**BSP Abstract 2026**

## Role of European starlings (*Sturnus vulgaris*) as vectors and reservoirs of animal and zoonotic diseases

Common or European starlings (*Sturnus vulgaris*) are a widespread avian species often found in close association with human developments and agriculture. In the UK the majority of starlings are resident all year round and their breeding season takes place from March to April. Starlings also migrate from Northern and Central Europe to overwinter in the UK, arriving in September and October and leaving the UK in February and March. They are highly social birds, and during the breeding season they nest in close proximity to other starlings. Outside of the breeding season resident and migratory starlings form large flocks of tens to hundreds of thousands of birds to forage during the day, and in the evenings form murmurations as they flock together to fly to communal roosting sites such as Aberystwyth Pier which is estimated to consist of up to 50,000 starlings and is a popular tourist attraction.

Starlings are omnivorous eating invertebrates such as crane fly larvae from pasture and grains, and their foraging behaviour is closely associated with livestock farming. Since 1964 starling populations have declined in the UK by more than 50%, and they are a Red list bird of high conservation concern; this decrease in starling numbers has been associated with changes in cattle farming practises and the availability of invertebrate prey on pastures. Starlings often enter farm buildings to feed on animal feed, it is estimated that a 1000 starlings can consume 1.5 tonnes of feed over two months resulting in economic loses to farmers.

Another significant issue is the accumulation of starling faeces, contaminating equipment, feed, cattle and also impacting on bathing water quality (at the Aberystwyth Pier roosting site). Starlings have recently been shown to act as reservoirs and vectors of zoonotic pathogens, so these faeces may contain bacteria, fungi, parasites and viruses which present a risk to animal and human health (Cabe, 2021 doi.org/10.3390/ani11020466). Starlings are both biological (faeces) and mechanical (beaks and feet) vectors of a range of pathogens, including *Salmonella* spp., several *Escherichia coli* serotypes, *Campylobacter jejuni, Mycobacterium avium, Chalmydophilia psittaci, Flavivirus* spp. (West Nile Virus), Avulavirus spp. (Newcastle's disease) and transmissible gastroenteritis (a coronavirus). Starlings have been shown to be carriers of anti-microbial resistant (AMR) bacteria such as ciprofloxacin-resistant *E. coli* in the USA (Carlson et al, 2020 10.1038/s41598-020-66782-4). These pathogens may be shed in the faecal droppings and infect livestock, resulting in increased morbidity and mortality and reduced productivity.

The main focus of this project will be to identify and catalogue the bacterial, parasite and viral pathogens present in starling faeces collected at Trawsgoed dairy farm, and at the roosting site at Aberystwyth Pier.