

Life_eco adapt50



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no. 2

Rise in temperatures and heatwaves: how do we adapt?



Life_eCO adapt50

Life eCOadapt50

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Presentation



Extreme heat is one of the main consequences of the climate crisis and one of the greatest challenges for municipalities around the world. Catalonia and the Mediterranean basin are particularly vulnerable areas.

According to the Seasonal Climate Bulletin of the Meteorological Service of Catalonia (summer 2025), last summer was the hottest in the 121 years of data at the Ebro Observatory. For the ninth consecutive year, temperatures exceeded 40°C (16 days in total, with a maximum temperature nearing 44°C in the Ribera d'Ebre), an unprecedented record.

In this context, we dedicate this second issue of the magazine to extreme heat and the increase in the number, duration, frequency and intensity of heatwaves. The data show that 2025 was not an exceptional year, but part of a growing trend that severely affects people's health and economic sectors.

Last November, at COP30 in Brazil, the Beat the Heat Implementation Drive was launched, a joint initiative of the Brazilian Presidency, the United Nations Environment Programme (UNEP) and the Cool Coalition, with the aim of accelerating the adoption of sustainable cooling and resilience solutions in cities, combining passive design, nature-based solutions and clean technologies.

The campaign is based on a worrying reality: more than 1 billion people do not have access to adequate cooling, and, without action, this figure could triple by 2050, contributing to hundreds of thousands of heat-related deaths each year. The most vulnerable groups are low-income people, the elderly, women, outdoor workers, residents of poorly conditioned buildings and smallholder farmers, who depend on the cold chain to market their produce.

As UNEP Executive Director Inger Andersen reminds us, "we cannot solve the heat crisis with air conditioning: this would increase emissions and costs. Passive, efficient, nature-based solutions can meet the growing needs for cooling and protect people, food chains and economies while we pursue global climate goals. We have no excuse: it is time to fight the heat."

The widespread rise in temperatures is having increasing impacts on the sectors with which Life eCOadapt50 works. In the agricultural and forestry sectors, extreme heat accelerates water stress, promotes pests and diseases, and increases the risk of fires, altering crop productivity and forest health. In the fishing sector, warming water alters marine ecosystems, displaces species, and affects the availability of resources. At the same time, the tourism sector has its activities constrained by reduced climatic comfort, limitations on the use of outdoor spaces and the need to adapt facilities and services. These effects, increasingly evident, are the starting point for the articles that make up this issue.

We would like to thank the authors for their contributions to this issue, in which they share how extreme heat and the widespread rise in temperatures affect their sectors of activity and what strategies can help to strengthen resilience.

Let's co-create adaptation!

Editorial team



1. The analysis

1.1 Catalonia facing the challenge of extreme heat: knowledge, projection and response

Marc Prohom i Duran

Head of the Climatology Area.

Meteorological Service of Catalonia (SMC, by its initials in Catalan).

Government of Catalonia

Climate change is no longer a future hypothesis but an ongoing process that is profoundly transforming the climate of Catalonia. Among its most evident effects are the rise in average temperature and, above all, the intensification and increased frequency of heat extremes. The latest reports from the Meteorological Service of Catalonia (SMC, by its initials in Catalan), via the Annual Bulletin of Climate Indicators (BAIC, by its initials in Catalan), show sustained and accelerated warming of the region, with direct consequences for human health, ecosystems and economic activities. Through a question-and-answer format, this article paints a clear picture of the phenomenon and puts figures on the extreme temperature changes already being observed and expected in Catalonia and its area of influence, and points to some actions to adapt to them.

What is meant by a *heatwave*?

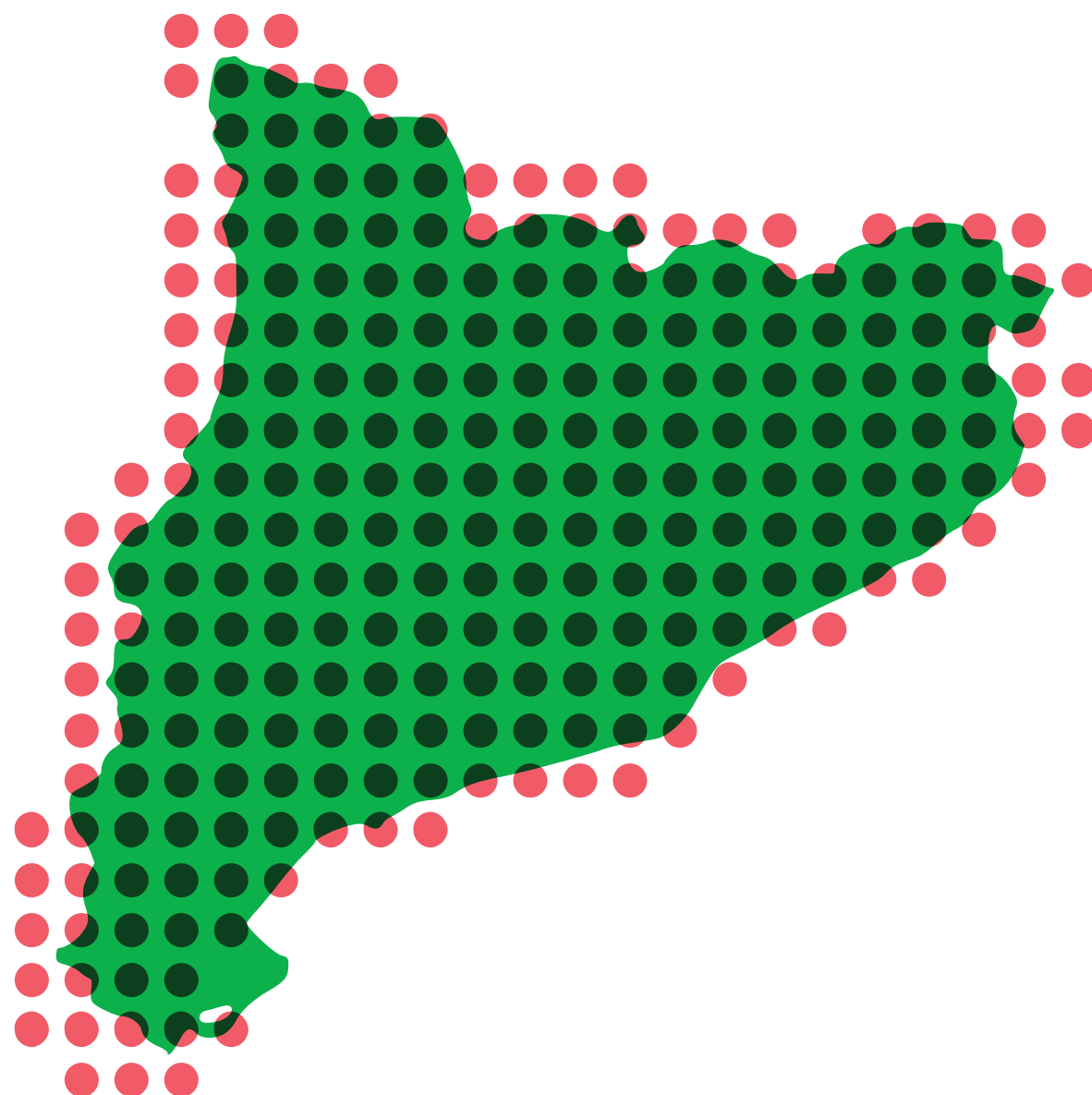
A heatwave can be broadly defined as a prolonged period with temperatures clearly above average that affects a large geographical area.

In Catalonia, the SMC considers a heatwave to be an episode in which, for at least three consecutive days, the maximum temperature exceeds the 98th percentile of daily summer (June–August) values calculated for each municipality. If, on a one-off basis, this threshold is exceeded for one or two isolated days, it is referred to as intense or very intense heat, but without the added element of persistence. At the European level, there are similar definitions based on high percentiles and a comparable minimum duration. In Catalonia, furthermore, for the past two summers, the SMC has been issuing warnings for night-time heat when the minimum temperature exceeds the 98th percentile. This is due to the evidence that these conditions have a direct impact on thermal comfort, the quality of night-time rest and the health of the population.

What do a hot day, a *scorching day*, a *tropical night*, a *torrid night* and a *sweltering night* mean?

Several years ago, the Sectoral Climate Indices Expert Team (ET-SCI), under the supervision of the World Meteorological Organization (WMO), defined a set of climate extremes indices based on daily temperature and precipitation series, which allow for diagnosing their past and future evolution in the context of climate change and can be applied to any type of climate. Among these indices, the following were identified:

- Hot day (HD): a day with a minimum temperature of 30°C or above.
- Tropical night (TR): a night with a minimum temperature of 20°C or above.





Over the years, in addition to continuing to consider these indices, new ones have had to be defined to adapt to the new climatic reality, and the concepts of *torrid night* (with a minimum temperature of 25°C or higher) or *sweltering night* (when the minimum temperature does not drop below 30°C) have emerged, the latter being a phenomenon that is still uncommon, but which has already been observed sporadically in our area.

Is Catalonia more vulnerable than other countries in Europe and the Mediterranean?

The Mediterranean basin is a climate hotspot, that is, an area where a rate of warming above the global average is observed and projected, as well as an increase in combined risks (heatwaves, droughts, wildfires). The assessments by the Mediterranean Experts on Climate and Environmental Change (MedECC) and the IPCC explicitly highlight this.

In this regard, Catalonia combines several vulnerability factors: (1) a high exposure to warm African advections and persistent anticyclones in summer, due to its location in south-western Europe, (2) dense urbanisation across much of the territory, which exacerbates the phenomenon of the urban heat island, and (3) chronic water stress that increases the risk of fire in an extensive forest mosaic, especially with drier and hotter summers.

How do we know if heatwaves will increase in the future?

To produce climate projections, global and regional models are used which, first, reproduce past climate (a process called *hindcasting*) to verify that they can accurately simulate long-term climate patterns and trends. Subsequently, once validated, simulations are run into the future based on the different emission scenarios (RCP/SSP). For Catalonia, the SMC has developed ESCAT-2020, using statistical downscaling (at 1km resolution) and applying the RCP2.6 (moderate), RCP4.5 (intermediate) and RCP8.5 (intensive) scenarios. These ensembles allow changes up to 2050 (and indicative trends up to 2100) in temperature averages and extremes, such as intense heat episodes, to be estimated.

Magnitude of the change: what has happened and what is expected in Catalonia?

The SMC documents a clear increase in heat extremes and a decrease in cold extremes in Catalonia, with heatwaves of greater intensity, duration and frequency, and a sharp rise in tropical and torrid nights, especially along the coast and in urban areas. In recent years, Barcelona has exceeded one hundred tropical nights at urban observatories and has broken records for torrid nights, reflecting the heat island effect and local warming (*Figure 1*).

Regionalised projections at 1 kilometre (ESCAT-2020) indicate, for the whole of Catalonia, very substantial increases in heat indices before mid-century, especially in the RCP8.5 scenario. Some of the most notable projected changes, with the 1971–2000 period as the reference baseline, are as follows:

- Hot days (TD $\geq 30^{\circ}\text{C}$, DC): increases of the order of +20 to +40 days/year (*Figure 2*).
- Tropical nights (TN $\geq 20^{\circ}\text{C}$, TR): typical increases of +15 to +30 nights per year, with the most significant increases along the coast.

