European Wilderness Quality Standard Audit

Nationalpark® Hohe Tauern

EUROPEAN WILDERNESS SOCIETY

2016

WILDERNESS CERTIFICATE

The European Wilderness Society certifies that the

HOHE TAUERN WILDERNESS

AUSTRIA

with 8.465,58 ha is complying with the GOLD European Wilderness Quality Standard and is registered in the European Wilderness Preservation System

valid until 01.10.2025

Max A.E. Rossberg
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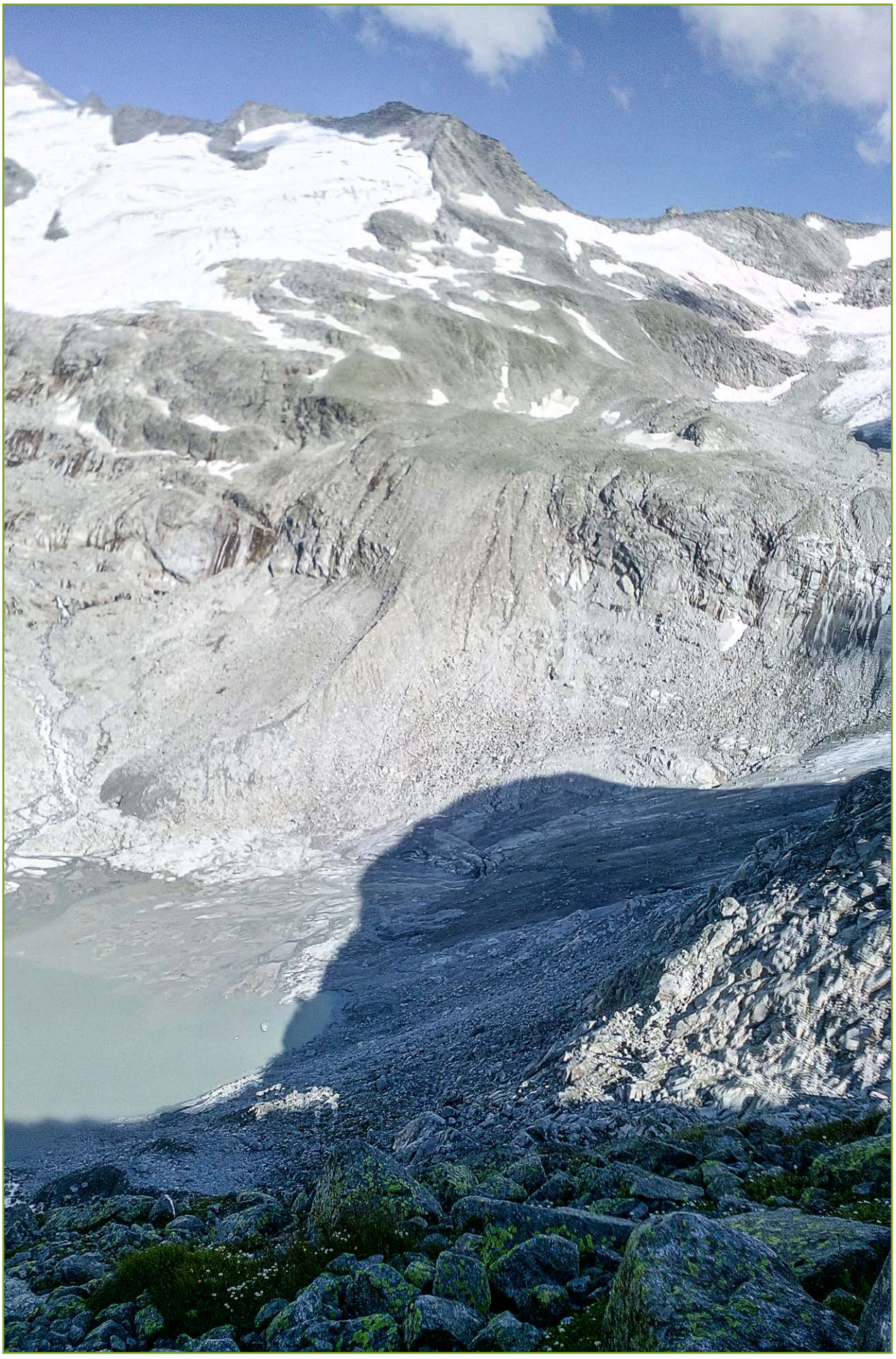


1. Executive summary

Wilderness represents a vital part of Europe's natural and cultural heritage. In addition to its intrinsic value, it offers the opportunity for people to experience the spiritual quality of nature in the widest experiential sense – beyond mere physical and visual attributes and in particular its psychological impact. Wilderness also provides important economic, social and environmental benefits, including ecosystem services.

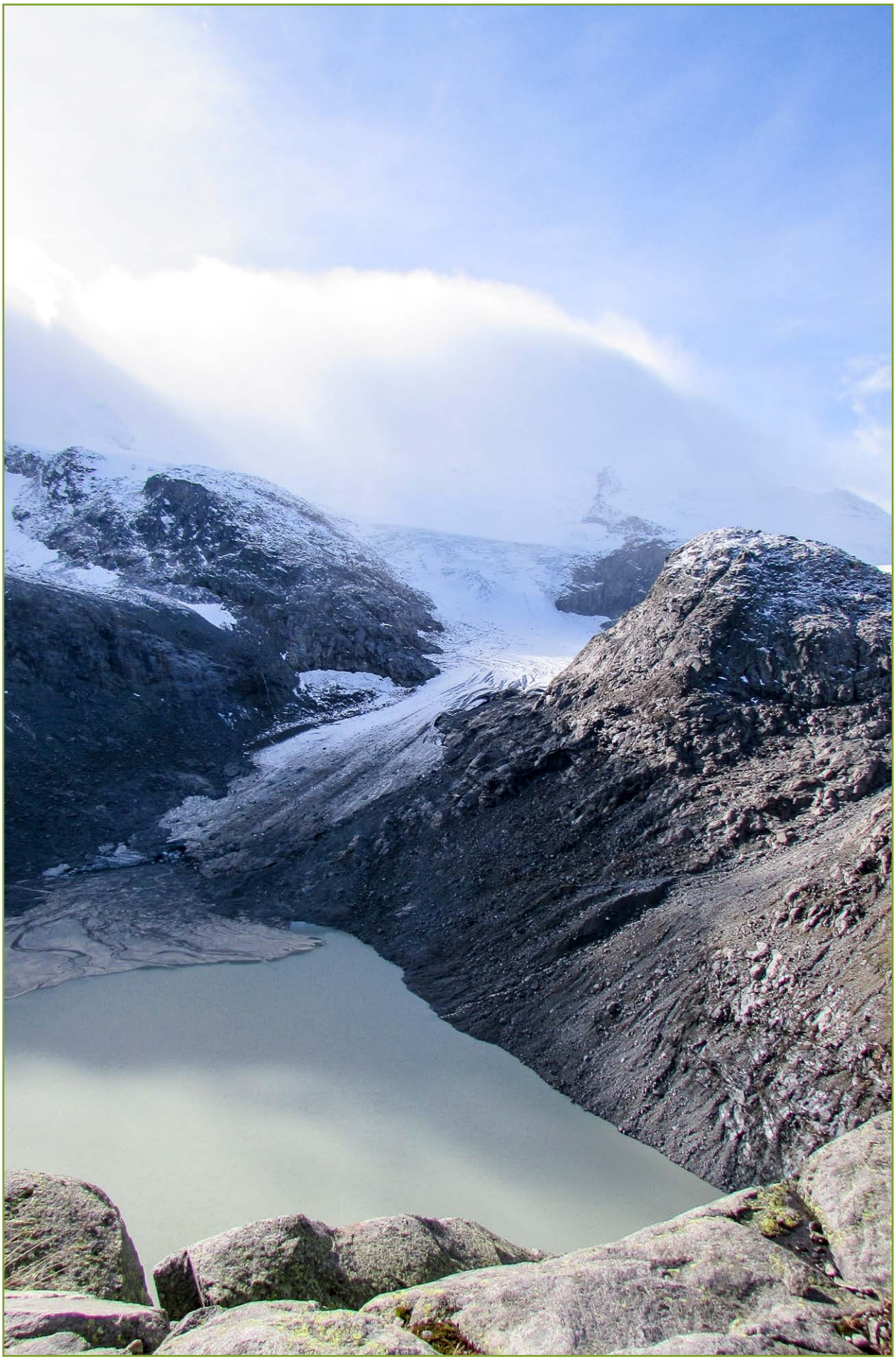
The European Wilderness Society as a Pan-European, wilderness and environmental advocacy organisation has developed the European Wilderness Quality Standard and Audit System, a tool to identify, designate, manage and promote European wilderness in order to support wilderness and its protection.

The European Wilderness Quality Standard and Audit System serves as a basis for effective wilderness protection, designation, restoration, and promotion of wilderness across a range of geographical and political regions and different habitats in Europe. It provides an easily understood, unambiguous and practical wilderness benchmark system that can mobilize the necessary interest and support among practitioners across the key sectors of society.

The European Wilderness Quality Standard and Audit System is a mechanism which was used to assess quality of wilderness within the Nationalpark Hohe Tauern Salzburg. The establishment of a wilderness within the Nationalpark Hohe Tauern Salzburg is in response to a new Nationalpark strategy for Austria which aims to strengthen the wilderness character of their core areas.

The Nationalpark Hohe Tauern applied to be audited using the European Wilderness Quality Standard and Audit System. This audit lasted from February until August 2016 and included an extensive site assessment from 28 July until 6 August 2015. The result of the research, the site assessment and the data verification resulted in a list of 69 recommendations of different importance, all of which should be completed by 2020.

The newly designated Hohe Tauern Wilderness with its 8,465 ha complies all of the principles and criteria of the Gold Standard of the European Wilderness Quality Standard and Audit System and therefore becomes a full member of the European Wilderness Preservation System.



2. European Wilderness Quality Standard and Audit System

This European Wilderness Quality Standard and Audit System in the scientific context of current wilderness research chapter was written by Michael Huber & Michael Jungmeier (E.C.O. Institute of Ecology/University of Klagenfurt) February 2016

2.1. Introduction

Wilderness is a vital part of Europe's natural heritage. This is underpinned by an ongoing trend towards the designation of wilderness in Europe (e.g. the UNESCO World Heritage Site Primeval Beech Forests of the Carpathians and the Ancient Beech Forests of Germany (since 2011) or recent initiatives to promote wilderness (e.g. Wild Europe Initiative, European Wilderness Society, PANParks etc., Martin et al. 2008).

The trend towards wilderness conservation and promotion raises certain questions about what the term wilderness actually means in a European context. In Central European countries, no legislation comparable to the US Wilderness Act exists, which clearly defines wilderness as of a minimum area size, and designates places exclusively as such (Lupp et al. 2011). Although the term wilderness has long existed in various European languages, it is a rather new concept as a concept for nature conservation in Central Europe (Hintermann et al., 1995; Zunino, 2007). The German term Wildnis (wilderness) also has an associated meaning as something looking messy and untidy giving wilderness a rather negative meaning (Lupp et al. 2011). As no clear definition for this term seems to exist, misunderstandings may occur (Lupp et al. 2011). Murray (1968) even assumes that "Wilderness is what men think it is".

According to the US Wilderness Act (1964) wilderness, are "areas where the Earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain" (US Wilderness Act, 1964). It reflects a holistic approach, as well as preserving the capacity of the landscape to experience what the country was like when the first European settlers arrived (Lupp et al. 2011). The current definition for IUCN Category Ib (Wilderness Areas), defines wilderness as "usually large unmodified or slightly modified areas, retaining their natural character and influence, without permanent or significant human habitation, which are protected and managed so as to preserve their natural condition." (Dudley 2008). This definition of IUCN is strongly relying on the definition of the US Wilderness Act (Vicenzotti 2010).

However, after thousands of years of shaping European landscapes, this primeval imagination of wilderness is hardly achievable. It soon became apparent, that an individual definition of wilderness as a conservation concept in Europe was required to reflect the current natural and spatial conditions and the cultural context. Numerous authors acknowledge the difficulties in finding an appropriate definition as next to a conservation concept and a historic concept, wilderness is above all a cultural concept. Trommer (1997) calls the European wilderness mainly a cultural phenomenon being a contrast to civilization.

One man's wilderness is another's roadside picnic ground (Nash, 1982, P.1).

Lupp et al. (2011) observed that the wilderness discussion in Central Europe lacks a common physical and spatial definition and that this is also an indication for strong ethical and religious, educational and cultural motifs in the demand for wilderness. Thus, they conclude that wilderness more is a state of mind (Nash, 2001) or a mental construct (Vincenzotti and Trepl, 2009) (Lupp et al. 2011).

The European Wilderness Quality Standard and Audit System definition

As a reaction to the lack of a common European definition of wilderness, the Wilderness Working Group of the Wild Europe Initiative developed and generated the definition of European Wilderness and Wild Areas (Wild Europe Initiative 2013), which builds on the definition of the existing IUCN Category IB. According to the definition, wilderness and wild areas are defined as follows:

> *"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."*

> *"Wild areas have a high level of predominance of natural process and natural habitat. They tend to be individually smaller and more fragmented than wilderness, although they often cover extensive tracts. The condition of their natural habitat, processes and relevant species is however often partially or substantially modified by human activities such as livestock herding, hunting, fishing, forestry, sport activities or general imprint of human artefacts."*

The definition of wilderness by the Wild Europe Initiative is used for the European Guidelines on Management of Wilderness and Wild Areas in the Natura 2000 Network (European Commision, Kun European Wilderness Society 2013) and in the European Commission Wilderness Register.

The understanding of wilderness as a basis for the European Wilderness Quality Standard and Audit System is rather close to the definition as provided by the US Wilderness Act (1964). It shares the same understanding of wilderness, but accepts a certain extent of modification. The introduction of so called wild areas can be considered as a concession to a European context. However, the definition does not address the issue of wilderness as a state

of mind (Nash 1982, Nash 2001) or as a cultural concept (Stremlow & Sidler, 2002, Trommer 1997; Vicenzotti & Trepl 2009).

Hoheisel et al. (2010) claims that wilderness is not a feature that can be described in natural scientific terms only, but needs a more sociocultural approach. As not only the European Wilderness Initiative and the European Wilderness Society, but also the European Commission adopted this definition in their guideline, this could be as well a first step towards a shared set of common features of wilderness and thus building a foundation for a common European understanding of wilderness.

According to the definition, the European Wilderness Quality Standard and Audit System is based on the following key issues describing wilderness:

- **Governed by natural processes:** This is considered a basic principle and is in line with the understanding of wilderness as proposed by IUCN Cat Ia or Ib, to a certain extent even with IUCN Cat II. Nationalparks which have the priority objective to allow for dynamic processes on a large scale (Dudley 2008). It is also congruent with the US American definition of wilderness.

- **The presence of native habitats and species.** This explicitly includes species and habitats that are native to a certain place, which excludes (heavily) degraded habitats and neobiota species.

- **Sufficient size to ensure the effective functioning of natural processes:** This acknowledges that a certain size is needed to allow for undisturbed and dynamic natural processes. However, minimum sizes are hard to define and depend on the type of habitats.

- **Unmodified or slightly modified area:** This focuses on areas, which have been mostly exempt from human modification in the past. This also means that heavily modified areas cannot be considered wilderness at least on a medium perspective. However, a definition of slightly modified is yet to be provided.

- **Exempt from intrusive or extractive human activity or impact**: This clearly defines wilderness as areas, where no current human activity or impact occurs irrespectively of the time since it has been exempt from any use.

- **Visual disturbance:** This relates to a specific impact of humans by means of a built environment and infrastructures which disturb the unspoilt character of a wilderness. However, this closely relates to the recreational aspect of wilderness, as it might be people who consider a disturbance a disturbance.

This definition is the basis for the European Wilderness Quality Standard and Audit System, its principles, criteria and indicators, which are supposed to further specify the above mentioned aspects of wilderness. Additional thresholds and further specification of definitions

is part of the ongoing development of the European Wilderness Quality Standard and Audit System.

Similarly, as discussed in Aplet et al. (2000), there is a differentiation between wilderness, which has a strict and narrow definition, and so called wild areas (or wild lands in Aplet et al. 2000), which can be found in any landscape at any scale and have an intermediary character when referring to the Wilderness Continuum as proposed by Lesslie & Taylor (1985). Consequently, wilderness or wild areas can be found at the more natural and least developed end of an environmental modification spectrum. Thus, by including the definition of wild areas it is being acknowledged that there is not a fixed threshold which defines wilderness, but a continuum which changes over time. This is also acknowledged by Ceasu et al. (2015), who consider rewilding of abandoned farmland in order to create room for increased wilderness experiences and a more extensive and self-regulating ecosystem as a viable option within the wilderness discussion.

EQWA makes the claim to locate the current status on the Wilderness Continuum by assessing a number of criteria and indicators. However, Orsi et al. (2013) point out the problem to locate the point, along the continuum, beyond which there is wilderness as this decision is affected by individual perceptions. Comber et al. (2010) even assume that the majority of wildness studies still seem largely arbitrary, leading to results that reflect the viewpoint of a group of scientists and stakeholders (e.g. managers, NGOs). Some authors even argue that past landscape modifications by human populations and pervasive human impacts across scales make the idea of wilderness particularly in Europe inconsequential (Heckenberger et al. 2003).

This makes clear that the European Wilderness Quality Standard and Audit System operates in a rather dynamic new area, which demands absolute transparency and well defined criteria and thresholds, even more as there is most fundamental discussion going on and criteria and thresholds are not yet agreed on by the research community. The work of the European Wilderness Society thus constantly works on developing, defining and refining thresholds to test them in practice.

Definition of natural processes

All definitions of wilderness somehow relate to so called natural processes. Thus, in order to assess wilderness, an appropriate definition of which processes are included is required. A comprehensive overview and definition has been prepared by Wild Europe (2012). This is particularly interesting as it allows for a more comprehensive understanding of the definition used by the European Wilderness Quality Standard and Audit System. According to Wild Europe (2012) natural processes comprise:

Abiotic factors (Wind, water, fire, avalanches, geology and climate)

Biotic factors are comprised of

- Wildlife (Trophic levels, population dynamics, migration, prey-predator relationships etc.)
- Habitats and flora (Natural succession, ecotone functioning, habitat mosaics, reproduction and population dynamics etc.)
- Natural cycles (Sequestration and storage, availability of biomass, nitrogen etc.)

Furthermore, scale plays a prominent role as it is necessary to allow the full range of processes with a special focus on space for abiotic processes and on metapopulations. Further key principles of Wild Europe (2012) for the functioning of natural processes refer to self-sustained processes, which are free from external influences and show the highest species variability and broadest age structure.

2.2. Assessment of wilderness – current approaches

Lupp et al. (2011) carried out a comprehensive analysis of the current state of wilderness research and concluded that, even quite theoretical work has been carried out so far in a European context, but that concrete, empirical research is still lacking. Theoretical research has not yet been fully tested the ground, makes it rather challenging to elaborate a system to assess the quality of a wilderness, but also makes the European Wilderness Quality Standard and Audit System one of the few efforts to standardize and put theoretical work in practice.

Even though, the conservation of wilderness is an objective target that is socially desired and a main task of protected areas (Machado 2004; Mittermeier et al. 2003), there is no generally applicable method for recording and assessing this value (Mayrhofer et al. 2015).

The following section provides a brief overview about the various efforts to structure, conceptualize and assess wilderness with a specific focus on a European context:

The dimensions of wilderness

Ceausu et al. (2015) provide a comprehensive overview of current approaches. They consider wilderness a multidimensional concept that has developed from an aesthetic idea towards a science- based approach. According to them, a wilderness assessment should at least capture a subjective, human experience as well as an ecological dimension of minimally impacted ecosystems. Some of the main currently used conservation approaches regarding wilderness consider wilderness from a rather strict point of view focusing on the degree of human presence, biophysical aspects of natural processes, ecological communities and ecosystems that develop in the absence of human management (Brooks et al. 2006, Kalamandeen and Gillson 2007).

The qualities of wilderness

When it comes to assess the quality of wilderness, the question raises, which qualities comprise wilderness. A number of approaches and definitions from the American context, such as a minimum size of 5000 acres (2000 ha), or the possibility to hike for several days without finding traces of human use are not very well suited for Central Europe. (Lupp et al. 2011). The European Commission (2013) requires that any evaluation of the effectiveness of protected areas for the conservation and development of wilderness needs to address the four qualities of wilderness: a) naturalness, b) undisturbedness, c) undevelopedness and d) scale. In varying terms with similar meanings all assessments refer to these dimensions (e.g. remoteness (Mackey et al. 1998 and Mayerhofer et al. 2015); solitude (Aplet et al. 2000)). Some authors also refer to trophic chains by looking at the spatial occurrence of megafauna species such as apex predators, large herbivores or birds of prey (Ceausu et al. 2015). Furthermore, human impact such as land-use, pollution (Aplet et al. 2000) or artificial light (Ceausu et al. 2015) and human infrastructures such as roads, buildings or settlements, natural composition, uncontrolled processes, unaltered structures and many more are used as proxies to describe the wilderness quality. In other approaches the term untrammelled (U.S. Wilderness Act 1964, BLM 2010) is also used. Initial efforts to include the documentation and monitoring of natural processes have been undertaken by Jungmeier et al. (2015).

There are several GIS-based studies which measure wilderness on the basis of wilderness quality on a regional, national or even global scale by using varying combinations of the above mentioned qualities (Orsi et al. 2013; Plutzar et al. 2013; Carver et al. 2011; Fischer et al. 2010; Fritz et al. 2000; McCloskey & Spalding 1989; Mayrhofer et al. 2015).

Reif (2013), who reflected the operationalization of wilderness targets in Germany, proposes five qualities namely (1) Size, representing the completeness of processes, states, and species composition, (2) habitat continuity, (3) Rareness and endangerment, (4) connectivity and absence of fragmentation and (5) representativeness.

Kuiters et al. (2013) made a comprehensive effort to identify wilderness in Europe and implement a European Wilderness Register by adhering to the four wilderness qualities. Their analysis included zonation, size of the core zone, extent of management measures and interferences as well settlements, road infrastructure and access, extractive uses and management aspects such as wildlife management.

In general, there seems to be a trend towards the use of at least the four qualities of wilderness as also defined by the European Commission (2013). Consequently, the following section makes an effort to further specify these dimensions and the current state of debate.

Naturalness

According to the European Wilderness Guidelines, the quality Naturalness includes naturalness of vegetation, naturalness of the occurring species and naturalness of the natural processes (EU Commision 2013). However, there is substantial discussion about how to measure naturalness. Some authors even argue that past landscape modifications by human popula-

tions and pervasive human impacts across scales make the idea of wilderness particularly in Europe inconsequential (Heckenberger et al. 2003). This raises the question of the respective baseline against which naturalness is measured. In practice, traditional agricultural landscapes often have become the benchmark against which biodiversity change was measured (Papworth et al. 2009).

Most approaches make use of proxy indicators such as distance to roads or settlements as well as distance from patches of artificial / modified land cover (e. g. Orsi et al. 2013) due to a lack of spatial data on other indicators of naturalness. Several authors also describe naturalness by indicator species (Mayrhofer et al. 2015), by forest hemeroby (Mayrhofer et al. 2015, Grabherr et al. 1998) or by a comparison with the potential natural vegetation (Pnv, e.g. Bohn et al. 2000; Ceausu et al. 2015). This issue is addressed by the European Wilderness Quality Standard and Audit System by the principle Natural process and Biodiversity and its related criteria.

Undisturbedness

According to the EU Commission's definition (2013), undisturbedness refers to an administrative, statutory or legislative measure. A wilderness should be free from modern human control or manipulation. While existing human interventions like infrastructure and land uses are assessed in the categories of naturalness and undevelopedness, regulations with regards to human interactions in the given area are considered main criteria to assess undisturbedness (Mayrhofer et al. 2015). This can be ensured by regulations, legal provisions, management plans or an appropriate zonation system, which should provide a frame to minimize possible disturbances. Some authors also consider stand age of forests as appropriate indicator to assess the degree of undisturbedness from a historical point of view (Mayrhofer et al. 2015).

Undevelopedness

The quality of undevelopedness can be measured by number of or distance to settlements or other human artefacts (Plutzar et al. 2013; Orsi et al. 2013; Tricker et al. 2012). Tracks that allow motorized vehicles increase the potential for modifying the environment and are considered human artefacts. Evaluating undevelopedness could be based on an analysis of length and density of the road network (Mayrhofer et al. 2015). Orsi et al. (2013) define solitude as an important factor for the perception of wilderness by visitors and have used the probability of meeting other visitors by length and visitor frequency on footpaths. Aplet et al. (2000) took population density as an indicator for solitude.

Scale

From an ecological point of view, it can be argued that a wilderness should meet minimum size features (i.e. large enough for the effective ecological functioning of natural processes). The spatial scale needed for maintaining the ecological integrity of a natural area determines its minimum size (i.e. scale needed for undisturbed natural ecological processes and viable species populations). This largely depends on the ecosystem types involved (Kuiters et al. 2013). Thus, IUCN does not give standardized minimum sizes for wilderness as long as it is

ensured that areas are large enough for an effective ecological functioning of natural processes without intrusive or extractive human activity (European Commission 2013). Thus, this also includes core zones of Nationalparks (IUCN Category II) which allow for dynamic processes on a large scale (Dudley 2008). The Swedish Environmental Protection Agency (SEPA), has further specified standards for IUCN Ib wilderness to 1000 ha in Northern, and 500 ha in Southern Sweden (Kuiters et al. 2013), following a similar definition as Finland (1000 ha; European Commission 2013). The US Wilderness Act (1964) generally considers about 2000 ha as an appropriate minimum size. The European Wilderness Register adopted a minimum threshold value for wilderness core zones of at least 3.000 hectares (Kuiters et al. 2013). Other initiatives even define minimum areas up to 10.000 ha (PANParks 2009).

Given the variety of minimum sizes, the frequent absence of minimum areas and the numerous attempts to provide definitions for a minimum size of wilderness in Europe show that primarily values and perspectives are important in defining thresholds.

Scale is not only important from an ecological point of view but it can also be defined by anthropogenic factors. A certain size may be necessary to enable the protection of whole landscapes. This is important as people spiritually identify with wilderness and feel emotionally bound to certain landscape features. The size of the area often determines the perception of 'wildness', i.e. if a visitor can experience solitude, wholeness and other spiritual experiences. The issue of sufficient size must be considered with reference to the surrounding landscape as the quality of the surrounding landscape determines the ecological connectivity and the functioning of the ecosystems in the core area. The surrounding landscape also influences how the visitors experience the area. Therefore, wilderness is often related to remoteness, although it is not a strict prerequisite (European Commission 2013).

Categories of Wilderness

Lupp et al. (2011) analyzed the current discussion regarding approaches to determine various types of wilderness (e.g. by Diemer et al. 2003), who proposes four designations based on spatial extents (Nationalparks (>1000ha), Urban Wilderness (<1000ha close to cities), Urban or Rural Rewildering Sites (<500ha) and Rewildering Microcosms (several hectares).

The wilderness continuum assesses wilderness quality in relation to the degree of modification as well as in relation to the degree of freedom to develop without human interference. Similarly, Aplet et al. (2000) describe five different types of wilderness depending on the degree of naturalness and freedom.

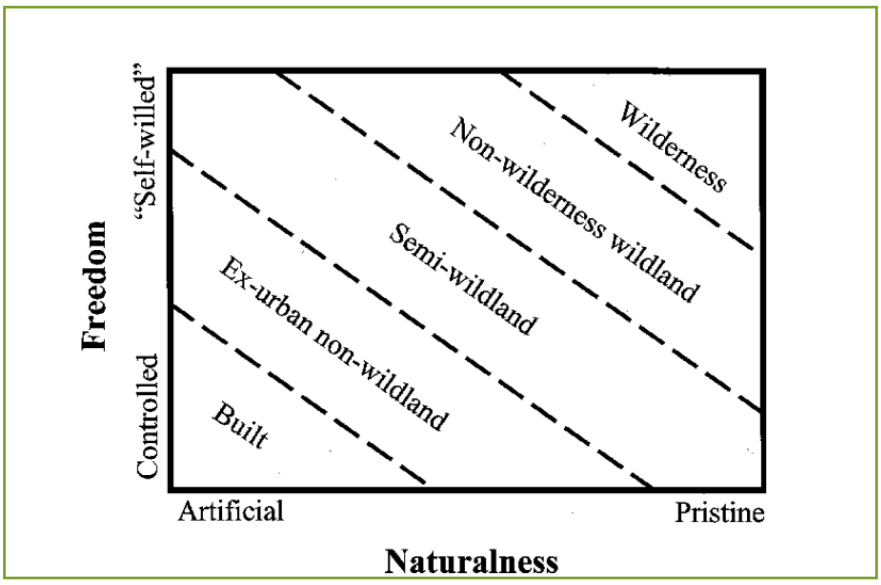


Fig. 1: The „continuum of wildness" with increasing wildness as a function of naturalness and freedom from human control.

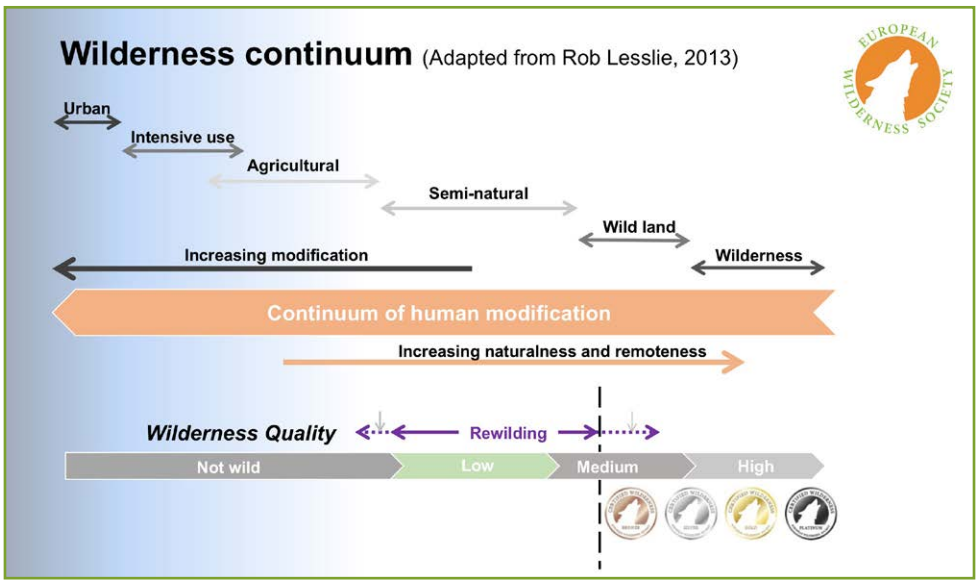


Fig. 2: The wilderness continuum as a basis for the European Wilderness Quality Standard and Audit System.

Considering the figures showing the wilderness continuum, the question raises how they relate to the European Wilderness Quality Standard and Audit System and how they are or could be operationalized.

The classification of Aplet et al. (2000) offers an attractive two-dimensional model. The assessment of self-will or control is rather easy to operationalize by referring to existing regulations, eventual zoning and management plans. However, the second key dimension, naturalness, is widely considered a core dimension for wilderness, but raises a number of questions yet to be answered. How can a pristine environment be characterized? How to define thresholds for naturalness? Several studies have addressed this issue (as indicated further above)

using proxies such as hemeroby, potential natural vegetation, indicator species or even just the absence of human infrastructure.

If considering a comprehensive assessment of wilderness, a further issue needs to be considered: Where to draw the baseline? How to define understandable thresholds? The location of the different types or labels of wilderness on this matrix is a key challenge for research. Orsi et al. (2013) point out the problem to locate the point, along the continuum, beyond which there is wilderness as this decision is affected by individual perceptions.

Wilderness Categories and minimum size

There are four categories of wilderness zones; each category defines a specific wilderness quality standard with a focus on its wilderness values. Wilderness should have a wilderness zone with the following sizes:

- Bronze wilderness – at least 1,000 ha (500 ha for specific habitats such as raised bogs, floodplains, etc.).
- Silver wilderness – at least 2,000 ha.
- Gold wilderness – at least 3,000 ha. This category represents the minimum size recommended by the former Working Definition of European Wilderness and Wild Areas.
- Platinum wilderness – at least 10,000 ha. This category represents the highest achievable level in the wilderness continuum.

Fig. 3: Bronze-, Silver-, Gold and Platinum Wilderness-Categories, European Wilderness Quality Standard and Audit System

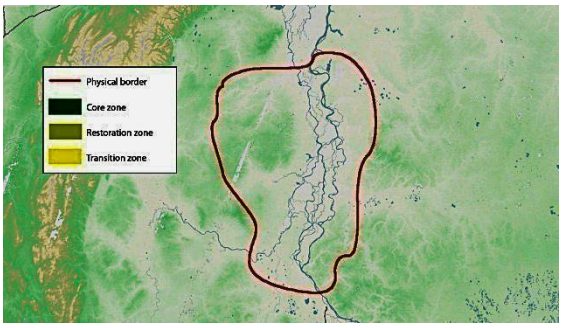
Step Approach to Certification along the Wilderness Continuum

A potential wilderness generally has a defined boundary as a result of mapping in addition to a vision for the area. Based on this vision, several steps take place; an initial examination of the area, workshops with the management team and an analysis of available and relevant research and management plans. After which the area becomes designated as a the European Wilderness Quality Standard and Audit System Candidate. During the following two years, various actions take place, such as the creation of a management plan for invasive species, fire control management plan and a restoration plan in order to prepare the area for an audit.

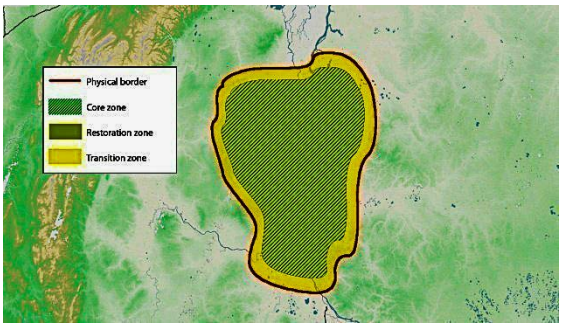
Fig. 4: The manager of a potential wilderness proposes a wilderness with a clearly defined boundary.

