

Getting the shot: The effect of camera use on the probability of southern sea otter (*Enhydra lutris nereis*) disturbance in Central California

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Introduction

The popularity of wildlife photography has increased in recent years, intensifying pressure on charismatic species (Fennell & Panah, 2020). Previous research has shown that photos taken at close distances can elevate stress, cause behavioral changes, and even lead to habituation to humans (Hanisch, 2019).

Barrett (2019) found that as the **distance between a sea otter and disturbance source decreases, the probability of a sea otter being active increases**. Activity is associated with an energetic cost.

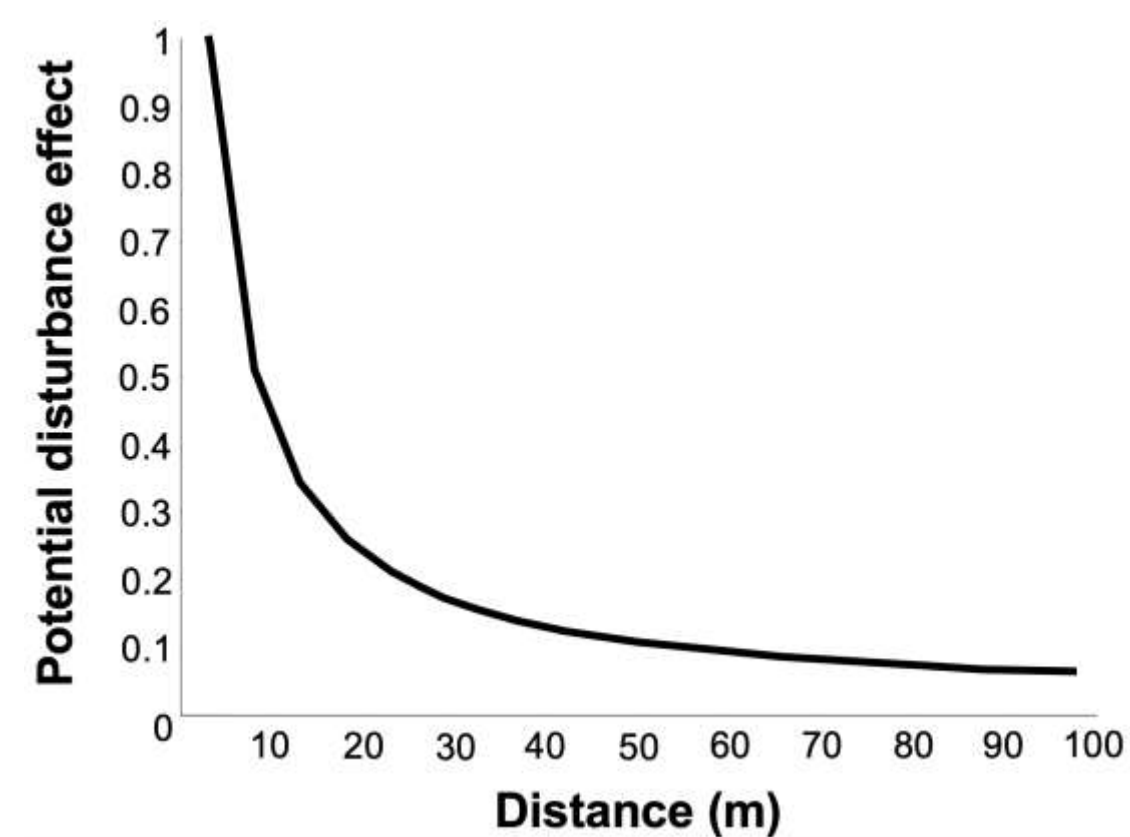


Figure 1. Human-otter proximity influences a disturbance's magnitude (Barrett, 2019).

Here, we determined if **camera use** by marine recreationists affects the distance they maintain from southern sea otters at six Central California sites.

Methods

Between February 2021 and September 2023, nearshore community science volunteers used scan sampling methods to collect observational data for a total of **434 scan sessions**.