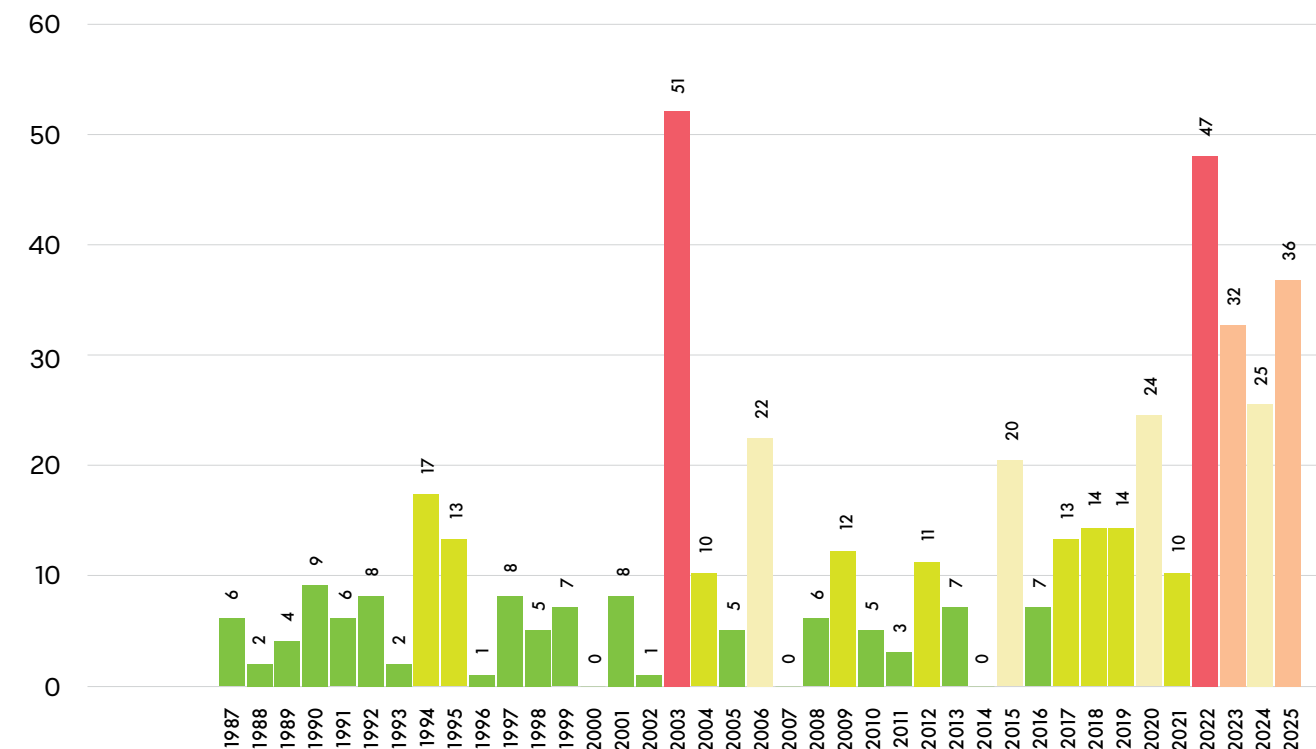


Figure 1. Evolution of the annual number of torrid nights (TN > 25 °C) in Barcelona. Can Bruixa (Les Corts) weather station, 1987-2025

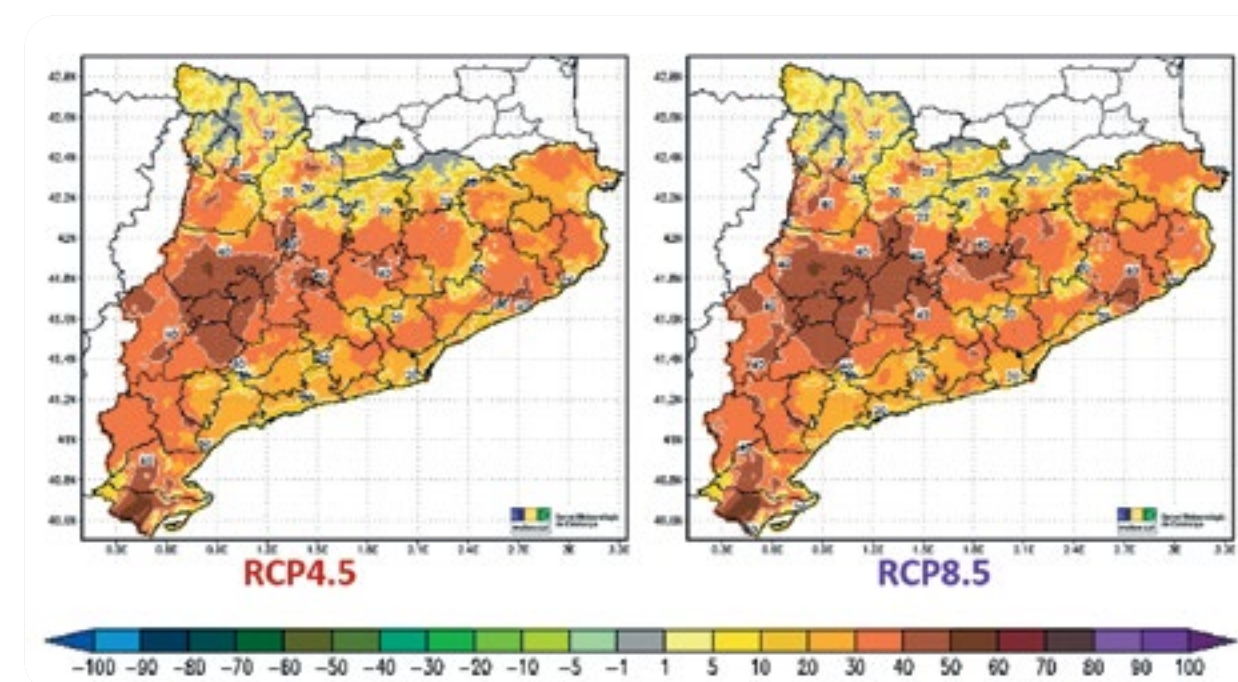


Figure 2. Projected maps of the increase in the number of hot days (TX > 30 °C) for the 2021-2050 period compared to the 1971-2000 period, and for two climate change scenarios: RCP4.5 (left) and RCP8.5 (right).



The Mediterranean basin is a climate hotspot, meaning that it is experiencing and is projected to experience a rate of warming above the global average.

Implications for health, the city and the territory, and priority technical adaptation measures.

The implications of these thermal extremes are evident across all sectors, and the health sector is the one that suffers the greatest impact, with a very marked increase in morbidity and, eventually, mortality. According to data from ISGlobal, the summer of 2024 is estimated to have caused more than 62,000 deaths from extreme heat across Europe, of which 1,100 were recorded in Catalonia, placing public health and healthcare systems under strain. With a climate that is forecast to become increasingly hot, these figures are unlikely to decrease unless effective adaptation policies are implemented, such as alert systems and health protocols focused on the most vulnerable groups in the population. Furthermore, of all geographical areas, cities are, without a doubt, the most intensely affected, making them highly vulnerable ecosystems that exacerbate extreme temperatures.

The paving of streets and the traditional building materials used are sources of heat accumulation during the day, which release it at night, a phenomenon that exacerbates the urban heat island effect. All of this is compounded by a lack of extensive green spaces that could act as thermoregulators. In these cases, urban cooling should be promoted, based on nature's solutions: more shade, encouraging evapotranspiration, and green roofs and façades are some examples, as is the de-densification of the urban continuum through the creation of new green spaces. Finally, another sector heavily affected by heat extremes is agriculture. The advance of heat in the calendar causes phenological dysfunctions, with earlier flowering and fruit ripening, which in turn leads to reduced pollinator efficiency, while heatwaves cause damage to crop quality and yields, especially in the case of fruit trees. In this area, remarkable progress has been made in the efficient use of water (smart irrigation) or in the search for crop varieties more resilient to the new climatic reality.

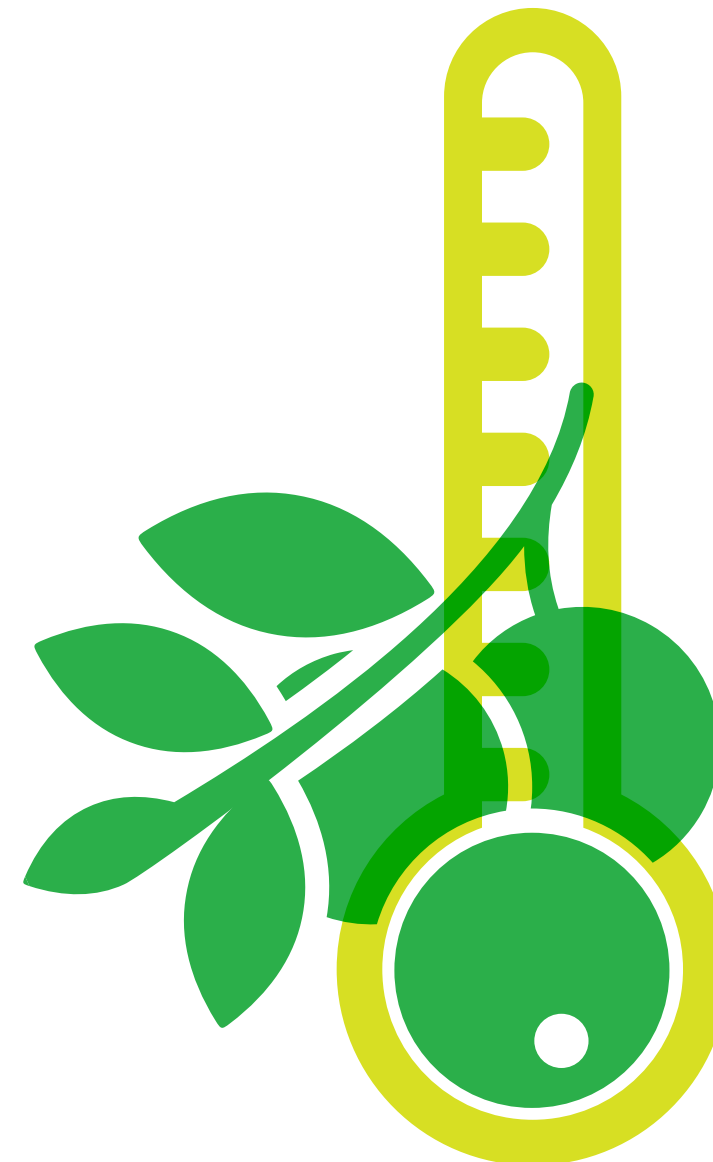
In short, extreme heat in Catalonia is no longer a one-off phenomenon, but a structural feature of our changing climate. Extreme heat episodes have become more frequent, more intense and longer-lasting, and can occur outside the classic summer period. Faced with this reality, the capacity for adaptation, both technical and social, will be crucial in turning a climate threat into a challenge of collective resilience and smart management of the territory.

1.2 Impacts of extreme heat on the Catalan agri-food sector

Anna Pallí

Head of the Technology Watch and Quality Assurance Offices.
Institute for Agricultural and Food Research and Technology

COP30 in Belém has just concluded, once again placing the climate at the heart of the production agenda. At the opening, President Lula da Silva appealed for the need to make bold decisions and warned of the importance of combating climate denial. For decades, science has been warning that global warming will soon exceed 1.5°C and that this is bringing us closer to potentially irreversible tipping points in ecosystems, as well as causing significant changes in sea level. Although the agreements reached remain insufficient, the message resonates strongly in a Mediterranean region like Catalonia, where the agri-pastoral sector will be increasingly exposed.





The Mediterranean context will be one of the most affected, with longer and more intense heatwaves, tropical nights, recurrent droughts and chronic water stress. In Catalonia, this translates into reduced water availability, increasing crop variability, more fragile and vulnerable soils, and growing competition between agricultural, urban and environmental uses. What we are able to achieve collectively in the coming years will be crucial in mitigating the risks to water and food.

The impacts on the agri-food sector are multiple and interconnected. In livestock farming, extreme heat causes thermal stress; reduced intake, lactation and fertility; more health and welfare problems; mortality during severe episodes; and an increase in water and energy consumption for cooling. In agriculture, the combination of high temperatures and water scarcity leads to yield and quality losses, phenological alterations, the proliferation of emerging pests, and the degradation of pastures and soils. Furthermore, drought and heatwaves increase the risk of new-generation fires, with potential impacts far exceeding historical levels.

