

## Overview of delegates' presentations

Session 1                      **Physiology I: nutrition and energetics**

**CHAIRMAN**    Professor Robert G. White, USA

**Co-Chairman**    Professor Hans Staaland, Norway

**Orals - Monday 12.15-12.45**

**Posters -            Monday 11.00-12.15**

### Oral presentations

Abstract 1      Comparison of nutrient absorption by red deer and reindeer calves in winter.  
R.G. White, R. Langvatn & H. Staaland.

Abstract 2      Effect of wind on Svalbard reindeer fur insulation.  
Christine Cuyler & Nils Are Øritsland.

### Poster presentations

Abstract 3      Mechanisms of winter metabolic acidosis compensation in reindeer in the reticulo-rumen.  
Aleksandr Chalyshev.

Abstract 4      Lichen digestibility in muskoxen and reindeer.  
Claudia Ihl, R.G. White & D.R. Klein.

Abstract 5      Determination of the heat increment of feeding in muskoxen.  
James P. Lawler & Robert G. White.

Abstract 6      Adaptation of digestive system in reindeer to annual winter feeding.  
V. Marjala, U. Heiskari, M. Nieminen & L. Syrjälä-Qvist.

Abstract 7      Comparative digestion in two sub-species of reindeer.  
S.D. Mathiesen, W.S. Sørmo, T.H.A. Utsi, M.A. Olsen, M.A. Vader, V.B. Rædergård & N.J.C. Tyler.

Abstract 8      Adaptation of reindeer calves to various diets.  
Anna Nilsson & Birgitta Åhman.

Abstract 9      Ruminal fibre digestion in lichen-fed reindeer.  
M.A. Olsen & S.D. Mathiesen.

Abstract 10     Factors influencing the *in vitro* digestibility of lichens in reindeer.  
P.V. Storeheier, S.D. Mathiesen, N.J.C. Tyler & M.A. Olsen.



**Session 3      Veterinary medicine, parasites, health and welfare**

**CHAIRMAN    Professor Claes Rehbinder, Sweden**

**Co-Chairman    Dr. Sven Skjenneberg, Norway**

**Orals - Monday 15.20-15.50**

**Posters -        Monday 15.50-18.00**

**Oral presentations**

- Abstract 22    Use of host-mimicking trap catches to obtain data for parasitic flies associated with reindeer.  
J.R. Anderson & A.C. Nilssen.
- Abstract 23    Changes in bioavailability of radiocaesium from 1986 to 1998 in lichen contaminated by the  
Chernobyl accident.  
Knut Hove, Hans Staaland, Øystein Holand & Hallvard Gjostein.

**Poster presentations**

- Abstract 24    Early reindeer calf mortality.  
E.O. Ågren.
- Abstract 25    Toxovars of *Clostridium perfringens* isolated from reindeer in Arctic northern Europe and from  
sheep in tropical west-Africa.  
Ansgar Aschfalk & Wolfgang Müller.
- Abstract 26    Trace minerals in northern ruminants: copper and ceruloplasmin.  
Perry S. Barboza & John E. Blake.
- Abstract 27    Safety of *Brucella abortus* strain RB51 vaccine in reindeer.  
John E. Blake, Philip Elzer & Julia Bevins.
- Abstract 28    Heavy metals and trace elements in reindeer from Rybatsjij Ostrov, north-western Russia.  
A. Bernhoft, T. Waaler, S.D. Mathiesen & A. Flåoyen.
- Abstract 29    Influence of global pollution on lichens and reindeer on Russian tundra.  
M.V. Glazov.
- Abstract 30    Potential value of in vitro antigen-specific IFN-gamma assays for the diagnosis of brucellosis,  
tuberculosis, paratuberculosis and infectious bovine rhinotracheitis in wild ruminants.  
Jacques Godfroid, Franck Boelaert, V. Wellemants, C. Clavareau, A. Heier & K. Walravens.
- Abstract 31    Histopathological responses to radio-collars in caribou and muskoxen.  
Anne Gunn & G. Wobeser.
- Abstract 32    Parasitic nematode larval densities and calving ecology of barren-ground caribou in the  
Northwest Territories, Canada.  
Anne Gunn.
- Abstract 33    The population dynamics of parasitic nematodes of Svalbard reindeer (*Rangifer tarandus*  
*platyrhynchus*): species differences in age intensity and seasonality.  
J. Irvine, A. Stien, O. Halvorsen, R. Langvatn & S.D. Albon.

