

Improving mark-recapture techniques for Eastern Ribbonsnake (*Thamnophis sauritus*): a pilot study using pit tags in Atlantic Canada

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Monitoring efforts and population studies on the Threatened Atlantic population of Eastern Ribbonsnake (*Thamnophis sauritus*) have been limited by the lack of suitable research techniques for their small, slender bodies, cryptic behaviour and life history. The lack of knowledge regarding population trends, threats, and habitat needs hinders the development of effective best management practices and recovery measures for the species. Here, we revisit a previous attempt from 2008 to permanently mark Ribbonsnakes for mark-recapture surveys using Passive Integrated Transponders (PIT) tags. Our study aimed to improve previous methodologies by utilizing smaller tags (8 mm vs 12 mm), and refining both the position and insertion technique to increase retention rates. From 2023 to 2024, we tagged 33 snakes at three long-term monitoring sites in Queens County, Nova Scotia with a 45.5 % (15 of 33) recapture rate. All recaptured individuals (15 of 15) retained their tags and displayed well-healed entrance points (days since last recapture averaged 67.1, ranging 2-349). These preliminary results suggest that updated protocols not only improve retention rates but also maintain snake health, supporting this method for long-term mark-recapture studies. Future tagging efforts in 2024-2025 will continue to assess the utility of permanent tags for Ribbonsnake research.

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