Indeed, drought is now one of the most tangible effects of climate change in our region, and has gone from being an occasional phenomenon to becoming a recurrent risk, with longer and more severe episodes. In response, in recent years public policies have combined the modernisation of irrigation with planning tools and incentives for changing practices. Investments in localised irrigation, automation, remote monitoring and support for scheduling have reduced the water allocation per hectare on many farms. At the same time, the combination of these improvements with crop changes and the adaptation of practices (the introduction of less demanding species, varietal improvement, vegetation cover, regenerative agriculture) is gaining ground, along with river basin planning tools to assess the water balance at a system level and not just at the plot level, as promoted by the Water Framework Directive.

Without being able to abandon mitigation efforts, adaptation to climate change is already a necessity and a pillar of productive strategies. Measures such as shading and ventilation, more efficient drinking troughs, early warning systems and heatwave response plans need to be strengthened. It is also essential to adapt calendars, management methods and genetic improvement strategies aimed at resilience. In parallel, silvopasture systems, agrovoltaic and tree-shade solutions are being explored, as well as the use of sensors, data-driven decision-making and the deployment of new insurance and risk management tools.

However, adaptation cannot be purely technical. We must address the challenges related to the economic viability of farms, access to finance and the barriers to technological adoption. We need a deeper understanding of the problem at a systems level and its local manifestations to drive new business models and multi-stakeholder governance capable of managing the complexity of the challenges. All of this must also be geared towards ensuring food security, territorial equity and intergenerational succession, three pillars that will shape the resilience and future of our agricultural sector.

Scientists insist that we still have time and that we know what needs to be done to steer food systems within the planet's limits. But only if we bring together the talent and energy of businesses, farmers, the scientific community, institutions and citizens around a shared vision will we succeed in ensuring that food continues to be a key element of our economy and a strategic pillar of well-being, health and prosperity for all of Catalonia.



Photo © IRTA



Photo © IRTA



1.3 Forests on the ropes: the challenge of adapting to an accelerating climate

Anna Sanitjas

Head of the Technical Office for Municipal Forest Fire Prevention and Agricultural Development. Barcelona County Council

In 2022, the DeBosCat network detected 33,072 hectares in Catalonia affected by drought and extreme heat. In 2023, the figure rose to 66,500 hectares, double the previous year, setting a sad historic record. Each summer seems to start earlier and end later. Nights do not cool down, heatwaves are longer and the risk of fire increases, along with other climate impacts such as drought. Climate change is putting Catalonia's forests under increasing pressure.

Many of the trees we have today were born under conditions very different from those of today: with more water, higher humidity and a more favourable climate and weather. Now, with prolonged droughts and intense heat, these trees are suffering: they lose vigour, weaken and become more vulnerable to pests and diseases. The situation is worsening because, over the past few decades, we have abandoned forest management. And when a Mediterranean forest is left unattended, more undergrowth grows, there are more trees, and they all compete for increasingly scarce water. This leaves our forests more vulnerable than ever, a fragile ecosystem where a lot of fuel and dry material accumulates, creating the perfect conditions for a major wildfire.

The question is inevitable: what will happen to our forests? Well, they will change, and nature will reorganise itself. Some forests will remain as they are, others will lose certain species and, in some cases, much of the tree cover could disappear and turn into scrubland. If this process is not managed, the change can be sudden and dramatic: we could see large-scale forest fires that endanger human lives, cause significant biodiversity loss and release thousands of tonnes of CO₂ into the atmosphere. But a planned and orderly reorganisation is also possible, based on sustainable forest management, which generates wealth for the region and allows for the creation of landscapes that are more robust, more resilient and viable both ecologically and socially and economically. The decision is in our hands.

Adaptation involves managing more effectively: reducing densities (felling trees!), mixing species, promoting diverse (young and old) and vigorous forests, and restoring mosaic landscapes to help curb fires. Fire prevention plans, forest management instruments and the designation of priority management areas are tools that help us act judiciously and efficiently in forests that need us to work on them and invest in them strategically.

The challenge is immense: to adapt forests that have grown quickly to a climate that is changing even faster. But significant opportunities also arise: reactivating forest management can generate economic activity; for this reason, we must promote the use of wood as a renewable material, support forest carbon credits, or boost non-timber products. Joint land management, associations of forest owners and shared governance are also part of the solution.

Forests are an essential ally in the fight against climate change. Preparing them for extreme heat and drought is investing in a safer, more sustainable and better future for everyone.



Photo © Marta Juan

Forests are an essential ally in the fight against climate change. Preparing them for extreme heat and drought is investing in a safer, more sustainable and better future for everyone.



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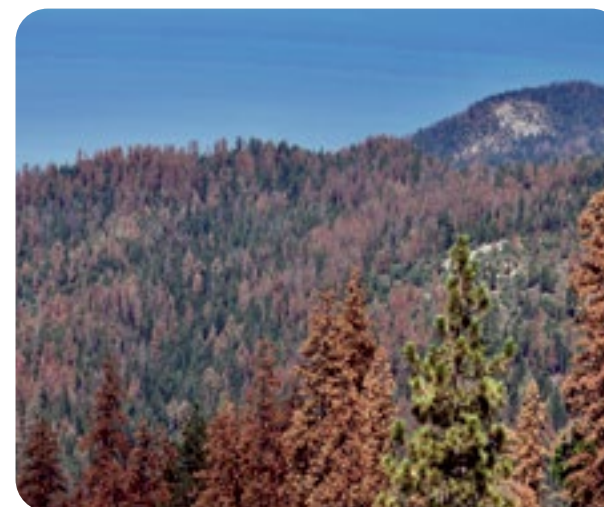


Photo © Francisco Lloret



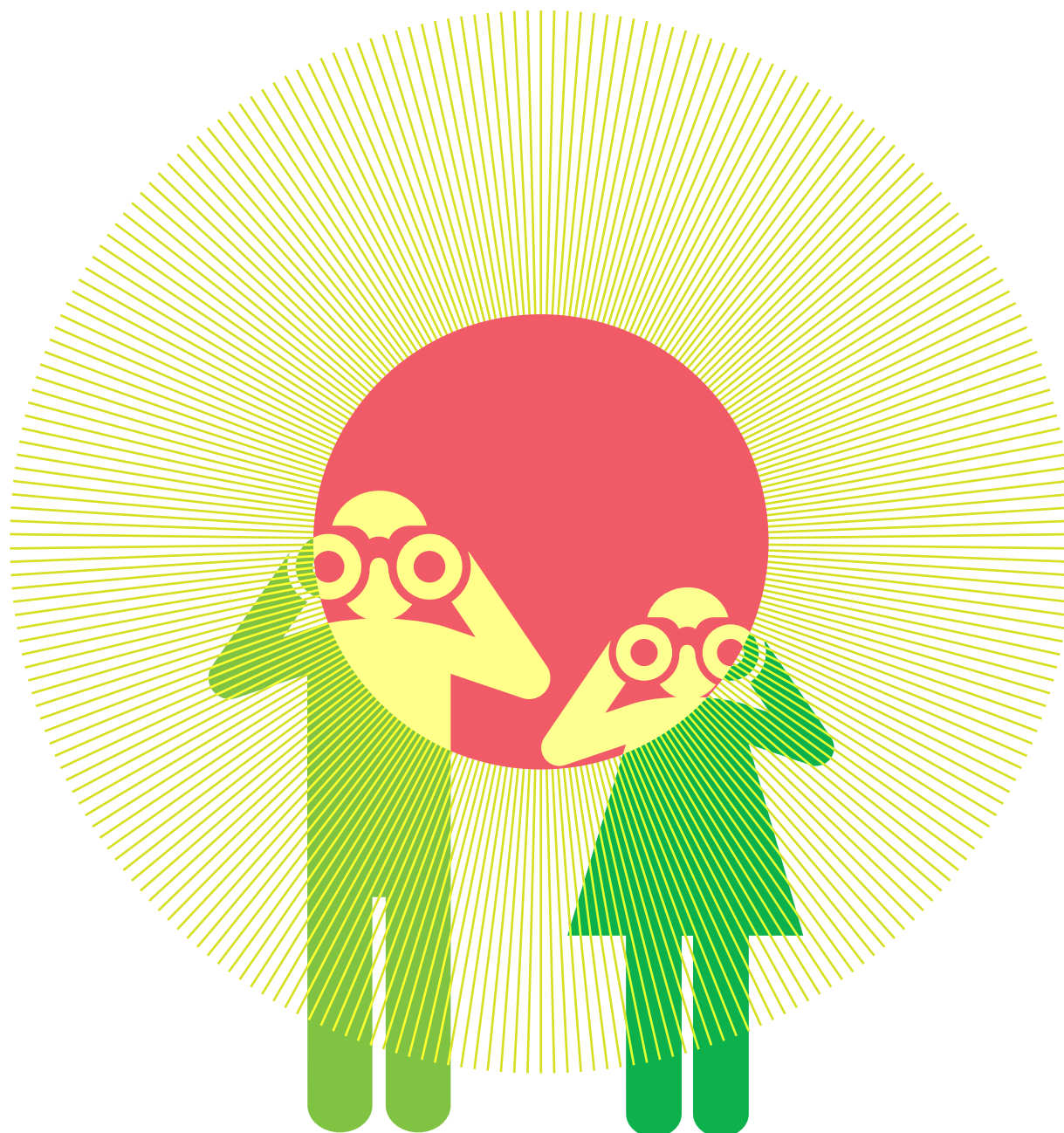
Photo © Oriol Clavera



1.4 Extreme heat and tourism

Ernest Cañada

Member of Alba Sud and postdoctoral researcher
at the University of the Balearic Islands (UIB)



One of the manifestations of the climate change we are currently experiencing is the intensification of heat and, in particular, extreme episodes. This situation increasingly puts everyday life at risk in many territories and, in turn, increases the risks of tourism activity, forcing us to reconfigure socio-economic dynamics. Global warming has altered the conditions that allow for tourism, and in Catalonia this affects us in various ways: extreme heat that advises against visiting certain territories at certain times of the year, which may coincide with the high season, or working in impossible conditions both outdoors and in enclosed spaces, such as kitchens; a decline in the amount of available snow, which prevents associated sporting activities, or the intensification of weather phenomena, such as severe storms with downpours that overwhelm existing infrastructure, among other problems.

Catalonia, one of the world's leading tourist destinations, is being forced to confront challenges that have a global dimension. Measures are needed to tackle risks that are not merely conjunctural, and for this reason we must plan socio-ecological transition processes that make life possible. Firstly, we must reduce the vulnerability to which processes of productive specialisation expose us. Therefore, the reduction of tourist activity in some territories must be accompanied by an increase in industry, primary activities and other services. The objective should be to rebalance our economy on territorial units much smaller than the national scale. Secondly, we need a tourism relocated to the geographical vicinity, which reduces the climate footprint of transport. And this implies a larger and better public transport network and giving municipalities greater management capacity. Thirdly, we must make our cities greener, not only for tourism but, fundamentally, for living and working in them, with more vegetation, water features and climate refuges. Fourthly, the transition in the tourism sector should not be carried out by exacerbating social inequalities. This would mean allocating more resources to policies that guarantee access to local tourism for the majority and, therefore, would require greater policy coherence, understanding that you cannot do whatever you like and expect global warming not to take its toll.



Photos © Cambra de Comerç de Barcelona (CCB)



1.5 An ever-warmer sea: challenges, opportunities and adaptation of the Catalan fishing sector

Lucía Espasandín i Marta Coll
Institute of Marine Sciences (ICM-CSIC)

The Mediterranean is warming 20% faster than the global average, considered one of the regions on the planet most affected by climate change. Catalonia is situated in this basin and already clearly shows the consequences of a changing environment. The Catalan Sea has seen a rise in sea temperature of 0.35 °C per decade since the 1970s and an increase in heatwaves, which are becoming increasingly frequent and intense. The change has only just begun; these are trends that are expected to continue in the future.

