Ecological Values of Europe’s Wilderness

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Divergent paths for wild land in the 19th and 20th century – the Continental divide

19th century America – aesthetic approach
• wild land viewed as a source of inspiration and recreational activity
• a spiritual, aesthetic, and intrinsic beauty
• species and natural systems had an inherent value, not created or dependent on human beings

20th century Europe – scientific approach
• scientific approach to restoration and preservation of unique assemblages of species
• not necessarily based on landscape values

A painterly perception of wild scenes bridged the Continents - from Yosemite Valley to the Bernese Oberland in Switzerland
The “discovery” of Yosemite valley, 1851

• groups of **Miwok** and **Paiute** settled in Yosemite between 4,000 and 8,000 years ago

• Ahwahnechee lived off **deer** and ground **acorn meal** from black oak

• annually **burned valley floor vegetation**, which selected for black oak and kept meadows and forests open

• volunteers of the Mariposa Battalion entered Yosemite Valley **25 March, 1851**, in search of native tribal leaders involved in raids on Euro-American settlements

• Lafayette Bunnell, battalion physician, writes about the **Indian war** that led to the “discovery”

• after the “Mariposa Wars”, Ahwahnechee had a long if **troubled relationship** with Yosemite Valley
Carleton Watkins & the photographic age of exploration

Watkins, summer of 1861, strapped a tonne of camera equipment to mules and rode into Yosemite Valley and Mariposa Grove.

The three brothers

Mirror Lake and Mount Watkins

The half dome

Grizzly Giant sequoia tree

View down the valley from Union point

The vernal fall
Grant of “Yo–Semite Valley” to the State of California 1864

- Galen Clark finds giant sequoia trees in Mariposa Grove, 1857
- determines to preserve Mariposa Grove and Yosemite from logging
- drafts Bill with support from U.S. Senator John Conness
- submits Bill to Congress along with Carleton Watkins photographs

The Yosemite Valley and Mariposa Big Tree Grove were granted:

“upon the express conditions that the premises shall be held for public use, resort, and recreation; and shall be inalienable for all time”

The uniqueness of the legislative grant is that it provided for land to be reserved for non-utilitarian purposes

The legislation required the State Governor with eight other appointed Commissioners to manage the grant of the Yosemite Valley
Frederick Law Olmsted wrote a Preliminary Report on Yosemite in 1865 that has a systematic exposition of the geomorphology, hydrology, and biophysical qualities of the valley, as well as:

- the importance of contact with wilderness for human well-being
- the effect of beautiful scenery on human perception
A democratisation of wild nature

Olmsted realised how easily a few men could destroy the valley for their own material gain. He argued that portions of natural scenery be properly guarded and cared for by the government:

“for the free use of the whole body of the people forever .....laws to prevent an unjust use by individuals of that which is not individual but public property, must be made and rigidly enforced”

Burning of the valley by the Ahwahnechee came in for criticism:

“Indians and others have set fire to the forests and herbage and numbers of trees have been killed by these fires......rocks in the midst of the most picturesque natural scenery have been broken, painted and discolored by fires built against them”

“that which is not individual but public property”
Olmstead refers to the works of Swiss painter Alexandre Calame while describing the impressive character of the Sierra Nevada mountains.

“It is not, however, in its grandeur or in its forest beauty that the attraction of this intermediate region consists, so much as in the more secluded charms of some of its glens formed by mountain torrents fed from the snow banks of the higher Sierras. These have worn deep and picturesque channels in the granite rocks, and in the moist shadows of their recesses grow tender plants of rare and peculiar loveliness. The broad parachute-like leaves of the peltate saxifrage, delicate ferns, soft mosses, and the most brilliant lichens abound, and in following up the ravines, cabinet pictures open at every turn, which, while composed of materials mainly new to the artist, constantly recall the most valued sketches of Calame in the Alps and Apennines.”
Switzerland - forests, rocks, torrents

