

Briefing Note

Workshop on the Box Tree, 13-14 April 2016, Mendel University, Brno, Czech Republic

The Brno workshop on the preservation of the box tree was held in a friendly atmosphere and highly constructive spirit. The Abkhaz and Georgian participants remained committed and engaged throughout the discussions. They seemed genuinely interested in finding common solutions to the problems affecting the box tree and were focusing on substance rather than politics. Especially the Georgian participants appeared determined to steer clear of politicization, and both sides avoided making statements that could spark negative reactions from the other party. Socially, the participants also made a good match and spent much time together during meals and in the evenings.

The discussions were largely of a technical nature and the workshop provided a space for useful exchanges of information and discussions of issues of common interest. The first day of the workshop focused, in particular, on the current situation, and the regional as well as the international experts provided presentations on the regional state of affairs (Georgia, Abkhazia and Turkey). During the proceedings of the second day, the focus was more on operational issues, including on specific action points and on discussion of current and future interventions.

International Research

One session was dedicated to the research conducted so far by international researchers on the two invasive pests that are threatening the endemic Caucasian box tree (*Buxus colchica*): the box tree moth (*Cydalima perspectalis*) and the box blight (*Cylindrocladium buxicola*). The research was presented by international experts Dr. Marc Kenis, Prof. Otakar Holuša, Prof. Asko Lehtijärvi, Dr. Iryna Matsiakh, Dr. Gabor Vetek and Ms. Aubrey Bras, and included studies on the spread and impact of the two pests.

In Europe, the box tree moth was first observed in Germany in 2007, and since then it has been observed in 27 countries in Europe and in the Caucasus since 2012. The first observations were made in the region of Sochi but in less than 3 years it invaded most regions of the Eastern Black Sea. Its rapid spread is not only caused by natural migration (the moth can cover a distance of only 10 km per year), but particularly as a result of international trade with ornamental plants. The pathway of introduction of the box blight is uncertain but seems to have arrived in the Caucasus region from Russia and was first observed in 2007 in Abkhazia, and around 2010 in Eastern Turkey.

Whereas discussions predominantly focused on the box tree moth, there appeared to be no acceptable method of treating the box tree in its natural habitat against the box blight. However, the research indicated that not all box trees are attacked by the blight. In Iran, where the box blight is particularly prevalent, some 5% of the box trees remain unaffected by the pest. However, it remained a serious concern that the combined impact of the box blight and the box tree moth might result in the extinction of the box tree in the Caucasus and the East Black Sea region. The fungus could survive in

leaf debris for up to five years and as microspores in soil for up to 15 years and the box blight is therefore particularly difficult to fight.

Short-term Measures - Spraying

The session on short-term measures focused on spraying of the box tree against the moth. With the early onset of spring, according to the Abkhaz participants, spraying had started in Abkhazia a few weeks earlier. A specially equipped helicopter had been provided from Krasnodar in Russia, by which spraying had been carried out in so far 50% of the affected areas. The areas covered by the action included the large box tree groves in Pitsunda and Skurcha, although it was uncertain whether these stands would have a chance of recovering after last years' total defoliation. In case that no results in terms of recovery would be observed by the summer, spraying in these areas would be terminated and efforts would rather concentrate on saving stands that are still alive.

Spraying by helicopter could be effective in open landscapes, but less so in mountainous conditions, the Abkhaz participants noted. Hence, it was deemed important to spray from the ground as well, but unfortunately the technical capacity for such action was limited. For the spraying in Abkhazia, mainly the pesticide *Dimilin* (Diflubenzuron) was being used, purchased in Russia, since it is known to have less negative side effects than traditional chemicals.

In Western Georgia spraying was scheduled to start within the subsequent two weeks. Special vehicles were in the process of being purchased by the Ministry for Environment Protection through a state tender process, which was to be completed in a matter of days. The Ministry would be carrying out the spraying of the box natural stands in forests (400 ha, of which 250 ha were infested and 150 ha with a risk of infestation) and in protected areas (150 ha), in Guria, Samegrelo and Imereti using the biological agent *Bt* (Lepidin, a brand produced locally in Georgia). *Bt* (*Bacillus thuringiensis*) was recommended by experts as the least harmful agent and is being used against the box tree moth also in most European countries.

The Ministry of Agriculture of Georgia in cooperation with the district authorities would be responsible for additional spraying of ornamental box trees in parks and public areas (ca. 150 ha) using a chemical agent, *Deltamethrin*. Ten spraying vehicles were available for this purpose, which were in use also for spraying against other pests.

