COUNCIL OF EUROPE CONSEIL DE L'EUROPE

Convention on the Conservation

of European Wildlife and Natural Habitats

Standing Committee

Recommendation No. 147 (2010) of the Standing Committee, adopted on 9 December 2010, on guidance for Parties on wildland fires, biodiversity and climate change

The Standing Committee of the Convention on the Conservation of European Wildlife and Natural Habitats, acting under the terms of Article 14 of the Convention;

Having regard to the aims of the Convention to conserve wild flora and fauna and its natural habitats;

Recognising that climate change affects biological diversity in the territory covered by the Convention, including species, habitats and the Areas of Special Conservation Interest of the Emerald Network;

Recognising the need to adapt conservation work to the challenges of climate change so as to minimise its impacts on the species and natural habitats protected under the Convention;

Bearing in mind that uncertainties surrounding the precise nature of future climate change and its impacts on biodiversity should not delay practical conservation action;

Recognising that fire is a major factor in shaping vegetation and that it may trigger important permanent ecosystem change in a context of climate change;

Aware that both many natural and seminatural habitats and forest plantations may be more prone to burn if rainfall decreases and temperatures rise with climate change in some parts of Europe;

Conscious that nature conservation and forestry policies need to take into account and be adapted to changing patterns of fire that will accompany climate change;

Recalling CBD COP 10 Decision X/33 on Biodiversity and climate change;

Recalling Recommendations No. 135 (2008) and No. 143 (2009) of the Standing Committee, on addressing the impacts of climate change on biodiversity;

Welcoming and bearing in mind the report "*Climate change, wildland fires and biodiversity*" by Mr Jose Manuel Moreno [doc T-PVS/Inf (2010) 10];

Recommends Contracting Parties to the Convention and invites Observer States to:

1. Assess how fire may affect biological diversity in a context of climate change, particularly in fire-prone areas; identity which areas may increase their risk of fire in different climate change scenarios and take precautionary measures; identify, in particular, areas that may be at risk of desertification in Europe by a combination of higher temperatures, repetitive fire and erosion;
2. Assess the changes required in land use and land management policies, including forestry, to make forests and other ecosystems more resilient to fires in a context of climate change;
3. Consider the role of fire in the implementation of Bern Convention guidance on biodiversity and climate change.
4. Where appropriate, implement the proposed actions of the guidance in appendix to this recommendation.

APPENDIX

GUIDANCE

This guidance draws on the expert report commissioned by the Council of Europe and discussed by the Group of Experts on Biodiversity and Climate Change at its meeting in 2010.

Measures that may be considered as appropriate for addressing the impacts of climate change on biodiversity, for the purposes of the application of the Convention, are listed for consideration by Contracting Parties. These measures are offered as examples of action that may be taken by authorities at all levels of governance to address this issue. Other complementary measures may be identified by governments as equally appropriate to their particular circumstances and concerns. Notwithstanding these adaptation measures, there is an urgent need for climate change mitigation actions at local, regional, country and global levels. Effective mitigation is crucial to contain climate change to levels within which we may have a reasonable chance of achieving effective adaptation. Although these recommendation focus on the adaptation to climate change, it is important to bear in mind that, on the one hand, climate change mitigation activities may be harmful to biodiversity and, on the other hand, the conservation and restoration of certain ecosystem types in particular forests and wetlands have to play an important role in the overall mitigation effort.

The effects of wildland fires on ecosystems and their biological communities are complex. The impacts of a changing climate on the species and habitats protected by the Bern Convention may differ widely, depending on the species and the interactions with other species and/or their habitats, as well as according to location. The effects that climate change mitigation and adaptation measures, taken in other sectors, can have on species and habitats should also be considered in order to avoid negative impacts.

Wildland fires, biological diversity and climate change

Fire has a complex impact on ecosystems. It helps shape vegetation and it can be a major factor of plant communities change in a climate change context. Mediterranean ecosystems have evolved in a world with fire, so numerous plant traits can be associated to a long evolution with fire.

Fires do not burn the landscape at random, and tend to affect certain vegetation types more often than others, and occur at certain locations. Fires burn through natural protected areas as well. During the last three years, of all the area burned in the largest EU Mediterranean countries nearly 1/3 was part of the Natura 2000 network. Areas close to or at intermediate distance to roads or towns are the ones that burn most frequently. These elements of fire risk are important for conservation areas.

Although many ecosystems of Southern Europe and the Mediterranean can be considered to have evolved under fire, the current fire regime is different from what it might have been in the past. Changes in fire regime, such as increased frequency and severity of fires, threatens ecosystem stability and, in some areas, favours degradation loops that impedes the recovery of the vegetation towards more mature stages.

Postfire regeneration usually follows the autosuccessional pattern. Plants are able to withstand fires mainly by surviving the blaze and resprouting or by germinating from seeds that survive the fire as well and, in many instances, require heat-related stimuli to germinate. In a few years after fire the plant community resembles that before the burn. However, direct regeneration is not always warranted, especially if the climatic on soil conditions have changed. Furthermore, there are many emblematic species that do not regenerate well after fire.

