

## Investigations of avian influenza in wild birds at Lake Constance (Research programme CONSTANZE)

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### Key words

highly pathogenic avian influenza H5N1 (HPAI H5N1), water birds, Lake Constance, surveillance methods, virus transmission, migration behavior, disease awareness

### Aim of the study

By the time HPAI H5N1 spread from East and Southeast Asia across central Asia into Europe and the area of Lake Constance in winter 2005/2006, data on the dynamics, ecology and epidemiology of the virus in the wild bird population was hardly available. In this context, Switzerland initiated a tri-national research program involving scientists, government agencies and NGOs of the abutting countries of Lake Constance to investigate avian influenza infections in wild waterfowl at Lake Constance and the risk of infection for domestic poultry.

### Material and methods

The surveillance consisted of testing birds sampled by the following methods: live birds caught in traps, birds killed by hunters, birds caught in fishing nets, dead birds found by the public and catching live Mute Swans; sentinel flocks of Mallards were also used. The test results as well as other relevant information about each tested bird was then entered in a central database. Descriptive statistical analysis was performed to investigate the prevalence of AIV in the region of Lake Constance. The effectiveness of different surveillance methods was compared performing scenario tree analysis. The migration behaviour of water birds was analysed using satellite telemetry.

### Results and significance

Although virus introduction from regions as far as the Ural Mountains seemed possible based on the migration behaviour of certain species, no HPAIV H5N1 was found. However, influenza A viruses of different low pathogenic subtypes were isolated in 2.2% of the sampled birds (swabs). Of the different surveillance methods applied in the program the sampling of sentinel birds was particularly efficient as it informs on the introduction of influenza virus and allows to investigate the dynamics of AI infections. The analysis of the contacts between wild birds and free-range poultry showed that contacts hardly take place. Hence, this risk factor is less important as assumed before the project.

### Publications, posters and presentations

Brunhart, I.; Baumer, A.; Reist, M.; Stärk, K.; Griot, C. (2010) Projekt «Constance»: Erkenntnisse aus drei Jahren Aviärer Influenza-Forschung im Bodenseegebiet. Schweizer Archiv für Tierheilkunde, Dezemberausgabe.

Brunhart, I.; Hattendorf, J.; Baumer, A.; Schwermer, H.; Wodak, E.; Griot, C.; Stärk, K.D.C. (2009) Investigation of the Epidemiology of Avian Influenza in Wild Birds at Lake Constance – A Tri-lateral Project of Germany, Austria and Switzerland. In: Book of Abstracts of the 12th conference of the International Society for Veterinary Epidemiology and Economics (ISVEE XII), Durban, South Africa, 10 - 14 August 2009.

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