

Christian monastic communities living in harmony with the environment: an overview of positive trends and best practices¹

Abstract

This paper explores the relationship between Christian monastic communities and nature and the natural environment, a new field for this journal. After reviewing their historical origins and evolution, and discussing their key doctrinal principles regarding the environment, the paper provides an overview of the best practices developed by these communities of various sizes that live in natural surroundings, and reviews promising new trends. These monastic communities are the oldest self-organised communities in the Old World with a continuous history of land and environmental management, and have generally had a positive impact on nature and landscape conservation. Their experience in adapting to and overcoming environmental and economic crises is highly relevant in modern-day society as a whole and for environmental managers and policy makers in particular. This paper also argues that the efforts made by a number of monastic communities, based on the principles of their spiritual traditions, to become more environmentally coherent should be encouraged and publicized to stimulate more monastic communities to follow their example and thus to recapture the environmental and spiritual coherence of their ancestors. The paper concludes that the best practices in nature conservation developed by Christian

¹ This paper is a substantial development, both in content and scope, of a previous paper written by one of us (JM) for the Proceedings of the Third workshop of The Delos Initiative, which took place in Lapland, Finland, in 2010. A certain number of the experiences discussed here comes from case studies prepared during the last nine years in the context of The Delos Initiative, jointly co-ordinated by two of us (TP, JM), within the IUCN World Commission of Protected Areas. Research has been possible thanks to the support of the Chair of Culture, Science and Religion, Universitat Internacional de Catalunya, Barcelona.

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monastic communities in countries that often seem to be moving in the opposite direction deserve widespread recognition. These practices should be emulated both within and beyond monastic communities and will act as inspiration not only for managers of natural protected areas but also for many other organisations in society as a whole.

Key words

Creation, environment, hermits, hermitages, nature conservation, natural protected areas, landscape, monasticism, monastic communities.

1. Origin of a resilient lifestyle in harmony with nature

The origin of Christian monasticism goes back some sixteen centuries to the deserts of Egypt, Palestine and Syria during the time that these countries formed part of the Roman Empire. Indeed, the oldest thriving Christian Coptic monasteries are located in the Egyptian deserts, an example of how monasticism developed in areas with very scarce basic resources such food and water.

From the earliest times, the ideal of monastic life was closely linked to the aspiration of a return to a terrestrial Paradise, a desire that was associated with asceticism, which was necessary for achieving spirituality. More or less complete solitude in the wilderness was sought to enable aspirants to progress spiritually and attain holiness, thereby developing deep harmony with nature by approaching (or even regaining) the 'Adamic state'.

From the beginning of monasticism, two main lifestyles developed that have gone almost unchanged up to the present day: community life – coenobitic – and isolated life – heremitic. Heremitism and coenobitism are usually regarded as complementary paths corresponding to different vocations or to different stages in the spiritual life of monks and nuns. The lives of prominent holy hermits such as St Anthony (251–356) have been a source of inspiration for centuries and, according to Athanasius, by the end of his life "there were monasteries in the mountains, and the desert was peopled with monks".

St Macarius the Great (c. 331–390) is credited with having established the idea of the *lavra*, which combines the features of both hermitages and coenobia. Colonies of hermits (*lavras*) living in caves or huts, out of sight and generally out of earshot of each other, would have consisted of several hundred individuals. At the centre of the dwellings stood a complex of buildings including a bakery and a church where the hermits would gather once a week (Lawrence, 1989). Before the Arab conquest, it is calculated that there were about five thousand Coptic monasteries and nunneries (Meinardus, 1961).

The monks and nuns of these first communities that settled in the wilderness lived very ascetic existences with a bare minimum of needs. They supported themselves by making baskets, rope and linen, for example, out of the materials that were available, which they would exchange to satisfy their bare necessities (Lawrence, 1989). The study of the economy and livelihoods of the earliest monasteries in Palestine reveals a degree of variety – due to the necessary adaptation to their specific natural and social surroundings – that never went beyond the limitations of each community's ascetic religious principles (Heiska, 2003).

Historically, hermits have usually been supported by monastic communities or by lay people and in some monasteries most monks live as hermits for at least part of their lives. In other communities, hermitic life is only an option for those who feel attracted to such a lifestyle. A hermit devoted to silent prayer and contemplation in solitude should be seen as the prototype of a human being living in close harmony with nature. In the words of one French modern-day hermit, "hermits live a cosmic experience of communion with nature" (Mouizon, 2001). No wonder, therefore, that from the fourth century onwards, numerous contemporaneous records talk of the holy men and hermits who befriended wild animals such as lions, bears, wolves and poisonous snakes, and who in some cases were even fed by them (Macaire, 1993). Indeed, the best-known 'natural' saints are either hermits or monks who lived in solitude.

According to tradition, the originator of life in monastic communities was St Pachomius (c.292–346), another Coptic-speaking Egyptian. By his death, large male and female monasteries had been established in the regions of Thebes and Thebaid. Some of these monasteries were home to over one thousand people who lived off the vegetables they grew and their craftwork (mats and baskets made from rushes from the river Nile), which they ferried downriver to market; indeed, the boatman is a figure that appears in the Rule of Pachomius (Lawrence, 1989).

St Basil of Cesarea (335–379), considered to be the father of Eastern monasticism, did not bequeath any rule as such but instead gathered together counsels for the running of coenobitical

communities, which greatly influenced subsequent monastic legislators. Basil taught the virtue of work as a means of perfecting the soul, of supporting the community and of providing for the poor. Every monk should have a trade, he wrote, preferably one such as agriculture, weaving or shoemaking that produced marketable essentials. His influence took root in communities established in deserts and arid regions in Syria and Cappadocia and spread to many other countries (Lawrence, 1989). St Maroun (?–410), considered the father of the Maronite Church, established another lineage that has a similar attitude to the natural environment.

The expansion of monastic settlements followed diverse historical, cultural and geographical patterns that have been well researched in general (Masoliver, 1978, 1980). By the end of the first millennium, thousands of monasteries were thriving in Europe, North and East Africa and the Middle East, including many in remote and isolated areas. The impact of these monastic communities on spirituality, art, science and culture in general has been widely acknowledged and documented both in this journal and elsewhere (Krüger et al. 2007; Kinder, 2002), and their legacy has been – and still is – an important topic of research. However, the positive impact of these monastic communities in the management of natural resources and nature conservation has received much less attention, despite the fact that a number of them have developed what we would currently consider to be ‘best’ or ‘sustainable practices’, even in extremely harsh conditions, often very successfully and over a long period of time (Mallarach, 2012).

Given that the founders of many monasteries deliberately sought out lonely or wild terrain, often with very limited resources, the longevity of those communal settlements is impressive and thus deserves careful attention. In isolated desert or arid areas, the survival of the community depends on the development of efficient, highly sophisticated water management and garden systems, and the reducing of needs to the very minimum.

One of the first Christian monasteries, St. Catherine's, founded in 337 AD near the site of the biblical Burning Bush, is located at the foot of Mount Sinai in an extremely arid region. It has been continuously active ever since it was established and has been under the protection of Islamic law since 623 AD. In 2002 the monastery was included in the Saint Catherine Protectorate, one of the largest protected natural areas in Egypt. Wonderful mountain orchards and vegetable gardens are tended by the Muslim Gebaliya Bedouin tribe who has been serving the Orthodox monastic community for centuries (Grainger and Gilbert, 2008).

A further example is the monastery of St. Anthony the Great, founded in 356 AD shortly after his death. Situated on the mountain of Al-Qalzam Mountain near Al Zaafarana in Egypt, this monastery has been occupied continually since its foundation and today consists of a self-contained village with gardens, a mill, a bakery and five churches. Like other Egyptian Coptic monasteries, St Anthony's is currently experiencing a revival; its monastic population has grown considerably in recent years and attracts a large number of pilgrims. A number of monks from Saint Anthony's spend the final part of their lives as hermits in nearby caves².

Such outstanding examples of resilience are not unique. Centuries of prudent resource management by Christian monasteries have created a wide variety of extensive and harmonious monastic landscapes, well adapted to ecosystems as diverse as the frozen taiga of northern Russia, the African deserts, the rugged Alps and Carpathian mountains, or the coastal areas and wetlands of the Mediterranean. Many have been well managed and conserved for centuries, that is, at least up to the industrial revolution or, in certain cases, up to the present day.

The spread of Christianity into the Americas, Central and Eastern Asia, Central and Southern Africa and Oceania over the past five centuries has followed different patterns in each region. Currently, certain Christian monastic communities in almost all biomes except Antarctica are having to face up to similar challenges as their ancestors, the main difference being that today these communities usually have better access to a wider array of technology and so can adapt more easily to their environments.

² <http://www.stantony.com.au/> [retrieved 20 May 2014].

2. Values and principles in relation to the natural world

Christian monastic communities live in deserts or uninhabited places not through misanthropy or a need to be close to undisturbed nature – this latter aspect does exist, but is secondary – but rather as a way of imitating Jesus and his cousin, John the Baptist, who withdrew into the desert to be able to pray and commune with God with no distractions. As a result, over the centuries many monastic communities have been set up in isolated areas of Europe, North Africa and the Middle East.

Monastic communities are the oldest self-organised communities in the Old World to have had a continuous positive impact on nature conservation. This extremely significant but often overlooked historical circumstance is in part due to the fact that monastic communities are based on principles that coincide closely with those of environmental sustainability, such as:

- Stability, discipline, asceticism, sobriety, poverty, vegetarianism.
- Few material needs; more time for prayer, contemplation and meditation.
- Orientation not towards material profit but rather towards spiritual benefit.
- The idea of communal rather than private property in line with the concept of monks as custodians or stewards and never as owners.
- Cherished values such as sacredness, silence, solitude, harmony and beauty.
- A desire for perfection or excellence, in both spiritual and material domains.
- Creation (Nature) as a manifestation of God (*theophany/epiphany*) that deserves respect.
- A realisation that all natural living beings praise their Creator.
- Natural resources (gifts of Creation) should be safeguarded and bestowed on future generations³.

Although the governance of monastic communities varies greatly according to the tradition or branch they belong to, all tend to stress the family bonds of the community, with the abbot or abbess seen as the father or mother of the monastic family. Most monastic communities include some democratic procedures – for instance, in the case of the election of the abbot or abbess or the acceptance of new candidates – but the authority of the head of the monastery is undisputed.

Other than a few centralised orders such as the Carthusians, most Christian monastic lineages allow each monastic settlement a great degree of autonomy. Western orders have very detailed rules, whilst Orthodox, Coptic and Ethiopian monastic orders have *typicons*, a compilation of customs that, although differing from one monastery to another, follow certain broad general principles. The influence of the monastic legislation of the emperor Justinian lasted until the end of Byzantium period (Masoliver, 1981).