It is not excluded that, with climate change, parts of Southern Europe and the Mediterranean become more arid and that many areas of Central and Northern Europe where fire does not affect at present large surfaces may see more frequent fires as temperatures rise and rainfall patterns change.

Difficult as it is to project future impacts of climate and other global changes on the vegetation and species composition of any system in the first type, much more difficult it is to do so in Southern Europe and the Mediterranean areas. Restoration has no easy models to use them as a reference, and many ideas

need to be revisited at the light of new paleo-ecological evidence. Given the threats of changes in fire and other climate and global changes over the values at hand, not the least its distinct and rich biodiversity, the challenge of conserving these territories under the ongoing climate and land-use/land cover changes and other global changes is paramount.

PROPOSED ACTIONS

1 Include the role of fire in conservation of species and habitats in fire prone areas

Fires have been occurring, and will most certainly occur within many protected areas in southern Europe and in the landscape matrix that surrounds them. Fires are generally considered as a threat, and fire suppression is the dominant policy throughout SEM. There are enormous skills and capacities to fight fires. Yet, when they break out inside or around protected areas they will burn through them. But since the main/only policy is to fight them, provisions to understand how they directly or indirectly affect protected areas and species once burned are, for the most part, lacking. Until now, the ecological role of fire is ignored. Consequently, when they occur there is no contingency plan as to how the affected system will be impacted. Therefore, even without any climate change, biodiversity conservation plans need to consider how fires will affect species and habitats throughout the territory. Fire ecology is a must in all management and conservation plans, and strategies to incorporate this knowledge must be enacted.

2. Identify the role of natural fire or prescribed burning in conservation

Some ecosystems and species depend on fire or can benefit from it. Identifying them might be critical since current policies will jeopardize their persistence. In these cases, plans for introducing fire, either by prescribed burning, or, when appropriate, with wild fires within acceptable conditions to avoid other risks must be made. Because the prevailing view is that fires are undesired, and the risks that entail managing fires is great, conservation plans in need of fire must be implemented with great care to avoid accidents that would stop the continuation of needed plans with the concourse of fire.

3. When drawing up conservation plans aimed at specific target species, consider how fire will affect them

Species or groups of species are impacted by fire differently, depending of fire characteristics and other factors. In the case of protected areas whose objective is one or a group of particular species, the viability of their conservation in a context of fire needs to be specifically considered. Management plans that address the possible impacts of fire need to be species or group specific, since different species are likely to respond differently to fire.

4. Assess the vulnerability of the protected areas network to fire

Corridors and stepping stones are important elements for insuring population persistence and species migration, more so in view of the impending threats. These elements, however, may be subject to fire. When these components are formed by forest, fire can alter their functioning capacity for long. Since it is very likely that some of these more isolated elements are in areas with greater human influence, their susceptibility to fire and repeated fire might be rather great and needs to be quantified since its long-term persistence may be severely threatened. As with the rest of the protected areas, the impact of fire needs to be known in advance in order to better evaluate their capacity to continue playing their role. Robust network designs, capable of not succumbing to a single fire, are needed to allow these places continue playing their vital service.

5. Ensure, where urban developments and roads are near protected areas, that measures are taken to extreme fire vigilance

Most fires are lit by people. Towns and roads are the main sources of ignitions. However, the probability of burning is still high at some intermediate distance to roads and towns since fire can travel long distances. Protected areas within these domains are at higher risk of fire than those further away. Urban developments into the wildlands and near protected areas can be a threat to these due to increase

ignition probability and subsequent fire. Also, the network of roads crossing protected areas, in addition to other perils, can clearly add risk. These two elements must be cautiously considered when declaring protected spaces and be particularly monitored during the time of high fire risk. Eventually, specific restrictions might have to be put in place to minimize risks. Risk mapping of protected spaces taking into consideration proximity to roads and towns is critically needed.

6. Identify synergies/conflicts between fire and conservation

Fire fighting includes, among other, fire break lines or fire-break areas. These can provide open space and hence favour species persistence different to those in the preserved matrix, particularly when these are forest. The role of such areas and corridors as sources of rapid colonization after fire needs to be appraised. These areas can serve as colonization points but there are positive or negative elements (increasing potential for invasive species) that need to be fully considered. The advantages and disadvantages of these areas in the event of fire need to be taken into consideration.

7. Assess changes in the landscape matrix through fire

Abandonment will continue in response to changes in socioeconomics and with climate change. Abandonment modifies the landscape matrix towards homogenization and that can threatened the persistence of many species. Fires can open up space and introduce large changes in the landscape matrix. Not all organisms will be equally affected but such changes in the landscape structure. Some, through the openings made by fire, will be favoured. Others will be negatively affected. Conservation plans must therefore contemplate the landscape scale changes that are introduced by fire.

