

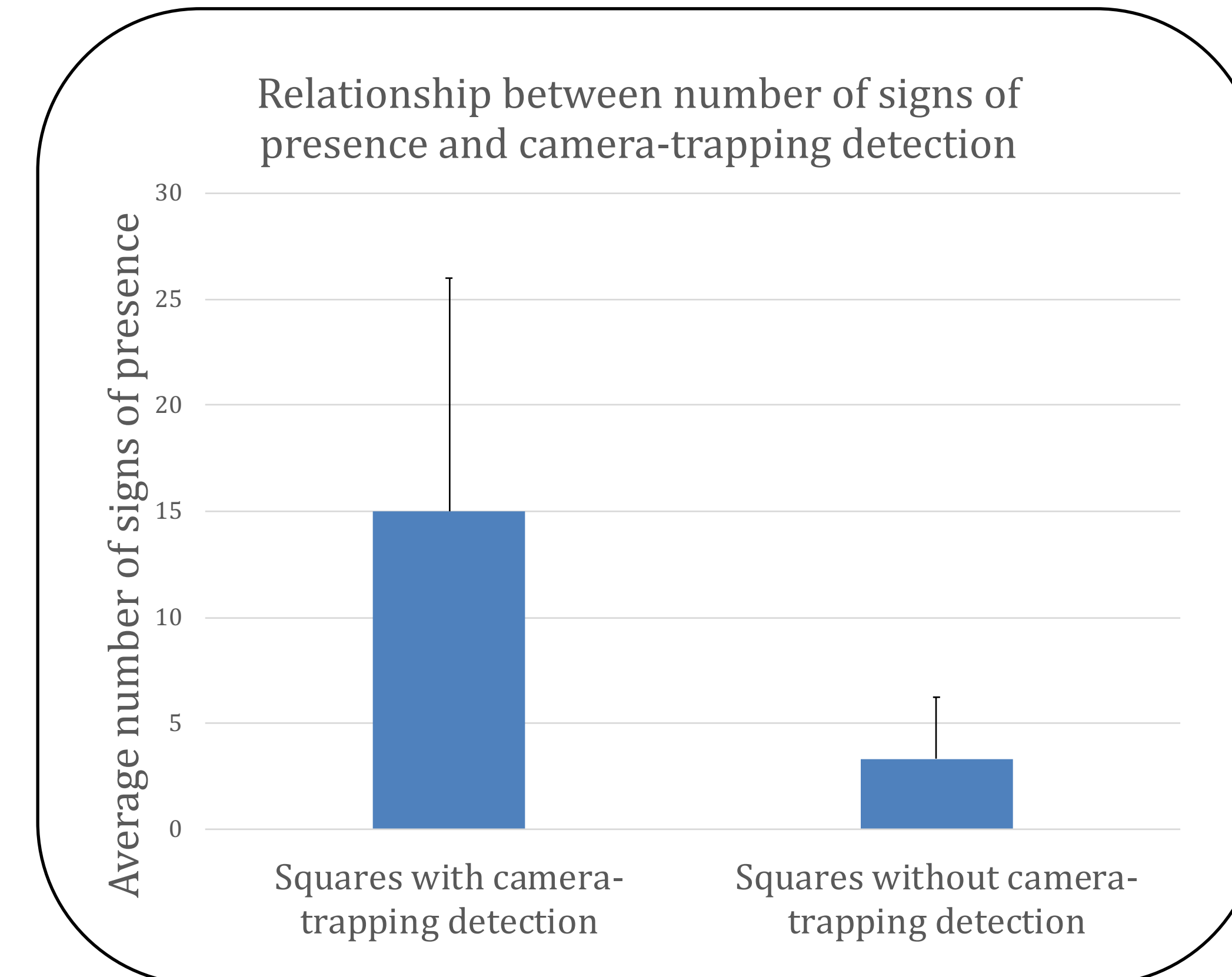
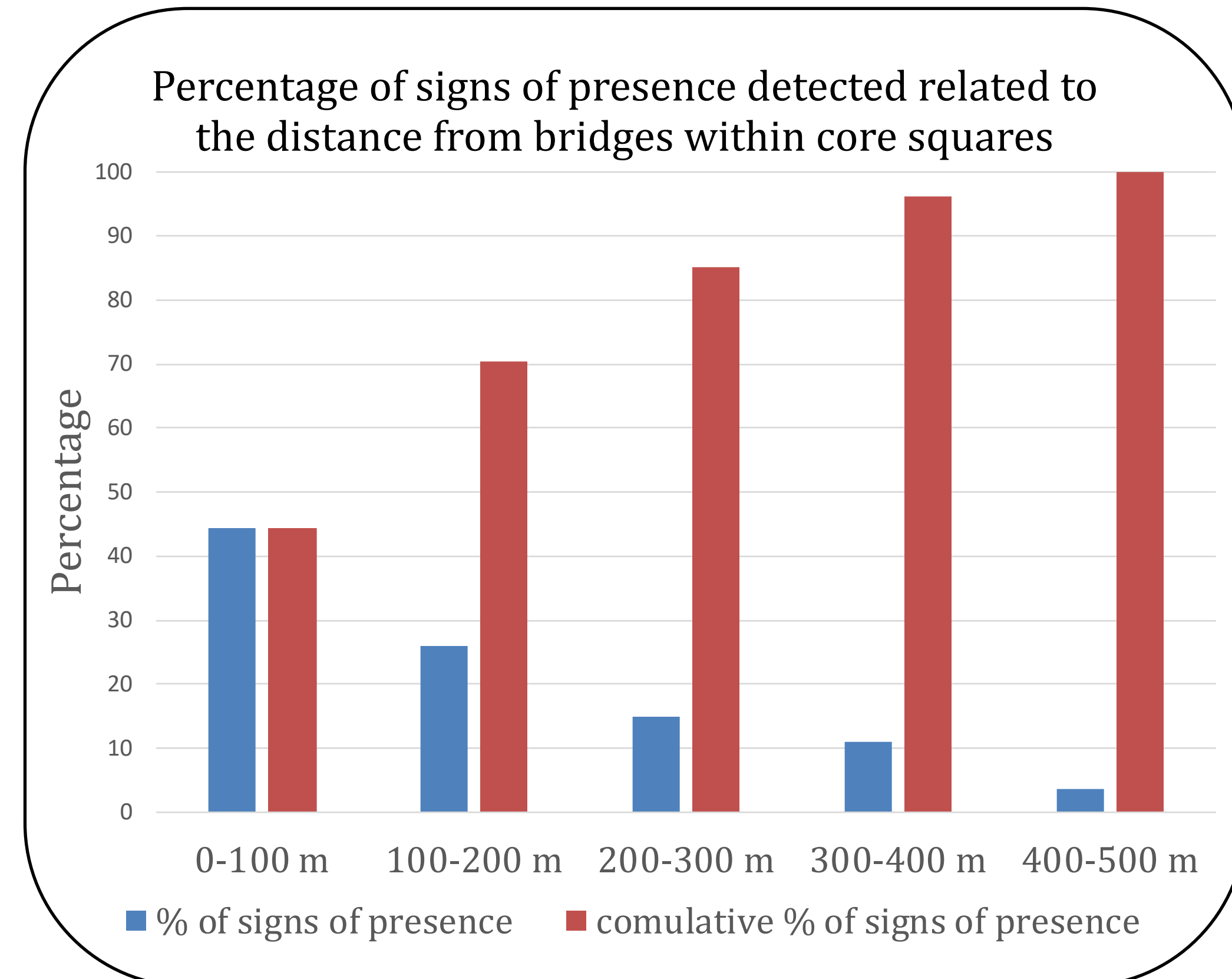
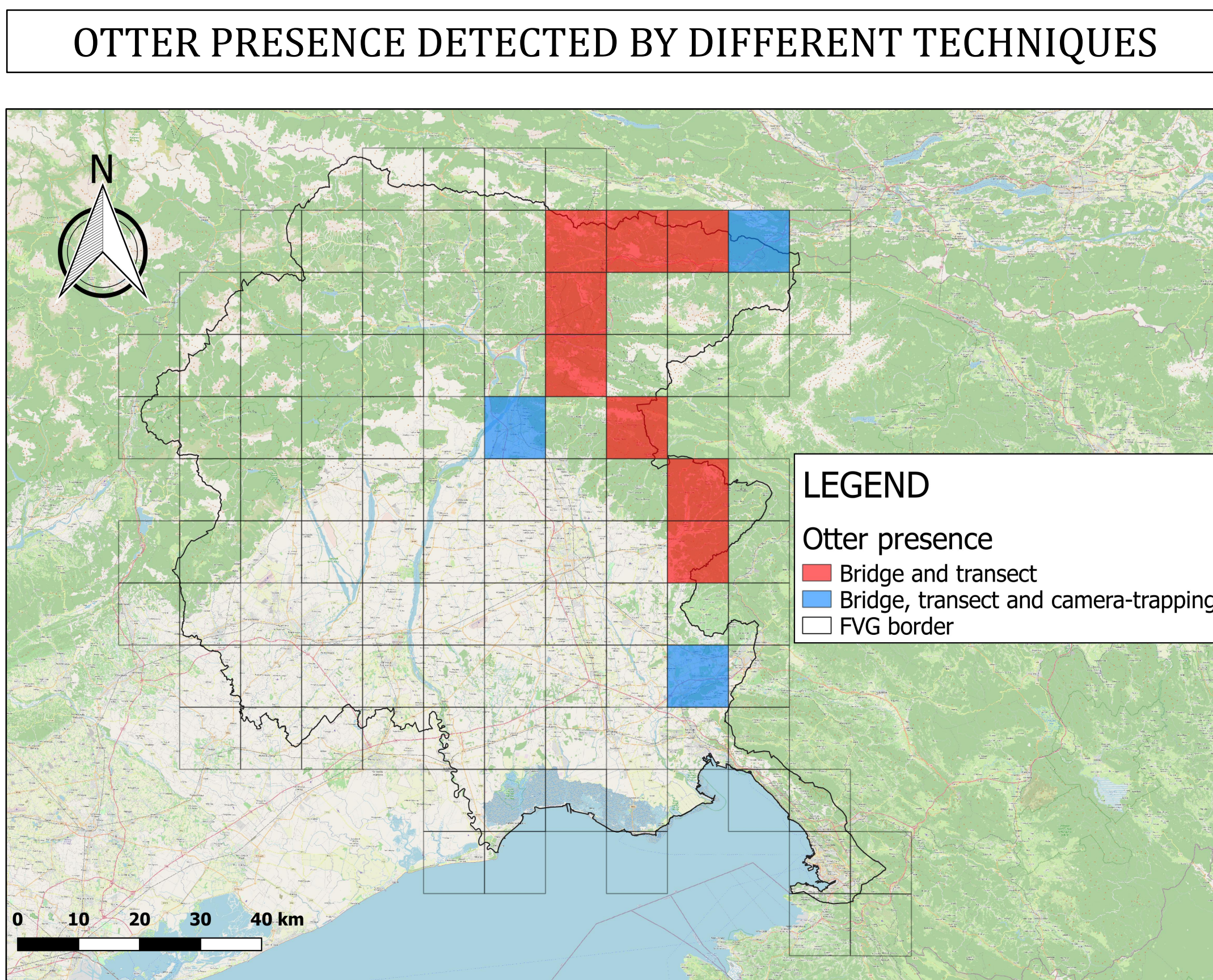
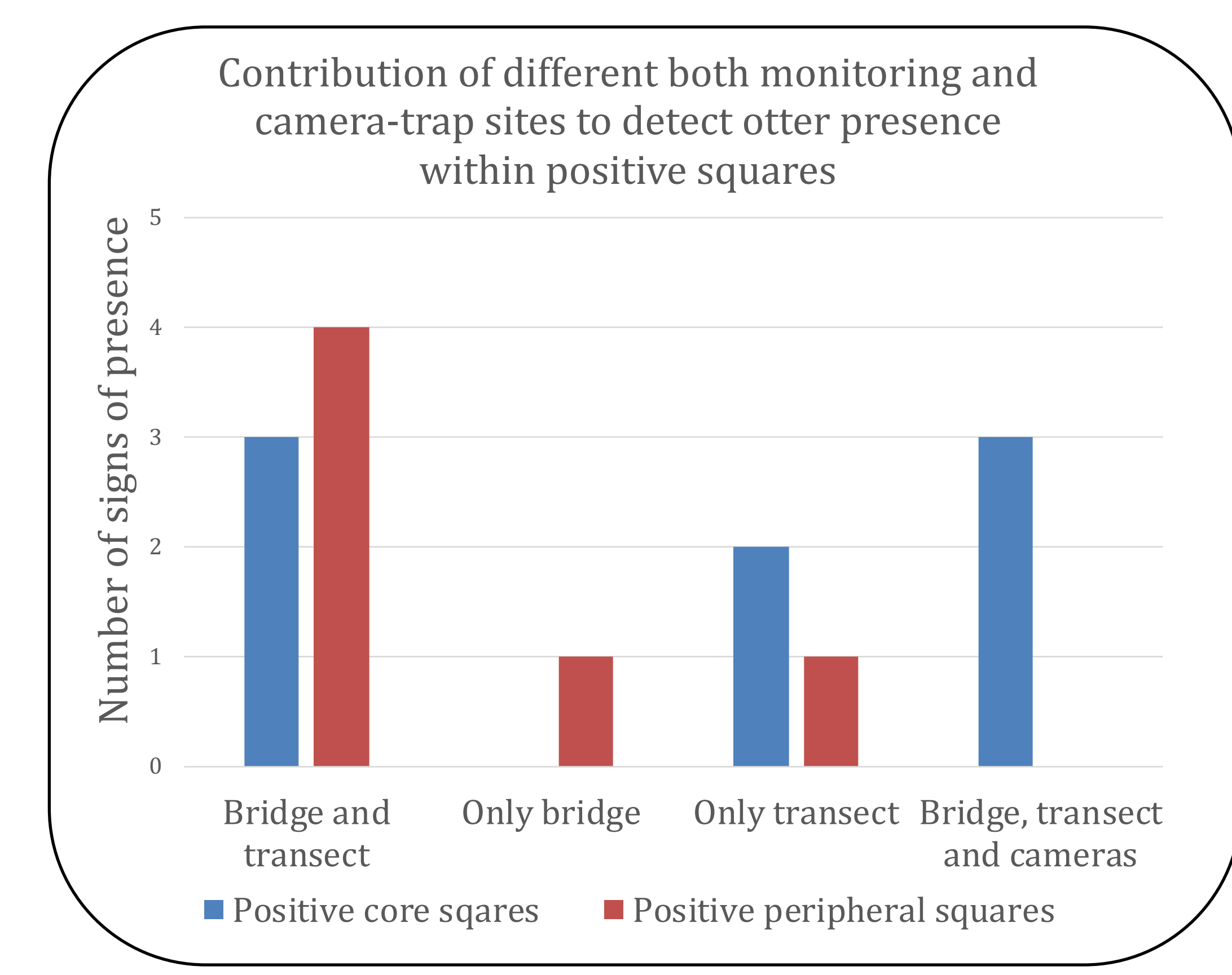
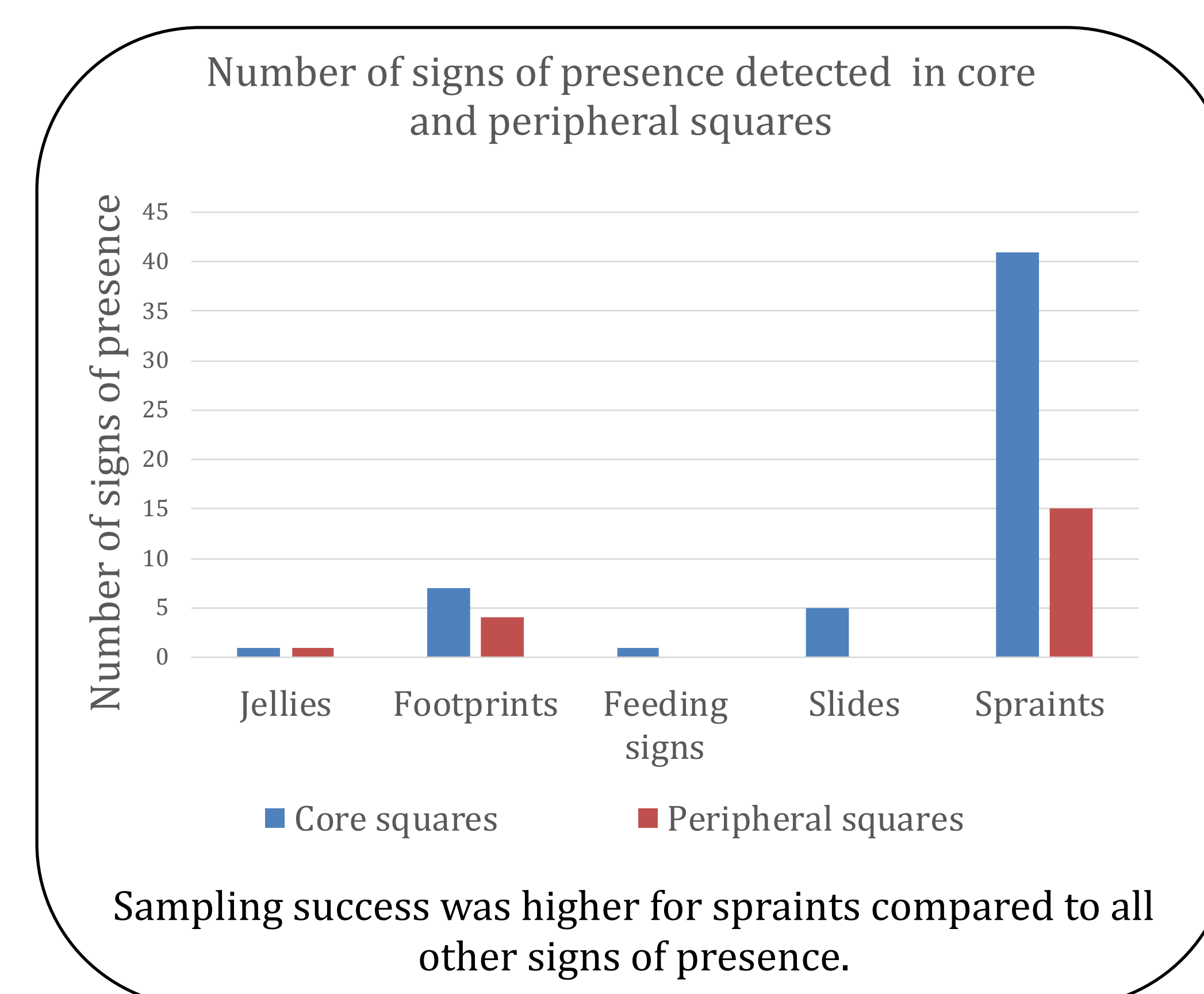
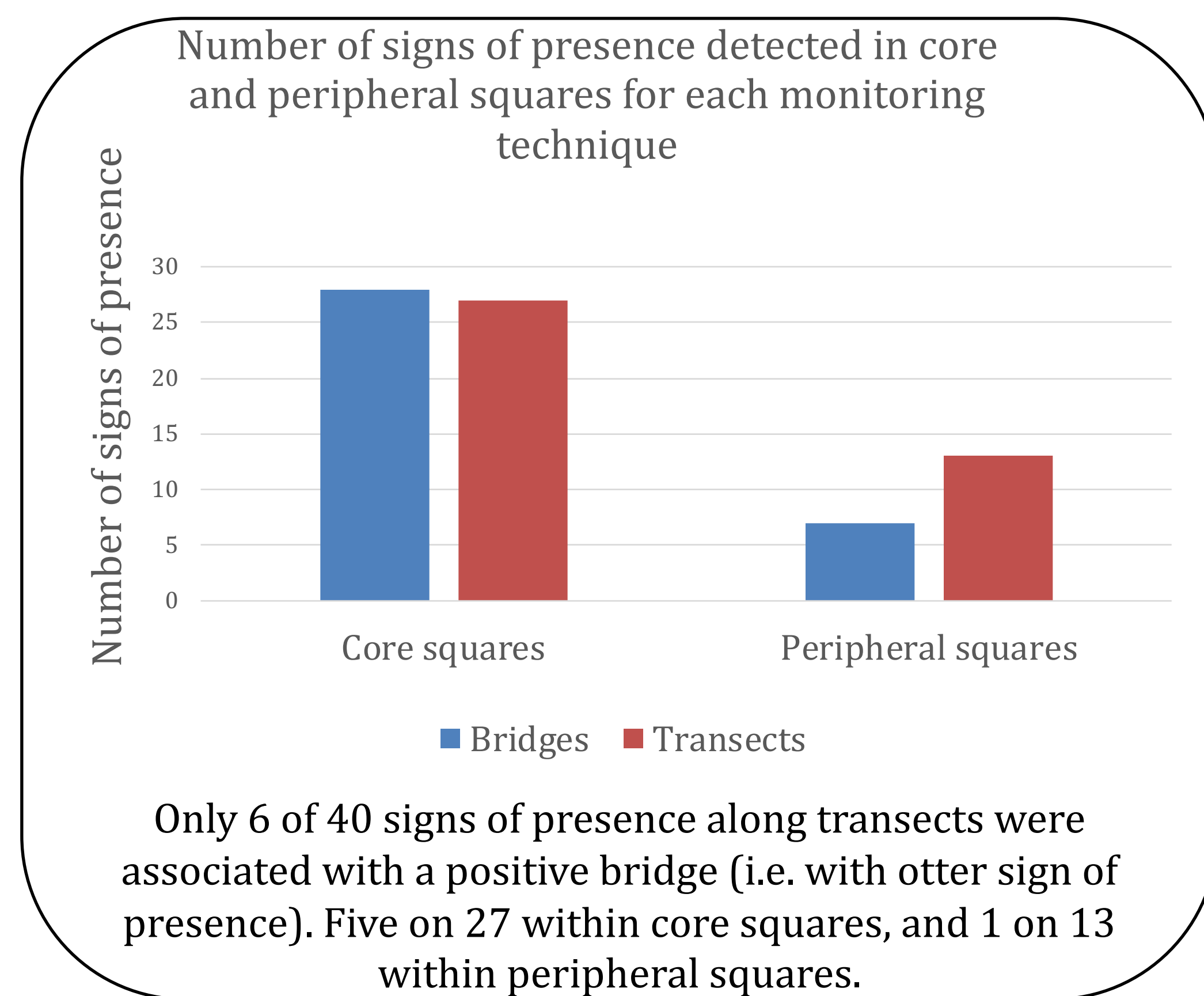
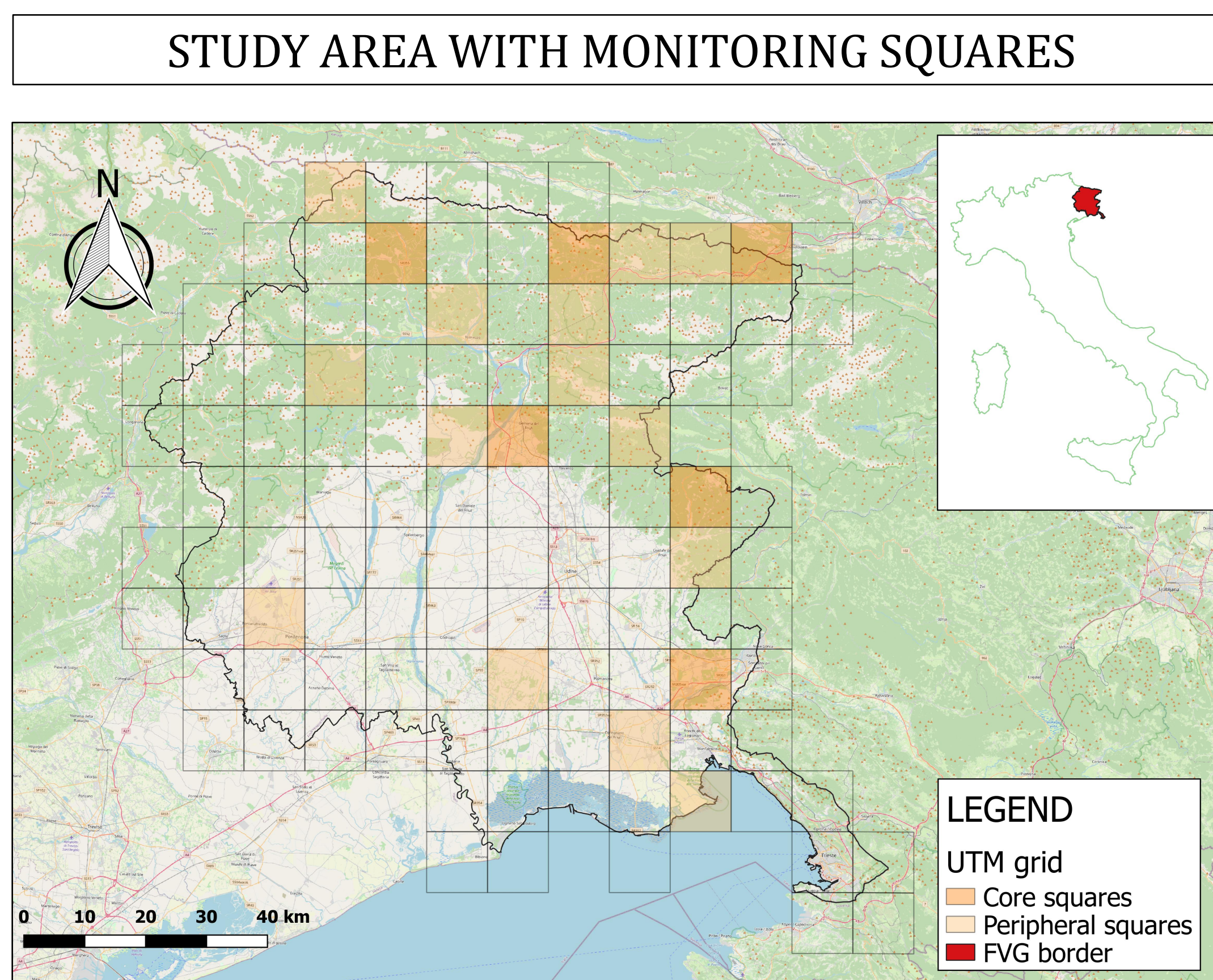


INTRODUCTION: The Eurasian otter (*Lutra lutra*) in the north-eastern Italy has suffered a marked decline because of hunting (fur trading) and river