After two years, the area will be examined according to the indicators resulting in a SWOT analysis. Based on the results of this audit System, a management plan would be developed for the wilderness, followed by the awarding of a wilderness category.

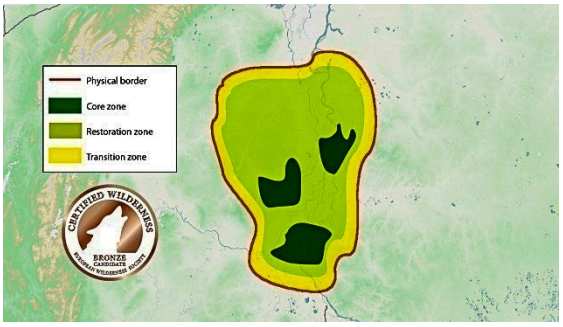
The wilderness zone would gradually be enlarged in order to reach a maximum extent. The progress of restoration defines which wilderness category would be assigned.



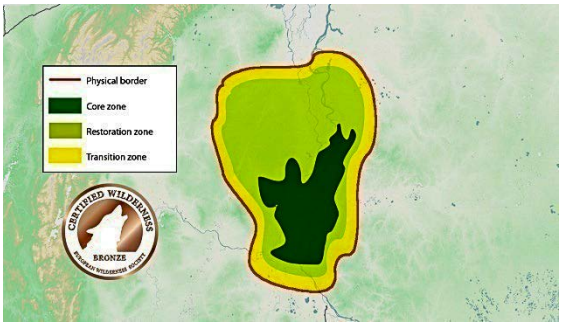
Step 1: *Selection of the area is based on wilderness quality mapping, giving it a physical boundary.*



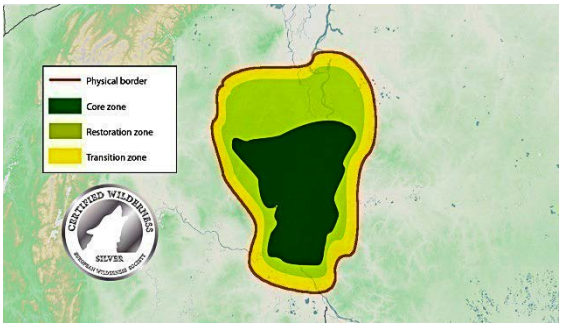
Step 2: *Development of a vision for wilderness.*



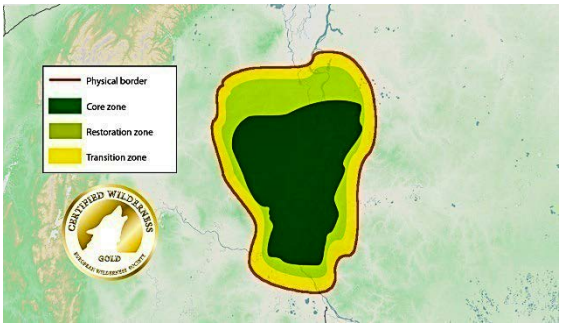
Step 3: *Area receives candidate status, followed by a wilderness audit over the next two years, utilizing the European Wilderness Quality Standard and Audit System.*



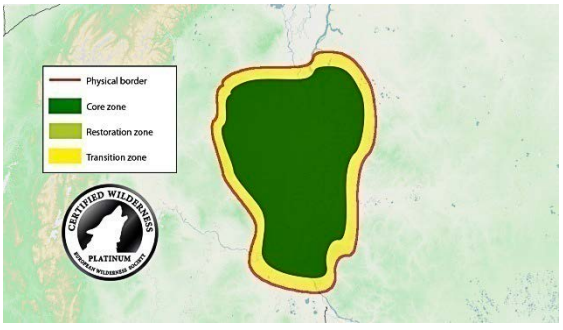
Step 4: *Based upon the results of the European Wilderness Quality Standard and Audit System audit, a management plan is created as well as a wilderness restoration plan. The area is given an appropriate certified wilderness category.*



Step 5: *Restoration in the restoration zone leads to non-intervention wilderness zone of more than 2,000 ha. The area is given Silver certification.*



Step 6: *Progressive restoration leads to non-invention wilderness zone reaching 3,000 ha and given Gold certification*



Step 7: *The restoration of wilderness is complete.*

The European Wilderness Quality Standard and Audit System approach: Methodology

The European Wilderness Society developed the European Wilderness Quality Standard and Audit System (European Wilderness Society 2015) to provide a common European wilderness certification standard which is following the common accepted "Definition for European wilderness and wild areas" developed by the Wild Europe initiative (Wild Europe 2012).

The European Wilderness Quality Standard and Audit System is based on over 500 indicators assigned nine principles. Each area is assigned one of the four categories forming the proposed wilderness preservation system: bronze, silver, gold or platinum. The European Wilderness Society puts a lot of effort into the discussion and further development of the European Wilderness Quality Standard and Audit System and thresholds for its indicators in order to provide a comprehensive tool for operationalizing the theoretical discussion. The European Wilderness Quality Standard and Audit System understands principles as the fundamental statements about a desired outcome. Criteria are the conditions that need to be met in order to comply with a principle. Indicators are the measurable states which allow the assessment of whether or not a particular criterion has been met.

Areas of platinum or gold category are regarded as wilderness, while those of bronze or silver are wild areas. A wild area can evolve into a wilderness over a long term process as also considered in the wilderness continuum approach (Lesslie & Taylor 1985). For general communication purposes and easy understanding, the European Wilderness Society applies the term wilderness for all categories irrespective of the actual category.

The nine European Wilderness Quality Standard and Audit System principles

The European Wilderness Quality Standard and Audit System is based on 9 principles, which are as follows (in order of their appearance in the European Wilderness Quality Standard and Audit System guideline):

- **Wilderness Size and Zoning:** Wilderness certified under the European Wilderness Quality Standard and Audit System should have three zones, the wilderness zone surrounded by a restoration zone, surrounded by a transition zone. This threefold structure is considered the best protection for key wilderness principles while allowing the potential for expansion and flexible interaction with other land uses.

- **Natural processes and biodiversity:** (In general) a wilderness or wild area should have a core zone where natural processes maintain natural dynamics in biodiversity, contributes to the conservation of wilderness indicative species and contains examples of undisturbed ecosystems.

- **Wilderness Management Plan:** This plan encompasses the different Wilderness conservation measures, a biodiversity management plan, and a plan for supporting the natural processes, a landscape management and the training of the responsible wilderness management team. This principle also covers the impact of visitor management.

- **Wilderness Restoration:** In general, a plan must be in place for all Bronze- and Silver Standard areas to restore wilderness with the focus on low human intervention. In the Gold-and Platinum Standard areas, wilderness restoration is typically implemented in the buffer zone for later expansion.

- **Wilderness and Extractive Uses:** Gold- and Platinum Standard Level areas should not have any human extractive use. At the Bronze- and Silver Standard Level a phase out plan for extractive use should be put into place. Also covered under this principle are fire control, disease control, and invasive species control. The core zone should not have any human extractive use or human intervention, not even fire control, disease control, wildlife management or invasive species control. For restoration purposes, some management interventions might still be permitted at the Bronze- and Silver Standard-levels especially, but only under very strict regulations and after close scrutiny of their necessity.

- **Wilderness Disturbance:** Here the focus lies on the removal of infrastructure, well-planned tourism access and strictly regulated and limited access to the area, in order to secure minimum impact on the wilderness core zones.

- **Control strategy for fire, invasive species, and natural catastrophes:** In general, a wilderness or wild area should have a fire control plan, a disease control plan and an invasive species control plan. Here the focus lies on the core zone without any active management measures to control fire, disease and an invasive species.

- **Wilderness Research and Monitoring:** Research and monitoring activities should generally be zero-impact in their character and observe minimum-intervention principles. This requires a detailed plan for scientific research and cooperation with scientific institutions and universities regardless of the European Wilderness Quality Standard and Audit System level.

- **International Relevance:** The audit of the international relevance focuses mainly on the IUCN categories, Natura 2000 Network, UNESCO designations but also accepts other certifications.

Given the structure and content, it becomes clear that a wide range of issues of wilderness is covered by the European Wilderness Quality Standard and Audit System approach. The principles related Wilderness Management Plan, to Wilderness Research and Monitoring as well as International relevance, furthermore indicate the presence of an additional dimension referring to a management quality. (see page 18).

Table 1: The dimensions of Wilderness and the European Wilderness Quality Standard and Audit System.

	Dimensions of Wilderness				
European Wilderness Quality Standard and Audit System Principles	Naturalness	Undisturbedness	Undevelopedness	Scale	Management
Wilderness Size and Zoning				√	
Natural processes and biodiversity	√				
Wilderness Management Plan					√
Wilderness Restoration					√
Wilderness and Extractive Uses	√				
Wilderness Disturbance		√	√		
Control strategy for fire, invasive species, and natural catastrophes		√			
Wilderness Research and Monitoring					√
International Relevance					√

These general principles or qualities seem to adequately reflect the wilderness qualities as defined by the European Commission (2013) without referring to the specific criteria or indicators.

However, this leaves three principles, which provide additional qualities going beyond the current wilderness debate. This comprises mainly the principles of Wilderness Restoration, Wilderness Research and Monitoring and International Relevance. Based on these principles, the European Wilderness Quality Standard and Audit System covers two key dimensions:

- The quality of wilderness (the current state of biodiversity, natural processes, existing infrastructures, visitors, eventual uses and disturbances)

- The quality of the wilderness management (existence of plans, regulations, organizational settings, guidelines how to deal with certain issues etc.)

Thus, the European Wilderness Quality Standard and Audit System gives not only an assessment of the current quality of wilderness, but also about the current quality and standard of the authority responsible to manage the respective wilderness. This could be a major additional value of the European Wilderness Quality Standard and Audit System subject to the condition that the related indicators cover all relevant aspects. However, the indicators are not subject of the present review.

The principle international relevance aims to describe the wilderness and its importance within the international conservation network as it assesses whether the area is recognized by IUCN or similar organizations, whether it is part of the Natura 2000 network and if endangered species or habitats are protected by the wilderness. Furthermore, it serves a proxy indicator by assessing whether the management is able to comply with international requirements.

Conclusions and Perspectives

The current essay reflects the concept of the European Wilderness Quality Standard and Audit System in the light of the current wilderness research. Apparently, there is no other such assessment available even though there are numerous ongoing research activities aiming to assess wilderness. Most of the research has either a focus on theoretical reflection of the concept wilderness or is strictly case-study based.

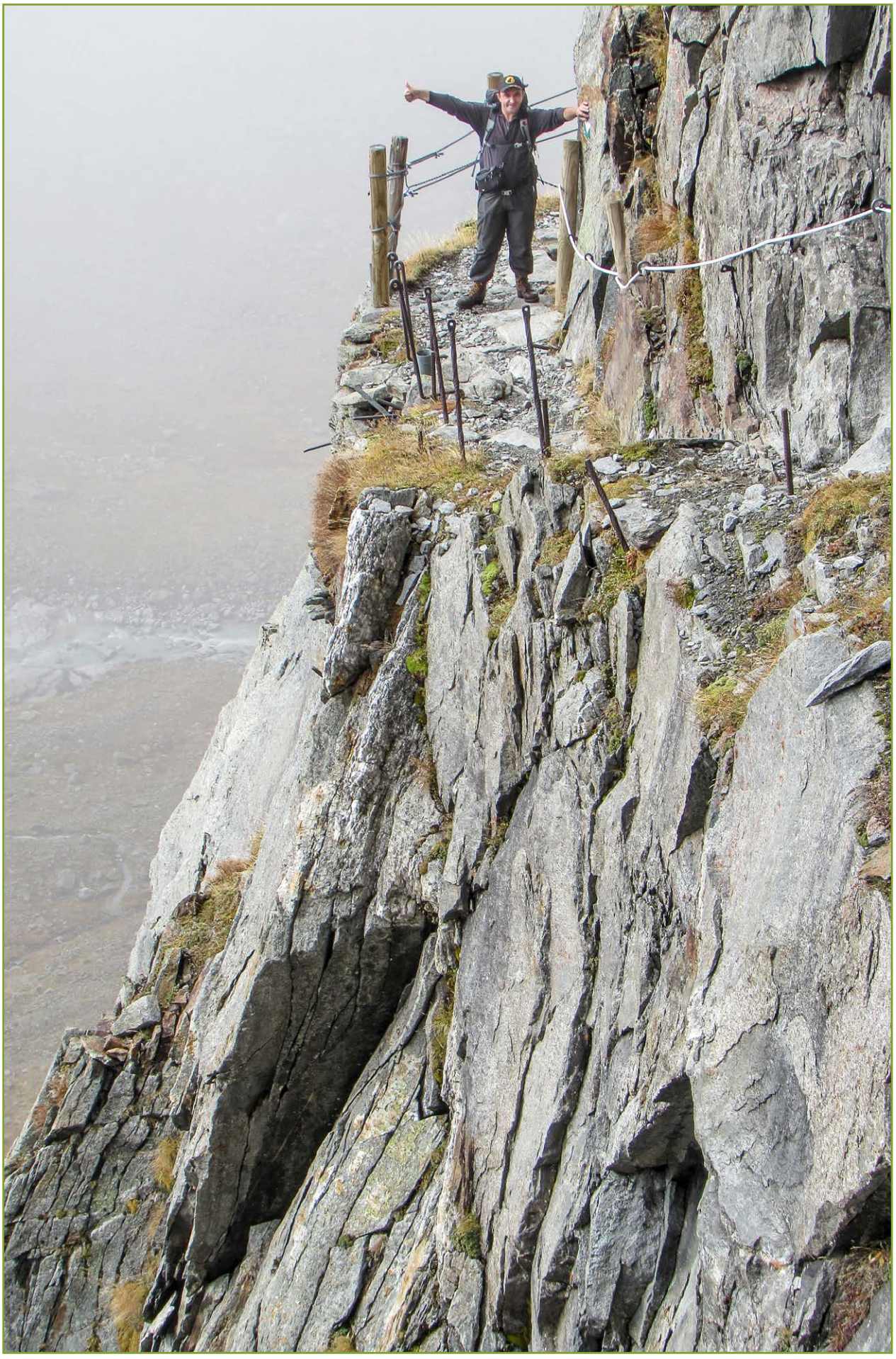
The approach of the European Wilderness Quality Standard and Audit System is not primarily focusing on theoretical reflection, but is a well-elaborated effort for a practical and pragmatic assessment summarized in a process-oriented tool for a reproducible assessment of wilderness. The approach applied to assess wilderness is well covered by the existing criteria and principles. It also includes the 4 qualities of wilderness as defined by the European Commission (2013).

However, further efforts should focus on the definition and evaluation of further thresholds and on an intensive discussion on the key issue of naturalness. Several authors provide viable approaches (e.g. hemeroby or potential natural vegetation) also applicable on larger scales to contribute to an assessment of naturalness going beyond proxies such as the absence of human traces or infrastructures. The authors recommend to strengthen the issue of naturalness as it is considered a key dimension of wilderness by science.

The approach to build on the wilderness continuum is viable and appropriate from a scientific point of view and provides a sound framework. Further efforts integrate this concept into the European Wilderness Quality Standard and Audit System methodology and to further specify thresholds are currently being discussed by the European Wilderness Society. Results are to be included by the next update of the European Wilderness Quality Standard and Audit System methodology. This will strengthen the credibility and transparency of the assessment as well as of the criteria applied to reach a certain label. Regarding the structure, it is recommended to strictly separate the management perspective and the wilderness quality principles as this will make the structure more comprehensible and will further emphasize one of the strengths of the European Wilderness Quality Standard and Audit System namely bringing together quality and management.

The European Wilderness Quality Standard and Audit System makes the claim to locate the current status on this Wilderness Continuum by assessing a number of criteria and indicators. However, Orsi et al. (2013) and Comber et al. (2010) point out the problem to locate the point, along the continuum, beyond which there is wilderness as this decision is affected by individual perceptions that reflect the viewpoint of a group of scientists and stakeholders (e.g. managers, NGOs).

The approach of the European Wilderness Quality Standard and Audit System and its application across Europe will provide relevant contributions to the ongoing discussion about comparable and reproducible assessments of wilderness to fill the gap outlined by Comber et al. (2010) and Heckenberger et al (2003). It is an elaborate effort integrate the theoretical academic approaches and case studies into a common framework, which is tested and adapted on site. Furthermore, it constantly explores the limits between academic wilderness concepts and their implementation in practice.



3. Wilderness

3.1. Value of the European Wilderness

Wilderness represents a vital element of Europe's natural and cultural heritage. In addition to its intrinsic value, it offers the opportunity for people to experience the spiritual quality of nature in the widest experiential sense – beyond mere physical and visual attributes, and in particular its psychological impact.

European wilderness also provides important economic, social and environmental benefits, including ecosystem services, for local communities, landholders and society at large.

3.2. Wilderness functions

Wilderness performs several functions more efficiently than in modified landscapes. Among these are:

- Conserving natural processes,
- Securing evolutionary genetic potential,
- Conserving biodiversity, especially large herbivores, top predators and scavenger communities,
- Protecting essential ecosystem services,
- Connecting landscapes,
- Capturing and storing carbon dioxide,
- Building scientific knowledge and understanding of natural processes,
- Inspiring people.

3.3. Wilderness in Europe

The wilderness concept has gained considerable momentum during the last 15 years. A milestone occurred when the European Parliament Resolution on Wilderness in Europe[1] was adopted in 2009. In brief it states that the European Commission must:

- Develop a clear definition of wilderness,
- mandate that the European Environment Agency and other relevant European bodies map the last wilderness' in Europe,
- undertake a study on the values and benefits of wilderness protection,
- develop an wilderness strategy,
- expand wilderness and manage rewilding areas,
- promote the values of wilderness and launch information campaigns to raise awareness about wilderness and its significance, working together with NGOs & local communities.

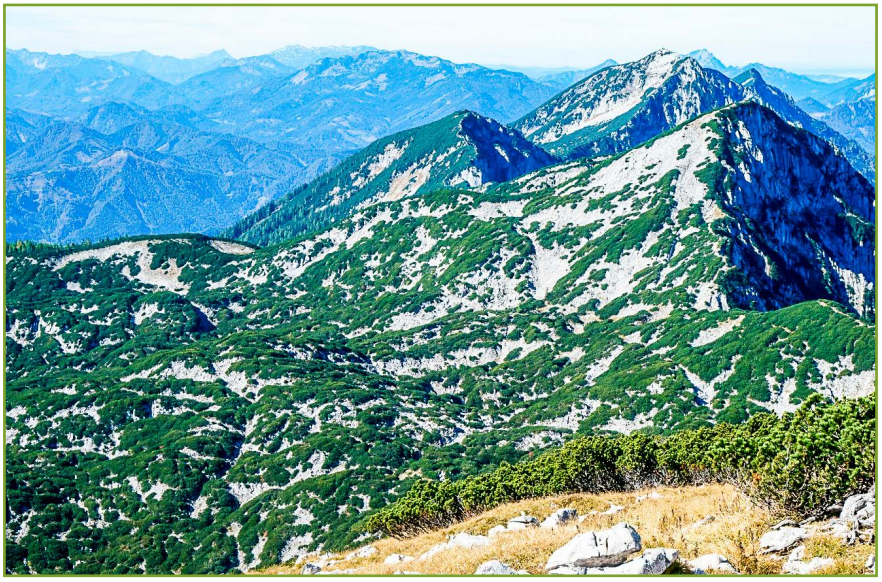


Fig. 6: The wilderness concept has gained considerable momentum in Europe during the last 15 years

3.4. European Wilderness Society

The European Wilderness Society is a Pan-European, wilderness and environmental advocacy organization whose mission is to identify, designate, manage and promote European wilderness in order to support their long-term existence and further development and restoration. The European Wilderness Society is an international organisation with 18 years of experience with wilderness conservation in Europe. The European Wilderness Society is a member of a number of European organization such as Wild Europe, UNEP, UNESCO, etc. The European Wilderness Society is also the key partner in the process of developing the European wilderness definition, the European Wilderness Registry (2013), and the Guidelines on Wilderness in Natura 2000 (2013).

[1] *Wilderness in Europe. European Parliament resolution of 3 February 2009 on Wilderness in Europe (2008/2210(INI))*

3.5. European Wilderness Preservation System

Growing demand for more wilderness in Europe has led us to the creation of the European Wilderness Preservation System showcasing some of the finest wilderness in Europe. This system includes the best European wilderness sprinkled from the Mediterranean up to the Arctic Circle, from the Atlantic coast to the Ural Mountains! All members of the European Wilderness Preservation System have been verified according to the European Wilderness Quality Standard and Audit system, guaranteeing full compliance with a common set of wilderness principles, criteria and indicators.

Fig. 7: European Wilderness Preservation System 2016

4. Audit Team and itinerary

4.1. Audit Team

Mr. Vlado Vancura; Lead wilderness auditor
Field of expertise: Wilderness in Europe, wilderness management, wilderness and local stakeholders, wilderness and tourism use, and implementation of European Wilderness Quality Standard and Audit System

Max Rossberg; Legal auditor
Field of expertise: Management plans, visitor management, legislative framework and educational programmes

Verena Gruber; Wilderness auditor
Field of expertise: Wilderness and tourism use, implementation of European Wilderness Quality Standard and Audit System

Gudrun Pflüger; Lead biologist
Field of expertise: Flora and fauna, implementation of European Wilderness Quality Standard and Audit System

Bodo Rossberg; Report developement
Field of expertise: Report developement and layout

Karin Eckard; Lead editor
Field of expertise: Report editing

Fig. 8: The visiting group (from left to right). Vlado Vancura and Verena Gruber (Wilderness Verifiers), Wolfgang Urban, (Director Nationalpark Hohe Tauern Salzburg)

Host team

Astrid Rössler – Deputy Governor of Salzburg
Wolfgang Urban – Director of the Nationalpark Hohe Tauern Salzburg
Ferdinand Lainer – Deputy Director of the Nationalpark Hohe Tauern Salzburg

Park staff

Ferdinand Rieder – Head Ranger of the Nationalpark Hohe Tauern Salzburg
Kristine Bauch – Head of science and research
Kirchner Maria – Education and Visitor Information
Hochsommer Barbara – Geographic Information System
Gruber Bruno – Professional hunter
Homer Johannes – show mine interpretor
Mayer Brigitte – assistant
Veronika Mayer – Secretariat
Holz Alexander – Park Ranger
Muhr Hannes – Park Ranger
Hofer Herbert – Park Ranger
Heider Ekkehard – Park Ranger
Schmuck Herbert – Park Ranger

Fig. 9: Assessment of glaciated areas.

Accomodation Haus Rohregger

Sophia Rohregger (SR) – Manager of Haus Rohregger
Ernst Meschick (EM) – Warnsdorfer Hütte
Emil Widmann (EW) – Kürsinger Hütter

4.2. Verification itinerary

- Data collection: February - Jun 2015
- Site assessment: July - August 2015
- Data completion and verification: August - October 2015
- Preliminary report, writing, editing and presentation including consultation: November 2015 - February 2016
- Final report writing, editing and layout: February - July 2016
- Final report printing and presentation: August 2016

4.3. Site assessment itinerary

Tuesday 28 July

First meeting: Nationalpark Hohe Tauern Salzburg office in Mittersill with Nationalpark Direction Wolfgang Urban, Nationalpark Deputy Director Ferdinand Lainer and Kristine Bauch, head of science and research.

Set work programme and schedule for the verification, discussions on the European Wilderness Quality Standard and Audit System. Work done with the main management documents, maps, history and discussions about the vision of wilderness management, discussions about research in the wilderness, wilderness in the upcoming management plan, legal framework of the proposed wilderness, the relevance of wilderness in the current projects and work of the Nationalpark Hohe Tauern Salzburg, motivation to install a wilderness.

Wednesday 29 July

Fieldtrip to the Untersulzbach Valley.

Issues discussed: legal framework of the special protected area, property ownership and the history of the valley, habitats in the wilderness zone, traditional and current pasture/meadow management in the park and in wilderness zone, game-management and grazing rights.

Thursday Friday 30 - 31 July

Met in the office for final discussions about the following overnight field trip.
Start of field trip to the Krimmler Achen Valley in the afternoon.

Day 1: Overnight field trip to the Warnsdorfer Hütte in the Krimmler Achen-Valley.
Issues discussed: changing of the landscape due to natural processes (debris flows, floods and melting of the glaciers) and associated issues such as changing of trails and infrastructure around the wilderness.

Fig. 10: Climbing the long valleys was opportunity to discuss management of high alpine ecosystems in wilderness zone.

Day 2: Hike to Glacier Lake near the Warnsdorfer Hütte, Schlieferspitze, Krimmler Törl with a hike over the Obersulzbachkees and down to the Obersulzbach Valley.

Discussed issues: historic and current management of high alpine ecosystems in wilderness zone, grazing rights and game management in the wilderness zone, research and monitoring in the wilderness, traditional and current pasture/meadow management in the park, open questions concerning the final boundary of the wilderness.

Saturday – Sunday 1– 2 August

Overnight field trip to the Kürsinger Hütte in the Obersulzbach Valley.

Day 1: Glacier path and via ferrata up to the Kürsinger Hütte, exploring and assessing area around the cabin.

Issues discussed: Ongoing changes in landscape in the high alpine areas such as retreating glaciers, dynamism of glacier lakes (forming of new lakes), permafrost, impact of infrastructure in the surroundings of wilderness zone (Kürsinger Hütte, cable, power lines), tourism activities in the high alpine areas, interpretive trails (glacier trail).

Fig. 11: Glacier path and via ferrata led the verification team up to the top of Schlieferspitze.

Day 2: Work in Kürsinger Hütte on the European Wilderness Quality Standard and Audit System, Klammltrail from Kürsinger Hütte back to valley station of the cable car.

Issues discussed: tourism infrastructure, education and interpretation activities and revision of topics from the previous days

Monday – Tuesday 3 – 4 August

Overnight stay in the Untersulzbach Valley.

Day 1: visit of the old mine Hochfeld, used now as a tourism product, hike up to the Untersulzbach-glacier through the special protected area, setting up of campsite

Fig. 12: Overnight stay in the Untersulzbach-glacier region.

Day 2: hike back to the car, visit of the mineral museum in Bramberg

Discussed issues: tourism/visitor-management in the Nationalpark, processing of park's characteristics and history through interpretive trails and tourist sites such as the tourist mine, management and history of the special protected area, current and historic grazing, hunting and future plans for this area, research and monitoring approaches of the scientific board of the Nationalpark Hohe Tauern Salzburg, noise and light pollution, management of mineral-searching in the Nationalpark Hohe Tauern Salzburg, etc.

Wednesday 5 August

Field trip to Thüringer Hütte in the Habach valley, visit of the Ecological Footprint at the Nationalpark Hohe Tauern Salzburg "factory" in Hollersbach.

Issues discussed: Minerals and management of mineral searching, traditional and current pasture/meadow management, game management and grazing rights, habitats and boundaries of the wilderness, conflicts between conservation and tourism in addition to landowners, educational interpretation mandate of the Nationalpark Hohe Tauern Salzburg.

Thursday 6 August

Closing meeting in the Park Office in Mittersill, meeting with Deputy Governor of Salzburg Mrs. Astrid Rössler

Issues discussed: Summary of wilderness assessment in the Nationalpark Hohe Tauern Salzburg, future cooperation with other members of the European Wilderness Preservation System regarding knowledge exchange, research and monitoring, definition of wilderness, interpretation of wilderness in different languages, legal framework of wilderness in management plan of the Nationalpark Hohe Tauern Salzburg, and final size of wilderness.

5. Nationalpark Hohe Tauern Salzburg

5.1. Introduction

Hohe Tauern Wilderness is firmly imbedded in the Nationalpark Hohe Tauern Salzburg. It is large contiguous piece of wild land at the top of the Hohe Tauern Alps and it includes several important habitats types such as glaciers and permanent snow, rocks, boulders and scree, natural grasslands and conifers forest.

Fig. 13: Hohe Tauern Wilderness includes rocks, boulders and scree.

The park is managed by a team of committed managers led by a director with a strong wilderness vision. Their systematic work is based on wide range of research based analysis with a focus to create a unique wilderness in the Austrian Alps. They have a vision that through natural wilderness restoration, the land will recover from the several centuries of intensive human use. In addition, the area offers a unique opportunity to observe and study dynamism due to the retreating glaciers.

The total size of the Nationalpark Hohe Tauern Salzburg is 80,500 ha and the area is managed by the Nationalpark administration which is located in the village of Mittersill.

Fig. 14: Position of the Nationalpark Hohe Tauern Salzburg, Austria.

Table 2: Nationalpark Hohe Tauern Salzburg

Park information	
Protected area	Nationalpark Hohe Tauern Salzburg
Country	Austria, province of Salzburg
IUCN classification	II
Main ecological classification	Subalpine & high alpine habitats
Number of visitors per year to the Nationalpark	600,000 (NP area), 600,000 (NP-visitor centers and NP exhibitions)
Number of visitors per year to Hohe Tauern Wilderness	Less than 5,000
Size	80,500 ha = 54,000 ha (core zone) + 26,500 ha (buffer zone)
Size of Hohe Tauern Wilderness	8,465 ha
Year established	1984

History of the Nationalpark Hohe Tauern Salzburg

Nationalpark Hohe Tauern Salzburg was created in the 1980s, as Austria's first and largest Nationalpark. The largest area is divided by three surrounding provinces; Salzburg, Tyrol and Carinthia. After almost two decades of wilderness movement in Europe, an internal strategy was develop to create an extensive wilderness zone.

It was challenging due to a complex land ownership situation and the ability of management to implement the necessary steps to create the wilderness.

Fig. 15: Hohe Tauern Wilderness is attractive touristic destination.

However, due to the commitment of the entire management team, Hohe Tauern Wilderness become an European Wilderness Society partner in 2014 and a member of the European Wilderness Preservation System in 2015.

Since then, management has worked closely with the European Wilderness Society to contribute to wilderness conservation in Europe.

Natural features and biodiversity

The Nationalpark Hohe Tauern Salzburg, Nationalpark Hohe Tauern Tyrol and Nationalpark Hohe Tauern Carinthia cover in total an area of 185,600 hectares. From west to east, the parks stretch over a distance of more than 100 km, their widths reaching up to 40 km. The Nationapark Hohe Tauern is essentially an area of high mountains, covering an altitudinal range between 1,010 and 3,798 m (the elevation of Austria´s highest peak, the Großglockner). Within the park, 266 peaks exceed a height of 3,000 m and glaciers cover a total area of 13,000 hectares. Water is an essential feature of the landscape, with 279 recorded rivers and brooks, 26 major waterfalls, 551 mountain lakes and 650 bogs (Nationalpark Hohe Tauern 2011).

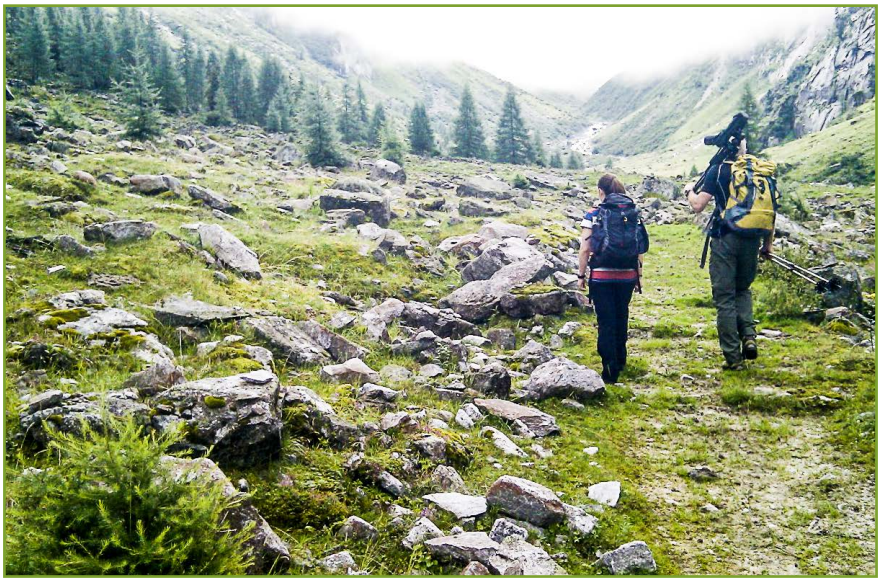


Fig. 16: Habitat types of the subalpine zone is also represented in the park.

Habitat types of the subalpine, alpine and nival zones are well represented in the park, as most of the area is located above the tree line, while forests composed of Norway Spruce (Picea abies), Larch (Larix decidua) and locally Stone Pine (Pinus cembra) account for 20,100 hectares, or just 11% of the park. The landscape in the highest portions of the Nationalpark Hohe Tauern Salzburg consists of sparsely vegetated areas with rocks, boulders and scree, extensive snowfields and glaciers, which contrast strongly with the rich flowery alpine meadows, lush communities of tall herbs and dense alder and pine scrub, found in its lower sections.

Biodiversity is remarkably high, Nationalpark Hohe Tauern Salzburg harbours 44% of Austria‘s plant species, 47% of its mammals and birds, a third of butterfly species, a quarter of beetle species and almost 69% of bee species (Nationalpark Hohe Tauern Salzburg 2011). Organisms adapted to the harsh conditions of high altitude environments feature prominently among most systematic groups.

Fig. 17: Snow fields and glaciers is important part of the Hohe Tauern Wilderness.

Species with an arctic-alpine distribution like Ptarmigan (Lagopus mutus), Mountain Hare (Lepus timidus), Mountain Burnet (Zygaena exulans) and Mountain Aven (Dryas octopetala) are found alongside species typical for European and Asian mountain ranges like Ibex (Capra ibex), Chamois (Rupicapra rupicapra), Marmot (Marmota marmota), Snow Vole (Chionomys nivalis), Alpine Chough (Pyrrhocorax graculus), Small Apollo (Parnassius sacerdos) and Edelweiss (Leontopodium alpinum). The warm and dry valleys on the southern slopes of Hohe Tauern even offer suitable habitats for species of dry Mediterranean mountains, like Rock Partridge (Alectoris graeca), Alpine Swift (Apus melba), Rock Trush (Monticola saxatilis) and Chalk-hill Blue (Polyommatus coridon) (Stüber & Winding 2007, Huemer & Wieser 2008).

