1. Supplementary materials

1.1. Sources of information in different stages of the process

Table SM 1. Steps and sources of information of the methodological process

Steps	Sources and methods
1. Definition of the work scenario	• *Map of Civil Protection of Catalonia* (Generalitat de Catalunya, 2020): collection and synthesis of information for in the RB of Montseny • Base of data fire forest the Service of Prevention of Fires Forest of DARP: collection and synthesis of information for in the MBR • Characterization of ZHR (UT-GRAF; Department of the Interior, 2018; Castellnou *et al.* , 2009; Costa *et al.* , 2011; Piqué *et al.* , 2011): collection and synthesis of information for in the RB of Montseny • Brotons *et al.* , 2013; Turco *et al* ., 2018; Castellnou , 2018; Duane and Brotons , 2018: summary of trends expected with the changing climate UT-GRAF expert knowledge : validation
2. Identification and mapping of landscape values	• Montseny Information System (SIMSY): SIG databases of the Public Use Plan (Montseny Natural Park, n.d.) • *Vulnemap* (Bagaria *et al* ., 2017): selection , integration and analysis of data in GIS • Base of data mapping of properties with Plan Technical of Management and Improved Forest (Center of the Property Forest) • Base of data of assets : data supplied by Gemma Font (Museum of Ethnology of the Montseny , the Gabella) • *Fonts del Montseny* Project: https://goo.gl/Mvg79Y • Meetings with social actors and citizens: Technical participatory for the co-design of the method of assessment (Table SM 2)
3. Prioritization of areas to protect	• Meetings with social actors and citizens: Technical participatory for the co-design of the method of prioritization (Table SM 2) • Multi-criteria method: simplified Promethee (adapted from Brans *et al.* , 1986): prioritization of polygons of containment of fires forest
4. Develop a fire management strategy	• Castellnou *et al*., 2013: conceptual basis of the strategic management of wildfires • *INFOCAT Plan* (Department of Interior, 2014): Synthesis of types of areas of low load of fuel • ORGEST recommendations (Piqué *et al.*, 2011) • Law 5/2003, 22nd of April, of measures to prevent fires • UT-GRAF expert knowledge: validation • Meetings with social actors and citizens: technical equity to the consensus of the strategy

1.2. Meetings and workshops

Table SM 2. Participatory meetings and scale of participation

Meeting	Place and date	Participants	Issues
1st meeting with regional actors	Sant Celoni, 28/11/2018	Representatives of the following organizations/institutions: Territorial services (Department of Agriculture, Livestock, Fishing and Food, Catalan Government); Wildfires Prevention Technical Municipal Office (Barcelona provincial Council); Montseny Natural Parc (Barcelona Provincial Council); Federation of Forest Defence Associations of La Selva; Museum of Natural Sciences of Granollers; Coordinator for the Safeguarding of Montseny.	Presentation of the project; presentation and validations of methodology; presentation of fire regime; identification of data sources.
2nd meeting with regional actors	Sant Celoni, 12/12/2018	Representatives of the following organizations/institutions: Forest Ownership Centre (Department of Agriculture, Livestock, Fishing and Food, Catalan Government); GRAF (Forest Actions Reinforcement Group, Firefighters body, Catalan Government); Territorial services (Department of Agriculture, Livestock, Fishing and Food, Catalan Government); Federation of Forest Defence Associations of Osona; Federation of Forest Defence Associations of La Selva.	Validation of changes in methodology (based on feedbacks in the first meeting); presentation of the fire regime and containment polygons; presentation and validation of preliminary results of landscape values; identification of missing information.
Meetings with local actors	Tagamanent, 05/02/2019; Arbúcies, 06/02/2019	Members of Association of Forest Defence, Firefighters and Forest owners from the locality; Economic actors linked to agriculture and tourism.	Presentation of the project and preliminary results; identification of zones highly valued and zones to prioritize (those deemed to protect from fire).
3rd meeting with regional actors	Sant Celoni, 27/02/2019	Representatives of the following organizations/institutions: Rural Agents (Department of Agriculture, Livestock, Fishing and Food, Catalan Government); Territorial Services (Department of Agriculture, Livestock, Fishing and Food, Catalan Government); Territorial services (Department of Territory and Sustainability, Catalan Government); Montseny Natural Park (Barcelona Provincial Council); Federation of Forest Defence Associations of Osona; Association of forest owners of Montseny; Museum of natural sciences of Granollers; La Gabella Ethnologic Museum of Montseny.	Presentation and validation of multi-criteria method to prioritize containment polygons.

Meeting	Place and date	Participants	Issues
Expositions	Figaró, 04/06/2019; Viladrau, 06/06/2019; Seva, 13/06/2019	Citizens.	Presentation of the project and preliminary results; identification of zones highly valued de zones to prioritize (those deemed to protect from fire).
Final project Meeting	Sant Celoni, 21/06/2019	Representatives of the following organizations/institutions: GRAF (Forest Actions Reinforcement Group, Firefighters body, Catalan Government) and Fire stations of the region; Rural Agents (Department of Agriculture, Livestock, Fishing and Food, Catalan Government); Territorial Services (Department of Agriculture, Livestock, Fishing and Food, Catalan Government); Territorial services (Department of Territory and Sustainability, Catalan Government); Wildfires Prevention Technical Municipal Office (Barcelona Provincial Council); Montseny Natural Park (Barcelona Provincial Council); City councils of Campins, Fogars de Montclús and Sant Pere de Vilamajor; Association of forest owners of Montseny; Museum of natural sciences of Granollers; Coordinator for the Safeguarding of Montseny; Life project Montserrat; Group of athletes of the Congost.	Presentation of results of landscape values; presentation of prioritization of containment polygons; presentation and validation of the wildfire management strategy; identification of proposals to implement the strategy.

1.3. The applied multi-criteria model

The multi-criteria method applied in this study is a simplification of the PROMETHEE method (Brans et al., 1986). The multi-criteria aggregation process starts then with a pairwise comparison of alternatives (i.e. containment polygons). Let's consider we have a set of n alternatives and m criteria. We start by constructing an outranking matrix $E(NxN)$ with the result of a pair-wise comparison of alternatives, according to all M criteria. Each element e_{ij} of the outranking matrix (i.e. the value of the row i and column j) is calculated by the sum of the weights of criteria that are in preference of alternative i when compared to alternative j, plus the half of the weight of the criteria when alternatives are indifferent. For example, if we assign equal weights to all categories (i.e., criteria in the multi-criteria jargon), we have that each category has a weight of 16.7% (= 100/6). If we compare polygon 1 with polygon 2 under category A, and polygon 1 is more valued than polygon 2, 0.167 winning points are assigned to polygon 1. Thus, successively with each of the categories until obtaining the total winning points of polygon 1 compared to polygon 2 (and *vice-versa*). After obtaining the outranking matrix, a coefficient was calculated for each polygon by adding the winning points (i.e. rows) and subtracting the losing points (i.e. columns) obtained in the comparison of this

polygon with the rest of polygons. Thus, a ranking was constructed according to the coefficient obtained for each polygon, from highest to lowest score. A first comparison was made by assigning equal weights (16.7%) to all categories. To corroborate the soundness of the results, a sensitivity analysis was carried out by changing the weights of the categories (six additional multi-criteria evaluations in which, in each case, 30% was assigned to a category and a 14% in the other categories). This analysis showed that the variation of the weights of the categories had a negligible influence on the prioritization of the polygons.

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