In this context, it is necessary to underline the fact that autarchy is usually regarded as an ideal of life since it maximises freedom from worldly pressures. The monastery in the widest sense of the word is often conceived as a living organism⁴, while the monastic community or even the monastic order is seen as a family.

The Rule of St Benedict (480–550), the patriarch of Latin monasticism⁵, recommends placing the monastery in an area that can provide for all the monks' material needs (RB 66,6) and also establishes that monks have to take care of all the possessions of the monastery "as if they were

³ E.F. Schumacher in the article *A message from the Universe* remarks on the need to restore the four classical cardinal virtues (*prudentia, justitia, fortitudo, temperantia*), the first of which – prudence – was considered to be the mother of the others, *genitrix virtutum*. It is no coincidence that in the 20th century this precautionary principle is regarded internationally as the first principle of sustainability.

⁴ This concept is found in many places such as St Basilus, the Monastic Constitutions of the Pseudo-Basilus and Dorotheus of Gaza (Leroy,??, quoted in Masoliver, 1981)

⁵ The Rule of St Benedict (written c. 535) is regarded as one of a group of closely related monastic rules composed in Italy and Southern Gaul in the first half of the 6th century. The main literary source of the Rule of St Benedict is considered to be the Rule of the Master, written by an unknown abbot c. 500 (Lawrence, 1989).

sacred vessels of the altar" (RB 31, 10). "All the possessions of the monastery" include the fields, the vegetable gardens, the forests, springs, and wells, as well as all the other elements that facilitate the life of the monastic community. In a certain way, the distinction between the sacred and the profane is surmounted and all of Creation is seen to reveal the glory of God (Neyt, 2003). The ideal is summarised in the famous motto "*ora et labora*", along with the principle that "*they will be truly monks if they work with their hands*" (RB. 28.8). The logical consequences of the principles laid down by St Benedict are the rooting of monastic communities in the land, creative efforts to develop wise and prudent management systems that strive for perfection, the avoidance of any kind of commercial mentality, and care for those such as the poor, old, sick, weak and pilgrims who are more in need: (Neyt, 2003).

The rules of the early Celtic (Irish) monks, written in the 6–8th centuries, also provided a prescription for an autarchic, ascetic lifestyle based on a bare minimum of natural resources and normally carried out in wild, isolated natural sites. They advocated that monks should "*cultivate and share the fruits of the earth*" and established the figure of a monk-steward who was put in charge of the monastic lands (*erenmogh*)⁶. Like the normal Irish dwelling of the time, monasteries were constructed in the shape of a fort composed of two or three earth rings or walls encircling the living quarters. The space between the rings was devoted to vegetable gardens and animals. All buildings were built from local materials, either timber or plants, or wattle and daub (O Maídn, 1996). In areas lacking timber, monks built stone buildings such as the 6–8th century beehive stone buildings of the island monastery of Sceilig Mhíchíl that were of quite amazing design. Another rule stressed the idea of "abstinence in times of abundance", even though periods of scarcity were by far commoner than periods of plenty⁷.

The association of virtue and nature has always been a common theme in monastic and hermitic life and is normally based on Biblical symbols. For example, according to the Constitutions of the Camaldoli from 1080, the seven virtues of the eremitic-monastic vocation are related to the seven trees mentioned by the prophet Isaiah (Isaiah 41:18-19) – fir or pine, cedar, hawthorn, myrtle, olive, box and elm (Licciardello, 2004, quoted in Pungetti, Hughes and Rackham, 2012).

It is worth underlining the fact that the monastic view of nature is radically different from that of modern nature-lovers (including agnostic ecologist communities). The values that monastic communities embrace are far removed from the mainstream values of modern materialistic societies, which are the root cause of the present global ecological crisis (Nasr, 1966). In this sense, monks and nuns have more in common with traditional communities and the world's indigenous peoples, even if their respective theological perspectives are quite different. The monk or nun chooses remote areas that serve, above all, as sites for quiet retirement for prayer and contemplation (*hesychia*) but also – and here the Gospel and the lives of St. Anthony and the other early monks make it clear – to fight against Satan and his helpers. The desert is a place of struggle, in which the fulfilment of the Mystery is enacted; and when the monk defeats the devil in the power of God it is 'virtually' all human nature that it is saved and restored, and acquires a new mode of existence. Therefore, sensitivity towards nature is also involved in the restoration of man through salvation. This is the background to the miracles performed by the holy monks in the desert and of their familiarity with wild animals, as new Adams heralding a new age and a new heavenly state (Macaire, 1991). Therefore, the examples of tenderness and delicacy towards nature shown by saints can be interpreted as an anticipation of a 'supernatural' state that transfigures the future and are more than just a simple 'return to natural life' or to the 'wilderness'. It is relevant to recall here that most known Christian 'nature' saints were monks or hermits.

Some have criticised the members of monastic communities for "abandoning the world". This is of course partially true but it is even more true that in shutting themselves off from society, monks and nuns strive to live in spiritual communion not only with God but also with all other human beings and all of Creation. According to the Deir Mar Mousa al-Habashi monastery in Syria, "*the second priority is Evangelical simplicity, a way for living in harmony and complete responsibility with*

⁶ The Rule of Ailbe is attributed to St Ailbe (d. 534) but was probably written by one of his followers about two centuries later (O Maídn, 1994).

⁷ An incomplete portion of another rule, which was written c.1411 (O Maídn, 1994).

*Creation and the society that surrounds us (...) with an aesthetic of justice and gratification*⁸

This implies that the commitment of monastic communities to the protection and management of natural sites that has for centuries been part of their search for God will necessarily be subject to a withdrawal from the world, to silence and to community life with restrictions on contact with secular society. This is why monasteries do not always follow strict criteria regarding efficiency or the dissemination of environmental messages that require other types of organisations (Makarios, per. com.).

Most monastic communities use a variety of tools and strategies to communicate their values, which include the way they understand Creation and their relationship with all living beings and the environment, to society. Depending on the order, context and circumstances, they may choose to use traditional channels, new technologies or both, although they usually aim their message at exclusive audiences that are attracted to monasticism. Traditional religious practices such as retreats, seminars, counselling, the publication of books and articles, and sacred art are combined with modern tools including symposia, web pages, DVDs, CDs, guided tours and interpretation centres and the like.

Although very few Christian monasteries have explicit communication goals related to nature conservation, it is indisputable that the values they communicate – chiefly through the examples they set – do have a positive impact on the people they reach through greater respect for nature and by encouraging others to adopt simpler, more frugal and environmentally sustainable lifestyles.

3. Historical developments in monasticism in relation to nature and landscape

Thanks to the alms and donations that many monasteries received, coupled with the careful and efficient management they practiced, monastic communities often ended up managing large tracts of land, lakes and other water sources covering tens or even hundreds of square kilometres. In several European and Middle Eastern countries, we estimate that at their peak monastic communities were responsible for managing 10-35% of productive land in some regions.

By following a lifestyle that seeks wholeness and physical, mental and spiritual equilibrium, most contemplative monastic communities have always been keen to develop efficient, self-sufficient strategies that enable them to devote substantial time to prayer, meditation and contemplation. Most hermitic domains also made significant contributions to nature conservation since hermits found the deep peace they were looking for in areas that we now call nature reserves⁹.

Currently, hundreds of present-day natural protected areas (national parks, natural parks, protected landscapes, nature reserves of different types, etc.) have been established in ancient monastic landscapes that retain their beauty, harmony and biodiversity.

Most of these protected natural areas are managed as 'protected landscapes' or 'cultural landscapes', equivalent to IUCN Category V, the most common category of protected area in Europe (Mallarach et al., 2008). This is additional proof of the effectiveness of these types of natural community-conserved areas.

In fact, monasticism has always gone hand-in-hand with nature protection and sustainability, perhaps due to necessity given the conscious goal of permanence that monasteries uphold. Among the Benedictines and their offspring (Cistercians, Camaldolesians, Trappists, etc.), agricultural and forest management practices were normally sustainable, sophisticated and well adapted to each site. St Benedict's Rule set an early example – nowadays acknowledged – of

⁸ <http://www.deirmarmusa.org> [retrieved 14 February 2014].

⁹ Given the large number of diverse names used in different countries and the fact that a designation such as 'national park' differs in meaning from country to country, the International Union for the Conservation of Nature (IUCN) has defined six categories representing a global framework for comparing the status of protected areas. It is worth remembering that the latest version of the IUCN *Guidelines for Applying Protected Area Management Categories* acknowledges for the first time that sacred natural sites may exist in each nature conservation categories (Dudley, 2008). Most Nature Reserves correspond to IUCN Protected Area Categories I or III.

sustainability and the fact that Benedict has been made the patron saint of Europe is seen by some as a hopeful sign of the times (Prince of Wales, 1993).

Although monastic forest practices acquired a well-deserved reputation for sustainability, not all such practices are identical. In Italy, for instance, experts nowadays can differentiate a forest that was managed by a Benedictine from one managed by a Cistercian or Camaldolese monastic community. A well-researched case is that of the forest practices developed by the Camaldolese in the extensive forests of the Apennines and in the area around the monastery of Camaldoli and its holy hermitage (Sacro Eremo), which are today part of the National Park of the Casentino Forests, Italy (Pungetti, Hughes & Rackham, 2012). Another significant example are the practices that have been carried out in the forests of the Mount Athos peninsula for centuries, which are recognised and respected even today (Papayannis, 2010).

Cistercians established almost all their settlements in lowlands, usually next to springs, rivers or other water bodies, and developed sophisticated agricultural systems and devices for harnessing renewable water energy (Leroux-Dhuys, 1999). In addition to the common domestic and liturgical uses of water, Cistercians were well known for developing creative and efficient systems for using water for productive purposes such as flour-, oil- and paper-milling, efficient irrigation, fish aquaculture and purification and depuration systems. In this respect, it is important to acknowledge the significant positive impact – to date only partially researched – that Cistercian communities had on Western Europe during the centuries before the industrial revolution (Kinder, 1997).

The need for wine at mass encouraged the development of a wine culture in numerous monasteries, which led to the discovery of the *méthode champenoise* by Dom Perignon and the production of various types of liquors such as Chartreuse by the Carthusians. Other examples of alcoholic beverages of monastic origin include the Benedictine and the Trappist beers, which are ranked as some of the best in the world.

Discussion of the fact that certain monastic communities and hermits have settled in and adapted to some of the world's most astonishing landscapes is unavoidable. For example, monastic communities are to be found on top of the impressive rocky pinnacles of Meteora (Greece), nestling in the midst of rock pinnacles (Montserrat, Spain), hanging from the cliffs of the Sümela canyon (Turkey), carved out of cliffs in places such as Saint George (Palestine) and Ostrog (Montenegro), or standing in remote Arctic archipelagos, frozen for most of the year, like the monastery of Solovetsky (Russia).

