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Chapter 4

The baseline, a social construction

Clémence Moreau, Cécile Barnaud, Raphaël Mathevet

Introduction

In 1995, the marine biologist Daniel Pauly published his article *Anecdotes and the shifting baseline syndrome of fisheries*. According to his theory, the baseline, i.e. the state of an ecosystem considered as "natural", evolves over time, without the actors noticing it, insofar as they consider an erroneous baseline: that of previous decades, corresponding to their childhood or the beginning of their professional career. As each generation redefines what is natural and what is not, the standard becomes slippery, and the degradation of ecosystems becomes invisible to the actors. He states that the quantity of fish considered normal in a marine ecosystem tends to decrease with the decreasing age of the researchers (Pauly 1995).

There are several reasons why this short account, written in the first person, has resonated widely in fisheries management and marine ecology. The theory is easy to grasp and its logic seems compelling (Campbell *et al.* 2009). It also highlights a hitherto imperceptible cause of ecosystem degradation, linked to our own representations. To consider as "natural" an ecosystem that, only yesterday, would have seemed "degraded" to us, is to revise downwards what is desirable in terms of conservation (Maris 2018; Soga and Gaston 2018). The risk, then, is to become increasingly tolerant of ecosystem degradation (Soga and Gaston 2018). Another strength of this theory is its evocative power: it summons images of past abundance, which contrast with a current degraded state; the theory is then mobilizable for

conservation programs (Campbell *et al.* 2009; Alagona *et al.* 2012). Finally, within the scientific community, the analysis of the shifting baseline syndrome makes it possible to encourage interdisciplinary work, since it requires the combination of historical data from ecology, but also from local knowledge, art or literature (Campbell *et al.* 2009).

Through this text, Pauly invites us to take a new look at the concept of a baseline, defined as "a state or trajectory of a system used as a comparator" (Maron *et al.* 2015). Far from being a stable and neutral datum, the baseline is influenced by political agendas, economic realities, scientific knowledge, local knowledge, and even prejudices (Hilding-Rydevik *et al.* 2017). The baseline can thus be screened by constructivism, according to which we can only access knowledge of reality through our system of representations, individual or collective (Lévy and Lussault 2013).

Considering the baseline as a social construct calls for the exploration of at least three lines of thought that we will develop in this chapter. Firstly, the baseline is not stabilized but evolves over time: this was Pauly's intuition, which has been confirmed but also criticized by numerous studies. Secondly, different elements, not only ecological, but also social, cultural, economic and even political, enter into the construction of the baseline, hence the fact that the baseline may vary according to social groups or individuals, and to contexts. Finally, since the choice of the baseline has strong management implications and there is not necessarily a consensus, it is necessary to debate it. To develop these three lines of thought, we will rely on a review of the literature and will support our remarks with examples taken from a study conducted in the Cévennes National Park (Box 4.1.).

Mont Lozère is a granite massif located in the south of the Massif Central. Its characteristic landscapes (pastures dedicated to sheep and cattle breeding, natural meadows, beech/fir forests, and coniferous plantations), as well as the cultural and ecological richness of the site, have justified various classifications and recognitions: Cévennes National Park in 1970, biosphere reserve of the Unesco Man and Biosphere program (1984), inscription of the Mediterranean agro-pastoral landscapes on the Unesco World Heritage List (2011) (Photo 4.1.)

As elsewhere in France and in Europe, the Lozère mountain region is witnessing the "closing of landscapes", i.e. the increase of forest cover in former rangelands and meadows, abandoned or less intensively grazed. In these mountain regions, the expression "landscape closure" implicitly refers to a negative, undesirable phenomenon (Le Floch *et al.* 2005). One of the structuring postulates of the fight against "landscape closure" is the existence of a baseline landscape, situated in the middle of the 19th century, when the agricultural exploitation of the territory was at its peak and the landscapes were particularly open. The increase in forest cover is then perceived as a deviation from this model (Marty and Lepart 2001; Le Floch *et al.* 2005). At the same time, the open landscapes themselves are evolving, in the context of a (moderate) intensification of livestock systems, and there is disagreement on the types of open landscapes that should be preserved or promoted. Certain agricultural practices are indeed on the increase, such as rock removal (which consists of removing large granite boulders to facilitate the mechanical exploitation of plots) or prairie turning (the plowing of permanent prairie or rangeland, which then becomes temporary prairie, plowed and seeded regularly). Insofar as they may impact the character of the park, these two practices are subject to authorization in the core zone of the National Park.

