

A serological survey on the health status of large ungulates in the central and southern French Alps

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Following the detection of four clinical cases of *Brucella melitensis* infection among chamois (*Rupicapra rupicapra*) in the Ecrins Massif between 1986 and 1990, a serological survey was conducted in four mountainous regions of the central and southern French Alps to determine the prevalence of this infection within the populations of large ungulates.

This survey, coordinated by the Veterinary Services Directorate and the Departmental Veterinary Laboratory of the Hautes-Alpes, was conducted during the 1991-1992 hunting season in the Ecrins National Park, the Queyras Regional Park, the Bochaîne Massif and the Chaudun Massif. Participating in the survey were the National Hunting Office, the National Forestry Office and the Departmental Hunting Federations of the Hautes-Alpes, Isère and Savoy, as well as individual hunting associations.

Blood samples were taken by hunters from the heart or major blood vessels of animals killed. Teams of technicians and students of the National Hunting Office and the Hunting Federations were specially trained to follow the hunting campaign and to package sera. All species of large wild ungulates were represented: red deer (*Cervus elaphus*), chamois, roe deer (*Capreolus capreolus*), wild boar (*Sus scrofa*) and moufflons (*Ovis musimon*) (Table I). The technicians were provided with the necessary equipment to send samples to one of seven centres recently set up in Gap, Névalche, Villard-d'Arène, Monétier, Pelvoux, Ristolles and Saint-Julien-en-Bochaîne. These centres, equipped with centrifuges, forwarded the serum samples to the Departmental Veterinary Laboratory in Gap for serological testing. The testing concentrated on brucellosis, but other diseases capable of causing abortion (chlamydiosis, salmonellosis and Q fever) were also included. In addition, tests were performed for toxoplasmosis, infection with maedi-visna virus and paratuberculosis. Any remaining serum was placed in storage at -20°C for possible subsequent testing.

This survey of many hundreds of animals provided evidence of the importance of brucella infection and facilitated an assessment of the prevalence of other diseases of large ungulates in the region, which are particularly at risk through frequent contact with transhumant herds and flocks of domestic ruminants.

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TABLE I
Origin and species of ungulates involved in the serological survey

Locality	Chamois	Roe deer	Species studied		
			Mouflon	Wild boar	Red deer
Névache	18	6	1	–	–
Villar-d'Arène	34	–	–	–	–
Monêtier-les-Bains	37	–	–	–	–
Pelvoux	10	–	–	–	–
Ristolas	28	–	–	–	–
Chaudun	–	–	24	–	–
Bochaîne	3	5	6	5	64
Total	130	11	31	5	64

The initial results obtained show that:

- With regard to **brucellosis** in the peripheral zone of the Ecrins Massif, the one and only moufflon shot possessed brucella antibodies, which were detected by two different tests. However, in the Bochaîne area, four of sixty-four red deer were positive (three of which possessed high titres), while results from the moufflon, chamois and roe deer were negative.
- In general, **paratuberculosis** seemed to be present in every area covered by the survey.
- A single chamois gave a positive reaction to the **maedi-visna** virus, the agent of progressive pneumonia, in addition to two red deer in the Bochaîne area.
- In the case of **chlamydiosis**, ten chamois, three red deer, a moufflon, a roe deer and a wild boar gave positive or weakly positive reactions.
- Traces of antibodies specific for *Salmonella abortus ovis* were found at very low titres in eight red deer in the Bochaîne area, with the exception of one which had a significant antibody titre.
- **Q fever** and **toxoplasmosis** seemed to be absent from wild ungulates in the area investigated.

The results of this survey thus tend to indicate that the health status of large ungulates in the central and southern French Alps is satisfactory except in the case of paratuberculosis, particularly in the Monêtier-les-Bains area. However, domestic animals in this area do not appear to be affected to the same extent. The appearance of four clinical cases does not seem to have spread the infection among chamois populations.

These observations will be supplemented during the 1992-1993 hunting season.