From an ecological point of view, the inclusion of areas devoted to hermits in monastic properties normally gave rise to a very balanced landscape pattern, which still exists in many regions of Europe. Thus, monastic settlements tend to contain monasteries of different sizes, usually surrounded by agricultural lands and managed forests, with assorted hermitages and monks' cells located in the best-conserved natural areas.

Another significant historical contribution of monastic communities to conservation and good practices is that of monastic gardens, which gave birth to botanical and pharmaceutical gardens in numerous post-medieval European and Middle Eastern towns (MacDougall, 1986).

The zenith of the positive influence of monastic communities on nature conservation varied depending on the region. While in the Middle East, North Africa and Ireland the peak was probably reached in the 5–6th centuries and in the 10–13th centuries in Byzantium, the high point of monasticism in many Western and Central European countries was not attained until the 11–14th centuries and in Russia in the 15–16th centuries.

However, the history of Christian monasticism is not one of steady evolution, as is well known. Aside from occasional disruptions by wars or pillage, the worse setbacks suffered by monastic communities in Europe came with the Reformation, which suppressed monasticism in northern and parts of central Europe and the British Isles. Later on, the French Revolution and its aftermath in the 19–20th centuries prompted several European governments – both liberal and communist – to ban religious houses and monastic organisations, or to enforce severe limitations on their activities,

which usually involved the confiscation of monastic properties and lands for political, ideological or economical reasons (Besse, 1911).

As a result, many monasteries were either abandoned, sacked or destroyed. This process has had severe repercussions not only for monasticism and its associated cultural and spiritual heritage (as has been well studied) but also for nature and landscape conservation, a fact that has been far less documented. Many monastic forests that had been carefully managed for centuries were cut down or seriously damaged in just a few decades (Urteaga, 1989; Torcal & Mallarach, 2008). Numerous traditional varieties of fruit and vegetables were lost and a great deal of what is nowadays called “traditional ecological knowledge”, including many best practices that had been developed gradually over centuries by monastic orders in Europe, were rapidly forgotten.

Later, when the political situation changed and a certain tolerance for monasticism returned, a monastic resurgence occurred in many European countries, which led to the partial recovery of what had been lost. Some outstanding habitats such as old-growth forests could not be easily restored, however. Among the exceptions were some Orthodox and Eastern Christian monasteries such as those on the Sinai and Mt Athos peninsulas whose traditions continued unchanged under the Ottoman Empire, as is the case of a number of monasteries scattered throughout the deserts of Egypt, Syria, Palestine and Jordan and the Aegean islands.

Despite the significant losses, in Europe alone 40 Christian monasteries have been included in the UNESCO list of World Heritage Sites as Cultural Sites, of which three have also been inscribed as both Natural and Cultural World Heritage Sites: the monasteries of Mt Athos and Meteora in Greece, and Studenica in Serbia¹⁰, a clear proof of the outstanding value of the monastic contribution to the world’s natural and cultural heritage.

4. Historic protected areas created or managed by monastic communities

During their long history, Christian monastic communities have established diverse types of what we now call ‘natural protected areas’¹¹. In most cases, it is fair to say that nature conservation and the efficient use of natural resources was an implicit part of their existences. In some cases, however, the goal of nature conservation was far more explicit, often as a support for spiritual practices. A brief discussion of a few relevant examples follows.

Landscape scale management

From the 7–9th centuries onwards, a number of monastic colonies were established on the slopes of Mount Olympus, Greece, as a continuity of the tradition of the Holy Mountain (Hagión Oros) that had existed in Hellenic times (Masoliver, 1981). At the beginning of the second millennia, the majestic Mt Athos, located at the southern tip of the most northern of the three Halkidiki peninsulas, adopted the name of ‘Holy Mountain’.

The Garden of the Holy Virgin, the only monastic republic in the world, is a well-documented case study. It is about 335 km² in size and over the past ten centuries has only ever been inhabited by monks. Governance is based on a coalition of twenty Pan-Orthodox sovereign monasteries organised in numerous self-sufficient communities ranging in size from monasteries hosting hundreds of monks to smaller *sketes*, *kallive* and *kellia*. As well, there have always been numerous hermits living in huts or caves, in particular on the slopes of Mt Athos, the Holy Mountain, a large roadless area at the tip of the peninsula. The monastic population peaked in the 18th century under Ottoman rule at around 50,000 monks. A steady decline began in the 20th century and by 1903 there were 7000 monks and around only 1100 in the 1970s. Since then, a spiritual and material

¹⁰ <http://whc.unesco.org/en/list/1068> [retrieved 15 May 2014].

¹¹ ‘Natural protected areas’ is generic term encompassing many different types of protected areas that vary in legal status from country to country: national park, natural park, natural wildlife refuge, natural monument, protected landscape, nature reserve, strict reserve, and many others.

renewal has taken place leading to a steady increase in the monastic population to over 2000 (Speake, 2002). Management measures include a permanent absence of cattle, along with respectful extraction of timber, stone and other materials for construction, and wood as fuel. Due to its rugged topography, flat areas are few and far between and most agriculture is carried out in stone-walled terraces. This monastic republic has a very rich biodiversity in its predominantly forest habitats, including 22 species endemic to Greece, 14 of which are local endemics. Its larger fauna includes 41 species of mammal, six of which are carnivores (Philippou and Kontos, 2012). It is no coincidence that after a millennium of continuous monastic self-sufficient rule, the quality of the site's natural heritage and the landscape of the Athonite Peninsula is in general still exceptional at both Mediterranean and global levels, as was recognized by the inclusion of the whole peninsula in 1988 on the UNESCO List of World Heritage Sites as a mixed natural and culture site. Due to the fresh challenges posed by the increasing number of pilgrims, new technologies and a number of external threats, a *Framework Plan for the conservation and management of the Athos natural and cultural heritage* is being developed in collaboration between the monastic government and the Greek authorities, with advice from UNESCO (Papayannis, 2012).

Old-growth forest preservation

One of the best-documented examples of nature protection by monastic communities are the old-growth forests found from the Russian taiga to the Ethiopian plateau.

Traditionally, the Carthusian order settled in wild rugged countryside, often surrounded by large forests that were left untouched as a buffer of solitude and silence, as, for example, around the monastery of Grand Chartreuse built in the 12th century in a secluded pristine valley in the Savoy Alps (France). During the next six centuries, around 280 Carthusian establishments were built in Europe, often surrounded by large areas of pristine old-growth forests that survived until the 18th–19th centuries when, like at Scala Dei (Spain), the hermit-monks were forced to flee and the protective forests were quickly razed to the ground¹².

According to the earliest Rules of the Hermitage of Camaldoli established by St Romuald (~951–1027), the conservation and management of surrounding forests were a priority. The strict preservation of forests was seen as essential for the protection of the secluded life of this branch of the Benedictines, who combined hermitic and coenobitic life in separate buildings (Pungetti, Hughes & Rackham, 2012).

The Sacro Eremo delle Carceri (Italy) is the forested mountain area to which St Francis of Assisi retreated in the 12th century. Forests of this natural 'sacred hermitage' have been so carefully conserved that they are currently considered to be some of the finest in Italy¹³.

A final example is that of the old-growth forest preserved around the Sainte Baume (Holy Cave) of Saint Marie Madeleine in Provence (France), a hermitic site since the 5th century that has been conserved by monastic communities since the 9th century and today is a centre of pilgrimage currently cared for by a Dominican community¹⁴. The feeling of 'naturalness' one has when visiting this beech forest has been recently assessed as 'outstanding' and in ecological terms it is considered to be one of the highest quality sites in the Mediterranean (Rossi et al. 2013)¹⁵.

¹² Gort, E. 1999. *La Cartoixa de Scala Dei i l'Orde Cartoixà a Catalunya*, p. 15-26 in James Hogg (ed). *Scala Dei primera cartoixa de la Península Ibèrica i de l'Orde Cartoixà*. Comissió VIII Centenari, Analecta Cartusiana. Universitat Salzburg.

¹³ Pungetti, G.; Hughes P. F.; Rackham, O. 2012. *Ecological and spiritual values of landscape: a reciprocal heritage and custody, provide an interesting discussion from the nature conservation viewpoint*. In Pungetti, G.; Oviedo, G. & Hooke, D. (eds.) *Sacred Species and Sites. Advances in Biocultural Conservation*. Cambridge University Press, p. 65-82.

¹⁴ <http://hotellerie-stebaume.pagespro-orange.fr/presentation.html>

¹⁵ For the monastic community, see: <http://www.saintebaume.org/dominicains.html> [retrieved 16 May 2014]. The forest has been the object of numerous studies collated in <http://www.foretsanciennes.fr/wp-content/uploads/Module-biblio-Sainte-Baume.pdf> [retrieved 3 June 2014]

The Holy Carmelite Deserts

The Holy Carmelite Deserts represent the peculiar synthesis of sacred mountains and hermitages envisioned by a Discalced Carmelite, F. Thomas of Jesus, in the 16th century. His purpose was to establish protected areas "*rich in waters and natural beauties*" located in remote and isolated areas that could be devoted to contemplative retreats. Such spaces were open to all men who wanted to pray "*in the presence of the beauty of the harmony of the universe.*" F. Thomas himself founded three Holy Deserts in the kingdom of Castile (1592–1599) and this model was so well received that it soon spread and every Carmelite province came to have at least one Holy Desert. In all, 23 Holy Deserts were established in Portugal, France, Italy, Belgium, Poland and Mexico and are an important precedent as protected areas created for purely spiritual reasons (Ruíz & Husillos, 2008).

Four centuries later, a certain number of these 'deserts' remain. In Spain, four Holy Carmelite Deserts are still active, all of them located within modern protected natural areas, of which the Santo Desierto de San José de las Batuecas in the Batuecas-Sierra de Francia Natural Park is the most faithful to its origins (F. Ignacio Husillos, per.com).

Sacred Mountains and Calvaries

One final type of natural protected area owing its origin to religious motives is the 'Sacro Monte' (holy mountain), a northern Italian creation dating from the late 15th century. In this case, the monastic involvement was indirect and less significant in the exporting of the model. St Carlo Borromeo (1538–1584), Bishop of Milan, promoted a plan for a network of chapels and devotional sites in the mountains of Lombardy and Piedmont that the Council of Trent (1545–1563) proposed as a model to be imitated within the Roman Church. Thus, a number of significant natural landscapes, whether previously used for worship or not, were transformed into complexes that narrate via statues and paintings important episodes from the Old and New Testaments. The model spread from Italy to Europe and the New World during the Counter Reformation and adopted new meanings but without losing any of its remarkable harmony with natural features. The best-preserved complex is the Sacri Monti of Piedmont and Lombardy: nine groups of chapels skilfully integrated into an outstandingly beautiful natural landscape of hills, forests and lakes that were built during the 16–17th centuries and included on the UNESCO World Heritage List in 2003¹⁶.

