

# Wildlife overpasses:

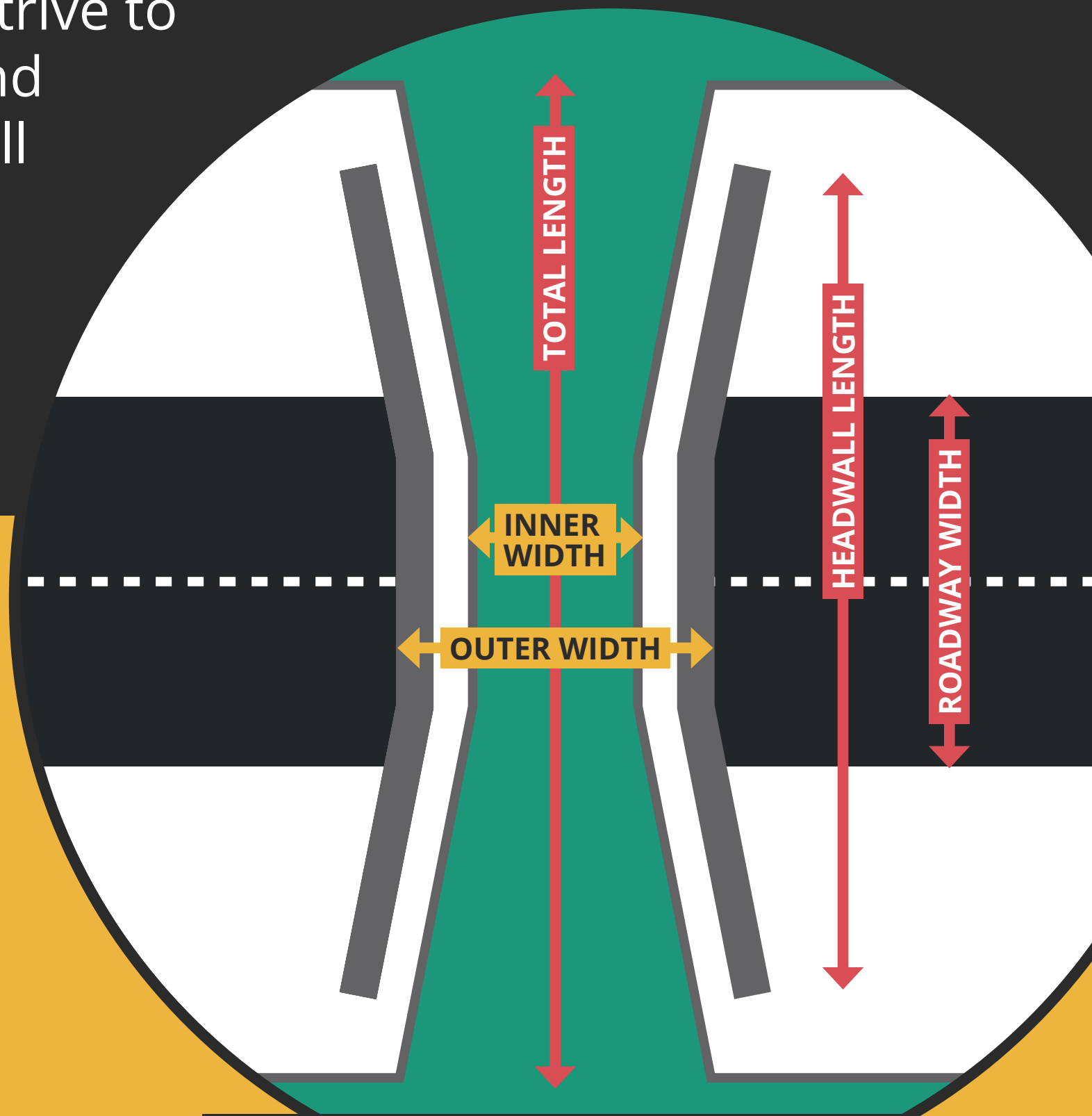
size, distribution, effectiveness, and design recommendations



## INTRODUCTION



It is clear that **wildlife crossing structures paired with exclusion fencing reduce wildlife vehicles collisions while facilitating wildlife connectivity across roadways.** However, highway mitigation projects for wildlife are large economic investments, and agencies strive to balance cost and benefit while still providing the greatest benefit to wildlife.

