

Use of wildlife underpasses by common hamster through a highway interchange

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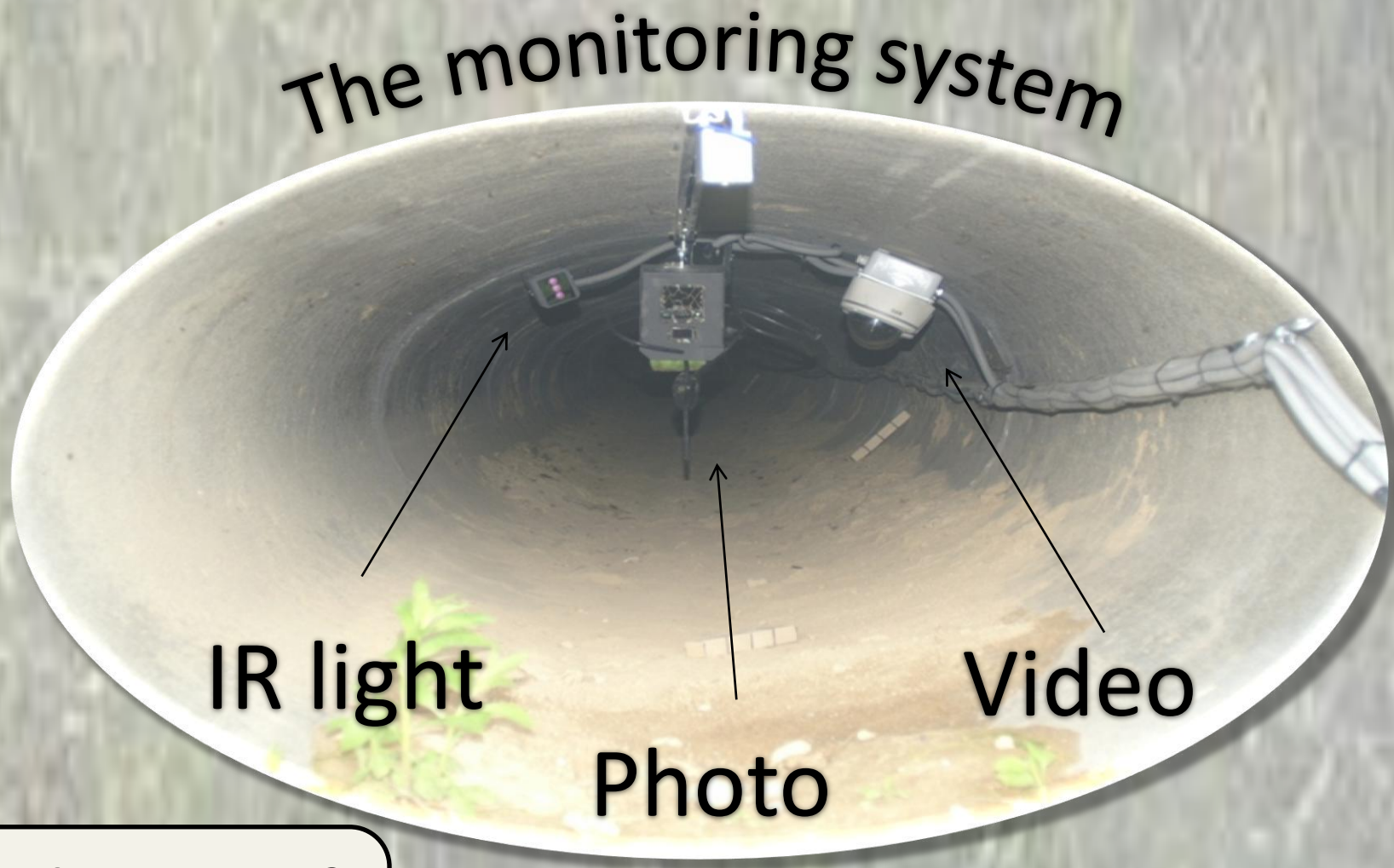
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The studied highway interchange

To avoid roadkills and genetic depletion of fauna populations, wildlife underpasses are built throughout roads. Studying animal when crossing these structures allows environmental Engineers to adapt the shape and location of underpasses to improve their efficiency for target species.



