SUMMARY REPORT A2

Study area

The *ex-ante* monitoring area for the two saproxylic species covers a total area of 54,812 ha and includes 39 Natura 2000 sites (one of which in Tuscany), of the 158 presents in Emilia-Romagna, in addition to some external areas near the sites themselves. The selection of the Natura 2000 sites to be investigated was carried out using three criteria: the first, analysing the official forms and examining previous data on the presence of the species, then taking field trips to verify preliminarily, based on the vegetation maps and the presence of suitable habitats. The other two criteria were based on aptness, excluding from the monitoring activities those sites where it would not have been possible to carry out the conservation measures envisaged by the Life project. Additionally, those where the monitoring program of the Life MIPP project was in progress were excluded, so as to optimise resources and to concentrate the field effort in the areas less investigated to date. The territories of the two national parks that fall between Emilia-Romagna and Tuscany are also within the project area. For this reason, the project area also included, for the sole *Rosalia alpina* species, a limited area of the Tuscan side.

Results

Osmoderma eremita

In the ex-ante monitoring campaigns of the LIFE Eremita project, carried out in 2016 and 2017, the species was overall found with 85 individuals, of which 20 in 2016 and 65 in 2017. Most reports (No. 77) fall within the Natura 2000 Network, 8 specimens have been reported in non-SCI areas but in any case, close to the Natura 2000 Network.

As for the sampling methodology, 47 specimens (45 F; 2 M) were captured through the use of BCWTs and 1 specimen (F) using PT traps; 27 reports (1 M, 1 F, 29 remains) were detected with the WMS method and 6 reports (2 M and 4 F) through VES. There were no recaptures of the marked specimens.

Rosalia alpina

Within the monitoring of the LIFE Eremita project (2016-2017 biennium), 110 specimens were contacted inside four Natura 2000 sites (IT408003, IT408002, IT514005, SIC IT4030004) and in two stations outside SCI. Furthermore, three habitat trees have been identified with the presence of holes ascribable to the species, two in the IT408003 site and the other one in the IT405002 site. Also, for *R. alpina*, most of the detections (no. 90) fall within the Natura 2000 Network; 20 specimens have been reported in non-SCI areas but in any case, adjacent to the Network. There were no re-captures of the marked specimens.

Coenagrium mercuriale

In the ex-ante monitoring campaigns of the LIFE Eremita project in the 2016 and 2017 biennium, *C. mercuriale castellanii* resulted as present in two Natura 2000 sites (IT4070011; IT4090002).
A male specimen has been identified, probably a wandering individual off-site Natura 2000, near SCI IT4070011, on the same stream on whose stretch flowing inside the site the population is well established. The highest number of individuals counted was registered on site IT4090002. With the VES method, 1513 adults were counted in 2016 and 1639 adults in 2017. With the CMR method, applied only in 2016, 375 males were captured and marked, 8 of which were recaptured. In the IT4070011 site, with the VES method, 24 adults were found in 2016 and 56 adults in 2017.

Graphoderus bilineatus

With reference to the monitoring campaigns carried out in the two-year period 2016 and 2017, the species was found only in Lake Pratignano (Fanano, MO) on the IT4040001 site. The number of individuals found is 4 adults and 1 larva in 2016, and 1 adult in 2017.
In the remaining 37 Apennine basins monitored, the species was not found, although in many cases other large and medium-sized Ditiscidae species (Dytiscus marginalis, Cybister lateromarginalis, Acilius sulcatus) were discovered.

Conclusions

Thanks to the Life Eremita project, for the first time in Emilia-Romagna a monitoring of *Osmoderma eremita* was so broadly organised that it simultaneously covered 34 sites of the Natura 2000 network, in environments potentially suitable for hosting the species, also detecting new presence stations. Finding of the species in the sites investigated in the Apennine belt is of considerable importance since in most of these areas it had never been previously reported. Given the previous knowledge and the results of the monitoring carried out, however, it is not possible to provide a complete picture of its dissemination on the regional territory. The knowledge of the current distribution of the species in the region is affected, in particular, by the scarcity of data due to the difficulty of observing this insect and the lack of specific research conducted by trained personnel and on a wider territorial scale. However, it can be confirmed that at present in the regional territory the species is in strong rarefaction, very localised and with a definitely fragmented distribution. The current diffusion of the species is a consequence of the generally inadequate management of forest environments and in particular of the decayed and hollowed trees that make up the reproductive sites and the only life environment. For these reasons, interventions that lead to a restoration of suitable environments, with an increase in habitat trees suitable for the species, turn out to be of fundamental importance for the conservation of the residual populations in the distribution area of the species. At the same time, it is essential to define and implement specific management measures for the management of forest environments, and in particular the habitat 9260 - *Castanea sativa* woods.
Also, for *Rosalia alpina* for the first time in Emilia-Romagna a monitoring was organised that took place at the same time in all Natura 2000 sites with beech woods, from the Emilia to the Romagna Apennine area. The survey has outlined a regional distribution framework of the species, which is rather fragmented. In the beech woods of the Romagna Natura 2000 sites, the species has been confirmed only within the National Park of the Casentinesi Forests, where most of the reports are concentrated, mainly due to the availability of suitable habitat trees. As far as the Emilian mountain is concerned, for the first time the presence of the species has been documented in the central and southern part of the National Park of the Tuscan-Emilian Apennines, in areas where it was not previously known. Evidence was also found of the presence of *Rosalia alpina* in central-eastern Emilia, in an Apennine area where in the past it had already been reported (high Apennines of Modena). However, the scarce numbers obtained for the beech woods of the Emilia Apennines, despite the efforts made, suggest that these are relict and residual populations. The main critical issues for the conservation of *Rosalia alpina* are represented by extreme scarcity of dead wood and old trees, due to the aim at production in the management of the woods, especially those privately owned.
For what it may concern *C. mercuriale castellanii*, in Emilia-Romagna is limited to the foothill area and located in only three stations, in disjointed areas of the Romagna territory. The results confirm the regressive trend of the species in Emilia-Romagna, also because several reports dated between the 40s and 70s of the last centuries have not been confirmed recently, due to the gradual disappearance of the small sunny streams with clear and permanent waters, suitable to host the species. The monitoring carried out enabled the planning of habitat improvement

interventions and translocation actions aimed at reinforcing the populations present. The monitoring of *C. mercuriale castellanii* was the first application in Italy of the methods adopted by ISPRA (Higher Institute for Environmental Protection and Research) and the Ministry of the Environment for the monitoring of species of Community interest (Stoch & Genovesi, 2016). By using this method also in the ex post monitoring planned by the Life Eremita project, for the first time a temporal series of abundance values from which to obtain quantitative information on the population trends in Emilia-Romagna will be available.

In conclusion, the presence of *G. bilineatus* in Emilia-Romagna is reduced to a single mountain basin, an evolving peat bog within the SCI IT44040001 in the Modena Apennines, with a population that is likely in a negative trend. In the other sites of the Natura 2000 Network in Emilia-Romagna where the species was known (IT4050022 in the province of Bologna, IT4070001 and IT4070003 in the province of Ravenna), it has not been reported for more than twenty years and it is believed that historical stations do not have the proper environmental characteristics currently, due to the pressure factors in the Emilia-Romagna plain. The search for new stations of presence has not provided positive results and it is therefore possible to confirm the contraction of the historical distribution area of the species. Based on the results obtained so far on the only population present on the territory today, and not having sufficient guarantees that it might support the removal of possible founders for an ex situ breeding, it is deemed as prudent to exclude this work hypothesis, thus avoiding any risk of further worsening of the species state of conservation.