

The Influence of Soil Moisture on the Color Morph of the Eastern Red-backed Salamander (*Plethodon cinereus*)

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Background

The Eastern Red-backed Salamander (*Plethodon cinereus*) is abundant throughout the Northeastern United States². This salamander has two distinct color morphs, commonly referred to as red-backed or lead-backed. Prior research suggests these different color morphs of this salamander have been known to be found at different substrate temperatures, however, this finding may be dependent on the location and season of sampling¹.



Research Question

Does the soil moisture of an area influence the color morph of the Eastern Red-backed Salamander?

Methodology

- Four plots of 12 coverboards set up in SNHU Arboretum in different habitat areas
- Weekly count surveys and soil collection using soil corer
- Weigh soil weekly to calculate soil moisture of each plot

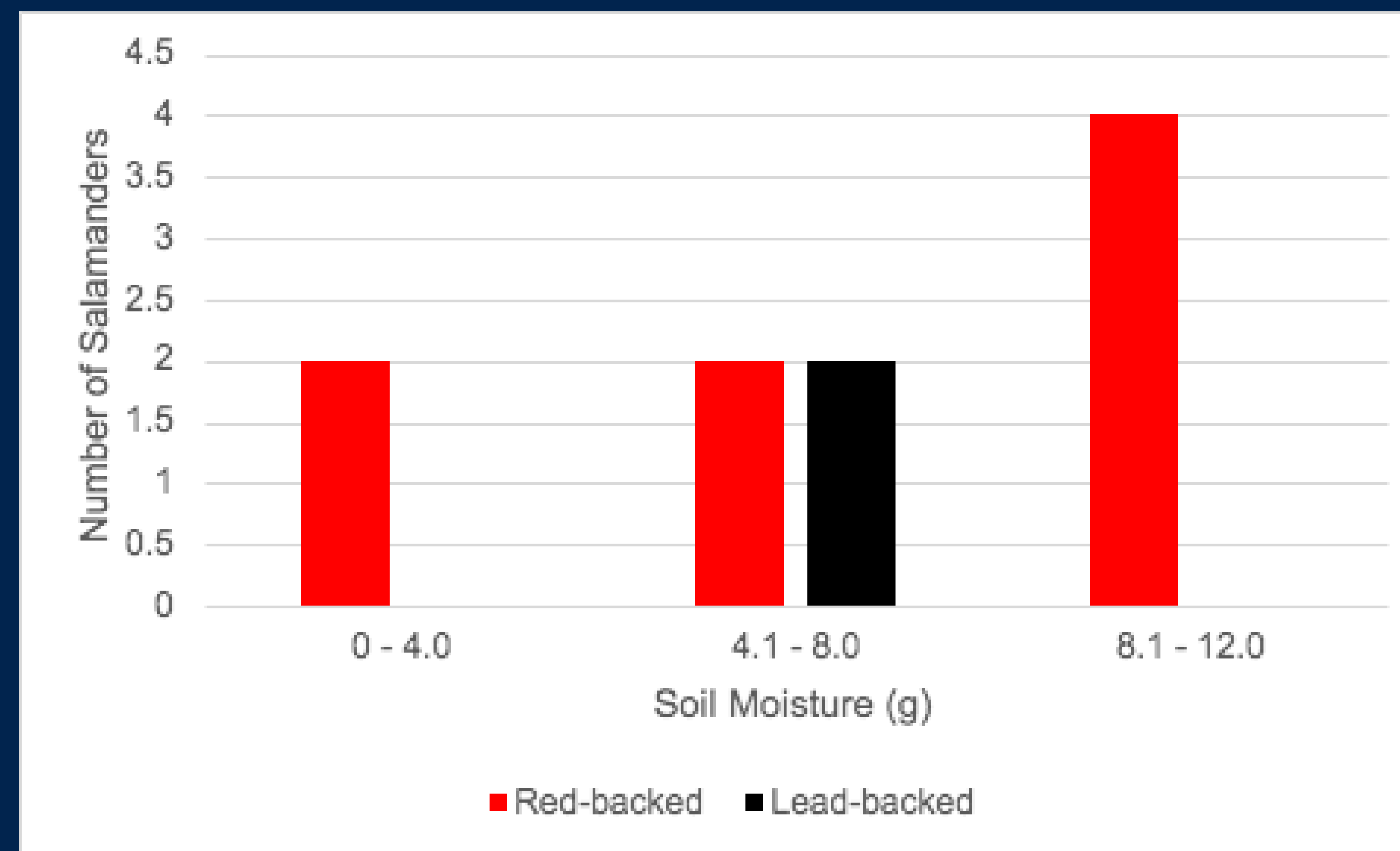


Fig. 1: Number of Red-backed and Lead-backed salamanders found at various ranges of soil moisture.

