)

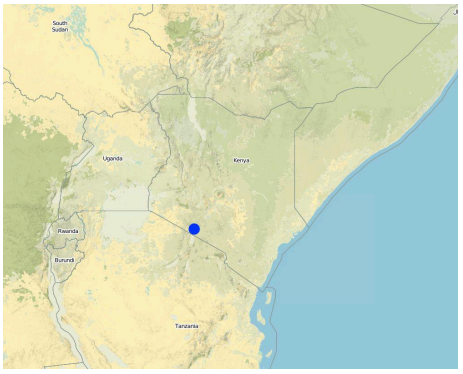
Ecosystem-wide seasonal grazing management in community land (肯尼亚)

描

Livestock movements are managed through community governance systems to maintain spatial and temporal heterogeneity of pasture, creating a gradient of quality and quantity of pasture across the landscape. This is achieved through clearly designated seasonal grazing areas for livestock and tight controls on settlement areas, grazing patterns and water points. In addition, at the individual herder level, traditional ecological knowledge plays a strong role in the decisions made to improve livestock production

This technology is applied in the South Rift Valley, Kenya, across a semi-arid landscape, with erratic rainfall averaging 400-600 mm per annum. Water availability is an issue. The perennial Ewaso Ngiro South river flows through the Shompole swamp, a vital drought refuge for livestock and wildlife, before ending up in Lake Natron. The area, roughly 1000 km2, is covered by two group ranches, Olkiramatian and Shompole, which are managed as a single ecological unit. A group ranch is a jointly owned freehold land title given to the customary occupants of communal lands. The total number of occupants of both ranches number roughly 20,000 people, with the majority belonging to the Maasai ethnic group. The ranches have not been subdivided and are not fully sedentary, unlike many other areas of southern Kenya. There is a long history of co-existence of wildlife and livestock in Maasialand. In Olkiramatian and Shompole seasonal livestock movements and herding practices are formalized by group ranch grazing plans governed by local committees. The wet season grazing areas are termed “livestock rearing zones”. The dry season grazing areas have been retained as “grass banks” for livestock, and since the early 2000s, have been used additionally as wildlife conservancies for ecotourism (see figure below). Livestock rearing occurs to the east of the Ewaso Ngiro river; grass banks and the wildlife conservancy to the west. Grazing committees from both group ranches manage livestock access to certain areas, with the conservancy (grass bank) rested during the wet season of up to six months. When grazing is permitted in the conservancy, as the dry season progresses, temporary settlements are limited to an area called the “buffer zone”. Livestock must then move into the conservancy from the buffer zones to access this late season grazing. The “livestock rearing zone” is permanently settled and grazed year-round. Within each zone there are small “Olopololis” (grass banks of a few hectares), situated near individual settlements and used to maintain higher quality pasture for weak and young animals. This management strategy ensures that the dry season grazing area is rested during the rains, and it helps to maintain consistently higher biomass and taller grass than that of the wet season grazing area. The higher biomass also corresponds to a rainfall gradient running from the Nguruman Escarpment edge in the western extremity of the group ranches to the dry central rift valley floor in the east. The biomass in the dry season area is used by both livestock and wildlife grazers during the late dry season and in droughts. The grass bank is only grazed out during prolonged dry periods. The Maasai employ a strategy of using the shorter milk-producing grasses of the livestock areas during the rains and the coarser grasses in the grass banks for the dry seasons. The shorter wet season pastures have a higher nutrient content and greater digestibility than the grass bank: this is very important for lactating females. The grass is kept short from both grazing by livestock during the growing seasons and due to intrinsic differences caused by shallower soils and lower rainfall in these grazing areas.
Within this broader governance framework and control of grazing areas, individual decision making is also permitted within these controlled areas. This allows herders to manage livestock to improve production in relation to each herd. For example, individuals might split the herd to take advantage of different energy and nutrient requirements of lactating females, bulls, and calves.
This maintenance and exploitation of forage heterogeneity is vital to the productivity and resilience of the landscape, and this heterogeneity exists at multiple scales, with the major differences existing between the grazing areas, but also smaller difference within them. Resource heterogeneity facilitates wildlife-livestock coexistence. This heterogeneity creates a matrix of varying quality and quantity of forage. Wildlife species have different metabolic

