

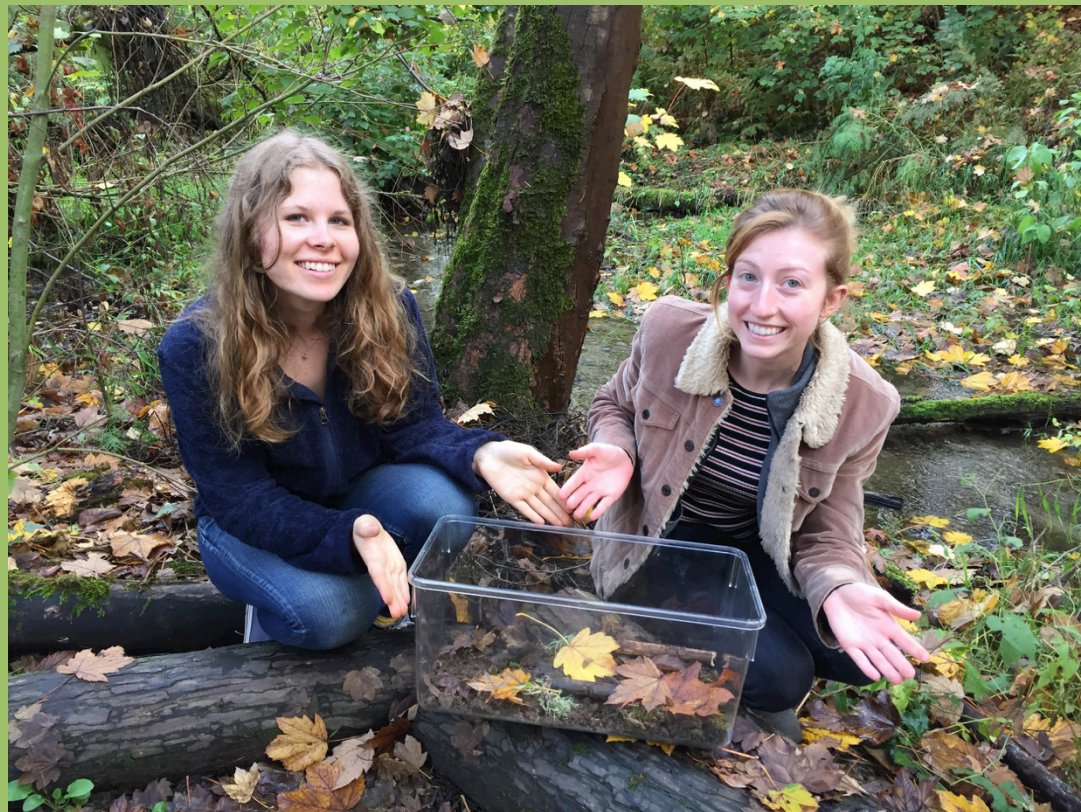
There's No Place Like Home: Homing Abilities in Slugs

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Question: Do wild slugs from the Reed College Canyon have the ability to home? If so, what mechanism allows slugs to find their home?

Answer: Slugs may have the ability to home using a directional sense.