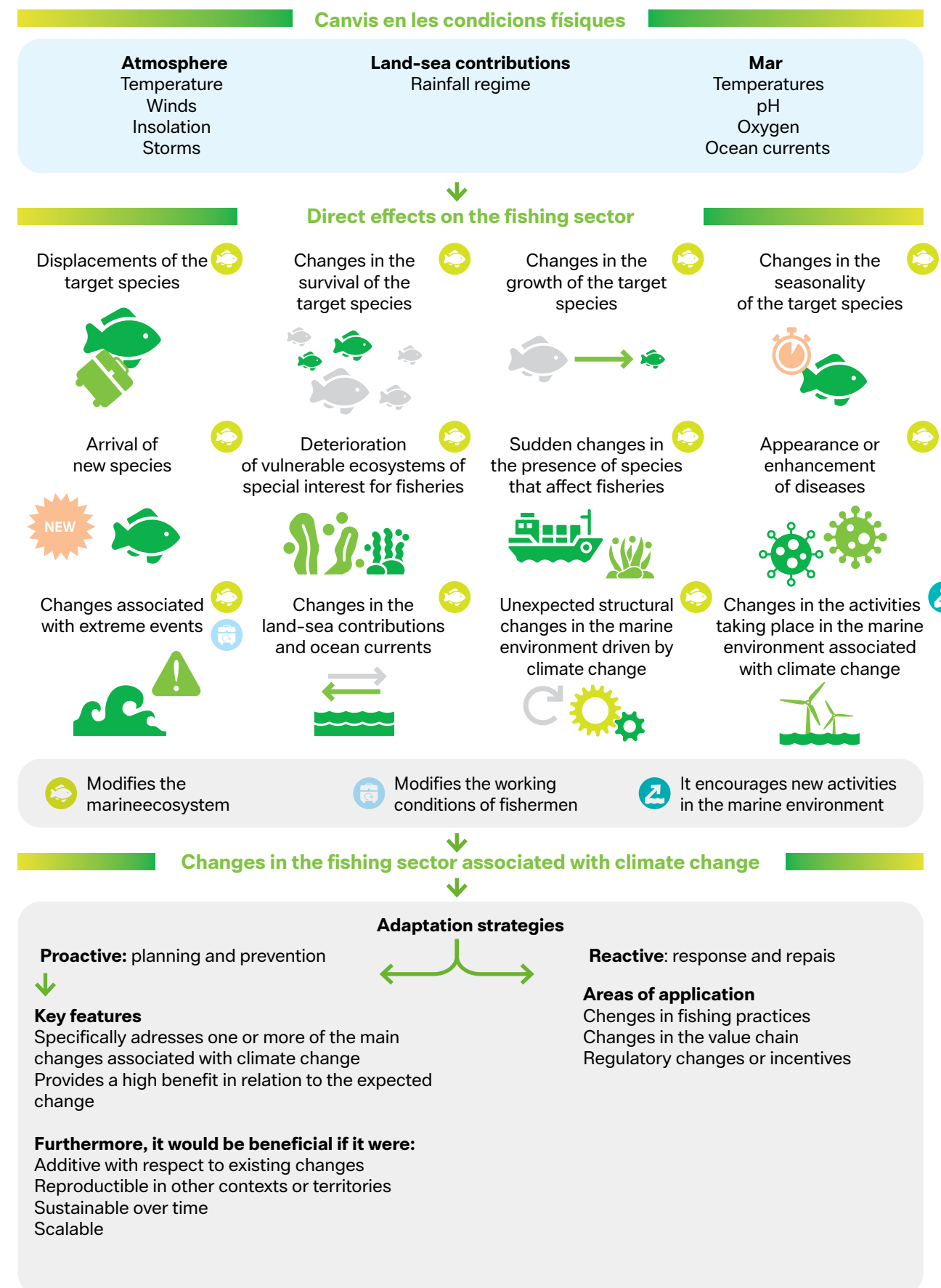
Sea warming and heatwaves affect the survival, abundance, distribution and life cycle of marine species. Their consequences also affect the fishing sector, as it depends directly on marine resources.

On the Catalan coast, heatwaves have been shown to cause the mortality of corals, gorgonians and Posidonia oceanica seagrass meadows, habitats that are essential for many commercially important species. The rise in temperatures also favours the arrival of warm-water species and the decline of cold-water ones, disrupting food webs and altering the composition of marine communities. These changes are reflected in the composition of catches and in fishermen's incomes, creating new fishing opportunities but also challenges due to the loss of high-value commercial species. In this context, the arrival of non-native species is also facilitated, as they now find a suitable environment in which to thrive. Furthermore, climate change alters the life cycle and seasonality of commercial species, modifying their breeding and migration periods. This causes mismatches with fishing calendars and current closed seasons, which will need to be adapted if the sector is to remain sustainable in a changing environment.

Finally, it is important to emphasise that not all fleets are or will be affected equally: some will be able to adapt easily, while others will face greater difficulties. Thus, "winners and losers" of climate change emerge.

The fishing sector's response to the warming sea is inevitable, but it can be reactive, with more serious undesirable impacts, or proactive, which would allow for the generation of opportunities and the minimisation of negative impacts. Some of the measures that can be carried out to adapt to the new reality are habitat restoration, adapting marketing, or adopting more flexible and participatory management to anticipate and adjust to a rapidly changing environment. Catalan fishing, with its experience and knowledge of the sea, can be an example of resilience in the face of an increasingly warm Mediterranean Sea. To this end, it is necessary to get started and adapt proactively, redefining the relationship with the sea to secure the future of fishing.

Climate change





2. Studies and data

2.1 Current situation and future scenarios for Mediterranean crops in the valleys of Camprodon

Jordi Puig Roca

Coordinator of L'Espigall Agroconsultoria



The Valls Circulars project by the Mancomunitat de la Vall de Camprodon incorporates a climate study that has analysed the agroclimatic evolution of the Camprodon valleys (Ripollès) by comparing the baseline climate scenario with two future climate projections (RCP4.5 and RCP8.5), and focusing on its impact on several strategic Mediterranean crops: wheat, vine, almond tree and olive tree. The climatic characterisation has been based on three variables: the type of summer, the type of winter and the moisture regime, which are determining factors in the production cycle and the viability of these crops.

In the base climate period, the region predominantly experiences wheat summers —moderate maximum temperatures and cool minimum temperatures— across 40% of the territory, especially in the higher areas, and maize —the summer is long enough to allow the maize cycle— across 27.3%, particularly in the valley bottoms. It also features cool-oats winters —the winter allows for the production of oats sown in autumn— across 62% of the territory. These conditions favour winter cereals but limit the expansion of more thermophilic Mediterranean crops. Projections indicate a widespread increase in temperature: under the RCP4.5 scenario, warm summers progressively expand, while under RCP8.5 they will clearly dominate, with a notable reduction in cold winters and a shift towards warmer categories.

Regarding the moisture regime, a transition is observed from wet or permanently wet regimes towards regimes with higher water stress during critical periods of the crop, especially in the RCP8.5 scenario, which will increase the dependence on irrigation or water storage systems to ensure stable yields. This change affects the crops analysed differently: wheat can adapt to a greater extent, while the olive tree and the almond are more sensitive to frost and drought, respectively.

The results of the territorial suitability analysis —that is, the assessment of each area's degree of fitness for different crops— indicate that much of the territory will maintain favourable conditions for winter cereals, which will increase in future scenarios as new thermal windows open at higher elevations. However, the vineyard will double its suitability, rising from the current 7,963 ha of potential to nearly 13,150 ha in future scenarios, always on south-facing sites with well-drained soils. Almond trees shows very strong growth potential (from 3,200 ha of current potential to nearly 10,000 ha in future scenarios), conditional on late-flowering varieties, as the risk of frost will remain high. Olive trees will increase their suitability, from the current 8,000 ha of potential to around 13,000 ha in the future. Despite the improvement of viability, the crop will need to be planted on south-facing slopes to avoid thermal inversion and persistent humidity, which can lead to phytopathologies.

Similarly, the study highlights that warmer conditions could extend the agricultural season, opening the door to new management systems (later sowings, different-cycle varieties, introduction of new plant materials). Nevertheless, the soil–water duo remains the main limiting factor: the deeper, richer soils in the valley bottoms will face the greatest water stress, while the poorer, more acidic soils will receive more rainfall, although the adaptability of the crops, especially those studied, may be lower.

In summary, the future climate of the Camprodon valleys and many Pyrenean valleys points to a clear Mediterraneanisation, which could partially favour the expansion of vines, almond and olive trees, provided they are planted on well-oriented sites and on mid-slope areas (away from the valley floors and the highest parts). Cereals remain a reliable and adaptable crop, but with possible yield reductions if summer drought intensifies. This will have a very significant impact on the agroforestry matrix, as the expansion of agriculture into mountain areas, which are currently predominantly forested or used for grazing, could facilitate the creation of new agroforestry mosaics that are more resilient and better adapted to the new climatic conditions.



