

## The opening to the French public of 'natural' sites of coastal dunes: the choice between 'over-visiting' and 'over-protection' of a shared natural heritage

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### Abstract

This paper proposes some thoughts on the stakes of opening to the visiting public natural sites with particular reference to coastal dunes.

In France the visiting public readily enjoys access to sites and particularly those situated along the coasts where this social activity forms part of the vocation of the Conservatoire du Littoral, the *Office National des Forêts* and the *Conseils Généraux (Départements)* (Meur-Férec, 1997). At ground level the diversity of each site together with the variable policies adopted by owners and managers, together with their differing geographical locations and social and economic pressures, produces an infinite variety of particular situations. The range of the degree of liberty of access to coastal sites varies greatly from the extremes of severely protected "*Réserve Biologique Domaniale*" only open to guided tours to free access peri-urban sea-side parks. Although most coastal zones readily admit the public, the inherent damage caused to sand dunes by "over-visiting" is sometimes badly accepted in scientific and ecological circles as constituting a real menace to our shared natural heritage.

Reasoning in terms of risk we have to consider stakes of opening, or closing, of sites to the public. The reasons for this are multiple and the protection of the biodiversity for future generations is certainly one of them (the protection of human lives against the risk of sea water flooding is of course another prime aspect but, fortunately, this is a limited risk along the coasts of France). However, one can also consider the amenities acquired through site visits and the awareness of ecological issues that hopefully will be transmitted to future generations. To what degree the opening of sites will conciliate the major issues of conservation of the biodiversity / public access?

These questions lead to a reflection concerning the evolution of the relation between Man and Nature (Kalaora, 1998; Miossec, 1998). The coastal dune environment has moved on over recent centuries from the "frightening desert" (Brémontier, 1797) to a precious spatial resource destined often for short term unbridled economic development, and nowadays sometimes evolves to a "sanctuary" precluding public access. In a reaction against development excess the current thought in sites management tends to privilege the conservation of the ecosystems in the name of biodiversity. However the best interests of Humanity as a whole cannot only be translated into

terms of biodiversity which is, after all, only one of the several factors of good husbandry concerned by the protection of our shared heritage of Nature. The access accorded to a public, as a function of the nature of the sites, well informed, marshalled, limited in number and reasonably behaved, can also through an acquired awareness of our heritage become a guarantee of sustainable preservation.

Keywords: Coastal dunes; Natural heritage; Opening to the public; biodiversity; Visitors access; France.

## Introduction

In France most protected natural sites are public property, owned by the State or local communities, and open normally to public access under more or less stringent conditions. This situation has two objectives: nature conservation and at the same time allowing as many people as possible to enjoy the countryside and our “natural” environment. In other countries other choices have been made. As an example in the United Kingdom the two notions of nature conservation and the enjoyment of the countryside are considered separately. The first being restricted to private sites, largely unknown to the public, destined to preserve the existing ecosystem termed “Sites of Special Scientific Interest” and the second, within the framework of enjoying the national heritage, to the popular public enjoyment of the countryside termed “Areas of Outstanding Beauty, Heritage Coasts” (Meur-Férec, 1997).

On the 5,500km of the coasts of metropolitan France, about 1,250km are as of today public property: about 800km are shared between the *Departements* - ENS (*Espaces Naturels Sensibles*) and the Conservatoire du Littoral ; 370 km of the coasts are managed by the ONF (*Office National des Forêts*) ; about 50km depend on local communes and others which are also managed by the ONF (excluding those lands managed by the Conservatoire) and about 30km which are public property managed by other bodies (Regional and Communal). This extraordinary heritage, made up of about 75% of sand dunes, has been extracted from the forever mounting economic pressures which bear down on private land and is presently being enjoyed by an ever increasing public. It has always been difficult to assess the number of visitors who avail themselves of sites due to their very nature of being open to all-comers who may enter them from all directions. However we are witnessing, through reports both by local officials and quantitative surveys of particular sites, that the number of visitors has increased considerably over the last 20 years (the *Conservatoire du Littoral* has undertaken an extensive survey of the frequency of visitors in order to better appreciate the phenomena, the results should be available in 2005).

