Slektninger av *L. arctica* har gnagere og rovdyr som mellomverter, rovdyr av hundefamilien som sluttverter. Reinen er imidlertid sluttvert i livssyklusen til *L. arctica.* I den første artikkelen testes tre mulige overførings- eller smittemåter. Resultatene tyder på at bihulemarken har en direkte livssyklus med overføring om sommeren via beite, selv om vertikal transmisjon fra simle til foster/kalv ikke kan utelukkes. Det er også mulig at snegl kan fungere som transportvert.

Den andre artikkelen beskriver den vekst og reproduktive utvikling som skjer i bihulene fra 4-5 mm langt sluttlarvestadium hos 3-4 mnd. gamle kalver til voksen, eggleggende parasitt hos ettåringene. Sammenliknet med nærstående arter må *L. arctica* ha en meget rask larval utvikling (progenese). *L. arctica* er en spesiell representant for tungemarkene: Parasitten har direkte livssyklus med adskilte, årlige generasjoner og en utvikling i reinen som tar 10-12 måneder. Den har kort tid til rådighet for transmisjon. Transmisjonen er vanligvis begrenset til yngste aldersgruppe hos verten. Livssyklus avhenger sannsynligvis både av klima, vertsresistens og reinens adferd.

Arbeidet med *L. arctica* har også gitt indikasjoner om reproduktiv strategi hos tungemarkene.

Rolf Egil Haugerud, University of Tromsø, has taken the degree of Cand. Scient. (master of science) en ecology, zoology with the thesis «A life history approach to the parasite-host interaction *Linguatula arctica* Riley, Haugerud and Nilssen, 1987 - *Rangifer tarandus* (Linnaeus, 1758).» The thesis comprises of two papers written in English. Rolf Egil Haugerud was born in 1944 in Drammen. He has been a teacher in northern Norway 1964-84 and has further studied at the University of Trondheim 1970-73.

Linguatula arctica is a tongue worm (Pentastomida) found in reindeer calves. Most calves are infected wit postlarval worms in the sinuses during autumn and winter months. The larval stages are not yet found except for the endlarval stage (nymph) from the upper respiratory tract. The earlier stages may be found during summer in various viscera because the endlarvae reach the sinuses from August to October/November. Hostreactions were registrated but it is too early to conclude about pathological impact.

Rodents and ungulates normally are linguatulid intermediate hosts with canines as definitive hosts. However, the reindeer is the final host in the life cycle of *L. arctica.* In the first paper three transmission possibilites were hypothesized and tested. The results although not conlusive, suggest a direct life cycle with transmission in the short artic summer. Vertical transmission as alternative strategy is also probable. Transmission to a gastropod species indicates a paratenic function.

The second article describes growth and development from 4-5 mm long endlarva in 3-4 months old calves to patent parasites (max. 145 mm) in yearlings. The data imply a very rapid development (2-2 1/2 months) from transmission to endlarva stage (progenesis). Obviously, *L. arctica* is a very special tongue worm with its northern distribution. Its direct life cycle, its discrete and annual generations with a developmental time of almost one year, its restriction to the youngest age group of the herbivorous host and its short time available for transmission. Life cycle probably depends on climate, host resistance and the social behaviour of the host.

The observations of *L. arctica* also give indications of general reproductive strategy among pentastomids.

Obituaries
Minneord

Professor Vladimir Nikolaevich Andreev

Professor V. N. Andreev who died on September 29, 1987 at the age of eighty, was a leading Soviet scientist in the field of reindeer husbandry. The name of Prof. Andreev is widely known abroad as well. He was the most competent specialist in the sphere of tundra geobotany and reindeer range investigation.

V. N. Andreev was born in 1907 in Leningrad. He was educated at Leningrad University, later on he took the post-graduate course at the USSR Academy of Sciences. From the student's years he devoted himself to the research of tundra vegetation and range resources. He began his wide and prolonged expeditions to the Far North from the European tundras. His early studies on the vegetation of Kanin peninsula tundras and his investigations of biology and ecology of lichens became classic in the field of tundra geobotany.