地点



地点: Olkiramatian, Kajiado, 肯尼亚

分析的技术场所数量: 单一场所

选定地点的地理参考
- 36.14942, -1.86005

技术传播: 均匀地分布在一个区域 (approx. 100-1,000 平方千米)

在永久保护区？:

实施日期: 2004

介绍类型
- ☐ 土地使用者的创新
- ☑ 作为传统系统的一 分 50 年
- ☐ 在实 /研究期
- ☐ 外 目 干

requirements and diets, and this varied base ensures that a diverse wild ungulate population is maintained year-round. Late season forage boosts the resilience of wildlife during extreme events. This technology requires a governance structure that is both responsive to the changing ecological conditions and able to build consensus and enforce grazing management.

技术分类

主要目的

- [x] 改 生产
- [x] 减少、 、恢复土地 化
- [x] 保护生态系统
- [ ] 结合其他技术保护流域/下游区域
- [x] 保持/提 生物多样性
- [ ] 低灾害
- [ ] 应气候变化/极端天气及其影响
- [x] 减缓气候变化及其影响
- [x] 创 有益的经济影响
- [ ] 创 有益的社会影响

土地利用

牧场

- 半游牧畜牧业

动物类型: 山羊, 绵羊, cattle

供水

- [x] 养
- [ ] 混合 水灌溉
- [ ] 充分灌溉

土地退化相关的目的

- [x] 止土地 化
- [ ] 减少土地 化
- [ ] 修复/恢复严 化的土地
- [ ] 应土地 化
- [ ] 不 用

解决的退化问题

土壤水蚀 - Wt 土流失 侵

生物性退化 - Bc 植 盖的减少 栖息地丧失Bq 数生物 减少Bs 和物种多样性的下

SLM组

- 畜牧业和牧场管理

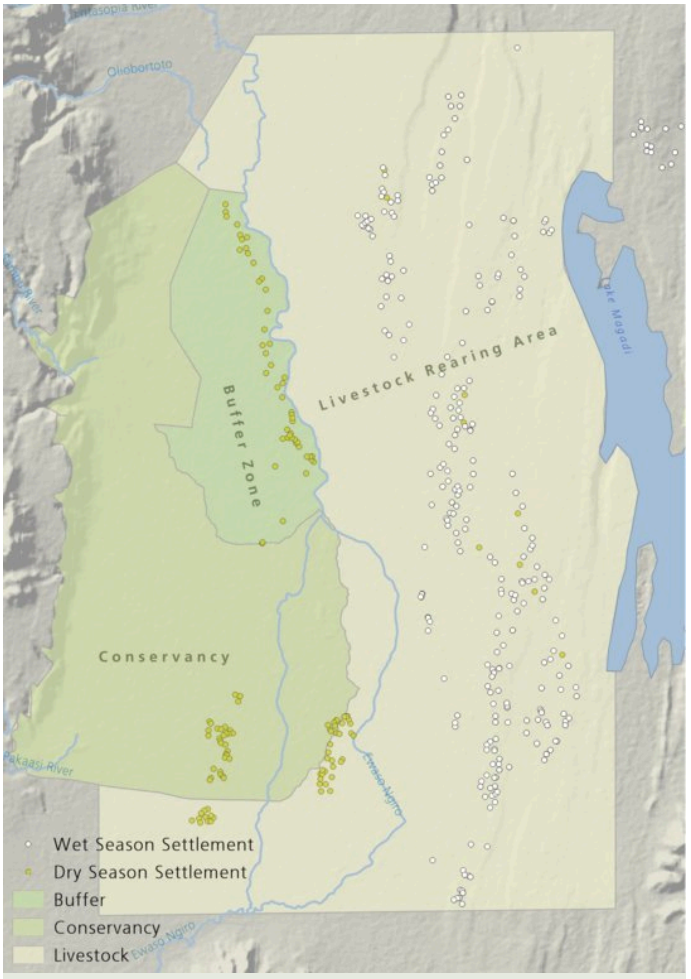
SLM措施

管理措施 - M2 改变管理强度级别, M3 根据 然和人文环境布局, M4 活动时 安排的 大变化

技术图纸

技术规范

The drawing shows the management units used in this seasonally structured grazing management system. The livestock rearing zone, to the east of the Ewaso Nyiro river, is permanently settled and is grazed heavily during the wet season (April - July). During this time herders utilize the short, nutritious grasses in this low biomass area. As forage biomass begins to reduce the community grazing committees meet to discuss the opening of settlements to the west of the Ewaso Nyiro river. This decision is made using traditional ecological knowledge, comparing available forage biomass and the numbers of livestock to previous years and past experiences. Once the grazing has been opened to the west of the river people may settle within the buffer zone. This limits direct access to the higher biomass