

Avian trypanosomiasis: An emerging disease in the Swiss Alpine swift (*Tachymarptis melba*) population
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Alpine swifts (*Tachymarptis melba*) are long distance migratory birds, which, in Switzerland, nest in colonies that have been continuously monitored by the Swiss Ornithological Institute (SOI) for over 40 years. In the summers of 2022 and 2023 an unexpectedly high number of sudden mortalities (30-80%) occurred in 20-to-45-day-old nestlings from several nesting sites. Nestlings submitted for post-mortem examinations were in good body condition but pale with extensive subcutaneous haematomas, while some had malformed or stunted primary feathers. Molecular testing ruled out Avian influenza virus, West Nile virus, Usutu virus, Polyomavirus and Circovirus infection. Microscopically, protozoan parasites were identified in skeletal and cardiac muscle. These tissues tested positive in an avian trypanosome PCR and the obtained sequences had a 99.6% similarity to *Trypanosoma corvi* and other *Trypanosoma* sp. Sequences. To confirm a haemoparasite infection, 72 blood smears of 45-day-old nestlings from two colonies showing high nestling mortalities were assessed, of which 20 contained trypanosomes, some with high parasitaemia (≥ 20 parasites in 10 microscopic fields). Trypomastigote morphometrics (n=36; mean total length=30.0 μm) were consistent with those of *T. bouffardi*, a west African avian trypanosome described to cause high parasitaemia but not known mortalities in Passeriformes. As no sequences of *T. bouffardi* are available for comparison, the species affecting the Alpine swifts has currently been coined *T. bouffardi*-like (Cigler et al., 2023). Within the last few years of monitoring by the SOI, no trypanosomes were detected on blood smears prior to 2021. Examination of blood smears indicated that nestlings containing trypomastigotes had higher white cell counts and a higher mortality rate, while deceased nestling exhibited signs of immunodepletion. Currently, death is suspected to result from a coagulopathy causing uncontrolled haemorrhaging of otherwise harmless louse fly (*Crataerina melbae*) stings. These louse flies (*C. melbae*) have been identified as the competent vector of the protozoans (active multiplication in the insect midgut), allowing for quick spread within a colony. These findings suggest that a likely novel avian trypanosomiasis causing mass nestling mortality is emerging in the Swiss alpine swift populations.

1. Cigler P, Moré G, Bize P, Meier CM, Frey CF, Basso W, Keller S. Trypanosomiasis: An emerging disease in Alpine swift (*Tachymarptis melba*) nestlings in Switzerland? Int J Parasitol Parasites Wildl. 2023 Dec 12;23:100895. doi: 10.1016/j.ijppaw.2023.100895.