Photos © Jordi Puig



2.2 The future of forests in the face of a warmer, drier climate

Jordi Margalef, Jordi Vigué and Míriam Piqué

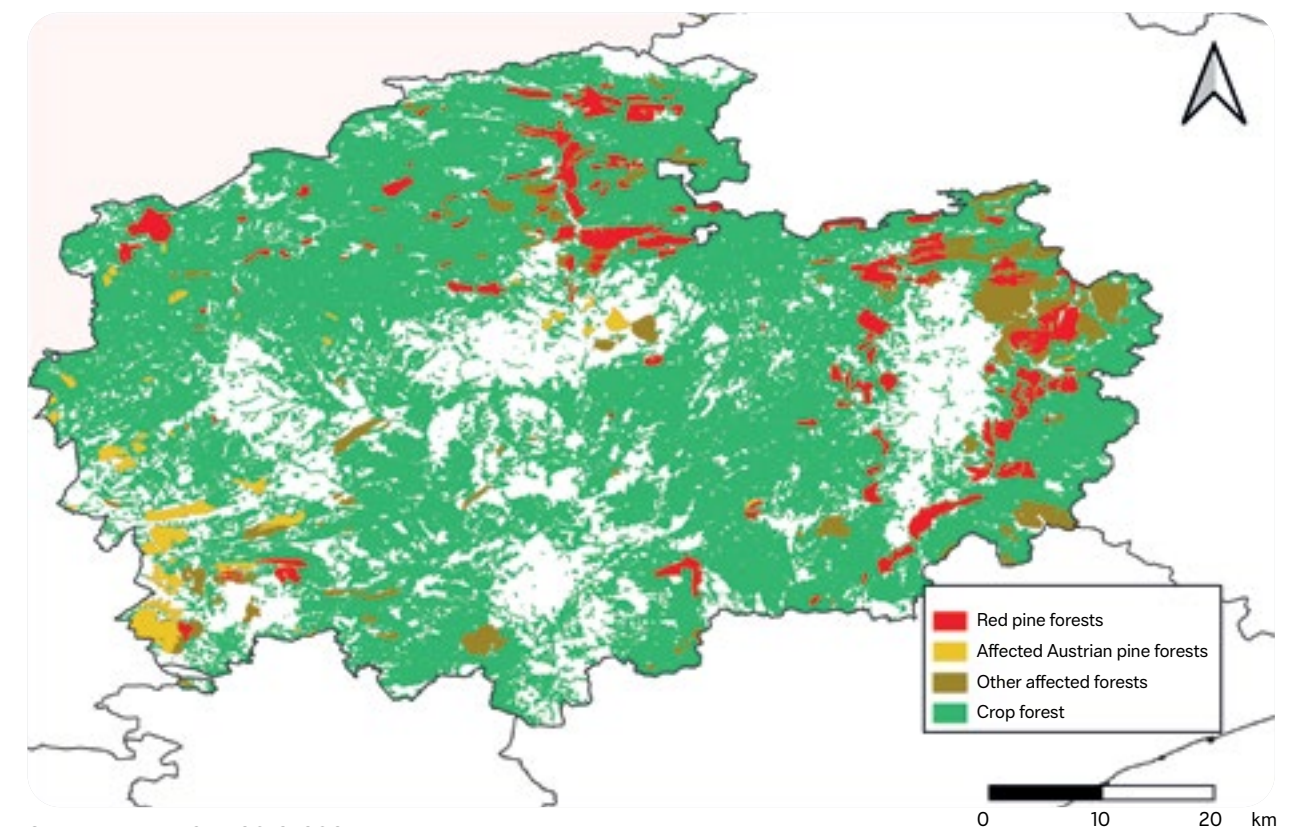
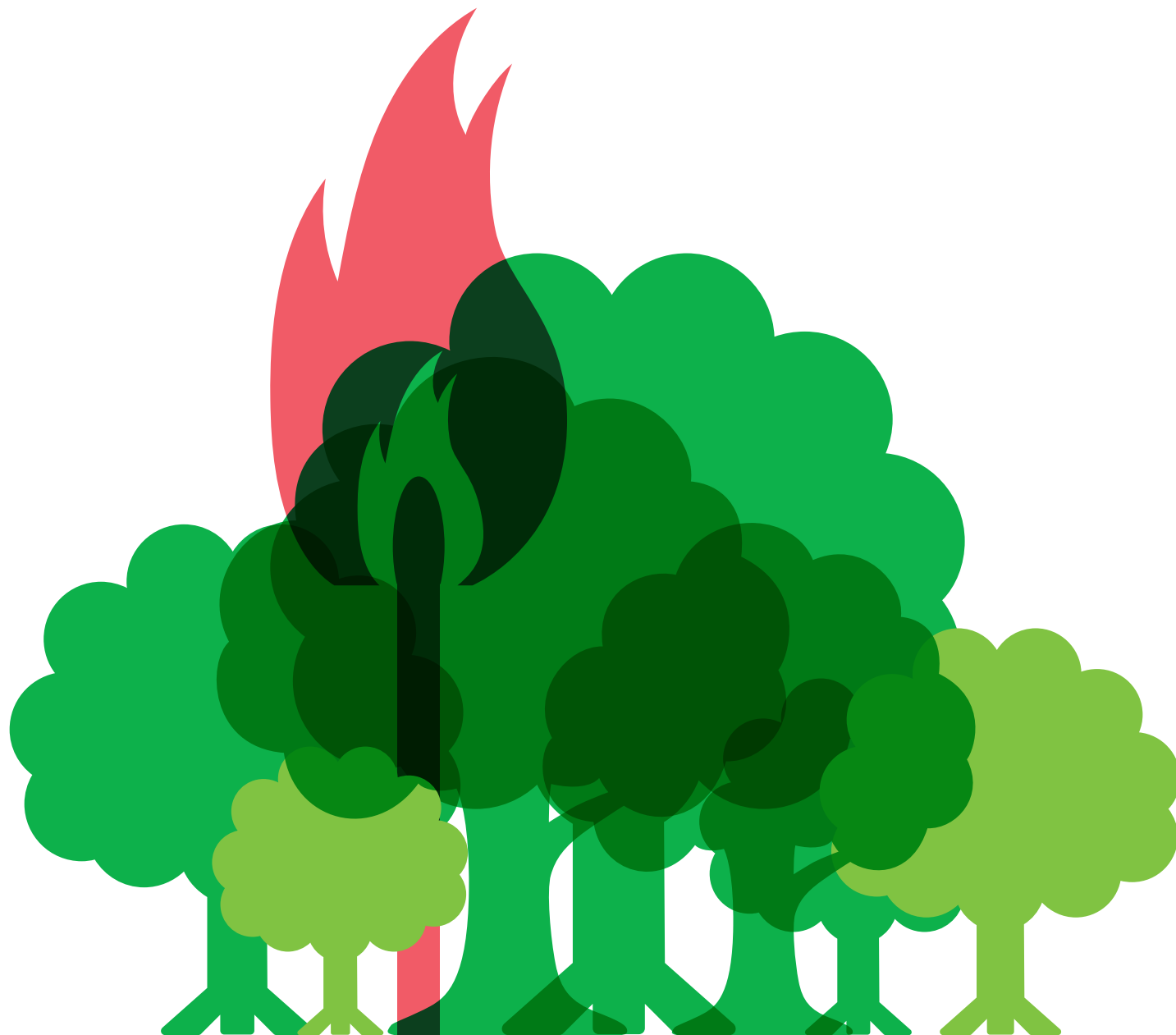
Multifunctional Forest Management Programme.

Centre for Forestry Science and Technology of Catalonia (CTFC)

The rise in temperatures and the intensification of associated extreme events (heatwaves) directly affect forest ecosystems. Firstly, they can cause a loss of vigour and productivity in trees due to the increased evaporative demand, already high at our latitudes. This translates into reduced growth and, consequently, a lower capacity for forests to act as carbon sinks.

Secondly, elevated thermal stress can affect forest health, weakening crowns and other tissues, and making trees more vulnerable to pathogens and pests. Furthermore, it can increase the vulnerability of forests to wildfires, due to greater exposure to drought and high temperatures, resulting in a larger amount of fine dry fuel that facilitates fire spread. Ultimately, rising temperatures and extreme heat events can severely affect the provisioning (production of timber, biomass, cork or other forest products) and regulating (carbon sequestration, water regulation, soil protection, etc.) ecosystem services, as well as the biodiversity associated with these forests.

According to DeBosCat data, red pine and Austrian pine forests are among the most affected forest formations in Catalonia, especially in Central Catalonia. The map shows the distribution of red pine and Austrian pine forests that have experienced defoliation or mortality attributable to drought and rising temperatures, according to the Catalonia Forest Monitoring Network (DeBosCat, 2012–2024).



Source: DeBosCat, 2012–2024



This phenomenon is explained, in addition to the reasons already mentioned, by the fact that the red pine's distribution in these areas is at its limit. Being close to the limits of environmental tolerance exacerbates the negative effects of climate change and of thermal and hydric stress.

Most research agrees that the tree canopy acts as a buffer against extreme temperatures, so that beneath it the effects of heatwaves are mitigated. Forest management can help reduce vegetation's water stress. In this context, appropriate forest management can be an effective tool for reducing the weakening of stand induced by the water stress associated with heatwaves, while also maintaining the capacity to regulate the microclimate and increasing the level of prevention against fires and other impacts.

In these forests, it is particularly advisable to apply continuous cover silviculture, with gentle and progressive clearings that allow a stable canopy to be maintained and, at the same time, to moderate competition for resources; maintain or promote the most adapted species to diversify the stand; combine these measures with selective clearings of the undergrowth, and improve forest structure to prevent fires. Often the red pine forms mixed stands with various broadleaved species, and it is worth considering interventions aimed at changing the dominant species. Furthermore, maintaining the forest canopy and part of the shrub layer is fundamental to promoting the establishment of regeneration, a key stage in the forest cycle that is particularly sensitive to extreme heat and drought events. In this regard, naturalistic or nature-like management presents itself as a good option for maintaining the ecosystem services provided by the forest to the fullest extent, especially those related to climate regulation.



A stand of red pine in Seva (Osona) with high mortality following the 2023 drought. The stark difference between the resistance of the stone pine and the red pine is evident.
Photos © CTFC

2.3 Climate action plans in tourism: a strategic and operational tool for territorial adaptation to extreme heat

Josep Rodríguez

Head of the Strategic Projects and Cross-cutting Action Section.
Tourism Services Management. Barcelona Provincial Council

The *Guide to Climate Action Plans in Tourism*, developed by the Community4Tourism project under the Interreg Euro-MED programme, provides a methodological framework for designing climate action plans aimed at the tourism sector in the Mediterranean. Although it is primarily aimed at regional and local authorities and destination management organisations (DMOs), its application can be extended to other stakeholders in the sector.

The guide starts from a clear premise: climate change has a cross-cutting impact on all economic and social activities, and its management requires an integrated approach. The sustained rise in temperatures, droughts and heatwaves —increasingly frequent and intense in the Mediterranean basin— jeopardises not only the sustainability of tourism but also the viability of local production systems and the health of ecosystems.





This guide becomes an operational instrument for translating climate commitments into concrete actions, adapted to the local context.

The document proposes structuring action plans around the five pillars of the Glasgow Declaration on Tourism and Climate Change: measure, decarbonise, regenerate, collaborate and finance. This framework facilitates the incorporation of climate adaptation into territorial or business development plans. Thus, for example, a rural accommodation can integrate energy efficiency measures, natural shading and passive ventilation to reduce exposure to extreme heat, or a forestry operation can use this framework to assess fire risks and plan adaptive management of forest stands.

Among the recommended adaptation measures are efficient water management, the introduction of resilient plant species, the installation of green roofs or natural cooling systems, the restoration of ecosystems for microclimatic regulation, and the promotion of low-carbon local products. These actions not only reduce vulnerabilities but also strengthen the territory's appeal and competitiveness.

The guide emphasises the importance of multi-stakeholder, multi-level collaboration and promotes synergies between administrations, the private sector, research and the local community. Integrating climate action plans into territorial or business strategic plans allows for the establishment of measurable objectives, monitoring indicators and funding streams aligned with European frameworks.

Ultimately, this guide becomes an operational instrument for translating climate commitments into concrete actions tailored to the local context. For Mediterranean rural territories, it represents an opportunity to anticipate risks, strengthen resilience and advance towards regenerative development models capable of maintaining economic and environmental viability in the face of a scenario of increasing extreme heat.

Within the same Euro-MED programme, the Cool Noons project is testing solutions to tackle heatwaves in Mediterranean tourist destinations. These measures can be adapted to rural or semi-rural environments: for example, creating cool routes between agricultural or grazing areas; develop natural shading around rural accommodation, with light-coloured paving, misting systems and water features to reduce the heat island effect, or establish cooling points on farms during periods of extreme heat. These examples show how the integration of microclimate solutions, local participation and a focus on thermal comfort can also help the agricultural, forestry and rural accommodation sectors to adapt strategically.

2.4 The fishermen of the Costa Brava in the face of heatwaves: challenges, adaptation and opportunities

Jordi Fulcarà Mayné
President of GALP Costa Brava

Marine heatwaves, increasingly frequent and intense in the Mediterranean, are profoundly transforming fishing activity on the Costa Brava. The sustained rise in water temperature — which Josep Pasqual has determined to be 1.5 degrees over the past fifty years— is altering marine ecosystems and jeopardising the economic viability of many fishing fleets.

Species traditionally abundant, such as sardines, anchovies and sea bass, are migrating to deeper or more northerly waters, while others, more adapted to the heat, such as red mullet or some warm-water species, are gaining in presence. This biological reorganisation implies changes in catches, in departure schedules and in the profitability of the fleets.



Photo © GALP CB



The consequences are not only ecological. Heatwaves also affect working conditions: shorter working days to avoid the hottest hours, increased health risks for fishermen and higher energy costs to maintain the cold chain. At the same time, rising temperatures and reduced nutrient availability can favour episodes of anoxia or algal blooms, which degrade water quality and affect fishing gear. This is the case with the echinoderm *Astrospartus mediterraneus*, known as the sea sponge, which in ten years has come to dominate several areas of the seabed, between 30 and 110 metres deep.

In the face of this scenario, fishermen and the authorities are beginning to implement adaptation measures. All the fishing fleets of the Costa Brava have become Blue Points after achieving better water management, and two fishing vessels, one in the Alt Empordà and the other in the Baix Empordà, are equipped with portable desalination units.

Work is also under way to improve resource management through catch-monitoring technologies and collaborations with scientific centres to anticipate ecological changes. The use of more energy-efficient vessels and reduced fuel consumption are part of the strategies to minimise the environmental and economic impact.

Despite the risks, opportunities also arise. The transition to a more sustainable, knowledge-based fishery can strengthen the sector's role as guardian of the coastline. Posidonia seagrass restoration projects and the promotion of locally sourced products can add value to the produce of the Costa Brava. Furthermore, cooperation between fishermen, scientists and public managers is key to building a future adapted to climate change. Fishermen collaborate with scientists to provide information and data for climate change adaptation.