- Abstract 34 Parasite biodiversity in Arctic ruminants and the influence of climate on transmission dynamics.  
S.J. Kutz, E.P. Hoberg & L. Polley.
- Abstract 35 Studies of *Elaphostrongylus rangiferi* in caribou of Newfoundland.  
M. Lankester, M. Ball & S. Mahoney.
- Abstract 36 Exposure rates of muskoxen on Banks Island, Northwest Territories, to yersiniosis.  
J.A. Nagy, N.C. Larter, M. Branigan & M.E. Olson.
- Abstract 37 Attempts to eradicate reindeer parasites (*Hypoderma tarandi*, *Cephenemyia trompe* and *Linguatula arctica*) on an island in northern Norway.  
A.C. Nilssen, W. Hemmingsen & R.E. Haugerud.
- Abstract 38 Effect of ivermectin on reindeer dung fauna.  
A.C. Nilssen, R.E. Haugerud, K. Åsbakk, W. Hemmingsen & A. Oksanen.
- Abstract 39 Calving and calf mortality at the Experimental Field Station in Kaamanen 1970-97.  
H. Norberg & M. Nieminen.
- Abstract 40 Reindeer calf mortality rates in reindeer herding co-operatives of Hammastunturi and Muddusjärvi.  
H. Norberg & M. Nieminen.
- Abstract 41 Cause-specific calf mortality in reindeer herd studied with radiotelemetry.  
H. Norberg, I. Kojola & P. Aikio.
- Abstract 42 Health and pregnancy status of the Colville River, Alaska moose during and following a population decline and poor recruitment in 1996-97.  
Todd M. O'Hara, Geoff M. Carroll, Lora Ballweber, John E. Blake, Carla Willetto & Genieve Rinker.
- Abstract 43 Radionuclide levels in caribou of northern Alaska in 1995-1996.  
Todd M. O'Hara, Doug Dasher, John C. George & Victoria Woshner.
- Abstract 44 Mineral and heavy metal status associated with and following a mortality event and poor recruitment in moose of the Colville River System, Alaska.  
Todd M. O'Hara, Gavin Meerdink, Geoff M. Carroll, Keith Mueller, John E. Blake, Perry S. Barboza, Victoria Woshner & Carla Willetto.
- Abstract 45 Ivermectin treatment of reindeer.  
A. Oksanen & M. Nieminen.
- Abstract 46 Histological analysis of small intestinal epithelium in reindeer.  
E. Ringø, Ø. Aas-Hansen, M.A. Olsen, S.D. Mathiesen, T. Kaino, M. Nieminen & R. Myklebust.
- Abstract 47 Immobilization of captive reindeer (*Rangifer tarandus tarandus*) with medetomidine-ketamine: a comparison of clinical effects using different methods of drug administration and different doses for dart injection.  
K.A. Ryeng, S. Larsen & J.M. Arnemo.
- Abstract 48 An ELISA for detection of antibodies against *Mycobacterium avium* subspecies *paratuberculosis* in wild ruminants in Norway.  
Morten Tryland, Ingrid Olsen & Liv Jorun Reitan.

**Session 4**

**Reindeer/caribou peoples and their knowledge**

**CHAIRMAN** Dr. Timo Helle, Finland

**Co-Chairman** Elna Sara, Norway

**Oral - Tuesday 12.30-12.45**

**Posters - Tuesday 10.30-12.30**

**Oral presentation**

Abstract 49 Inuit ecological knowledge of climatic influences on caribou and calving areas in the Kitikmeot region of Nunavut, Canada.  
N.L. Thorpe & S.P. Eyegetok.

**Poster presentations**

Abstract 50 Using historical Inuit knowledge for the delineation of habitat protection areas for Arctic tundra caribou.  
Michael A.D. Ferguson.

Abstract 51 Identification of traditional knowledge of reindeer herding and comparisons with knowledge derived from scientific knowledge.  
Berit Inga.

Abstract 52 Genetic data on the migration of ancient Eurasian hunters through Siberia and the circumpolar area.  
A.F. Nazarova.

**Session 5****Products**

**CHAIRMAN** Dr. Janice Rowell, USA  
**Co-Chairman** Anne Cathrine Rørholt, Norway

**Oral - Tuesday 12.45-13.00**

**Posters - Tuesday 10.30-12.30**

**Oral presentation**

Abstract 53 Objective measurements of qiviut fiber from wild muskoxen.  
Janice E. Rowell, Christopher J. Lupton, M.A. Robertson, John A. Nagy & Robert G. White.