The monitoring system

During a year, we monitored 12 different sized wildlife underpasses located at the interchange of 3 highways. We used 2 triggered cameras and 5 video cameras per structure.

Aperture size of monitored structures (meters)

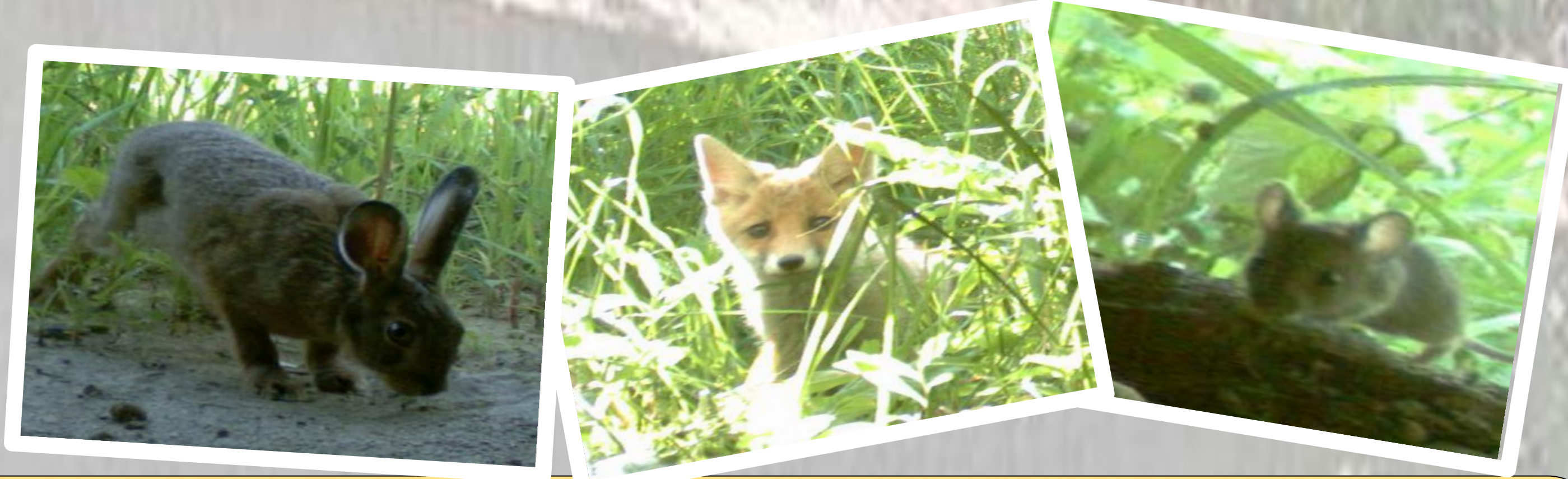


A = Small sized underpasses (0,6* 0,4)

B = Standard sized underpasses (1,2 * 0,5)

C = Large sized underpasses (5,5 * 4,3)