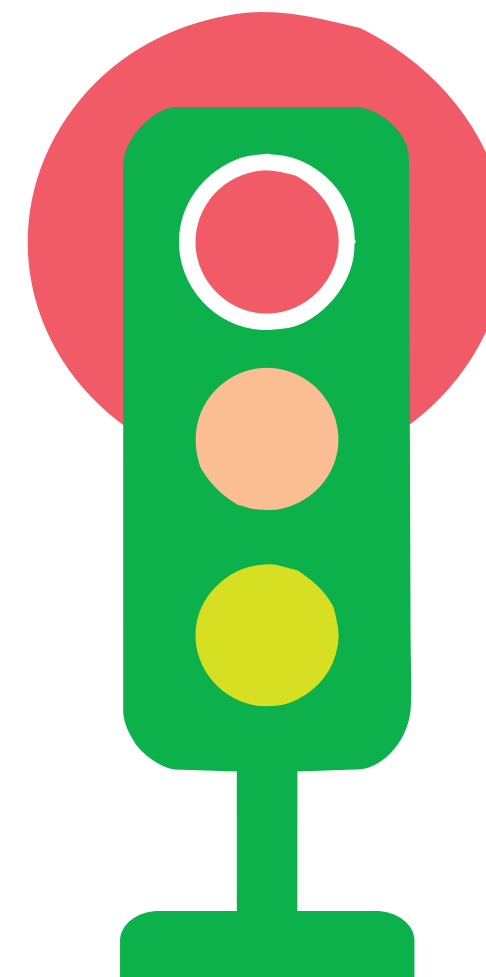
Heatwaves, then, are an undeniable challenge, but also a catalyst for innovation and the triple sustainability of the sea: social, economic and environmental. The challenge will be to ensure that this transformation strengthens both the health of the sea and that of the communities that depend on it, and that fish consumers from our fishmongers, both households and the catering trade, are aware of the effort the fishing sector is making to adapt to climate change and get involved by consuming its products, which are healthy, tasty and sustainable.



Photo © GALP CB

2.5 Extreme heat and prevention of associated occupational risks

CCOO de Catalunya and UGT de Catalunya



In the Mediterranean, heatwaves are becoming increasingly frequent, more intense and longer-lasting. These extreme conditions have a significant impact on occupational health, as the risk of a workplace accident when temperatures are extreme can increase by up to 12%. But the effects of extreme heat do not stop at the workplace; they also carry over into domestic life, as the poor thermal insulation of many homes, especially those with lower incomes, prevents adequate rest. Lack of sleep and a constant feeling of heat cause irritability, loss of concentration and increased stress, factors that ultimately feed back into the risk of workplace accidents and deteriorate the physical and mental health of workers. Despite this evidence, the majority of companies in Spain remain unprepared.



According to data from the European Agency for Safety and Health at Work (EU-OSHA), 26% of workers in Spain are currently exposed to extreme heat in their workplace (compared with 20% in the European Union), and 17% are exposed to high levels of solar radiation (12% in the EU). In 2025, at least five people lost their lives at work as a result of heatstroke. These figures highlight the inadequacy of current prevention mechanisms and the urgent need to strengthen processes for assessing thermal stress risks. It is therefore necessary to ensure the effective implementation of the preventive measures derived from these assessments, with the active participation of workers and their representatives. In this regard, the roles of health and safety representatives and environmental representatives become fundamental for identifying risks, proposing improvements and safeguarding occupational health and working and environmental conditions in the workplace.

As established by Royal Decree 8/2024, collective bargaining must incorporate protocols for dealing with adverse weather phenomena, and the Labour Inspectorate must continue to act with determination in any situation that endangers the health or life of workers. The Law on the Prevention of Occupational Risks establishes the right of workers to be informed and consulted, and to participate actively in matters that affect their health and safety at work. The inclusion of clauses in collective agreements that provide for measures such as the reorganisation of working hours and rhythms, guaranteed access to hydration and shade points, and the suspension of work in extreme conditions is an effective tool for adaptation. It is also necessary to ensure that workers receive specific training on the risks associated with heat stress. This approach allows us to go beyond the legal minimum; ensure a fairer, more effective and participatory adaptation, and recognise new employment rights associated with the climate.



Collective bargaining must incorporate protocols for dealing with adverse weather phenomena.



3. From the field

3.1 Interview with Alba Delgado and Sabina Plaja, EMD of l'Estartit

We meet with Alba Delgado, vice-president of the l'Estartit EMD (Decentralised Local Authority, by its initials in Catalan), and Sabina Plaja, a technician at the same body, on a sunny Thursday in November, in front of the wicker shade structure of the children's playground in Plaça 1d'Octubre in l'Estartit, overlooking the sea. They have spent months working to make this structure, which serves as a climate shelter, a reality. Just a few days earlier, on 25 October 2025, it was publicly inaugurated at an event organised by GALP CB, as part of the "Blue Gastronomy for Christmas!" campaign, to promote market fish and highlight its importance within the territory's gastronomic heritage.

To begin with, could you briefly explain what exactly this initiative to create outdoor climate refuges in l'Estartit consists of?

The idea of the shade structure and of creating an outdoor climate shelter in l'Estartit stems from the fact that the climate is becoming increasingly warm and that outdoor public services must also be accessible with full guarantees and the necessary comfort. This outdoor climate shelter complements the climate shelters we already had in enclosed spaces, such as the retirement home and the library.

The initiative originated as a citizen proposal submitted to the participatory budgets. How was this idea channelled within the framework of the Life eCOadapt50 project? And what has been the role of the Living Lab and community participation?

Indeed, the proposal came from participatory projects, but at the time it could not be carried out as it was not successful. Later on, the opportunity arose to carry it out as part of the Life eCOadapt50 project, so we at the EMD spoke with the technicians from GALP Costa Brava, who helped us channel it through the Living Lab and make it a reality.

This wicker structure allows air to pass through without breaking, thus serving a dual function of shade and ventilation, which is very important in summer, especially during heatwaves and periods of extreme heat.



What type of structure is the shade structure?

The structure has a metal core which is covered with wicker, a traditional natural plant material used for making baskets, handles, etc. that is, fishing gear. The weaving technique used is the same as that traditionally employed; therefore, the wicker here is closely linked to the territory. The structure was created by Tramats, a basketry workshop from Torroella de Montgrí run by Josep Mercader and Magda Martínez, artisans who work with native plant materials using the most traditional techniques. First, they made the pieces and then brought them here and sewed them together. As it is an elastic material that does not break, it allows for this characteristic curvature of the shade structure without snapping. For the design, they drew inspiration from the dimensions of the park's perimeter, its existing elements, the marine environment and the children who play there. In fact, it is an organic structure that, depending on where you are and the perspective you view it from, can be a wave, a manta ray, etc. It has been attributed different shapes! It is more than a structure or an outdoor element: it's a plant sculpture.

Why was wicker (*Salix fragilis*) chosen over other materials? What advantages does this material offer compared with other options (awnings, wooden pergolas, etc.)?

Today, with a bit of a tramontana blowing, it's a good day to see that the structure and the type of plant material used are genuinely suitable compared with, say, some awnings that would by now be in Begur (laughs). This wicker structure allows air to pass through without breaking, thus serving a dual function of shade and ventilation, which is very important in summer, especially during heatwaves and periods of extreme heat. Notice that everything has been thought through: although the structure may seem very low, it has been designed precisely like this, taking into account the sun's rays throughout the year, to prevent them from penetrating into the park in the summer, for example. It has also been taken into account that the users are mainly children and families who can sit on the benches.



Photo ©Susanna Ginesta

And this material probably doesn't require much maintenance, compared to an awning, which can be easily broken by the wind, or to vegetation, which needs to be watered and pruned periodically...

Exactly, it's very easy to maintain. It doesn't need water because it's a plant that's already been dried, and even the ties on the metal rods are made with knots used for fishing, so it's very sturdy. The only thing that can happen is that it gets a small tear, but it can be re-woven. The structure is expected to last for about ten years.

You've touched on this already, but how can the shade structure help with adapting to heatwaves?

If you come to an open-air playground in the middle of July, you have to leave, as you can't stay there. The shade structure acts like a kind of umbrella, providing well-being and greater climatic comfort thanks to the shade it offers and the ventilation.

What has been the cost of constructing this shade structure and how has it been financed?

The total cost has been around €30,000. The Tramats structure has been 100% funded by the eCOadapt50, while the civil works have been covered by the EMD of l'Estartit.

Do you plan to evaluate the use and effectiveness of this climate shelter?

Since we only opened the structure just over a month ago, we now have time to consider how we can assess these parameters and which indicators we need to take into account. We will speak with the Tourism Department to see how we can manage this, as they are normally the ones who conduct surveys of tourist establishments and of tourists' perceptions, among other activities. We will also discuss how to communicate to the tourism sector about this additional service available in l'Estartit, the outdoor climate shelter.