areas within the conservancy and grass banks, and increases the length of travel for each herd every day, in an effort to preserve forage for longer. Once forage has been depleted in the buffer zones and the periphery of the conservancies, the committees meet and allow access for herders into the conservation areas, which have tall, high biomass, but low-quality grazing. Often access to this area requires considerable distances to be walked by livestock. In recent years, adaptive management systems have led to the settlements within the south of the conservation area to be closed to preserve forage biomass within the swamp and conservation area for a longer period of time; and allow for recovery of partially degraded land.



Author: Peter Tyrrell

技术建立与维护 活动、投入和 用

投入和成本的计算	影响成本的最重要因素

- 算的成本为 每个技术单位 **The two group ranches** volume, length: **Approximately 1000km2**)
- 成本 算使用的 美元
- 汇率 换算为美元 1 美元 = 不 用
- 用劳工的每日平均工 成本

There are no or little costs to this technology, as it builds off structures of management which are already in place and work organically within the area.

技术建立活动
n.a.

技术维护活动
1. Management meetings (时 / 率 easonally)

然环境

年平均降雨量
- [ ] < 250毫米
- [x] 251-500毫米
- [ ] 501-750毫米
- [ ] 751-1,000毫米
- [ ] 1,001-1,500毫米
- [ ] 1,501-2,000毫米
- [ ] 2,001-3,000毫米
- [ ] 3,001-4,000毫米
- [ ] > 4,000毫米

农业气候带
- [ ] 潮湿的
- [ ] 半湿润
- [x] 半干旱
- [x] 干旱

关于气候的规范
以毫米为单位 算的年平均 400.0
Highly variable rainfall both spatially and temporally. Annual average rainfall has a 33%CV.
气 站名称Lale'enok Resource Centre

斜坡
- [x] 水平 0-2%
- [ ] 缓 3-5%
- [ ] 平缓 6-10%
- [ ] 滚坡 11-15%
- [ ] 崎岖 16-30%
- [ ] 峭 31-60%
- [ ] 常 峭 60%

地形
- [x] 原
- [x] 山
- [ ] 山坡
- [ ] 山地斜坡
- [ ] 坡
- [ ] 底

海拔
- [ ] 0-100 m a.s.l.
- [ ] 101-500 m a.s.l.
- [x] 501-1,000 m a.s.l.
- [ ] 1,001-1,500 m a.s.l.
- [ ] 1,501-2,000 m a.s.l.
- [ ] 2,001-2,500 m a.s.l.
- [ ] 2,501-3,000 m a.s.l.
- [ ] 3,001-4,000 m a.s.l.
- [ ] > 4,000 m a.s.l.