There may therefore be tension between the baseline landscape (extensive agro-pastoral landscapes) and the current landscapes (which are evolving either towards forest or towards more intensive agricultural landscapes). This tension manifests itself in conflicts of interest, or even open conflicts, notably between the agents of the Park and the farmers around certain agricultural practices (rock removal and prairie turning).

To study this tension, we set up a qualitative research device between 2015 and 2019, as part of a PhD thesis in geography, combining a qualitative approach (semi-structured interviews, participant observation) and action research (participatory workshops around a role-playing game) (Moreau 2019).

Box 4.1. Presentation of the case study



Figure 4.1. Agro-pastoral landscapes of Mont Lozère.
Credit N. Salliou

4.1. The baseline evolves over time: the shifting baseline syndrome

The shifting baseline syndrome theory has met with widespread acceptance in the scientific community. A meta-analysis, conducted in 2019, indicates that 152 publications have been made on the topic, 82% of which are on aquatic ecosystems and 28% on terrestrial ecosystems (Guerrero-Gatica *et al.* 2019). On the other hand, the appropriation of this theory is still timid in the French-speaking literature. Changes in baseline systems are essentially addressed by the social sciences, which question the representations underlying the development of land-use planning policies (Luginbühl and Terrasson 2013), but without explicitly referring to the shifting baseline syndrome.

In the scientific literature, three types of articles refer to the shifting baseline syndrome: those that reconstruct a past baseline by measuring species abundance, those that focus on representations, and finally those that address the management implications of this syndrome.

The first types of papers aim to assess changes in abundance of species, mostly marine. All of these papers agree on ecosystem degradation, but they mobilize a variety of resources and methods (Pinnegar and Engelhard 2008). Some authors rely on scientific or naturalist data (Baum and Myers 2004 ; McLean *et al.* 2016). Some authors use scientific

or naturalist data, others use fisheries catches and trade data (Guénette and Gascuel 2012; Alleway and Connell 2015). Some studies mobilize less formal sources, such as historical photographs of recreational fishing trophies (McClenachan 2009) or archaeological finds (Drew *et al.* 2013). Other studies rely on both formal and informal data (Godoy *et al.* 2010 ; Whipple *et al.* 2011 ; Fortibuoni *et al.* 2016). Finally, several works seek to incorporate Pauly's cherished "anecdotes" (Ainsworth *et al.* 2008; Parsons *et al.* 2009).

While some studies take a comparative approach, and replicate the same data collection protocol as one conducted several decades earlier (Price *et al.* 2014), most of these studies simply paint a picture of past ecosystems, without addressing the issue of perceptions. They evoke a shifting baseline syndrome from the baseline without being able to demonstrate it.

The second type of paper focuses on representations of the baseline and its evolution through time. Several studies compare the representation of a "natural" or "good condition" ecosystem across generations (Bunce *et al.* 2008 ; Turvey *et al.* 2010; Burbano *et al.* 2014; Giglio *et al.* 2014; Katikiro 2014 ; Barbosa-Filho *et al.* 2020). Researchers have reproduced the same survey protocol as a study conducted in the 1970s (Leeney and Downing 2016). An ethnobotany study compares the ability of different generations to name local species in their local language (Kai *et al.* 2014). Finally, in the tradition of Pauly, who took himself as an object, some studies focus on the evolution of the baseline in the scientific life of researchers (Muldrow *et al.* 2020).

These works conclude that there is a change in the baseline between generations, which Papworth (2009) calls generational amnesia. Here again, these articles address the question of representations, without necessarily mobilizing scientific data that would allow us to compare the past state of the ecosystem with the perceived state. Finally, few studies combine a rigorous description of ecological dynamics with an analysis of representations.

Finally, the third type of article focuses on the management consequences of the baseline shift. The shifting baseline syndrome creates an increased tolerance for environmental degradation, resulting in a low level of ambition for conservation or restoration (Soga and Gaston 2018; Guerrero-Gatica *et al.* 2019). Moreover, if the baseline is not perceived in the same way by all the actors, there may be conflicts between those who implement restoration operations (scientists, managers, technicians) and the users (Guerrero-Gatica *et al.* 2019). To prevent this syndrome, several avenues are possible: improving knowledge of past ecosystems, encouraging direct experiences with nature or environmental education (Soga and Gaston 2018). Until then, it is necessary to follow the precautionary principle to avoid underestimating the degradation of the environment (Dudgeon 2010).