A specific box tree action plan had been elaborated over the past few months by a designated State Commission with a membership consisting of representatives of the Ministry of Agriculture, Ministry of Environmental Protection (including the National Forestry Agency and the Agency for Protected Areas), Ministry of Economy, Ministry of Regional Development and Infrastructure, the Forest Protection Department of the Autonomous Government of Ajara, the Georgian Orthodox Church and civil society organisations. The action plans described the planned efforts with respect to spraying, but also included strands to create a seed bank in Batumi, a nursery in Rukhi near Zugdidi and efforts to inform the public about the dangers of transporting box tree between the regions. Expectedly, the action plan would soon be approved by the Cabinet of Ministers and it was hoped that it could also be a useful tool in raising international awareness on the issue and for fund raising.

In terms of regional collaboration, the participants acknowledged the importance of regularly exchanging information on the situation on the ground, including on the spread of the box tree moth and the box blight, and on applied methods to fight the pests, including in particular spraying and monitoring. Georgian participants asked the Abkhaz side to be kept informed about the effects of spraying with *Dimilin*. Dr. Shiroma Sathyapala (FAO) noted that she would be available for consultation and advice, including on choice of pesticides and on pruning methods, and she encouraged the regional participants to contact her whenever needed. She and FAO would also be available for an assessment to Abkhazia, if invited. She strongly discouraged the use of chemical pesticides other than *Bt* and *Dimilin*.

The representative of UNDP, Niina Tenhio, briefly surveyed the efforts of her organisation since last summer to address the box tree issue in Abkhazia and noted that UNDP had been working with the Head of the Abkhaz (*df*) Institute for Ecology Dr. Roman Dbar and the NGO Apsabara to bring together relevant stakeholders in addressing the issue and supporting the NGO's efforts to collect data on the pest and enhancing public awareness. She also mentioned that UNDP participated as an observer in the Abkhaz (*df*) governmental working group on the box tree and that UNDP, more broadly, carried out agricultural programmes that might also address issues of relevance for preservation of the box tree.

The delivery through UNDP of the spraying equipment funded by the German OSCE Chairmanship was discussed as well, and the Abkhaz participants emphasised the importance of an urgent delivery of the equipment. UNDP's representative noted that delays had occurred with complications in the bidding process. The Italian producer that had initially won the tender had been unable to deliver in time, and a new supplier was now in the process of being identified. Abkhaz lead participant, Dr. Chitanava, said that the Abkhaz side highly appreciated this support, but urged that the equipment be delivered expediently. The UNDP representative provided assurances that every efforts would be made to deliver the equipment soon.

Short-term Measures - Monitoring and Research

On the basis of the project currently implemented by CABI following the EUSR engagement on the matter and with funding provided by the German OSCE Chairmanship, leading expert Dr. Marc Kenis provided an introduction to a proposed moth monitoring system that could be established in affected areas in the Eastern Black Sea region. As part of this intervention, 50 moth traps each to the Georgian and the Abkhaz sides along with 200 pheromone capsules would be provided shortly. The input was highly appreciated by the Abkhaz and Georgian participants.

The discussions in this session focused on different complimentary approaches, including on the practices for use of the pheromone traps for the moths (when flying) combined with visual inspections of the larvae. Marc Kenis emphasized that the traps were not efficient for actual control, but specifically for monitoring, i.e. for obtaining an understanding of the moth's cycle and population dynamics as a basis especially for efficient spraying. Marc Kenis offered his assistance in outlining further recommendations to the Georgian and Abkhaz participants as they worked out the specific modalities for their monitoring systems and also advice in developing research projects (with due

consideration of their research capacities and human resources available), to study the population dynamics of the moth in Abkhazia and well as in Guria/Samegrelo/Imereti.

While the Georgians noted they were already carrying out trap based monitoring to a limited extent, they agreed that this monitoring could be developed. Expert Dr. Gabor Vetek suggested on the basis of collaborative research on the box tree moth he had conducted in the Western Balkans that an online database might be established for exchange of monitoring observations across the regions.

Systematic monitoring and research of the moth's biology and life cycle in a wild environment had not been conducted in the region earlier, it was noted, and such studies could prove highly valuable not only in fighting the box tree moth, but also in developing greater preparedness for taking appropriate measures in responding to future invasive species. The study of the box tree moth under the specific climatic and ecological conditions of the Eastern Black Sea region would help creating a recipe that could be of immense value in fighting future pests. Dr. Savely Chitanava noted that Abkhazia was likely to face problems in the coming years with an invasive beetle, *Rhynchophorus ferrugineus*, which would seriously threaten the palm trees on the Abkhaz Riviera. Also several other invasive insects observed in Russia's Sochi region might soon make their way to Abkhazia, therefore necessitating preparedness in responding to potential pests.

