

CAMERA TRAPPING MONITORING OF ARBOREAL SPECIES: A CASE STUDY ON SQUIRRELS

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The use of camera traps to survey and detect animal species is not real news. However, the recent progresses of digital photography and the availability of budget equipment determined a dramatic increase in the use of this technique. Camera trapping has been generally applied to the survey of big or medium size mammals. We present a case study where camera trapping has been applied to the survey of arboreal rodents, in particular squirrels. Red squirrel (*Sciurus vulgaris*) is declining in Lombardy due to the expansion of the invasive alien grey squirrel (*S. carolinensis*). Therefore, efficient monitoring programs of these species are of particular importance for conservation. The study was carried out in the Site of Community Importance Oasi Le Foppe di Trezzo (SCI IT2050011), located in the territory of Parco Adda Nord (Lombardy, northern Italy), in the high Po plain. The area has a surface of 9.67 hectares and it is characterized by the presence of 9 artificial water basins in plain woodland with black locust, oaks, European hornbeam, poplars, hazelnuts and willows, surrounded by an agricultural and urbanized landscape. The main objective of our survey was the production of a check-list of mammal species. Besides camera trapping, we applied other traditional survey methodologies for terrestrial and arboreal mammals: trapping (Sherman live-traps), detection of sign and tracks, hair-tubes, periodical check of artificial nests.

We used 3 infra-red camera units (Model Keep-Guard KG560) that were set to record 10 to 30 seconds video clips 24h per day. Cameras have been operated since January 2010 and they were periodically moved in 9 sites. In each trapping site camera was blocked on tree trunks at variable height (from 30 to 180 cm). The camera objective was directed to an open area or animal path (3 sites), to the underwood (4 sites) or to a horizontal tree branch (2 sites). Sites were baited with different kind of food. Branches in particular were baited with hazel nuts, peanuts and fruits. A total of 822 video clips have been recorded in 326 camera trap-days. Percentage of failure (empty videos) was 27.7%, therefore the average capture efficiency was 1.5 animals per trap per day.

Red squirrel was considered only a potential, never observed, species. It was first

detected on March 30 by a camera trap pointed to underwood. A second event was recorded on July 21 in a different underwood place, 15 days after the displacement of the camera trap. From that day, the red squirrels, at least two animals, have been constantly recorded by the device. In total 270 events of red squirrel have been recorded in 255 trapping day (1.1 squirrels / trap-day). Success ratio was 270/534 clips (50.6%). Grey squirrel has never been observed in the protected area, before. Its first detection occurred on August 7. This species has been recorded 8 times from August to the beginning of October, in the same site. A baited hair tube was put in front of the camera trap, and the behaviour of both red and grey squirrel was recorded. Pointing the camera trap on baited horizontal branches, we obtained an even better efficiency. The first detection of a red squirrel was recorded after only 1 day (29 h) from the displacement of the camera trap in that position. In the same period we only collected from hair tubes 2 samples of red squirrel hairs and none of grey squirrel. Only 12 hair tubes were put in place in the study area. However, comparing the efficiency of hair tubes from literature data with that of camera trapping in our study, the latter seems to prevail. The added values of camera trap data are the possibility of individual recognition (for capture/recapture protocols) and to collect data about activity patterns of animals. The majority of the records was collected in autumn. In that period squirrels were active from 7:28 to 19:30, with three main activity peaks: morning (9 to 10); midday (12 to 13) and afternoon (17 to 18). The main observed activities, of course, were the search and collection of food (181 events), but also movements (86) and interactions with birds (3).

We would recommend the use of camera traps also for arboreal and low density species, as an enforcement of traditional methodologies. Spread control and monitoring programs of problematic species, like the alien and invasive grey squirrel, could be strongly improved applying this methodology.