During the 17th century, the Benedictines created the 'Calvaries' and in some instances they still manage these protected landscapes. One of the most significant examples is the landscape complex of Kalwaria Zebrzydowska, Poland, included on the UNESCO list of World Heritage Sites in 1999. These Calvaries are landscapes, shaped four centuries ago with a particular religious purpose in mind, that encompass a series of symbolic places of worship related to the Passion of Jesus Christ and the life of the Virgin Mary; they have remained virtually unchanged ever since and are still today places of pilgrimage.

All these examples are truly outstanding but are by no means unique. The number of Christian monasteries (including usually part of the lands they have historically managed) that have been inscribed on the UNESCO list of World Heritage Sites provides additional evidence of the global significance of monastic settlements. As well, many other monastic landscapes maintain natural heritage values that, whilst not quite being globally significant, are still highly relevant at bioregional or national levels.

5. Current positive trends

Currently, most of the former European communist countries such as Belarus, Bulgaria, the Former Yugoslav Republic of Macedonia, Romania, Russia and Ukraine are experiencing a recovery of their monasticism. The second largest Christian monastic population in Europe is actually to be found in Romanian Moldavia in the Vanatori-Neamt Natural Park, which hosts over 2,000 monks

¹⁶ <http://whc.unesco.org/en/list/1068> [retrieved 15 May 2014].

and nuns (Catanoiu, 2007) organised in self-sufficient communities, either in monasteries, *sketes* or small monastic villages. New foundations are frequent and in the vast natural areas of the Carpathians the expansion of the region's historic monasteries is currently quite commonplace and most are well aware of environmental concerns.

Despite the general trend towards secularisation and the decline that a number of monastic communities are experiencing in some countries (especially in Western Europe), new Christian monastic settlements are being established in some regions, usually within natural areas, both legally protected or otherwise, and new efforts are underway to recover and protect ancient holy and sacred natural sites. Some examples are briefly discussed below.

In 2012, around 190 monasteries and hermitages, home to about 1,800 monks and nuns, were operating within a total of 13 national and natural parks in Romania (Catanoiu, 2012) and in some parks such as Vanatori-Neamt, Muntii and Portile de Fer, new monastic settlements have been established recently. At the same time, new monastic disseminated *sketes* are developing around the old monasteries of Agapia and Varatec, which are amongst the largest female monasteries in the Orthodox world and unable to cope with the large numbers of new aspirants (Catanoiu, pers. Com. 2014).

After years or even centuries of neglect and the destruction wreaked during the recent civil wars, a number of monasteries in the Balkans are being restored and populated afresh by monastic communities, often within natural protected areas: the monasteries of Skadar Lake, Montenegro, the monastery of Mileseva within the Milesevka Special Nature Reserve, Serbia (Dingarac & Pesic, 2012), and the monasteries of Gradac and Studenica in the Golija Nature Park, also in Serbia (Dingarac & Pesic, 2011).

Some abandoned monasteries in Muslim-dominated countries such as Deir Mar Mousa in Syria or in countries where Christians are a minority (e.g. Lebanon) are being given a new lease of life. An interesting example is the Ouadi Qashida, Lebanon, the Holy Valley, and spiritual cradle of the Maronite Church, where people from different religious backgrounds retreat to natural caves under the guidance of the monks and nuns living in the monasteries of the valley (Mgr Samir Mazloum, pers. com.). In the same valley thrives the Orthodox Monastery of Hamatoura (HM Makarios, pers. com. 2013).

The unexpected rebirth of hermitism in southern and western Europe is also of note. In France, for instance, it has been estimated that in recent decades more than 200 hermits have retreated to remote areas, mainly in the Ardèche region (Muizzon, 2010). In Italy over 300 hermits are thought to be living permanently in the wilderness and over 2,000 temporary hermits, most of them Christian, retreat to natural areas, where they stay for anything from a few months to a few years (Denwahl, 2004).

As well, several new Orthodox monasteries have been established in restored traditional buildings in Western European countries, including Solan, Saint Antoine-le-Grand, Cantauque and Santa Maria del Vilar, in France. Most strive to be self-sufficient and practice organic farming.

Further examples include the recovery and restoration of ancient Coptic monasteries in desert regions such as those in the Wadi Mur area, and the new foundations under the Coptic Pope Shenouda III, who in his youth (1954) opted for six years of solitude in the Egyptian desert in a cave that he himself had hewed out of the rock¹⁷.

Efforts by the Franciscan Custody of the Holy Land, among others, to conserve sacred Christian sites such as the outstanding natural sites of Mount Tabor, the Mount of the Blessings and St Peter's Church on the shores of Lake Tiberias have intensified as they come under threat by tourist projects and environmentally disruptive irrigation policies.

From an environmental point of view, a number of significant positive trends can be identified in

¹⁷ <http://www.copticchurch.net/topics/pope/#Biography> [retrieved 14 May 2014]

monastic communities in recent years. A selection of these trends, each with a number of examples, is briefly discussed below. Although all interrelated, they have been grouped into five sections: environmental management, productive activities, nature and landscape conservation, and spiritual concerns.

Environmental management

The conscious choice of living in harmony with the natural environment has impelled monastic gatherings and communities in recent years to reflect and make public statements of their commitments.

For instance, in 2003 the Benedictine sisters of St Gertrude of Cottonwood, Idaho, USA, stated that *"We are beginning to feel the bond which unites us to the earth and we recognise our responsibility to respect and develop the riches which it offers us. With this in view, we undertake to adopt a way of life that makes manifest our love for the earth, to join with others who are trying to heal the wounds inflicted on our planet, to sustain our enthusiasm by an on-going education in ecology, to use our lands to make a profit in a responsible way, and to share with others the climate of peace and recollection which our environment offers"*.

In 2006 the Benedictine sisters of Erie, Pennsylvania, USA, published a handbook devoted to the Benedictine communities of Central and South America. The book, translated into Spanish and Portuguese, provides explicit guidance on how to apply environmental stewardship principles to land, buildings and work. In the foreword, Mother Joan D. Chittister, OSB, says: *"For Benedictines, an environmental audit is not a fad. It is not a social nicety. It is certainly not an option. It is simply a contemporary manifestation of an ancient commitment to the rhythm of the earth, the needs of the community and the God of Creation"*¹⁸. The Benedictines' commitment to ecological practices includes promoting forest stewardship schemes, as well as using renewable energy resources including wind generators and geothermal heating.

The following year the monastic community of Santa Maria de Poblet, Catalonia, began a reflection on the need to improve its relationship with the environment. Along with three other Cistercian monasteries, two years later they published the document *The Relationship between Monasteries and the Environment: A Declaration by the Cistercian Congregation of the Royal Crown of Aragon*¹⁹, a self-bonding statement providing guidance for the relationship between monastic communities, their hosts, workers and associates, which has prompted a number of significant changes in environmental management that have spread to other European Cistercian monasteries.

Lastly, the Buddhist/Catholic encounter on *Monasticism and the Environment* held at Gethsemane Abbey in Kentucky in 2008, sponsored by the Monastic Interreligious Dialogue, declared *"We acknowledge our complicity in damaging the environment and will make a sincere and sustained effort to reduce our negative impact on the planet. We are committed to take more mindful, universal responsibility for the way we use and manage the earth's resources. We resolve to develop our hearts and minds in ways that will contribute to a sustainable and hopeful future for our planet. We renew our commitment to the sacredness of the earth, relating to it as a community, not a commodity. May our love for all beings and this world sustain our efforts and may our earth be revitalized. This is our prayer and commitment"*²⁰.

Energy

¹⁸ <http://www.arcworld.org/downloads/Listening%20to%20the%20Earth%20%28English%29.pdf> [retrieved 16 May 2014]

¹⁹ The entire Declaration can be found in the monastery's web page: <http://www.poblet.cat/index>. [retrieved 16 May 2014]

²⁰ The web page 'Green and Hopeful: Monasticism and the Environment' contains the Declaration. The publication 'Green Monasticism: A Buddhist-Catholic Response to an Environmental Calamity' (Gethsemane Encounters) can be purchased at <http://www.urbandharma.org/G3/index.html> [retrieved 16 May 2014].

The explicit goal of reducing fossil fuel use as much as possible and, in some cases, of reaching zero fossil fuel consumption and zero emissions has been adopted by monasteries such as Münsterschwarzach and Marienstatt in Germany and Christ in the Desert, Arizona, USA. Numerous monasteries and *sketes* in the monastic republic of Mt Athos (Hagion Oros), Greece, such as Simonopetra combine hydroelectricity, solar photovoltaic panels and local wood to produce most if not all the energy they use (Papayannis, 2008).

In many other cases, however, renewable energy (solar, hydroelectric, biomass, etc.) covers a certain proportion of the energy needs of the monastic buildings, the rest being supplied by fossil fuels (e.g. the monasteries of La Pierre-qui-Vire, Lérins, Gangobie in France; Poblet in Spain, etc.).

Water efficiency

The establishment and maintenance of efficient water management occurs in many monasteries in desert areas, including Deir el-Syriani, St Pishoy, St Macarios the Great and Paromeos in the Nitrian desert of Egypt, and Mar Saba and Saint George in the desert of Judea, Israel. Most monasteries in arid or dry areas also have efficient systems for collecting rainwater and for reusing as much water as possible. Even in regions of abundant rainfall such as Belgium, where irrigation is unnecessary, there are monasteries such as Rixensart where rainwater is collected and used for sanitation.

Eco-friendly buildings and facilities

The inclusion of strict environmental criteria in new monastic buildings is a growing trend. Prominent examples are the monasteries of Siloé, Italy, the Abbey of Himmerod, Germany²¹, and Christ in the Desert, Arizona, USA²².

A few monastic communities have decided to move from urban settings to protected areas in order to develop more eco-friendly lifestyles. This is the case of the Stanbrook Abbey community that decided to move to the North York Moors National Park, England. The monastic vision of this female Benedictine community states that *“our search for God leads us to design a 21st century monastery, smaller in scale, which seeks to conserve the community’s human and financial resources, and to be sensitive to environmental and ecological concerns. We wish to live simply and frugally (...) and we seek to become ‘lovers of the place’, working in harmony with the National Park ethos to conserve and enhance the natural beauty and the cultural heritage of this unique landscape...”*²³.