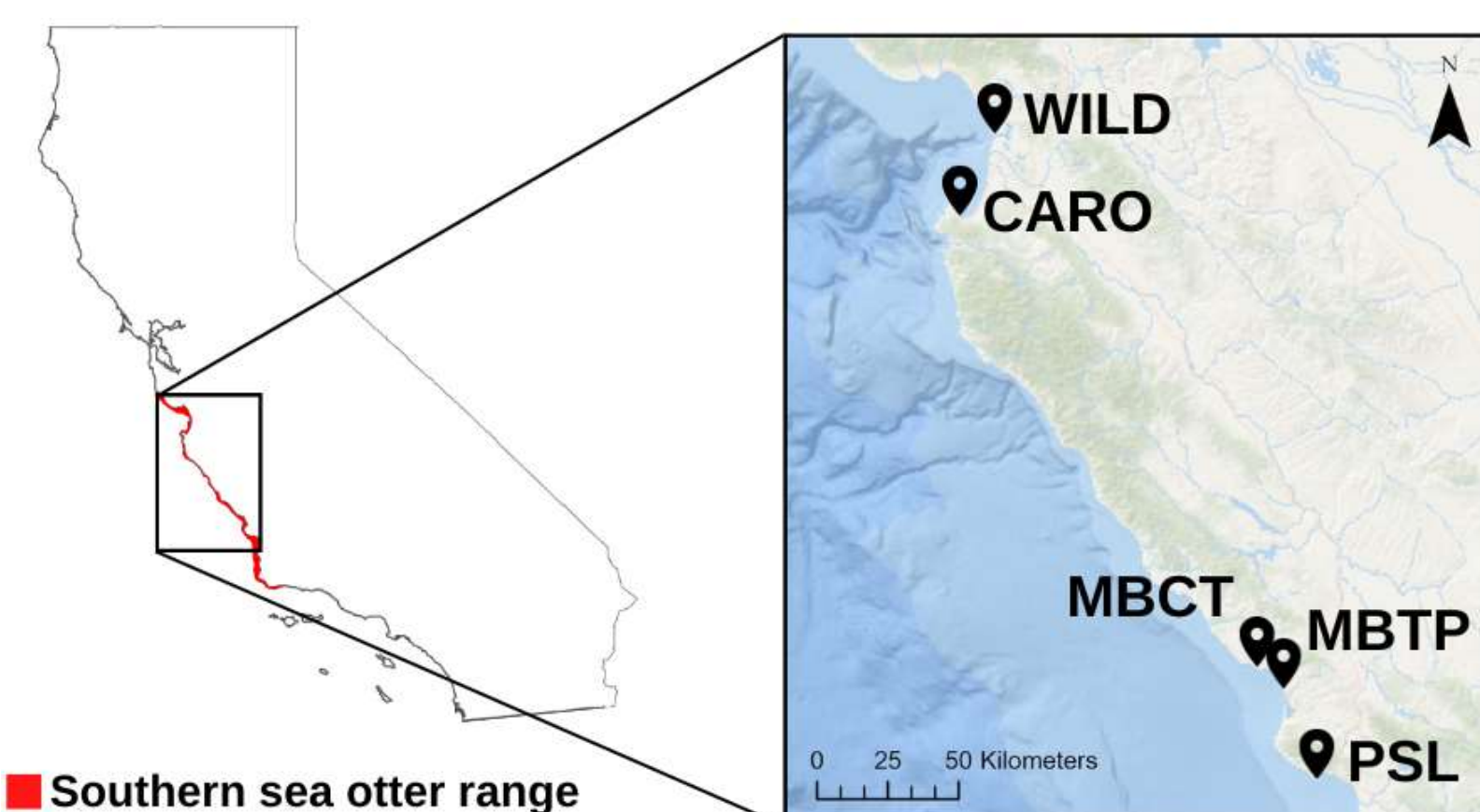