**Poster presentations**

Abstract 54 Reindeer milking and the chemical composition of the reindeer milk.  
P. Aikio & M. Nieminen.

Abstract 55 A comparison of underwool (qiviut) from wild and captive muskoxen.  
Morgan A. Robertson, Janice E. Rowell, Robert G. White, Christopher J. Lupton & John A. Nagy

Abstract 56 Nutrient dependent composition of polyunsaturated fatty acids in *M. psoas minor* from reindeer.  
O. Taugbol & S.D. Mathiesen.

Abstract 57 Reindeer blood, use and composition.  
M. Uusitalo & M. Nieminen.

Abstract 58 Meat quality traits in reindeer (*Rangifer tarandus tarandus* L) fed various diets.  
E. Wiklund, A. Nilsson & B. Åhman.

**Session 6**                      **Rangeland / grazing systems**

**CHAIRMAN**    **Dr. Anne Gunn, Canada**  
**Co-Chairman**    **Cand. real. Eldar Gaare, Norway**

**Orals - Wednesday 12.15-13.00**  
**Posters -            Tuesday 10.30-12.30**

**Oral presentations**

- Abstract 59      Climate, weather and caribou numbers: a question of scale.  
A. Gunn.
- Abstract 60      Herd-specific predictive models that integrate effects of climate and development on caribou as  
a subsistence resource for Arctic communities.  
Brad Griffith & Don Russell.
- Abstract 61      Overgrazing: signs and tendencies.  
M.A. Magomedova & L.M. Morozova.

**Poster presentations**

- Abstract 62      Natural cycle of reindeer and its relationships with forage resources.  
B.D. Abaturov & V.N. Lopatin.
- Abstract 63      Does quality of summer pastures depend on reindeer density?  
K.A. Bråthen & C. Wegener.
- Abstract 64      New perspectives on reindeer rangeland management; equilibrium vs.non-equilibrium in an  
ecosystem dominated by dynamic interactions.  
Jonathan E. Colman.
- Abstract 65      Satellite inventory and biomass assessment of Finnish reindeer summer pastures.  
Alfred Colpaert, Jouko Kumpula & Mauri Nieminen.
- Abstract 66      Productivity and demography of reindeer forage plants in Svalbard.  
E.J. Cooper, H. Perander & P.A. Wookey.
- Abstract 67      Development of a muskox habitat map for northern Alaska using GIS.  
Fiona S. Danks & David R. Klein.
- Abstract 68      Ungulates and snow-affected pastoral ecosystems of the central Asian highlands - can our  
knowledge of Arctic ungulate systems inform husbandry and wildlife conservation in these  
rapidly developing regions?  
Joseph L. Fox, Daniel J. Miller & Per Mathiesen.
- Abstract 69      Modeling caribou response to seasonal and long-term changes in vegetation: II. Estimating  
seasonal changes in forage quality.  
J. Johnstone, D.E. Russell & B. Griffith.

- Abstract 70 Climate, vegetation, caribou and people: a regional integrated assessment model for investigating the sustainability of Arctic communities.  
C.R. Nicolson, G.P. Kofinas, M.D. Berman, J.A. Kruse, R.G. White, D.E. Russell, & J. Johnstone.
- Abstract 71 Climatic influences on forage quality for Arctic ungulates: Implications of climate change.  
D.R. Klein, P. Valkenburg, C. Bay & F.S. Danks.
- Abstract 72 Landsat 5 TM images in mapping winter pastures of reindeer, in the Näkkälä reindeer herding district.  
Timo Kumpula, Alfred Colpaert, Jouko Kumpula & Mauri Nieminen.
- Abstract 73 Determination of the reindeer pastures carrying capacity in western part of Petchenga region.  
V.B. Kuvaev, A.V. Rybkin & D.A. Shakhin.
- Abstract 74 Seasonal and annual variability in the quality of forages consumed by Peary caribou and muskoxen on Banks Island.  
N.C. Larter & J.A. Nagy.
- Abstract 75 Reindeer population density impact on forage biodiversity.  
A.M. Odasz-Albrigtsen.
- Abstract 76 Anthropogenic transformation of Enisey forest tundra reindeer pastures during the development of oil-gas industry.  
D.A. Shakhin & A.V. Rybkin.
- Abstract 77 Reindeer grazing and the soil processes in oro-Arctic ecosystems.  
Sari Stark & Rauni Ohtonen.
- Abstract 78 Modeling caribou response to seasonal and long-term changes in vegetation: I. Development of an algorithm to generate diet from vegetation composition and application to projections of climate change.  
R.G. White, J. Johnstone, D.E. Russell, B. Griffith, H. Epstein, M. Walker, F.S. Chapin III & C. Nicolson.