The Bernese Oberland - forces of nature strongly acting within the landscape, as Olmsted observed in the Yosemite Valley

Mountain Torrent before a Storm (The Aare River, Haslital) (1850)

Torrent in the Alps (1849)

Mountain Torrent (1850-60)

Alexandre Calame (1810-1864)

From the collection of Asbjørn Lunde
Forests are the history of protected nature in Europe

**Switzerland** - forestry regulated by the communes as “*rights of usage*”
- communes in mountainous regions issued “*banning letters*” (*Bannbriefe*) to preserve forests that protected against avalanches, rockfalls and torrents eg. Andermatt banning letter 1397
- suffers a series of *disastrous landslides and floods in the 1830s*, leading several cantons to pass forestry laws between 1834 and 1840 that prohibited clear-cutting

**Romania** - official measures in 14th century restricting access and use to *forest reserves* (*branisti*) through “*letter of the forbidden forest*” (*carti de paduri oprite*). No hunting, fishing, felling, grazing, foraging

**Austria** - wood cutting and litter harvest prohibited to avoid *avalanches* and *gully erosion* on steep slopes above villages of Oberinntal, Tyrol in 1517, Möllta, Carinthia, in 1518
Protection forests across Europe – a stabilising factor against natural hazards

% of forest as protection forest in 2010

Area of protection forest (1,000ha) 2010

Protective functions for soil, water and other ecosystem services:
- mountainous areas: risks from active erosion, landslides, torrents or snow avalanche
- coastal areas: ingress of water and sand
- urban areas: water and air quality
Undisturbed forest as a metaphor for wilderness in Europe

**Indicator 4.3 Naturalness:** Area of forest and other wooded land, classified by “undisturbed by man”
The scientific wilderness - Ecological concepts defined in Europe

- “the physiology of the earth” - Hutton 1788
- phyto-geography - Alexander Humboldt 1805
- “struggles for existence ....with the physical conditions of life” Charles Darwin, The Origin of Species 1859
- ecology - Ernst Haeckel 1866
- biocenosis - Karl Möbius 1877
- phytosociology - Józef Paczoski 1896
- autecology, synecology - Schröter & Kirchnner 1902
- modeling trophic levels of carnivore, herbivore and plants - Volterra 1925, 1927
- food chains (trophic position) - Charles Elton 1927
- ecosystem - Arthur Tansley 1935
The emergence of the protected area in Europe
Lagodehki State Nature Reserve, Georgia

Ludwig Mlokosiewicz
1831-1909
Corresponding Member of the Russian Imperial Academy of Sciences

1903 - **Mlokosiewicz** proposed the idea of transforming the Lagodekhi Gorge into a Nature Reserve.

1911 - Scientists presented the report “**Lagodekhi Gorge as Monument of Nature and the Necessity of its Protection**” at a meeting of the Caucasian Department of the Russian Geographic Society.

1912 - Petition drawn up by the Geographic Society and the Academy of Science. **Lagodekhi Gorge declared a nature reserve.** Tree felling, hunting and livestock grazing were banned on the reserve.
The emergence of the protected area in Europe

Russia and the Zapovedniki 1916

- withdrawn from economic use
- standards or models of nature
- the “control” or reference areas in an experiment on the effect of humans upon the natural environment

31 zapovedniki are also BRs
Swiss National Park (IUCN Cat. Ia)  
- 100 years of exclusion from human impact

“A sanctuary for animals and plants, as far as possible excluded from any human impact, an area in which for 100 years there would be no economic use from forestry, grazing and hunting, and where no axe, nor the sound of shooting would be heard.....

