

PARASITES, DISEASE, AND BEHAVIOUR - Chairman: Dr. D. Shackleton

Elizabeth S. Williams, G.G. Schoonveld, T.R. Spraker and C.P. Hibler - Paratuberculosis (John's disease) in bighorn sheep (*Ovis canadensis*) and rocky mountain goats (*Oreamnos americanus*) in Colorado.

Bruce Johnson: Did you say that pigs, horses, and mules could also carry the disease?

Beth Williams: At slaughter, someone surveyed pigs and horses and found, from cultures of the mesenteric lymph nodes, that John's or Paratuberculosis organisms were present in these animals. In most cases they will not go on to develop into a clinical case.

Jim Bailey: Do you plan any studies in other goat herds?

Beth Williams: As soon as we get a reliable test to be sure we are diagnosing Paratuberculosis we are going to do some survey work in other goat and bighorn sheep herds in the state.

T.D. Bunch, S.R. Paul and H. McCutchen - Chronic sinusitis and osteomyelitis in desert bighorn sheep

Nike Goodson: Have any tests been conducted to see if the same bacterial agent isolated in infected desert sheep is present in healthy individuals?

Stephen Paul: The sinus is not a sterile area. These are probably normal inhabitants of the sinus of any sheep.

Nike Goodson: Is the botfly a native animal in this area?

Tom Bunch: It exists all through Mexico, the U.S. and Canada. The work done in the 1940's determined that the incidence of botfly parasitism in domestic sheep was above 90%. Some work found that the incidence in lambs was over 90%.

Jim Bailey: Is this botfly problem in the studies on domestic sheep more of a problem in the south than in the north?

Tom Bunch: It is related to the drier, arid areas. It is a common agent in the desert bighorn sheep habitat. At least, there it appears to be more of a problem.

Joel Berger: It has been suggested that Desert sheep are a low quality population. Do you think the incidence of osteo-necrosis is more prevalent in desert populations than in northern populations? If so, why?

Tom Bunch: I do not know for sure. I do not think it makes any difference what condition the sheep are in; the botfly also takes healthy stock. It also seems to be higher in the females.

T.R. Eccles - Activity patterns of captive California bighorn sheep (Ovis canadensis californiana) at Penticton, B.C.

Bill Wishart: Of the animals that were standing and lying down, did you notice different age groups? Is there anything in your observations to suggest that the young animals stay out in the sun and the older, larger ones stay in the shade?

Ross Eccles: Not so much from the shade/sun point of view, but the animals that I did see standing a lot were certainly the older animals, particularly in the winter.

Anonymous: Ross, does standing minimize conductive heat loss to the ground?

Ross Eccles: I do not think so. They seem to prefer underneath Ponderosa Pines where there is tremendous litterfall for proper insulation. Perhaps moving to, and bedding down in a proper site was more stressful than standing and ruminating where they were.

Daryll Hebert: What are the convective heat losses on those particular days?

Ross Eccles: Primarily wind.

Malcolm Ramsay: Did you notice if the dominant animals initiated movement to, or away from, bedding sites more than subordinates?

Ross Eccles: It seemed to be a mixture. At first I was interpreting leading a group movement as being a dominant display, but after I saw enough interactions to rank the animals I found that almost any animal could lead a group movement.

Dave Shackleton: Do you think that associating status with various activities is, in fact, a very poor measure of dominance?

Ross Eccles: Yes. Perhaps also the terrain does not lend itself to dominance, or even necessitate a dominance hierarchy. Interactions seem to increase somewhat when the animals are forced to a point resource like the hay pile.

J. Berger - Behavioural development of bighorn sheep: a comparison of populations inhabiting desert and northern environments.

Jim Bailey: Do you know why the desert bighorn is so non-synchronous in its breeding? Second, did you observe this rather continuous breeding activity to interfere with maternal behaviour?

Joel Berger: No, I don't really know why they are non-synchronous. I think the lamb itself has no effect on ram behaviour. Rams will inspect just as frequently, ewes that have lambs as those without.

Bill Wishart: Did the transplant animals appear to be intermediate in their group size or length of time spent suckling?

Joel Berger: The group sizes and relationships of lambs to ewes were intermediate in the transplant animals, however their behaviour patterns occasionally were not intermediate. Lambs were intermediate in suckling.