Some authors take a critical look at Pauly's theory. Longitudinal studies of ocean history are few, and studies often mobilize unreliable data; they also resort to extrapolation or focus exclusively on certain species (Campbell *et al.* 2009; Alagona *et al.* 2012). The shift in the baseline is also built on assumptions that are not made explicit. The first is the existence of a pristine nature, past and gone, that humans have inexorably degraded. This assumption deserves to be discussed, insofar as it is based on a typically Western separation of humans and nature, according to which marine ecosystems are not populated (Campbell *et al.* 2009). Many protected sites are more cultural than natural landscapes (Hilding-Rydevik *et al.* 2017). Moreover, this vision of a past stability contrasts with a dynamic conception of ecosystems, which prevails in ecology today (Campbell *et al.* 2009). The second unexplained hypothesis is that the past baseline also constitutes a management objective, a desirable future, in a nostalgic approach to conservation ecology. However, Alagona *et al.* (2012) remind us that if the past can be used as a parable, it cannot be used as the only guide for the future.

All of these reflections invite us to pay close attention to the different representations of the baseline, and to the tensions and disagreements that can exist around the shifting baseline syndrome between the actors of a territory. This is what we highlight in the case study of Mont Lozère (Box 4.2.).

We explored the hypothesis of a shifting baseline syndrome on Mont Lozère, based on 46 individual semi-structured interviews, with actors from the agricultural, forestry, tourism, conservation and hunting communities (2016- 2017), and participant observation by the Scientific Council of the Cévennes National Park (*Conseil scientifique du Parc National des Cévennes*) (2017), which focused on landscape evolution in relation to agropastoral practices (Moreau, *et al.* 2019a).

Our results show that among the actors in the field, the dominant representation is that of "landscape closure", experienced as a negative phenomenon, against which it is necessary to fight by "landscape maintenance", i.e. by maintaining "open" landscapes, or even by reopening certain "closed" environments. However, other representations exist, such as that of the foresters, who consider that "we must take advantage of the increase in forest cover", by an ecological or economic development of these landscapes. These actors situate the baseline in a period prior to the agricultural development of the territory, sometimes "the Middle Ages", often in more vague terms. They put forward the "natural" character of the forest, referring as much to the past state of the ecosystem as to a climax. We can therefore speak of a shift in the baseline, insofar as forest landscapes are regaining legitimacy. Indeed, in the past, such normative shifts have already taken place: it is only since the 1970s that the ecological and cultural interest of pastoral landscapes has been put forward (Marty and Lepart 2001).

At the same time, although a large number of actors wish to "maintain open landscapes", they do not all agree on the type of open landscapes to be preserved. For the National Park agents or the tourism actors, the evolution of agricultural landscapes under the effect of rock removal and prairie turning constitutes a "degradation" of heritage landscapes. According to them, there is a significant risk of a shifting baseline syndrome: insofar as these changes are temporary and gradual, they will not necessarily be perceptible to the actors who will gradually get used to them. For other actors, mainly livestock farmers, the evolution of landscapes under the effect of these practices is considered inevitable, even desirable, often described as an "improvement" of the land and an increase in its productive potential, which is in line with the practices of their ancestors who shaped the landscapes to practice livestock farming.

We are thus witnessing two joint phenomena: on the one hand, the tipping of the baseline through a questioning by certain actors of the supremacy of open landscapes as a baseline, and on the other, a shifting baseline syndrome linked to the evolution of open environments under the effect of the intensification of agricultural practices. These two phenomena are partly linked, as the intensification of practices in open environments can be used by some as an argument in favor of a return to a more natural forest environment. In both cases, mobilizing different baselines is a way for actors to support their practices and their own legitimacy to "create landscape" (Hatzfled 2009), whether they are breeders, National Park agents, agronomists or foresters.

Box 4.2. Tilting and shifting of baselines regarding Mt. Lozère

4.3. How is the baseline constructed?

If we accept that the baseline is a social construct, it remains to be understood how this construction takes place. Soga *et al.* (2018) identify several causes of shifting baseline syndrome: incomplete data about the natural environment, impoverished experience, and familiarity with the environment. We can therefore identify four factors that are involved in the construction of the baseline: knowledge, memory, experience, and cultural norms.

