

Action C5.  
Extension of the Prevention and early  
warning system to other Natural Parks

Deliverable:  
Trapping design for French replication sites - 2021 update

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## Summary

The 2020 trappings based on black multifunnel traps baited with the 4 attractive compounds defined in 2020, could not concern the inner part of the Port-Cros National Park, the planned replication site. However, traps deployed on the Porquerolles island, in areas close to the limits of the Park did not capture any *Xylosandrus* beetles. A trapping network deployed on the coastal seashore, including 10 sites equipped with 17 traps, detected *X. compactus* at 2 sites rather far (>50km) from the National Park but no *X. crassiusculus*, were trapped. The suggested 2021 protocol will be based on the same traps and lures as in 2020 but new agreements with the National Park will allow to settle a trap within the park limits. The former trapping network on Porquerolles island and on the closeby seashore will be maintained in order to detect possible movements of the beetles towards the Park.

## 1. Introduction

The Covid-19 epidemics largely perturbed the surveys planned in 2020 in delaying all the planned trappings to mid-june at least. Moreover, the administration of Port Cros national park did not give any reply to our inquiries at this moment. Thus, the 2020 survey firstly consisted in generalizing a network of attractive traps on the seashore nearby to the Port Cros islands, including 10 sites equipped with 17 traps, in order to detect possible spots of beetle presence susceptible to expand to the Park. Secondly, owing to one of the associated partner (Cosave-Eric Chapin) we finally succeeded, from early July on in deploying two traps on the island of Porquerolles. This island is partly included in the National Park, but the traps were settled in a zone not belonging to the Park.

## 2. Lure and trap design used in the replication sites

The trapping consisted in black multifunnel traps baited with 4 compounds: Ethanol/ (-)  $\alpha$ -pinene/quercivorol (1 ml)/  $\alpha$ -copaene (2 ml). The exact design is shown in Figure 1.

Ethanol UHR (100ml with 96 % purity; release rate 2 g/day at 20°C) (Figure 1A) and (-)  $\alpha$ -pinene (25 ml with 98 % purity; release rate 0.3 g/day at 20°C) (Figure 1B) were obtained from Econex (Spain) as diffuser packs whereas Quercivorol and  $\alpha$ -copaene were obtained as bubble cups (Figure 1C-D) from Synergy Semiochemicals Corp. (Burnaby, BC, Canada). Although expected by the suppliers to last 60 days, pragmatic observations led to consider that the efficacy of these doses disappear long before under the Mediterranean climate during summer. Thus, all of these doses were to be replaced after 6 weeks. The position of the doses on the trap were as follows: the pack of ethanol tied to the middle of the trap (Figure 1) and the bubbles of quercivorol and  $\alpha$ -copaene as well the pack of  $\alpha$ -pinene tied to the 2<sup>nd</sup> funnel from the bottom.

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## 3. Results of the 2020 trappings in the replication sites

Table 1 presents the captures of the beetles obtained in 2020 on the Porquerolles island and on the closeby seashore. No *Xylosandrus* beetles were trapped on Porquerolles island. *X. compactus* was trapped on 2 sites of the Var seashore (Saint Raphaël, Roquebrune/ Argens) but rather far (>50km) from the National Park. It was not trapped in its former sites of presence of Château Léoube and Le Rayol, which are located at a shorter distance from the Park. The other species, *X. crassiusculus*, was not trapped at all in the sites of the trapping network.



Figure 1: Trapping design used in 2021

Site	Number of traps	<i>X.crassiusculus</i>	<i>X.compactus</i>
Porquerolles 1	1	0	0
Porquerolles 2	1	0	0
<b>Agay (Saint Raphaël)</b>	<b>1</b>	<b>0</b>	<b>3</b>
Bormes Château Léoube	2	0	0
Bormes le Ruscas	2	0	0
Col du Canadel	1	0	0
Le Rayol	1	0	0
Le Thoronet	6	0	0
<b>Roquebrune sur Argens</b>	<b>1</b>	<b>0</b>	<b>1</b>
Saint Raphaël	1	0	0
Saint Tropez	1	0	0
Toulon	1	0	0

Table 1: *Xylosandrus* captures during 2020 in the replication areas

However, all these 2020 results must be considered with caution since the late settlement of the traps did not allow to capture the first generation of both beetles, emerging from mid-April to early June, which is usually the major one.

#### 4. 2021 protocols to survey the possible spread of *Xylosandrus* spp. towards the Port-Cros National Park

New contacts with the head of the National Botanical Conservatory of Porquerolles Island, which is effectively part of National Park of Port Cros and hosts a major collection of fig, mulberry and carob trees, allowed to deploy one trap in this Conservatory. Besides, the two traps settled in other parts of the island will be maintained. In addition, INRAE team will go by July to Porquerolles island to survey for any symptoms of tree and shrub damage by *Xylosandrus*. The trapping on the seashore will be maintained at the same 10 sites as in 2020 in order to appreciate the differences with the 2020 captures (Figure 2).



Figure 2: Map of the 2021 trapping network for early warning of expansion of *Xylosandrus* spp. and possible incursion to the National Park of Port Cros. New trap in Porquerolles island in purple.

A special attention will be put on the two sites where previously the presence of *X. compactus* was detected, at Château Léoube and Le Rayol. Here survey of damaged shoots will also be organized in order to confirm or not the absence of the beetles. In case of captures of *Xylosandrus* on the continent in traps located elsewhere than in the areas where the beetles have already been recorded, all sensitive plant species are to be checked for damage symptoms within a radius of 100m. The eventual need for pruning or removal of infested plants will be discussed with officers of the Forest Health Department.

The 2021 trapping protocol will be similar as the one for 2020 (cf 1.), the same numbers of black multifunnel traps per site baited with quercivorol (1ml) +  $\alpha$ -copaene (2 ml)+ Ethanol + (-)  $\alpha$ -pinene. Collection of the trapped insects will occur every 3 weeks and the attractants changed every 6 weeks.

Taking into account the problems occurred in 2020, specific arrangements have been adopted during the February 2021 meeting in Antibes in order to guarantee the beginning of the trappings by early April and their duration until October, thus allowing a reliable comparison of the numbers of trapped beetles between 2019 and 2021.

## 5. Conclusions

The 2021 trapping network will allow to consider for the first time the inner part of the National Park of Port-Cros whereas the previous SAMFIX studies were restricted to its vicinity. It will allow to confirm whether the beetles have effectively not invaded the park yet, and under the objectives of this LIFE project to suggest methods for protecting the park from any incursion of *Xylosandrus* from the close seashore or with ornamental trade.