There is a relatively high proportion of endemic species among plants and inverterbrates; in fact, the Hohe Tauern range represents one of the six major centres for endemism in Austria (Rabitsch & Essl 2009). Geology is extremely varied and parts of the Hohe Tauern are famous for their rich mineral occurrences, 200 different types of minerals have been found there.

5.2. Management of Nationalpark Hohe Tauern

5.2.1. Land ownership

In the Nationalpark Hohe Tauern, most of the land is privately owned. Land belonging to individual farmers and farmers associations accounts for 62% of the park's area, while another 21% is owned by NGOs (i.e. alpine clubs and conservation organisations). Only 16% is public land, agency of Austrian Federal Forests as the major landowner[1].

In the Nationalpark Hohe Tauern Salzburg, the pattern is somewhat different; while farmers and farmers associations hold 59% of the area, public ownership amounts to 35% and NGOs own only 6%. Due to the restrictions to existing land use rights, economic activities have to be negotiated with the landowners and compensated financially. This is even true for public land.

Fig. 18: The ownership structure has important implications for the implementation of non-intervention zones in the park.

When Austrian Nationalparks were first established in the 1980s and 1990s, there was an arrangement which foresaw compensation payments even to the Austrian Federal Forests, on account of their semi-private characteristic.

Farmers and farmers associations proved to be the toughest negotiators, eagerly defending their economic interests. This has set limits on the development and location of non-intervention management zones, especially in the Tyrolean area of the park. However, in Salzburg, farmers united in a so called Schutzgemeinschaft (Protection Association), where the word protection tellingly refers to the interests of landowners, and not to the protection of nature.

[1] *Kohler, Bernhard, Vančura, Vlado & Zika, Michael. Hohe Tauern West 2007. Wild Europe Initiative.*

However, eventually contractual arrangements were reached (referring mostly to the leasing of hunting and grazing rights) on a substantial portions of the park, which paved the way for an IUCN recognition.

Land ownership structures differ markedly between core and external zones. In Salzburg, core zones are made up of 40% public, 52% private and 8% NGO-owned land, while the corresponding figures for external zones are 28% public, 71% private and 1% NGO owned land. Obviously, it was much easier to set up core zones in areas owned by the state and by conservation-minded NGOs.

5.2.2 Nationalpark Hohe Tauern structure, finances and zonation

The Nationalpark Hohe Tauern is located in the boundary region of three Austrian federal provinces (Salzburg, Carinthia, and Tyrol). Since nature conservation in Austria falls into the almost exclusive legal competence of provincial governments, the Nationalpark Hohe Tauern consists of three contiguous, but autonomous units, each with their own administration, budget, infrastructure, legal framework and management: Nationalpark Hohe Tauern Carinthia, Nationalpark Hohe Tauern Tyrol and Nationalpark Hohe Tauern Salzburg.

There is of course a joint corporate identity and a certain degree of co-ordination among the three parts, mainly concerning wildlife management, research, visitor management and marketing, but in many respects, the three units of the park act individually. Due to the fact there are three legal entities, IUCN deals with the three administrative units of the park as if they were separate protected areas. Although Austrian Nationalparks are jointly financed and supervised by the federal and provincial governments, administration and daily business are matter of the provincial governments, which provides a strong regional touch and secures close contact with local communities and stakeholders.

In the Nationalpark Hohe Tauern Salzburg, the Nationalpark's administration has the status of an approving authority of first instance in the case of Nationalpark core zones and special protected areas, of second instance for the external zones of the park. Enforcement of laws and regulations is supervised by the park rangers.

Financing is based on contracts between the federal and the three provincial governments, each party contributing to the basic funds of the park. For example in the Nationalpark Hohe Tauern Salzburg, two-thirds is provided by the provincial and one-third by the federal government. Any additional money comes from corporate partnerships, EU projects and economic activities such as tourism and the education center. The total spending of the Nationalpark Hohe Tauern amounted to €10.3m in 2011. Nationalpark Hohe Tauern Salzburg: €4.8m, Nationalpark Hohe Tauern Tyrol: €2.6m and Nationalpark Hohe Tauern Carinthia €2.9 M. (Bauch & Urban 2012, Stotter 2012, Oberdorfer 2012).

The Nationalpark Hohe Tauern Salzburg is the largest (80,500 ha), followed by the Nationalpark Hohe Tauern Tyrol (61,100 ha) and the Nationalpark Hohe Tauern Carinthia (44,000 ha). The three parts of the Nationalpark Hohe Tauern share a common zoning system, which distinguishes between the core and external zones. In Carinthia and Salzburg, an additional category, Special Protection Area has been implemented.

Fig. 19: In Carinthia and Salzburg provinces a category so-called "special protection areas" has been implemented.

The size of the core zones of the Nationalpark Hohe Tauern make up a total area of 114,500 ha in the entire Nationalpark (Nationalpark Hohe Tauern Salzburg 50,700 ha; Nationalpark Hohe Tauern Tyrol 34,700 ha; Nationalpark Hohe Tauern Carinthia 29,100 ha). This corresponds to 61.7% of the total area, 63.0%, 56.8%, and 66.1% respectively. It is important to note that when the Nationalpark laws were written in 1983, the core zones were not conceived as non-intervention management areas.

Despite the fact that the legal framework states that there should be no management of nature within the core zones, invariably included was a list of possible exemptions. Some of these exemptions make sense with respect to Nationalpark goals, but others are in open conflict with non-intervention wilderness management.

However, exemptions can only be granted after an official approval procedure. Beyond exemptions, all three Nationalpark laws state that activities relating to mountain agriculture such as pasturing, haymaking and the use and maintenance of the necessary infrastructure are not subject to any restrictions within the core zones. In Carinthia and Salzburg, the same is true for low-intensity forestry. In all three provinces, fishing and hunting are allowed within the core zones.

Thus, the Nationalpark laws do not substantially restrict major types of land-use within declared core zones. This was not an issue, however, by the mid-1990s the Austrian Ministry for the Environment began to set binding standards for Austrian Nationalparks, making IUCN recognition a prerequisite for the continued use of the label Nationalpark.

In the event that the laws were not changed, compliance with IUCN criteria was sought through contractual arrangements with landowners and land users. This was relatively easy for barren, totally unproductive land, as well as for land belonging to alpine clubs and conservation NGOs but was not so easy for core zone areas owned by individual farmers, farmers association or the Austrian Federal Forests, negotiations on compensation payments had to take place before it could be established.

Fig. 20: The compliance with IUCN-criteria was sought through contractual arrangements with land-owners and land users.

Eventually, all three parts of the park reached agreements and non-intervention management was secured for least 75% of the existing core-zones thus complying to IUCN regulations.

On this basis, IUCN recognition for the Nationalpark Hohe Tauern Carinthia was reached in 2001, for the Nationalpark Hohe Tauern Salzburg and Nationalpark Hohe Tauern Tyrol in 2006. IUCN category II was granted to each legal entity separately and independently; it always refers to the entire park area and includes both core and external zones. For the purposes of the present report, it is important to note that there are de facto two types of core zones in the protected area; core zones without extractive land-uses and core zones with low-intensity land-use mostly grazing and hunting.

In the Nationalpark Hohe Tauern Salzburg, core zones without any extractive land-use amount to 40,000 hectares, which corresponds to 78.9% of the total core zone area. While all three parts of the park have eventually achieved the required proportions for the two types of

core zones, the delineation of non-intervention management zones is influenced by the issue of acceptance and financial constraints.

Setting up a wilderness is currently only feasible on land where there is already an agreement regarding compensation and where landowners will not try to link their consent to the outcome of still pending negotiations in other parts of the park. This excludes land owned by farmers associations from any wilderness considerations.

In the original zoning, wilderness goals were met by the designation of Special Protection Areas. Special protection areas were meant to protect comparatively small patches of highly valuable, sensitive or pristine habitats from any human impact and can be seen as small scale precursors of today's non-intervention management core zones.

With the IUCN zoning, these areas have largely lost their significance, at least where they overlap with non-intervention management core zones. Therefore, in the Nationalpark Hohe Tauern Salzburg, the Special Protection Areas will soon be abolished but existing areas of this type will of course be maintained.

Fig. 21: "Special protection area" makes up 3.6% of the entire Nationalpark area.

The Special Protection Areas in the Nationalpark Hohe Tauern Salzburg amount to a total of 3,200 hectares, in Carinthia to 3,600 hectares. In Tyrol no such area had been implemented. Thus, Special Protection Areas comprise 3.6% of the entire Nationalpark area. The majority of land with continuing use is located in external zones of the park. Despite their somewhat confusing name, these zones are an integral and important part of the protected area. They explicitly focus on the preservation of cultural landscapes. It is in these external zones where traditional forms of land-use, like pasturing, haymaking and extensive forest use are maintained and even encouraged.

Fig. 22: The traditional building in external zones is secured through targeted subsidies.

The traditional and low-intensity characteristic of these activities continues not so much through regulations but rather through targeted subsidies (e.g. for the use of traditional building materials in fences and huts, or for the maintenance of low-intensity grazing and mowing regimes). As can be expected, thie is a delicate issue with many compromises having to be made, as even low-intensity forms of modern agriculture must differ from truly traditional practices, if they are to be economically viable.

The availability and use of machinery leads to quite different necessities, opportunities and outcomes, starting with the inevitable access infrastructure and ending with a much higher degree of impact on the managed areas in many instances. However, land-use intensity in the external zones is definitely low, when compared with areas outside of the park.

Since their establishment, external zones have repeatedly played a crucial role in warding off destructive projects. For instance, there were proposals to open up the long valleys on the northern slopes of the Hohe Tauern to public traffic, or to establish ski resorts within the Nationalpark. Due to the relatively strong legal status of external zones, it was not possible to overrule conservation priorities by claims of overriding public economic interest in such projects.

Nature based tourism is an important factor in the external zones and a number of arrangements and incentives are in place to ensure its environmental sustainability. In both agricultural and touristic facilities, the Nationalpark supports and promotes alternative methods of energy production, mobility, transport and waste management.

The Nationalpark Hohe Tauern has the status of Natura 2000 in all three provinces, both under the Birds, Flora and Fauna, and the Habitats Directives. This further strengthens protection of the entire area and has encouraged much research and monitoring activities. In

addition, this designation provides funding opportunities for active conservation and restoration measures within the framework of EU LIFE and Rural Development projects.

It is interesting to note that much of the past external communication of the Nationalpark has focussed on the value of alpine cultural landscapes and on the harmonious coexistence of man and nature within the external and core zones that have land-use activities. This was certainly due to the necessity of increasing acceptance and support among local stakeholders and land-users, but it has directed public perception towards an aspect of the park that is not really central to the Nationalpark idea, as conceived by IUCN. Only recently have wilderness aspects of the park gained more weight in their communication activities.

Fig. 23: Only recently have wilderness aspects of the park gained more weight in the communication activities.

5.2.3. Wilderness rules in the Nationalpark Hohe Tauern Salzburg

Special Protection Area

According to § 6 of the Salzburg Nationalpark law (Salzburger Landesregierung 1983), the purpose of a special protection areas is to preserve sites of special significance with respect to landscape or ecological features, including their animal and plant life. Such areas may either be located within Nationalpark core zones, or within external zones.

Their establishment requires the full consent of all land-owners or land-users that may be substantially impaired in their rights - meaning that they must be compensated for any economic loss resulting from the declaration of the area.

In special protection areas, any human intervention into landscape and nature is forbidden.

There are some general exemptions to this non-intervention management approach and the provincial government can grant specific exemptions as well, but only insofar, as they do not come in conflict with the overall goals of the protected area.

Under § 2 the overall purpose of the area, as already stated in the Nationalpark law and adds that the reserve shall secure the natural evolution of a high mountain area and preserve its landscape character and pristine state.

Under § 3, lit. 2, General exemptions concern a) the maintenance of existing trails, b) the access for hiking, climbing and ski-touring, c) measures related to existing grazing and forestry easements, d) lawful hunting (as far as not further restricted in the regulation), e) the maintenance of markings and signs concerning land property.

Under § 3, lit. 3 the regulation specifies which kind of interventions are explicitly forbidden within the special protection area. These are: a) forestry measures; b) hunting, with exemption of Roe deer and Red deer-hunting and when retrieving game shot outside the area; c) feeding of wildlife (both game and non-game species); d) releasing/introducing game; e) constructing or installing any devices for hunting and game management; f) collecting of minerals and fossils, disrupting the soil surface; g) polluting or impacting the area by storing, discarding or spilling any kind of waste or other material; h) setting up tents and bivouacs, except near trails and on specified sites, setting up fire places, lighting fires, smoking; i) collecting berries, mushrooms and other plants, or any parts thereof; j) impacting or modifying the vegetation; k) leading dogs, except for hunting purposes; l) horse riding; m) making avoidable noises; n) driving vehicles, including skidoos; o) using aircraft (motorized or non-motorized) flying lower than 5,000 m, which is also valid for military and police training flights; p) performing agricultural activities, including mountain pasturing.

Under § 3, lit 4 the regulation states that the prescribed game management plan for the wider area has to take the rules of the special protection area into full account; the plan must be adapted on the basis of scientific expertise provided by the Nationalpark.

Fig. 24: The regulation specifies which kinds of interventions are explicitly forbidden within the special protection area.

§ 4 of the regulation lists the specific exemptions that may be granted by the authorities, provided that they do not interfere with the overall goals of the special protected area. After careful consideration and, if necessary, under additional conditions or on a temporary basis only exemptions may be granted for: a) scientific research activities; b) the maintenance and if needed reconstruction of existing buildings (not valid for hunting installations); c) the maintenance and marking of existing trails, paths and resting sites; d) measures related to the supervision and management of the special protection area; maintenance measures securing human settlements against natural hazards; e) mechanical forestry sanitation measures, but only to the extent deemed absolutely necessary; f) shooting and catching of Chamois, if this should become necessary for ecological reasons (and only, if natural regulation cannot be expected to reduce the population within a foreseeable time span); g) control measures for wildlife epizootics, but only to the extent deemed absolutely necessary; h) scientifically supervised reintroduction programmes for extinct species; i) catching of wildlife for relocation purposes; j) training activities of mountain rescue services.

The rules set out in the regulation for the special protection area come remarkably close to those for a wilderness and with some modifications, they might indeed serve as a model for the regulation for Hohe Tauern Wilderness.

Nationalpark Hohe Tauern Salzburg core zone

The legal text about core zones (§ 5 of the Salzburg Nationalpark law) is older than the regulation for the special protection area and in many respects also less strict. It first states that core zones consist of areas that are either completely or largely in a primeval state; the main public interest in these areas lies in the preservation of nature in its entity. Therefore, within core zones, any intervention into nature is forbidden, as well as any impact on the landscape. But then, the text adds a series of exceptions to this general non-intervention statement. These exceptions may be granted for specified measures and activities. They fall basically under two categories:

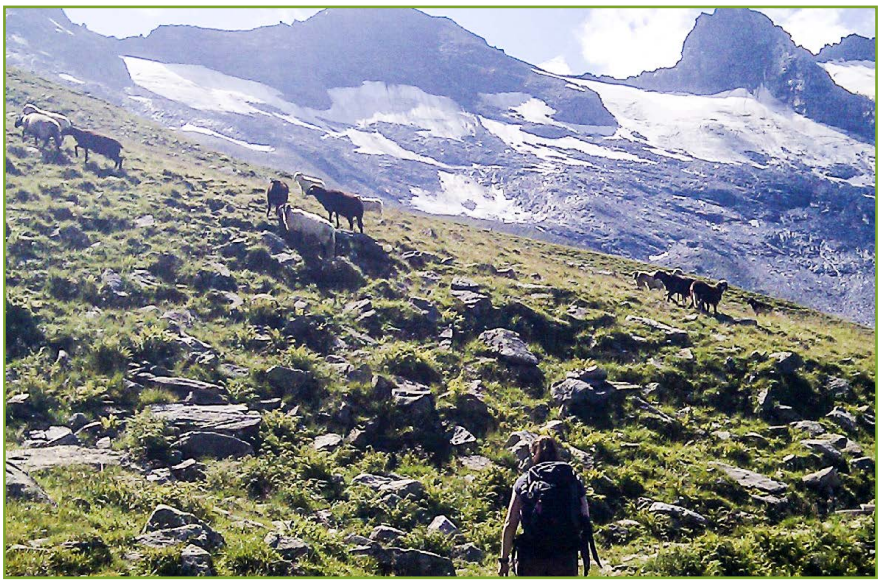


Fig. 25: Only upper part of Habach Valley has wilderness quality.

The first category requires authorization by the provincial government, under the provision that the implementation will not impair the overall goals of the core zone. It includes:

- Damage prevention with respect to avalanches, landslides and floods including technical installations and infrastructure.
- Advancing the conservation goals of the Nationalpark
- Scientific research
- Activities related to the building and adaption of huts, tourist shelters, access roads, trails, as well as summit crosses
- Regular forestry, beyond harvest for the supply of pasturing activities
- The use of low-flying aircraft but not for tourism or sport purposes
- Activities relating to the building and adaption of energy supply installations for pasturing and touristic huts

The other kind of activities that needs no authorization because they comply with Nationalpark goals. They include

- All activities within the framework of pasturing
- All activities s required for the maintenance of previously authorized technical installations
- All activities relating to the supply and maintenance of pasturing and tourist huts, including waste disposal/treatment, insofar as they are not related to building of new installations
- Low intensity forestry for the supply of pasturing activities, provision of fuel wood, building material for huts and fences.

Hunting, fishing and tourism are dealt with in §3 of the Nationalpark law. According to this paragraph, hunting and fishing are not subject to the Nationalpark law, as long as they are performed in accordance with the existing provincial laws and regulations. This means in practice that hunting and fishing have the same status within and outside the park. The only exception refers to special protection areas, where different regulations may be in place. Similarly, § 3 specifies that conventional hiking and mountaineering, and cross country skiing are not subject to the Nationalpark law. Thus, low-intensity, nature-based tourism is possible throughout the park area.

These core zone rules do not ensure true non-intervention management regime but rather, they put limitations on activities.

Fig. 26: The Hohe Tauern Wilderness is exclusively located on land, where all land-use rights have been compensated.

These activities are against IUCN rules for Nationalpark core zone. Therefore, from the mid-1990s, compliance with IUCN criteria had to be sought through contractual arrangements with landowners and implementation of non-intervention management becoming dependent on financial compensation schemes and the lease of land-use rights in the process. By reaching such contractual arrangements, the Nationalpark has successfully transformed a substantial portion of its original core zones into wilderness zones without any extractive land-uses.

6. Wilderness internationally

6.1. Wilderness globally

Globally, wilderness is a natural environment that has not been significantly modified by human activity. It may also be defined as the most intact, undisturbed wild natural areas left on our planet, the last truly wild places that humans do not control and have not developed with modern infrastructure. The principle global wilderness criteria are: Size, intactness, human population density and biodiversity.

Fig. 27: Globally, wilderness is a natural environment that has not been significantly modified by human activity. Banff Wilderness, Canada.

6.2. Wilderness in Europe

Wilderness in Europe is rarely established by law or administrative acts and is usually hidden as fragments in some existing protected areas scattered throughout the continent. Typical for Europe is wilderness that is in various stages of wilderness continuum.[1] The main features of these areas are that they have not been modified and human activity is restricted.

[1] *http://wilderness-society.org/wilderness-continuum-european-wilderness-quality-standard/*

Fig. 28: Wilderness in Europe is increasingly considered important for biodiversity, ecological equilibrium, as well as inspiration, and recreation. Berezinsky Wilderness, Belarus.

Increasingly wilderness is considered important for biodiversity, ecological equilibrium, conservation as well as solitude, inspiration, and recreation. In some European countries wilderness is deeply valued for cultural, spiritual, moral, and aesthetic reasons. More and more people believe that wilderness is vital for human spirituality and creativity.

6.3. Wilderness in Austria

Austria contains excellent examples of European wilderness, where the Nationalpark Hohe Tauern Salzburg is one of the most ambitious protected areas in Austria to gain international recognition for wilderness[2].

Within Europe, the Alps are one of the most promising regions for both wilderness preservation and estoration (Fisher et al. 2010). Austria has a major share of the Alpine arc, 4,600 km², corresponding to 29% of the total mountain range thus it has a high degree of responsibility for wilderness protection in this ecoregion. However, nature conservation in the Austrian Alps focuses on cultural landscapes.

There is a single, small wilderness in Austria, that acceptable for IUCN 1b criteria (Wildnisgebiet Dürrenstein, 3.5 km²) representing just 0.04% of the national territory. Additionally, there are six Austrian Nationalparks, three of which are located in the Alps (Nationalpark Hohe Tauern, Nationalpark Kalkalpen and Nationalpark Gesäuse). Two of them are already members of the European Wilderness Preservation System with Hohe Tauern Wilderness and Kalkalpen Wilderness.

[2] *Kohler, Bernhard, Vančura, Vlado & Zika, Michael. Hohe Tauern West 2007. Wild Europe Initiative*

Fig. 29: Three Austrian Nationalparks are located in the Alps (Nationalpark Hohe Tauern, Nationalpark Kalkalpen and Nationalpark Gesäuse). Rugged limestone peaks in Nationalpark Gesäuse.

The core zones of Austrian Nationalparks, totalling 1,598 km², or 1.9% of the national territory are non-intervention management areas which could qualify as wilderness. Yet, not all Austrian Nationalparks have embraced the non-intervention management philosophy in their core zones. There is still a wide range of management approaches, from almost full compliance to the wilderness concept, as practised in Hohe Tauern Wilderness and Kalkalpen Wilderness, to an opportunistic approach, as in Nationalpark Gesäuse, where bark beetle management still takes place.

In other parks, true non-intervention management is only practised in parts of the declared core zones.

This situation has prompted WWF Austria in 2010 to set up a wilderness programme and to join forces with the Wild Europe Initiative. The long-term goal of WWF Austria is to achieve the full alpine wilderness potential and to have wilderness established on at least 10% of the national territory. To achieve this ambitious goal, it will need a twofold strategy: to designate new wilderness on unprotected land and to improve the quality and status of already existing non-intervention management areas. International support will be a crucial in both approaches.

From the outset, activities of the Wild Europe Initiative have provided essential support to wilderness work in Austria. With regard to Nationalparks, the outcomes of the Wilderness Conference in Prague 2009 have substantially influenced the development of the new Austrian Nationalpark strategy.

Under the impression of the Message (poselstvi) from Prague, the Austrian Ministry of Environment has placed the idea of wilderness at the heart of the new strategy (endorsed in

2010), declaring that all Austrian Nationalparks shall henceforth focus on ecological process management in their core zones. The establishment of strict non-intervention zones (explicitly referred to as wilderness) has been set as a clear and binding goal for all parks. The strategy also specifies that non-intervention areas shall make up no less than 75% of the Nationalparks area, as required by IUCN criteria (Lebensministerium, 2010).

Fig. 30: Several Austrian parks put emphasis on no-intervention management.

Although some Austrian parks conform to these requirements, the strong emphasis on ecological process management and the explicit mention of wilderness in the new Nationalpark strategy have raised many practical questions about core zone management in most parks. This provides an excellent opportunity for the Austrian wilderness movement to promote and develop the wilderness approach, both within and outside Nationalparks. Due to the advantage of their highly developed administrative structures, the Nationalparks have become something of a Austrian wilderness laboratory, where wilderness management techniques and regulations are developed and tested.

As an example, the highly controversial issue of bark beetle management in protected areas is currently treated by a commission of the joint umbrella organisation of the Austrian Nationalparks, which involves NGOs as well, among them WWF. The recommendations of this commission will set the standards for bark beetle management not only in the Austrian Nationalparks, but also in future wilderness. Therefore, it essential that the recent wilderness impetus of Austrian Nationalparks, receives further support, both from the Austrian and the European wilderness movement.

6.4. Hohe Tauern Wilderness

6.4.1. Topography of Hohe Tauern Wilderness

Hohe Tauern Wilderness is located in the south west of the Nationalpark Hohe Tauern Salzburg. It covers an area of 8,465 ha along the main ridge of the Hohe Tauern range and in the valleys of Krimmler Achental, Obersulzbachtal and Untersulzbachtal. The highest point is Großvenediger (3,660 m), the lowest point is the Untersulzbach valley at 1,654 m. There are 29 named and 42 unnamed peaks exceeding 3,000 m (OeAV, 1998). More than 14 glaciers are found in the area, among them, the Obersulzbachkees the third largest in Austria. Three rivers; the Krimmler Ache, the Obersulzbach and the Untersulzbach together with their many tributaries flow into the Salzach River, one of the major Austrian rivers feeding the Danube[3].

The discharge of the glacier fed rivers is considerable and follows a characteristic seasonal pattern, with high flows in summer that may exceed the low ones in winter by a factor of 30-40. During summer there is also a pronounced daytime pattern, with peak flows occurring in the late afternoon and early evening hours, when melting water from glaciers and snowfields rushes down the streams. Summer evening peak flows can exceed morning lows by more than 60%. Spectacular floods may occur, when high melt rates of glaciers combine with sudden downpours from heavy thunderstorms. Peak flows can be devastating and severely modify the landscape of the valleys.

Fig. 31: Wolfgang Urban, director of the Nationalpark Hohe Tauern Salzburg, who designed the HoheTauern Wilderness.

[3] *Kohler, Bernhard, Vančura, Vlado & Zika, Michael. Hohe Tauern West 2007. Wild Europe Initiative*

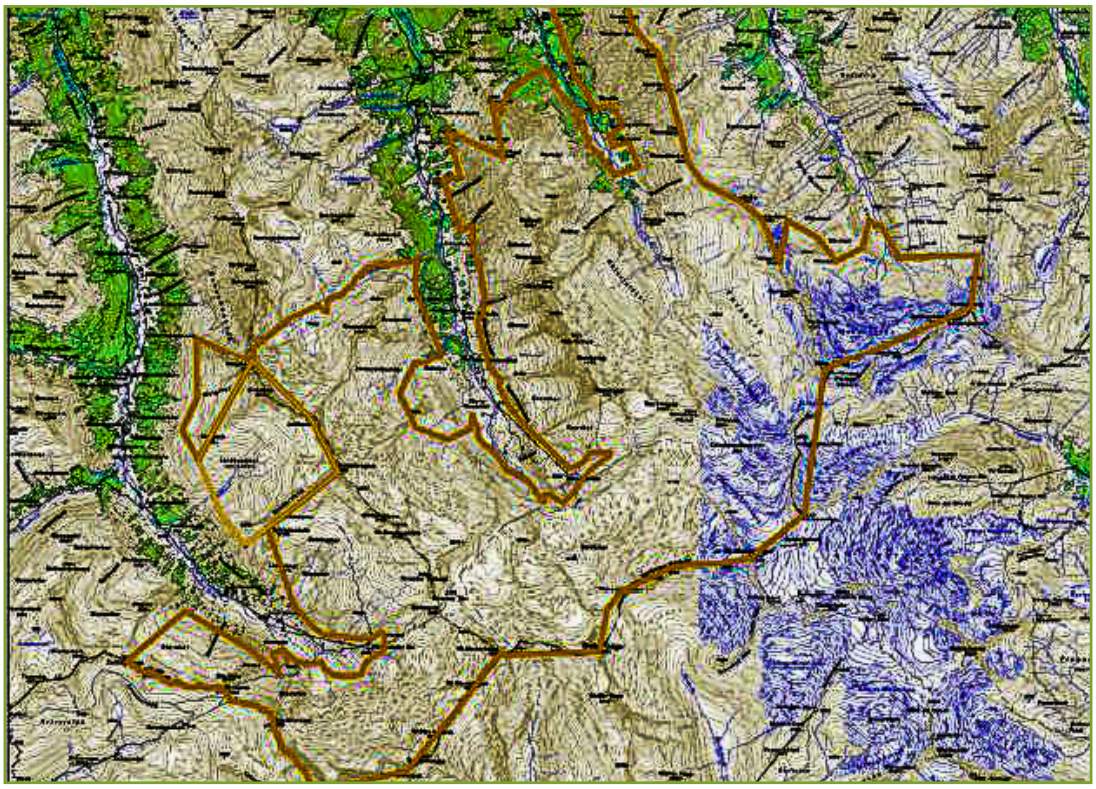


Fig. 32: Borders and zonation of the proposed Hohe Tauern Wilderness in 2003. Dark orange line: border of wilderness core zone. Light orange line: border of wilderness buffer zone.

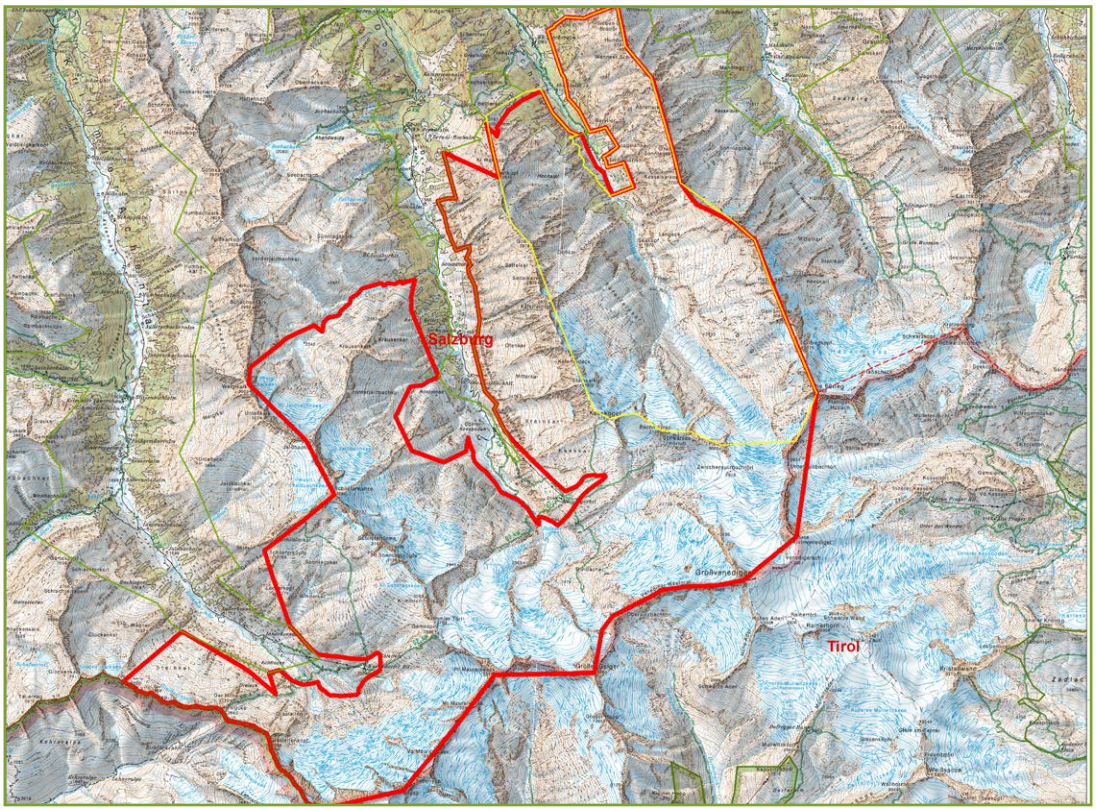


Fig. 33: The Nationalpark Hohe Tauern Salzburg Wilderness, Salzburg, Austria in 2015. Dark red line: border of verified wilderness.

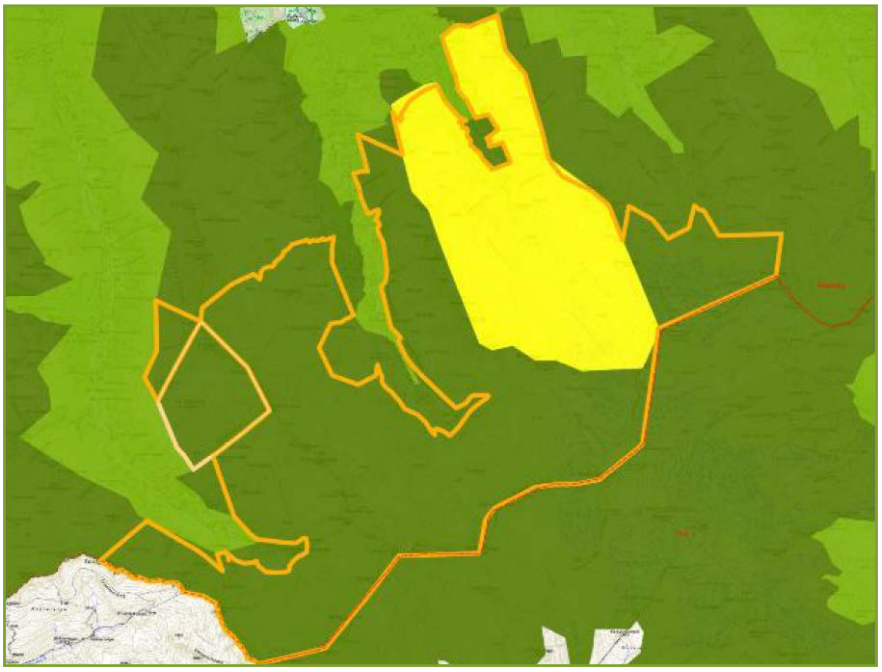


Fig. 34: The border of Hohe Tauern Wilderness in 2003. Dark green areas is Nationalpark core zone. Light green areas is Nationalpark external zone. Yellow areas is special protection area.

The largest of the four rivers, the Krimmler Ache, is famous for its spectacular waterfalls, located at the entrance to the valley, 18 km downstream from the in the Hohe Tauern Wilderness. Here the river tumbles down a 380 m high flank in several cascades (Lainer 2007).

The Krimmler waterfall is one of the major tourist hotspots in Austria, attracting an 400,000 visitors annually. Despite this huge gathering of people at its entrance, the largely uninhabited Krimmler Achental is almost as quiet as any other valley in the Nationalpark. Visitation drops to normal levels immediately behind the waterfalls. In comparison, at the upper end of the valley, 20 km from the falls and at the very border of the Hohe Tauern Wilderness, Warnsdorfer Hütte has around 3,000 visitors annually.