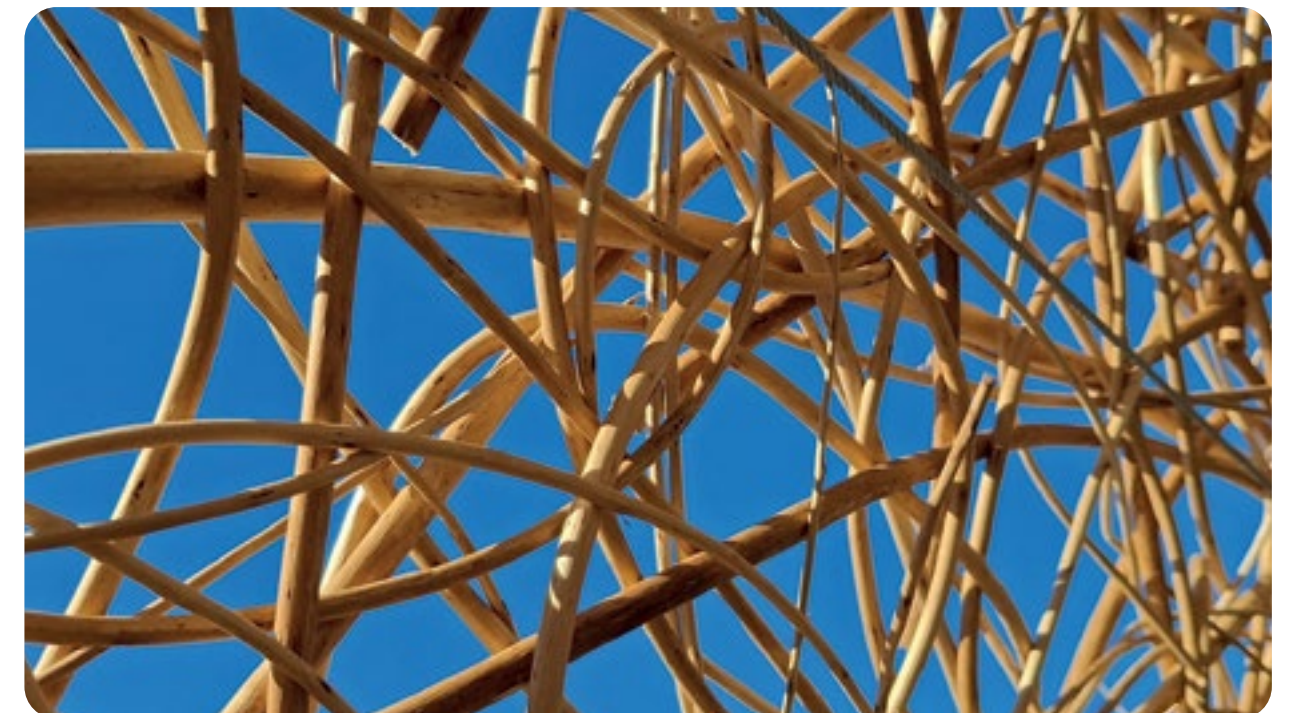


Photo ©Susanna Ginesta



Photo ©Susanna Ginesta

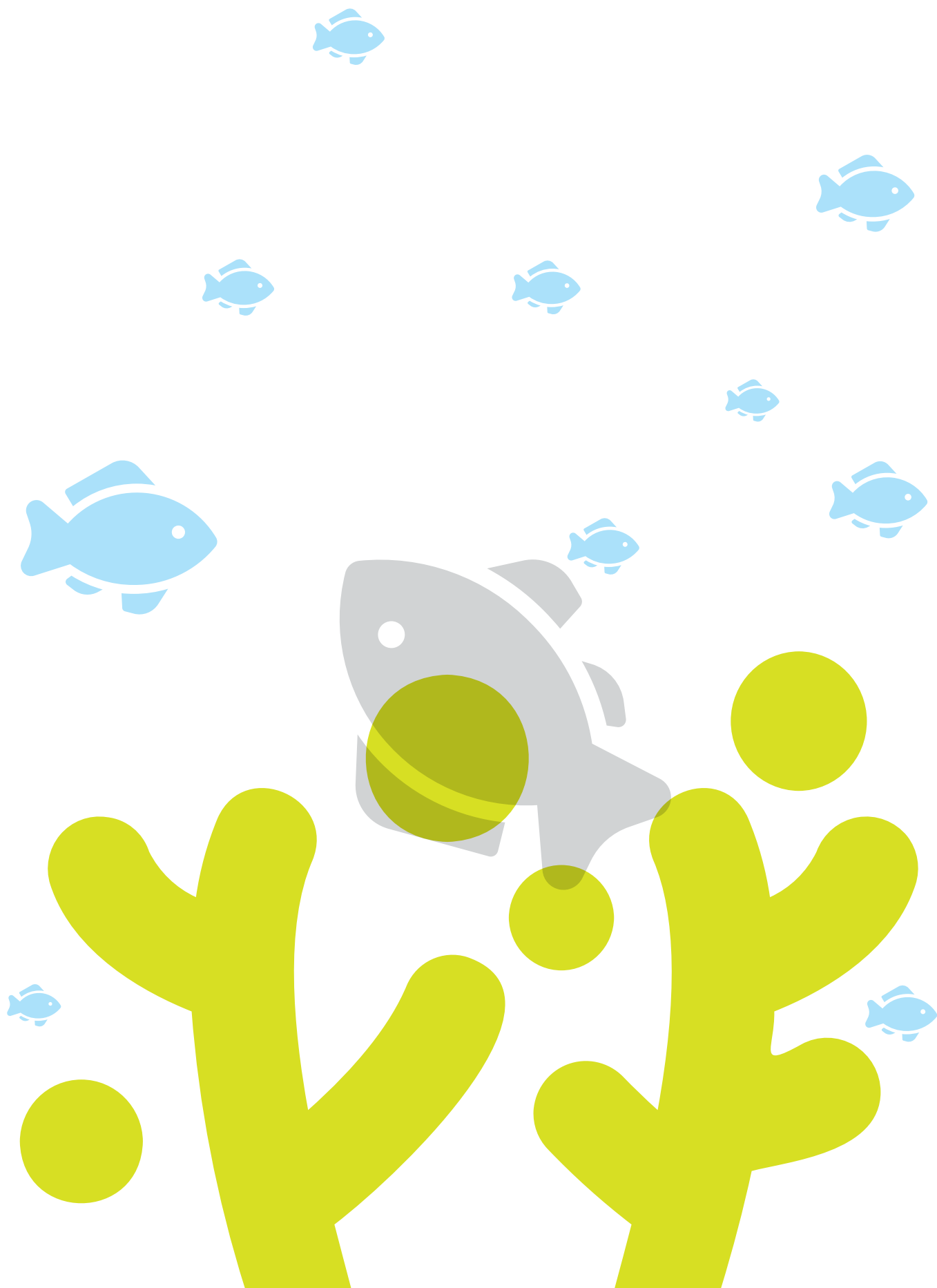
The climate vulnerability assessment carried out as part of the Life eCOadapt50 project identified, among the highest risks in the Baix Empordà, the loss of climatic comfort (for both residents and visitors) and changes in tourist demand patterns. Do you think that the creation of these shaded spaces could be the first piece of a broader tourism adaptation strategy in l'Estartit? In a context of climate change, to what extent do you think that the ability to provide thermal comfort in public spaces is a matter of tourism competitiveness?

Until recently, all the climate shelters we had in l'Estartit were indoor ones, located in municipal facilities. The shade structure is the first outdoor climate shelter and we understand that it is a very important piece for the tourism sector and for the network of climate shelters we want to continue creating, especially considering that the climate crisis, with increasingly frequent and intense heatwaves, affects above all the most vulnerable groups, such as children and the elderly. That's why we want to publicise it on our websites, and, although you might not choose a tourist destination based on this alone, it's an added bonus to consider, which can help make up your mind, especially for families with children.

Are you planning to install more climate shelters in the playgrounds or squares of l'Estartit? Have you received requests or enquiries from other municipalities to replicate this initiative?

We have several uncovered playgrounds, so we will seek funding to turn them into outdoor climate shelters as well. Although other municipalities have not yet contacted us (it was only installed very recently), we have received interest from some associations that want to install similar facilities, and we also have several requests to create similar structures in other squares and children's playgrounds in l'Estartit.

The shade structure is the first outdoor climate shelter in l'Estartit and we understand that it is a very important piece for the tourism sector and for the network of climate shelters we want to continue creating, especially considering that the climate crisis, with increasingly frequent and intense heatwaves, affects above all the most vulnerable groups, such as children and the elderly.



4. [eCO] Actions

4.1 Study on the proliferation of filamentous algae in the Bay of Pals and the Medes Islands

Costa Brava Fishermen's Local Action Group (GALP) and SUBMON

A threat to marine ecosystems

Due to the rise in sea temperature caused by climate change, in recent years there has been an increasingly frequent proliferation of filamentous algae in the Bay of Pals and the Medes Islands, popularly known as *lepo*. These algae, which used to appear only sporadically, now proliferate persistently and are transforming marine ecosystems that until recently were dominated by gorgonians, corals, bryozoans and sponges.



Filamentous algae on a red gorgonian.
Photo ©SUBMON



Ecological and socioeconomic impacts

The algal mat is composed mainly of brown algae such as *Acinetospora crinita*, *Nematochrysopsis marina*, *Zosterocarpus oedogonium* and *Chrysonephos lewisii*. These organisms tend to proliferate in spring, when water temperatures rise and storms are less frequent. However, climate change is altering these patterns, extending the growth seasons and expanding the areas affected.

When the algae cover the seabed, they smother sessile species such as gorgonians, corals and sponges, which reduces biodiversity and weakens benthic habitats. This ecological imbalance also has direct consequences for diving tourism and artisanal fishing, two key sectors of the Baix Empordà. Algae-covered seabeds reduce visual appeal for visitors and, moreover, all indications are that the massive presence of these filamentous algae can negatively affect the traditional fishing activity in the area, both in terms of the quantity and quality of catches.

A collaborative project to understand the problem

In light of this situation, the Montgrí Natural Park, the Medes Islands and the Lower Ter, together with the University of Girona and several diving centres in l'Estartit, launched a pilot project in 2024 to study the origin of the problem and control the proliferation of filamentous algae with the aim of reducing the impact on the seabed, especially on the most sensitive species. As part of the Life eCOadapt50 project, the Local Fisheries Action Group (GALP)

Costa Brava supports it through a supplementary study on water quality in the bay of Pals and the Medes Islands. The aim is to analyse the relationship between eutrophication—that is, the excess of nutrients in the water—and the proliferation of these algae to determine the extent to which human factors such as agricultural run-off or sewage can influence it.





Photo ©SUBMON

Main results and conclusions of the study

The study lasted for around six months (July–December 2024) and had a budget of €12,400 (excluding VAT). The project involved the periodic collection of water samples to analyse parameters such as nutrient content or suspended solids, and to identify algal species.

The atypical year of 2024, following the drought that affected Catalonia, greatly influenced the results obtained, making it difficult to achieve all the project's initial objectives and leaving some questions unanswered. Moreover, the data were collected over a very short period of time; therefore, the results should be interpreted with caution.

On the one hand, no direct link has been established between the proliferation of filamentous algae and water quality. On the other hand, it has not been possible to determine how this massive growth affects the area's artisanal fishing.

Nevertheless, the results indicate that water quality is influenced by pollutants that reach the sea via the Ter River, a key factor in understanding the impact of terrestrial activities on marine ecosystems.

Also, thanks to a citizen science initiative, in collaboration with the diving centres of l'Estartit, a first map has been produced of the degree of impact on the dive sites of the Medes Islands, which includes the areas with the greatest presence and abundance of filamentous algae. This map was created from observations by customers and guides at the l'Estartit dive centres, and these observations were divided into three classes according to the extent of filamentous algae in the area.

Despite the difficulties, the study has yielded relevant results and laid a foundation for future research. Moreover, it has enabled the local community to be involved in the research, a key aspect for advancing the management and conservation of marine ecosystems.

Implementation of a citizen science initiative

Outreach is essential to promote more sustainable management of the marine environment and to strengthen the involvement of all stakeholders in the protection of coastal ecosystems.

Thus, a citizen science initiative was implemented with the participation of the ten diving centres and also the artisanal fishermen from the Estartit Fishermen's Guild. The initiative involved reporting any observations of filamentous algae in the area, providing information mainly on their location and the approximate surface area they occupied.

The diving centres were provided with an information document to familiarise their instructors, guides and clients with the initiative. In contrast, an information session was held with the artisanal fishermen at the co-op itself, attended by, among others, the master fisherman and the secretary.

An example of collaboration between institutions

This initiative is also an example of collaboration between public institutions, research centres and private stakeholders, such as fishermen's guilds or diving centres, who share the same objective: to preserve the natural wealth of our coastline.

Although the results have not been as expected, local stakeholders value the project and being taken into account in the actions that follow, since, after all, they are the ones most affected, working day in, day out in this environment impacted by algae, which directly affect their professional activities.

Ultimately, this study is a step forward on the path to improving the environmental management of the Costa Brava coastline and establishing strategies to minimise the impact of climate change on marine ecosystems, protect biodiversity and ensure that tourism, fishing and conservation can coexist in a balanced way in the future.

4.2 Forest works for biodiversity improvement and adaptation to climate change in the beech woods of the Matagalls Mountain.

Diputació de Girona

A habitat of high ecological value

The Matagalls Mountain, in the heart of the Montseny Natural Park and Biosphere Reserve, is one of the country's most emblematic forest areas. Its forests, mainly beech woods, and subalpine meadows form part of a mosaic of habitats of high ecological value, which are currently facing one of the most significant challenges of recent decades: adapting to a rapidly changing climate. The rise in temperature, heatwaves, episodes of persistent drought and the decline of forests caused by these phenomena are forcing us to rethink the way we manage these ecosystems. es.

