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## Adder swimming across Loch Lomond, Scotland

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The adder (*Vipera berus*) has a wide distribution across Scotland including some west coast islands where, in some areas, it can be reasonably common (McInerny & Minting, 2016). One such area is the shores of Loch Lomond where adders have been studied and monitored over a number of years (McInerny, 2014a,b, 2016, 2017, 2019).

Adders are normally territorial, moving relatively short distances from their winter underground hibernation holes, so-called hibernacula, which they can re-use in consecutive winters. Radio-tracking studies have shown that snakes, particularly males, can move a few km each year, searching for food and mating opportunities, before returning to their winter hibernation sites (Hand, 2019). During such movements they can cross many terrains, including burns and rivers, being adept swimmers, and have even been found on seashore strandlines (McPhail, 2011; McInerny & Minting, 2016).

In this context Stella Rice and Richard Fotheringham made an extraordinary observation of an adder

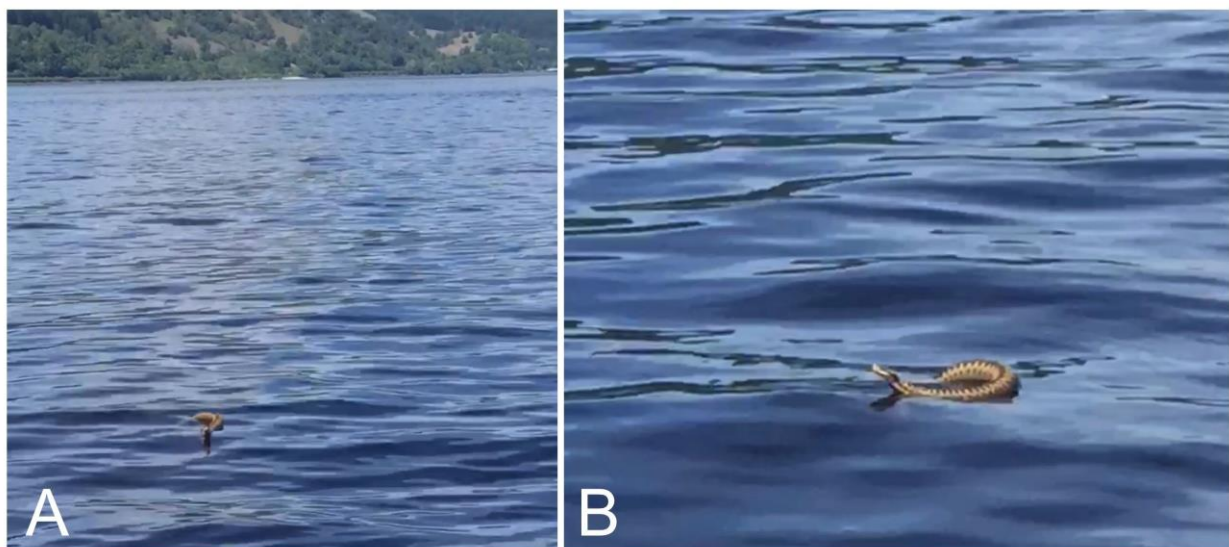
swimming across Loch Lomond while kayaking (Fig. 1 and video which can be viewed at <https://www.youtube.com/watch?v=Y8ka5IZ3K1c>).

The snake, likely a female, was observed at 12.50 p.m. on 2nd June 2021 at approximately NS3628895359, mid-loch between Ross Point and Culag, approximately 500 m from the east shore and 1 km from the west shore.

It is not clear from which side of Loch Lomond the adder originated, although large populations are known to be present on the east shore (McInerny, 2017), so this seems the more likely source. Adders are also present on some of the inches (islands) of Loch Lomond so, conceivably, it could have originated from one of these.

Whatever its source, this highly unusual observation of a swimming adder in the middle of a large loch illustrates that they can cross sizeable bodies of water, potentially to find new feeding grounds, locate other snakes with which to mate, or even colonise new areas. Consistent with the latter it has been suggested that the aquatic proficiency of adders allowed the species to colonise many islands in the Baltic Sea where they are currently found, without the need for land-crossings (Carlsson & Tegelström, 2002; Ursenbacher *et al.*, 2006).

It would be intriguing to know if this individual was able to return to its home territory and hibernation site; perhaps the water crossing was intended and had been completed before. Either way this observation demonstrates that snakes can move large distances and cross significant bodies of water to reach new areas. It will be interesting to see if the publication of this Short Note results in the reporting of other similar observations elsewhere in Scotland.



**Fig. 1A,B.** Adder (*Vipera berus*), likely a female, swimming across Loch Lomond, Scotland, between Ross Point and Culag, 2nd June 2021. The snake was mid-loch, approximately 500 m from the east shore and 1 km from the west shore. These two images are screen grabs from a video which can be viewed at <https://www.youtube.com/watch?v=Y8ka5IZ3K1c>. (Photos: Stella Rice and Richard Fotheringham)

I thank Stella Rice and Richard Fotheringham for sharing with me this fascinating observation and the use of their images in the Short Note.

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