Fig. 35: Untersulzbach glacier in the Hohe Tauern Wilderness.

Fig. 36: Obersulzbach river in the Hohe Tauern Wilderness.

Fig. 37: The Krimmler waterfalls north from the Hohe Tauern Wilderness.

6.4.2. Vegetation of Hohe Tauern Wilderness

The wilderness is essentially an area of high mountains, covering the subalpine (1650-2100 m), alpine (2100-2800 m) and nival (> 2800) altitudinal belts. Large parts of the area fall into the alpine and nival zones. Accordingly, much of the ground is covered by glaciers and permanent snow (32%) or by rocks, boulders and scree (40%), while sparsely vegetated areas account for a further 20%. Natural alpine grassland constitutes 5.3% of the area and subalpine coniferous forests is just 1.3%. (Fig. 38).

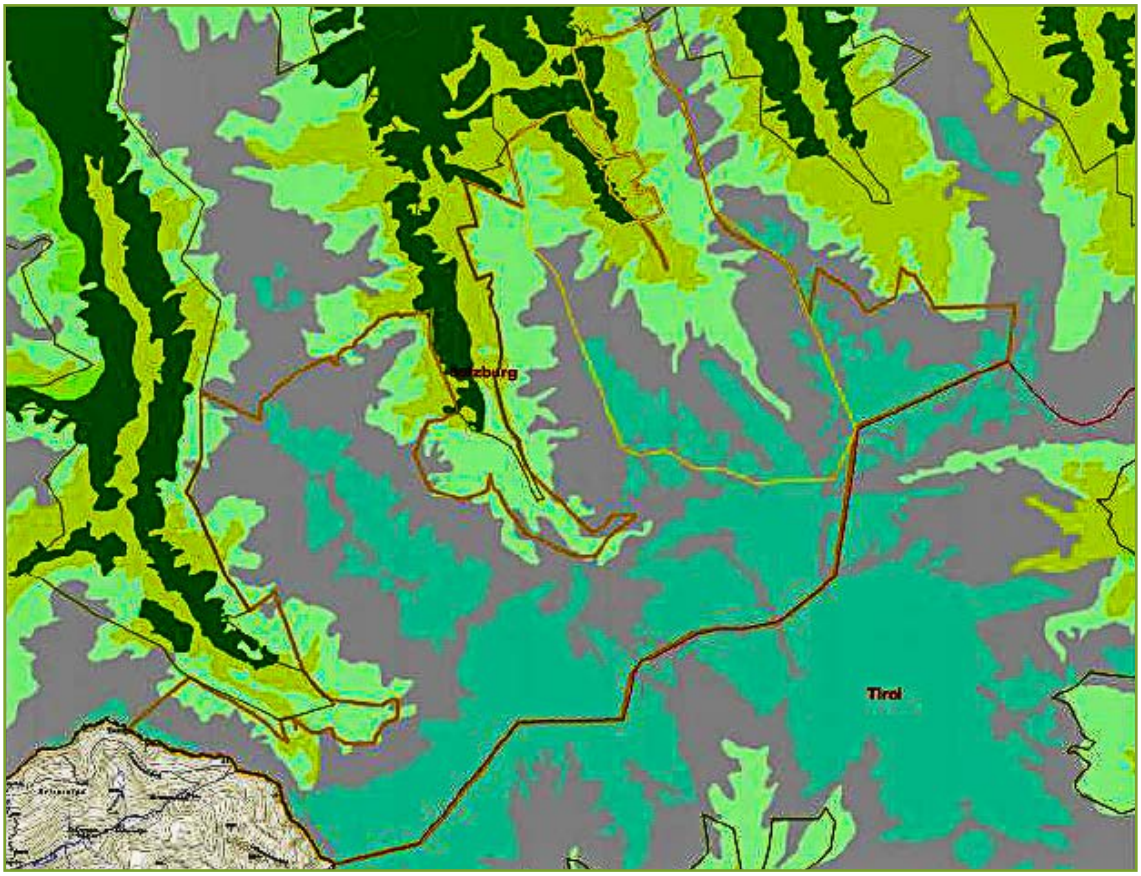


Fig. 38: Major habitat types in the Hohe Tauern Wilderness, according to CORINE land cover data. Blue-green are glaciers; gray are rocks, boulders and scree; light green is sparsely vegetated ground; medium green is natural grassland; dark green is coniferous forest.

Plant cover in the upper nival zone is extremely patchy and limited to ice-free rocky outcrops. It consists of a handful of vascular plant species, mosses, lichens and algae. A specialised group of algae even thrives on the snow surface. In the sub-nival zone, the sparse vegetation is again dominated by mosses and lichens, with some interspersed vascular plants, often growing in cushions and tiny carpets.

There is much open and bare soil in this zone. However, a continuous plant cover only develops in the alpine altitudinal belt, which is the natural realm of alpine grasslands. Dense mats of short and sturdy grasses, strewn with colourful flowers and aromatic herbs are a character-

istic feature of that zone. But even here, bare ground remains on windswept ridges, in gullies and in snow-filled hollows, on rocks, boulders or scree fields. In the lowest part of the alpine zone, shrubs like Alpine Rose (Rhododendron ferrugineum), bilberry (Vaccinium myrtillus) and cowberry (V.vitis-idea), etc invades the grasslands.

These shrubs naturally form a narrow belt of heath-land along the tree-line and they also grow profusely as under storey in the open forests of the upper subalpine belt. Due to anthropogenic forest clearance, the subalpine heaths often cover much larger tracts of land than under natural circumstances. In wet places and on abandoned pastures, dense thickets of green alder (Alnus viridis) may develop (Fig. 42); on dry stony soils, they are replaced by equally impenetrable stands of dwarf pine (Pinus mugo). The forest in the uppermost subalpine belt is essentially dominated by Stone pines (Pinus cembra) (Fig. 44) and Larches (Larix decidua), which are replaced downhill by almost pure stands of Norway Spruce (Picea abies). The latter are typical for the lower subalpine zone and - under the continental climate conditions of the Central Alps - even for the entire montane forest belt.

Fig. 39: Glacier moraines with alpine meadows in Untersulzbach Valley.

Fig. 40: Gravel moraine with sparse vegetation.

Fig. 41: Alder scrub in Untersulzbach valley.

Fig. 42: Alpine meadow in full flower.

Fig. 43: Stone pine, dwarf pine and alder scrub along tree line.

6.4.3. Climate of Hohe Tauern Wilderness

The climate of the area is in fact very harsh. As there is no weather station close to the proposed wilderness, climate data from a comparable location in the central part of Hohe Tauern (Moserboden, 2036 m, 30 km east of the area, may serve as an illustration (ZAMG 2012, Hydrographischer Dienst 2012).

In the period from 1971 to 2000, annual average temperature at this station reached 1.4°C, with an average value of -5.2°C for January and 9.1°C for July. Annual extremes ranged from -28.7 °C to 24.4°C. Temperature dropped below freezing on 201.4 days/yr on average, and remained permanently there for 80.6 days. The ground was snow covered on 225.6 days/yr, maximum snow depths reaching 330 cm in late winter. Continuous winter snow cover lasted on average from the 8th of November to the 23rd May, the earliest date being October 3rd, while the latest thaw occurred on the June 19th. The annual precipitation sum amounts to 1,496.4 mm on average, half of which fell between June and September.

There were 64.4 bright days (with a cloud cover below 20%) and 144.4 overcast days/yr (cloud cover > 80%). Annual average wind speed amounted to 2.4 m/s, with strong winds occurring mostly during the winter months. Wind speeds exceeded 6 Beaufort on 18.0 days/yr, more than 8 Beaufort were registered on 6.89 days/yr on average.

6.4.4. Wilderness quality

A recent effort to model Austria's wilderness potential (Plutzar, 2013) provides the opportunity to evaluate the wilderness quality of the proposed area. The model is based on the wilderness continuum of the Australian Heritage Commission (Lesslie et al., 1993). This approach assigns to each locality a quantitative wilderness quality index. The index consists of the evaluation and integration of four different components:

- Remoteness from settlements, the distance to permanently inhabited places
- Remoteness from access the distance to established traffic routes
- Apparent naturalness, the presence of permanent civilization facilities
- Biophysical naturalness, the presence of biophysical disturbance caused by an industrialized society

The results of the modelling exercise show that extensive tracts of land in the Hohe Tauern range attain the highest wilderness quality index (dark green areas in Fig. 45). In fact, the western portion of Hohe Tauern is the second largest contiguous wilderness block in Austria.

An enlargement of the map (Fig. 46) shows that the Hohe Tauern Wilderness is located well inside that block. But the map also illustrates the sensitivity of wilderness quality to infrastructure. In Krimmler Achental and Obersulzbachtal, the otherwise continuous dark green area is broken up in several smaller blocks, due to the presence of the dirt roads on the valley floor, the two huts and by some of the hiking trails. In contrast to this, wilderness quality

appears completely unimpaired in the upper reaches of Untersulzbachtal, where there are neither huts nor roads nor trails.

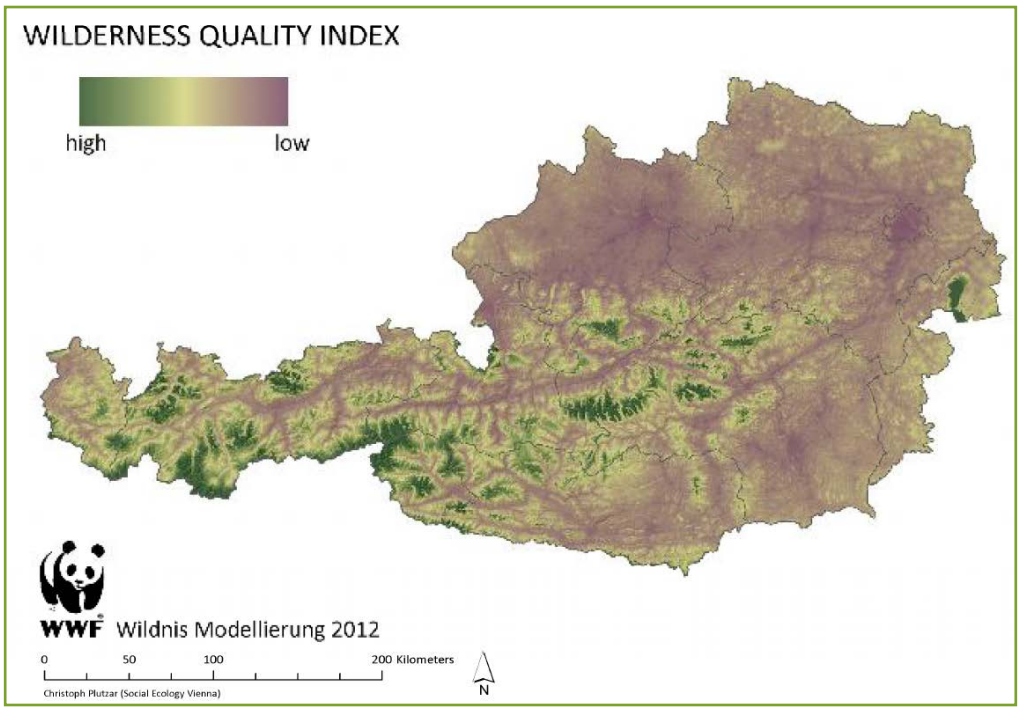


Fig. 44: Wilderness quality index of Austria (Plutzar, 2013).

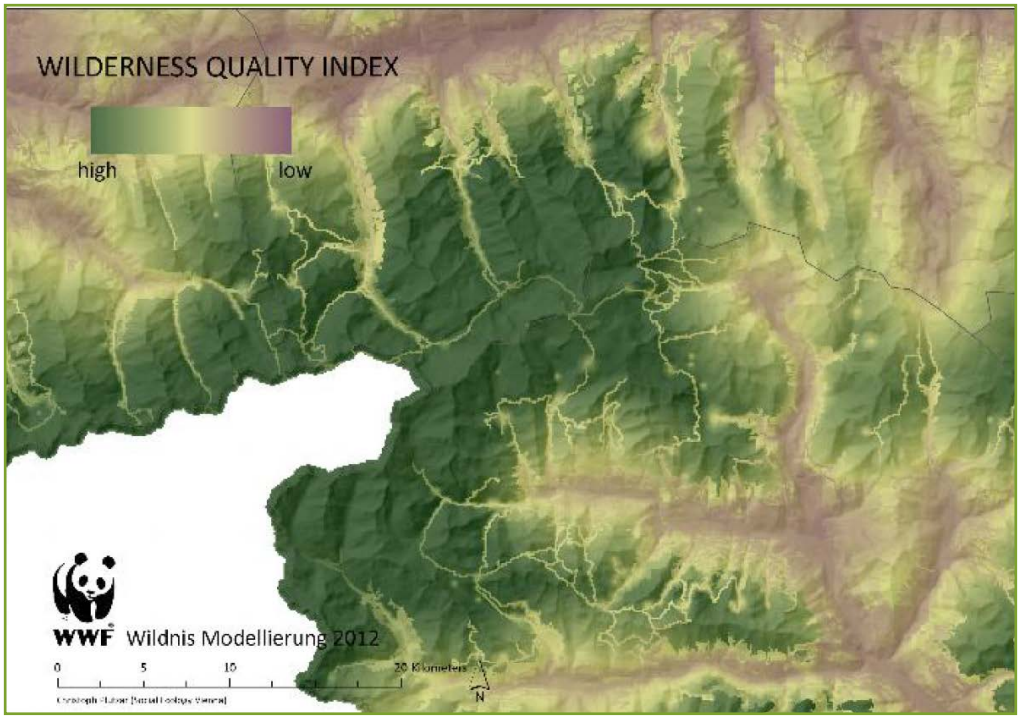


Fig. 45: Wilderness quality index of Hohe Tauern Wilderness (Plutzar, 2013).

6.4.5. Land ownership

There are only two landowners within the proposed wilderness, the Austrian Federal Forests and conservation NGO from Germany, the Verein Naturschutzpark e.V. recently bought by the Nationalpark Hohe Tauern Salzburg (Fig. 47).

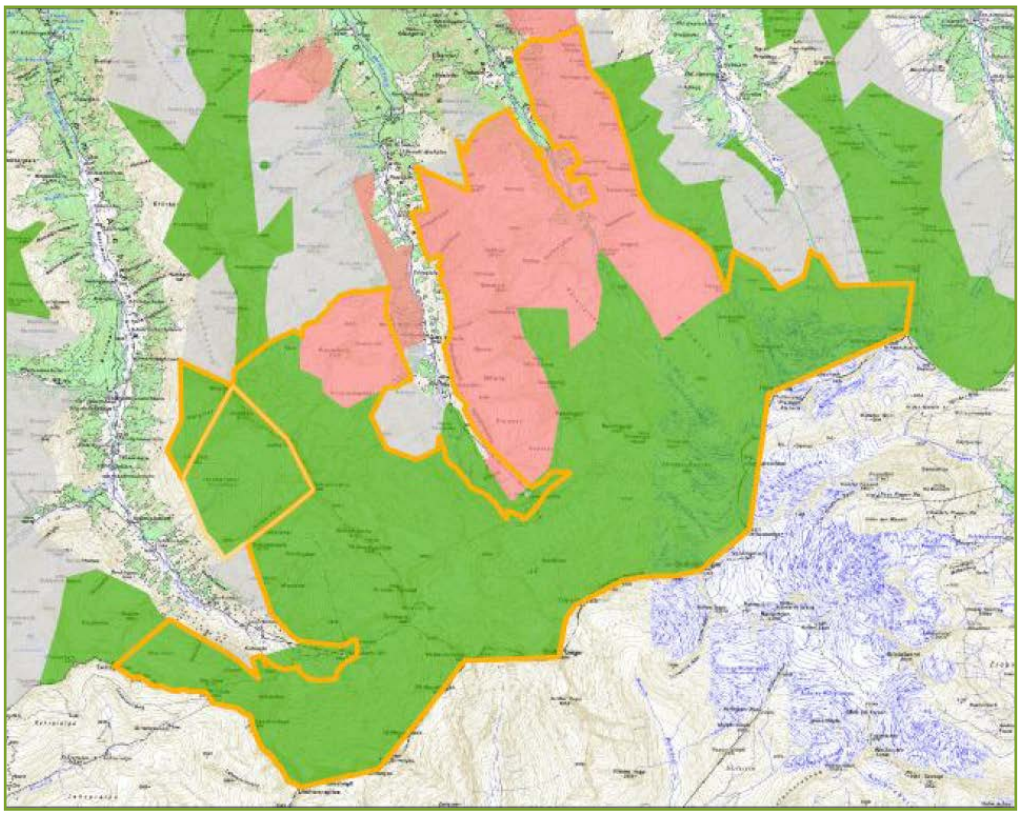


Fig. 46: Land ownership within the proposed wilderness. Green: Austrian Federal Forests (ÖBf); pink: Verein Naturschutzpark (VNP recently bought by the Nationalpark Hohe Tauern Salzburg).

The Austrian Federal Forests (Österreichische Bundesforste AG, ÖBf) were originally founded in 1925 and reorganized as a stock corporation in 1997. The sole shareholder of the stock company and owner of all ÖBf land is the Republic of Austria. The Austrian Federal Forests manage 10% of Austria's territory (857,000 hectares, 512,000 of which are forests), they own 74 lakes and several river sections and administrate 121 forestry, 1,280 hunting and 425 fishing districts. 50% of ÖBf- land is protected, the company is a major landowner in 3 Austrian Nationalparks, to which it has contributed a total of 52,000 ha. In two of these parks (Kalkalpen and Donau-Auen), it is closely involved in park management and administration. ÖBf also owns substantial parts of the Wienerwald Biosphere Park and of the wilderness Dürrenstein. 26,000 hectares of ÖBf-land are under Natura 2000 protection. The Austrian Federal Forests have to care for a total of 147,000 hectares of protective forest and for substantial drinking water resources. In many regions they also supply and maintain touristic infrastructure and provide access to important recreational areas.

However, the company is not just the manager and protector of Austria's public natural assets, it is also profit-oriented. For the right to use the Republics resources, it pays an annual user royalty, amounting to 50% of its net profit. The core business of ÖBf is forestry management, it provides timber to sawmills, to the paper, pulp and cardboard industries and it delivers fuel to biomass power plants. It has a renewable energy department and is involved in small hydropower, biomass, wind and solar power projects. Real estate management, the lease of hunting and fishing rights, as well as the provision of forestry services to other landowners are important business sectors as well (ÖBf 2012).

In the context of Austrian Nationalparks, the Austrian Federal Forests are treated as all other landowners. Whenever their land-use rights and economic activities are subject to conservation restrictions, the company is entitled to full compensation. This may seem paradoxical at first sight, but it is a logical consequence of the radical outsourcing exercise, the former state enterprise underwent in 1997.

Within the Hohe Tauern Wilderness, the Austrian Federal Forests own a total of 6,973 hectares, which corresponds to 71.4% of the entire area (dark green areas in Fig. 13). 85% of that land has the status of a Nationalpark core zone, while 15% are designed as special protection area. Land use rights (hunting and grazing) have been compensated on almost all of this land, except for the sheep grazing rights on 501 ha of Nationalpark core zone in the Krimmler Achental, to the northwest of Warnsdorfer Hütte. These grazing rights result from an old easement to the benefit of a farmer and this area was during the European Wilderness Society assessment work excluded from the wilderness zone.

The second landowner in the Hohe Tauern Wilderness used to be the German "Verein Naturschutzpark e.V.". Founded in 1909 by a group of scientists, writers, clergymen and teachers, this is arguably the oldest surviving conservation organisation in Germany and certainly one of the oldest in Europe. In its early days, the association was influenced by the American Nationalpark movement and by the successful private initiative that has led to the establishment of the Swiss Nationalpark in 1914. On these models, the association planned to set up large protected areas in Germany and Austria, by acquiring land with the help of donors and supporters. The idea was to establish such areas across all major landscape types of central Europe.

Eventually, Verein Naturschutzpark e.V. achieved its goals in the lowlands of northern Germany, where it developed the famous Naturpark Lüneburger Heide and in the Austrian Alps, where it acquired substantial amounts of land in the Hohe Tauern.

Fig. 47: The Untersulzbach Valley proved to be of such outstanding quality, that it was declared a special protection area in 1995.

During the Second World War and in the economic boom years that followed, much of the association's possessions in the central part of Hohe Tauern were lost to hydropower development, to the building of a motorway and to the construction of the transalpine oil pipeline. Therefore, the association shifted its activities to the western part of the mountain range, where it had acquired land in the Untersulzbach- and Obersulzbach-valleys. For many decades, these areas were run as privately protected areas. When the Nationalpark was eventually created, Verein Naturschutzpark e.V. was proud to bring these valuable possessions under the powerful legal roof of the park.

The association did an excellent job in keeping at bay all development attempts and by reducing extractive land use to a minimum – the area in the Untersulzbach Valley proved to be of such outstanding quality, that it was declared a special protection area in 1995. Today, the association owns 3,500 hectares within the Nationalpark (Makowski 2009, Stadler & Zimmermann 2009).

Within the Hohe Tauern Wilderness, 2,774 hectares (28,6% of the total area) belong to Verein Naturschutzpark e.V. (areas shaded pink in Fig. 13). 1,575 hectares have the status of a special protection area, while 1,199 ha belong to the Nationalpark core zone.

6.4.6. Current protection status

To the north and east, the Hohe Tauern Wilderness is well embedded in the Salzburg part of Hohe Tauern Nationalpark, whose outer borders are at a distance of 3 km to the outer borders of the Hohe Tauern Wilderness. To the south, the wilderness border follows the provincial border with Tyrol, running along the main ridge of the Hohe Tauern mountain range. On the Tyrolean side, all land is Nationalpark core zone for a depth of at least 3 km.

Along a 5 km stretch in the southwest, the border of the Hohe Tauern Wilderness coincides with the state border between Austria and Italy. The adjoining land on the Italian side is also protected, by the Naturpark Rieserferner-Ahrn/Parco Naturale Vedrette Ries-Aurinia (IUCN category V).

Thus, the Hohe Tauern Wilderness zone is surrounded on all sides by protected land. From southwest to northeast, the Hohe Tauern Wilderness is up to 16 km wide, from north to south its width varies between 1,9 and 11km. Overall, the shape of the area is rather compact, but with two deep indentures in the Krimmler Achental and the Obersulzbachtal.

7. Implementation of the European Wilderness Quality Standard and Audit System in Hohe Tauern Wilderness

The European Wilderness Quality Standard and Audit System and the Nationalpark Hohe Tauern Salzburg use their own zoning systems. The European Wilderness Quality Standard and Audit System zoning system is based on The Working Definition of European Wilderness and Wild Areas. The Nationalpark Hohe Tauern Salzburg zoning system is based on Austrian legislation. Table 1 shows the compatibility of the two systems.

Table 3: The different zoning systems, EWQA = European Wilderness Quality Standard and Audit System / NPHTS = Nationalpark Hohe Tauern Salzburg

	EWQA	NPHTS	Compatibility between EWQA and the Nationalpark Hohe Tauern Salzburg zoning
Widerness area[1)]	Wilderness zone[2)]	Nationalpark Hohe Tauern Salzburg Wilderness zone	Compatible
	Restoration zone[3)]	–	There is no restoration zone in Hohe Tauern Wilderness
	Transition zone[4)]	Nationalpark Hohe Tauern Salzburg core and buffer zone	Compatible. The Nationalpark Hohe Tauern Salzburg Wilderness zone is surrounded by the Nationalpark Hohe Tauern Salzburg Core and buffer zone

[1] Wilderness can be categorised into three 'zones,' with a wilderness zone surrounded by a restoration/buffer area of minimal activities, which in turn is surrounded by a transition zone (see Appendix II). It is considered that this threefold structure offers best protection of key wilderness principles whilst allowing potential for future expansion and flexible interaction with other land uses. (Definition of European Wilderness,2013)

[2] The Wilderness zone would have the 'highest' quality of wilderness, with minimal impact of human activity or infrastructure and a dominance of natural processes. Where feasible, outward expansion would occur over time through restoration/rewilding into the restoration/buffer zone – particularly if the wilderness is not large enough initially to allow complete ecological processes. (Definition of European Wilderness, 2013)

[3] The Restoration zone, with relatively low impact of human presence, surrounds and protects the wilderness zone. Emphasis here should be on restoration/rewilding of natural habitats and processes, with phasing out of built structures and high impact activities within 10 years. Where feasible, there should be plans for it to be incorporated into the wilderness zone and expand outwards over time into the transition zone. (Definition of European Wilderness, 2013)

[4] The Transition zone is an area where a range of human activities is permitted, but with management controls preventing development of major infrastructure, wind farms or large scale clear felling, that might significantly alter the landscape or natural environment. Sustainable harvesting is possible of timber, animals (hunting & fishing) and plants (berries, fruits, mushrooms), together with organic agriculture. (Definition of European Wilderness, 2013)

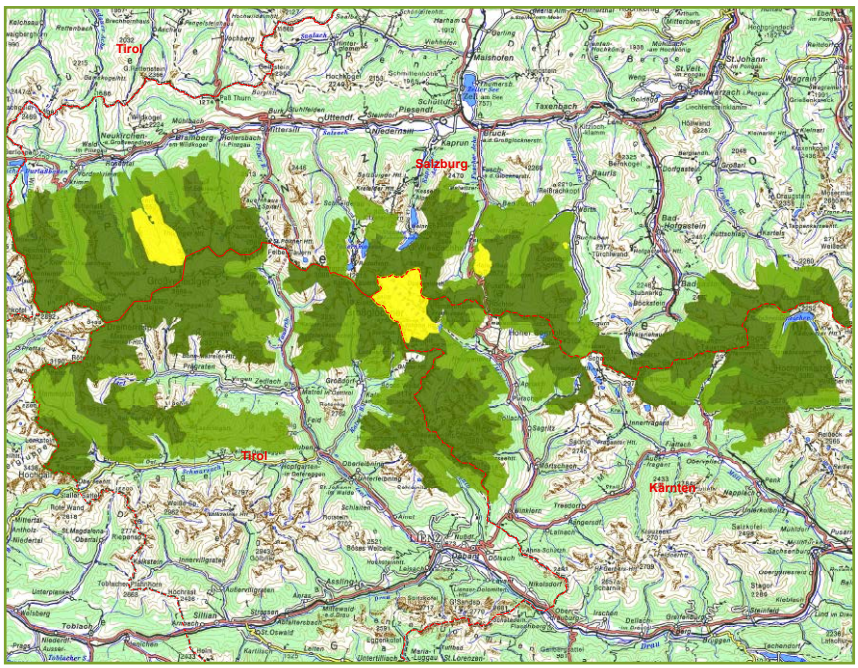


Fig. 48: Zoning of Hohe Tauern National Parks: Core zones is dark green, buffer zone is light green, special protection areas are yellow. Provincial borders of Tyrol, Salzburg and Carinthia are shown as dotted red lines

Fig. 49: Wilderness is a well-established part of the Nationalpark Hohe Tauern Salzburg.

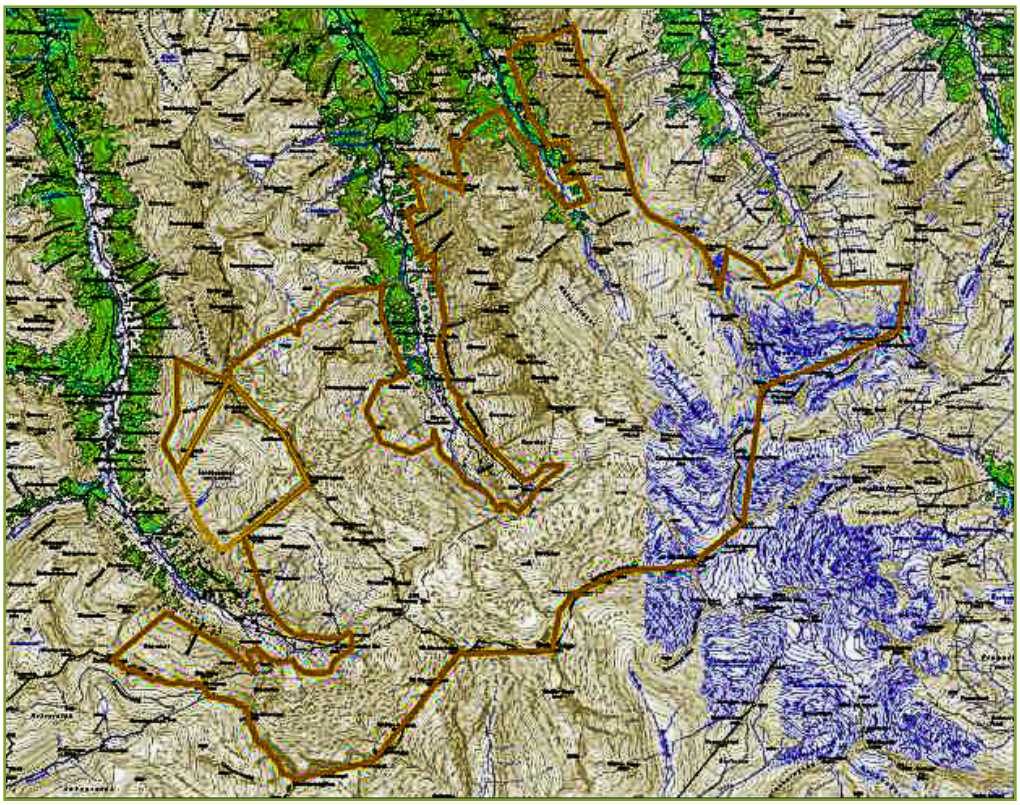


Fig. 50: Proposal of the Nationalpark Hohe Tauern Salzburg Wilderness, Austria.

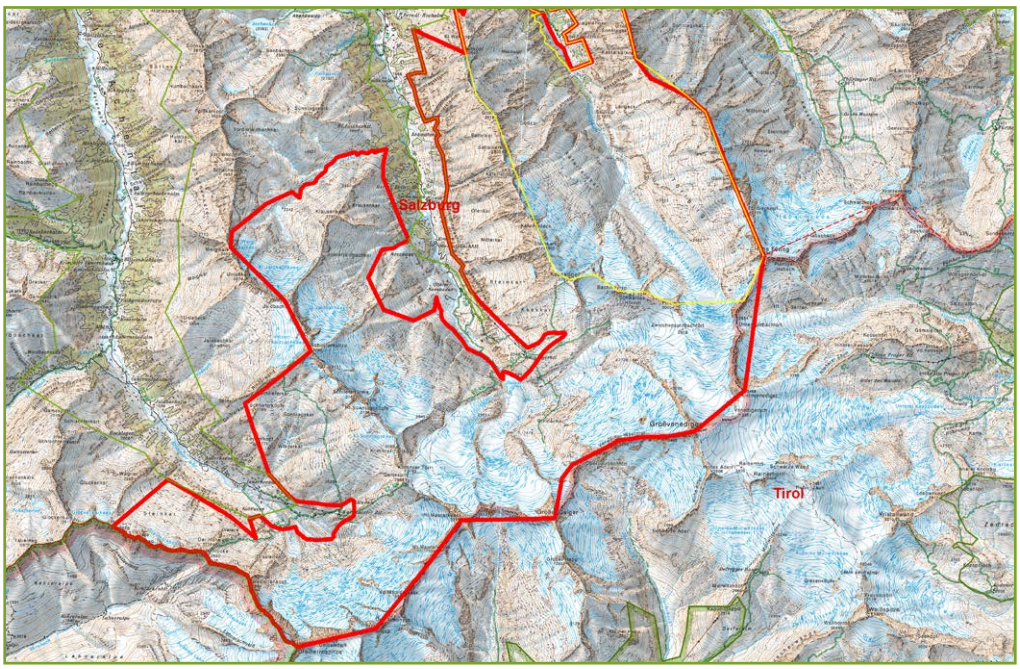


Fig. 51: Nationalpark Hohe Tauern Salzburg Wilderness Salzburg, Austria.

7.1. Principle 1: Wilderness Size and Zoning

In general a wilderness should have three zones mentioned in Table 3. In cases where these zones cannot be implemented, additional measures must be implemented to ensure protection and ecological functioning of the wilderness zone.

Reason for the Principle

The principle focuses on four main aspects of wilderness quality; boundaries, maps, size and zoning.

7.1.1 Criterion 1.1. Wilderness zone has defined boundaries

Reason for the Criterion

A defined boundary on the map and in the field is critically important for a well-protected wilderness. A well-defined and visible boundary avoids or minimizes possible disturbances or damage to the wilderness.

Current situation

Wilderness is a well-established part of the Nationalpark Hohe Tauern Salzburg. The boundary of wilderness is identical with ownership plots. The boundary of the wilderness zone is marked on the map and on trails when entering the wilderness zone. However the boundary of wilderness zone is not always well visible in field (off trails).

Part of the wilderness zone (ca 3000 ha) used to be owned by a German NGO and was this year bought by the Nationalpark Hohe Tauern Salzburg. Another part of wilderness zone (ca 6000 ha) is owned by the Austrian Government, managed by the Austrian Forest Service. The large areas around the wilderness zone are also owned by the Austrian government and managed by the Austrian Forest Service. Part of these areas are used by local people for grazing and hunting, other parts are not used due to the elevation.

Findings

The European Wilderness Society team verified approximately 30% of the wilderness boundary in the field. Of the boundaries which were verified, they were 100% accurate with the map. The boundaries partially follow along identifiable natural features in the landscape such as ridges, creeks and are known by the Nationalpark Hohe Tauern Salzburg field staff.

The Nationalpark Hohe Tauern Salzburg is surrounded:
at the north, by large open areas above the tree line which are used for grazing and there is a small fragment of land, particularly at the bottom of Untersulzbach Valley, that is covered by spruce and cembra pine forests at the tree line, at the south, the glaciers cover the top of the main Hohe Tauern ridge.

Strengths

The wilderness zone is one large compact piece of land.

Zoning: The wilderness zone is either surrounded by Nationalpark core or buffer zone with the depth varying from several hundred meters to several kilometres.