....the hope that animal species extinct in historical times in our country, will migrate back into the total sanctuary”

Dr Walter Bissegger, National Council March 1914

A Swiss National Park is established in which the entire animal and plant life is left to free and natural development, and is protected from any human influence. The whole Park is placed under scientific observation

Federal Decree on the establishment of a Swiss National Park in the Lower Engadine  April 1914

“A great experiment in wilderness creation

A great "naturalising trial" will be conducted there. To follow all the stages of this naturalising, this return to the original condition, this "retrograde succession" to the most in depth, is a principal object of scientific observation and must extend naturally to a very long period

Prof. Carl Schröter, 1920
Protection of Natural Conditions
- the original paradigm in Europe

American botanist Harvey Hall studied the flora of Yosemite. He travelled Europe in 1928 to learn about National Parks and reserves here. His observations hold true today:

- Europe was taking a scientific approach to setting up Parks, in contrast to aesthetic and recreational values in America
- Europe “no longer had extensive natural areas to protect”

“They must first re-create natural conditions through long periods of protection” a freeing of natural processes

Gran Paradiso National Park - grazing considered to be the “worst enemy” of the Park
Abruizi National Park - partial reserve lower zone “now denuded and nearly barren”
“complete reserve” upper zone had agriculture, grazing, felling, hunting, fishing prohibited

Tatra Mountains, Czechoslovakia, proposed National Park - Complete reserve
- fully protected with buffer area of less severe restrictions

Secondary wilderness is the reality of contemporary wilderness in Europe, and is the outcome from a period of ecological restoration under strict protection
A lack of natural control mechanisms in SNP – trophic cascades

Species counts – Red deer

<table>
<thead>
<tr>
<th>Year</th>
<th>Red deer</th>
<th>Chamois</th>
<th>Ibex</th>
</tr>
</thead>
<tbody>
<tr>
<td>1918</td>
<td>12</td>
<td>1,000</td>
<td>60</td>
</tr>
<tr>
<td>1925</td>
<td>90</td>
<td>1,250</td>
<td>190</td>
</tr>
<tr>
<td>2013</td>
<td>1,818</td>
<td>1,388</td>
<td>257</td>
</tr>
</tbody>
</table>

-alpine meadows overgrazed by Red deer, field mice numbers down, less prey for foxes and raptors
-forest regeneration in valleys setback by herbivores
Wildlife comeback (hoped for!)

“Yet one thing is certain: The wolf finds in Switzerland a richly laid table: In recent centuries, the number of red deer was hardly ever as high as today” – SNP 2009

Wolf living in Pigniu, Surselva – 40km from SNP

Single migrants living 2010-12  First bear in SNP for 100 years – photo 28 July 2005

“There will be no organised re-introduction of the bear, lynx or wolf in the National Park. Any individuals of these species that migrate into the Park will be most welcome and will be afforded total protection within the Park’s boundaries” - SNP

25th February 2008: lynx in SNP captured and fitted with a transmitter. Walked into Italy.
System directing mammalian species and their contemporary distribution in Europe
The potential of large carnivores as conservation surrogates in the Romanian Carpathians - Rozylowicz and others 2011

Co-location between carnivores and 10 mammal and 55 bird species of European conservation concern - forest specialists, habitat generalists, and non-forest species
Co-location of system directing species
Wolf, lynx and bear in the Carpathian and Dinaric mountains

Trophic cascades in place
– the natural condition, the original paradigm, the true wilderness
The last ecologically intact areas in Europe?

Co-location of strictly protected areas with high WQI - top 5% WQI and IUCN Cat. Ia&b II

WQI is a continuum based on an equal weighted combination of population density, road density, distance from nearest road, naturalness of land cover and ruggedness
Chernobyl 27 years on

vegetation restoring
Wildlife comeback - unplanned freeing of natural processes

Trophic cascades in Chernobyl
Restoring wilderness from an ecological perspective

Retaining the “natural condition” at Nørholm Hede, Denmark

Restoration of vegetation:
- grazing stopped in 1895
- 350ha designated a nature reserve in 1913
- owner requested that it be kept in its “natural condition”. No human intervention since
- fixed plots set up in 1921 to study vegetation changes and forest succession
- tree numbers increasing exponentially, with a doubling time of about 10 years
- IUCN Cat. Ib
Deer return to Nørholm Hede