8. Assess future risks

Changes in fire frequency, intensity/severity, size and season must be specifically contemplated for conservation areas under scenarios of climate and land-use/land cover change. This must be done for current areas with fires and for those in which fires were not present but that are likely to occur due to the changes in climatic conditions and other factors. Each of the parameters that define the fire regime can differentially affect the various species. Changes in fire season, particularly when migrant species are concerned, need to be cautiously considered. Consequently, the impact of each of them needs to be assessed in general or for the particular species or group of species that are of interest.

9. Assess how drought and other stresses may increase fire risks when drawing management plans for biodiversity

Conservation scenarios that include fire must take into consideration the level of stress being endured by the various species since, little by little, they will inhabit areas that are more stressful for them due to changes in climate among other stressors. The capacity of particular species or groups to respond to fire under such circumstances and to changes in fire regime needs to be appraised. As fires might occur under extreme conditions not seen until now (drought being the most relevant) this type of interactions need to be fully taken into consideration in future management plans for biodiversity conservation. Additional stresses due to more frequent and intense heat waves, particularly in the open habitats of the first years of regeneration after fire, must also be known.

10. Include worst case scenarios in conservation plans

Although the great majority of fires are of small size, some of then can attain very large sizes, in the order of thousands of hectares. In Spain, the maximum size of any fire recorded is around 30.000 ha, and the maximum length is 45 km (Moreno et al. 1998). The potential for one fire to spread over a whole protected area at once is not negligible. Smaller and homogeneous areas in a matrix of high fire risk are the most threatened. The prospect of increasing fire size under future conditions further adds to this. Consequently, worst case scenarios that include burning a large portion or even the whole protected area when these do not exceed several thousands of hectares needs to be contemplated. The role of buffer zones in this context needs to be equally appraised.

11. Examine how fires may bring opportunities to accommodate species to the new climate

Fires, by opening new space, and by having reduced competition among organisms in the early phases can open new space for species to move upwards or northwards in search of suitable climate. But this can also be used for invaders. Differentiating the new colonizers that are now attuned to the new conditions from those invading is important. Identifying the potential for fire to act as stepping stones must also be considered.

12. Identify species at greater risk

Species of late successional stages, thus requiring longer time to colonize burned areas, are probably the ones at greater risk in scenarios of increased fire frequency. Moister sites should regenerate quicker than more xeric sites, but their rate of recovery will be delayed with the onset of reduced precipitations under future climate for large parts of SEM. Consequently, their recovery period will be extended and the probability of burning again in earlier stages of regeneration indicates that species proper of mature successional stages might suffer. Studies should emphasize determining which groups of species enter at which state of the postfire succession and on the time needed for their recovery.

13. Identify which species may never recover after fire

Among those species most likely to suffer from fire are those of reduced distribution that are linked to particular systems that are fire sensitive. That is, those that do not regenerate after fire. A fire, particularly a large one, can severe these populations for long, making its recovery difficult. Identification of bottle-necks and deadly-traps among organisms and their systems in the event of fire is critical for those species that may be most threatened.

14. Promote research in the ecological links between species that may suffer a mismatch by the combination of fire and climate change

Climate change is producing mismatches among species (in pollination, in dispersal). Furthermore, fire con contribute to alter them. Identifying mismatches that are enhanced by the combination of fire and climate change might be of relevance for the maintenance of species that may already be in danger.

15. Examine risk of fire in possible changes in the protected area network

With climate change, the size of the protected areas will have to be increased to achieve the same conservation objectives. Until now, fire has not been taken into consideration in the design of the network of protected areas. Yet, its effectiveness can vary. Consequently, future modifications must consider how fire would affect its effectiveness. Since it is likely that the protected areas of the current network are those in a better state of conservation, which, presumably, are those further away from human influence, it is likely that new additions will be closer to human habitations, thence with higher risk of fire. Risk of fire must be included at the time of modifying the network of protected areas.

16. Improve awareness on the ecological role of fire

Fire is commonly seen as something negative, but it can play a dual role in the conservation of biodiversity. Fire, for the most part, hardly receives any attention in education, even in university programs, or not as much as its relevance demands. Every effort must be done to form and inform the general public and students at all levels about the role of fire in ecosystems and biodiversity conservation.

17. Promote research in how wildland fires affect biodiversity in a context of climate change

Knowledge on how fire affects the various groups of organisms across gradients is still a must. Long term observation sites, where the main groups of are studied jointly should be established.

Large fires, particularly large fires episodes, are laboratories that should be explored in depth for their role on biodiversity. Since many of these fires occur along gradients, these are opportunities that should not go by unexplored.

Maps with fire history are now possible for the last decades. These offer opportunities to study the impact of repeated fires on biodiversity across groups and across landscapes.

Protected areas are not static and will change with climate change. Modelling their fate and their vulnerability under scenarios of climate and fire change are crucial to understanding their future role in biodiversity conservation.