Regarding the first of these factors, several works illustrate how changes in knowledge have sometimes led to a reconsideration of the baseline. Thus, at the end of the 19th century, there was a debate among vegetation specialists about the origin of the open landscapes of the Grands Causses: in the 1880s, the French botanist Charles Flahaut argued that the vegetation was a relic of steppe vegetation, before reversing his position at the end of his career, and asserting that the climactic vegetation of the Causses was forest, with overgrazing being able to explain the current landscapes (Marty and Lepart 2001). These scientific reversals have significant consequences for management. For example, Vera *et al.* (2010) explain that between the 19th and early 20th centuries, the degradation of European forests was attributed to the presence of herbivores¹. On the basis of this evidence, two measures were prescribed to return ecosystems to a "natural" state: spontaneous development of vegetation and exclusion of domestic herbivores. However, more recent studies have shown that domestic animals were integrated into forest ecosystems during the Middle Ages. In addition, scientific knowledge can also be mobilized by actors according to their own strategies, for example by conservation organizations (Barnaud *et al.* 2021) or agricultural unions concerned with maintaining or developing certain practices (Mathevet and Béchet 2020). Finally, alongside scientific knowledge, local knowledge can also be taken into account in the construction of the baseline. In some cases, the erosion of local knowledge can explain the shifting baseline syndrome (Kai *et al.* 2014). Finally, we can say that knowledge is socially and historically situated: even if the baseline is based exclusively on knowledge, it remains the object of a social construction.

The second factor is related to memory. Papworth *et al.* (2009) distinguish between different types of baseline shifts: generational amnesia, where new generations are unaware of past biological conditions, and personal amnesia, where people lose memories of their own experiences. The authors also uncover the phenomena of illusory memory, where people relate a past state of the ecosystem that is not confirmed by scientists, and change blindness, where people continue to refer to the baseline without noticing changes that have affected the ecosystem. Alteration and distortion of memory will therefore influence the baseline.

¹ See Laurent Godet's chapter in this book "Rewilding by the return of the ghosts of the past".

The third factor involves experiences. Keilty *et al.* (2016) show how everyday life near dams can change their perception, to the point of being integrated into a landscape considered "normal" or even "natural." The role of experience is thus central, and this will have strong consequences. Thus, urbanization implies a loss of experience of nature, and thus a risk of a shifting baseline syndrome increased (Turner *et al.* 2004). The risk is then to take ordinary nature as a baseline, which is a considerably impoverished nature compared to wild nature (Maris 2018).

The fourth factor concerns cultural norms. In the Grands Causses, for example, it was from the 1970s onwards that the heritage and ecological value of open landscapes was progressively emphasized, whereas these landscapes had previously been considered as degraded landscapes, the baseline being that of a forest climax to be restored. This change in the baseline is closely linked to an evolution in the social representations of farmers. While pastoral societies were considered until the first half of the 20th century as disrespectful of the natural equilibrium of the environment, they have been gradually recognized in their heritage role since the 1970s (Marty and Lepart 2001). The Cévennes National Park, which was initially conceived as a forestry park, thus made the maintenance of open landscapes the target of its management, which also made it possible to obtain the support of the local population, which was strongly agricultural (Basset 2009). Through this normative shift, the baseline does not refer to a natural landscape but to a cultural one, thus emphasizing the influence of cultural norms.

Finally, biological or evolutionary factors are also mentioned (Keilty 2016) insofar as aesthetic or environmental preferences can be explained by the evolution of humankind in contact with nature (Kaplan 1987; Wilson 2012).

Finally, these factors combine differently depending on the period, the social group, but also on the individuals. Different representations of the baseline thus coexist within a social group, as we have shown in the case of Mount Lozère (Box 4.3.).

As we have seen, the actors of Mont Lozère are opposed in their representations of the landscape dynamics in progress.