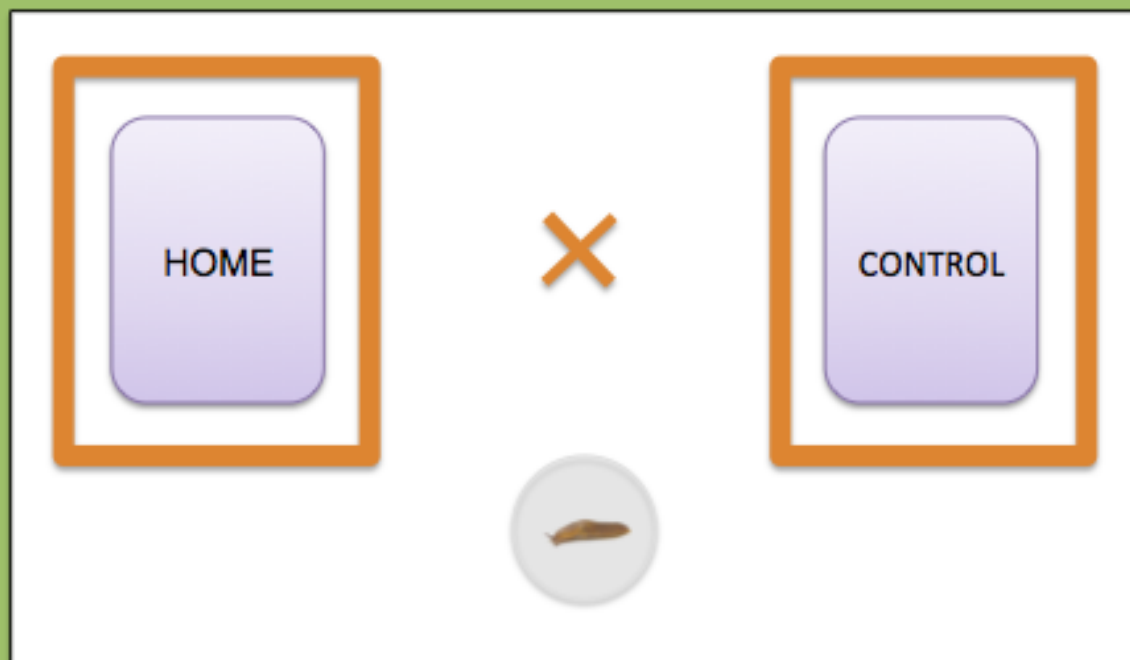
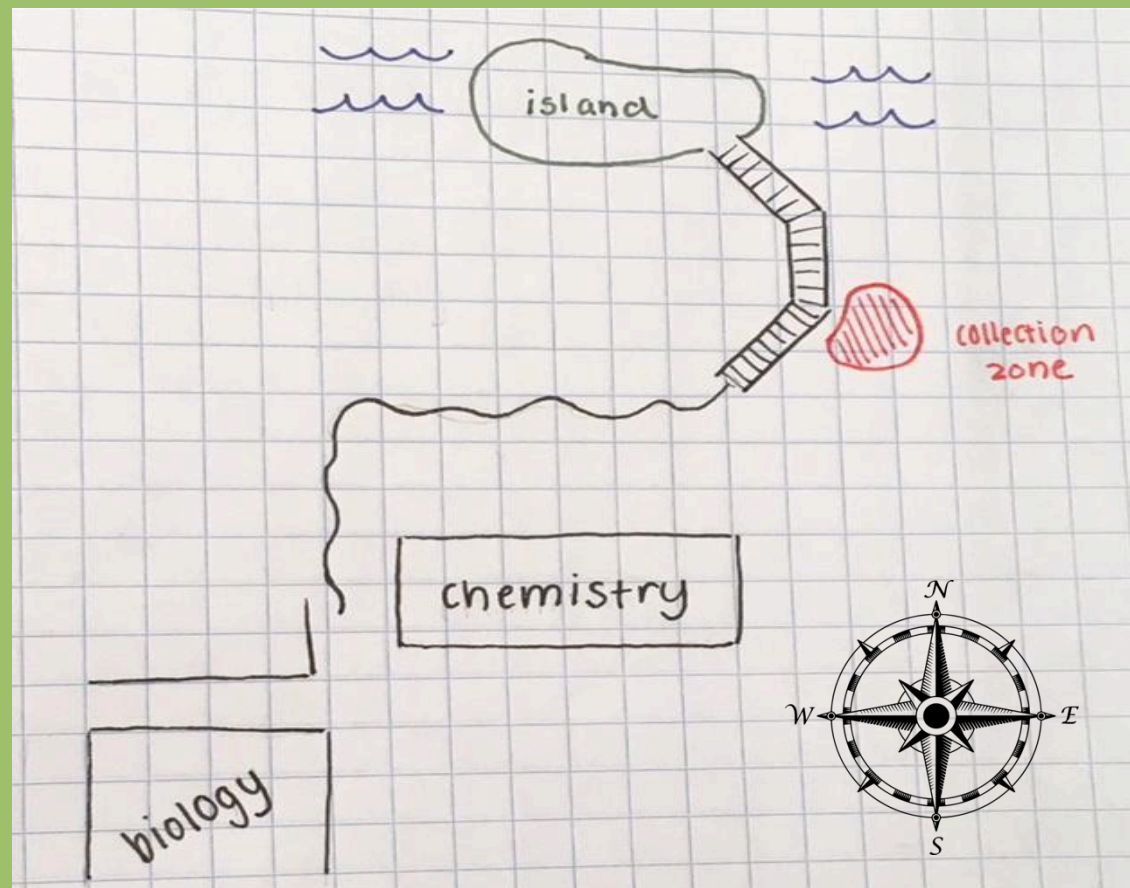
Background:

- Research indicates that a variety of slug and snail species have homing abilities (1-4).
- In some species, slugs use an olfactory or chemosensory mechanism to find their homes (1, 2). There is also evidence that other slug species use slime trails to home (3).
- The wild slugs collected from the Reed College Canyon may be three-banded garden slugs (*Ambigolimax valentianus*) (4).