This enthusiasm for sea board natural sites brings up questions of management connected with the double objective of nature conversation and public access. To what measure are these two objectives opposed? Our natural heritage represented by the local ecological systems may perhaps be severely menaced by “over-visiting” by an irresponsible public having no respect for nature and motivated by a thirst for free access to natural sites readily available? On the other hand there exists a risk that the “over protection” of sites for their own sakes which conflicts with narrow ecological views, which appear to be largely immune to a more open spirit of public governance, such that

we may well question that this may perhaps constitute a danger to the principles of the "humanist" view-point?

The reply to these questions cannot be sought through a strictly academic discipline or through a vested interested approach; the reply must come from a philosophical reflection of the relations between man and nature together with the multitude of points of view surrounding the issues of our humanities' shared heritage constituted by our natural surroundings (the authors are aware that this adjective of "natural" cannot be applied to its undisturbed status which has today disappeared but rather an "orientation" where considerations of "nature" command a high place in the occupation and the management of sites). This short paper proposes some elements of thoughts on what is at stake in opening sites to the public and their management within the context of coastal areas and particularly that of sand dunes.

### **A large variety of both sites and types of visitors**

In France, especially following the Second World War, part of the sea-board sand dunes had been occupied and subsequently destroyed by both urbanisation and industrial activity. The process continues today, in spite of the stringent legislation laid down in the "Loi Littoral" of 1986, to attract numerous property developers. The State has intervened through the powers invested in the *Conservatoire du Littoral* together with the *Départements* through the legislation concerning the "*Espaces Naturels Sensibles*" and the ONF (*Office National des Forêts*). This natural heritage of about 180,000ha, acquired and managed by public funds is, with some minor exceptions (Marquenterre) largely freely open to visitors as a public service. However the degree of free access is tempered according to the nature of the different sites according to their characteristics, their particular status, owners and managers.

#### ***The varied degrees of open access***

All the sites of the *Conservatoire du Littoral*, the *Départements* and the ONF are open to the public within the limits of a due respect to an ecological balance. Visitors are generally directed along pathways and are advised by informative panels. The rules of expected behaviours are indicated at the entry-points and concern generally the prohibited use of motor vehicles, the picking of plants, camping, lighting fires, waste disposal, letting dogs run wild, etc. Some areas may at times be prohibited from access to allow for the regeneration of areas suffering from over-frequentation. Free access is proposed at numerous entry points and the guards provide both information and advice as well as supervising behaviour. Repression for misdemeanours is not excluded. The ONF guards are endowed with an historical authority handed down from the judicial police force which empowers them to establish contraventions on evidence of a lack of compliance with the site rules. Since the Law of 27 February 2002 concerning local democracy the guard of the *Conservatoire du Littoral* have the same power.

Some statutes place very strict limits on the degree of access by the public. This is the case for the RBD's (*Réserves Biologiques Domaniales*) and parts of National Parks which are classified as "protection zones". These sites privilege an ecological ambition rather than one of welcoming visitors. This is the case of the RBD in the *Département* of

the Pas-de-Calais at Merlimont, on the Côte d'Opale, where only guided visits by representatives of the ONF are authorised. However the coastal sites are extensively open to the public throughout their length bordering the coastline and access is not absolutely forbidden; it is however not encouraged with formal pathways and car parking areas etc. Only the île de Port Cros benefits from the statute of a "National Park" on the national coastline of France. Again the designation of the zone is an ecological sanctuary, open to the public, with strict limitations. Occasionally national parks may contain small areas of limited access, termed "*Réserve Intégrale*", an example is the zone called "Bonelli eagle" on the île de Port Cros. These restrictions remain very limited in number and extent throughout the littoral and only concern sites having an ambition of conservation of local ecological systems.

At the other hand of the scale some coastal dune sites managed by local Communes in largely urbanised areas have a truly open access and are managed as such as leisure zones (*Parc du Vent* in Dunkirk). In this case the play areas have the priority. It is more a question of a public recreation field than a nature zone. Nevertheless environmental education is present through informative posters and animated games based on the flora and fauna. This type of site responds to a very real social demand and it does possess the inherent advantage of exposing to a very large public the notions of "nature protection".

In fact, the very ecological diversity of each site, and their "providers" varying designations and their management team's status together with their geographic context, social and economic aspirations, are all at the very heart of the wide variety of natural sites along the sea coasts harbouring sand dunes.