.....应用的技术
- [ ] 凸形情况
- [ ] 凹 情况
- [x] 不相关

土壤深度
- [ ] 常浅 0-20厘米
- [x] 浅 21-50厘米
- [x] 中等深度 51-80厘米
- [ ] 深 81-120厘米
- [ ] 常深 120厘米

土壤质地（表土）
- [x] 粗粒/ 砂
- [x] 中粒 壤土、粉土
- [ ] 细粒/ 粘土

土壤质地（地表以下>20厘米）
- [x] 粗粒/ 砂
- [x] 中粒 壤土、粉土
- [ ] 细粒/ 粘土

表土有机质含量
- [ ] 3%
- [ ] 中 1-3%
- [ ] 低 <1%

地下水位
- [ ] 上
- [ ] < 5米
- [ ] 5-50米
- [x] > 50米

地表水的可用性
- [ ]
- [ ] 好
- [ ] 中等
- [x] 匮乏/没有

水质（未处理）
- [ ] 好 用水
- [x] 不 用水 处理
- [ ] 仅供农业使用 灌溉
- [ ] 不可用

水 参考

盐度是个问题吗？
- [ ] 是
- [x] 否

洪水发生
- [x] 是
- [ ] 否

物种多样性
- [x]
- [ ] 中等
- [ ] 低

栖息地多样性
- [x]
- [ ] 中等
- [ ] 低

应用 技术的土地使用者的特征

市场定位
- [ ] 生 给
- [x] 混合 生/商业
- [x] 商业/市场

非农收入
- [x] 低于全 收入的0%
- [ ] 收入的10-50%
- [ ] > 收入的50%

相对财富水平
- [x] 常 瘠
- [x] 瘠
- [ ] 平均水平
- [ ] 丰富
- [ ] 常丰富

机械化水平
- [x] 手工作业
- [ ] 畜力牵引
- [ ] 机械化/电动

定栖或游牧
- [ ] 定栖的
- [x] 半游牧的
- [ ] 游牧的

个人或集体
- [x] 个人/家庭
- [x] 团体/社区
- [ ] 合作社
- [ ] 员工 公司、政府

性别
- [x] 女人
- [x] 男人

年龄
- [ ] 儿童
- [ ] 年人
- [ ] 中年人
- [ ] 老年人

每户使用面积
- [ ] < 0.5 公
- [ ] 0.5-1 公
- [ ] 1-2 公
- [ ] 2-5公
- [ ] 5-15公

规模
- [ ] 小 模的
- [x] 中等 模的
- [ ] 大 模的

土地所有权
- [ ] 州
- [ ] 公司
- [x] 社区/村庄
- [ ] 团体
- [ ] 个人 未命名

土地使用权
- [ ] 由 入 无组织
- [x] 社区 有组织
- [ ] 租
- [ ] 个人

用水权

- [ ] 15-50公
- [ ] 50-100公
- [ ] 100-500公
- [ ] 500-1,000公
- [ ] 1,000-10,000公
- [x] > 10,000公

- [ ] 个人 有命名

- [ ] 由 入 无组织
- [x] 社区 有组织
- [ ] 租
- [ ] 个人
- [x] Traditional methods of water management through comittees exists in some areas. In other area the creation of Water Resource Users Associations has begun to manage water.

进入服务和基础设施的通道

健康	差	好
教	差	好
技术援助	差	好
就业 例如 农	差	好
市场	差	好
源	差	好
和交	差	好
用水和卫生 施	差	好
服务	差	好

影响

社会经济影响

料生产

	减少	增加

This is in contrast to areas without seasonal grazing management.

料

	减少	增加

This management system works best to preserve lower quality higher biomass fodder. Quality may not increase dramatically, but the creation of short areas of well-fertilized grass near settlements may increase the local quality of fodder during the wet season.

生产故

增加		低

In comparison to other systems the preservation of late season grazing is crucial in preventing complete losses of livestock during droughts.

社会文化影响

文化机会 如精神、审美以及其他

减少		改

Management of land in this manner relies on traditional ecological knowledge for both individual and community decision making. This is dependent on cultural values and understanding, and underpins grazing management in Maasai society.