The core and buffer zones fulfil the management criteria for a transition zone, therefore it is not necessary to delineate such a zone in the planned wilderness.

Maps
The area has a GIS system. The maps of the wilderness zone are available in printed and digital format. This provide an effective tool to manage and improve the quality of the wilderness zone. The area also has good map for visitors.

Boundary
The wilderness zone has defined boundaries on the map. These boundaries are not always marked in the field but approximately 30% of the boundary can be identified due to the fact that it follows geographical lines (e.g. the mountain ridges on west, south and east).

There are boundary signs along the entrance points to the Nationalpark Hohe Tauern Salzburg core and buffer zones.

The Nationalpark Hohe Tauern Salzburg has the potential to enlarge the wilderness zone. There are many hectares of potential wilderness surrounding the wilderness zone.

Weakness

There is no inventory of wilderness potential around wilderness zone. The maps do not show the wilderness zone.

The wilderness zone boundaries are not always visible in the field therefore visitors are not always aware when they are entering the wilderness zone.

There is limited possibilities and no capacity to enlarge the wilderness zone due to the complex land ownership and management model of the surrounded areas.

Recommendations

Incorporate the boundaries of the wilderness zone on the hiking maps and existing field information systems	
Priority: Medium	Time Frame: 2020

Improve visually the limits of the wilderness zone in field	
Priority: Medium	Time Frame: 2020

Improve the wilderness aspect of the communication strategy beyond the German-speaking audience	
Priority: High	Time Frame: 2020

Fig. 52: A defined boundary is important for protecing wilderness.

Fig. 53: The maps of the wilderness zone are available in printed and digital format.

Fig. 54: There is a boundary information throughout the park.

7.1.2. Criterion 1.2. Minimum size of the wilderness zone depends on the predominant habitat type

Reason for the Criterion

The size of a wilderness zone is one of the most important aspects fofr long term conservation. These areas are considered to have a high biodiversity and ecological functioning value resulting in high capacity to adapt to changes in abiotic and biotic conditions, without shifting to a different qualitatively state. In other words, they are ecologically resilient.

This important point is the reason a minimum was established for each of four wilderness categories. The minimum size of the wilderness zones differ between habitats and depends on a particular situation, which can vary from place to place.

Current situation

The wilderness zone is compact and surrounded by a large area with similar wilderness quality. The predominant habitat types are subalpine, alpine and nival with snowfields and glaciers.

Findings

The wilderness zone was approved in 2015.

Strengths

The total size of wilderness is 8,465ha. The wilderness zone meets the quality standard for Gold category which is a minimum of 3000ha. The wilderness zone is one of the largest wildernesses in Central Europe is large enough to support spontaneous natural processes.

Weakness

Limited resources prevent further enlargement of the wilderness zone

Recommendations

Research the potential for enlargement of the wilderness	
Priority: Medium	Time Frame: 2020

Develop a map of potential wilderness enlargement around wilderness zone.	
Priority: Medium	Time Frame: 2020

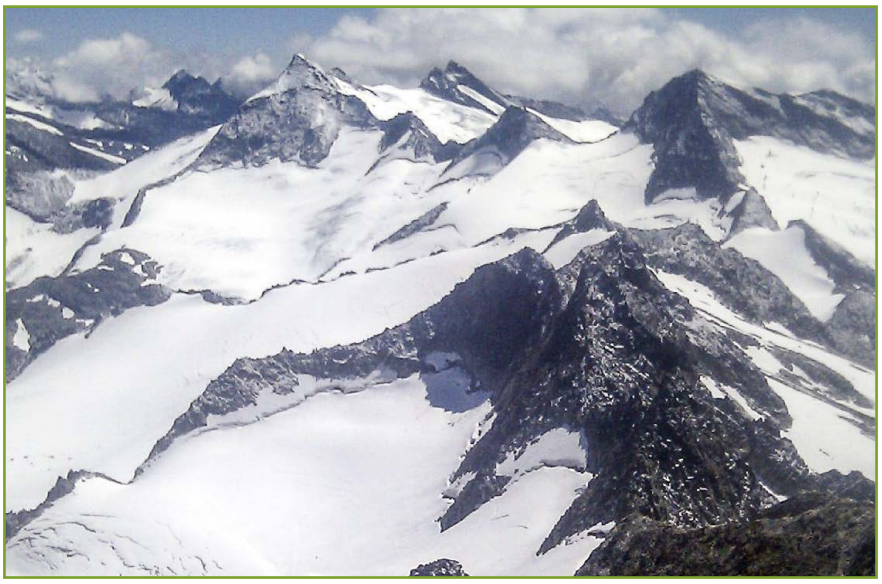


Fig. 55: The wilderness zone is surrounded by a large area with similar wilderness quality.

7.1.3. Criterion 1.3. Wilderness has three zones; wilderness, restoration and transition, where further expansion of wilderness is planned and two zones, wilderness and transition, where restoration and/or expansion is completed.

Reason for the Criterion

Zoning is a tool to assist in the planning and management of wilderness. In general, zoning divides a protected area into logical units for management. It applies consistent management objectives based on natural, cultural and recreational values, and existing and projected patterns of access in relation to specific conservation goals. The zones reflect the intended land use, the degree of human use, level of management and development permitted.

Wilderness certified under the European Wilderness Quality Standard and Audit System should have three zones with a wilderness zone surrounded by a restoration zone of, which in turn is surrounded by a transition zone. It is considered that this threefold structure offers best protection of key wilderness principles whilst allowing potential for future expansion and flexible interaction with other land uses. http://wilderness-society.org/european-wilderness-quality-standard/

Current situation

Hohe Tauern Wilderness has two zones; a wilderness and transitional zone. Since the wilderness zone is large, a restoration zone is not necessary. The wilderness zone is surrounded by the transitional zone three sides. The fourth side is the Nationalpark Hohe Tauern Carinthia and P**arco Naturale Vedrette di Ries – Aurina, Italy.** As these areas fulfil the management criteria for a transitional zone, and the wilderness zone is adequately connected with these areas it is not necessary to delineate such a zone for the wilderness zone.

Findings

The wilderness zone contains examples of undisturbed habitats.

Strengths

The wilderness zone is not lacking any important ecological processes typical for these kinds of habitats and elevation such as glaciers dynamics, permafrost, landslides, rock falls, debris flows, temporary glacial lakes, succession of alpine meadows and forest recovery. The wilderness zone ensures ecological processes remain intake and is free from management and restorative measures. In addition, it contributes to the conservation of species such as ibex, chamois, eagle and marmot.

Weakness

The boundaries of the wilderness zone are not yet marked, process of enlargement and building of the ecological bridges with potential wilderness around is not possible and likely it would be a long-term process.

Recommendations

Search for additional funding and resources to enlarge the wilderness zone	
Priority: Medium	Time Frame: 2020

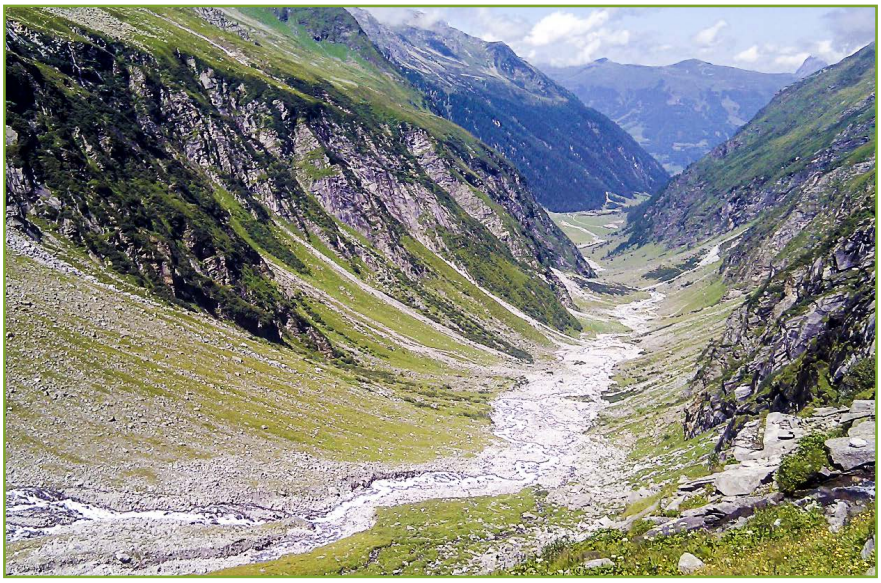


Fig. 56: Hohe Tauern Wilderness includes two zones; a wilderness and transition zone.

7.2. Principle 2: Natural processes and biodiversity

A wilderness should have a zone where natural processes take place without the human intervention and in a healthy state so that it contributes to the conservation of threatened species for that region and contains examples of undisturbed habitats.

Reason for the Principle

This principle focuses on one of the key ecological aspect of wilderness quality standard which is naturalness.
Naturalness means; the naturalness of vegetation and associated species assemblages and natural processes.

Fig. 57: Naturalness is a key ecological aspect of wilderness quality standard.

7.2.1. Criterion 2.1. The wilderness zone has natural processes to maintain biodiversity.

Reason for the Criterion

Natural vegetation and its associated species are the result of its unique evolutionary history of biodiversity within its local abiotic environment. Its conservation is not only important for species protection but also adaptation to climate change and other environmental disturbances. In this context, spontaneous natural processes and examples of undisturbed habitats play a critical role in conservation.

The main objective in the wilderness zone is to maintain natural dynamics and a high level of biodiversity with minimal or no management measures whenever possible.

Current situation

The wilderness zone utilizes non-intervention management and it maintains the dynamics of natural processes.

The park is managed by a team of committed staff lead by a director with strong wilderness vision. Their systematic work is based on wide range of research with a focus to restore natural dynamics in this part of country which has had a long history of extractive uses such as grazing, logging and mining.

The result of this systematic work is that in this area one is able study and experience the power of spontaneous natural recovery – rewilding. An important experience particularly because of its central European location.

Findings

The wilderness zone is managed by natural dynamics.

The site assessment revealed that there is an opportunity and potential to implement this management principle in an expanded area thus enlarging the wilderness zone. However, this would be challenging due to complex ownership, the price of the land, compensation payments and limited resources.

Strengths

The long-term objective is to manage by natural dynamics and spontaneous natural processes in order to maintain undisturbed habitats and biodiversity.

Non-intervention management is well-established in the wilderness zone.

The term wilderness is used in their communications and marketing.

Remarkable work has been done over the last 10 years from the perspective of implementation of non-intervention management and the expansion of this concept. This work provides an excellent example for other protected areas in Austria and beyond.

There are documents and research results such as articles, research seminars and reports that underline the importance of wilderness. Part of it is available in English.

The management documents include several important analyses to prove the linkages between wilderness, natural dynamics and increased levels of biodiversity.

The main objective in the wilderness zone is to implement measures to restore wilderness quality in addition to the study and improving knowledge of these linkages. The aim is to create a large compact piece of wilderness, which utilizes non-intervention management.

There is a comprehensive wilderness management plan is under development.

Weakness

The wilderness zone is defined as the highest part of the Nationalpark so it is missing several habitats available at the lower elevation.

The majority of these analyses and documents are available as internal reports and in German. An exception is the annual reports (2013 and 2014) which is in English The Potential Wilderness Grossvenediger.

Some local stakeholders are not aware of the importance of wilderness protections and the importance of a non-management approach.

Recommendations

Develop a comprehensive management plan for the wilderness zone in order to maintain natural dynamics.	
Priority: High	Time Frame: 2018
There should be a separate chapter of the overall management plan or separate document with an English summary.	
Priority: Medium	Time Frame: 2018
Continue with current communication of wilderness management objectives focusing on the community and visitors.	
Priority: High	Time Frame: 2020
Develop a more comprehensive strategy on how to effectively share wilderness management experience with other park managers and rangers in Europe.	
Priority: Low	Time Frame: 2020

Fig. 58: The main objective in the wilderness is to implement measures to restore wilderness quality.

7.2.2. Criterion 2.2. The Wilderness zone contributes to the conservation of wilderness indicator species.

Reason for the Criterion

Indicator species are just one of several important measure naturalness.
Specific species such as chamois, marmots and ibex are highly specialize for this environment above 2000 meters. Their ability to mate, raise young are considered as an indicator for the health of an ecosystem

Current situation

Approximately 90% of the management staff agrees that the wilderness zone is an important tool for protecting natural processes and maintaining biodiversity. Wilderness provides a safe home range for a number of species, in particular during sensitive periods in their life cycle such as the breeding season.

Findings

The management documents provide information on IUCN red-listed species. For many of them, the wilderness zone is a safe refuge during critical periods in their life. Management measures in this zone are directed towards mitigating the main threats to these species, with particular focus on human activities (e.g. no hunting and grazing).

The Nationalpark Hohe Tauern Salzburg and particularly the surrounding area used to have large herbivores and carnivores. However, today the wilderness zone provide a safe habitat for chamois and ibex. The wilderness zone is not suitable due to its elevation for other animals typical for forested habitats such as badger, lynx, wolf and bear.

Strengths

The wilderness zone contributes to the conservation of indicator species.

Park staff see wilderness as an important tool to guarantee the conservation of indicator species.

There are a number of educational programmes as well as exhibitions at the Nationalpark Centre (it has a 360° cinema) with a focus on wilderness and park management's efforts to create wilderness.

The Ibex was successfully reintroduced to the area a few decades ago and is now managed by the local hunting association except in the wilderness zone where Ibex are managed by park administration. There is a complex Ibex telemetry monitoring and genetic project in cooperation with hunters. Ibex are not a protected species and can be hunted with regulations even in the Nationalpark, the only exception is the wilderness zone.

Vultures and eagles were successfully reintroduced but wilderness zone due to its elevation is not an ideal habitat for these birds.

The wilderness zone is not a suitable habitat for large carnivores. Nevertheless, the wolf has been observed several times at lower elevations which indicates that there are parts the Nationalpark that have suitable habitats for them.

Invasive alien species are not an issue. The wilderness zone is located far away from the areas that have had invasive species.

A management plan which includes the issue of invasive species is under development.

There is monitoring, research, international cooperation and field activities. These are used to improve the quality of wilderness and to maintain the habitats for endangered species.

Weakness

Wilderness includes examples of high elevation flora and fauna but in the northern part there has been heavily impact from logging and intensive grazed of the previous centuries. There is still moderate pressure from grazing and hunting in the areas surroundings the wilderness zone.

There is growing threat of invasive species from the area outside the park.

Recommendations

Management plan under development should include;

- information on endemic, red-listed, vulnerable and/or other rare species which occur in the wilderness
- information on native species in the wilderness zone that have decreased or become extinct
- information about actions on invasive alien species management
- the continued systematic monitoring of the large herbivores with a focus on wilderness zone
- include a summary in English

Priority: High — Time Frame: 2018

Continue with current communication strategy focusing on the purpose of wilderness, the importance of indicator species such as ibex, chamois

Priority: High — Time Frame: 2020

Continue to monitor for the threat of invasive alien species in the wilderness

Priority: Medium — Time Frame: 2020

Fig. 59: Management organization succeeded in buying ca 3,000 ha of wilderness.

Fig. 60: The Ibex was successfully reintroduced to this area a few decades ago.

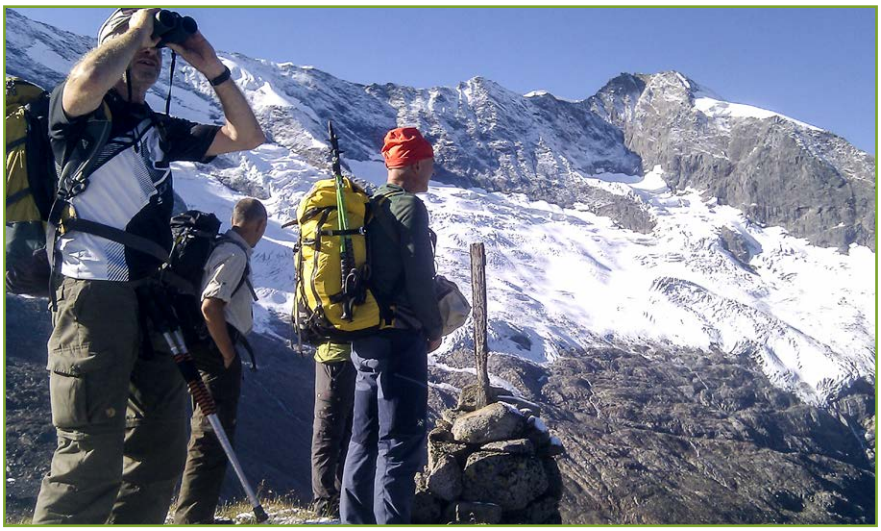


Fig. 61: There are several areas with wilderness quality outside the wilderness zone.

Fig. 62: Natural vegetation and its associated species are the result of evolutionary history.

7.2.3. Criterion 2.3. The wilderness zone contain examples of undisturbed ecosystems

Reason for the Criterion

It is difficult to find undisturbed habitats in Europe therefore the definition of wilderness in Europe does not mean only pristine or primeval landscapes but areas that are recovering and are without intrusive or extractive human activity, settlements, infrastructure or visual disturbance.

Current situation

The wilderness zone provides the finest examples of undisturbed habitats in the Hohe Tauern mountain range. It includes glaciers and glaciated areas, fragments of forest (the tree line ecotone), various stages of rock fall areas and many more.

However some parts of the wilderness were intensively used in the previous centuries which the scars are still visible.

Findings

The area is dynamic including changes from retreating glaciers.

Strengths

The wilderness zone contains the finest examples of high altitude undisturbed habitats in the entire county, a list is available.

The Untersulzbach valley is a rare exception not only in the wilderness zone but in the entire park due to the least visible impact of past activities.

There is a presence of healthy population of ibex and chamois.

Activities in the wilderness zone are controlled and monitor by park staff in particular rangers.

The objective of the wilderness zone is to utilize passive restoration.

The enlargement of the wilderness zone is under discussion although the management plan under development does not include an restoration programme but rather focuses on monitoring for short and long-term changes in the wilderness.

Weakness

The impacts of previous commercial activities, such as forestry and grazing in the lower parts of wilderness zone are still visible. There are still some challenges and disputes concerning management of the surrounding areas between the landowners and park managers.

Recommendations

Continue with communication of wilderness conservation efforts in the wilderness zone, highlighting examples of undisturbed ecosystems.

Priority: High	Time Frame: 2020

Fig. 63: The wilderness zone contains the finest examples of high altitude undisturbed habitats in country.

7.2.4. Criterion 2.4. The wilderness has a management plan to restore natural processes in the restoration zone.

Reason for the Criterion

Wilderness is rarely undisturbed. Therefore the places that have been impacted by humans can be restored to wilderness over time.
Restoration is the process of assisting in the recovery of a landscape that has been degraded, damaged, or destroyed. Restoration can be active or passive.

Active restoration is an intentional activity that initiates or accelerates landscape recovery with respect to functional processes, species composition and community structure, and resistance to disturbance. Passive restoration is when minimal activities are undertaken and the area is allowed to restore on its own.

Current situation

Wilderness zone has signs of past human activity. Nevertheless most of the wilderness zone has for decades been left to passive restoration with positive outcomes. Park management plans to continue with passive management.

Findings

The wilderness has no restoration zone.

Strengths

The wilderness and transition zones are large and are easily combined with the zoning used by the European Wilderness Quality Standard and Audit System. The wilderness zone is not actively managed. The transition zone includes some activities such as traditional grazing and hunting.

Weakness

In order to enlarge the cwilderness zone, a comprehensive wilderness restoration management plan is needed. Currently, there is no resources to develop such a plan.

Recommendations

Develop a draft comprehensive study to achieve the following:

- Define the potential to enlarge the wilderness zone
- Prepare a map of a proposed restoration zone
- Identify activities and steps to implement possible restoration measures (e.g. remove grazing, funding)

Fig. 64: Wilderness zone has signs of past human activity.

7.3. Principle 3: Wilderness Management

This principle addresses the various wilderness conservation measures such as a biodiversity management plan, plan for supporting the natural processes, landscape management and the training of the wilderness management team. In addition, this principle covers the impact of visitor management.

Reason for the Principle

An area that has been designed as a protected wilderness zone does not always guarantee that it will be managed to ensure its preservation. In order to guarantee long-term sound wilderness conservation, it is necessary to have a good understanding of the principles of wilderness management. Good wilderness management must recognize and respect that wilderness is; an area governed by natural processes, composed of native habitats and species and is large enough for ecological functioning. The area needs to be unmodified or only slightly modified without intrusive or extractive human activities, settlements, infrastructure or visual disturbances.

7.3.1. Criterion 3.1. The wilderness is protected by law in accordance within national legislative framework for an indefinite period of time.

Reason for the Criterion

In order to guarantee the protection of wilderness for an indefinite period of time it needs to be protected by law. National legislative framework include laws for Nationalparks, bylaws and other regulations as they related to nature conservation and protection. These laws usually provide secured long-term legal protection and it is the most common tool to mitigate any possible illegal activities as well as prevent its commercial development.

Current situation

The Nationalpark Hohe Tauern Salzburg is part of Austria's protected area network. The focus for management was meet quality the standard of IUCN category II. Site assessment showed that proposed wilderness zone would meet the quality standard of IUCN category Ib - wilderness.

Findings

Management of HTW is a unique example of wilderness management, supported not only by the Federal Ministry of Environment but also by local province government (Salzburg) and the Austrian Forest Service. These authorities agreed to protect wilderness by a non-intervention management approach.

Strengths

The Nationalpark Hohe Tauern Salzburg is legally protected and wilderness is part of the core zone. Legislation defines the type of management which is permitted in core and buffer zones.

There is long-term objective to protect the proposed wilderness which is supported by stakeholders.

National legislation focus on protection of the Nationalpark Hohe Tauern Salzburg as a IUCN category II. It is important to note that the core zone of the Nationalpark Hohe Tauern Salzburg was originally not conceived as strict non-intervention areas, when the Nationalpark law was written 1983. Even the legal text states that there should be no human intervention into nature and landscape within the core zone, they invariably add a list of possible exceptions (see in details to report of the Wild Europe Initiative, page 21-22).

In order to protect wilderness was a management decision done as a result of process going on in the last decade throughout the Europe and particularly after the Wilderness conference in Prague, 2009.

Approximately 3000ha was purchased from a German NGO which will now be the responsibility of park management. This area will be wilderness where non-intervention management will be applied. Very unique situation in this park (illustrating park management commitment to protect wilderness) is the ongoing process of buying ca 3000 ha of wilderness zone from German NGO by the Province of Salzburg to implement non-intervention management in the full scope. This land will be in ownership and management responsibility of the park management.

There is professional management with committed staff. The park is considered as a model for wilderness conservation in Austria and Central Europe.

Management has wilderness management skills and knowledge, approximately 60% of the park employees believe that non-intervention management in wilderness is an important asset for the park (and is very likely that after successful European Wilderness Society wilderness certification this percentage will even increase).

Wilderness management skills and knowledge are mandatory requirements for employment especially rangers. Top level managers are well-educated and supporters of non-intervention management.

There are adequate financial resources from the federal and provincial governments as well as EU funding for the purchase of land.

Management is skill at tapping into resources that is made available through the EU Commission through projects which focus on wilderness conservation, research and communication.

Wilderness zone provides excellent examples of high altitude habitat types.

There is a map and a list of important habitat types in the wilderness zone. The wilderness zone includes mostly high altitude habitats and landscapes.

Human activities such as tourism, commercial forestry, hunting and motorized access are permitted outside the wilderness zone.

The area outside of the wilderness zone is used as entry points to the park for tourists. There are three long valleys providing access to the wilderness zone. Motorized access to these valleys is strictly controlled and local businesses provide bus transport. Austrian Alpenverain maintains many kilometres of officially marked trails providing access to the wilderness zone.

Weakness

The main challenge to implementing non-intervention management is the attitude of local people and stakeholders with respect to wilderness protection.

The potential to enlarge the wilderness zone is a low potential due to traditional ownership rights and activities. Local people have a strong sense of ownership to the land and benefit commercially from it.

There are several remote areas with difficult terrain outside the wilderness zone. These areas likely also meet the wilderness quality standard.

Complicated land ownership in the area prevents including other habitats to the existing wilderness zone.

The areas outside the wilderness are open to grazing, hunting, and forestry. These activities does not impact wilderness zone.

Recommendations

Implement a long-term wilderness plan to guarantee its legal protection (e.g. specific wilderness focused legislation with an extent period of 30-35 years	
Priority: High	Time Frame: 2020

Continue implementing the communication strategy with focus wilderness.	
Priority: High	Time Frame: 2020

Fig. 65: The Nationalpark Hohe Tauern Salzburg is a unique example of having wilderness management.

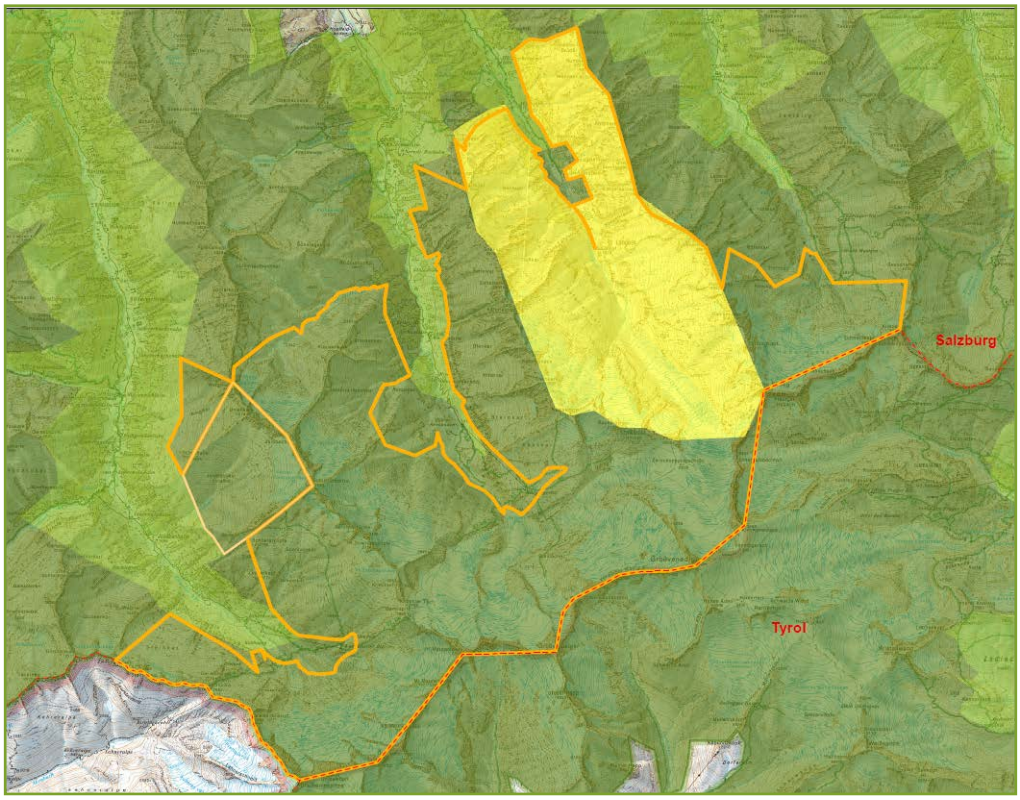


Fig. 66: Wilderness zoning.

Fig. 67: The main challenge is to implement non-intervention management.

Fig. 68: Wilderness zone provides excellent examples of high altitude habitat types.

Fig. 69: There are several remote areas outside wilderness zone with wilderness quality.

7.3.2. Criterion 3.2. The wilderness has a wilderness management plan of at least 10 years.

Reason for the Criterion

A manager has a natural tendency to want to 'manage' whether there is a need for it or not.

The need to manage wilderness could be inconsistent with the concept of wilderness. By definition, 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.

The term management strongly suggests that people are in control, that the land needs to be managed. Non-intervention management can be a new approach for protected areas.

Wilderness stewardship is a more accurate terminology of this new form of land use management. Wilderness stewardship is a more holistic approach to wilderness management where managers first determine whether there is the need for any management action before implementing an action plan.

Wilderness stewardship aims to protect, maintain and where necessary, restore wilderness and provide opportunities for solitude in nature. It includes the designation, planning, management and monitoring of wilderness. A long-term wilderness management plan is an important to achieve these goals.

Current situation

There are documents providing the framework for daily management. These documents include a long-term wilderness conservation strategy of which a new one is in development. This new strategy will have short and long term objectives which highlight the need to maintain ecosystem services and biodiversity.

These documents outline the basic objectives and management principles of the Nationalpark Hohe Tauern Salzburg including Hohe Tauern Wilderness.

Findings

The main stepping stones of long-term conservation strategy in the Nationalpark Hohe Tauern Salzburg:
1. Aim to achieve the local recognition, (1994 agreement of all three provinces to create a unified coordinated management)
2. Aim to achieve national recognition
3. Aim to achieve international recognition (in 1984 Park was a small area, enlargement happened thanks to international recognition),
4. Aim to create and protect wilderness zone, (since conference in Prague, 2009, the wilderness become issue for the Nationalpark Hohe Tauern Salzburg...

Strengths

There is a long-term conservation strategy.

A Wilderness Management Plan is being developed as part of the management documents. The validity of many documents is for nine years due to agreements with state forestry and hunters.

Many of the documents are publically available. Some are available in English such as the annual reports.

There is comprehensive communication and marketing strategy.

Management objectives in the wilderness zone highlight the priority of wilderness conservation and that ecological processes and biodiversity will be maintained over the long term.

Protected area has an ambition to protect (also legally) large contiguous wilderness zone.

There is a wide range of educational brochures and programmes available for visitors.

There is a plan to develop wilderness focused interpretation and training programmes (e.g. a wilderness academy, incorporate wilderness rangers to school programme, visits to wilderness).

English-speaking guided tour are available.

Weakness

Most documents in regards to the conservation strategy and connectivity with other wilderness in surroundings are available only in German.

The ownership structure and the cost to purchase user rights reduce the chances of enlarging the wilderness zone.

There lacks comprehensive wilderness focused education, interpretation and training programmes.

Recommendations

Focus on the development of new management plan with a section on wilderness	
Priority: High	Time Frame: 2017
Consider the posibility to enlarge the wilderenss zone. Develop a short inventory of wilderenss potential in the area.	
Priority: Low	Time Frame: 2020
Implement wilderness education, interpretion and training.	
Priority: High	Time Frame: 2020
Implement research and monitoring strategy with a focus on wilderenss.	
Priority: Medium	Time Frame: 2020
Communicate widely the benefit of wilderness conservation in order to share the experience with other protected areas in Austria and beyond.	
Priority: High:	Time Frame: 2020
Develop an analysis of internal and external threats to the wilderness zone	
Priority: High	Time Frame: 2020

Fig. 70: The wilderness concept has gained considerable momentum in Europe during the last 15 years.

Fig. 71: There is a plan to develop wilderness focused interpretation and training programmes.

Fig. 72: The new management plan includes wilderness education and interpretion.

7.3.3. Criterion 3.3. The wilderness has a sufficiently large and trained full time management team

Reason for the Criterion

An important precondition for successful park operations is an appropriately sized and trained management team that is committed and dedicated.

Due to the wide range of skills that park management staff must possess, it is imperative that proper training is made available.

The manager who knows how to handle issues in a professional manner will smooth over problems with less collateral damage. Avoiding these types of issues will save time and valuable resources.

Current situation

The Nationalpark Hohe Tauern Salzburg has a professional management team. The aim of management is to guarantee the long-term protection of the park.

Park management has a high level of wilderness management knowledge with approximately 70% who believe in the importance of non-intervention management.

Findings

There is number of field employees - park rangers. They have a responsibility to implement and communicate the following; nature conservation, forestry and hunting laws. However, park rangers have a limited enforcement capacity. They are mostly focusing on education, interpretation and communication. There is an interest to maintain good relationships with the local population.

Strengths

Park management and employees are committed and proud of their work in particular the wilderness.

There is always number of seasonal employees in summer, including several students working on research topics.

Weakness

There is a need to train staff on the subject of wilderness management skills, improve language skill and develop wilderness focused education and interpretation

Recommendations

Develop field training for wilderness management best practice.	
Priority: High	Time Frame: 2020
Increase language skills for the staff who are involved in tourism, visitor management and communication.	
Priority: Low	Time Frame: 2020
Develop and implement wilderness focused education and interpretation training programmes	
Priority: High	Time Frame: 2020
Train park managements from other protected areas on wilderness management and interpretation	
Priority: Medium	Time Frame: 2020

Fig. 73: Wilderness management knowledge and skills are mandatory requirements for park employees. Top level managers are well-educated and support wilderness conservation.

7.3.4. Criterion 3.4. A training plan for the management team exists.

Reason for the Criterion

Training is an excellent opportunity for expanding the management team's knowledge base. A structured training and development programme would ensure that the management team has sufficient experience and background knowledge.

A structured training programme should have a programme which would include a timeline, outline of activities, and who is responsible for what activities as well as defined outcomes for the training.

Current situation

Regular training is organised for the management team. There is annual meeting of Austrian Nationalpark employees including directors and staff.

The Nationalpark Hohe Tauern Salzburg organises a number of seminars, field trainings which are focused on wilderness. Park also brings in external lecturers and trainers.

Findings

Park rangers have good knowledge to work in the field and fulfil tasks linked to wilderness conservation.

Training programmes for management occur on regular annual bases. This training focuses on the Nationalpark Hohe Tauern Salzburg related subjects, the role of the park in Europe, ecological processes and biodiversity and the role of large carnivores.

Strengths

Regular internal trainings for the management team. The training plan includes objectives, methods and schedules. There is a strong commitment and wish of the management team to learn new skills.

The issue of wilderness and importance of non-intervention management as one of the highlight of the Nationalpark Hohe Tauern Salzburg is growing in the last several years. It will be likely even more important when this area will be included to the European Wilderness Preservation System. In this moment the following subjects could become important: wilderness in Europe, wilderness and ecological processes and biodiversity, wilderness and large predators, wilderness rangers, wilderness and visitors and locals, etc.

