

columbianus columbianus are lead poisoning and avian cholera. Far less is known about disease problems of *Cygnus cygnus buccinator*. However, heavy parasite burdens in cygnets have been associated with poor cygnet survival in the Yellowstone-Centennial Valley region of northwest Wyoming and southwest Montana. This is the only important breeding area in the contiguous United States.

Ingestion of lead pellets deposited in marshes as a result of waterfowl hunting is the most important source of lead poisoning. Other cases result from the ingestion of lead sinkers used in sport fishing and from pollution due to lead mining. Lead poisoning is especially serious at the Lake Mattamuskeet National Wildlife Refuge in North Carolina. An estimated 7200 *C. c. columbianus* have died from ingestion of lead pellets at that location between winter 1972/73 and winter 1977/78.

Avian cholera has killed numerous *C. c. columbianus* in California. Estimated losses have been as high as 6% of the swans wintering in that state during some years.

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HEARTWORM *SARCONEMA EURYCERCA*, A CIRCUMPOLAR INFECTION IN SWANS

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The heartworm *Sarconema eurycerca* (Wehr 1939), first described from *Cygnus columbianus columbianus*, has now been found to occur on a circumpolar scale in all five swans and three species of geese in the Northern Hemisphere. The biting louse *Trinoton anserinum* has been determined to be the intermediate host in the life cycle of *S. eurycerca*. Results of a study on the microfilarial periodicity of this heartworm in the peripheral circulatory system of *C. c. columbianus* show these larvae to be nocturnal and to concentrate in the blood between 0100 and 0400 hours. This suggests that the feeding behaviour of the louse is periodic.

Prevalence of heartworm has been determined in *C. c. columbianus*, *Cygnus columbianus bewickii*, and British and American populations of *Cygnus olor*. Prevalence ranges between 3.6% and 30% for all swans sampled. Prevalence is

highest in *C. c. columbianus* and British *C. olor*, averaging 20% and 17% respectively. During a four-year neck-band and resighting study of 720 *C. c. columbianus* captured on their wintering grounds in North Carolina and their breeding grounds in Alaska, the ratio of non-parasitized to parasitized swans resighted did not change significantly for either adult or juvenile swans up to four years after capture. This suggests that swans found positive for heartworm by blood examination did not have a significantly higher mortality than birds which were determined to be negative for the parasite.

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