Education versus the environment

Raising awareness in visitors vis-à-vis nature and the environment, that is, including spiritual principles and relating Christian principles and spirituality to nature conservation in educational or retreat activities, is practised in a few monasteries such as Camaldoli, Italy, the Virgin Mary of Rodia and Chrysopigi, Crete, Greece (Theoxeni, 2010), the hermitage of Vovidenia, Romania and St Ottilien, Germany, among others. Some monasteries organise annual or periodical meetings to discuss environmental concerns from a Christian point of view: the monastery of Notre Dame de la Clarté, France, for example, created some years ago Oeko-logia, an ecumenical association for research and reflection on the environment²⁴. Other monasteries such as the Abbey of Fulda, Germany, are active in disseminating organic gardening practices via workshops, publications, etc. (Elverst, 2003). In the monastery of El Miracle, a dependency of Santa Maria de Montserrat, a course on Nature and Spirituality, based on the symbolic correspondences of the four

²¹ http://abteihimmerod.de/abtei-zisterzienser-kloster-himmerod_eifel-mosel/. [retrieved 16 May 2014].

²² The web page of the monastery Christ in the Desert includes a section on ‘History of Sustainable Building’ http://christdesert.org/About_Us/Strawbilt/History/.

²³ Included in the web page of the Friends of Stanbrook Abbey, which also includes a section on sustainability that discusses the main features and design of the ‘green monastery’ <http://www.stanbrookabbeyfriends.org/> [retrieved 15 May 2014].

²⁴ See <http://www.dominicaines-taulignan.fr/demarche-ecologique>. [retrieved 18 May 2014].

seasons, has been taught since 2008²⁵

Gardens, medicinal gardens and ethno-botany

Some monasteries with large number of gardens, based on modern designs and plants not coherent with their historical tradition, decided to transform them to ecologically friendly and cheap to maintain models; with designs based on the biblical or monastic symbolism, whilst improving their aesthetic appeal at the same time. A good example of this type of transformation has been undertaken in the Cistercian monastery of Poblet, Spain, during the past years, allowing a reduction in the maintenance work, water saving and elimination of chemical fertilizers and pesticides, since most of the plants mentioned in the Bible are from dry or arid regions with poorer soils than those of the monastery, and are as such hardy species that need little care and attention.

Another practice is the restoring of ancient medicinal gardens and old herbal pharmaceutical remedies and processes (e.g. Vatopedi, Mt Athos, Greece, and Stična and Prečastiti Gospod Opat Janez Nowak, Slovenia). The use of medicinal plants based on local ethno-botanical knowledge is being promoted in African monasteries such as Dzobegan, Togo, and Ewu-Isahn, Nigeria. In the latter, the monastic community has created the Pax Herbal Clinic and Research Laboratories, which use medicinal plants in the monastery's hospital, where over forty people who otherwise would have no access to medical care are treated per day (Adodo, 2003).

Productive activities

Farming and animal husbandry

The practice of organic farming is common in many monasteries, in some countries almost all of them. In some cases, traditional practices are simply continued, e.g. in the large Romanian monasteries of Neamt, Secu, Agapia, Varatec, etc. where local plant varieties and local breeds are conserved, producing a variety of vegetal and animal products using traditional methods for self consumption. Other monastic communities have consciously changed from agrochemical to organic farming (e.g. the Abbeys of la Pierre-qui-Vire, Saint-Benoît-sur-Loire, Boulaur and Rieunette, France; the monasteries of Hosios Lukas and Chrysopigi, Agia Triada, Greece; Santa Croce in Gerusalemme and Casamari, Italy; Nuestra Señora de los Angeles, Andalusia, Spain; Plankstetten, Germany; the Annunciation in Nazareth, Israel; Miura, Japan; and Thu-Duc in Viet-Nam, among many others). In some monasteries, organic agriculture has become a significant part of the community's identity²⁶ and enables the monks or nuns to be self-sufficient.

In some cases, conversion to organic farming has been promoted together with the recovery of historical vegetable gardens and orchards, e.g. in the Cistercian monastery of Vallbona, Spain, whilst in others, restoration of destroyed monasteries has been together with a conscious aim to conserve local domestic varieties and breeds, like in the small Orthodox monastery of Duprava, in the gorge of river Uvac, Serbia (Pestic, per. com. 2014).

In Eastern Europe, some monastic communities are worried that incorporation into the European Union could have negative impacts on the quality of the agricultural practices. In recent years, a number of Romanian monasteries have benefited from the advice of Pierre Rabhi, the French leader and organic farming activist, under the patronage of the Orthodox Patriarch of Romania (Rabhi, 1996). Monasteries located in or near large urban areas often have their farmsteads located at a certain distance as in the case of the famous Kiev Pechersk Lavra, the largest monastic complex in Ukraine. In some cases, farm work has an additional social aim and provides an environment for helping to rehabilitate people with special needs (addictions, etc.). For instance,

²⁵ See <http://www.santuarielmiracle.com/pdf/naturaespiritualitat.pdf>. [retrieved 14 June 2014]

²⁶ The book *Le monastère de Solan, une aventure agroécologique* eloquently explains the process by which the monastery of Solan, France, has made the transition to organic farming and includes a section about the Orthodox theology of creation (Delahaye, 2011).

the female monastery of Saint Elisabeth of Novinski, near Minsk, Belarus, founded in 1999, has a large farm some 30 km from the monastery, where between 50 and 80 residents are undergoing rehabilitation²⁷.

Best practices in animal husbandry have been developed in a number of monasteries such as those of Frauenthal and Hauterive in Switzerland, Cystersów in Poland and many in Rumania. A number of monasteries that have cows or sheep produce organic cheese either for self-consumption or for sale (e.g. the monasteries of Randol, Chambarand and Lérins, France).

Forestry

Wise and prudent management has been the rule in most monastic forests. In the Italian Peninsula, for instance, about eight centuries of experience of forest management by Camaldulensian monks in the Casentinese forests, condensed into the Forestry Code of Camaldoli, was the basis for the Forestry Code of the new Italian state in the 19th century (Frigerio, 1991).

In Lebanon, the Ouadi Qashida (the Holy Valley), a World Cultural Heritage Site, protects an interesting cultural landscape that includes some of the best remnants of the native cedar forests at Horsh Arz el-Rab (Cedars of the Lord). The cedar was one of the most highly prized building materials in the ancient world, as is well documented from Ancient Egypt and also in the Book of Kings in the Bible (Zohary, 1982). Modern forms of temporary retreats in the Holy Valley provide this traditional area of hermitic life with new compatible uses. Three monasteries now operate inside the valley and a new interpretation centre has been built that stresses the importance of preserving these cedar forests (Higgins-Zogib, 2005).

In the monastic republic of Mt Athos, Greece, the development of sustainable forestry practices such as restoring coppiced oak wood to high forest and the combining of sustained yields with biodiversity and aesthetic concerns in chestnut oak forests have been developed in the forests of Simonopetra Monastery, and have influenced not only the other monasteries of the Holy Mountain but also many other forested areas in Greece (Kakouros, 2010).

The careful management of smaller (less than 100 ha) forests around monasteries occurs in many monastic areas such as Notre-Dame de Randol, France, Chrisopigi on Crete, Greece, Wavreumont, Belgium, and many others.

Another type of good management practice is found in monasteries such as Stift Heiligenkreuz, Austria, that have forestry plantations, either of native or of mixed species of tree. Finally, in some arid regions, certain monasteries such as those of Koubri, Burkina Faso, and Dzobegan, Togo, have planted well-adapted tree species and have succeeded in creating the only forests for many kilometres around and a milder climate in the monastic buildings (Yawo, 2003).

Arts and crafts

As part of their search for perfection, numerous monastic communities are beginning to produce fine organic liturgical products such as altar breads, icons, rosaries, candles and incense, as well as religious publications (e.g. the Russian Orthodox Monastery of the Holy Trinity, Jordanville, New York)²⁸. The female monasteries of Agapia and Varatec, Romania, among the largest of Europe, are famous for carpet weaving and embroidery (Catanoiu, per. com. 2014). Other monasteries have oriented their production towards foods and beverages, often with excellent results. Examples include the famous Trappist beers (e.g. Saint-Sixtus Abbey, Belgium), the famous Chartreuse liquor, which has helped support the Carthusian monasteries, and numerous high-

²⁷ The residents work with animals (cattle, pigs, sheep, goats), in the fields (potatoes, root crops, maize), in orchards (apple, pear, plum and cherry trees, red- and blackcurrants, raspberries), on a poultry farm (chickens, geese, quails), in an apiary, and also in a breeding kennel for Central Asian sheepdogs. See http://www.obitel-minsk.by/welcome_text-1_mid33.html [retrieved 3 June 2014].

²⁸ <http://www.jordanville.org/> [retrieved 19 May 2014].

quality organic wines, cheeses, biscuits, sweets, perfumes, herbal remedies, cosmetics and many more. As an example, in the French region of Provence alone there are currently 11 abbeys with shops, six of which sell their own artisanal products, and five craft and products from other monasteries²⁹.

Other monastic communities support themselves by producing high-quality crafts such as icons, pottery, wood-carvings and leather-work, a logical development given that most monastic communities are engaged in local small-scale farming, animal husbandry, fishing and/or forestry. All these activities naturally presuppose a spiritual and ecologically responsible approach to the relationship between monks or nuns and nature, which, as we have seen above, lies at the very heart of monastic life. In some countries, monasteries have established formal or informal networks of monastic products and crafts, which in some cases are advertised and can be purchased on-line (e.g. *Le Guide des produits monastiques* in France)³⁰.

Fair trade

Although most products sold in monastery shops are hand-made by monks or nuns, there are also a certain number of products that may have been manufactured using resources imported from distant countries. In cases such as coffee, tea and cocoa, there is a justified concern about the ethical and environmental conditions under which these products are grown and processed. The idea of 'Fair Trade' emerged as an ethical response, based on transparency and respect, that seeks greater equity in international trade and better trading conditions and rights for marginalised producers and workers – above all in poor countries. Since 2000, an annual Fair Trade for Churches and Monasteries and other Christian institutions has been organised in Augsburg, Germany, under the name 'Gloria'. In 2013, over one hundred exhibitors from 13 different countries took part³¹. On the other hand, in some countries such as France, monastic products are sold under a brand name. Overall, there is a growing willingness to promote fair trade in monastery shops. Some of the products sold in monastic shops such as coffee and tea are advertised as fair trade products in a number of monasteries including the Abbey of Gethsemane, Kentucky, USA³²

Nature and landscape conservation

Natural Protected Areas

In many arid regions of Africa, generally severely overexploited and ecologically deteriorated, monastic forests are the only surviving forest patches and host an extremely valuable biodiversity. This is the case of numerous hermitic or monastic forests in Ethiopia, normally lumped together into a group of some 35,000 'church' forests (Dudley, Higgins-Zogib, and Mansurian, 2005; Bekele et al. 2001).

