

## AFTER LIFE PLAN

During the project, very great efforts were made to control ailanthus infestation within the AMNP, higher than initially assumed, because the infested area was huge, and the number of infested areas well above what could be expected. The Park extends over a very large surface, with a territory in which public and private areas alternate, agricultural areas and natural habitats, in a scenario very complex and difficult to manage.

To ensure that the great results obtained during the project will be preserved, and the enormous efforts made will not be vanished, it will be necessary to operate in three main directions:

- management of the vegetation already treated, to avoid the growth of resprouts and new shoots, and that slowly the weed vegetation can take over again;
- containment of the infested areas of the park where it was not possible to carry out the operations, for the reasons above reported, to prevent the infestation from spreading to other areas;
- control of new infestations from the infested areas outside the Park.

Regarding the first point, it must be emphasized that many treatments have been made in private areas where landowners or farmers have given consent to the treatments. They appreciated the interventions made, and were well educated on the risks of new possible infestations and on the need to monitor continuously the territories in which the ailanthus had been controlled. They will personally be the best "controllers" in the area, because they will have interest in continuing to control the infestation. In addition, the landowners or farmers who have joined the project and authorized the elimination of the species, can intervene in the future with the treatments without requiring any authorization, should a new action be necessary to control the ailanthus on the shoots or on new plants born from seed.

With regard to the public areas treated, the project partners have among their institutional activities those of controlling the territory, avoiding alien invasions and respecting national and European regulations on the conservation of nature and biodiversity. The recent European legislation, as also underlined by the Italian Ministry, will give greater surveillance and intervention powers.

Regarding the second point, landowners who have not authorized the removal of the ailanthus and therefore still have invasive species within their properties, may be obliged to carry out / have targeted interventions to control the ailanthus, for avoid spreading in areas where this species has been eliminated. In this regard, reference is made to what is explicitly indicated in the national reference standard, more specifically in Article 22, paragraph 5, which states: The competent authorities for the territory adopt the necessary measures to guarantee access to private areas in the event that is required in the context of management measures. So, as regards the lack of access to the funds, these local authorities will issue access orders for the removal of the ailanthus specimens, also in consideration of the huge annual production of seeds which constitutes an important recolonization factor in the reclaimed territories.

Moreover, the regional administration is obliged to conduct actions aimed at the management or eradication of all invasive alien species of Union relevance present on the administered territory, including any recolonizations of parts of the territory where the species has been eliminated. These actions must also be pursued by the Park Authority.

Regarding the third point, pending formal approval of a species management plan, the prohibitions established by both Union and national legislation apply, which include, inter alia, the prohibition on the

transport, sale, planting and use of invasive plant species. Moreover, the participation to specific technical worktables on the management of invasive alien species, the awareness of local administrations on these issues, as well as the need to intervene at the regional level, will ensure that measures for the containment of the species are promoted even outside the Park, possibly with adequately funded management actions.

## SWOT Analysis

### Strengths

- The interventions on *A. altissima* were carried out through an innovative, eco-compatible and sustainable chemical strategy, based on the use of a systemic herbicide (glyphosate) introduced locally in the stems with low volume application techniques. Thus, effectiveness of the treatments has been increased, reducing the risks and negative impacts associated with the use of pesticides on the environment and human health.
- The control methods used combine the use of mechanical and chemical methods and allow maximum effectiveness, reduced use of herbicides, minimum risk of exposure for operators, minimum dispersion of herbicide in the environment (in compliance with the Directive on sustainable use of pesticides), absence of drift and effects on non-target species.
- The used techniques easily replicable and involve the use of common and easy-to-use tools.
- The use of glyphosate, applied with the techniques proposed by the project, proved effective for the control of invasive flora with no negative impact on the local flora.
- The used techniques can also be used anywhere and on any unwanted tree or shrub species.
- The elimination of the most harmful invasive species present in the AMNP had positive consequences on natural habitats and local biodiversity.
- The optimization of low impact management methods, applied for the first time on an extremely large surface such as the entire territory of the AMNP, allowed to demonstrate the possible control of ailanthus on a large scale with satisfactory results, with the recovery of huge infested surfaces. The use of a herbicide in a precise, aware, and considerate manner towards the environment has also made it possible to demonstrate, beyond pretexting criticisms and baseless attacks, that the practices used have not led to any negative consequences for the environment, indeed contributing to its recovery and the protection of biodiversity.
- The interventions, apart from that for the personnel necessary for the interventions, foresee very low costs.
- The involvement of a large number of landowners and farmers, both in the demonstrative phase and in the "appreciation" of the results, made it possible to have a considerable consensus among the population.
- The dissemination activities, consisting in numerous visits in the Park and meeting with students, citizens, politicians, that raised the awareness towards the problems of biotic invasions, the need of their control, and the negative impact of ailanthus in the Park.
- The help of the interactive map will allow performing surveillance in a targeted manner, checking over time especially the sites that were more haunted or more difficult to manage.
- The entry into force of the new European and national legislation, which considers *A. altissima* an alien invasive species to be controlled, will certainly streamline the procedures for interventions, and will

invest the Park with the responsibility of managing this alien species, preventing anyone inside the AMNP the possession, propagation or voluntary reintroduction of specimens of this species.