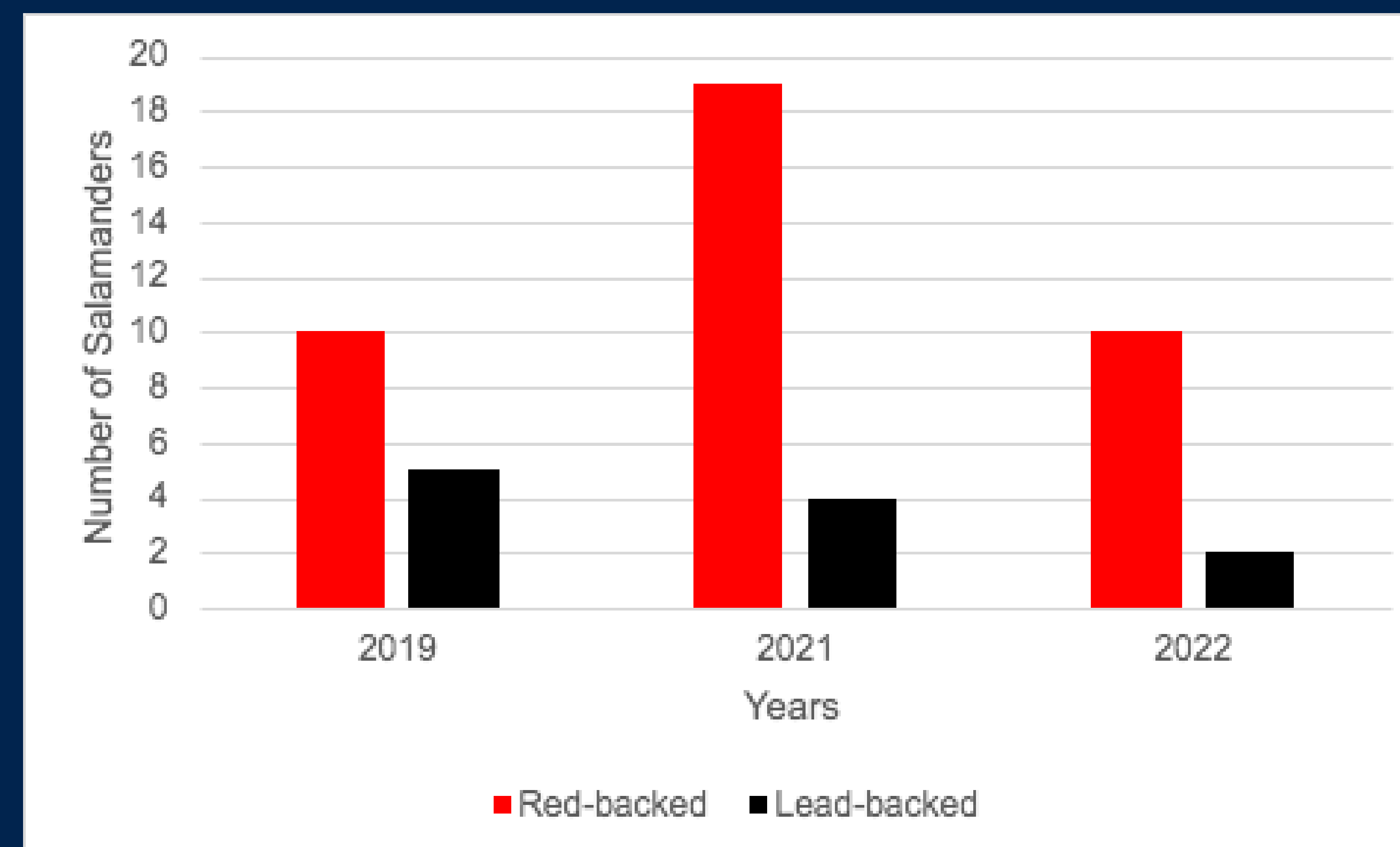


Fig. 2: Number of Red-backed and Lead-backed salamanders found in the SNHU Arboretum over the last few years.

Conclusions and Next Steps

- Joining Salamander Population and Adaptation Research Collaboration Network (SPARCnet)
- Need 50 coverboards for each plot to join
 - Received a grant to purchase more coverboards



References

- ¹M. Caitlin Fisher-Reid, Kristine Grayson, Sara R. Grouleff, et al. Eastern red-backed salamanders: A comprehensive review of an undervalued model in evolution, ecology, & behavior. *Authorea*. August 03, 2021.
- ²Petruzzi, E. E., Niewiarowski, P. H., & Moore, F. B.-G. (2006). The role of thermal niche selection in maintenance of a colour polymorphism in redback salamanders (*Plethodon cinereus*). *Frontiers in Zoology*, 3(1). <https://doi.org/10.1186/1742-9994-3-10>

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