- deer rarely seen on open heathland of a century ago (1 roe deer in 1900)
- both Red and roe deer migrated into Nørholm Hede as woodland re-colonisation progressed
- 130 roe deer and 35 red deer observed in 2005
- study in 2010 to analyze the relationship between the number of deer and young tree saplings
- deer/Km2 calculated from presence of deer tracks and deer pellets

Inverse relation between amount of pellets found and trees <0.5m high

Where are the wolves?
Potential wolf breeding areas in Denmark in 2020

Wolf sightings 2007-2013

Red deer fawn occurrence 1995-2003

Natural processes observed at large scale

Wolves in Denmark - what can we expect? Feb 2013
Future wilderness in Brandenburg, Germany
Wildlife comeback planned at large scale

- three ex-military training areas strictly protected from 2000
- natural dynamics through non-intervention coupled with monitoring successional changes, other plants and animals
- new wilderness seen as core areas in an ecological corridor that stretches to border with Poland
- 12.7Km² added to Germany’s target of 2% wilderness by 2020

Wolves caught in a camera trap in Lieberose 2010 – at least 3 wolf cubs born since then

Wolf management plan, Brandenburg 2013-2017
Wolf packs in Brandenburg to 2012
Wolf sub-populations and the expansion into NW Europe

- Wolf population about 20,000
- 10 subpopulations with constraints on mixing (Spain, Scandinavia most isolated)
  - **German-West Poland** group probably from the Baltic group, not Carpathian
  - Wolves in **Denmark** came from Germany
  - Wolves in **Austria** from three groups
  - **Netherlands**: animal strongly resembling a wolf was “hit and killed” July 2013 by a car near the town of Luttelgeest

Distribution of potential wolf territories within 1Km of prime areas
A Wilderness Convention for Europe gets around not having the word in protected area legislation or in all European languages (wild nature - dikimi priroda, nature sauvage, salvaje, natura selvaggia incorrotta, põlisloodus, yaban hayati, gyvoji gamta, viata sălbăticie).

The Framework Convention will be based on the Wild Europe Definition of Wilderness, and will have a Protocol for wilderness based on the strict protection across Europe. Wilderness identified through the Convention can join the European Wilderness Preservation System.
A wilderness is an area governed by natural processes. It is composed of native habitats and species, and large enough for the effective ecological functioning of natural processes. It is unmodified or only slightly modified and without intrusive or extractive human activity, settlements, infrastructure or visual disturbance.”

A Working Definition of European Wilderness – Wild Europe

**Category Ia** are strictly protected areas where human visitation, use and impacts are strictly controlled and limited to ensure protection of the conservation values.

**Category Ib** protected areas are protected and managed so as to preserve their natural condition.

**Strict protection could equate to the wilderness definition**
Strictly protected areas across Europe – IUCN Category Ia and Ib

Most countries (40/46) classify some of their protected areas for **strict protection** (Cat. Ia) or **protection of natural conditions** (Cat. Ib)
### Is there a protected area type for strict protection in the national legislation?