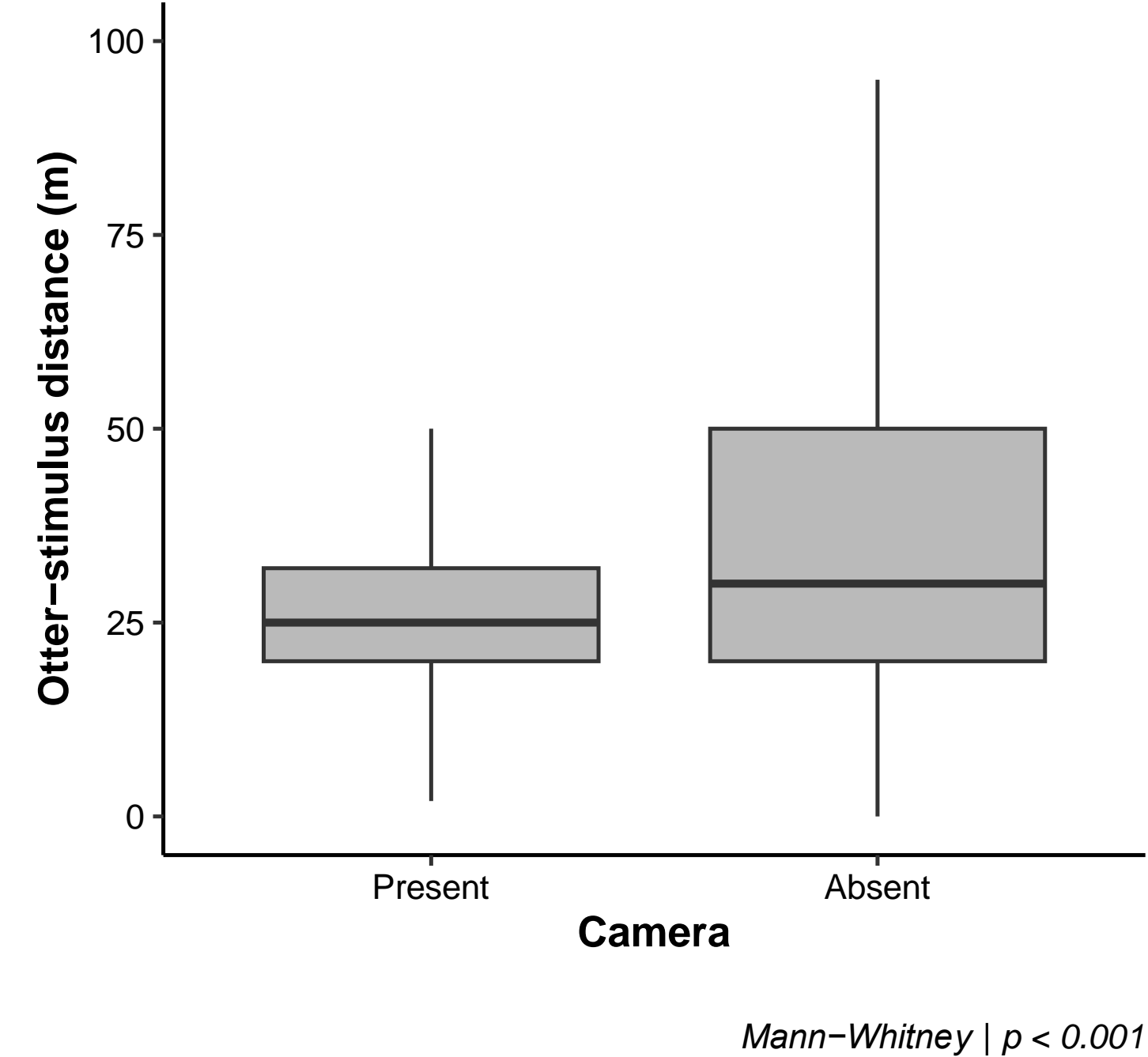


