

## Baltic Seabird Dataset Description

### Background

The dataset consists of video footage of common murrelets [Uria aalge](#), a seabird that nests on cliffs in the Baltic Sea. These birds spend most of their time offshore, but in May – July every year they lay their eggs on the limestone cliffs of [Stora Karlsö](#), an island in the middle of the Baltic Sea. Seabirds are good indicators of changes in the marine environment, and studying their behavior provides useful information about the environmental state of the Baltic Sea. The cameras are installed inside an artificial breeding ledge for common murrelets, providing unique opportunities to film the birds from a close distance.

### Video data

The CCTV camera system was installed in 2019. The video footage for 2019 comes from two cameras that film continuously at 60 frames per second between May 1st and July 15th. The video material is in .avi files with an average length of 2 H, with a total file size of approximately 2 Tb. IR-light provides clear imagery even under complete darkness. Screenshot examples are provided in Fig. 1.





*Fig. 1. Screenshots of day and night scenes from the CCTV footage of common murre. Adult birds and chicks are seen in both examples.*

In 2020, 4 cameras were used, creating approximately 5 Tb data. Due to the COVID-19 lockdown, no tourists visited the island in 2020 which led to an increased number of sea eagles and thereby increased disturbances of the common murre. Comparing video footage from 2019 with 2020 can reveal how the seabirds responded to this unexpected event.

## **Annotation**

The seabird researchers' aim is to use machine learning to identify adult birds, chicks, and eggs on the videos. To this end, annotations with bounding boxes have been made. The total number of annotated images is around 2300, with approximately 18000 objects belonging to any of the three categories "Adult", "Chick", and "Egg".

## **AI**

An object detection algorithm that can identify Adults, Chicks, and Eggs, has been developed. Data scientists are currently developing a target tracking algorithm to follow

individual birds frame by frame, with the goal of identifying bird individuals. Seabird researchers plan to use the target tracking of individuals to identify behaviors of birds such as socializing, fights, and copulation.