IRC X Poems for Oral Papers

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These poems were written drawing primarily from the words and language of the scientific papers in the proceedings with some additions and modifications. I was trying both to distill the scientific findings and to capture underlying feeling, beauty or humor embedded in the language or content of the paper. I intended to do all the oral presentations, but didn't quite succeed. I included a few posters that caught my attention. There are about 42 poems altogether. Of necessity, they were hastily done and as a result, do not live up to their potential as poems. I enjoyed doing this and recommend it as a method for summarizing papers. It helps get to the heart of the matter.

Multiple Use

4.0a
Mining could be a valuable component
A veritable gold rush
Coal, copper, diamonds
Sand, clay, salt
Oyu Tolgoi, turquoise hill
30% of Mongolia's GDP by 2021
30'000 informal artisanal miners
Air pollution
Water pollution
Mercury pollution
Cyanide pollution
Arsenic pollution
Rural people see
Mining as destructive of nature
And Grazing
With little economic benefit
Mining is not compatible
With Mongolian culture
With cherishing
The environment

4.0b
North American rangelands
Energy independence
Diversify energy sources
Untapped energy sources
Renewable and non renewable sources
Demand for resources
Alternative energy resources
Biophysical processes
Socioeconomic processes
Complex interactions
and negative feedbacks

Goods and services
Laws and culture
Education and attitudes
External outcomes
Include
Soil erosion
Water pollution
Greenhouse gas emissions
Biodiversity loss
Etcetera
Etcetera
Etcetera
Still numerous knowledge gaps
Next step
Multidisciplinary research
Standard indicators
Develop policies
Minimize and mitigate
Impacts
Goods and services
Critically important

4.1.1
Argentina
Biofuels
Energy crops
Aroused new interest
Transformational processes
Perennial grasses
High accumulation
Translocation
One annual crop
And one perennial
Feedstock and
Biofuel
Food and energy
And environment
Trilemma
Perennial grasses
For food and fuel
Could be a solution

4.1.2
In mining reclamation
Regardless of seeding rate or rainfall
Seeded grasses similarly abundant
Long after seeding.
Conversely,
Starting conditions regulated

Native shrubs.
Practical knowledge can emerge
From studying restoration
In practice

4.1.3
What is the relationship
Between soil crusts and seed banks
In the Great Plains?
Plant communities shifted more than seedbanks
In response to pipelines
Soil biological crusts were highly sensitive
To pipeline presence.
Watch out for invasive legume Melilotus!

4.1.4
In the Bakken
So much gas
So little space
Fugitive dust, disruption and ineffective restoration
Jargon in contracts and leases
Stress on social networks and local services
Better policies, planning and public relations
Could improve life and reduce conflict
In the Bakken

4.1.5
Range supply review
A way to inventory, map and visualize
And measure cumulative impacts

4.2.1
Fire is a natural disturbance
Most fires occur in C4 grasslands
Most in the Southern Hemisphere
Pastoralists have traditional knowledge
Of vegetation management
Using fire
Burning causes warming
Global warming
Black carbon
Melts ice
Smoke cools
Charred plants reduce albedo
Warm soils
Does managed fire make it worse?
The warming?
As a rule
Fire alone cannot control

Invasive species
Conservation
Reduces livestock
Leaving only
Fire
Conservation landscapes
Working landscapes
Mosaic
Grazing and fire
Are synergistic
Diversity
Heterogeneity
Shifting mosaic
Grazing lawns
Scholarly reviews, management reviews
Challenge long held views
Include controls
And Before and after
Measures
To avoid confounding weather
Traditional
Spring ritual
Pasture Burning
Climate change increases fire risk
Prescribed burning decreases risk of fire
Traditional burning is widespread
Lacking scientific knowledge

4.2.2
How do fire seasonality and return interval
Affect rangeland productivity and plant composition?
Spring, summer and fall burns
1, 3 and 6 year return intervals
Season and fire frequency interact
Fire had little effect on productivity
But shifted species composition
Fall and summer fires at short intervals
Favor rangeland integrity.

4.2.3
Megafires are a bigger problem
Than drought
Finding durable solutions
Requires collaboration
Among diverse stakeholders.

4.2.4
Burning is risky
But extreme heat is needed

To kill shrubs in the Southern Great Plains
Which is greater:
The risk of escaped fire?
Or the risk of doing nothing
And watching the trees encroach
On your grass?
Many factors affect
Landowners' attitudes towards fire

4.2.5
Targeted grazing can be used to
Manage fuels and alter
Fire behavior
By reducing fuel loads and
Creating fuel load heterogeneity
Patchy burns leave islands
Of unburned sagebrush
A seed source for recolonization
Across the steppe
Effectiveness of targeted grazing
Depends on fire weather conditions
And the structure of
The plant community.