- The detailed capillary mapping system of ailanthus infestation throughout the AMNP, and subsequent monitoring of interventions and results, constitutes an innovative management tool. This software, developed for the Project, will allow a continuous updating of data in real time, operating directly in the field, and to keep track of all the infested areas.

## **Weaknesses**

- The Park has a huge extension (over 66 thousand hectares) and is surrounded by numerous cities infested by ailanthus, and therefore it is not easy to ensure continuous and complete surveillance of the whole territory, or to absolutely prevent the accidental reintroduction of the species, for example through the transport of seeds by the wind.
- The Partners cannot allocate funds specifically for the required actions, as this is not allowed by the respective administrations. However, each of them has in its own “missions”, the instruments for managing the infestations and guarantee the obtained results.
- The presence of infestations in private areas poor in arboreal vegetation has made and can make it difficult in some cases to obtain authorization from the owners for eliminating them.
- The eradication protocol implemented is effective, but must be supported by a large workforce, such as to guarantee the execution of the treatments as quickly as possible; in particular, it is necessary to promptly remove / reprocess the sprouts in order not to frustrate the work done.
- Italian and regional legislation regarding the management of invasive tree species is still incomplete and could lead to erroneous interpretations, and therefore can be an obstacle to a correct management of these species, and to the organization of control interventions.

## **Opportunities**

- Although in LIFE Projects, due to the very nature of the same, little space is granted to basic research, some scientific collaborations with other research institutions have been started during the project in order to identify alternative strategies to the use of herbicides chemical, or supporting the methods used to improve their effectiveness, environmental sustainability and long-lasting results. Preliminary studies have made it possible to identify pathogenic fungi of ailanthus and to investigate the production of natural metabolites that can be used as natural herbicides. Other studies, in collaboration with the University of Bari and the ENEA of Rome, allowed the identification of promising eriophyids, potential biocontrol agents of the ailanthus.
- The scientific interest of other research institutions shows how the issue of the management of ailanthus in particular, and of invasive species more generally, presents an enormous possibility of future developments.
- Citizen science and citizen involvement systems may be developed, to allow even ordinary citizens, residents, students, tourists to easily report the possible presence of the invasive species.
- The practices used can be easily used in other contexts (for example urban areas) where there are the same important needs to avoid the dispersion of the herbicide in the environment.
- These practices could be further improved, for example by developing automatic or semi-automatic tools to make cuts and brushing in a single action, or incision and herbicide application at dosages automatically calibrated according to the size of the plants.

- The updated list of invasive alien species to which containment measures need to be taken (attached to Implementing Regulation (EU) 2019/1262 of 25 July 2019) also includes *A. altissima*. This means that the Italian government, with its responsible bodies, must also legislate on, and implement, the practices necessary for the control of these species. At this regards, the Project has developed low environmental impact protocols that can also be used in Natura 2000 sites, and that could be adopted at national and community level, without even the need for environmental impact assessment.
- The Ministry of the Environment and Protection of the Territory and the Sea has officially expressed its opinion regarding the possibility of continuing the activities carried out within the Project even after the end of the same, and of intervening in the Park areas, both to consolidate the results obtained , and to avoid the recurrence of outbreaks of ailanthus infestation, by involving the relevant public bodies. This communication provides valuable indications on how current legislation can and should be applied at regional level. Furthermore, the letter comments how "the experience gained during the LIFE project in the Alta Murgia park should be considered as an important element for the national strategy and that the results achieved should be preserved".
- The participation to technical worktables could allow to give more attention to the problem of invasive species and to the need of their control

## Threats

- Continuous surveillance of the territory, to prevent the infestation from reoccurring, must be entrusted first of all to the landowners and farmers, who own most of the areas from which the ailanthus has been eliminated, and have the tools to be able to intervene directly.
- The new regulations at national and EU level do not yet fully apply at the local level, and it is not entirely clear what can be done and what is mandatory to do. This can create some confusion on the part of those who have to intervene in the area.
- Considering the considerable interest also of administrators and technicians, the generated awareness could start a "virtuous circle" and lead to the implementation of control and management rules for invasive alien plant species largely responsible for the degradation of urban furniture, compromising viability, hygiene of the city areas and urban, historical, artistic and architectural heritage.
- The legislation provides for the abolition of the use of glyphosate in the future, and therefore the risk is that it will no longer be possible to intervene with this herbicide, which is by far the least environmentally impacting.
- Some individual citizens have already opposed the project in the past, citing the use of chemicals in a natural area, or the need to protect any living form, even if alien or invasive, as justifications. These episodes may repeat in the future.