#### *A large diversity of public requirements, practices and objectives*

The profusion of freely accessible nature reserves is well received by a varied public whose multiple demands are ever increasing. Following surveys made during guided tours organised in the natural sites in the dunes to the east of Dunkirk (Meur-Férec *et al.*, 2001; Baron-Yelles and Meur Férec, 1999) we can attempt to classify the various visitors into categories as a function of their practices and objectives. Initially we find that the majority of visitors fall into the category of families, often **parents with their young children**, not particularly familiar with the aspirations of "nature lovers", and in search of a structured welcome and a playful learning experience. Secondly we find a **youthful adventurous** group seeking to "discover" and "have surprises", keen on sporting activities like hiking, together with a motivation to "learn something" during their visit. Young urban couples fall typically into this category. Finally a **public of specialists** make up a third group. They are composed of both national and international visitors having made the trip for the specific reason of visiting nature reserves. These visitors possess specific fields of ecological interest: bird-watching, botany, insect life, ... Often middle aged and members of an educated sector of society they are frequently members of several organisations concerned with the protection of nature.

To these groups keen on guided visits should be added all those, perhaps making up the majority, of people with no affirmed interest in nature but are simply on their way to the beach to sun bathe, play, jog, get some fresh air or get away from things.

Confronted by this interest in nature, largely encouraged by local communities endeavouring to promote their sites, and by the State Education Ministry within their environmental vocation, also the *Conservatoire du Littoral* within its remit of encouraging open access, together with Tourist Boards for whom the attraction of Nature is an economic resource, not forgetting the media who thrive on popular aspirations, etc. The management teams responsible for nature reserves are often concerned and at times positively alarmed. How can they protect the ecosystem under such conditions? Why protect rare plant species if they are only to be trampled under-foot by families on picnic somewhat insensible to the future of *Parnassia palustris* or *Liparis loeselii*?

## **Managers and the public at large – the face to face of often divergent values**

### *Biodiversity and the protection of species: a management priority?*

It is easy to understand how management teams are concerned with the future of seaboard nature sites especially considering their stated objectives and the background of the people employed to achieve them.

These objectives are incorporated into a “**Management Plan**” which constitutes the basis which orientates the mission entrusted to its members. Generally set up for the sites of the *Conservatoire du Littoral* and the *Départements* they are generally updated every five years. They stipulate, following an ecological assessment of each site, the management objectives to be obtained, the strategies to be persuaded, the ways and means to be employed, the time-scale planning, and the monitoring and evaluation of the results. These documents are generally written by the senior staff of the management organisation (*Départements* and Regional Authorities for example) and at times consultant organisations specialising in ecosystems. The main objectives laid down in the plans are the stability and the increase of the **biodiversity** and the conservation of **protected species** through national and international legislation. The nature reserves managed by the ONF benefit from “*Plans d'Aménagement*” based on the same principles; their ambition is to seek to reconcile the economic, ecological and social functions; in the coastal sites the function of wood production gives way to the considerations of conservation and sustainable public amenity (Favennec, 1999).

In accordance with the Management Plans the actions are organised in order to respect the objectives which appear to obtain a large consensus within the management team responsible for the Nature Site. Welcoming the public and the limitation of access to certain areas are usually planned around the cited conservation objectives.

Biodiversity is effectively accepted worldwide as a guarantee of the quality and the “sustainability” of our planets ecosystem. *The biological diversity, or biodiversity, concerns the variety and the variability of all living organisms. This includes the genetic variability within species and their populations, the variability of species and their forms of life, the diversity of the ecological complexes of which they are part, and those of the ecological processes in which they act* (XVIIIth UICN meeting, Costa Rica, 1988). The conservation of the biodiversity involves the protection of certain species set down in

reference lists which refer to statutes (Red List of the UICN, annexes of European Directives “Birds” and “Habitats”, National Directives...). The main criteria for the protection of species are their rarity and/or the importance of the risk of extinction which is often directly connected with the destruction of their natural habitat by Man (Bellan-Santini, 2002).