In 1931 V. N. Andreev joined the Leningrad Institute of Reindeer Husbandry. The contacts with the eminent botanist Prof. B. N. Gorodkov, the founder of the Soviet school of complexe tundra studies, played an important role in his formation as a scientist. Under the guidance of Prof. Gorodkov, V. N. Andreev and other young botanists began a wide and thorough exploration of reindeer ranges all over the Soviet North. Afterwards this collective work had been honoured with a high government award: the USSR State Prize. V. N. Andreev was one of these State Prize laureates.

The young scientist was proposed to work in Leningrad, at the USSR Academy of Sciences. But he refused the tempting career and left for the Far North. At first he worked as a director of the Nar-'yan Mar reindeer station (the Nenetz National region, Arkhangelsk district). Here he studied in details the lands of the Nenetzs, ranges and vegetation of the Pechora North.

Later on he moved to Norilsk where the former Institute of Reindeer Husbandry was transferred; it had obtained the name of the Far North Agricultural Institute. Professor Andreev had been at the head of the scientific work of this complexe Institute. He guided wide and detailed geobotanical investigations of Taimyr tundras. Here V. N. Andreev had completed the methodical work on the reindeer ranges evaluation; these methods were used by scientists and practical workers in the Soviet North during many years. Under the guidance of V. N. Andreev a first aerial census of wild reindeer in Taimyr had taken place.

In 1965 V. N. Andreev moved to Yakutsk. Here he joint the Institute of Biology, the Yakut Branch of the USSR Academy of Sciences. He became the head of the Laboratory of Geobotany and Cryptogamic Plants. In Yakutia V. N. Andreev worked for the remainder of his life. He summed up geobotanical investigations of European and Siberian tundras. He proposed classification schemes for the vegetation of tundra and forest-tundra. Professor Andreev played the most important role in the compiling of geobotanical maps of the Soviet North. At the close of his days he began the deep stationary investigations of productivity and dynamics of tundra vegetation communities. V. N. Andreev was the initiator of applying aerial methods for investigation of tundra vegetation and ranges in the USSR. He developed special aero-visual methods, widely used aerial photographs.

V. N. Andreev paid a great attention to the studies of flood-land vegetation in the valleys of Great Siberian Rivers, especially the Yenissey. His ideas on rational using the enormous meadow areas of northern river valleys begin to come true nowadays.

Professor Andreev was one of the first to pay attention to the urgent necessity of conservation and protection of northern ecosystems. He was one of the initiators of the movement for the Nature Protection in the Far North.

V. N. Andreev had more than 250 scientific and popular articles and books. He had a lot of disciples and followers, those whom he advised and inspired. V. N. Andreev founded a scientific school of geobotanical bases for northern reindeer husbandry which is recognized all over the world.

Professor Andreev was not an armchair scientist. He spent many months in tundra and forest-tundra, often in very hard conditions. He was a strong and courageous man. He was always independant and a man of principle in scientific discussions.

V. N. Andreev had great authority among scientists and public figures. He was a member of Bureau of the Council on North Problems (the USSR Academy of Agricultural Sciences), a member of the USSR Acad. Sci. Scientific Council on Vegetation Kingdom. V. N. Andreev was an Associated Member of the Botanic-Geographical Society of Sweeden, a honorary citizen of Alaska.

For the remainder of his life Prof. Andreev refused to return to Leningrad. He was true to his love for the Nature of the North. He continued to work till the end. He deceased and was buried in Yakutsk.

Professor E. E. Syroechkovski

Institute of Evolutionary Morphology and Animal Ecology, USSR Academy of Sciences, Moscow, USSR.

Dr E. J. Lindgren-Utsi

It is sad to report the death of the anthropologist Dr Ethel John Lindgren, FRSA, who was for many years Honorary Secretary and, latterly, a Director of the Reindeer Council of the United Kingdom. She died on 23 March 1988, aged 83, at Reindeer House, in the Cairngorm Mountains of Scotland, within sight of the herd of reindeer which she helped her late husband, Mikel Utsi, to establish. The Cairngorm herd, which today numbers about 100 animals, owes its existence to the far-sightedness and generosity of Mikel Utsi and the drive and determination of Dr Lindgren, his wife.

The suggestion that reindeer could thrive in the Scottish Highlands, and that some should be imported as an experiment, was first made in 1947. The Reindeer Council was founded two years later and Dr Lindgren was appointed its Honorary Secretary. The plan to re-introduce reindeer to Scotland was welcomed in the press but was viewed with caution and some scepticism by the authorities. Dr Lindgren, however, was indefatiguable in