Weakness

Most of the information about training programmes is available only in German

Recommendations

Develop a wilderness focus training plan for the management team.	
Priority: Medium	Time Frame: 2020

Fig. 74: Training is an excellent opportunity for expanding the management team's knowledge base.

7.4. Principle 4: Wilderness Restoration

A plan should be in place for the restoration of areas in the restoration zones for later expansion of the wilderness zone.

Wilderness restoration is an intentional activity that initiates or accelerates the recovery of damaged ecosystem that has wilderness potential. Wilderness restoration includes a wide range of activities such as restoration of disturbed areas and the reintroduction of native species.

Reason for the Principle

A wilderness restoration plan would be needed for if the objective was to expand the wilderness zone.

Fig. 75: The Nationalpark Hohe Tauern Salzburg has a long-term vision to develop a unique large wilderness.

7.4.1. Criterion 4.1. It is the objective to enlarge the wilderness zone.

Reason for the Criterion

The objective of of enlarging the wilderness zone is an important criterion and requires planning. Enlarging the wilderness zone is a strategic decision and therefore this process should include key stakeholders.

Enlargement of the wilderness zone is an important decision for wilderness managers to meet the European Wilderness Quality Standard or upgrade the wilderness category. Enlargement of the wilderness zone can reduce fragmentation and minimize negative impacts. Wilderness zones that are adequately large provide safe areas for species to thrive and ecosystem functioning.

Current situation

The Nationalpark Hohe Tauern Salzburg has a goal to develop a large wilderness in Austria and become a model and inspiration for other wildernesses in Europe.

Findings

There is a potential to enlarge the wilderness zone.

Strengths

The Nationalpark Hohe Tauern Salzburg wilderness zone is a large contiguous piece of land at the north site of Venediger range. There is a potential to enlarge the wilderness zone in the Salzburg part and also on the south side at the territory of the Nationalpark Hohe Tauern, Tyrol, Austria and on the Italian border.

Weakness

Enlarging the wilderness zone would be demanding and costly process which at the moment there is no resources to undertake such a task.

Recommendations

Develop a report to assess the feasibility to enlarge the wilderness zone.	
Priority: Low	Time Frame: 2020

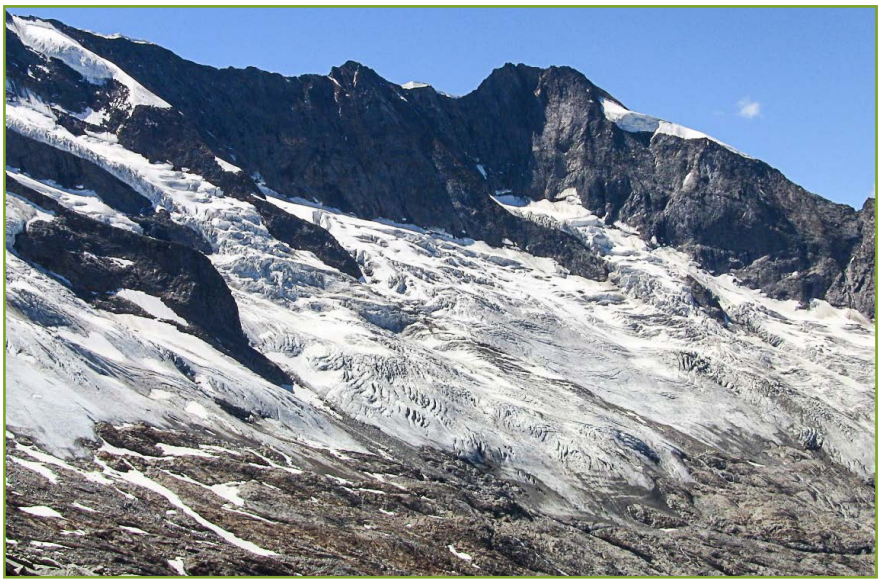


Fig. 76: There is potential to enlarge the wilderness zone on the Salzburg and also on south side of mountains at the territory of the Nationalpark Hohe Tauern, Tyrol, Austria and also on Italian site boundary.

7.4.2. Criterion 4.2. The wilderness has a wilderness restoration plan to enlarge and improve the wilderness zone.

Reason for the Criterion

Due to land uses and human activities in the past, biological and/or physical processes have been altered in a particular area. In this case, active managed might be needed to restore ecological functioning and return the land to its natural condition as much as possible. Revegetation and reintroduction of native species are just two examples of active management.

Current situation

There is no wilderness restoration plan to enlarge or improve the wilderness zone.

Findings

Wilderness restoration could be an important tool to enlarge the wilderness zone.

Strengths

The Nationalpark Hohe Tauern Salzburg has professional and passionate staff who believe in passive restoration with minimal intervention.

A lot of resources have been spent in the last years to communicate the importance of wilderness in order to increase the support from locals, stakeholders and the general public.

Weakness

Private land ownership as wellas limited capacity and financial resources.

Recommendations

Develop a report to assess feasibility to develop wilderness restoration plan.	
Priority: Low	Time Frame: 2020

Fig. 77: A wilderness restoration plan is a tool to accelerate the recovery of a damaged ecosystem with wilderness potential.

7.5. Principle 5: Wilderness and extractive uses

The working definition of wilderness stipulates that wilderness is an area without intrusive or extractive uses.

Reason for the Principle

The wilderness zone does not have any extractive uses or intrusive activities such as forestry, hunting/culling, fishing, agricultural activities including livestock grazing, or mining, dead-wood collection, or any other activities that modifies the landscapes or extracts resources.

However, during restoration, some management activities and/or extractive uses might be permitted for at the bronze and silver levels.

7.5.1. Criterion 5.1. The wilderness zone has no extractive or commercial uses.

Reason for the Criterion

Extractive or commercial uses have a negative impact on wilderness.

Current situation

Wilderness zone has no extractive or commercial uses.

Findings

HTW is an excellent example of a large contiguous piece of high alpine re-wilding land with no extractive activities.

Strengths

The wilderness zone has an aim protect spontaneous re-wilding processes. The heart of the wilderness zone is *Special Protected Area*, where all extractive uses have been removed. This area is not even accessible by hiking trails and provides an excellent nucleolus of today's wilderness zone.

The wilderness zone has been area for hiking, mountaineering, climbing, glacier expeditions and educational trips for several decades. These activities have historically been organized by Alpenverein. In the last years, wilderness education and interpretation activities have been organized and the number of these increasing every year.

Weakness

In the past centuries, the land was intensively used and the wilderness zone was significantly impacted. The signs of these uses are still visible today. Nevertheless the area has had several decades of rewilding.

There are 2 alpine huts at the edge of wilderness zone offering traditional services for visitors such as accommodations and food. Both facilities are supported by cable cars. These facilities and the growing interest for outdoor activities (Großvenediger is popular climbing destination) create pressure on the wilderness zone.

Recommendation

Continue implementing education and interpretation activities which focuses on the negative impact of extractive uses such as grazing, forestry and hunting, the importance of rewilding, spontaneous natural processes, and wilderness conservation.

Priority: Medium Time Frame: 2020

Fig. 78: Verification team managed to visit and verify large part of wilderness zone.

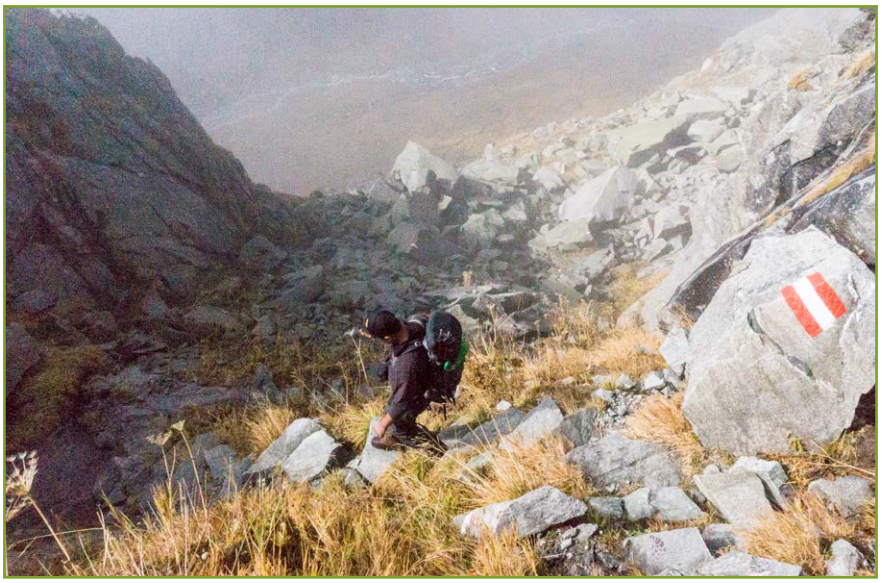


Fig. 79: There are several trails heading to the Hohe Tauern Wilderness.

7.5.2. Criterion 5.2. The wilderness zone has no forestry operation.

Reason for the Criterion

Forestry operation, even selective cutting and nature close forest management techniques, are not compatible with the principles of wilderness management.

Current situation

There is no forestry operation in the wilderness zone.

Findings

Since there is almost no forest within the proposed wilderness forestry is not an issue.

However, the Austrian forestry law also applies to unused forest, prescribing interventions for example in the case of bark beetle outbreaks, large-scale breakdown of the forest cover, apparent lack of rejuvenation and for the maintenance of protected forest. Exemptions from these obligations are only possible if forest is declared as *biotope protection forest* under the Austrian forestry law. The Nationalpark would apply for such a statute with respect to the wilderness, even if at the moment, there is not much forest land.

Forest may advance in the future, due to climate change, ceasing of grazing and as a result of the recovery of forest. With increasing forest cover, the likelihood of natural disturbances affecting the stands will increase as well.

Since the above mentioned forestry measures are not at all compatible with the wilderness, it would seem wise to secure the legal basis for non-intervention management.

Strengths

The wilderness zone has no forestry operation. There are only small fragments of forest at the lower elevation of the wilderness zone but there is no forestry.

Weakness

Part of the wilderness zone, particularly the northern part was impacted heavily in the last centuries by intensive forestry. Self recovery of this forest is very unlikely without active management.

Recommendations

Apply for a statute biotope protection forest in order to minimized possible forestry operation pressure in the future.

Priority: Low | Time Frame: 2020

Fig. 80: There is no forestry operation in the wilderness zone.

Fig. 81: Part of wilderness zone was impacted in the last centuries by intensive forestry.

7.5.3. Criterion 5.3. The wilderness zone has no hunting and/or game management

Reason for the Criterion

Hunting and/or game management are not compatible with wilderness management.

Current situation

The wilderness zone has no hunting and/or game management.

Findings

Game management confirms to the guidelines for undulate management. In the Salzburg part, game management is further embedded in a regional concept of wildlife management, which reaches beyond the boundaries of the protected area.

Current game management practices within the park would be compatible with wilderness and should be upheld after establishment. However, a strict approach should be taken with respect to exceptions for management interventions: they should not be allowed in the wilderness zone, even in the case of epizootics and diseases. Stronger emphasis should also be placed on the restoration of natural phenomena, like the migration of red deer between high altitude summer ranges and wintering grounds in valleys.

A scientifically sound roadmap for the restoration of both migration routes and wintering grounds should be developed, including a plan for the gradual phasing out of the remaining winter feeding stations which are currently located outside the Nationalpark core zones.

Strengths

Hunting and game management are not allowed in the wilderness zone. This zone is an excellent habitat for a range of species including chamois, ibex, and eagle. The area is the subject of species monitoring in particular chamois and ibex. No hunting in the wilderness zone provides a good model for wilderness in the wider Alps region and across Europe.

Weakness

Part of the wilderness zone particularly at lower elevation was heavily impacted in the past centuries by intensive hunting resulting in the extinction of large carnivores and ibex.

Recommendations

Develop a strategy to communicate the importance of having no hunting in wilderness zone.	
Priority: Medium	Time Frame: 2020
Develop a scientifically sound roadmap for the restoration of both migration routes and wintering grounds.	
Priority: Medium	Time Frame: 2020
Continue to implement the communication strategy which gives importance to having carnivores in the wilderness zone.	
Priority: Medium	Time Frame: 2020

Fig. 82: It is essential to communicate that wilderness is a hunting-free zone.

7.5.4. Criterion 5.4. The wilderness zone has no extractive fishing or management of fish populations.

Reason for the Criterion

Extractive fishing and/or management of fish populations are not compatible with wilderness.

Current situation

The wilderness zone has no extractive fishing or management of fish populations.

Findings

The wilderness zone is not fish habitat.

Fishing is not an issue within in the proposed wilderness, as rivers have no harvestable fish populations due to high flow velocity, low temperatures, high degree of turbidity and the occurrence of natural barriers, like waterfalls.

However, the management practices in the rivers sections below the proposed wilderness should be modified so as to meet both Nationalpark goals (i.e. no artificial stocking, no use of non-native species, natural reproductions of native fish).

Strengths

There is no fishing in the wilderness zone

Fig. 83: The wilderness zone has no extractive fishing or management of fish populations.

7.5.5. Criterion 5.5. The wilderness has a fish and game management plan for the restoration and transition zones.

Reason for the Criterion

In Principle 1, it is proposed to create a restoration and a transition zone. Management of these zones requires specific activities with objectives to enlarge wilderness zone.

The restoration zone with its relatively low human impact not only surrounds and protects the wilderness zone but also assists in the restoration/rewilding of habitats and ecological functioning. The objective is that these activities are phased out within ten years.

The transition zone is an area where a range of human activities is permitted, however management controls prevent development of major infrastructure such as wind farms or large scale clear cutting which would significantly alter the landscape or the environment. Sustainable harvesting of timber, animals (i.e. hunting and fishing) and plants (e.g. berries, fruits and mushrooms), together with organic agriculture is possible in the transition zone.

Current situation

The Nationalpark Hohe Tauern Salzburg has no restoration zone (Criterion 1.1.). The wilderness zone is either surrounded by Nationalpark core zones or by Nationalpark external zones with a depth varying from several hundred meters to several kilometres. As these areas easily fulfil the management criteria for a transition zone, it is not necessary to delineate such a zone for the planned wilderness. There are no resources, support of landowners and capacity to create a restoration zone.

Findings

Fish and game management plan for the transition zone is part of the overall management documents.

Strengths

A game management plan has been implemented for several years in the transition zone.

Weakness

Ibex and chamois hunted in transition zone.

Recommendations:

Park management continue on implementation of game management documents in transition zone	
Priority: Medium	Time Frame: 2020

7.5.6. Criterion 5.6. The wilderness zone has no active mining

Reason for the Criterion

Mining activities are often located in proposed wilderness. The reason for the criterion is to prevent future mining activities in newly verified wilderness.

Current situation

Wilderness zone as well as the entire protected area does not have any mining.

Fig. 84: Wilderness zone has no active mining.

7.5.7. Criterion 5.7. The wilderness zone has restored former mining sites

Reason for the Criterion

Restored mining sites are frequently located in proposed wilderness

Current situation

The protected area has no restored mining sites in the wilderness zone.

7.5.8. Criterion 5.8. Park management has implemented a restoration plan for previous mining sites in the restoration zone

Current situation

The protected area has no previous mining sites in the wilderness zone therefore a restoration plan for previous mining sites is not needed.

7.5.9. Criterion 5.9. The wilderness zone has no domestic livestock grazing.

Reason for the Criterion

Livestock grazing is not compatible with wilderness management.

Current situation

Wilderness zone has no livestock grazing.

Findings

The wilderness zone has no livestock grazing.

Strengths

Wilderness zone has no livestock grazing.

Weakness

There is seasonal livestock grazing in the transitional zone and also at the lower part of the Untersulzbach Valley.

The transitional zone has traditional grazing (alms). It is ongoing activity in several areas throughout the park, but these areas are not included to wilderness zone.

Recommendations

Continue communicate the importance no livestock grazing in the wilderness zone.	
Priority: Medium	Time Frame: 2020

Fig. 85: Domestic livestock grazing occur in park transition zone.

7.5.10. Criterion 5.10. The wilderness zone has no agricultural activities

Reason for the Criterion

Agricultural activities are not compatible with wilderness.

Current situation

The wilderness zone has no agricultural activities.

Findings

The wilderness zone has never been used for agricultural activities

7.5.11. Criterion 5.11. The wilderness zone has no deadwood collection

Reason for the Criterion

Deadwood collection is not compatible with wilderness.

Current situation

The wilderness zone has no deadwood collection.

Findings

The deadwood collection happened in the past centuries but only in limited area of the wilderness zone (e.g. lower elevations) to supply fire wood for summer alms.

7.5.12. Criterion 5.12. There is no commercial harvesting of berries, nuts and/or mushrooms in the wilderness zone

Reason for the Criterion

Commercial harvesting of berries, nuts and/or mushrooms is not compatible with wilderness.

Current situation

There is no commercial harvesting of berries, nuts and/or mushrooms in the wilderness zone.

Findings

The harvesting of berries, nuts and/or mushrooms for private use happened in the past but only in limited areas of the wilderness zone (north and lower elevations).

Fig. 86: There is no commercial harvesting of berries, nuts and/or mushrooms in the wilderness zone.

7.5.13. Criterion 5.13. There is no commercial collection of minerals in the wilderness zone

Reason for the Criterion

Commercial harvesting of minerals is not compatible with wilderness.

Current situation

There is some illegal collection of minerals in the wilderness zone

Findings

Retreating glaciers are open up possible opportunities to collect minerals either for commercial or non-commercial uses in the wilderness zone

Strengths

The collecting of minerals is not permitted. Park rangers are vigilant for this activity.

Weakness

There is limited capacity of park management to monitor and control collection of minerals in the wilderness zone

Recommendations

Monitor and control collection of minerals in the wilderness zone	
Priority: Medium	Time Frame: 2020

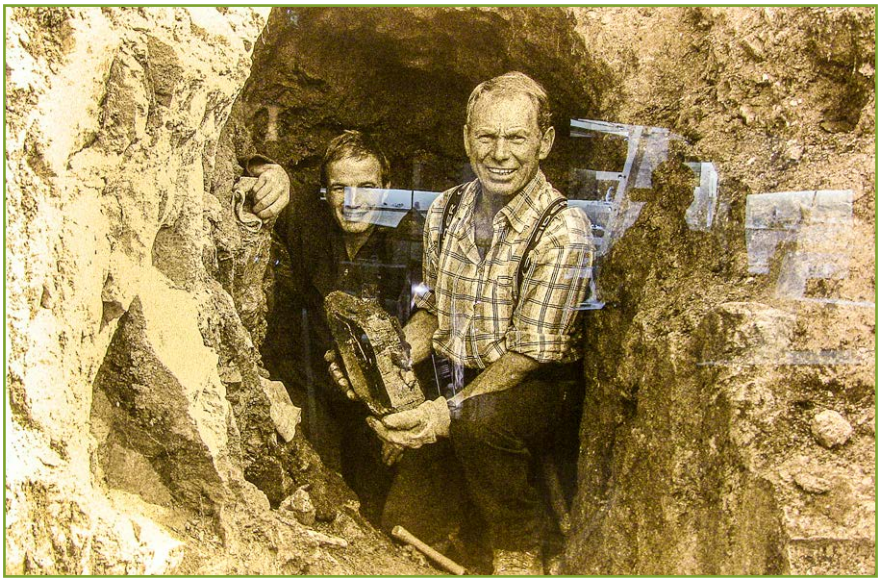


Fig. 87: There is not allowed to collect minerals for commercial use in the wilderness zone.

7.5.14. Criterion 5.14. There is no commercial use of wilderness zone for filmmaking

Reason for the Criterion

Filmmaking is not compatible with wilderness.

Current situation

There is no commercial use of the wilderness zone for filmmaking

Findings

There is growing pressure for filmmaking requests with the use of helicopters. However, the park has guidelines for how to deal with these requests.

Strengths

There is no filmmaking

7.6. Principle 6: Wilderness Disturbance

This principle focus on the removal of infrastructure, creating well-planned tourism access and regulating and limiting road access to the area in order to reduce impact in the wilderness zones

This principle addresses disturbances in a world were humans have imposed scale and boundaries on landscapes. The main issue of scale in disturbance management is about patch dynamic equilibrium. The main issue of boundary in disturbance management is the effect of edge conditions on disturbance frequency and magnitude. Human activities outside the wilderness dramatically influence management decisions on disturbances within wilderness zone.

Reason for the Principle

The wilderness zone should not have any significant man-made disturbances.

The wilderness zone should generally be free of infrastructure, commercial development and/or extractive uses. Disturbances would include but are not limited to permanent infrastructure, roads, permanent settlements, noise and light pollution.

The restoration zone can include temporary man-made disturbances such as infrastructure or other activities that might take place for a short period of time and does not leave damage.

Fig. 88: The wilderness zone should not have any significant man-made disturbances.

7.6.1. Criterion 6.1. The wilderness zone has no permanent infrastructure

Reason for the Criterion

Wilderness should not have permanent infrastructure as it is incompatible with wilderness quality standard.

Current situation

Wilderness zone has no permanent infrastructure

Findings

The wildernesses zone has no permanent infrastructure.

Currently, there is no technical infrastructure in place to secure human life and property against avalanches, landslides and rock-fall.

All areas with permanent infrastructure were excluded from the wilderness zone (alpine huts, cables and power lines).

Strengths

There are no permanent and temporary paved or gravel roads in wilderness zone! Park management has a clear strategy how to deal with inherited permanent infrastructure at the edge of the wilderness zone.

Weakness

There are 2 Alpenverein huts with cables and power lines in transition zone located close to the boundary of wilderness zone.

Recommendations

Park management develops an impact study of two Alpenverein huts on the border of wilderness zone	
Priority: Medium	Time Frame: 2020

Fig. 89: All areas with permanent infrastructure were excluded from the wilderness zone.

7.6.2. Criterion 6.2. The wilderness zone has no permanent settlements

Reason for the Criterion:

Permanent settlements are incompatible with wilderness quality standards[1].

Current situation

The Nationalpark Hohe Tauern Salzburg wilderness zone has no permanent settlements

Findings

The nearest permanent settlements from wilderness zone boundary is ca 10 km

7.6.3. Criterion 6.3. There is a management plan how to deal with temporary structures in the restoration zone

Reason for the Criterion

Temporary structures in the restoration/transition zone can be used for various purposes (e.g. restoration work, interpretation and education, etc.) The management plan provides framework for the permitted type and size of these temporary structures to minimized negative impacts in wilderness zone.

Common temporary structures in the restoration/transition zone are tourist huts/shelters for visitors which have orientation signs, maps, fire rings and interpretive panels

Current situation

There is a limited amount of permanent and temporary structures in the transition zone around wilderness zone related to tourism.

Findings

All existing permanent and temporary structures in the transition zone are related to accommodation, interpretation and education for visitors and have a low profile.

Existing permanent structures around wilderness zone provide simple accommodation and shelters (alpine huts) for visitors. Existing temporary structures include orientation signs, maps, and interpretive panels.

Strengths

Existing permanent structures around wilderness zone (alpine huts) are run in high environmental quality standard and provides also emergency service in low season (winter rooms)

Weaknesses

Existing permanent structures around wilderness zone (alpine huts) concentrate human impact due to number of tourists.

[1] *This criterion is directly link also to the IUCN Protected Areas Category Ia and 1b quality which states: Category Ia - Distinguishing features of this Category is … limiting access by people and excluding settlement. Category 1b - Protected areas Category 1b are usually large unmodified or slightly modified areas, retaining their natural character and influence, without permanent or significant human habitation, which are protected and managed so as to preserve their natural condition.*

Recommendations

Park management develops a map and inventory of the temporary structures (small scale tourism infrastructure) in the wilderness zone.	
Priority: Medium	Time Frame: 2020

Fig. 90: Existing permanent structures provides also emergency service in low season (winter rooms).

7.6.4. Criterion 6.4. There is a management plan to deal with inherited settlements in the wilderness

Reason for the Criterion

There is a growing interest to create new or enlarge existing wilderness which requires how to handle inherited settlements in the proposed wilderness.

There are several options for wilderness managers:
Exclude inherited settlements from the potential wilderness (e.g. large active settlements.
Accept them in the wilderness (e.g. abandoned settlement which could be restored to wilderness.
Use them for the benefit of wilderness (e.g. information points for visitors) which the management plan would need to set long-term objects and rules of use as needed.

Current situation

The Nationalpark Hohe Tauern Salzburg has no inherited settlements in the wilderness.

There are no settlements or buildings within the proposed boundaries of the wilderness. The visual impact of the two alpine huts (Kursinger and Warnsdorfer Hutte), which are located just outside the area, can be considered as rather low and localized. The huts are an important part of the tourist infrastructure of the Nationalpark.

As there is no road access to the huts, supply activities have to rely either on helicopter transport, or on cable cars. To minimize acoustic disturbance, the Nationalpark Hohe Tauern Salzburg is keen to keep helicopter flights to an absolute minimum (2 spells of supply flights a year) and thus strongly favours cable car transport. The cable cars supplying the huts are located outside the wilderness zone, but have certain, although limited visual impact on the landscape.

The same holds for the small power line supplying Kursinger Hutte with electricity. Nevertheless, opportunities to reduce the visual impact of both buildings and their supply infrastructure should be used, whenever they arise.

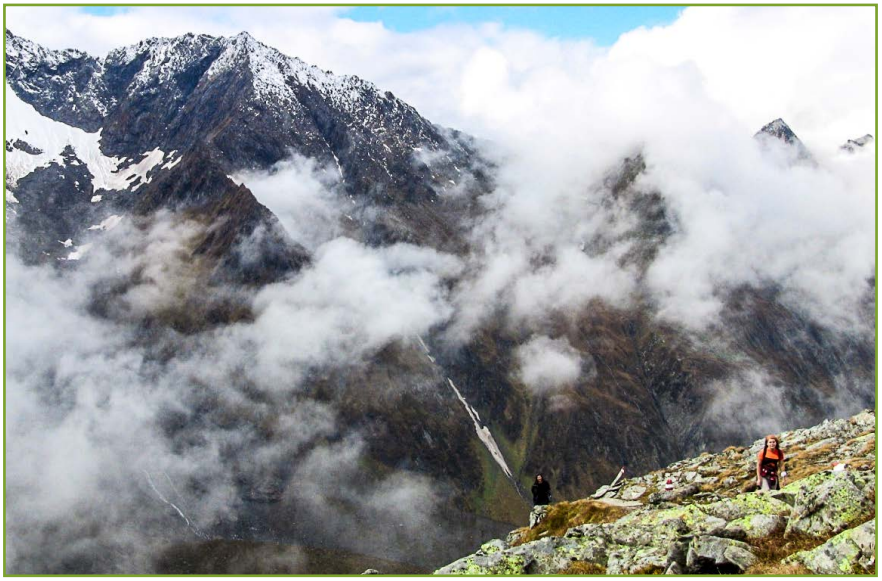


Fig. 91: The Nationalpark Hohe Tauern Salzburg has no inherited settlements in the wilderness.

7.6.5. Criterion 6.5. There is a management plan for the wilderness to deal with inherited indigenous gathering sites (e.g. traditional reindeer herding sites in Nordic countries)

Reason for the Criterion

Indigenous people are defined by international or national legislation as people having a set of specific rights based on their historical ties to a particular territory and their cultural or historical distinctiveness from other populations that are often politically dominant.

In the northern part of Europe, indigenous people are still living a traditional way of life (e.g. Hunting and fishing to make a living, grazing reindeer in traditional manner, etc.)

The way of the life of these people is a rare example of humans coexisting with nature, often times in the wilderness.

This creates an opportunity to include these large areas in the European Wilderness Quality Standard and Audit System.

Current situation

The protected area has no inherited indigenous gathering sites

7.6.6. Criterion 6.6. Permanent infrastructures in the restoration zone are removed according to the restoration plan, unless the removal is detrimental to the quality of the wilderness

Reason for the Criterion

Part of the restoration process is also to remove abandoned and disused infrastructure that are located in the restoration zone.

Current situation

The wilderness has no restoration zone, as of yet. When this zone is created it will be clear if there are abandoned infrastructures.

Findings

Wilderness zone has no permanent infrastructure.

7.6.7. Criterion 6.7. There is a management plan to deal with abandoned archaeological sites in the wilderness zone

Reason for the Criterion

Wilderness sometimes have abandoned archaeological sites. Actively researched archaeological sites or those used by tourist should not be included in the wilderness are.

If archaeological sites are already part of the wilderness zone, park management has to develop a plan to minimize the negative impact from the research or as a tourist attraction.

Current situation

Protected area has no archaeological remains in the wilderness zone.

7.6.8. Criterion 6.8. There is no motorized transport in the wilderness.

Reason for the Criterion

A wilderness limits motorized transport as much as possible. Motorized transport is incompatible with wilderness quality standard.

Motorized access is completely excluded in wilderness zone with the exception for rescue or if necessary to implement restoration activities.

Current situation

Protected area has no motorized transport in wilderness zone.

There are in each valley (transitional zone) the old gravel road. Traffic on the small dirt roads end at same distance from the wilderness is very limited and restricted by the existing Nationalpark regulations.

There is a system of taxi driving in the valleys helping tourist to get to alpine huts. This system is working in summer. Local farmers for many decades use these roads to access and use their property and so use actively gravel roads in valleys. These roads require an intensive maintenance and there is currently no intention to cease or discourage this activity.

Findings

The use of low-flying aircraft for recreational purposes is generally forbidden in the Nationalpark. Rescue flights in emergency situations and a limited number of helicopter flights to supplying huts and transporting heavy gears need it for trail maintenance are permissible, however. These regulations will have to be kept up after establishment of the wilderness, also the number of supply flights should be reduced as far as possible.

Using of drones (small planes) needs a license and permission from the Nationalpark Hohe Tauern Salzburg. Airplanes (or any flying transport) can fly only about 5000 m a.s.l.

Strengths

Wilderness has no motorized transport besides flying objects.

Flying helicopters have to follow park strategy. There is a guiding document developed by the Nationalpark Hohe Tauern Salzburg to minimize negative impact on wilderness zone
The helicopters can be used:

- in case of emergency and/or accident
- occasionally supply of alpine huts

The helicopters are flying usually in spring, using strictly defined flying corridors, timing, etc. Rescue operations also prefer using agreed flying corridors.

Weaknesses

Flying helicopters have a negative impact on wilderness zone and due to securing human life is difficult to avoid that.

Recommendations

Park management develops an impact study of aviation (e.g. sightseeing by helicopter, drones, etc) in wilderness zone.	
Priority: High	Time Frame: 2020

Fig. 92: Wilderness zone is far above the end of gravel road.

7.6.9. Criterion 6.9. There is free access on foot into the wilderness

Reason for the Criterion

Access on foot is the main manner in which to visit the wilderness and in particular the wilderness zone. In addition, monitoring and the patrolling of the wilderness zone is done on foot.

Current situation

Access: The wilderness zone is accessible only on foot and there are no drive able roads in the wilderness zone.

Free access on foot is permitted in the wilderness zone and there is no general obligation to stay on market path. This kind of access is unlimited but ca 90% of visitors stay on well-maintain trails.

Trails: Wilderness zone has limited number of kilometers of marked trails passing through wilderness zone. Wilderness zone is well known and used as destination for hikers, climbers, skiers, etc. These activities are main (traditional) purpose to visit this area.

The trail network in wilderness zone is not dense and trail marking are largely unobtrusive. A limited number of signposts have been set up at critical points of the trail network. Most of the area is devoid even of simple tracks. All existing trails are narrow hiking paths, just broad enough for a single person. Width of the trail is usually 50-60 cm.

There are some areas in the wilderness zone where due to intensity of use the trail is divided to the several lines and widened. However, the maintenance is regular and well done. There are only few muddy trails sections, particularly during wet rainy period and on soft soil areas.

Trail maintenance is mostly done with simple instruments, by skilled volunteers from Alpine Clubs, which have developed a philosophy of minimum intervention-trails and run extensive programmes for restoring multiple track-trails to single low-impact routes. As it makes sense to concentrate visitor impact on single tracks along nature hiking routes, the present level of trail maintenance and marking should be sustained, but no new trails should be opened within the wilderness.

An exception of this rule will have to be made for security reasons: in recent years, geomorphological dynamics in the area have strongly increased due to climate change (thaw of permafrost soil resulting in an increased frequency of large scale landslides and rock-fall). Some traditional trails have been destroyed altogether or have become too dangerous for further use. In such cases, the establishment of a new and safer roads must be permissible, to secure basic access to the area.
The wilderness zone is not suitable for paragliding, etc...

Findings

There are no suitable roads or trails for mountain bikes within the wilderness zone. Bikes are used only as transport mean to approach alpine huts (parking is still 1,5 hours from the huts outside of wilderness zone). Last 3-4 km bikers have to hike.

Difficult parts of trails are fixed by ropes, hooks, clamps, etc to secure safety. One access trail to huts (in transition zone) has statute of via ferrata.

The wilderness zone, particularly in spring, is use also for alpine skiing – free ride skiing. The wilderness zone is popular destination, particularly to reach the highest peak of the region Grossvenediger.

Strengths

Untersulzbach Valley is large part of wilderness zone without any official, marked and maintained trails! The area is very sporadically visited by public. Hiking beyond official trail end is very difficult. This area is visited usually only by park managers, rangers, researchers. There is a very sporadic visit in winter (due to frequent avalanches).

The high quality tourism maps are available and the maps are regularly updated. Protected area is offering an excellent wilderness experience e.g. demanding hiking trips but also easy trips around huts. Hiking trails are signed and maintained by local group of Alpenverein. Well designed and maintained hiking trails motivate hikers don't walk of the trails.

Most of the tourist trails are located in the South part of wilderness zone, Trails are heading either to the peaks or provide connection to the other huts and access to the attractive spots at the edge of glaciers. Large area of wilderness zone is trail free.

Weaknesses

Hiking trails not always meet the European Wilderness Quality Standard and Audit System wilderness quality standard e.g. trail is too wide, in difficult terrain not well maintained (e.g. around huts, claiming Gammzpits, etc), improper/useless density of tourist signs (trail to Kurzinger hutte, etc. There is also a demand coming from tourists groups to open new trails due to glacier retreat e.g. dead end trails to the glacier edge from Warnsdorfhutte and Kurzinger hutte, etc.