Within the European Union, most of the oldest remaining monastic lands are legally protected by national or international legal instruments such as the Natura 2000 network promoted by the European Union³³ or the Ramsar Convention on Wetlands of International Importance.

Outstanding examples include the conservation of the entire monastic territory of Mt Athos, Greece, inhabited by monks for over ten centuries, which is also a World Natural Heritage Site and

²⁹ <http://abbayesprovencales.free.fr/listartmo.htm> [retrieved 20 May 2014].

³⁰ <http://www.artisanat-produits-monastiques.com/> [retrieved 18 May 2014].

³¹ http://gloria.messedornbirn.at/fileadmin/data/Downloads/2014/Gloria_14/GLORIA_2014_Exhibitor_Invitation.pdf.

³² See the web page: <https://www.gethsemanifarms.org/gifts.aspx> [retrieved 20 May 2014].

³³ Natura 2000 is the centrepiece of the European Union's nature conservation policies and consists of a network of protected areas established by the 1992 Habitats Directive. The aim of the network is to assure the long-term survival of Europe's most valuable and threatened species and habitats. It includes Special Areas of Conservation designated by Member States under the Habitats Directive, and Special Protection Areas designated under the 1979 Birds Directive. Most of the Natura 2000 sites are privately owned and the main goal is to ensure sustainable ecological and economic management. See: http://ec.europa.eu/environment/nature/natura2000/index_en.htm.

Natura 2000 site and conserves rare habitats and regionally endemic species (Papayannis, 2007).

The island of Caldey, Wales, inhabited by monks since the 6th century (Hodges, 2003), currently hosts a Cistercian community and is now part of the Pembrokeshire National Park. Similar cases include the Abbey of Maria Laach in the Eifel National Park, Germany; the Abbey of Lérins on the small archipelago of Lérins, France, where both the surrounding land and sea are protected areas; the monastery of St Ottilien, Germany; the area in which the Camaldolensians established their first settlement, now included in the National Park of the Casentino Forests (Pungetti, Hughes & Rackham, 2012); the site where St Ivan Rilski promoted the holy unity between monasteries and nature in the alpine massif of Rila, south of Sofia, Bulgaria, now protected as a National and a Natural Park (Mallarach and Catanoiu, 2010); and the Abbey of Maigrage, active for seven centuries, which is surrounded by forest nature reserves³⁴.

Lake Ohrid, a Natural and Cultural World Heritage Site in the Former Yugoslav Republic of Macedonia, is home to St Pantelejmon, the oldest Slav monastery (and where St Cyril taught writing, education and Slavonic culture in the 7th century) and the monastery of Saint Noum. The most rugged part of the lake's watershed is included in the Galicica National Park, a protected area of international importance consisting of Lake Ohrid and Lakes Prespa (shared between Albania, Greece and the Former Yugoslav Republic of Macedonia) that has a number of significant historic orthodox hermitages on the cliffs along the lakes' shores.

A singular case is that of the Franciscan Custody of the Holy Land, who have managed numerous sacred sites in Israel, Palestine, Jordan, Syria, Lebanon, Egypt and Cyprus since the 12th century. These sites include holy natural places such as Mount Tabor, which houses a Franciscan monastery and an Orthodox monastery around which significant reforestation was undertaken by the Jewish National Fund, with similar tree species to its original vegetation, and the Hill of the Beatitudes on the shores of Lake of Galilee, amongst others.

Many monastic lands are managed very effectively as protected areas without any formal designation and are eloquent examples of what the IUCN calls 'indigenous' or 'community-based community-conserved areas'³⁵. Good examples include the monastery of Bolton, Ireland, which actively protects the wetlands on its property, and the monasteries of Soleimon, Belgium, and St Cecilia, England, which conserve valuable habitats for birds and attract numerous birdwatchers. An example on a larger scale is Lake Skadar (Montenegro and Albania), a wetland of international importance that has a rich natural, spiritual, historical and cultural heritage since it was the heart – both political and spiritual – of the Montenegrin kingdom during the Middle Ages. The beautiful landscape of the lake's islands was created by around twenty Orthodox monasteries in the 11–14th centuries and for this reason the area was called the Mt Athos of Zeta. Currently, five monasteries are still active around Lake Skadar (Dindarac, pers. com.).

Indeed, most monastic communities are very well-placed to maintain or develop best practices relating to nature conservation since, after all, these practices are part of their history and many communities have kept certain very valuable traditions alive (or at least records of them).

In a few cases, monastic authorities are represented on the boards of the protected areas, for instance, the Montserrat Natural Park (Spain) where the Abbot of the main monastery also sits as Vice-President of the Board as dictated by the park's regulations. Likewise, the Prior of the monastery of Poblet was elected president of the National Protected Area of Poblet (Spain) in 2011.

The Orthodox Church of Bulgaria has promoted a natural park around the famous monastery of Rila, considered the spiritual and cultural heart of Bulgaria, to protect its outstanding natural heritage. The main aim of this park is "*to guarantee and preserve the holy unity between nature and the Monastery, [and] its rebirth as spiritual and cultural centre of the country*", thereby fulfilling the wish of the holy founder of the monastery, (quoted in Mallarach and Catanoiu (2009)).

³⁴ See the webpage: <http://www.maigrage.ch/labbaye.html> [retrieved 13 May 2014].

³⁵ See the web page: www.iccaconsortium.org [retrieved 17 May 2014].

Another example of the spiritual vision of nature is found in the Qadisha Declaration of the Maronite Church, 2003: “*Today, in the spirit of St Maron we need to rediscover why God wishes His Church to care for nature, through education, teaching and preaching. In looking again at the life of St Maron and the thousands of hermits who sought Christ in the wilderness, in the forests and valleys, we believe we can become true believers by caring for all aspects of God’s*”, quoted in the *Beyond Belief*, a publication of the World Wild Fund, by Liza Higgings-Zogib (2004).

Last but not least, there are also a certain number of natural protected areas that have been directly promoted by monastic authorities; this is the case of the Rila Natural Park, surrounded by a national park, the Montserrat Natural Park and its Nature Reserve, considered to be the spiritual heart of Catalonia, and the Poblet Natural Area of National Interest, also in Spain.

Pilgrimage and landscape connectivity restoration

The restoration of ancient ways of pilgrimage connecting both living and inactive monasteries, as has occurred along several segments of the Saint James’ Way (Camino de Santiago) in Spain, Portugal and France, the Via Lauretana, Italy, and other pilgrimage trails in the Carpathians in Romania and Hungary, has led to the creation of new natural protected areas, some times interlinked. A number of monastic communities have traditionally tended the needs of pilgrims and some still do. Pilgrimage trails have a positive impact on ecological and landscape connectivity and have fostered, for instance, the conservation or restoration of the natural, cultural and spiritual heritage to be found along the Saint James’ Way in northern Spain. The main cluster of Biosphere Reserves in Spain is linked to this trail and it interconnects numerous monasteries such as San Millán de la Cogolla, some of which are World Heritage Sites (Mallarach, 2005).

6. Challenges and threats

Despite the resurgence of interest in monasticism and the value of communal spiritual life in nature, it is important to acknowledge the fact that during the 19–20th centuries a number of monastic communities adopted policies regarding the use of fossil fuels and non-renewable materials and chemicals in agriculture and animal husbandry that were not fully compatible with the spiritual principles of natural and environmental conservation. The reasons for this incoherence are diverse and include factors such as the influence of the secular surrounding society, a lack of awareness concerning the environmental and social impact of new technologies and practices, and, as it has often been pointed out, insufficient knowledge and/or understanding of the theology of Creation and the implications it has for the stewardship of natural resources.

According to Fr Hugh Feiss of Ascension Monastery in Jerome, Idaho, USA, the main justifications for not behaving in harmony with the environment “*tend to be cultural or psychological. Like the society they are still a part of, monks fall victim to the seduction of marketing and advertising, mistake good intentions for action, and make decisions based on what is most “practical.” As do many of their contemporaries, they too can respond to notices of impending ecological disaster with the psychological mechanisms of denial, repression, or projection*”.³⁶

Protected areas including monastic communities have very diverse ownerships and governance systems and styles, which imply the existence of governing boards, planning and management regulations, public use requirements, and so forth. In most cases, monastic communities are not allowed to participate in the governing boards of protected areas, a prohibition that has created difficulties when attempting to make the goals of protected areas (especially in the sphere of public use) match monastic life requirements. The case of Mt Athos is a global exception, as it is one of the world’s largest mixed nature and culture World Heritage Sites that is fully managed by a Holy

³⁶ From the forward of the book *Green monasticism* by F. William Skudlarek, Proceedings of the Catholic Buddhist Encounter on Monasticism and the Environment, 2008.

Community (*Iera Koinotis*).

Increasing numbers of pilgrims, as well as religious and secular tourism, pose serious challenges to a number of famous monasteries. Welcoming pilgrims or guests wishing to retreat, to share the spiritual life of the monks or to participate in the liturgy has a very different impact from those created by speedy superficial visits by masses of tourists. This is especially true in the cases of monasteries with high natural and/or cultural values located in scenic landscapes. The best practices that have already been tested and adopted in some cases may be a source for inspiration for others.

In many countries, monastic communities have lost their monasteries and most of their productive lands over the past two centuries, thereby making it very difficult to continue living a self-sufficient lifestyle. In some of the former communist countries, monastic communities are partially recovering their lands that may now be parts of existing protected areas such as the nature parks of Vanatori-Neamț, Romania, and Rila, Bulgaria.

Of all the European and Middle East Christian monasteries that have been declared Cultural and/or Natural-Cultural World Heritage Sites by UNESCO, around 40% are presently managed by monastic communities, the rest being managed by governmental institutions responsible for cultural heritage. Such institutions often consider monastic buildings and complexes as museums or cultural facilities and tend to ignore their spiritual relevance and context.

Nowadays, it seems that most monastic communities are aware of these threats and their potential or actual contradictions, and a good number are working to improve coherency by following the guidelines of their spiritual leaders. Although the size of monastic communities may vary widely from a few members to several hundred individuals, either male or female, in practice they usually consist of a modest group of a few dozen men or women whose small size helps implement the principle of self-sufficiency and guarantees a prudent use of modern technologies. This key principle is still widespread among Eastern and Coptic monasticisms. Before the industrial revolution, the same could be said of the monastic communities of the Roman Church. However, many communities subsequently abandoned manual labour in favour of intellectual work, although some – including some of the fastest growing communities – have maintained the former balance or are currently striving to restore it.