Research: Literature Impact Assessment Study

Another project component under CABI's project was presented: A literature study on the impact of the box tree moth and the box blight. In this study, which will be carried out over the coming two-three months, Marc Kenis and fellow expert Ruth Mitchell would review existing literature in a study of the "Potential ecological and societal impact of the box tree moth and the box blight in the Eastern Black Sea Region". The analysis would focus on the implications of a loss or a severe decline of the box tree in the region, and how it would influence the ecology, including flora and fauna, in the affected areas. The study would identify the types of woodlands and scrublands where the box tree occurs, and assess which species were specific to the box tree and likely to disappear with it. The study would also look at the cultural significance of the box tree, which is known to play a particularly important role in the Caucasus, and would also provide recommendations and consider different scenarios for pest control management and their impact. The research that would focus primarily on the Eastern Black Sea region and might also include material from Azerbaijan and Iran, would be a contribution to enhancing awareness regionally and internationally, and would be an additional tool in efforts to raise funds for fighting the pests.

Participants expressed their interest in the study and several experts, both regional and international, committed to provide support in finding reference material for use by the researchers in drawing up their paper. The literature review is expected to result in a joint research publication with collaborators from all regions of the Eastern Black Sea as co-authors.

Long-term Measures: Classical Biological Control

Discussions of long-term strategies centered around classical biological control (CBC), aiming at identifying and introducing an exotic natural enemy of the box tree moth in the Eastern Black Sea region as a viable, cost-efficient and ecologically friendly alternative to the use of pesticides. While until this type of control could be put in place there were no alternatives to use of pesticides, the introduction of a natural enemy could provide a sustainable long-term solution to pest control, as outlined by Marc Kenis. The objective would be to introduce an enemy that could lower the damages caused by an invasive species below a threshold that would be economically or environmentally acceptable. In this case, an effective CBC could be based on a parasitoid that attacks the eggs, larvae or pupae of the moth, thus seriously reducing the population. However, it would be a complicated and time consuming process to identify, test, breed and introduce the parasitoid, and would require a 3-5 year research programme. While CABI is available for carrying out such a programme, further explorations are needed to decide whether such a component could be integrated into a FAO intervention, e.g. under ENPARD II or ENPARD III.

Abkhaz participants had observed signs that a predatory wasp in Abkhazia was developing a taste for the box tree moth, and a bat living in Abkhaz gorges with limestone caves also seemed to attack the moths, thus preventing its penetration deeper into the valleys. Also Georgian researchers (references made to Dr. Manana Kereselidze, Department of Integrated Plant Protection Research, Scientific-Research Center of Agriculture at the Ministry of Agriculture) had observed a local parasitoid wasp that could feed on the larvae. Abkhaz and Georgian participants expressed interest in possible international support for research on the use of local natural enemies.

However, while local natural enemies might gradually emerge, it was deemed far from certain that they would be able to bring the box tree moth population down to a level sustainable for the ecosystem; at least this would likely take many years while the situation is rather urgent. The experts agreed that work on CBC in parallel to the possible emergence of local natural enemies would be of paramount importance for the survival of the box tree. Marc Kenis noted that the parasitoid fly (*Chouioia cunea*) had been used for control of the American white butterfly, but that this parasitoid attacked many different species and therefore was unlikely to be effective in fighting a specific species such as the box tree moth as it has been attempted in Russia. Millions of flies would have to be released continuously and this would affect also other insects.

Future Workshops on the Box Tree

In the concluding session, the participants expressed their satisfaction with the proceedings of the workshop. All participants agreed that the event had provided a valuable platform for discussing the problems of the preservation of the box tree in the Eastern Black Sea region, and for putting the discussion into a broader international perspective based on the research conducted by leading entomologists and plant pathologist specializing in the threats to the box tree. The workshop had also provided an important space for exchanging information on the current situation, including on the specific measures taken to control the pests. In this context it was noted that the full focus on substance had been encouraging, notwithstanding political sensitivities. Apart from undertaking

short term measures to control the insect pest, including through spraying, the Abkhaz and Georgian participants committed to make use of the moth trapping monitoring and visual inspections as well as contributing, where relevant, to the literary impact assessment study.

While UNDP would continue to engage in efforts to control the box tree moth through existing programmes on both sides of the Inguri river, the Abkhaz participants stressed their need to involve also FAO, and in turn this agency committed to visit Sukhumi as soon as possible upon receiving an invitation.

Both the Abkhaz and the Georgian participants expressed their interest in hosting a future workshop/conference on the box tree. The Abkhaz mentioned a conference on bio-diversity to be convened in Sukhumi in September and suggested that a special roundtable with all regional actors (Abkhazia, Georgia, Turkey and Russia) could be set up. Also the Georgian participants expressed interest and willingness in hosting a follow-on workshop on the box tree in Tbilisi.