Experimental Design

Independent variable: home stationary or home flipped (within subjects)

Dependent variables: homing success or failure and general direction of movement



Procedure:

- 1) Collect slugs from Canyon and habituate in home containers for 1 week
- 2) Flip coin to determine first test condition (home stationary or home flipped)
- 3) Place one slug on center X and allow to roam for 10 min of observation
- 4) Record success (crossed the tape), direction of movement, and latency to success (if applicable)
- 5) Repeat for other arena condition
- 6) Repeat for all slugs

Arena Set-Up: Home and control containers with an X marked between them. “Finish line” marked around containers in tape 2 inches away on all sides. Slugs placed under a glass container outside arena during testing.

Results

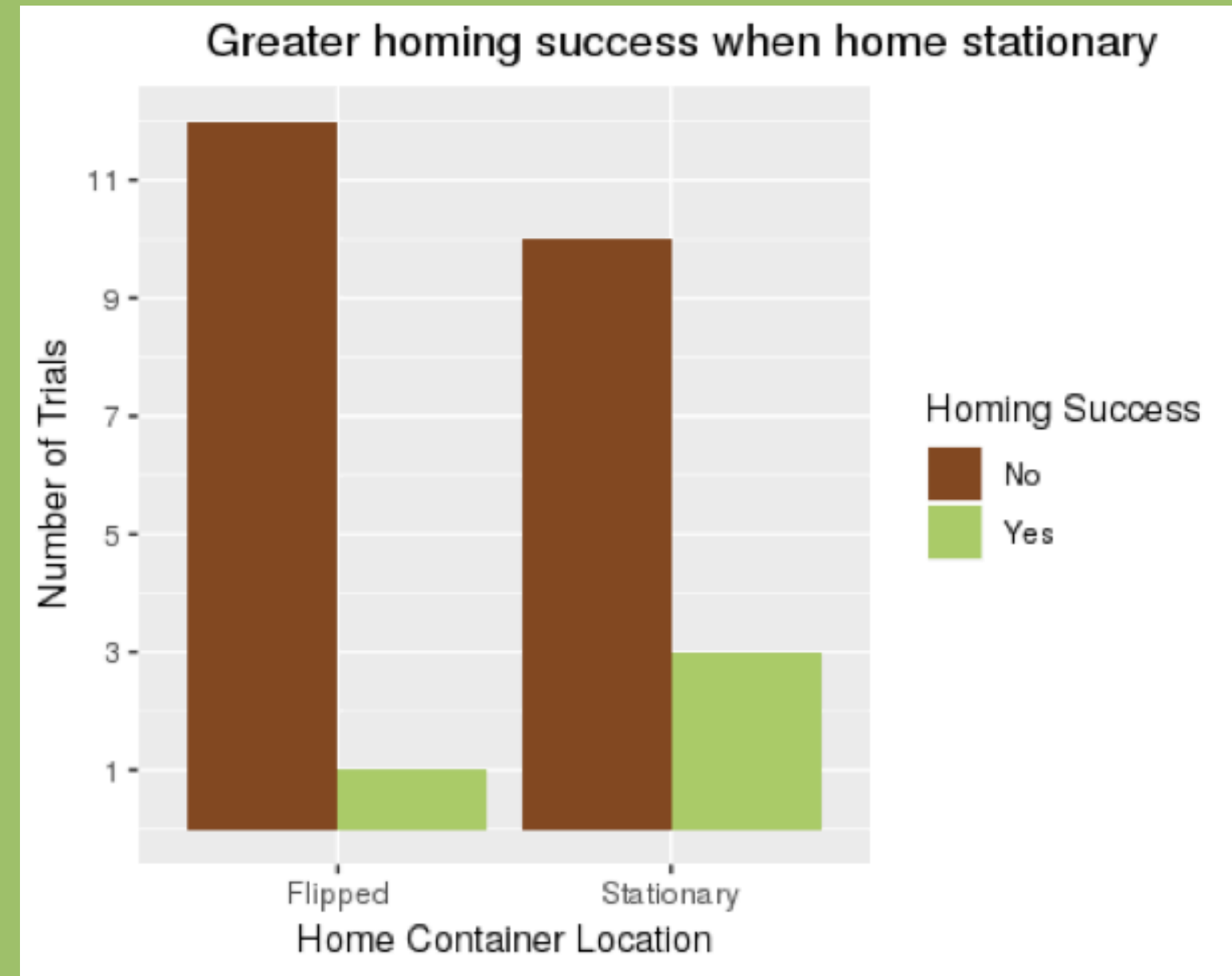
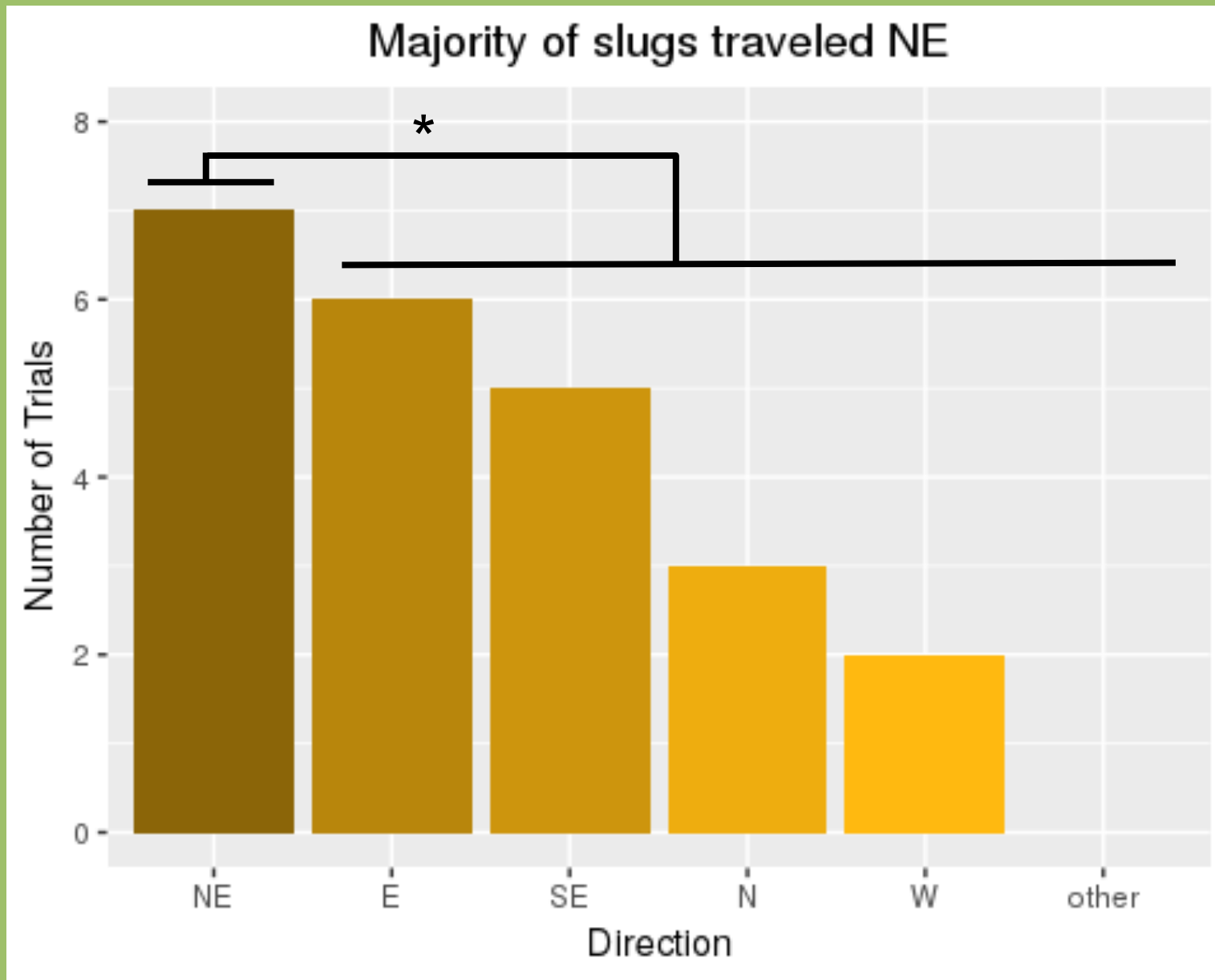


Figure 1. In both conditions, the majority of slugs moved in a general northeast direction (when a vector was drawn between beginning and end points) ($p < 0.05$), which is the direction of their Canyon home relative to the lab.

Figure 2. When their home containers remained stationary, slugs had a greater probability of success with the homing task, although the effect was not statistically significant.

Conclusion

Our experiment provides convincing evidence that wild Canyon slugs have a directional sense that they use to find their way home, and their home location is determined over a longer period of time than was used to habituate them in the lab.

Future Directions

- Habituate slugs in the lab for a longer period of time with a larger sample size and retest
- Investigate whether directional sense is magnetic



References:

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