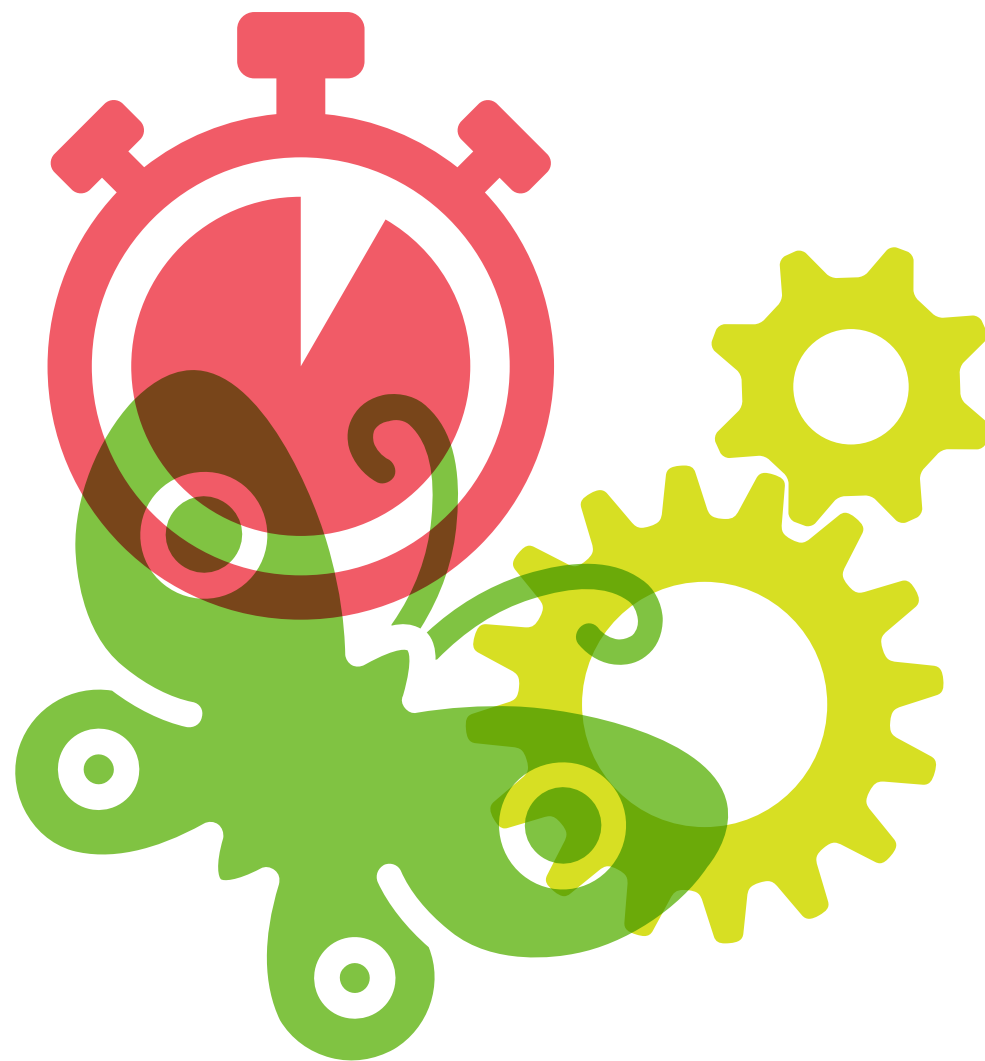


Photo © Héctor Rebollo (DDGI)

Resilience at the heart of management

Traditionally, many forest areas have been managed primarily on production criteria, prioritising certain species and promoting younger forest structures to obtain timber or firewood. However, in a context of accelerated climate change, this strategy increases the vulnerability of forests to change and prevents the sustainable use of natural resources. Therefore, the Diputació de Girona, as part of its management of the public estate on the Matagalls Mountain, is carrying out an intervention on 24.5 hectares of beech forest at Matagalls, with the aim of improving biodiversity and increasing the resilience of these forest stands.

The objective is clear: to foster more diverse, mature and structurally complex forests, capable of better withstanding droughts, pests or mass die-offs.

Adaptive forestry works: clearings and habitat diversification

The works are framed within the Matagalls Mountain Management Plan Project (Sanitjas, 2018), which establishes specific management guidelines aimed at climate adaptation and biodiversity improvement. Furthermore, they continue the line of previous actions carried out in various stands between 2013 and 2024, linked to projects such as LIFE Clinomics or LIFE Biorgest, which have already demonstrated the importance of promoting mature and biodiverse forest structures.

The action includes two lines:

1. Thinning to promote the development of a future tree structure in stand 2b, selecting up to 450 target trees per hectare in the first phase and removing direct competitors. The trees are selected to diversify species beyond beech (including ash, oak, holm oak, hornbeam, poplar, etc.), to enhance trees with microhabitats and to balance the forest structure.
2. Habitat diversification in stands 2b and 2c, by creating and expanding clearings of different sizes, with the aim of generating new open spaces and consolidating existing ones. The intervention will simulate controlled disturbances to promote habitat and



species diversity, regulating tree competition at the forest scale. This includes selective felling, ring-barking of different tree species and the creation of light-filled openings to promote natural regeneration and the arrival of complementary species, thereby offering the forest greater opportunities to adapt to the new conditions.

This type of intervention, while compatible with the sustainable harvesting of timber and firewood, delivers a high environmental return. It helps to foster more species-rich, robust forests that are better able to respond to climatic pressures. In this case, the works do not provide for the removal or utilisation of the felled trees in order to generate deadwood for the ecosystem.

The intervention began at the end of 2025 with the marking out of the works and is currently under way. However, this action is not a one-off: it forms part of a long-term management strategy that Diputació de Girona intends to continue implementing on the estate with its own resources or through future public funding programmes. Furthermore, the project directly contributes to the adaptation objectives defined for the territory, such as reducing the water demand of forests, promoting diverse structures and deploying forest management models that integrate conservation, resilience and socio-economic realities.

Expected impacts: short and long-term improvements

The planned silvicultural works are based on adaptive silviculture, a key tool for enhancing biodiversity in climate-vulnerable forests. In the short term, an improvement in habitat diversity and forest structures is expected, thanks to the creation of glades, the emergence of microhabitats and the reduction of competition between trees.

In the longer term, these changes should favour more resilient forests to drought, heatwaves and forest decline, while promoting a progressive transition towards species with lower water demands. Although the area is not geared towards the provision of forest products, indirect benefits could be generated, such as a slight improvement in rainwater runoff and microclimatic regulation.

These actions also have scientific value: Matagalls becomes an ideal space for validating adaptive management and biodiversity enhancement methodologies.

Local involvement, monitoring and institutional collaboration

The project involves the active participation of several public stakeholders: the Diputació de Girona, the management team of the Montseny Natural Park, the Centre for Forestry Science and Technology of Catalonia (CTFC) and the Diputació de Barcelona.

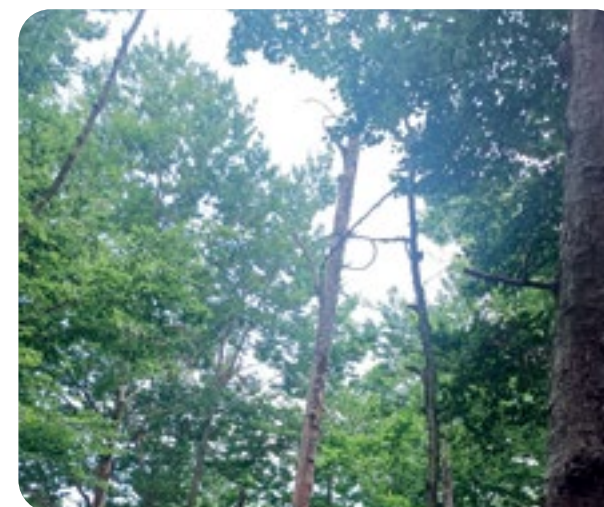
The immediate monitoring of the actions will be carried out by the Park's management team, while the CTFC will be responsible for long-term evaluation of the effectiveness of the management models applied using indices or indicators, such as the Potential Biodiversity Index (IBP, by its initials in Catalan) or the presence of bioindicator species such as *Rosalia alpina*, among others.

Replicable model and innovative management

The model implemented at Matagalls is planned to be applied to other public estates managed by the Diputació de Barcelona, in line with the objectives of the new Protection Plan for the Montseny Natural Park. Outside Montseny, similar initiatives have been adopted by the Montnegre Landowners' Association, although with a more productive focus. The model is therefore replicable, especially in public spaces that seek to prioritise conservation and adaptation to climate change.

The initiative stands out for its innovative approach: a bespoke, tree-by-tree management that contrasts with models which tend to homogenise forest stands. Although the concept of a "tree of the future" is not new, here it is applied with criteria based on ecological value—microhabitats, species less dependent on water and structures that promote forest balance—and not on productivity.

This methodology is highly adaptable, although it involves a higher cost in the selection and marking of trees, a necessary effort to ensure more resilient and biodiverse forests in a future marked by climate change.



Photos © Héctor Rebollo (DDGI)



5. Creating networks

5.1 New Mediterranean alliances to drive climate adaptation

Editorial team

In 2025, we began collaborating with the Natural Heritage Mission (MPN, by its initials in Catalan) of the Interreg Euro-MED programme, a European cross-border cooperation programme in the Mediterranean region that supports projects, initiatives and policies related to climate change and the environment. At the proposal of the Centre for Ecological Research and Forestry Applications (CREAF), a leading centre in terrestrial ecology and coordinator of one of the Mission's cross-cutting projects, the Diputació de Barcelona has become an associated partner of the Mission and joins a community of researchers, organisations, administrations and associations working to advance climate change adaptation and biodiversity protection across the entire Mediterranean basin.

Thanks to this, we had the opportunity to present the Life eCOadapt50 project at an exchange event held on 27 November 2025 in Barcelona. The meeting served to establish a first direct contact with researchers and organisations from both Catalonia and other Mediterranean countries who share our challenges in terms of adaptation, and also to learn first-hand about some of the thematic projects driven by the Mission that could serve as inspiration or an opportunity for collaboration with Life eCOadapt50, such as the Germ of Life; Wat[H]er, which deals with water management and drought; INCORE-MED, on coastal climate resilience and participation; or LocAll4Flood, on the prevention and management of flash flood risk. All of them can be found on the Mission's website.

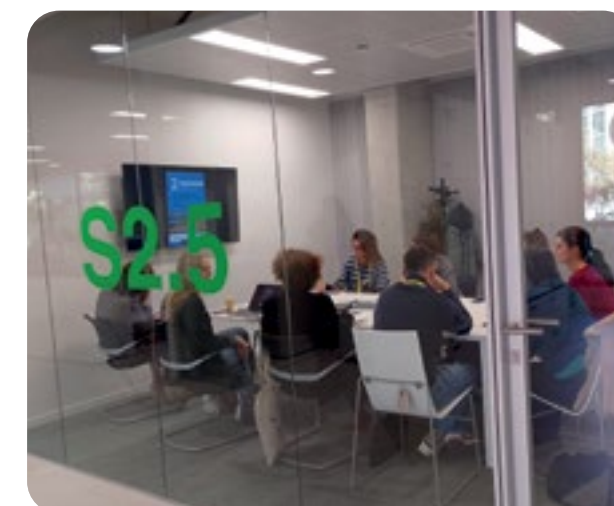
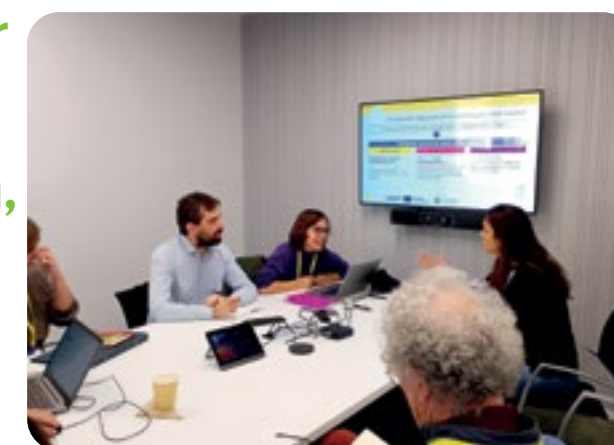
The MPN is one of the four missions of the Interreg Euro-MED programme and focuses on protecting, restoring and enhancing nature, as well as driving adaptation to climate change. It currently encompasses eighteen thematic projects that address issues relevant to eCOadapt50, such as the management of risks amplified by climate change (floods, fires, drought, sea-level rise), the protection and restoration of the coast, or the impact of climate change on forests and agroecosystems.

In order to maximise the impact of these thematic projects on the region as a whole, The MPN has created various governance initiatives that promote the exchange of knowledge, the transfer of results to decision-makers and the strengthening of political processes that can influence the climate resilience of the Mediterranean region, such as the community of practice and exchange meetings.

The participation of the Diputació de Barcelona in the MPN is an opportunity for all partners and participants of Life eCOadapt50, as it facilitates access to tools, methodologies, guides and projects developed by the MPN's thematic projects or others linked to it. Furthermore, collaboration and direct exchange with researchers and organisations can lead to participation in projects, pilot schemes or complementary actions, among others.



The MPN is one of the four missions of the Interreg Euro-MED programme and focuses on protecting, restoring and enhancing nature, as well as driving adaptation to climate change.



Photos © Sílvia Cañelles