4.2.6
Acacia has invaded Uganda
Reducing forage and livestock
Productivity
Traditionally, pastoralists managed brush with fire
But burning is now banned
And shrubs increased

4.3.1
Mexico
Plantations of native shrubs
An alternative for restoration
Of deteriorated rangelands
Colors from the visible range
Of the electromagnetic spectrum
Have differentiated effects
On photosynthetic activity
Can different radiation environments
Shorten shrub production
For restoration?
Effects were significant
For shoot length
But not for roots
Plants like red light best

4.3.2
Kochia competes well with weeds
Suppresses fires and
Increases diet quality
But how to establish it
In disturbed sites?
Plant in April not March
Monitor over time
To see how it gets along
With natives.

4.3.3
My mother told me
“Cut your food small
so you don’t choke.”
In Bangladesh
Cross-bred dairy cows
Eat more and gain more
When their para grass
Is chopped.
Mom was right.

4.3.? poster?
Tamilnadu, India
Wild plants are
Sustenance for dryland dwellers
Nomadic shepherds
Firewood collectors
Skilled craftsmen
Each use plants
For different purposes
Fodder is the main use of many plants
Wild fruits, to cook with
Cassia, Strychnosis and others for medicine
Agaricus, wild mushroom, for food
And Eracrostis cynosuroides,
A sacred grass
(And many more)
We need to know
What these plants are
And how to use and
Tend them well
So people and plants
Both survive and thrive.

4.4.1
When tame goes wild
Disperses and colonizes

Aggressive invader
Synthetic survey
Delicate balance
Between
Ecological risk
And economic value
Bromus inermis
Is least dominant in the most diverse sites
So, richness lends resistance
But suppressive effects of Brome are greatest
In high diversity sites
What is the mechanism that explains this
pattern?

4.4.2
Absinth and tansy
Hard to eradicate
Toxic to people
And livestock
Spray? Wipe? Or send out the goats
To eat?
Spraying kills good plants, too
Rotowiper sometimes works
Goats gobble up tansy
But it grows right back
Need to follow up with herbicide
Or graze for multiple years.

4.4.3
Need to kill that
Tamarix
Which herbicide
Is best?
IMazapyr
Imazapic
Triclopyr
Experiment on the Cimarron National Grasslands
Happyditch soils
Imazapyr kills
Non-target plants
IMazapic does much
Less damage
Triclopyr
Was a distant 3rd
In effectiveness.

4.4.4
Yes! Finally
A paper about weeds and people

Australian researchers
Consult producers about
Indian couch, an exotic grass
To identify a research and development agenda
A proposal is underway.

4.4.5
Kenya
Ipomoea
Creeping annual herb
Except bees and
Hairy black caterpillars,
Nothing eats it.
Pastoralist field schools
Schools without walls
Build on traditional knowledge
Innovate and empower
Learning by doing
Instead of telling what to do
Awareness raising: Posters
Role plays, poems!
TV talk shows, radio, YouTube and SMS
Fencing, uprooting and
Range rehabilitation can help
Eradicate Ipomeaia

4.4.6
An institutional
Solution to invasive
Exotic predators
Wild dogs.
Collaborative Area Management
Adjacent landowners
Fence their perimeter
To keep out dogs
Manage total grazing pressure
Aussie government pays half
Lambing rates went from 7% to 70%
A $504,000 Return on Investment.
Wow.

4.5.2
In Alberta
Feral horses, elk and cattle
Share the range
We need to know
How much forage grows
And keep stocking rates
In line.

4.5.3
Elk populations are recovering
In the Cariboo-Shilcotin country
Getting into stack yards
Causing general mayhem
Stakeholders may disagree
About what to do
There are no solutions
Only implications.

Posters:
In Patagonia
When sheep left
Guanaco increased
And didn't overgraze

High Altitudes and Latitudes

5.0a
Oblique angle of insolation
Cold temperature
Short growing season
Peat turns to
Permafrost
Covered in
Thick lichen and dwarf shrubs
Northerly and westerly Canadian islands
Are the coldest in the high arctic
Barren, black cryptograms, lichen,moss and sparse grass
Further south dwarf shrubs emerge
Then low arctic tundra
And finally subarctic woodlands
Pine, fir and birch
Bighorn sheep, musk oxen, reindeer,
And don't forget the geese
Reindeer eat lichen
Migrate
Populations fluctuate
Eluding management
They provide food
Clothing, identity
To arctic native peoples
For hundreds of years
Traditional agreements
Between family groups
Allowed flexible boundaries
Sharing resources

According to needs
And range conditions
We don't know what the future will bring
Baselines are needed
Government should heed
Traditional management.

