Swainson's Hawk Migration: Topic Summary

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Swainson's Hawk are large birds with pointed wings that are capable of migrating long distances (Liguori, 2018). In a single year, these migratory birds can travel more than 20,000 kilometers between North and South America (Airola et al., 2019; Littlefield & Johnson, 2013)! Migration is the process of animals moving from breeding to non-breeding areas on a regular, internally controlled basis (Robinson et al., 2010; Salewski & Bruderer, 2007). Every bird that can fly has inherit migratory genes that can be expressed through long-distance dispersal. Migration in birds is motivated by the desire to survive in areas that have abundant resources after the breeding season (Salewski & Bruderer, 2007).

Swainson's Hawk migration routes and dates of departure and arrival were assessed by Kochert et al. (2011) through the use of satellite transmitters. The study found that most hawks migrate to their non-breeding grounds in South America around late September and mid-October and to their breeding grounds in North America around mid-February and mid-March. They have been observed to take slightly different migration routes depending on where they originate in North America. For example, hawks from the west will follow two different routes, whereas hawks from the east will follow one route (Kochert et al., 2011). Campbell & Inzunza (2017) and Liguori (2018) made the discovery that Swainson's Hawks migrate together in flocks while taking photographs near Mexico. This led Kochert et al. (2011) and Fuller et al. (1998) to conclude that their migratory routes converged around east-central Mexico, which was later proven using satellite telemetry.

It has long been believed by scientists that Swainson's Hawks fast during their entire migration. However, Airola et al. (2019), Bechard et al. (2006), and Kochert et al. (2011) have

revealed using satellite transmitters and surveying rural areas that they tend to stop and forage in open fields for a few days during their migration. These are known as ‘stopover sites’ and they are used to obtain sufficient fat storage for the remainder of the flight. During this time, it was also discovered that Swainson’s Hawks will primarily eat insects rather than their usual diet of small mammals and invertebrates (Bechard et al., 2006). Additional research is needed to determine what these hawks do during stopovers and why some stop longer than others (Kochert et al., 2011).

The migration of Swainson’s Hawks can be influenced by anthropogenic effects and natural phenomena. The study by Robinson et al. (2010) explored how these influences can affect bird migration and how we can monitor these changes with different technologies. It was observed that anthropogenic effects such as climate change, land use, and buildings as well as natural phenomena such as the weather were found to influence bird migration patterns. In addition, it was discovered that bird’s behavioral and physiological changes during these effects could be monitored using a combination of sensors and tracking devices (Robinson et al., 2010). In terms of the Swainson’s Hawk, Campbell & Inzunza (2017) discovered that the anthropogenic effects and natural phenomena influence their timing of migration as well as their habitat usage at stopover sites. For example, increasing land usage for agriculture provides Swainson’s Hawks with more areas to forage, however, changing the types of crops to one that is unfavourable could deter them (Campbell & Inzunza, 2017). Woodbrige et al. (1995) proposes that future research should be directed on the ecological implications of human activity on the migration behaviour of Swainson’s Hawks and the implementation of conservational strategies to preserve their migration patterns.

There are still many limitations and unanswered questions when it comes to studying Swainson's Hawk migration behaviour. For example, Kochert et al. (2011) was only able to equip hawks over 900 grams with satellite transmitters, which could have created a bias towards larger hawks within the study. Robinson et al. (2010) suggests that in order to study migration effectively, technology needs to be invented that is smaller and more durable. In addition, researchers who conduct large-scale experiments need equipment that's affordable and accessible worldwide. Despite its challenges, studying migration is still an important aspect of animal behaviour research and future studies should be devoted to advancing migration technology.

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