A first type of actor, the majority, considers that the "closing of the landscape" constitutes a loss, both ecologically and culturally. According to this representation, the baseline was situated in the middle of the 20th century, at the peak of the agricultural development of the territory. While the baseline generally refers to a nature untouched by anthropic impact, Mont Lozère is an emblematic example of the development and conservation of cultural landscapes. This can be explained by two main factors. Firstly, cultural norms were progressively put in place from the 1970s onwards, supported by new knowledge, which allowed the recognition of the heritage value of agro-pastoral

landscapes. Secondly, collective memory plays an important role, as actors evoke memories and anecdotes experienced by their ancestors.

A second type of actor, mainly public sector foresters but also inhabitants who have come to settle in this region for its wilderness character, sees the increase in forest cover as an enrichment of biodiversity. They insist on the anthropic character of open landscapes, and question the temporality of landscape standards. Indeed, the forest constitutes for them the "natural" landscape of Mont Lozère, whether one looks to the past (Middle Ages, or even before), or whether one projects oneself in the long term of ecological dynamics. For this, they rely on knowledge of the biodiversity associated with forest landscapes, knowledge that is new but in full development, for example around the question of "old forests".

Finally, among the four factors that condition the baseline, we retain three on Mont Lozère: memory, cultural factors, and knowledge (Figure 4.2.). Conversely, evolutionary factors, identified by Keilty *et al.* (2016), did not emerge in the interviews. Similarly, experience seems to enter into the picture rather little: the inertia of representations is strong, forest landscapes continue to have a negative connotation, even though the inhabitants have sometimes lived their entire lives in a predominantly forested landscape.

Box 4.3. *Mont Lozère and the case of cultural landscapes*

Figure 4.2. Typical citations for the role of different factors identified by Keilty *et al.* (2016) in the construction of baselines on Mt. Lozère.

		Scale	
		<i>Individual</i>	<i>Collective</i>
Flexibility	Hard-wired	Memory factors ‘You see there, the stream, in the old days, there was a tree. My father or my grandfather, they saw the entire stream. The birds, the seeds, everything... it was sown. It's not the people who planted them. And after all, as we say in patois, <i>bartas, algunas</i> , it grows on you.’ A cattle farmer	<i>Evolutionary factors</i> /

		Experiential factors 'We have lost at least 20% of precipitation in 30 years and we have gained more than 1 degree. So inevitably, it changes a lot of factors on the flora and fauna. There's lots of places where...where the streams never dried up or they dry up every year. I've seen the grasshopper disappear, the birds disappear because of the bad springs that we had... it's true that we had a series of... spring seasons, each as awful as the other, and that birds like snake eagles, which eat snakes, if it rains all spring, well, snakes, the little ones, they do without. I have been doing climatological readings for the CNRS for 31 years. So I have precise data' An artisan	Cultural factors Cultural norms Before Mont Lozère it was a grazing area. There is no forestry mentality at all. We are not in the Jura, where people know what it takes to cultivate a forest, and they want to cultivate the forest. We are not in this dynamic. We have a farmer, breeder mentality A forest ranger (public sector) Knowledge 'Is the open environment an absolute goal? These are questions that are quite new, because we have developed knowledge of forest ecosystems, which means that now we give a value to the forest higher than what we did thirty years ago' A forest ranger (public sector)
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4.4 Debating the baseline

The baseline has a descriptive value: it gives an image of the past state of the ecosystems, and makes it possible to give meaning to the dynamics in progress. But the baseline also has a normative value. Indeed, identifying a baseline is equivalent to choosing as a model a precise point in the history of relations between societies and nature. The baseline refers to the past, but also implicitly, to an "end state", an ideal, or even a desirable future (Luginbühl and Terrasson 2013).

However, in the discourse of actors or in management documents, the baseline is rarely explained or justified, and it often amalgamates an unrecognized and idealized historical state, persistent current states and a future ideal (Donadieu 2002 ; Davodeau and Barraud 2018). This vagueness surrounding the baseline makes it a unifying element in the governance of landscapes, since it serves as a medium for the expression of various, even incompatible, desires and fears (Davodeau and Barraud 2018). Thus, in mountain territories facing "landscape closure", the reference to agro-pastoral landscapes and the need to keep them open are brandished as a unifying element (Peyrache-Gadeau and Perron 2010), being the object of a consensus, at least in appearance (Barnaud and Couix 2020).