Session 7                      Populations: dynamics and genetics

**CHAIRMAN**    **Dr. Jim Dau, USA**  
**Co-Chairman**    **Professor Eigil Reimers, Norway**

**Orals - Wednesday 15.20-15.50**  
**Posters -            Wednesday 10.30-12.15**

**Oral presentations**

- Abstract 79    Factors associated with stabilization of muskox numbers in northeastern Alaska.  
Patricia E. Reynolds.
- Abstract 80    Microsatellite variation of the muskox *Ovibos moscahtus* - historical, metapopulation and  
conservation implications.  
P.J. van Coeverden de Groot, Anne Gunn & Peter T. Boag.

**Poster presentations**

- Abstract 81    Status and factors affecting the Western Arctic Caribou Herd.  
J. Dau, J.W. Coady, L.A. Ayres, P.J. Bente, G.M. Carroll & S. Machida.
- Abstract 82    Evolutionary history of Peary caribou and Arctic island caribou on the Canadian high and  
central Arctic islands.  
J. Eger & A. Gunn.
- Abstract 83    Phylogenies and the future of Russian Tagil cattle.  
A.F. Gorbachev, A.F. Nazarova, A.M. Mashurov & S.M. Alhutov.
- Abstract 84    Muskox genetics from the past to the present.  
P. Groves.
- Abstract 85    Comparative - morphological analysis of skulls of contemporary and fossil muskoxen (*Ovibos  
moschatus*).  
A.R. Gruzdev, A.V. Davydov & T.P. Sipko.
- Abstract 86    Morphological and genetic differentiation of Euroasian reindeer (*Rangifer tarandus*).  
A.R. Gruzdev & A.V. Davydov.
- Abstract 87    Age determination of caribou (*Rangifer tarandus*) of the Wrangel Island by the degree of  
development and wear of teeth.  
A.R. Gruzdev & A.V. Davydov.
- Abstract 88    Sex and age classification surveys of Peary caribou on Banks Island, Northwest Territories  
from 1982-1998: A review.  
N.C. Larter & J.A. Nagy
- Abstract 89    Phylogenetic status of Yakut cattle in relationship to other Bovinae.  
A.M. Mashurov, N.O. Sukhova, Z.I. Ivanova, R.O. Tsarev & A.F. Nazarova.
- Abstract 90    The immunophylogenesis of Estonian, Finnish and Vietnamese cattle.  
A.M. Mashurov, A.F. Nazarova, H.H. Than, P.O. Tsarev, T. Iikva & T.I. Liibusk.

- Abstract 91 Defining herds within the range of 'Bluenose' barren-ground caribou.  
J. A. Nagy, A. Veitch, M. Branigan, K. Zittlau, N.C. Larter, D. Cooley, B.R. Patterson & C. Strobeck
- Abstract 92 Wild reindeer calf recruitment variations; biology or methodology?  
Eigil Reimers & A.Aa. Ims.
- Abstract 93 Population of the reindeer from the Novaya Zemlya archipelago at the time of nuclear tests.  
A.A. Sokolov & G.A. Klevezal.
- Abstract 94 Persistent instability in Svalbard reindeer dynamics: density-dependence in a fluctuating environment.  
N.J.C. Tyler, Mads C. Forchhammer & N.A. Øritsland.
- Abstract 95 Dynamics and state of muskox population on Taimyr.  
S.A. Tsarev & T.P. Sipko.
- Abstract 96 Genetic relatedness and diversity in Peary caribou (*Rangifer tarandus pearyi*) from the Bathurst Island complex.  
Keri Zittlau, Anne Gunn, Frank Miller & Curtis Strobeck.
- Abstract 97 Genetic relationships of caribou herds in the Inuvialuit Settlement Region, Northwest Territories and Yukon Territory.  
K. Zittlau, J.A. Nagy, N.C. Larter & C. Strobeck.