Recommendations

Park management discusses with Alpenverein with objective to agree on high wilderness quality standard for trail marking in the wilderness zone (e.g. less frequent marks, narrow trails, planning and systematic trail monitoring). There needs to be a concept of impact, meaning a limit of acceptable changes.

Priority: High | Time Frame: 2020

Fig. 93: The wilderness zone is accessible only on foot.

Fig. 94: Untersulzbach Valley is large part of wilderness zone without any official, marked and maintained trails!

7.6.10. Criterion 6.10. The wilderness zone has no noise pollution.

Reason for the Criterion

It is important to exclude noise pollution from the wilderness. Noise pollution is incompatible with wilderness quality standard.

Noise pollution has negative environmental consequences for wilderness. Human-induced noise pollution is one of many factors contributing to the depletion of wildlife populations. Noise pollution adversely affects animals by;

- masking, which is the inability to hear important environmental cues and animal signals;
- non-auditory physiological effects, such as increased heart rate and respiration and general stress reaction; and
- behavioral effects, which vary greatly between species and noise characteristics, resulting in, for example, abandonment of territory and lost reproduction
- Noise pollution significantly intrudes on the environment and wilderness experience.

Current situation

Noise intrusion is currently minimal, motorized machinery is normally not to be heard in the area. Due to the remoteness from large airports, aircraft overflying the wilderness travel at very high altitudes. Condensation trails are regular site, but acoustic impact is low. Noise from low-flying aircraft (helicopter) is limited to occasion rescue flights and the restricted number of supply flight to huts in the vicinity of the area.

Findings

There is no noise pollution due to the remoteness of the protected area

Strengths

The wilderness zone has minimal noise pollution. 90% of wilderness zone territory is noise pollution free. Noise pollution was verified at all three valleys and particularly in Untersulzbach Valley (overnight monitoring on August 3-4 2015), Obersulzbach Valley (overnight monitoring on August 1-2 2015) and in Krimmler Valley (overnight monitoring on July 30-312015).

None huts use noisy generator to produce electricity, they use either water power station or bringing electricity by power line from the valley.

Weaknesses

The main noise pollution has a source in the surrounding of 2 alpine huts and 1-2 the most frequently used trail (Gamsspitz and Keeskogel) due to number of people concentrated in one place. This concentration is happening during top tourism season (July to September, particularly during weekend and nice weather days).

Recommendations

Park management develops random monitoring of noise pollution in wilderness zone with a focus on seasonal/weekends when there is a concentration of tourist.

Priority: Low	Time Frame: 2020

Fig. 95: Roar of the creeks is only noise in the wilderness zone.

7.6.11. Criterion 6.11. The wilderness zone has no light pollution

Reason for the Criterion

It's important to exclude light pollution from the wilderness. Light pollution is incompatible with wilderness quality standard.

Plants and animals depend on Earth's daily cycle of light and dark, the rhythm to govern life-sustaining behaviors such as reproduction, nourishment, sleep and protection from predators. Artificial light at night has negative and deadly effects on many animals including amphibians, birds, mammals, insects and plants.

The source of most light pollution in wilderness is from cities, machines, transport systems, motor vehicles and lone tourism structures that are remotely located.

Light pollution significantly intrudes on the ecology and experience wilderness values.

Current situation

The wilderness zone has no light pollution.

Findings

There is no light pollution due to the remoteness of the wilderness zone.

The wilderness zone has minimal light pollution. 90% of wilderness zone territory is light pollution free. Noise pollution was verified at all three valleys and particularly in Untersulzbach Valley (overnight monitoring on August 3-4 2015), Obersulzbach Valley (overnight monitoring on August 1-2 2015) and in Krimmler Valley (overnight monitoring on July 30-312015). The small amount of light pollution was observed in the surrounding of alpine huts.

Strengths

There is small amount of light pollution in the wilderness zone due to the distance from major urban areas. The wilderness zone is very much remote dark area. Alpine huts (small source of light pollution) are outside of wilderness zone. The area is very much intact and small light pollution is coming from villages located at the foothill of mountains (verified during clear night assessment in Untersulzbach Valley).

Weaknesses

The light pollution has a source in the surrounding of 2 alpine huts.

Recommendations

Park management continues to monitor light pollution in the wilderness zone with a focus on mountains huts.

Priority: Low Time Frame: 2020

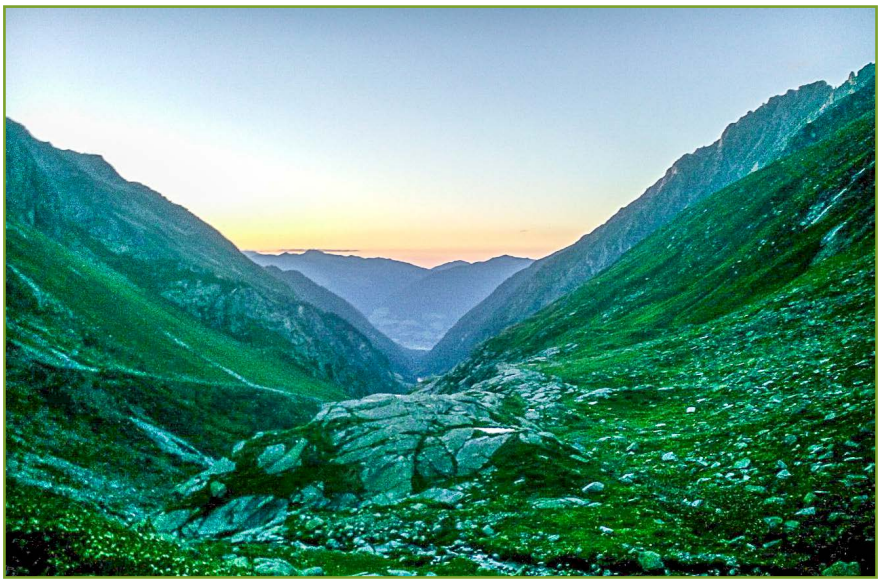


Fig. 96: The wilderness zone has no light pollution.

7.6.12. Criterion 6.12. The wilderness zone has no visual distraction on the horizon

Reason for the Criterion

It is important to exclude from the wilderness visual distractions that are on the horizon. Visual distractions on the horizon are incompatible with wilderness quality standard.

Visual distractions on the horizon have negative impacts on the wilderness experience. The sources of most visual distractions are from cities, towers and lone tourism structures that are remotely located.

Visual distractions on the horizon significantly intrude on the main experience of wilderness values.

Current situation

Wilderness zone is embedded in the core zone of the Nationalpark Hohe Tauern Salzburg with no visual distractions on the horizon.

However, the Nationalpark administration should take great care that no visible human infrastructure is installed in the vicinity of the wilderness - this includes all slopes and ridges visible from within the area, even if they are located at some distance and even if Nationalpark rules would not preclude installations in these places. Keeping an optical buffer area free of major landscape changes will be of great importance for the maintenance of an undisturbed wilderness impression.

Findings

The wilderness zone is very remote area. Huts do not create any significant destruction on horizon

Strengths

The wilderness zone has no visual distractions on horizon.

The visibility of cable car in Krimmlerachenntall was significantly reduced during the re-construction of the valley station. The cable car is located in transition zone but close to the wilderness.

Weaknesses

The visual distractions on horizon are 2 alpine huts and relevant construction (cables and power lines).

Recommendations

Park management carries out visual distraction assessments affecting the wilderness zone, focusing on minimizing impact of alpine huts and relevant constructions.

Priority: Low Time Frame: 2020

Fig. 97: The wilderness zone has no visual distractions on the horizon.

7.6.13. Criterion 6.13. The wilderness has no garbage pollution

Reason for the Criterion

It is important for the wilderness to be free of litter. Garbage pollution is incompatible with wilderness quality standard.

Garbage pollution has negative environmental impacts and lowers the wilderness experience. The main source of most garbage pollution is from visitors, or previous land users (e.g. forestry, agriculture, tourism, hunters, etc) have contributed to debris left on the ground.

Garbage pollution significantly intrudes on the main environmental and experience wilderness values.

Current situation

The wilderness zone is fairly clean.

Findings

The wilderness zone has not garbage pollution problems. Besides small trash found during assessment days, along the most frequently used trails (close to the huts) the area is very clean.

Strengths

There is a long-term systematic strategy to keep protected areas and particularly wilderness zone clean, for example implementing carry-in-carry-out policy. This is experience which can be effectively used to motivate other wildernesses in Europe.

Recommendations

It is highly recommended that park management share their experience with dealing with solid waste pollution and management with other wildernesses in Europe (e.g. recently verified wilderness in Ukraine).

Priority: High | Time Frame: 2020

7.6.14. Criterion 6.14. There are recreational fire pits in the wilderness

Reason for the Criterion

Making fire pits in the wilderness is a very complex issue throughout Europe due to the risk of fire so there are many regulations. In many European countries camp fires, particularly in forests are strictly forbidden or regulated. However, the camp fire is an important part of a wilderness experience.

Fire pits are suitable in the transition zone to provide opportunities for visitors to have this type of wilderness experience but it needs to be carefully planned.

Current situation

The fire is not allowed in the wilderness zone.

Findings

The wilderness zone has not the fire pits.

7.6.15. Criterion 6.15. There are rules for the use of horses in the wilderness zone

Reason for the Criterion

The use of horses occurs in some wildernesses in conjunction with hiking. Horses are used usually in large wildernesses and besides patrolling, they help to implement various projects, as well as do research and monitoring. Horses are also seen in favourable way to experience wilderness. However, intensive use of horses can have negative impacts on trails (e.g. erosion, mud, damage of trail, etc) and also on the experience of hikers. Therefore to use horses in the wilderness, managers have to keep in mind the conflict that could arise with hikers (e.g. hiking on muddy trail should not be part of their experience).

Management techniques include:

- separate hikers and horseback riding trails (where suitable)
- limit horseback riding groups
- exclude horseback riding from sensitive areas (e.g. wet areas, meadows, etc)

Combining the use of horses in the wilderness as well as hikers, there needs to be careful planning.

Current situation

The use of horses is not allowed in the wilderness zone. Access with horses is impossible due to the difficult terrain.

Findings

The wilderness zone has not the the use of horses.

Fig. 98: The wilderness zone has not the use of horses.

7.6.16. Criterion 6.16. The wilderness zone has no fencing

Reason for the Criterion

It is important to have fence-free wildernesses. Fences are incompatible with wilderness quality standard.

Fencing in wilderness has negative impact on environment and wilderness experience. Fencing creates barriers and causes injury, even death, for animals.

Current situation
Fencing is not allowed in the wilderness zone

Findings
The wilderness zone has no fencing.

7.6.17. Criterion 6.17. There are rules about dogs in the wilderness zone

Reason for the Criterion

Hiking with dogs is a great way to spend time in nature for many people but doing so in wilderness can impact both the land, wildlife and the dogs themselves. For example every dog owner's nightmare is to lose their pet in the woods. An uncontrolled dog can injure other hikers and/or wildlife, etc.

To minimize these threats, rules for dogs (or any other pet) are necessary.
Dogs are allowed in some wildernesses with regulations and others they are not permitted.
Some wildernesses do not address this issue.

Current situation

Nationalpark rules prescribe that dogs have to be kept on leads.

Findings

Pets were observed around huts and along the trails close to the huts.

Strengths

Pets are only permitted on leash.

Weakness

Presence of pets in wilderness zone causes problems to fragile alpine environment.

Recommendations

Park management continues with the strategy of how to use dogs in wilderness zone.	
Priority: Medium	Time Frame: 2020

7.6.18. Criterion 6.18. The wilderness has a visitor and recreational use strategy

Reason for the Criterion

Visitors and recreation activities are getting to be more and more risk in many protected areas in Europe. To combine wilderness conservation with opportunity for visitors to experience this unique environment the concept “leave no trace” should be implemented.

Visitors and recreational activities in the wilderness require careful planning and rules.

Current situation

The Nationalpark Hohe Tauern Salzburg law clearly states that “the conventional form of alpinism and hiking, ski touring” are not subject to restrictions within the park, with the exceptions of special protection areas: where stricter regulations may be in place.

Wilderness zone is important place also from tourism and recreation perspective. However, due to the difficult terrain, access to the proposed wilderness is limited to simple, muscle powered forms of travel, like hiking, climbing and skiing.

Climbers heading on glaciers trips or skiing mostly stay on trails used already for years. However, the park administration should keep up (search?) legal options for temporary restricting access to parts of the future wilderness.

This is of special importance in winter, when availability of undisturbed habitat is essential for the health and survival of deer, chamois, ibex and grouse. Provision of quiet zones is a proven alternative to the widespread, artificial winter feeding of wild ungulates and a key factor in ”keeping wild animals wild”. Having vital ungulate and grouse populations, which can exhibit their natural behaviour and relied on their special wintering adaptations must have priority over human visitor interests in the wilderness zone.

Findings

Visitors and recreation activities have a long tradition in the Nationalpark Hohe Tauern Salzburg. Park has already made a great work to minimized negative impact of tourism in park and particularly in wilderness zone and concept "leave no trace" has a strong support.

Canoeing is not possible because of steepness and ruggedness of the relevant river sections, mountain biking is precluded by the lack of drivable tracks and paragliding is forbidden by the regulations of the Nationalpark, which do not allowed for any aerial traffic for sportive purposes.

Setting up tents is not allowed in the Nationalpark but climbers may sleep under the open sky when they are either forced to do so by special circumstances, or when they undertake a demanding tour, which cannot be completed within a single day. These regulations should be maintained for the wilderness.

Given the relatively small size of the area and the availability of huts near its border, there is no need to set up special camping grounds or to allow deliberate camping within the area. Visitors to the wilderness should be actively informed and educated about "leave no trace roles". A more specific set of "leave no trace rules" should be developed for climbers and hikers on skis. Alpine guides and Nationalpark wardens should be trained for the propagation of these rules.

Strengths

Due to difficult terrain, access to the wilderness zone is limited to simple, muscle powered forms of travel, like hiking, climbing and skiing.

Wilderness zone has clear rules for visitors and recreational activities. Camping is not allowed in the Nationalpark (and so in wilderness zone), but climbers may sleep under the open sky when they are either forced to do so by special circumstances, or when they undertake demanding tour, which cannot be completed within a single day.

Due to availability of huts near the wilderness zone borders, there is no need to set up special camping grounds or to allow deliberately camping within the area.

Weaknesses

Implementation of the concept a „leave no trace" rule is demanding and long term process

Recommendations

Park management continue with concept of "leave no trace" in the wilderness zone with a specific focus on climbers, hikers and skiers.

Priority: High	Time Frame: 2020

Fig. 99: Visitors and recreation activities have a long tradition in the Nationalpark Hohe Tauern Salzburg.

7.6.19. Criterion 6.19. The wilderness has an integrated visitor and recreation strategy to support the wilderness concept

Reason for the Criterion

Protected areas, and particularly wilderness, attract people. Sometimes the protected area management is glad about people who are interested in their work and activities, sometimes protected areas are forced to open up more to the public to improve the number of visitors, and sometimes the pressure of visitors is too strong. In any case the management of a protected area has to take care of their "guests".

Nowadays integrated visitors and recreation strategy is a significant tool, sometimes even one of the main jobs within the protected area management. Visitor management is also critically important for sound wilderness management.

Current situation

The Nationalpark Hohe Tauern Salzburg is traditionally well known destination for Austrian and also for foreign visitors. Newly created wilderness zone is just an additional reason to visit this area.

Findings

Wilderness zone is an attractive area for visitors and the Nationalpark Hohe Tauern Salzburg is working on integrated visitors and recreation strategy

Strengths

The new management plan, including tourism and recreation aspect, is under the preparation. This document will include concept of infrastructure improvements, implementation of small scales tourism and diversification of tourism activities with specific focus on wilderness zone. The concept will be closely linked with philosophy of wilderness conservation.

The park has good potential for the development of very specific wilderness focused mountain experience - small scale and diverse products. There is a committed staff who has many ideas to achieve this task.

Weaknesses

Develop and implementation of the concept a integrated visitors and recreation strategy is demanding and long term process

Recommendations

To develop an integrated visitor and recreation strategy which includes training and communication to support the idea of wilderness

Priority: High	Time Frame: 2020

7.7. Principle 7: Control strategies for fire, disease, invasive species, and other natural disturbance

Ecological disturbances are one of the most profound aspects of wilderness. Natural disturbances such as wildfires and windstorms are important sculptors of landscape and habitats, however, they are often considered problematic and undesirable by humans.

Natural disturbances are among the most important sources of dynamics in a landscape. The role of disturbance in wilderness relates directly to scale and boundary which is problematic for conservation goals. Many landscapes are only fragments of what they once were, so called islands of habitats.

There should be fire and disease control plans as well as a plan to deal with invasive species. However, the wilderness zone should not have active management measures to control these disturbances.

Reason for the Principle

Ecological disturbances are a fundamental part of wilderness dynamic.

The characteristics of ecological disturbances are not always well understood by park managers and often the dilemma relates to the scale and how to respond to them.

Often, in human-dominated landscapes implementing a let it go policy is difficult due to the threats to society.

Fig. 100: The characteristics of ecological disturbances are often the dilemma relates to the scale and how to respond to them.

7.7.1. Criterion 7.1. There is a fire control plan

Reason for the Criterion

There is not always a good understanding of the ecological role of fire in wilderness. There are very few areas in Europe where fire management is used as a tool to maintain and protect biodiversity. However, there is a growing recognition that fire plays an important role in forest and range land ecosystems. Consequently, it is important to communicate the importance role fire plays.

Current situation

Fire is factor due to high precipitation in the protected, in addition to the lack of forest and low amount available fuel in alpine plant communities. No special regulations for fire management are needed at the moment.

Findings

Due to the character of the wilderness zone, fire is not an issue. The area is predominantly covered by glaciers, barren land, sparse vegetation and only small fragments of the wilderness zone are below the tree line. There is no visible evidence that the wilderness zone was burned in the past.

Strengths

Park managers understand the importance of fire to landscape dynamics.

Weaknesses

Fire ecology is a complex and difficult issue in central Europe. There are conflicting opinions and implementing a let-it-burn policy or even prescribed fire is a difficult issue.

Fire management is a politically challenging issue.
There are no studies about the fire history in the region which could help provide knowledge on the frequency and behavior of natural fires for evidence of its importance in ecosystem dynamic.

Recommendations

Conduct research focusing on fire history in wilderness zone.	
Priority: Low	Time Frame: 2020

Develop education and interpretation programmes focusing on fire management and let-it-burn policy.	
Priority: Low	Time Frame: 2020

Fig. 101: Due to the character of the wilderness zone, fires are not an issue.

Fig. 102: The area is predominantly covered by glaciers, barren land and sparse vegetation.

7.7.2. Criterion 7.2. There is a disease control plan

Reason for the Criterion

There is not always a good understanding of the ecological role disease plays in wilderness. There are very few areas in Europe where park managers implement disease management as a tool to maintain and protect biodiversity. However, there is a growing recognition that disease plays an important role in forest and range land ecosystems. Wilderness is the places where it should be implemented and its importance communicated to the public.

Current situation

Since the proposed wilderness is at a high elevation and lacks large tracks of forest, bark beetle or any other tree-related disease, outbreaks are not an issue within the wilderness zone. As with fire, this may change in the future, due to climate change. No management measures are needed for bark beetles.

As for wildlife diseases, such as sarcoptic mange which affects chamois and ibex constitutes a recurring challenge for the wilderness managers. Veterinary law prescribes radical interventions for affected ungulate populations, by culling individuals that show signs of the disease. This is not compatible with a non-intervention approach in wilderness zones.

Some wildlife veterinarians argue that radical culling measures will not prevent the spread of the disease anyway, but rather tend to promote it through individuals fleeing from the culling attempt. As an alternative, it has been suggested to set up large-scale quiet zones, where hunting is banned for the duration of the epizootic and access for visitors is restricted. Affected ungulate herds are left alone within those zones, and movement is kept to a minimum with only individuals leaving the area are shot. This model could be applied to the wilderness, the wilderness zone acting as a permanent quiet zone. However, such an arrangement would need the consent of hunting associations and could be part of the wildlife management plan.

Findings

There are two species of herbivores, Ibex and chamois in the wilderness zone that could have invite disease. Management of these two species is the responsibility of the local hunting society except the wilderness zone which is under the responsibility of the park management. There is no threat of disease on populations of these two species in wilderness zone.

Strengths

It is understood the importance of spontaneous disease outbreak as a part of ecological processes. However, they cannot implement any type of let-it-fly policy in the protected area due to conflicts with national legislation.

However, there are no active management measures taken in the wilderness zone to control any disease. There is a focus on monitoring and maintaining discussions with hunters and the public. Several studies on this subject are available in park office.

There is ongoing discussion with hunting associations regarding the management of sarcoptic mange around wilderness zone. Park management has an intention to minimize any active measures; hunters have a strong temptation to actively remove all weak and sick animals as has been done in the past).

Weaknesses

Spontaneous disease outbreak as a part of natural ecological processes is a complex and difficult issue in this type of protected area in Central Europe. There are conflicting approaches and implement a let-it-fly policy would be a long-term process. It is a difficult subject to communicate to the stakeholders, including local government and state forestry agencies.

It is not easy to control spontaneous development of any disease particularly in a high mountainous region with a large open landscape.

Most of the studies, monitoring and inventories are available in German

Recommendations

Continue to research the dynamics of spontaneous disease outbreak in regards to chamois and ibex in the wilderness zone.

Priority: Medium	Time Frame: 2020

Fig. 103: An outbreak of a tree disease is not considered to be a threat even in the lower parts of wilderness zone.

7.7.3. Criterion 7.3. An invasive species control plan has been developed for the wilderness

Reason for the criterion

Invasive species are a significant threat to native habitats. Species are considered invasive if they are not native to the particular habitat under consideration and an established population causes or is likely to cause environmental harm.

Nevertheless the attempts to control invasive species is often accompanied with considerable intervention into the natural processes. Therefore invasive species are not allowed in the wilderness zone and if absolutly necessary must be limited to the restoration and/or transition zone. The invasive species control plan provides strategies and recommendations for invasive species prevention, survey and detection, and ultimately control. It also addresses appropriate habitat restoration, staff training and public outreach and education.

Current situation

There are no invasive species in the wilderness zone.

Findings

Invasive species are not a major issue in high altitude regions of Austria, at least not for the moment. Most invasive species concentrate in the lowlands. The harsh mountain environment is more resistant invasive species. However, in the vicinity of the proposed wilderness, non-native species are an issue with regard to fish populations, which rely heavily on artificial stocks of rainbow and brook trout, two species of North American origin.

Strengths

Currently ongoing research and monitoring does not indicate any serious threat of an invasive species in wilderness zone.

Weaknesses

The park policy is that invasive species are not tolerated within the wilderness zone. The mountains huts in the surrounding of the wilderness zone are potential threats due to attack by invasive species. It will be a challenging task to prevent and control invasive species attack.

Spontaneous invasive species attack can happened any time and therefore is important to be proactive and ready to solve this challenge in advance. An invasive species control plan is an important proactive tool.

Recommendations

Continue to research and monitor the threat from invasive species to the wilderness.	
Priority: Medium	Time Frame: 2020
Develop an invasive alien species control plan for the restoration and/or transition zone to prevent incursion of invasive species to the wilderness.	
Priority: Medium	Time Frame: 2020
Develop education and interpretation programmes focusing on invasive species.	
Priority: Medium	Time Frame: 2020

Fig. 104: Research doesn't indicate any serious threat of an invasive species in the wilderness zone.

7.7.4. Criterion 7.4. There is a plan for natural disturbances

Reason for the Criterion

There is a number of other natural disturbances such as wind, climatic extremes (i.e. drought, hailstorms, and heat waves), but also floods, volcanic eruptions, and earthquakes.

A natural disaster can cause loss of life or property damage and typically leaves some economic damage in its wake, but simultaneously these are important players of ecosystem dynamics.

Current situation

People living around the wilderness and visitors have a feeling that the number of natural disturbances has been growing in the last years.

Findings

The wilderness provides a good opportunity to study and monitor these natural disturbances in an alpine environment.

Strengths

The wilderness zone is impacted by natural events. These natural events are important events in the wilderness zone. Due to the character of the wilderness zone, there is number of spontaneous, violent, natural events that take place such as avalanches, rock falls, debris flow and glacier retreat.

Weaknesses

The consequences of natural disturbances in wilderness zone heavily impact farmers in the valleys with periodic flash flooding, rock falls, debris flows and avalanches.

Recommendations

Develop a natural events monitoring plan for the wilderness.	
Priority: High	Time Frame: 2020

Develop education and interpretation programme focusing on the role of natural events in wilderness.	
Priority: High	Time Frame: 2020

7.7.5. Criterion 7.5. The wilderness is impacted by permafrost

Reason for the Criterion

There is a number of other natural disturbances such as permafrost degradation.

Current situation

Staff managememt has witnessed the degredation of permafrost resulting in an increase of rock slides.

Findings

The wilderness provides a good opportunity to study and monitor degredation of permafrost in an alpine environment.

Strengths

Permafrost occurs in the wilderness zone. Permafrost is an important element for high elevations and very active (due to melting) in the last decades due to global warming.

Weaknesses

It is likely that permafrost occurs above 2000 m. In an alpine landscape like wilderness zone, permafrost degradation can be a trigger for natural events such as landslides and rock falls.

Recommendations

Continue intensive research and monitoring of permafrost in wilderness.	
Priority: High	Time Frame: 2020

Fig. 105: It is likely that permafrost occurs above 2,000 m.

7.8. Principle 8: Wilderness Research and Monitoring

Wilderness offers opportunities to study the unique attributes of nature and natural processes. Quality wilderness research and monitoring allows park managers to make appropriate decisions. Research and monitoring activities should be invasive in their character.

Reason for the Principle

Early wilderness stewards did not have a large amount of research and/or monitoring resources so they relied on instinct and personal experience to guide them. Wilderness stewards today have access to a growing body of literature related to defining, managing, and monitoring wilderness.

Wilderness research and monitoring explores complex as well as long-term natural and social issues related to wilderness stewardship. It is a catalyst for synergistic, interdisciplinary activities that addresses the many issues that confronts wilderness stewards.

Fig. 106: Wilderness research addresses the many issues that confronts wilderness stewards.

7.8.1. Criterion 8.1. There is a wilderness research and monitoring strategy.

Reason for the Criterion

A wilderness research and monitoring is an *important* tool for the decision making process. A wilderness research and monitoring strategy helps to improve knowledge on wilderness in order to more effectively implement management measures and meet conservation objectives.

Any decision regarding wilderness management, should have had research done prior to the decision being made. Research is the key to successful wilderness management.

Current situation

The management plan includes a list of research and monitoring priorities (e.g. dynamism of alpine zone, glacier retreat, management of herbivores, inventory of wilderness indicative species).

Findings

The protected area has a well-designed research and monitoring plan. There is new long-term research and monitoring with goal to incorporate wilderness research and restoration.

The numerous and varied research activities of the Nationalpark focus on alpine environment, permafrost thawing, glacier retreat, flora and fauna and biodiversity conservation, key-species and habitats, on landscape level-processes and on relevant management issues. Most of this work is highly relevant to the wilderness zone.

Strengths

There are several completed and ongoing research which focuses on wilderness (e.g. to identify the boundaries of the potential wilderness). In the past research was focused on Ibex and chamois. There is ongoing research on eagles. There is the plan to create systematic research and monitoring programme and form a wilderness research centre at the boundary of the wilderness zone in Untersulzbach Valley. There is a process of identifying long-term research and monitoring priorities including wilderness.

There is a nine years research project in the Habach Valley which is located at the boundary of the wilderness zone, that is focussed on sarcoptic mange, effecting chamois and other ungulates. Habach Valley will be not hunted for nine years due to this research.

There is cooperation with a number of research partners; University of Vienna, Nationalpark Schweiz, Nationalpark Alto Adige and other partners in Switzerland and Germany

Weaknesses

Wilderness focused research and monitoring are not top priority in Austria's National Parks. There is inadequate coordination of wilderness research between protected areas and limited funding.

The majority of documents related to wilderness research are only available German

Recommendations

Continue to research and monitor activities with a focus on wilderness.	
Priority: High	Time Frame: 2020
Develop a research with a focus on collecting data on wilderness restoration.	
Priority: High	Time Frame: 2020
Develop and implement a communication strategy to communicate the outcomes of wilderness research.	
Priority: High	Time Frame: 2020
Improve coordination with other wilderness protected areas (e.g. unify GIS systems and research methodology among partners focusing on wilderness research).	
Priority: High	Time Frame: 2020
Observe the impacts of researchers and monitoring.	
Priority: High	Time Frame: 2020
Use a network of wildernesses organized under the European Wilderness Preservation System to share research and monitoring knowledge.	
Priority: Medium	Time Frame: 2020
Provide an English summary for the important outcomes of research and monitoring.	
Priority: High	Time Frame: 2020

Fig. 107: Wilderness research and monitoring are some of the most important aspects of the Nationalpark Hohe Tauern Salzburg management.

Fig. 108: Untersulzbach Valley is excellent spot to create a wilderness research and monitoring programme.

7.8.2. Criterion 8.2. There is a monitoring system which documents activities and extractive uses.

Reason for the Criterion

Research and monitoring are a *major* component of good wilderness stewardship as well as a cornerstone in the decision making process for management.

Current situation

There is a research and monitoring system which documents the activities and extractive uses in the protected area. Research and monitoring are some of the aspects of their work. There is a list of priorities.

Findings

A monitoring system is in development in order to monitor activities and previous extractive uses in newly created wilderness zone. Activities are done with minimal impact.

Within the wilderness zone, minimizing both visible and ecological impacts of research and monitoring is of special importance.

Strengths

There are several ongoing monitoring activities.
Outcomes of monitoring are incorporated in their management documents plans.
Monitoring focuses on extractive uses in wilderness zone
Many outcomes of monitoring are in English

Monitoring system in wilderness zone is focusing on

- management of herbivores
- wilderness and biodiversity
- dynamics of previously glaciated areas
- wilderness and the impact of tourism activities

Weaknesses

Wilderness focused research and monitoring are not a top priority in Austria's National Parks. There is inadequate coordination of wilderness research between protected areas and limited funding.

Recommendations

Continue to implement monitoring system to improve management of herbivores, restoration of ibex populations, tourism, wilderness interpretive programmes.		
Priority: High	Time Frame:	2020
Look for possible funding (e.g. Erasmus) to share their experience with other park managers in Europe using the European Wilderness Society communication platform.		
Priority: Medium	Time Frame: 2020	
Search for opportunities for more wilderness focused research in close cooperation with other protected areas in the European Wilderness Society network, research institutions or universities.		
Priority: High	Time Frame: 2020	

Fig. 109: Monitoring system in the wilderness zone focuses on the changing dynamics of previously glaciated areas.

7.8.3. Criterion 8.3. There is a monitoring plan to document indigenous peoples livelihoods and their impacts

Reason for the Criterion

In the northern parts of Europe, indigenous people still live a traditional way of life (e.g. subsistence living through hunting, fishing and the grazing of reindeer). This way of life is a rare example of people coexisting with nature of often in places with high wilderness quality.

This situation creates an opportunity to include these, often large, areas as part of the European Wilderness Quality Standard. This criterion was created for this specific situation

Current situation

The Nationalpark Hohe Tauern Salzburg has no indigenous people.

7.8.4. Criterion 8.4. The wilderness or wild area has a detailed plan for cooperation with scientific institutions and universities.

Reason for the Criterion

Cooperation between the protected area and scientific institutions and universities is fundamental for successful wilderness management.

Scientific institutions and universities can bring knowledge and innovative approaches to the management of wilderness, very often they provide arguments as to the importance of wilderness and how better to protect it.

Collaboration can be either of formal or informal in nature with scientific institutions or universities

Current situation

The protected area has formal as well as informal cooperation with scientific institutions and universities.

Findings

There is a well-established and ongoing collaboration with both Austrian and international partners.

Strengths

Management cooperates with national and international research and monitoring partners such as University of Vienna and other research institutions in Germany and Switzerland.

Weaknesses

Wilderness is rarely the main focus for collaboration with scientific institutions and universities.
Limited resources to enhance collaboration with scientific institutions and universities in order to focus on wilderness conservation.

Recommendations

Implement a plan for cooperation scientific institutions and universities with a focus on wilderness conservation.

Priority: High | Time Frame: 2020

7.9. Principle 9: International Relevance

The importance of wilderness is finally being recognized in Europe. More people and initiatives are beginning to work to protect and expand wilderness.

The International Union for Conservation of Nature (IUCN) has classified protected areas. These categories are recognised by international bodies such as the United Nations and by many national supra-national governments (European Union) as the global standard for defining and recognizing protected areas. Within IUCN protected area management categories, Category **1a and 1b are strict nature reserves and** wilderness areas. UNESCO – World Heritage Sites (WHS), UNESCO – Man and Biosphere (MAB), and Natura2000 are other important international networks for protected areas

Reason for the Principle

This principle is a link between local efforts to protect wilderness and global initiatives to protect wilderness heritage and biodiversity.

The Nationalpark Hohe Tauern Salzburg is the oldest National Park in Austria with significant international recognition. The protected area has several international recognitions.

Fig. 110: In order for an international recognition to be credible, an audit and verification need to take place.

7.9.1. Criterion 9.1. The wilderness is internationally recognized (IUCN, Natura 2000, other certifications).

Reason for the Criterion

International recognition is supposed to be proof that a wilderness meets a certain international standard. However, the current European network of IUCN protected areas with categories 1a and 1b, do not always meet these wilderness quality standards.

According IUCN Protected Areas categories system, category 1a and 1b are usually large unmodified or slightly modified areas, retaining their natural character and influence, without permanent or significant human habitation, which are protected and managed so as to preserve their natural condition.

Current situation

The Nationalpark Hohe Tauern Salzburg has two global recognitions. It is IUCN category II. It is a large contiguous piece of Hohe Tauern, last valley without tourism trail, alpine meadows and small fragments of pinus and spruce forest. The area provides favorable habitat for several European threatened species such as ibex, chamois and eagle.

Krimmler waterfall is located at the entry to the Krimmler Achental in the Nationalpark Hohe Tauern Salzburg, is awarded by the European diploma.