5.0b
Yaks:
Without them life would be impossible
Across high Asia
The rangelands are deteriorating
From ideologies, policies, modernization paradigms
Development at the cost
Of traditional knowledge and management
Yak are so much more
Than economic assets
Cultural ecosystem services
People and land
On the plateau
Grasslands created by burning
And maintained by grazing
Transformed by and for pastoralists
To create a sustainable food system
Adaptive, flexible
On the move
Mobility-essential to conservation
Water protection, carbon sequestration
Parks and people
Can be compatible
If managed cooperatively
If not injustice reigns
Pastoralist communities
Empowered feel identity with
Place, know who they are,
And how to be
In this high, cold country

6.5.1
Summer pastures in the Alps
Heidi’s land
Now being abandoned
The shrubs creep in
Farmers graze the highlands
For cheap grass and good animal health
And the pleasure they take
In working the summer farms
The tradition.
As climate changes

The high mountain pastures
May buffer change below
Rooted deep in tradition
Summer farming in the Alps
Continues to evolve.

6.5.2
In Ladakh
High elevation pastures
Challenging terrain
Harsh climate
Dwindling resources
R&D needed to assure
Sustainable fodder supplies
Without further degrading the landscape
Researchers should work
With local organizations.

6.5.3
Qinghai
On the roof of the world
Plant litter decreases
Plant height
And aboveground biomass
On dark felty soils.

6.5.4
Peru
Above 4000 meters
On Communal Cooperative lands
Ecological sites and paddocks overlayed
For rangeland planning
Improvement strategies selected
Based on ecosites and potential for improvement
Even better would be adding economic
And social criteria
Must think for the long-term
Change in Andean rangelands is slow.

6.5.5
Altay Mts, Mongolia
Tsunhal Nur
Participatory mapping with herders
Of three ethnic groups
The lakeside is most productive
And most vulnerable to overuse
Herders suggested strategies:
Mobility and make it rain.
Prayer came in last.

6.5.6
In Cameroon
Transhumance from Savannas to wetlands
Has ecological, economic and social impacts
Coordination is needed
To avoid degradation
And conflict.

Climate Change

6.0a
Rangelands 50% of earth's land
Fodder for poetry
ANPP
A core ecological currency
For ANPP
Rainfall is the key
Grazing effects vary
With evolutionary
History
We know well
How these work
Independently
But not so much
Simultaneously

The world will warm
Less rain will fall
In many rangelands, anyway
Extreme events
Uncertainty
Potential famine
And calamity

What can science do?
Look beyond our toes
Coordinated, distributed experiments
Data fusion and meta-analyses

6.0b
Nine thousand years
Is a long time
Longer than
Ranching has been
On the plains
(But not longer than human history here)
Comparing recent climate and
Ecological conditions

To the range of conditions over
9,000 years
What can it tell us about resilience
To human-caused climate change?

In recent years productivity increased
More than increased moisture predicts
Due to species changes
More wheatgrass and needle and thread
Less blue gramma

In the Holocene
Lake sediments say
Five drought cycles
Each lasting more than 100 years
Grassland pollen down to 5%
Compared to today's over 20%
The Dust bowl had nothing
On those dry times

Tree rings say the last 500 years had
36 years drier than 1936
One drought lasted 13 years
Another 31

What does this mean?
The impact of anthropogenic
Climate change
May not be loss of productivity
But instead increased variability.
In the northern Great Plains.
We'd better get ready.

6.1.1
In Sudan
Browse is a critical part of animal diets
In the semi-arid, arid and semi-desert zones.
They may be even more important
As climate changes.

6.1.3
Saskatchewan hay yields show long-term decline
Is there less water in the soil?
As warming occurs over time
The same amount of rain
Grows less hay
Physiology of photosynthesis explains this
Other crops adapted but not hay
Producers haven't switched to more adapted

Alfalfa
Hay shortages loom.

6.1.3
What grasses will grow best in salty Pampas
Three varieties of Chlorisgayana were tested
Finecut has the greatest density and cover
Santana the most seeds.

6.1.5
Apocynum venetum is a semi-shrub
From Eurasian desert-steppe.
What mechanisms allow it to thrive
In drought?
It grows in K deficient soils and is able to survive
In drought and saline environments
Making it valuable for improvement
Of barren and saline rangelands
In arid and semi-arid areas

6.2.2
Climate clever beef

6.2.4
New Zealand
Maori pastoral farms
Found trade-offs between profitability
And reduced GHG emissions
Culture must be accounted for
And tempers profit-maximization
Maori prioritize protecting
The environment.

6.2.5
The Puna of Peru
Supports 80% of Peru's cattle and sheep
And 100% of alpacas and llamas
Climate change and
Overgrazing
Increase herder vulnerability
They need adaptive management strategies.
And an early warning system

6.2.6
Holistic Planned Grazing Meta-analysis

Posters:

Ghana

Climate change could trigger resource competition
And violent conflicts
In pastoral communities
Strategies include:
Mobility, adoption of drought tolerant livestock, production and purchase of hay, use of private rangelands.

Namibia and South Africa
Use different strategies across different temporal and spatial scales
Haven't adopted NEW strategies in response to climate change.