Without denying the usefulness of these lists we may however express some reservations. The statutes (Protected Species on a national and international level, Key Species, Heritage Species...) and qualification criteria are not always clearly defined and supported. Such “*is said to be representative of our heritage any species which becomes the subject of interest whatever the nature of this interest*” (Delavigne, 2000). One could therefore imagine a scientist developing a passionate interest for a particular plant or insect for personal reasons and the species thus becomes protected or even a symbol. Additionally the rarity of a species is a function of space and time. As an example we may well consider a species to be rare considering its historic attachment to a defined space (like *Elymus arenarius* in France), which is quite common in other regions generally situated at high latitudes. In this case rarity is a function of a specific space of reference and there is no risk of extinction of the species as a whole. We should also consider that rarity is an evolutionary function which varies in time and at such speeds that the lists, in spite of their capacity to be updated, are often notably by their nature, slow in being revised. The lists are a simple and efficient means to combat the disappearance or the reduction of certain species and so protect Man’s natural heritage. However they are too “fixed” and are tied directly to a function of space and time together with a direct link to the sensitivity of those who set them up. They are thus useful but incomplete in their use to establish the objectives of natural site management criteria.

Notwithstanding the objectives of site management plans, **the sensitivity of managers** towards the conservation of ecosystems is also connected with their professional backgrounds. The large majority of senior staff members have been trained through a syllabus concerned with biology, ecology, forestry and agriculture. These courses do assure a certain level of knowledge of the natural sciences required to perform as a manager in the field of our natural living heritage. They do also orientate manager’s sensibilities towards certain species (rather than spaces) both animal and vegetal (rather than human). These fields rather preclude managers who have a geographic education together with both sociologists and philosophers in the field of nature in spite of the fact that these backgrounds are represented in the scientific committee of the *Conservatoire du Littoral*. These orientations, often firmly anchored in natural sciences, tend to produce managers who at times consider Man, and thus the public at large, as elements that upset the natural equilibrium and act destructively towards the efforts made in favour of the conservation of species, or at the very least they represent attitudes which ignore the values of conservation.

***Tagging, rubbish disposal and bulldozers: a doubting public***

On the other hand, the various types of visitors, generally satisfied with the preservation efforts in hand (Meur-Férec *et al.*, 2001) have, because their motivations differ so widely, another set of objectives (Kalaora, 1998).

For some, nature sites are owned by us all and are therefore owned by nobody. They tend to use sites as playgrounds, for moto-cross, parking, meeting and picnic areas and camping grounds and have no perception of their value to the community as sites of our natural biological and landscape heritage. This category of user tends to degrade sites through negligence or even wilfully as a manifestation of their refusal of a form of society which they reject (brush fires, tagged panels, etc.). They constitute the most difficult type of visitor to manage and educate and certainly the most provocative and depressing to the guards. These problems with vandals are not specific to nature sites and affect all facets of public life.

For other types of visitors, fortunately in the vast majority, very largely holding in respect the facilities, there are some areas of incomprehension with the authorities. From recent surveys of the degree of satisfaction held by visitors after their visit it does appear that people do expect to find a higher degree of urban facilities at sites. It is noted that a number of visitors to sites in northern France expect to find benches, dustbins, toilets and, why not, snack bars! People seem to be looking for "nature" as a back-drop to their activities without the inconvenience of not having "creature comforts". The level of "naturalness" accepted amongst visitors appears often to be very low. This ambiguity shown by numerous visitors has already been underlined in the review "Cahiers du Conservatoire du Littoral" (1995). These situations often leave managers perplexed in view of their unfailing efforts to restore natural habitats.

On the other hand some visitors readily understand and react negatively to the artificialisation introduced by some managers themselves and the curbs placed on their personal liberties. For some it is difficult to accept being channelled into paths so to avoid trampling on protected species or to give up cross country cycling or using trial motor-bikes to avoid tearing up humus when at the same time large areas are over-turned in order to "rejuvenate" the vegetation of the established dunes and new wet lands are formed to foster *Triturus cristatus* and Natterjack toad (*Bufo calamita*). How to understand the restrictions on picking up plants when the site managers cut down areas of natural long grasses (*Calamagrostis*) or tear out Sea buckthorn (*Hippophae rhamnoides*) or cut down trees (Pines at Sefton Coast, UK)? Also why do bird watching in silence and prohibit dogs to go near newly laid eggs while hunters shoot water fowl on protected nature sites?... Of course all these situations have rational explanations, more or less well founded, connected with a local context and a choice which has been made, but how to appeal to the public for respect and understanding in view of these apparent contradictions. Efforts may be made to educate and alleviate some of these contradictions (displayed information should be permanent and in several different forms; the information displayed by the guard as mediator is certainly the most efficient; no fixed information board can replace the indispensable human presence).