pollution. Such persecution and habitat alteration were so intense that the last sightings in the Friuli Venezia Giulia Region date back to the early 70s. Only in 2011 the species re-appeared and started to re-colonize part of its former distribution range. In 2020 signs of presence were collected in the Tarvisiano area (Val Canale and Julian pre-Alps Natural Park), and in Carnia; in the latter area previous studies detected even the American mink (*Neovison vison*). The purpose of our research is to provide further insights regarding the species distribution in the north-east of Italy, through the synergistic implementation of different monitoring methods (i.e., sign counts and collection, camera-trapping).

MATERIALS AND METHODS: Twenty squares (10x10 km) were surveyed in two different periods: September-October and November-December of 2020. Among these squares, six were considered as "core squares" while 14 as "peripheral squares". Core squares were classified as such based on historical data referring to either signs of presence or dead individuals collected in these areas. Within core squares, four transects of 1 km of length were walked: 500 m upstream and 500 m downstream, respectively, from a bridge. Within peripheral squares, four transects of 200 m of length were walked: 100 m upstream and 100 m downstream, respectively, from a bridge. Camera-traps (Apeman H55, Victure HC400, Scout Guard SG520, Boskon Guard BG520) have been placed in each square based on previous identifications of marking sites and/or suitable areas.

RESULTS: Positive squares: five core squares over six, and six peripheral squares over 14 have given positive results (signs of presence detection).

On average, the first photo has been taken after 39 days (SD = 6, n = 3) and, subsequently, after 44 days (SD = 3, n = 3).



CONCLUSIONS: The combined use of different monitoring techniques allowed us to confirm the ongoing Eurasian otter expansion trend in the north-eastern Italy, providing first insights on lowland colonization. No American mink signs of presence were detected. Camera-trapping confirmed the otter presence in those areas characterized by higher marking rate and allowed us to collect data referring to species activity pattern. Furthermore, we remark the importance of transects (at least 300-400m) especially where no otter signs were found under the bridges and in peripheral areas of the species' distribution. Finally, from another core sampling area (not showed) in which only camera-traps were used, we obtained an average sampling success variable from two up to ten days between events.