Environmental pressures and impacts such as contamination, biodiversity loss, deforestation and climate change are being felt in many parts of the world, even in monasteries located in remote places. As a result, monastic lands and resources are increasingly being threatened and the obligation that monastic communities have to hand down the monastery in the same state (or better) to the next generation may be in jeopardy. Therefore, one of the new challenges that monastic organisations are having to face up to is the dialogue with environmental and ecologist organisations and authorities. At local level, it may be necessary in some cases to join forces to prevent environmental threats and mitigate environmental impacts. At regional or national levels, it may be necessary to take a stand to prevent or modify policies that could have a detrimental impact on the quality of monastic life. The organisation *Alliance of Conservation and Religion*, for instance, promotes dialogue and joint projects such as the Green Pilgrimage Network that link conservationists and the world's major religions³⁷.

In the framework of IUCN, the Delos Initiative has undertaken a number of European monastic case studies that were discussed in workshops held in Montserrat (2006), Ouranopolis (2007) and Inari/Aanaar (2010), in which a number of Roman and Orthodox monks and nuns were actively involved. The Benedictine Community of Montserrat, Catalonia, welcomed the first workshop of The Delos Initiative. The proceedings of the workshop, *Protected Areas and Spirituality*, were the first joint publication by the Abbey of Montserrat and the IUCN and are a good example of the cooperation between monastic orders and environmental organisations (Mallarach, & Papayannis, 2007).

³⁷ See: <http://www.arcworld.org/projects.asp?projectID=521> [retrieved 17 June 2014]

7. Conclusion

An analysis of the management of natural resources by Christian monastic communities in diverse ecosystems throughout history is of great interest from the point of view of both nature conservation and environmental management. Such an analysis provides one of the best documented examples of effectively managed community-conserved areas that have created and maintained for centuries a diversity of beautiful, harmonious, productive and bio-diverse landscapes, in ecosystems ranging from the Arctic tundra or the Nordic taiga to the Eastern Europe steppes and Mediterranean mountains, from the North African oases to the Middle Eastern deserts and arid regions, from the high mountains to the valleys, plains and coasts, from the wetlands to the islands.

It should come as no surprise that the monastic lifestyle acts as a good framework for adapting to and living in harmony with the environment if we take into account the principles behind its spiritual tradition and the theology of Creation.

There is a considerable degree of variability, both geographical and historical, in the assessment of the spiritual values of Creation. However, in general, it seems clear that Creation theology has been more thoroughly developed and is more explicit in the Orthodox and Eastern Churches than in the Roman Church³⁸.

Historically, sites belonging to monastic orders have usually been more carefully managed than those managed by other Christian lay organisations, be they religious or local communities; levels of protection increase up to the domains of hermits, which are often strictly managed as preserves. Monastic lands that have been included in modern protected area are more likely to put limitations on visitor numbers and behaviour – as in the case of Mt Athos – to protect not only nature, but also silence and tranquillity, as a prerequisite for allowing people to experience the sacredness of the site.

It is clear that the managers of protected and/or cultural landscapes – according to the technical definition used by the IUCN discussed above – could benefit greatly from the long experience of monastic communities as managers of forests, pastures and croplands, as well as in the use of renewal energy sources, in particular hydro-power or wind-power, in many different ecosystems.

Nevertheless, the renewed interest in environmental coherence found in many Christian monasteries around the world is a very promising trend. Their message, grounded in solid spiritual principles and extensive traditional practices that go back many centuries, provides a living example of resilient sustainability that many other monastic or religious communities may be persuaded to follow.

³⁸ The declarations, encyclicals and addresses of the Ecumenical Patriarch Bartholomew I, compiled in the book *Humble Prayer, Cosmic Grace*, make it clear why the Ecumenical Patriarch, himself a monk, has been considered as the most influential 'Green Christian leader'. He has received the U.S. Congressional Gold Medal and the Sophie Price for leadership in environmental protection and sustainable development.

References

- Adodo, A. 2003, El trabajo como un baile cósmico: la práctica de las plantas medicinales en Ewu-Isahn. *Boletín de la Asociación Internacional Monástica*, N° 78.79 "La creación y el Medio Ambiente, p. 43-45.
- Anónimo. 2001. Tradición monástica hoy. ¿Cómo se ganan la vida los monasterios? *Boletín de la Alianza Inter-Monasterios*, n° 72, p. 19-36.
- Bartlett, W.L.; Dangel, M.; Lupo, P. & Annette Marshall, A. 2006. *Listening to the Earth. An Environmental Audit for Benedictine Communities*. Lake Erie-Allegheny Earth Force, Erie, PA, USA.
- Benedictus PP. XVI. 2010. *If you want to cultivate peace, protect creation. Message of His Holiness Pope Benedict XVI for the celebration of the World Day of Peace, 1 January 2010*. Declaration.
- Bekele, T, Berhan, G, Zerfu, S. and Yeshitela K. 2001. Perspectives of the Ethiopian Orthodox Tewahido Church in Forest Biodiversity Conservation, In a report of a workshop on the Biodiversity conservation in ancient church and monastery yards in Ethiopia, Addis Ababa.
- Besse, J. (1911). Suppression of Monasteries in Continental Europe. In *The Catholic Encyclopedia*. New York: Robert Appleton Company. Retrieved May 14, 2014 from New Advent: <http://www.newadvent.org/cathen/10453a.htm>
- Catanoiou, S. 2012. The Carpathian Mountains, a realm of Sacred Natural Sites. In Mallarach, J.M., Papayannis, T and Väisänen, R (eds). *Diversity of Sacred Natural Sites in Europe. Proceedings of the Third Workshop of The Delos Initiative, Inari/Aanaar*. IUCN & Metsähallitus. Finland, p. 217-230.
- Chrysavagis, J. (ed) 2003. *Cosmic Grace - Humble Prayer. The Ecological Vision of the Green Patriarch Bartholomew I*. Grand Rapids, Michigan: William B. Eerdmans Publishing Company.
- Delahaye, T. 2011. *Le monastère de Solan. Une aventure agroécologique*. Arles : Actes Sud, 127 p.
- Denwahl, F. 2007. The great solitude, in: Krüger, K. and Tomans, R., eds. 2007. *Monasteries and Monastic Orders: 2000 Years of Christian Art and Culture* . Tandem Verlag GmbH.
- Dingarac, S. and Pesic, N. 2012. Gradac Monastery and Nature Park Golija, Serbia. In Mallarach, J-M. (editor) *Spiritual Values of Protected Areas of Europe*, BfN Skripten 322, federal Agency for Nature Conservation, Bonn. P. 97-103.
- Dubos, R. 1973. *Les dieux de l'écologie*. Fayard, Paris.
- Dudley, N; Higgings-Zogib, L.; Mansourian, S. 2005. *Beyond Belief: Linking faiths and protected areas to support biodiversity conservation*. World Wildlife Fund for Nature, Equilibrium and Alliance of Religions and Conservation.
- Dudley, N., editor. 2008. *Guidelines for Applying Protected Area Management Categories*. International Union for the Conservation of Nature, Gland, Switzerland.
- Elverst, C. 2003. Abadía de Fulda, monjas benedictinas. *Boletín de la Alianza InterMonasterios* N° 78/79 « La Creación y el Medio Ambiente », pp. 64-65.
- Frigerio, S. 1991. *Camaldoli: Historical, Spiritual and Artistic Notes*. Villa Verucchio: Edizioni Camaldoli-Pazzini Editore.

- Grün, A. F. 2003. St Benedict and Creation. *Bulletin of the Alliance for International Monasticism*, Num. 78/79.
- Heiska, N. 2003. The Economy and Livelihoods of Early Christian Monasteries in Palestine. Master of Art Thesis. University of Helsinki. 120 p.
- Higgins-Zogib, L. 2005. Qadisha Valley and the Valley of the Cedars of God, in Dudley, N; Higgins-Zogib, L.; Mansourian, S. 2005. *Beyond Belief: Linking faiths and protected areas to support biodiversity conservation*. World Wildlife Fund for Nature, Equilibrium and Alliance of Religions and Conservation, p. 85-87.
- HRH The Prince of Wales. 1990. *The Earth in the Balance. A personal view of the Environment*. BBC Documentary Features. Text printed in 1993. *Journal Architectural Design*. Architecture and the Environment.
- Jonas, H. 1990. *Le Principe Responsabilité: Une éthique pour la civilisation technologique*, Cerf, Paris.
- Kinder, T. N. 2002. *Cistercian Europe: Architecture of Contemplation*, William B. Eerdmans Publishers, Grand Rapids, MI.
- Krüger, K. and Tomas, R., eds. 2007. *Monasteries and Monastic Orders: 2000 Years of Christian Art and Culture*. Tandem Verlag GmbH.
- Gort, E. 1999. La Cartoixa de Scala Dei i l'Orde Cartoixà a Catalunya, p. 15-26 in James Hogg (ed). *Scala Dei primera cartoixa de la Península Ibèrica i de l'Orde Cartoixà*. Comissió VIII Centenari, Analecta Cartusiana. Universität Salzburg.
- Grainger, J. & Gilbert, F. 2008. "Around the sacred mountain: the Saint Katherine Protectorate in South Sinai, Egypt", pages 21-37 in: Mallarach, J.-M. (ed.). *Protected Landscapes and Cultural and Spiritual Values*. Gland, Switzerland: IUCN; Eschborn, Germany: GTZ; Barcelona, Spain: Obra Social Caixa Catalunya.
- Kakouros, P. 2009. Landscape conservation actions in Mount Athos, p. 127-135, in Papayannis, T. & Mallarach, J-M (eds.) *The Sacred Dimension of Protected Areas: Proceedings of the Second Workshop of the Delos Initiative – Ouranoupolis 2007* IUCN; Athens, Greece: Med-INA.
- Kinder, T. N., 2002. *The Cistercian Europe. Architecture of Contemplation*. Cistercian studies Series. Wm. B. Eerdmans Publishing Company.
- Lacroix, M. 1994. *L'Humanicide. Pour une moral planétaire*. Librairie Plon. Paris.
- Landron, O. 2008. *Le catholicisme vert. Histoires des relations entre l'Église et la nature au XXème siècle*. Les éditions du Cerf, Paris.
- Lawrence, C.H. 1984. *Medieval Monasticism. Forms of religious life in Western Europe in the Middle Ages*. 2nd edition. Longman, London & New York.
- Leroux-Dhuys, J. F. 1999. *Les Abbayes Cisterciennes. Histoire et Architecture*, Cologne 1999. [Cistercian Abbeys. History and Architecture]
- Macaire, HM. 1991. Le moine et la nature dans la tradition orthodoxe [the Monk and Nature in the Orthodox Tradition]. Conférence Panorthodoxe sur la Protection de l'Environnement. Académie de Crète.
- MacDougall, E.B, 1986. *Medieval Gardens*. Dumbarton Oaks Research Library and Collection. Trustees for Harvard University, Washington D.C.