In addition, the Nationalpark Hohe Tauern Salzburg is member of Nature 2000, Europark (2015), PAN Parks (2013), AlpPark (2013) and Member of Green Alps networks.

Findings

The area is well known for its high-quality habitat at the top of the Austrian Alps and unique glaciated landscape. Area provide interesting habitat of re-colonization of recently glaciated land.

Strengths

It has high-quality habitat at the top of the Austrian Alps and a unique glaciated landscape including retreating glaciers.
interesting habitat of re-colonization of recently glaciated land

The protected area has managers who are committed to nature conservation and to the protection of the integrity of the natural processes particularly wilderness zone.

Protected area is a model of well managed wilderness park the objectives of
enlarging the wilderness zone
reducing fragmentation
increasing the quality of wilderness

Recommendations

Finalize the process of nomination for the European Wilderness Preservation System.	
Priority: High	Time Frame: 2020

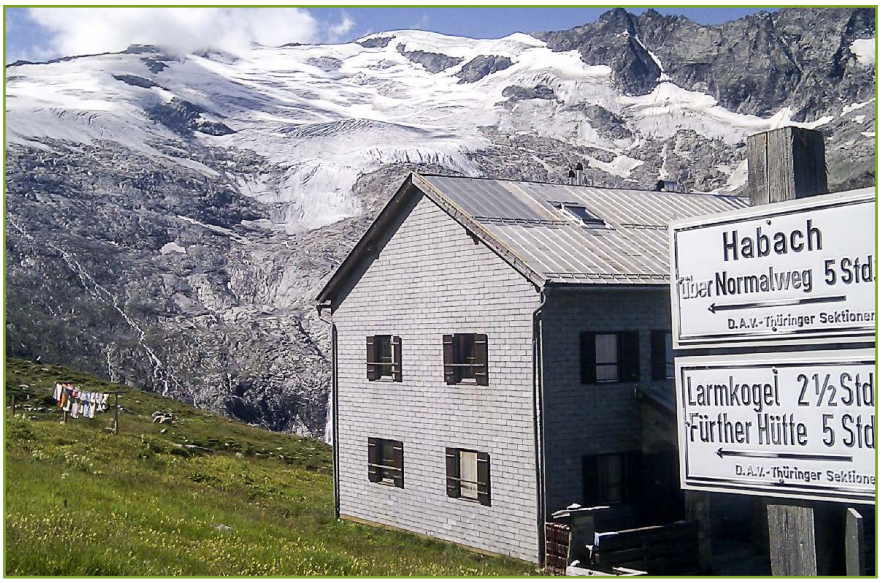


Fig. 111: Wider area of wilderness zone is good habitat for several European threatened species.

7.9.2. Criterion 9.2. There is a plan for the wilderness to become part of Natura 2000 network (where relevant and in accordance with the wilderness objectives).

Reason for the Criterion

Natura2000 is a network of nature protected areas in the European Union. It is made up of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) designated respectively under the Habitats and Birds Directives.

Wilderness is not explicitly mentioned in the Natura2000 legislation but applying a wilderness approach to the management of Natura2000 sites is compatible with the provisions of the Directives.

Current situation

Hohe Tauern Wilderness is part of Natura 2000 with long-term programme to implement non-intervention management in wilderness zone.

Findings

The Nationalpark Hohe Tauern Salzburg provides an excellent example on how to implement non-intervention management in Natura 2000

Strengths

The Nationalpark Hohe Tauern Salzburg provides an excellent example how to implement non-intervention management in Natura 2000

Recommendations

Promote their experience with other Natura2000 sites who utilize non-intervention management	
Priority: High	Time Frame: 2020

Fig. 112: Hohe Tauern Wilderness is part of Natura 2000 network.

7.9.3. Criterion 9.3. Wilderness supports the protection of internationally threatened species.

Reason for the Criterion

Wilderness is often the only type of protected area to guarantee protection of internationally threatened species. Large and contiguous wilderness creates space and an environment for species, particularly during critical periods of their life (e.g. mating and breeding season, rising litters).

Current situation

Hohe Tauern Wilderness is an important part of Alpine network of protected areas and an essential area for wilderness restoration and protection of internationally threatened species.

Findings

Hohe Tauern Wilderness provides an excellent habitat to support the protection of several internationally threatened species (e.g. ibex, chamois, eagle, etc).

The park is involved in number of European wide projects: protection of vulture, Ibex, eagle, Econet project with Berchtesgaden and other projects with Nature Park Alto Adige, Italy.

Strengths

A contiguous wilderness zone with the potential for enlargement which would create excellent condition to supports the protection of internationally threatened species. There is ongoing systematic monitoring and research programme in and around wilderness zone supporting the protection of internationally threatened species.

Weaknesses

Maintaining the support of local communities

Recommendations

Develops education and marketing campaign targeted at schools which focuses on wilderness and internationally threatened species targeted

Priority: High | Time Frame: 2020

Fig. 113: Wilderness zone is excellent examples of high mountain habitats.

8. Findings and Recommendations

Both existing and potential wilderness were evaluated for this report. The recommendations are divided into three priorities, high, medium and low. In addition a time frame is given for their completion. The intention of this chapter is assist managers in their strategically planning for the protected area.

Implementation of the European Wilderness Quality Standard and Audit System in the Nationalpark Hohe Tauern Salzburg

The European Wilderness Quality Standard and Audit System and the Nationalpark Hohe Tauern Salzburg have their own zoning systems. The European Wilderness Quality Standard and Audit System zoning system is based on The Working Definition of European Wilderness and Wild Areas. The Nationalpark Hohe Tauern Salzburg zoning system is based on Austrian legislation. Table 1 shows how the two zoning systems can be combined.

Table 4: The different zoning systems, EWQA = European Wilderness Quality Standard and Audit System / NPHTS = Nationalpark Hohe Tauern Salzburg

	EWQA	NPHTS	Compatibility between EWQA and the Nationalpark Hohe Tauern Salzburg zoning
Widerness area[1)]	Wilderness zone[2)]	Nationalpark Hohe Tauern Salzburg Wilderness zone	Compatible
	Restoration zone[3)]	–	There is no restoration zone in Hohe Tauern Wilderness
	Transition zone[4)]	Nationalpark Hohe Tauern Salzburg core and buffer zone	Compatible. The Nationalpark Hohe Tauern Salzburg Wilderness zone is surrounded by the Nationalpark Hohe Tauern Salzburg Core and buffer zone

[1] Wilderness can be categorised into three 'zones,' with a wilderness zone surrounded by a restoration/buffer area of minimal activities, which in turn is surrounded by a transition zone (see Appendix II). It is considered that this threefold structure offers best protection of key wilderness principles whilst allowing potential for future expansion and flexible interaction with other land uses. (Definition of European Wilderness, 2013)

[2] The Wilderness zone would have the 'highest' quality of wilderness, with minimal impact of human activity or infrastructure and a dominance of natural processes. Where feasible, outward expansion would occur over time through restoration/rewilding into the restoration/buffer zone – particularly if the wilderness is not large enough initially to allow complete ecological processes. (Definition of European Wilderness, 2013)

[3] The Restoration zone, with relatively low impact of human presence, surrounds and protects the wilderness zone. Emphasis here should be on restoration/rewilding of natural habitats and processes, with phasing out of built structures and high impact activities within 10 years. Where feasible, there should be plans for it to be incorporated into the wilderness zone and expand outwards over time into the transition zone. (Definition of European Wilderness, 2013)

[4] The Transition zone is an area where a range of human activities is permitted, but with management controls preventing development of major infrastructure, wind farms or large scale clear felling, that might significantly alter the landscape or natural environment. Sustainable harvesting is possible of timber, animals (hunting & fishing) and plants (berries, fruits, mushrooms), together with organic agriculture. (Definition of European Wilderness, 2013)

8.1. Principle 1: Wilderness Size and Zoning

A wilderness should have the three zones; wilderness, restoration and transition zones. In cases where these cannot be implemented, additional measures to ensure the protection and functioning of the wilderness core zone must be implemented.

Recommendations	Priority			Time
	Low	Medium	High	
Criterion 1.1. Wilderness zone has defined boundaries				
Incorporate the boundaries of the wilderness zone on the hiking maps and existing field information systems		√		2020
Improve visually the limits of the wilderness zone in field		√		2020
Improve the wilderness aspect of the communication strategy beyond the German-speaking audience			√	2020
Criterion 1.2. Minimum size of the wilderness zone depends on the predominant habitat type				
Research the potential for enlargement of the wilderness.		√		2020
Develop a map of potential wilderness enlargement around wilderness zone.		√		2020
Criterion 1.3. Wilderness has three zones; wilderness, restoration and transition, where further expansion of wilderness is planned and two zones, wilderness and transition, where restoration and/or expansion is completed.				
Search for additional funding and resources to enlarge the wilderness zone.		√		2020

8.2. Principle 2: Natural processes and biodiversity

A wilderness should have a zone where natural processes take place with-out the human intervention and in a healthy state so that it contributes to the conservation of threatened species for that region and contains exam-ples of undisturbed habitats.

Recommendations	Priority			Time
	Low	Medium	High	
Criterion 2.1. The wilderness zone has natural processes to maintain biodiversity.				
Develop a comprehensive management plan for the wilderness zone in order to maintain natural dynamics.			√	2018
There should be a separate chapter of the overall management plan or separate document with an English summary.		√		2018
Continue with current communication of wilderness management objectives focusing on the community and visitors.			√	2020
Develop a more comprehensive strategy on how to effectively share wilderness management experience with other park managers and rangers in Europe.	√			2020

Criterion 2.2. The wilderness zone contributes to the conservation of wilderness indicator species.				
Management plan under development should include: • information on endemic, red-listed, vulnerable and/or other rare species which occur in the wilderness • information on native species in the wilderness zone that have decreased or become extinct • information about actions on invasive alien species management • the continued systematic monitoring of the large herbivores with a focus on wilderness zone • include a summary in English			√	2018
Continue with current communication strategy focusing on the purpose of wilderness, the importance of indicator species such as ibex, chamois .			√	2020
Continue to monitor for the threat of invasive alien species in the wilderness.		√		2020
Criterion 2.3. The wilderness zone contain examples of undisturbed ecosystems				
Continue with communication of wilderness conservation efforts in the wilderness zone, highlighting examples of undisturbed ecosystems.			√	2020
Criterion 2.4. The wilderness has a management plan to restore natural processes in the restoration zone.				
Develop a draft comprehensive study to achieve the following: • Define the potential to enlarge the wilderness zone • Prepare a map of a proposed restoration zone • Identify activities and steps to implement possible restoration measures (e.g. remove grazing, funding)		√		2020

8.3. Principle 3: Wilderness Management

This principle addresses the various wilderness conservation measures such as a biodiversity management plan, plan for supporting the natural processes, landscape management and the training of the wilderness man-agement team. In addition, this principle covers the impact of visitor management.

Recommendations	Priority			Time
	Low	Medium	High	
Criterion 3.1. Thwilderness is protected by law in accordance within national legislative framework for an indefinite period of time.				
Implement a long-term wilderness plan to guarantee its legal protection (e.g. specific wilderness focused legislation with an extent period of 30-35 years.			√	2020
Continue implementing the communication strategy with focus wilderness.			√	2020

Criterion 3.2. The wilderness has a wilderness management plan of at least 10 years.				
Focus on the development of new management plan with a section on wilderness.			√	2017
Consider the possibility to enlarge the wilderness zone. vDevelop a short inventory of wilderness potential in the area.	√			2020
Implement wilderness education, interpretation and training			√	2020
Implement research and monitoring strategy with a focus on wilderness.		√		2020
Communicate widely the benefit of wilderness conservation in order to share the experience with other protected areas in Austria and beyond.			√	2020
Develop an analysis of internal and external threats to the wilderness zone.			√	2020
Criterion 3.3. The wilderness has a sufficiently large and trained full time management team.				
Develop field training for wilderness management best practice.			√	2020
Increase language skills for the staff who are involved in tourism, visitor management and communication.	√			2020
Develop and implement wilderness focused education and interpretation training programmes			√	2020
Train park managements from other protected areas on wilderness management and interpretation		√		2020
Criterion 3.4. A training plan for the management team exists.				
Develop a wilderness focus training plan for the management team.		√		2020

8.4. Principle 4: Wilderness Restoration

Wilderness restoration is an intentional activity that initiates or accelerates the recovery of damaged ecosystem that has wilderness potential. Wilder-ness restoration includes a wide range of activities such as restoration of dis-turbed areas and the reintroduction of native species.

Recommendations	Priority			Time
	Low	Medium	High	
Criterion 4.1. It is the objective to enlarge the wilderness zone.				
Develop a report to assess the feasibility to enlarge the wilderness zone.	√			2020
Criterion 4.2. The wilderness has a wilderness restoration plan to enlarge and improve the wilderness zone.				
Develop a report to assess feasibility to develop wilderness restoration plan.	√			2020

8.5. Principle 5: Wilderness and Extractive uses

The working definition of wilderness stipulates that wilderness is an area without intrusive or extractive uses.

Recommendations	Priority			Time
	Low	Medium	High	
Criterion 5.1. The wilderness zone has no extractive or commercial uses.				
Continue implementing education and interpretation activities which focuses on the negative impact of extractive uses such as grazing, forestry and hunting, the importance of rewilding, spontaneous natural processes, and wilderness conservation.		√		2020
Criterion 5.2. The wilderness zone has no forestry operation.				
Apply for a statute biotope protection forest in order to minimized possible forestry operation pressure in the future.	√			2020
Criterion 5.3. The wilderness zone has no hunting and/or game management.				
Develop a strategy to communicate the importance of having no hunting in wilderness zone.		√		2020
Develop a scientifically sound roadmap for the restoration of both migration routes and wintering grounds.		√		2020
Continue to implement the communication strategy which gives importance to having carnivores in the wilderness zone.		√		2020
Criterion 5.4. The wilderness zone has no extractive fishing and no management of fish populations.				
n/a				
Criterion 5.5. The wilderness has a fish and game management plan for the restoration and transition zones.				
Park management continue on implementation of game management documents in transition zone		√		2020
Criterion 5.6. The wilderness zone has no active mining.				
n/a				
Criterion 5.7. The wilderness zone has restored old mining sites.				
n/a				
Criterion 5.8. Park management has implemented a restoration plan for old mining sites in the restoration zone.				
n/a				
Criterion 5.9. The wilderness zone has no domestic livestock grazing.				

Continue communicate the importance no livestock grazing in the wilderness zone		√		2020
Criterion 5.10. The wilderness zone has no agricultural activities.				
n/a				
Criterion 5.11. The wilderness zone has no deadwood collection.				
n/a				
Criterion 5.12. There is no commercial harvesting of berries, nuts and/or mushrooms in the wilderness zone.				
n/a				
Criterion 5.13. There is no commercial collection of minerals in the wilderness zone.				
Monitor and control collection of minerals in the wilderness zone.		√		2020
Criterion 5.14. There is no commercial use of wilderness zone for filmmaking.				
n/a				

8.6. Principle 6: Wilderness Disturbance

This principle focus on the removal of infrastructure, creating well-planned tourism access and regulating and limiting road access to the area in order to reduce impact in the wilderness zones.

Recommendations	Priority			Time
	Low	Medium	High	
Criterion 6.1. The wilderness zone has no permanent infrastructure.				
Park management develops an impact study of two Alpenverein huts on the border of wilderness zone.		√		2020
Criterion 6.2. The wilderness zone has no permanent settlements.				
n/a				
Criterion 6.3. There is a management plan to deal with temporary structures in the restoration zone.				
Park management develops a map and inventory of the temporary structures (small scale tourism infrastructure) in the wilderness zone.		√		2020
Criteria 6.4. There is a management plan to deal with inherited settlements in the wilderness area.				
n/a				
Criterion 6.5. There is a management plan for the wilderness area to deal with inherited indigenous gathering sites (e.g. traditional reindeer herding sites in Nordic countries).				
n/a				

Criterion 6.6. Permanent infrastructures in the restoration zone are removed according to the restoration plan, unless the removal is detrimental to the quality of the wilderness area.				
n/a				
Criterion 6.7. There is a management plan to deal with abandoned archaeological sites in the wilderness zone				
n/a				
Criterion 6.8. There is no motorized transport in the wilderness.				
Park management develops an impact study of aviation (e.g. sightseeing by helicopter, drones, etc) in wilderness zone.			√	2020
Criterion 6.9. There is a free access on foot into the wilderness.				
Park management discusses with Alpenverein with objective to agree on high wilderness quality standard for trail marking in the wilderness zone (e.g. less frequent marks, narrow trails, planning and systematic trail monitoring). There needs to be a concept of impact, meaning a limit of acceptable changes.			√	2020
Criterion 6.10. The wilderness zone has no noise pollution.				
Park management develops random monitoring of noise pollution in wilderness zone with a focus on seasonal/ weekends when there is a concentration of tourist.	√			2020
Criterion 6.11. The wilderness zone has no light pollution.				
Park management continues to monitor light pollution in the wilderness zone with a focus on mountains huts.	√			2020
Criterion 6.12. The wilderness zone has no visual distraction on the horizon.				
Park management carries out visual distraction assessments affecting the wilderness zone, focusing on minimizing impact of alpine huts and relevant constructions.	√			2020
Criterion 6.13. The wilderness has no garbage pollution				
It is highly recommended that park management share their experience with dealing with solid waste pollution and management with other wilderness areas in Europe (e.g. recently verified wilderness area in Ukraine).			√	2020
Criterion 6.14. There are recreational fire pits in the wilderness.				
n/a				
Criterion 6.15. There are rules for use of horses in the wilderness zone.				
n/a				
Criterion 6.16. The wilderness zone has no fencing.				
n/a				

Criterion 6.17. There are rules about dogs in the wilderness zone.				
Park management continues with the strategy of how to use dogs in wilderness zone.		√		2020
Criterion 6.18. The wilderness has a visitor and recreational use strategy.				
Park management continue with concept of "leave no trace" in the wilderness zone with a specific focus on climbers, hikers and skiers.			√	2020
Criterion 6.19. The wilderness has an integrated visitor and recreation strategy to support the wilderness concept.				
Park management develop an integrated visitor and recreation strategy which includes training and communication to support the idea of wilderness			√	2020

8.7. Principle 7: Control strategies for fire, invasive species, and natural disturbances

Ecological disturbances are one of the most profound aspects of wilder-ness. Natural disturbances such as wild res and windstorms are important sculptors of landscape and habitats, however, they are often considered problematic and undesirable by humans.

Recommendations	Priority			Time
	Low	Medium	High	
Criterion 7.1. There is a fire control plan.				
Conduct research focusing on fire history in wilderness zone.	√			2020
Develop education and interpretation programmes focusing on fire management and let-it-burn policy.	√			2020
Criterion 7.2. There is a disease control plan.				
Continue to research the dynamics of spontaneous disease outbreak in regards to chamois and ibex in the wilderness zone.		√		2020
Criterion 7.3. An invasive species control plan has been developed for the wilderness.				
Continue to monitor the threat of invasive species to the wilderness.		√		2020
Develop an invasive alien species control plan for the restoration and/or transition zone to prevent incursion of invasive species to the wilderness.		√		2020
Develop education and interpretation programmes focusing on invasive species.		√		2020
Criterion 7.4. There is a plan for natural disturbances.				
Develop a natural events monitoring plan for the wilderness.			√	2020
Develop education and interpretation programme focusing on the role of natural events in wilderness.			√	2020

Criterion 7.5. The wilderness is impacted by permafrost.				
Continue intensive research and monitoring of permafrost in wilderness.			√	2020

8.8. Principle 8: Wilderness Research and Monitoring

Wilderness offers opportunities to study the unique attributes of nature and natural processes. Quality wilderness research and monitoring allows park managers to make appropriate decisions. Research and monitoring activities should be invasive in their character.

Recommendations	Priority			Time
	Low	Medium	High	
Criterion 8.1. There is a wilderness research and monitoring strategy.				
Continue to research and monitor activities with a focus on wilderness.			√	2020
Develop a research with a focus on collecting data on wilderness restoration.			√	2020
Develop and implement a communication strategy to communicate the outcomes of wilderness research			√	2020
Improve coordination with other wilderness protected areas (e.g. unify GIS systems and research methodology among partners focusing on wilderness research).			√	2020
Observe the impacts of researchers and monitoring.			√	2020
Use a network of wildernesses organized under the European Wilderness Preservation System to share research and monitoring knowledge.		√		2020
Provide an English summary for the important outcomes of research and monitoring.			√	2020
Criterion 8.2. There is a monitoring system which documents activities and extractive uses.				
Continue to implement monitoring system to improve management of her-bivores, restoration of ibex populations, tourism, wilderness interpretive programmes.			√	2020
Look for possible funding (e.g. Erasmus) to share their experience with oth-er park managers in Europe using the European Wilderness Society com-munication platform.		√		2020
Search for opportunities for more wilderness focused research in close co-operation with other protected areas in the European Wilderness Society network, research institutions or universities.			√	2020
Criterion 8.3. There is a monitoring plan to document indigenous peoples livelihoods and their impacts.				
n/a				
Criterion 8.4. There is a plan for cooperation with scientific institutions and universities.				
Implement a plan for cooperation scientific institutions and universities with a focus on wilderness conservation.			√	2020

8.9. Principle 9: International Relevance

The importance of wilderness is finally being recognized in Europe. More people and initiatives are beginning to work to protect and expand wilderness.

Recommendations	Priority			Time
	Low	Medium	High	
Criterion 9.1. The wilderness is internationally recognized (IUCN, Natura 2000, UNESCO, other certifications).				
Finalize the process of nomination for the European Wilderness Preservation System.			√	2020
Criterion 9.2. There is a plan to become part of Natura 2000 network (where relevant and in accordance with the wilderness objectives).				
Promote their experience with other Natura2000 sites who utilize non-intervention management.			√	2020
Criterion 9.3. Wilderness supports the protection of internationally threatened species.				
Develops education and marketing campaign targeted at schools which focuses on wilderness and internationally threatened species targeted.			√	2020

9. Wilderness Awarding

9.1. History of cooperation between the Nationalpark Hohe Tauern Salzburg and the European Wilderness Society

The cooperation between the Nationalpark Hohe Tauern Salzburg and representatives of the European Wilderness Society dates back to 2009 which is when park management approached the Society to formally protect wilderness in the core zone of their park.

The director of the Nationalpark Hohe Tauern Salzburg, Wolfgang Urban attended annual meetings which were organised by representatives of the European Wilderness Society. The European Wilderness Society Director of Wilderness Development visited the potential wilderness several times (2011, 2012, 2013, and 2015).

In 2014, WWF Austria, with the support of the European Wilderness Society, produced a report for the Wild Europe Initiative, The potential wilderness Grossvenediger. It assessed the quality standard of the proposed wilderness in the Nationalpark Hohe Tauern Salzburg with the European Wilderness Society criteria. The planned establishment of wilderness within the Nationalpark Hohe Tauern Salzburg is in responds to the new Austrian Nationalpark Strategy 2010, which calls on Austrian Nationalparks to strengthen the wilderness character of their core areas.

The director of the Nationalpark Hohe Tauern Salzburg, Wolfgang Urban, was interested in becoming involved in the network of European wilderness protected areas in order to improve management effectiveness of the Nationalpark Hohe Tauern Salzburg and in particular the wilderness zone.

He had expressed interest in creating a model for other protected areas in Central Europe which also have wilderness potential.

Fig. 114: Director of the Nationalpark Hohe Tauern Salzburg expressed an interest to protect wilderness in core zone of the Nationalpark Hohe Tauern Salzburg.

9.2. Awarding Process

In spring 2014 the Nationalpark Hohe Tauern Salzburg and the European Wilderness Society agreed on a timeline and the process of assessment and at the end of 2014, the Nationalpark Hohe Tauern Salzburg was awarded the Silver Candidate Wilderness diploma.

Fig. 115: HoheTauern Wilderness Silver Candidate Diploma and Certificate was awarded in 2014.

In summer 2015, a team of European Wilderness Society experts visited the Nationalpark Hohe Tauern Salzburg for 11 days and carried out the site assessment with a focus on the wilderness zone and this field assessment mission included an overnight assessments trip.

Finally, the Gold Wilderness diploma was awarded in October 2015 for the 8,456.68 hectares of Hohe tauern Wilderness and the area received the Gold Wilderness certificate.

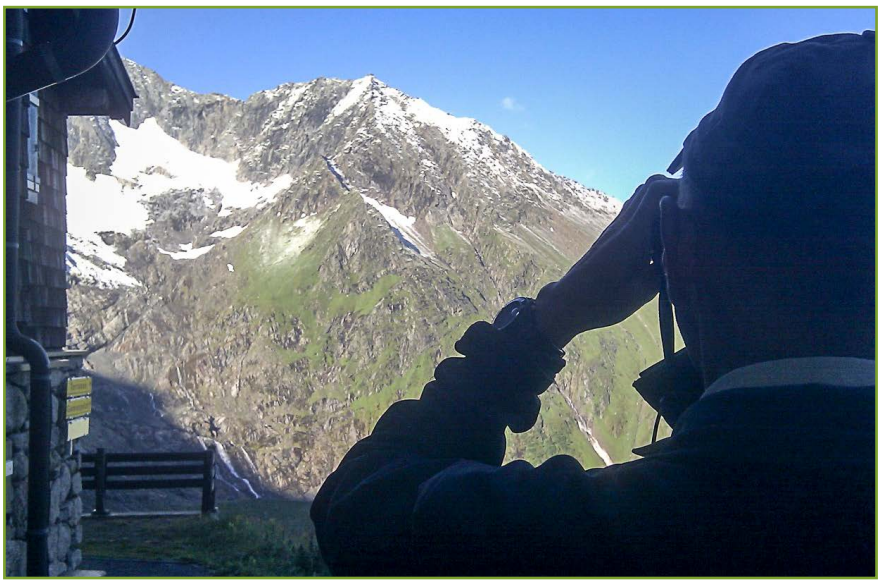


Fig. 116: The European Wilderness Society team verified 8,456.68 hectares of Hohe Tauern Wilderness and was awarded a Gold Wilderness Certificate.

Over the short and long term, the European Wilderness Society will continue to work with the Nationalpark Hohe Tauern Salzburg in an effort to enlarge wilderness and improve management effectiveness.

Fig. 117: HoheTauern Wilderness Gold Diploma and Certificate was awarded in 2015.

Fig. 118: HoheTauern Wilderness awarding ceremony 2015.

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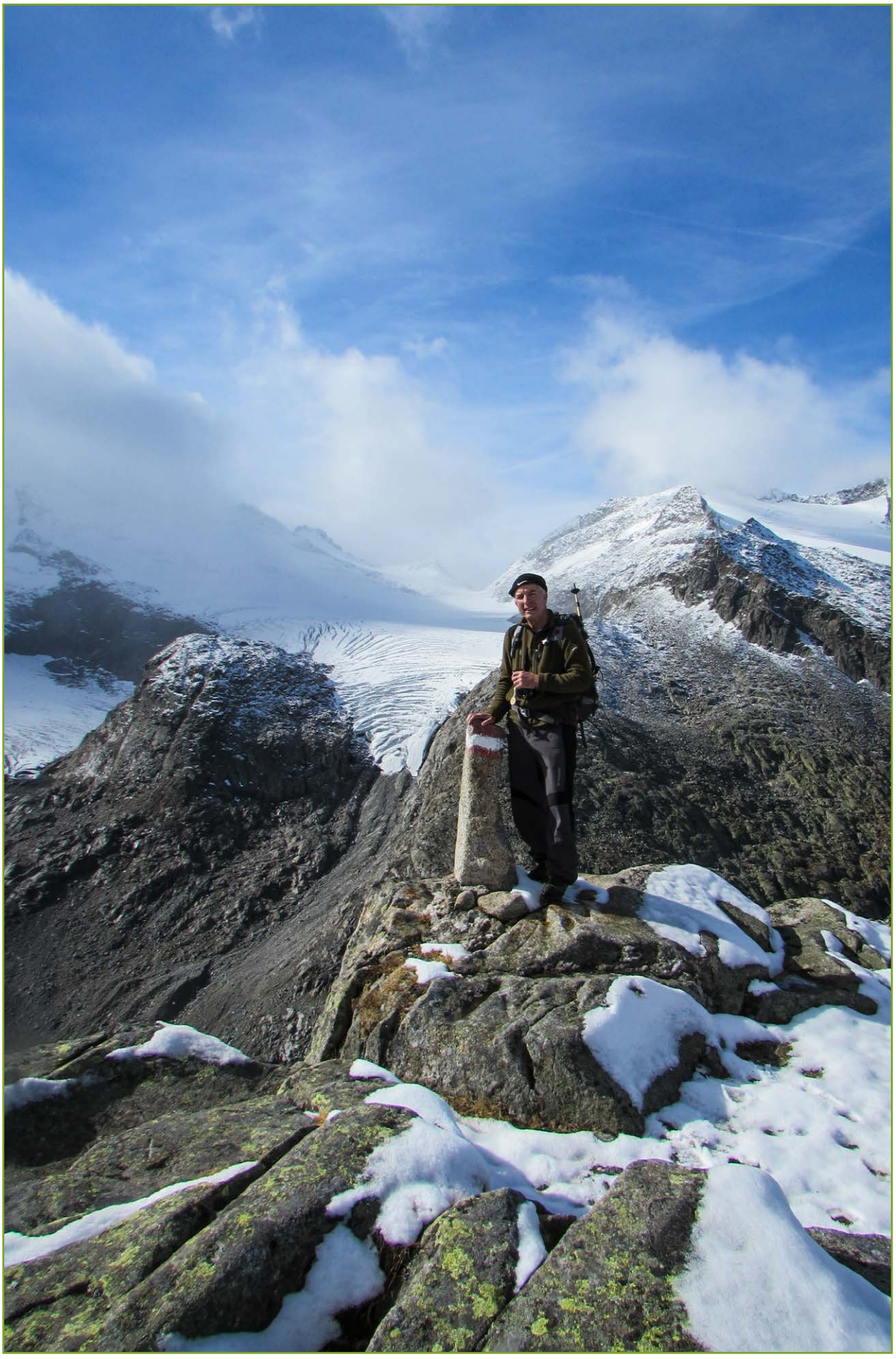

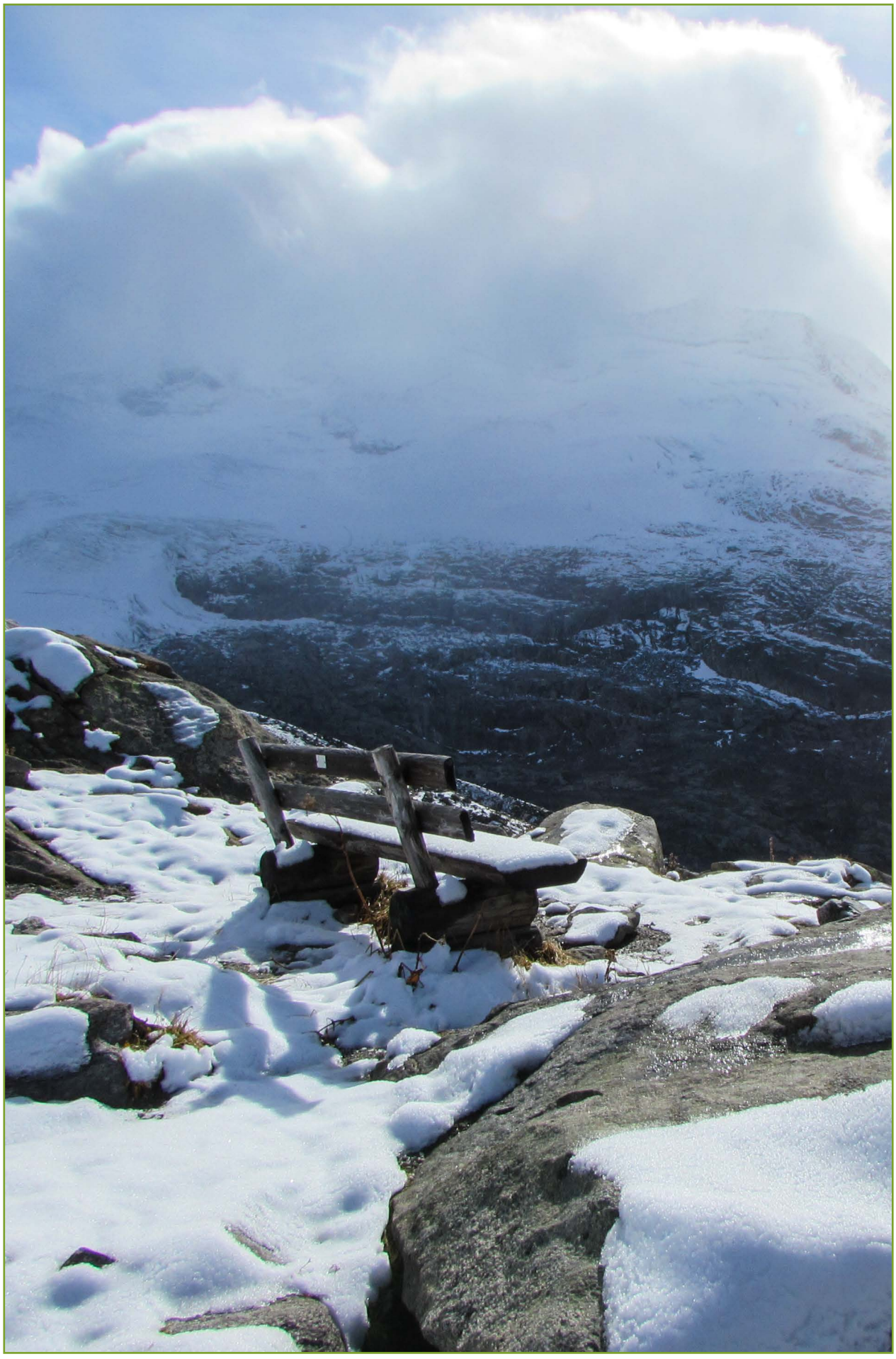

European Wilderness Quality Standard Audit

Nationalpark® Hohe Tauern

EUROPEAN WILDERNESS SOCIETY

European Wilderness Society

Registration number / ZVR Zahl: 305471009

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