生态影响

植 盖层

	减少	增加

This method increase vegetation cover by maintaining heterogeneity of forage resources across the landscape, and resting pasture seasonally to allow for vegetation regrowth.

生物 /地上C

	减少	增加

Late season forage available. Recovery and rest allows for greater productivity and rainfall use efficiency.

动物多样性

	减少	增加

Maintenance of spatial and temporal heterogeneity of forage resources ensures that wildlife species have access to the variable resources that they require over time.

场外影响

成本效益分析

与技术建立成本相比的效益

短期回报	常消极	常积极
期回报	常消极	常积极

与技术维护成本相比的效益

短期回报	常消极	常积极

期回报 常消极 常积极

No costs to establish and low direct cost of management actions.

气候变化

渐变气候

年 减少 常不好 常好

季 减少 常不好 常好 季湿季/ 季

气候有关的极端情况（灾害）

干旱 常不好 常好

用和 应

采用该技术的地区内土地使用者的百分比

- 单例/实
- 1-10%
- 11-50%
- ✓ > 50%

在所有采用这种技术的人当中，有多少人在没有获得物质奖励的情况下采用了这种技术?

- 0-10%
- 11-50%
- 51-90%
- ✓ 91-100%

最近是否对该技术进行了修改以适应不断变化的条件？

- ✓ 是
- 否

The management is constantly being adapted based on the prevailing ecological conditions. In 2015, over fifty settlements were closed by the community grazing and group ranch committee within the dry season grazing area to allow for pasture regeneration and to consolidate preservation of the dry season grass bank.

什么样的变化条件？

- ✓ 气候变化/极端气候
- 不断变化的市场
- 劳动力可用性 例如 由于 移

结 和吸取的教

长处: 土地使用者的观点

- This technology stems from a community based and is not imposed from a top-down perspective, and tries to create consensus among resource users.
- Allows individual flexibility within the broader grazing structure so that people can manage livestock within their own objectives.
- This technology provides forage for livestock into the dry season and drought.

弱点/缺点/风险: 土地使用者的观点如何克服

- Exploitation of the system by elites in charge of management decisions, allowing their livestock to access preferential grazing, which may not represent the needs of all groups. Ensure credible management structures in place; with the new community land act, this should encourage greater equity in decision making.
- Preventing settlement in areas of traditional occupation by certain households.

长处: 编制者或其他关键资源人员的观点

- Management in this way also replicates the methodologies used for land management for thousands of years by pastoral people and helps to generate an enabling environment for the coexistence of wildlife, domestic livestock, and people.
- Ensures that pasture is rested during the growing season within the dry season grazing areas, so that root mass can be established and to ensure grass seed production.

弱点/缺点/风险: 编制者或其他关键资源人员的观点如何克服

- Lack of focus on a production based system and income generation through livestock sales. Create and enabling environment for change, through market improvement and learning exchanges.
- Lack of resting and recovery of forage in the wet season grazing area. Rotate and rest wet season pasture for a few weeks during the growing period, potentially through grazing in the dry season reserve for a longer period.

参考文献

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WOCAT数据库中的完整描述
https://qcat.wocat.net/zh/wocat/technologies/view/technologies_3372/

链接的SLM数据
Approaches: Community-based rangeland management in the southern Kenyan rangelands
https://qcat.wocat.net/zh/wocat/approaches/view/approaches_3321/
Approaches: Community-based rangeland management in the southern Kenyan rangelands
https://qcat.wocat.net/zh/wocat/approaches/view/approaches_3321/

文件编制者

机构
- 不 用

目
- Book project: Guidelines to Rangeland Management in Sub-Saharan Africa (Rangeland Management)

链接到网络上可用的相关信息
- Seasonal movements of wildlife and livestock in a heterogeneous pastoral landscape: Implications for coexistence and community based conservation: http://www.sciencedirect.com/science/article/pii/S2351989417301075