However the main question remains open: how to lay down rules which are “good for Nature”? Are the doctrines in this field open to discussion and consensus, or are they arbitrarily laid down by some “enlightened despots” (Thiébaud, 1988)? Is there sense in protecting Nature for its own sake (Berque, 1996)? What are the objectives and what is at stake in preserving what we have left of “Nature”? These questions bring us to face the ambiguities of the evolution of the relation between Man and Nature.

## **Replies (or questions) to be looked for in the relations between Man and Nature**

Even though the relations between Man and Nature have fluctuated over the centuries between one social group to another, one can identify certain currents of thought chronologically.

Up to the XVIIIth century our coasts were not intensively occupied by Man and retained a certain atmosphere of fear mixed with a fascination in view of the immensity of space and violence displayed by the elements. The dunes were described as a “horrific desert” (Brémontier, 1797); Nature being often considered to be hostile towards Man.

During the XIXth century the dominant tendency was towards “**domestication**” of nature by Man in order to master the elements and if possible to render them “**productive**”. At this time the dunes were calibrated and managed using different techniques of stabilisation and notably by the planting of pines used for the production of timber and resin. At the same time society was becoming more democratic and rural life was giving way to a more urban society, the rising attraction of the pleasures of the seaside radically changed the relationship between Man and the sea-board. At the same time as the coast became the object of long walks and the doctors subscribed to the benefits of sea bathing at the end of the XVIIIth century, the dunes revealed themselves to be a **useful space to be exploited** for the needs of the construction industry.

During the XXth century the sparse aristocratic villas which had been built gave way to more dense constructions including housing developments and flats and often, after the Second World War to a “boom” in mass tourism. At the same time the rapid increase of industrial activity, especially the localisation of steel production on the sea boards and the need for generating power, encouraged the construction of industrial plants near ports located on flat sites near the sea and using principally the dunes and the estuaries. In view of this increasing need these sea board sites once numerous and of low cost became rare and sought after. During the 1950’s to 1970’s the sensibility towards the protection of our natural heritage had not yet affected the rapid rate of consumption of the space remaining in its natural state. In fact at this time the dunes were the site of a rapid developing part of the economy and their being used was considered acceptable without any consideration towards the well being of the environment. The only dunes that were totally saved were managed by the Forestry Commission (*Eaux et Forêts*).

Even though the first organisations concerned with protecting Nature appeared early in the 20<sup>th</sup> century, like the Society for the Protection of Birds which was founded in France in 1912, it was not until the 1970’s that the ecological movement really made a break-



through in forming a powerful counter movement to denounce the exploitation of Nature by Man without any notion of the importance of sustainability. This movement took the stand against unlimited economic development at any price and promoted the notions of a **common natural heritage** together with the menace to certain species and the ecological heritage. It was Man who became over time the **intrusive figure** who "disturbed" and destroyed nature. He stigmatised power and profit in the face of a fragile, delicate defenceless Nature. The excesses of this line of thinking both in the form of sentimentality or hard core beliefs of "deep ecology" are reflected in the development aberrations that they have brought about.

Today, the context has changed from that of the "30 glorious years" because the economic exploitation of nature reserves is governed by strict legislation in spite of some abuses, and deviations are present (Becet, 2002).

The protection of Nature in the western world remains in the forefront of media preoccupations and has been adopted, and sometimes used, for political ends. The current **main line thought** for most people is "Nature is not in the service of Man, neither for his needs nor for his pleasures; it is Man who is in the service of Nature" (Delbos and Jorion, 1988). Political ecology refers more and more to science that supplies its foundation and justification which is forever increasing; in depth quantified studies of fauna and flora supply full justification for the awareness of the importance of **biodiversity**. The term, used by the political classes concerned with their public image, has become the panacea of the protection of Nature, its ultimate objective, the very future of Humanity. Largely relayed and amplified by the media "biodiversity" and "future generations" are the leitmotif of all programmes concerning Nature often leaving aside present generations (often including elements of humanity suffering both here and elsewhere) and the considerations of landscapes.