- Abstract 110 Genetic resources of reindeer and their conservation by method of cryopreservation of germ cells.  
T.P. Sipko & N.N. Rott.
- Abstract 111 Correlation between pregnancy and body weight on reindeer (*Rangifer tarandus tarandus*).  
Heikki Sirkkola & Mauri Nieminen.
- Abstract 112 Harem dynamics of semi-domestic reindeer under different herd compositions of males.  
M.E. Smith, Ø. Holand, K.H. Røed, J. Kumpula & M. Niemanen.
- Abstract 113 Early reproductive failure in female Svalbard reindeer in relation to age, fat and body mass.  
N.J.C. Tyler, V.B. Rædergård & M.A. Vader.
- Abstract 114 Progesterone production during pregnancy in reindeer.  
N.J.C. Tyler, P.F. Flood, E.K. Hoare, M.J. Rodway & P.J. Chedrese.

**Session 9      Activity and movements, feeding behaviour and habitat selection**

**CHAIRMAN    Dr. David R. Klein, USA**  
**Co-Chairman    Jonathan Colman, Norway**

**Orals - Thursday 12.15-13.00**

**Posters -        Thursday 10.30-12.30**

**Oral presentations**

- Abstract 115    Red deer and roe deer diets in forests of northeastern China.  
H.P. Chen, J.Z Ma, F. Li, Z. W. Sun, H. Wang, L.Y. Luo & F. Li.
- Abstract 116    Winter foraging ecology of a population of Arctic tundra caribou after a predicted range shift.  
Michael A.D. Ferguson, Line Gauthier & François Messier.
- Abstract 117    A multi-scale approach to understanding the feeding habits, movements and distribution of woodland caribou in northcentral British Columbia.  
Chris J. Johnson, Katherine L. Parker & Douglas C. Heard.

**Poster presentations**

- Abstract 118    Partial migration by large ungulates: characteristics of seasonal moose (*Alces alces*) ranges in northern Sweden.  
John P. Ball, Caroline Nordengren & Kjell Wallin.
- Abstract 119    Foraging tradeoffs by wood bison: empirical tests of patch selection under captive versus free-range conditions.  
C.M. Bergman, J.M. Fryxell & C.C. Gates.
- Abstract 120    Caribou movement as a correlated random walk.  
C.M. Bergman, J.A. Schaefer, S. Luttich & R. Otto.
- Abstract 121    Activity patterns of wild reindeer in summer; 24 - hour periodicity?  
J. Colman, Chr. Pedersen, E. Reimers, Ø. Holand, S. Moe & D. Hjermann.
- Abstract 122    Possible energy compensation at night as an adaptation to severe energy use and limitations during day due to parasitic insect harassment.  
J. Colman, Chr. Pedersen, E. Reimers, Ø. Holand, S. Moe & D. Hjermann.
- Abstract 123    Behavior interactions between reindeer and sheep on shared summer range.  
J. Colman, Chr. Pedersen, Ragnhild Bjaalen, E. Reimers, Ø. Holand, S. Moe & D. Hjermann.
- Abstract 124    Utilisation of old meadow by reindeer in spring in northern Norway  
Svein M. Eilertsen & Svein D. Mathiesen.
- Abstract 125    Comparison of activity levels throughout the year in two herds of domestic reindeer in Finnmark, Norway.  
L.P. Folkow & A.S. Blix.
- Abstract 126    Reindeer summer activity pattern in relation to temperature and insect harassment.  
Rolf Iver M. Hagemoen & Eigil Reimers.

- Abstract 127 Comparative habitat and diet selection of muskoxen and reindeer on the Seward Peninsula, western Alaska.  
Claudia Ihl & D.R.Klein.
- Abstract 128 Summer feeding habits of a muskox herd on the Seward Peninsula, western Alaska.  
Claudia Ihl & D.R.Klein.
- Abstract 129 Pasture use of reindeer in northernmost Lapland - GPS-tracking and satellite image data as a study method.  
J. Kumpula, U. Fielitz & A. Colpaert.
- Abstract 130 Long-term patterns of activity in relation to photoperiod in free-ranging reindeer and sheep.  
B.E.H. van Oort, K.-A. Stokkan & N.J.C. Tyler.
- Abstract 131 Migrations of north Yakutian reindeer populations.  
V.M. Safronov.
- Abstract 132 Patch use in svalbard reindeer: food quality, quantity or parasite avoidance?  
R. van der Wal & S.D. Albon.
- Abstract 133 Habitat selection by calving caribou of the Central Arctic Herd, 1980-1995.  
S.A. Wolfe, B. Griffith, R.D. Cameron, R.G. White & S.M. Murphy.