An illusion of consensus around the baseline then emerges, which can mask tensions between divergent representations, or make certain points of view inaudible. For example, in the Pyrenees, the consensus on the need to maintain livestock and open landscapes in reality conceals contradictory opinions, for example in favor of rewilding (Barnaud and Couix 2020). This illusion of consensus is sometimes supported by scientific arguments, presented as neutral, whereas knowledge is historically and socially situated, and the mobilization of knowledge by local actors is also done in a strategic perspective (Barnaud *et al.* 2021).

Finally, the baseline is neither scientific evidence nor necessarily a consensus, but rather a matter of choice. Indeed, the choice of a baseline will determine the feasibility and effort required to achieve conservation goals (Bull *et al.* 2014). It is therefore necessary to set up discussion arenas, in which the definition of the baseline and the definition of its role in management will be debated at the same time (Mathevet *et al.* 2015 ; Moreau 2019). The objective is then to recognize the legitimacy of each person to "make the landscape", by means of their practices or the enactment of standards (Hatzfeld 2009).

Recognizing the plurality of viewpoints and their legitimacy within a constructivist approach is the basis of many participatory approaches (Barnaud and Mathevet 2015). The role of scientific knowledge in the definition of the baseline is then revised. Without falling into relativism, it is a question of recognizing the existence of other types of knowledge, such as local knowledge (Kai *et al.* 2014) but also recognizing that scientific knowledge is subject to numerous biases, and that scientists must also make explicit the biases underlying their hypotheses (Etienne 2010; Barnaud *et al.* 2021).

We have proposed to debate the baseline on Mont Lozère through a participatory approach to modelling (Etienne, 2010) based on a role-playing game (see Box4.4).

Our qualitative analysis revealed significant divergence of views on Mont Lozère around the question "Open landscapes, yes, but which ones?" (Moreau *et al.* 2019a).

Debating the baseline through a participatory approach therefore seemed necessary, which we did as part of a SECOCO (*Services ECosystémiques et action Collective*, 2015-2019) research project, conducted in partnership with the National Park team. We designed a role-playing game, SECOLOZ, modelling the effects of agricultural practices on landscapes and the ecosystem services they provide. Two workshops were organized on Mont Lozère, with farmers, elected officials and National Park agents (Moreau *et al.* 2019b). The analysis of the exchanges during the parties and during the debriefing reveals two points of debate on the baseline.

Firstly, participants debated the baseline's degree of naturalness. According to the farmers, the practices of rock removal and prairie turning are part of a long history of shaping landscapes through agricultural practices; there is nothing "natural" about these landscapes. For the Park's agents, the current changes are not of the same nature, due to their magnitude and irreversible nature. According to them, "naturalness" is not to be opposed to the "artificial" character of open landscapes: it is synonymous with biological richness. Thus, permanent or temporary grassland, although both resulting from human action, are in no way equivalent in their eyes in terms of biodiversity.

Secondly, during the game, the Park agents drew the attention of the other players to the evolution of the game board, thus using the game to alert them to the risk of a shift in the baseline on Mont Lozère. On the other hand, the breeders consider that the risk of shifting from the baseline is low, in a conservation context that tends to make landscapes more secure. More generally, the farmers argue that the baseline can be considered as a starting point, but not as a management objective.

We thus proposed a concrete device for debating the baseline. The simplification of reality, the playful aspect and the exchange of roles allowed us to distance ourselves from daily situations. The reflection initiated by the National Park, in which the SECOLOZ role-playing game was included, led to a modification of the authorization system, in order to promote mutual understanding between the Park and its citizens.

Box 4.4. *SECOLOZ, a role-playing game for debating the baseline*

Conclusion

Questioning the baseline leads us to collectively define a desirable nature and a desirable future, which is central in a context of global change. This review of the literature on the baseline and its shift, as well as our study of the changing landscapes of Mont Lozère, show the need to support the reflection of territorial actors with critical and integrated approaches, combining the study of social representations and practices, and the study of the ecology of the environments concerned. The material and immaterial dimensions of the baseline must be grasped both in the long term nature of their historical and political trajectory, in the plurality of points of view and the diversity of scholarly and

lay knowledge of the evolutionary processes. The ecological, economic, social and institutional transition of the territories is always in search of new development models, new values, new projects for the transformation of the socio-ecological community. Will a better knowledge of the baselines, (favoring a fine knowledge of our interdependencies through dialogue and action) be able to found new trajectories for our territories of life, and thus contribute to the well-being of humans and non-humans?

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