The results of a poll carried out in March 2004 amongst 400 walkers on the beaches and dunes of the *Départements* Nord and Pas-de-Calais reflect the strong influence of the media and the thought patterns which are dominant amongst the general public (Meur-Férec *et al.*, 2004). In response to the question "in your opinion should we combat erosion?" almost everyone chose the reply: "yes, always" in order "to protect nature", and "not at any price" in order to "protect homes". From this should we understand that we should build erosion defences around all Nature reserves and allow sea erosion to wear away the coastline and thus menace our sea side towns? This interpretation would certainly not reflect the beliefs of those questioned who may have attached undue importance to the words "protect" and "Nature" in the question to the degree that our question was badly formulated. However these surprising results reveal the weight of current thought patterns and the answers considered to be "politically correct" which directly connect "Nature" and "protect at any price" – it is as if one precipitated to press the "Yes" buzzer on a TV Game Show without really thinking about the question.

But if biodiversity becomes the only objective, constructed by intangible and universal faiths, does not nature risk becoming a field for "specialists only", a sanctuary for scientists which excludes the common man, punished for his excesses, suspected of having dangerous intentions towards destruction or, at least, living in dangerous ignorance. One may well ask oneself if the protection of diversity allows for a similar

diversity in both the approaches as in the points of view. One could apply to Nature management a principle advanced by Arnould and Miossec (2000) in discussing geography: “if diversity constitutes a richness, then one single line of thought can never become an eternal philosophy”.

What is really at stake in the preservation of Nature may perhaps involve its being made part of our building of **our sustainable heritage**, that is to say an appropriation by everyone of this common resource? A heritage to remain such must be protected, safeguarded but it has no value unless it is fully appreciated, that is to say shared, shown and accessible. One may risk the presumption of making a parallel between a Nature site and an emblematic historical site. It is difficult to imagine the closure of the castles of the Loire Valley or the Palace of Versailles closed to visitors to protect them and reserve their enjoyment for future generations. The public knows and respects this heritage because it has been appropriated and would not dream of organising a picnic in the crystal gallery or to jump on the beds... Of course Nature is not managed in the same way as castles; it is free alive and dynamic; the species are unnumbered, the space involved unlimited and the guards are outnumbered. However the process of heritage passes through the acquisition of the notion of true appropriation of a common wealth and that's true for Nature as well as manmade objects (Audrerie, 1997). After all is not **Nature an object of society**? “Nature exists for Man in so far as Man is concerned with it” (Delbos and Jorion, 1988). In this case should not its management respond to the principle of governance associating the ordinary common people in the debate?

## Conclusion

The double objective of trying to conciliate the conservation of ecosystems on one hand, and welcoming the public and their environmental education on the other hand is ambitious and entails some difficulties. It does seem however very important that these two objectives remain associated if we search a real consideration for Nature as our heritage. A compromise can be found and adjusted as a function of the various sites and what is at stake and may well require that one or the other of the options will prevail. The balance and thresholds of the capacity to absorb visitors have to be found, probably on a case-by-case basis. In any event the choices made in managing our common heritage must be explained and justified within the spirit of public service to the public at large. The undertaking is well worthwhile because opening up sites to the public, with some restrictions, is a means of conserving them for the long term through their appropriation by the public at large. It is an investment in the future even if some species and plants suffer from time to time and as long as none are eradicated completely. But the ecosystems, and in particular those in the dunes, have a natural resilience which allows for manmade errors in their management. Through their natural mobility the dune systems have an immense in-built capacity to heal themselves. It is a system which is adaptable providing that it is not wiped out by the advances of urbanisation or industrial development and is quite capable of surmounting changes in management choices and therefore adapt itself to current ways of thinking: development, stabilisation, forestation during the XIX<sup>th</sup> century, then deforestation and burning, scavenging, excavating, remobilisation; eradicate the rabbits then reintroduce them; open them up to the public, then close them, then reopen them...