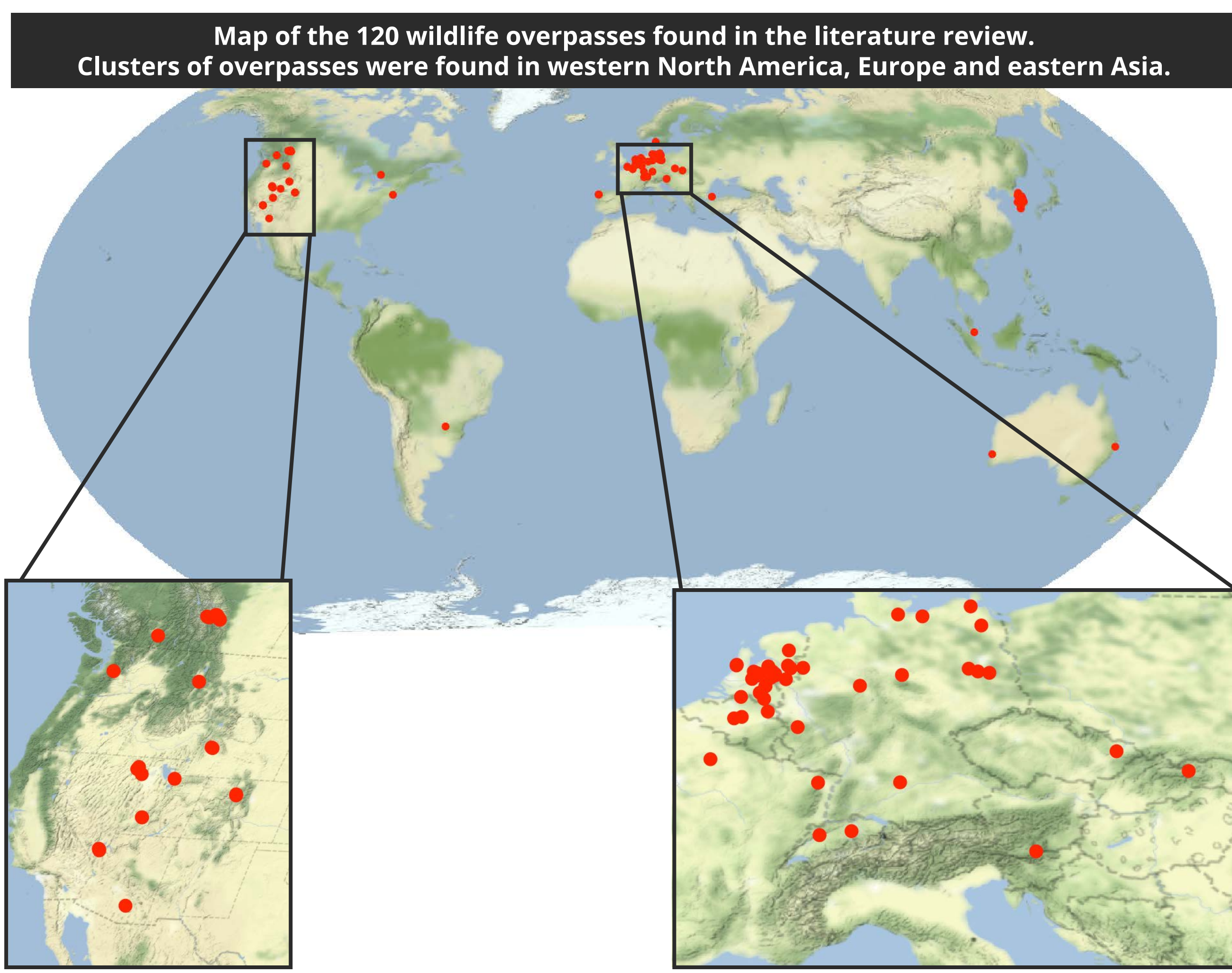


Graphical representation of the measurement procedure for all overpass dimensions obtained in Google Earth Pro 7.3.4.8573 (64-bit).