- Mallarach, J.-M. 2005. The Way of Saint James, in Dudley, N.; Higgings-Zogib, L. & Mansourian, Se. *Beyond Belief: Linking faiths and protected areas to support biodiversity conservation*. World Wildlife Fund for Nature, Equilibrium and Alliance of Religions and Conservation.
- Mallarach, J.-M. & Papayannis, T. (eds.). 2007. *Protected Areas and Spirituality. Proceedings of the First Workshop of The Delos Initiative – Montserrat 2006*. Gland, Switzerland: The World Conservation Union (IUCN); Barcelona, Spain: Publicacions de l'Abadia de Montserrat.
- Mallarach, J.-M.; Morrison, J.; Kothari, A.; Sarmiento, F; Atauri, J-A; Wishitemi, B. 2008. 'In defence of protected landscapes: A reply to some criticisms of category V protected areas and suggestions for improvement': in Nigel Dudley and Sue Stolton (eds.), 2008. *Defining protected areas: an international conference in Almeria, Spain*. Gland, Switzerland, IUCN, p. 30-36.
- Mallarach, J.M. (ed.) 2008. *Protected Landscapes and Cultural and Spiritual Values*. Values of Protected Landscapes and Seascapes Series, num. 2. IUCN, WCPA, Fundació Obra Social Caixa Catalunya & GTZ.
- Mallarach, J.M. and Catanoiu, S. 2009. Rila Monastery Natural Park, Bulgaria. In Papayannis, T. & Mallarach, J-M (eds.) 2009. *The Sacred Dimension of Protected Areas: Proceedings of the Second Workshop of the Delos Initiative - Ouranopolis 2007* IUCN; Athens, Greece: Med-INA, pp. 173-176.
- Mallarach, J.M. 2012. Monastic communities and nature conservation: Overview of positive trends and best practices in Europe and the Middle East. In Mallarach, J.M., Papayannis, T and Väisänen, R (eds). *Diversity of Sacred Natural Sites in Europe. Proceedings of the Third Workshop of The Delos Initiative, Inari/Aanaar*. IUCN & Metsähallitus. Finland P. 157-174.
- Masoliver, A. 1978. Història del monaquisme cristià. I Des dels orígens fins a sant Benet. El gra de blat, 19. Edicions Abadia de Montserrat.
- Masoliver, A. 1980. Història del monaquisme cristià. II De sant Gregori el Gran al segle XVIII. III. El monaquisme femení. El gra de blat, 19. Edicions Abadia de Montserrat.
- Masoliver, A. 1981. Història del monaquisme cristià. Els segles XIX i XX. el monaquisme oriental. El monaquisme femení. El gra de blat, 19. Edicions Abadia de Montserrat.
- Meinardus, O. 1961. Monks and Monasteries of the Egyptian Desert. Cairo.
- Mitchell, D.W & Skudlarek, W. (editors) 2010. *Green Monasticism. A Buddhist-Catholic Response to an Environmental Calamity*. Lantern Books.
- Muizon, F. de. 2001. *Dans le secret des ermites d'aujourd'hui* [Inside the secret of contemporary hermits], Montrouge: Nouvelle Cité.
- Nantsou, T. 2009. Environmental action by the Ecumenical Patriarchate, p. 241-248, in Papayannis, T. & Mallarach, J.-M. (eds.) *The Sacred Dimension of Protected Areas: Proceedings of the Second Workshop of the Delos Initiative - Ouranopolis 2007* IUCN; Athens, Greece: Med-INA,
- Neyt, M. 2003. Prat and work at the rhythm of creation. Seminar on Ecology and Spiritualities. 2 and 3 of April, Mont Saint Michel. Bulletin of the Alliance for International Monasticism (AIM), N° 78.79. Creation and the Environment, p. 21-27.
- Oldmeadow, H. 2003. "The Firmament Sheweth His Handiwork": Re-awakening a Religious Sense of the Natural Order, in McDonald, Barry (ed.). *Seeing God Everywhere: Essays on Nature and the Sacred*. Bloomington, Ind.: World Wisdom, Inc.
- O Maidín, U. 1996 (translator). The Celtic monk: rules and writings of early Irish monks. Cistercian

Studies series; no. 162. Cistercian Publications Inc.

Ó Ríordáin, J.J. 1996. The Music of what happens. Celtic Spirituality: A View from the Inside. The Columba Press. Dublin

Papayannis, T. 2008. Characteristic Mt Athos landscapes: the case of the Holy Simonopetra Monastery, Greece. In Mallarach, J.M. 2008. *Protected Landscapes and Cultural and Spiritual Values*. Values of Protected Landscapes and Seascapes Series, num. 2. IUCN, WCPA, Fundació Obra Social Caixa Catalunya & GTZ, p. 51-63.

Papayannis, T. & Mallarach, J-M (eds.) 2009. *The Sacred Dimension of Protected Areas: Proceedings of the Second Workshop of the Delos Initiative - Ouranopolis 2007* IUCN; Athens, Greece: Med-INA, 2009. p. 262.

Pesic, N., Dingarac, S. and Pesic, D. 2012. Special Nature Reserve Milesevka and the Mileseva Monastery. In Mallarach, J.M., Papayannis, T and Väisänen, R (eds). *Diversity of Sacred Natural Sites in Europe. Proceedings of the Third Workshop of The Delos Initiative, Inari/Aanaar*. IUCN & Metsähallitus. Finland p. 189-202

Philippou, I. and Kontos, K., in Papayannis, T. & Mallarach, J-M (eds.) 2009. *The Sacred Dimension of Protected Areas: Proceedings of the Second Workshop of the Delos Initiative - Ouranopolis 2007* IUCN; Athens, Greece: Med-INA, pp. 107-123.

Pungetti, G.; Hughers P. F.; Rackham, O. 2012. Ecological and spiritual values of landscape : a reciprocal heritage and custody. In Pungetti, G.; Oviedo, G. & Hooke, D. (eds.) *Sacred Species and Sites. Advances in Biocultural Conservation*. Cambridge University Press, p. 65-82.

Rabhi, P. 1996. *Parole de Terre*. Preface of Yehudi Menuhin. Editions Albin Michel, Paris.

Rossi M., Bardin, P., Cateau E., Vallauri D., 2013. *Forêts anciennes de la Méditerranée et montagnes limitrophes. Références pour la naturalité régionale*. WWF France, Marseille, 144 pages.

Roszak, T. 1979. *Person/Planet. The creative disintegration of industrial society*. Anchor Books, Graden City, New Yourk.

Ruíz Calavia, A. y Husillos Tamarit, I. 2008. *El Desierto de las Palmas. Historia y vida*. Fundación Desierto de Las Palmas. 148 p.

Schumacher, E.F. 1997. A message from the Universe, in *This I believe and other essays*. Ed Resurgence, UK.

Schuon, F. 1967. Universality and actuality of monasticism, in: *Light on the Ancient Worlds*. World Wisdom Books, Bloomington, Ind.

Speake, G. 2002. *Mount Athos: Renewal in Paradise*. Yale University Press, New Haven and London.

Theoxeni, Mother Sup. 2010. An integrated ecological approach to monastic land: the case of the Holy Convent of Chrisopigi, Chania, Crete, Greece. T. Papayannis and Mallarach, J.M: (editors) *The Sacred Dimension of Protected Areas. Proceedings of the Second Workshop of The Delos Initiative. Ouranopolis 2007*. IUCN Med-INA, p. 153-160.

Torcal, L. and Mallarach, J.M. 2008. The monastic landscape of Poblet: a place where spirituality, culture and nature joint hands. J.M. Mallarach, ed. *Protected Landscapes and Cultural and Spiritual Values* (p.80-91). Heidelberg: Kasperek. Barcelona: Obra Social de Caixa Catalunya. 189 p. Values of Protected Landscapes and Seascapes, num. 2.

Urteaga, P. 1989. *La Tierra Esquilada [The Abused Earth]: Las ideas sobre la conservación de la naturaleza en la cultura española del siglo XVIII*. Libros del Buen Andar.

Wild, R. 2012. Holy Island of Lindisfarne and the modern relevance of Celtic 'Nature Saints'. In Mallarach, J.M., Papayannis, T and Väisänen, R (eds). *Diversity of Sacred Natural Sites in Europe. Proceedings of the Third Workshop of The Delos Initiative, Inari/Aanaar*. IUCN & Metsähallitus. Finland, p. 125-138.

Yawo, M.R. 2003. El redescubrimiento del bosque, de las plantas medicinales y de la medicina natural y tradicional desde la experiencia de un monasterio africano. *Boletín de la Alinaza InterMonasterios*, nº 78/79, p. 37-42.

Zohary, M. 1982. *Plants of the Bible*. Cambridge University Press, Cambridge, London.

Selected web pages

Abbey of Santa Maria de Poblet: www.poblet.cat

Stanbrook Abbey <http://www.stanbrookabbeyfriends.org/Sustainability>;

<http://www.guardian.co.uk/environment/2009/oct/30/stanbrook-abbey-eco-friendly-nuns>

Abbey of Christ in the Desert: http://christdesert.org/About_Us/Strawbilt/History/

Bulletin Alliance of International Monasticism, Num. 78/79

http://www.aimintl.org/index.php?option=com_content&view=article&id=304&Itemid=326&lang=en

Carthusians: <http://www.chartreux.org>

Églises et Écologie: <http://ecologyandchurches.wordpress.com/>

Franciscan Custody of the Holy Land: <http://198.62.75.4/opt/xampp/custodia/01cust.php>

Indigenous and Community Conserved Areas. <http://www.iccaforum.org>

http://www.qantara.de/webcom/show_article.php/c-478/nr-147/i.html

Hermitism: <http://www.hermitary.com>

Monastery of Camaldoli: <http://www.camaldoli.it>

Monastery of Miura: <https://www.pcusa.org/news/2012/8/16/japanese-catholic-monastery-practices-ecological-w/>

Monastery of Saint Macarius the Great, Egypt: <http://www.stmacariusmonastery.org/eabout.htm>

Monastery of Cantauque: <http://www.monastere-cantauque.com/english/index.html>

Monastery of Saint Anthony, Egypt: <http://stanthonymonastery.org/NewHome.htm>

Monastery of Mar Musa, Syria: <http://www.deirmarmusa.org/index1.html>

Monastic Inter-religious Dialogue on the Environment, 2008:

<http://monasticdialog.com/conference.php?id=117>

Monastic Orders and Monasteries: <http://www.religiousworlds.com/mystic/orders.html>

Monàstica - Taller d'espiritualitat monàstica: <http://monastica.cat>

Muensterschwarzach: <http://www.abtei-muensterschwarzach.de/ams/kloster/konvent/index.html>

Orthodox Monasteries Directory: <http://www.orthodox-monasteries.com>

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