The main difficulty in the management of dunes seems not to be connected to their intrinsic fragility but to the definition of the objectives and as such the reflection and aspirations we are looking for in our efforts to protect them. These considerations cannot be left up to only naturalists or even scientists in general; they need in addition to be informed by public opinion.

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## References

- Arnould P. and A. Miossec. 2000. La diversité revisitée: milieux "naturels", perceptions, recherches et représentations en France. *Historiens et Géographes* 370:239-249.
- Audrerie D. 1997. La notion et la protection du patrimoine 1997. Ed. PUF Que sais-je? 128p.
- Baron-Yelles N. and C. Meur-Férec. 1999. Tourisme et loisirs de nature sur les sites préservés du littoral Nord-Pas-de-Calais. *Hommes et Terres du Nord* 1999/1:37-46.
- Becet J.M. 2002. Le droit de l'urbanisme littoral. Presses Universitaires de Rennes. 253p.
- Bellan-Santini. 2002. Outils de prise en compte de l'intérêt patrimonial des espaces et des espèces du littoral. In: Dauvin J.C. (Coord.). Gestion intégrée des zones côtières: outils et perspectives pour la préservation du patrimoine naturel. Patrimoines Naturels, Muséum National d'Histoire Naturelle. 346p.
- Berque A. 1996. Etre humains sur la terre: principes d'éthique de l'écoumène. Gallimard. 212p.
- Brémontier N.T. 1797. Mémoire sur les dunes. Ponts et Chaussées (rapport non publié adressé à l'administration du département de la Gironde).
- Conservatoire du Littoral. 1995. Les Français et la protection du littoral. Cahier du Conservatoire 4. 80p.
- Corbin A. 1988. Le Territoire du vide, l'occident et le désir de rivage 1750-1840. Paris, Flammarion.
- Delavigne A.E. 2000. Les espèces d'intérêt patrimonial et de la "patrimonialisation" des espèces. Rapport du Service Patrimoine Naturel pour le Ministère de l'Aménagement du Territoire et de l'Environnement. Programme "espaces protégés". 120p.
- Delbos G. and P. Jorion. 1988. La Nature ou le réel forclos. p.15-21. In: Chasser le naturel. Codoret A (Ed.). Edition de l'Ecole des Hautes Etudes en Sciences Sociales, Paris, 157p.
- Favennec J. 1999. Aménagement des forêts littorales: cas des forêts dunaires du littoral atlantique français. *Revue forestière française*, numéro spécial 1999:217-229.
- Favennec J. 2002 (Coord.). Connaissance et gestion durable des dunes de la côte atlantique. Les dossiers forestiers No. 11. ONF. 395p.
- Kalaora B. 1998. Au-delà de la nature l'environnement: l'observation sociale de l'environnement. L'Harmattan Col. l'Environnement.

- Mermet L and P. Moquay. 2002. Accès du public aux espaces naturels. Hermès Sciences, Paris. 393p.
- Meur-Férec C. 1997. A comparative review of coastal conservation policies in France and England-Wales. *Journal of Coastal Conservation* 3:121-132.
- Meur-Férec C., M. Hoedt and L. Danes. 2001. Fréquentation des sites naturels littoraux. Vers une meilleure connaissance du public: l'exemple de deux sites dunaires à l'est de Dunkerque. *Hommes et Terres du Nord*, 2-2001:81-89.
- Meur-Férec C. (Coord.), P. Deboudt, V. Deldrève, H. Flanquart, A.P. Hellequin, V. Herbert, J. Longuepée and V. Morel. 2004. La vulnérabilité des territoires côtiers: évaluation, enjeux et politiques publiques. Programme National Environnement Côtier, Ifremer, rapport final. 150p.
- Miossec A. 1998. Les littoraux, entre nature et aménagement. SEDES, coll. Campus Géographie. 192p.
- Thiébaud L. 1988. Pouvoir politique et protection de la nature. In: Chasser le naturel... Codoret A. (Ed.). Edition de l'Ecole des Hautes Etudes en Sciences Sociales, Paris, 157p.
- Yellès N. 1997. Espaces protégés et tourisme de nature sur le littoral atlantique français: stratégies et enjeux. Thèse de Doctorat en géographie, Université de Paris I. 392p.