Figure 2. Map of Central California study sites.

Results

Camera Presence

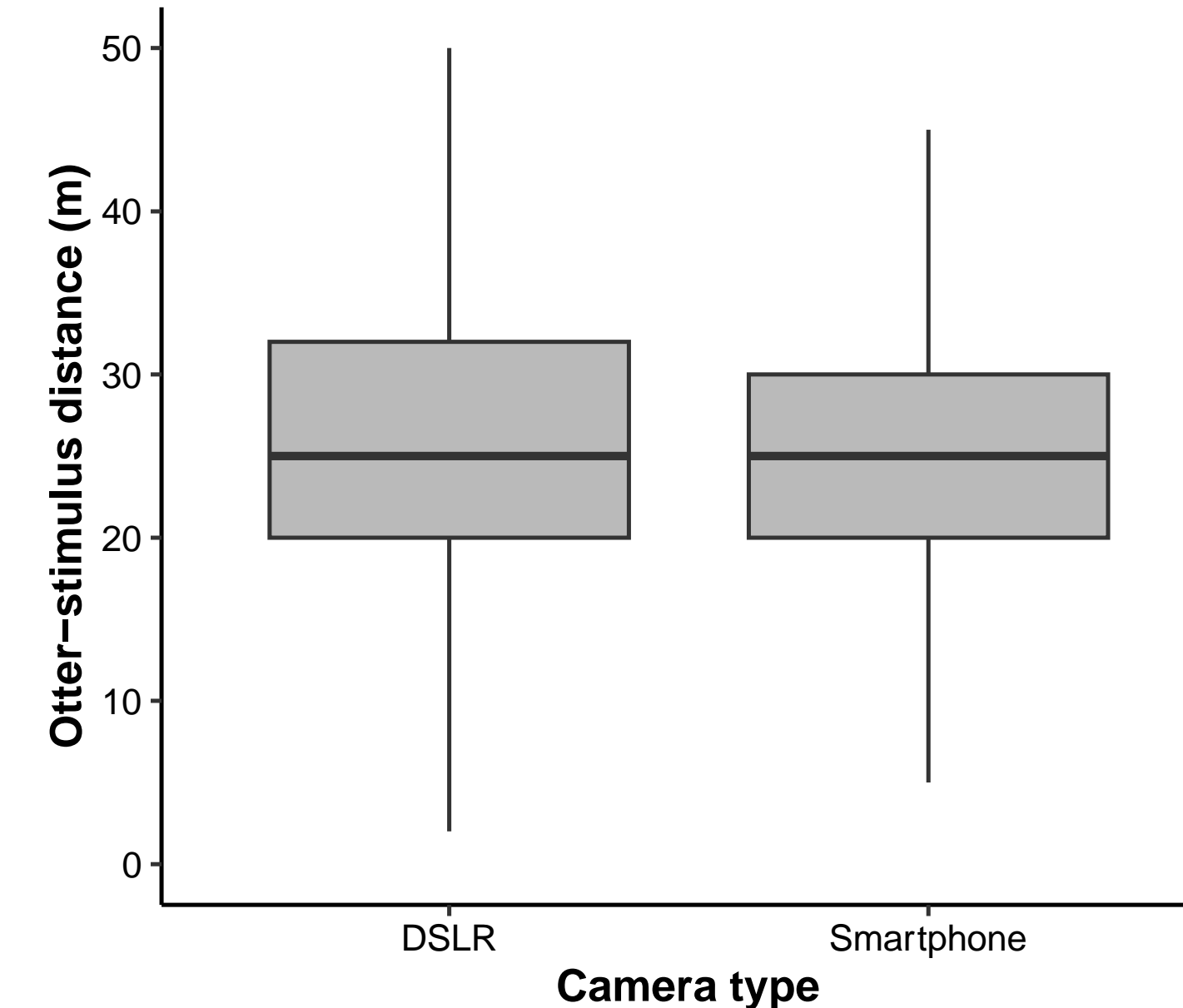
Camera users (n=2371) are **10.3 m closer** to sea otters on average than non-camera users (n=2720).