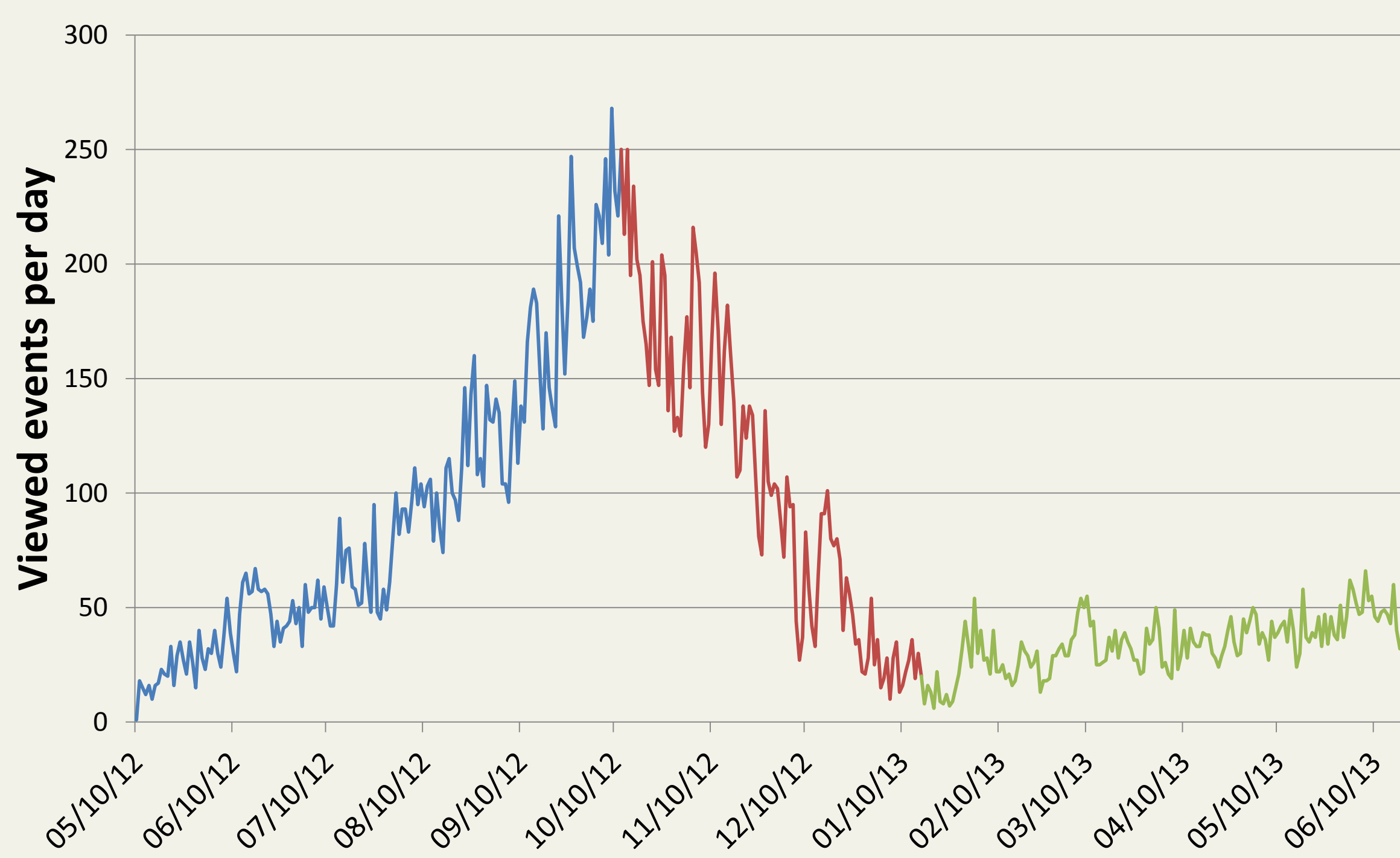
Wildlife underpasses used as habitat



Besides being used by several species, the underpasses seem to have a positive impact on the reconnection of populations by allowing species to settle inside the road interchange. Hamster burrows have been found inside the loops of the highways, suggesting permanent habitat areas.