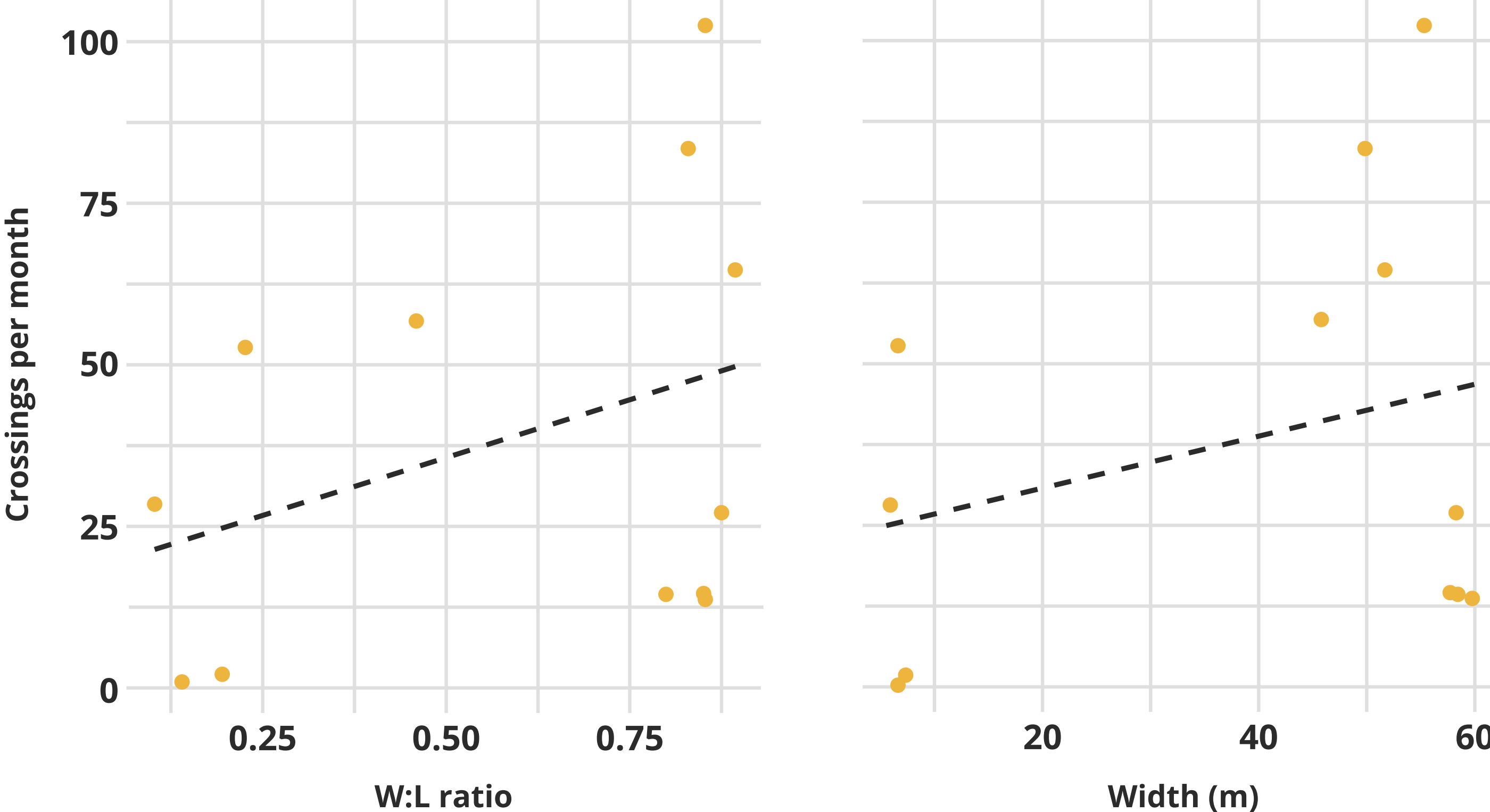
## METHODS

This study summarized **key features of 120 wildlife overpasses** on highways across the globe and reviewed the literature to **summarize overpass dimensional guidelines, effectiveness, and cost-efficacy.**

## RESULTS



Across the world, we found an average wildlife overpass width of 34m. **Most wildlife overpasses located in North America and Europe did not meet their respective dimensional guidelines.** Qualitatively, wider structures had nearly twice the average crossing rates compared to narrower overpasses.



Overpass inner width and width to length ratio in relation to the number of successful wildlife crossings per month. Data compiled from transportation agencies and government reports. Each dot represents an overpass structure (12 in total, located in western North America).

## CONCLUSION

**Wide overpasses (~50m) effectively reduce the barrier effect of the road and strike a balance between benefit and cost,** especially when targeting width-sensitive species and large assemblages of mammals.

## RECOMMENDATIONS

**Universal definitions of both overpass width and length are needed** to ensure that future wildlife overpasses meet expert recommendations and fulfill the ecological role for which they are designed.

To guide future investments, we propose a more rigorous experimental study design to effectively monitor the effectiveness of structures.

Future projects should consider that **longer overpasses must also be wider** to facilitate animal passage.

Future studies should investigate the **effect of overpass width on specific species** or other metrics of overpass success (e.g., biodiversity, biomass).