Mann-Whitney | $p < 0.001$

Camera Type

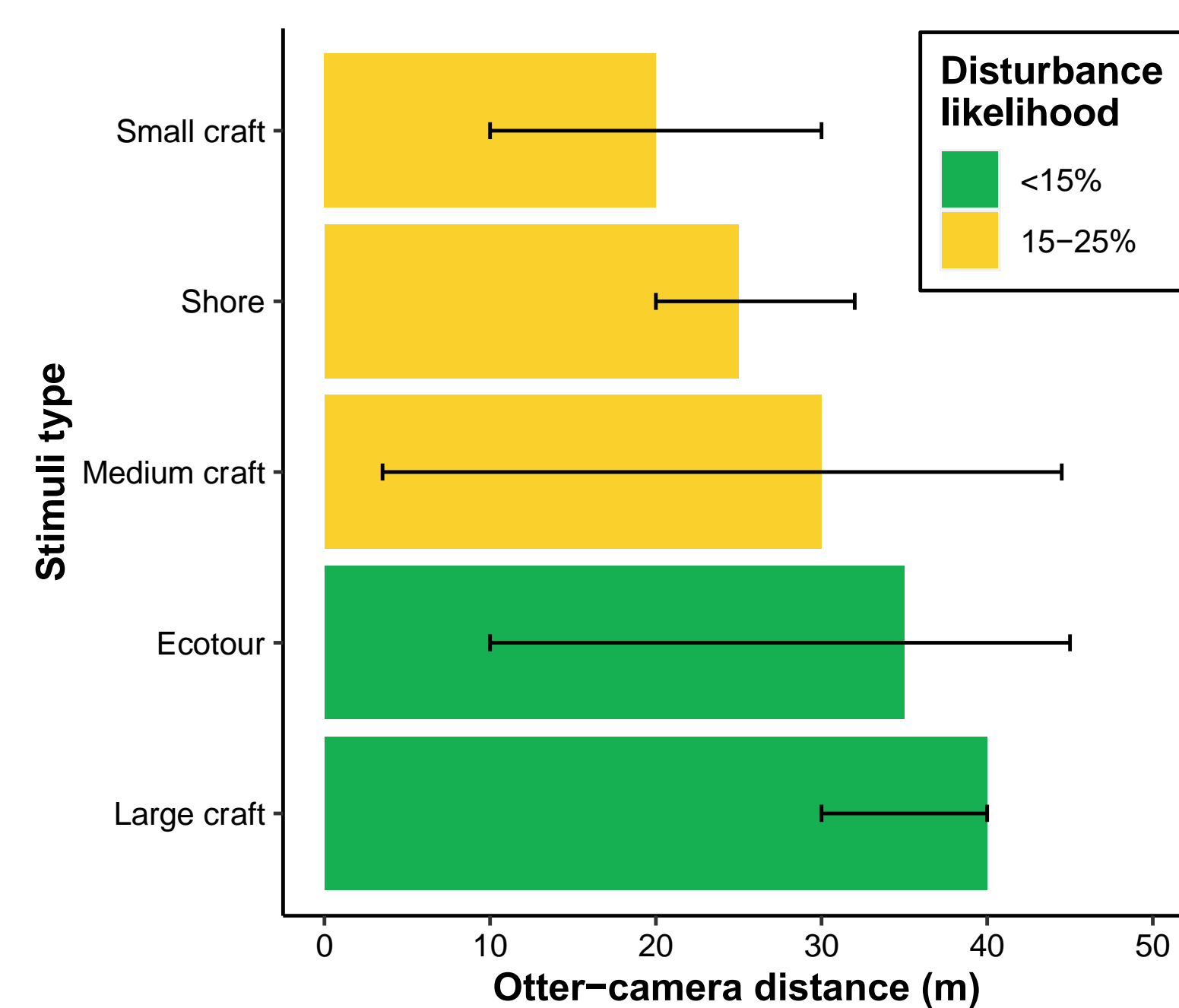
Smartphone users (n=1585) are **2.4 m closer** to sea otters on average than DSLR users (n=728).