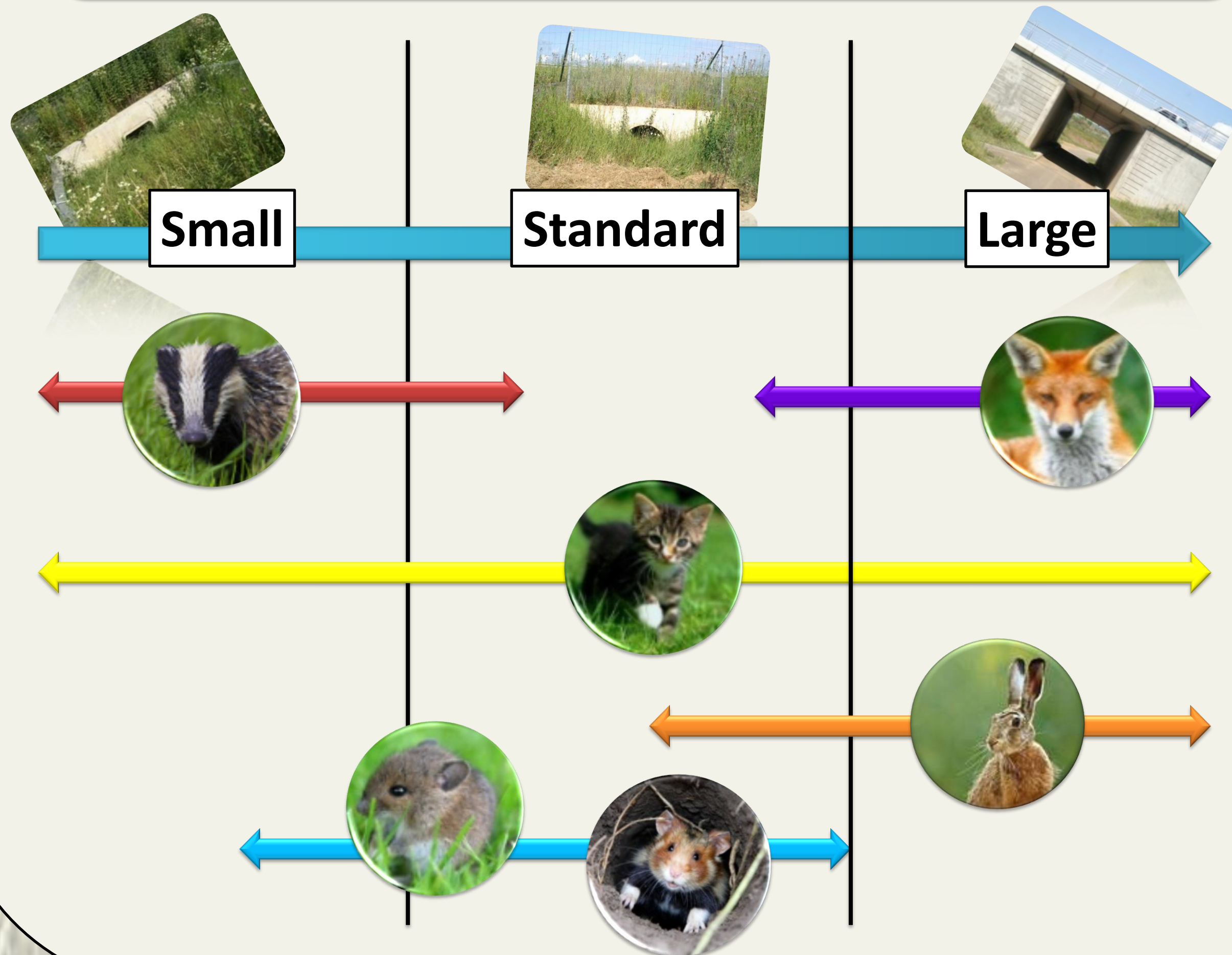
A great use of the structures

23 species have been observed at the entrance of structures and 14 have crossed through, including common hamsters. During October, there were 15.8 successful crosses per day per passage. In a year a total of 38 139 animals was recorded.



Effects of underpasses' size on species

Openness has significant effect on fauna frequentation. Common hamster and other small mammals have been more observed in standard sized structures.



A segregation between preys and predators

In a 500 meters long section, there are 3 underpasses differing in size. Our observations show that preys and predators do not use the same. What would happen if there was only one underpass size ?



Take home message

According to our observations, we can conclude that these underpasses are efficient for a variety of species and allow colonization of new territories.

Standard sized culverts are mainly used by small mammals and thus could be recommended for common hamster. However, this preference could be a consequence of predators' preference for small and large sized culverts and needs further studies.