<table>
<thead>
<tr>
<th>Country</th>
<th><strong>STRICT RESERVE (IUCN Cat. Ia &amp; Ib)</strong></th>
<th><strong>MANAGED RESERVE (IUCN Cat. IV)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Albania</td>
<td>Zone Strikte e Mbrojt</td>
<td>Rezerve Natyrore e Me</td>
</tr>
<tr>
<td>Belarus</td>
<td>zapovedniki</td>
<td>zakazniki</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>rezervati</td>
<td>poddůrzhani rezervati</td>
</tr>
<tr>
<td>Estonia</td>
<td>loodusreservaat/ looduslik sihtkaitsevöönd</td>
<td>hooldaatav sihtkaitsevöönd</td>
</tr>
<tr>
<td>France (forest reserves)</td>
<td>réserve biologique dominiale intégrale</td>
<td>réserve biologique dominiale dirigée</td>
</tr>
<tr>
<td>Greece</td>
<td>Periochés apólytos prostasías</td>
<td>Periochés prostasías</td>
</tr>
<tr>
<td>Latvia</td>
<td>Dabas rezervats</td>
<td>Dabas liegums</td>
</tr>
<tr>
<td>Liechtenstein</td>
<td>Waldreservat</td>
<td>Sonderwaldflaechen</td>
</tr>
<tr>
<td>Lithuania</td>
<td>Valstybinis rezervatas</td>
<td>Gamtinis draustinis</td>
</tr>
<tr>
<td>Romania</td>
<td>Rezervatie stiintifica</td>
<td>Rezervatie naturala</td>
</tr>
<tr>
<td>Russia</td>
<td>prirodnye zapovedniki</td>
<td>prirodnye zakazniki</td>
</tr>
<tr>
<td>Slovakia</td>
<td>prirodná rezervácia</td>
<td>chránený areál</td>
</tr>
<tr>
<td>Slovenia</td>
<td>strogi naravni rezervat</td>
<td>naravni rezervat</td>
</tr>
<tr>
<td>Spain (Asturias, Catalonia, Navarre)</td>
<td>reservas naturales, integrals</td>
<td>reservas naturales parciales</td>
</tr>
<tr>
<td>Turkey</td>
<td>Tabiatı koruma alanı</td>
<td>Muhafaza Ormanlar</td>
</tr>
<tr>
<td>Ukraine</td>
<td>prirodní zapovídnky</td>
<td>zakaznyky</td>
</tr>
</tbody>
</table>

The legislation in many countries distinguishes between **strictly protected reserves** and managed reserves.
The rich language of protected area legislation for strict protection - the exclusion of human intervention/activities

.....excludes any human intervention in natural processes
.....without human intervention
.....minimal human intervention
.....Habitats are called natural when their existence is not due to human intervention
.....self-regulation without direct human intervention
.....complete and permanent cessation of direct human intervention in the health of ecosystems
.....nature protection is the restriction of interventions that can endanger, damage or destroy conditions and forms of life
.....the protection of the ecological integrity of ecosystems and prevention of interventions and activities that could endanger that;
.....undisturbed, dynamic development be left and in which all human activities are undesirable
What activities are prohibited in strictly protected areas?

Withdrawn from economic/human activity (includes no hunting, logging, grazing)

- Belarus
- Bulgaria
- Croatia
- Czech Rep.
- Estonia
- Georgia
- Greece
- Italy
- Latvia
- Liechtenstein
- Lithuania
- Montenegro
- Norway
- Portugal
- Romania
- Russia
- Serbia
- Slovenia
- Spain (Asturias, Catalonia, Navarre)
- Switzerland
- Turkey
- Ukraine

NO Hunting, logging, grazing

- Albania
- Armenia
- Azerbaijan
- Finland
- Moldova
- Slovakia
- Sweden

Other activities prohibited in strictly protected areas include fishing, mineral extraction, construction, use of chemicals and fertilizers, lighting fires, introducing non-native species, water abstraction, waste disposal, and transport.
National Parks contribute to a wilderness characteristic - strictly protected core zones in the protected area legislation for National Parks (IUCN Cat II)

- National Parks in these countries could contribute up to a maximum of 4m Ha of strictly protected core zone ~ 0.2%
- Strict core zones in National Parks implemented through management plans also contribute
CONCLUSIONS

There is a wilderness characteristic in Europe.

It is a SECONDARY WILDERNESS from ecological restoration under strict protection.

The greatest potential for wilderness characteristic is where there is existing or returning TROPHIC DIVERSITY.

Adequately protected SECONDARY WILDERNESS is a safe refuge and reference for natural systems, as repositories of trophic diversity, and especially for endemic species.

We can identify and protect areas of HIGH POTENTIAL for wilderness characteristic, but WILD NATURE chooses where it wants to be – WE CANNOT “manage” wilderness for species.

Support the Congress resolution on a Wilderness Convention and the EWPS.