Mann-Whitney | $p < 0.001$

Stimulus Type

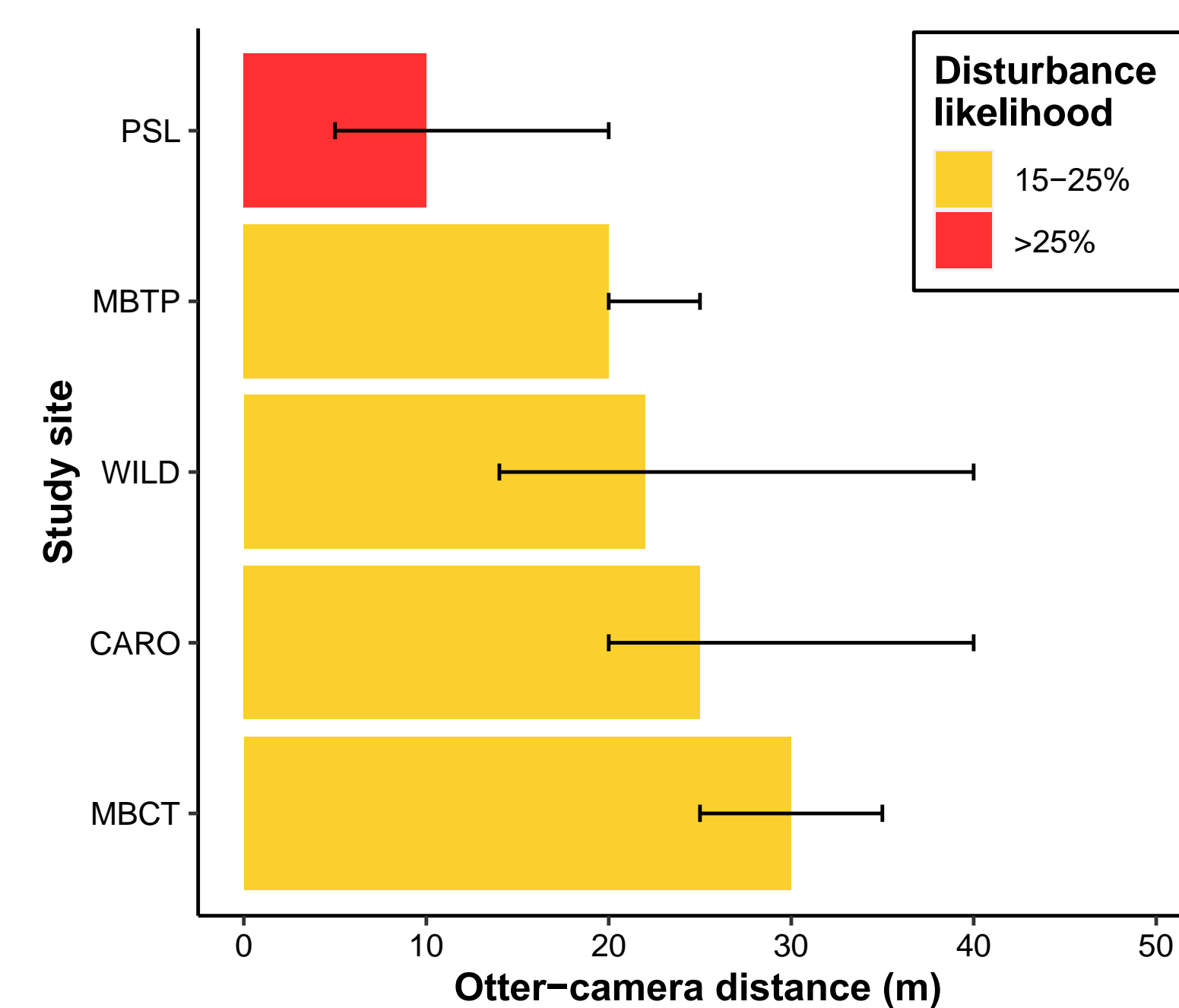
Large crafts (n=3) and ecotours (n=44) generally maintain safe distances. Those on shore (n=1708) and medium (n=23) and small (n=590) crafts are **closer to sea otters**.



Kruskal-Wallis | $X^2 = 344.1, df = 4, p < 0.001$

Study Sites

Camera users at PSL (n=137) have the **shortest human-otter distance** compared to camera users at MBCT (n=964), CARO (n=115), WILD (n=431), and MBTP (n=724).



Kruskal-Wallis | $X^2 = 1081, df = 4, p < 0.001$

Conclusion



Camera use—particularly **smartphones**—decreases human-otter distance, increasing the probability of sea otter disturbance.



Camera use by certain crafts (**kayaks, paddleboards**) and at certain locations (**PSL**) are more likely to cause sea otter disturbance than others.

Respect the nap! Humans should keep a distance of **at least 20 m** between them and a sea otter.

References

- Barrett, H. E. (2019). *The energetic cost of anthropogenic disturbance on the southern sea otter (Enhydra lutris nereis)* [Master's thesis, SJSU].
- Fennell, D. A., & Panah, H. Y. (2020). Tourism and wildlife photography codes of ethics: Developing a clearer picture. *Annals of Tourism Research*, 85, 103023.
- Hanisch, E. (2019). Cameras for conservation: Wildlife photography and emotional engagement with biodiversity and nature. *Human Dimensions of Wildlife*, 24, 267-284.

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