**Session 10 Conservation, husbandry and management**

**CHAIRMAN Professor Öje Danell, Sweden**  
**Co-Chairman Dr. Øystein Holand, Norway**

**Orals - Thursday 14.40-15.10**

**Posters - Thursday 15.10-18.00**

**Oral presentations**

- Abstract 134 Impact of the range expansion of the Western Arctic Caribou Herd onto traditional reindeer ranges of the Seward Peninsula, Alaska.  
G.L. Finstad.
- Abstract 135 Economically optimal stocking rates in reindeer husbandry.  
Öje Danell.

**Poster presentations**

- Abstract 136 Changes in reindeer area in Yamal region in 20th century and prospects of conservation of northern Yamal population.  
Vladimir N. Bolshakov & Nikolai S. Korytin.
- Abstract 137 Status of muskox populations in Alaska.  
J.W. Coady, P.E. Reynolds, J.R. Dau, G.M. Carroll, R.J. Seavoy & P.J. Bente.
- Abstract 138 Reindeer herding in northwest Europe - biological limits and challenges.  
Hans Kolbein Dahle, Öje Danell, Eldar Gaare & Mauri Nieminen.
- Abstract 139 Fright distancers of Forelhogna reindeer after disturbance by humans on foot or ski.  
Sindre Eftestøl, Jonathan Colman & Eigil Reimers.
- Abstract 140 Milk production and health in cold freestall barns.  
H. Eriksson.
- Abstract 141 Reindeer diet and pasture carrying capacity.  
E. Gaare, Ö. Danell & H. Staaland.
- Abstract 142 A program for monitoring lichen grazing in Finnmark, Norway.  
E. Gaare & H. Tømmervik.
- Abstract 143 Immobilization of wild reindeer for the rational utilization of its resources on the territory of Chukotka.  
A.B. Grebenkov & T.P. Sipko.
- Abstract 144 Assessing the effectiveness of wild reindeer management systems in Iceland.  
Páll Hersteinsson, Sakari Kankaanpää & Áki Jonsson.
- Abstract 145 Status and conservation of goral (*Nemorhaedus goral*) and serow (*Capricornis sumatraensis*) population of oak forest in Kumaon Himalayas, India.  
Orus Ilyas, Jamal A. Khan & A. Khan.
- Abstract 146 Regional features of changing of domestic reindeer population in north Russia: cultural, economical and ecological factors importance.  
K.B. Klokov.
- Abstract 147 G. Kofinas et al. Plenary lecture and debate Monday 9<sup>th</sup> August 21.00-22.00.

- Abstract 148 Role of cropping in regulation of the harvest of wild reindeer in Taimyr.  
L.A. Kolpashchikov.
- Abstract 149 Problems of wild and domestic deer interrelations and condition of pastures in the north of Yamal.  
Nikolai S. Korytin & Vladimir N. Bolshakov.
- Abstract 150 Current populations and numbers of reindeer in Russia.  
B.V. Liakin & B.V. Novikov.
- Abstract 151 Restoration of the historical area of muskox on north of Russia.  
B.V. Liakin & S.A. Tsariev.
- Abstract 152 Potential response to calf selection in reindeer (*Rangifer tarandus*).  
L. Rönnegård & Ö. Danell.
- Abstract 153 Effects of overflights by low-altitude jet aircraft on habitat and terrain use by caribou.  
J.A.K. Maier, R.G. White, S.M. Murphy & M.D. Smith.
- Abstract 154 Wild reindeer of the Kola peninsula at the end of the 20th century.  
Ø.A. Makarova.
- Abstract 155 Optimal adaptation of reindeer herds to rangelands under uncertainty.  
E. Moxnes, Ö. Danell, E. Gaare & J. Kumpula.
- Abstract 156 Necessity of circumpolar approach for keeping of reindeer husbandry as a traditional branch of economy and culture of north natives.  
A.N. Polezhaev, A.N. Berkutenko & N.A. Polezhaev.
- Abstract 157 The introduction of muskox on the polar Ural.  
S.M. Shirshov, T.P. Sipko, S.A. Tsarev & A.B. Grebenkov.
- Abstract 158 State of the Putoran snow sheep population.  
T.P. Sipko & V.V. Larin
- Abstract 159 Harvesting importance, rational using and guarding of reindeer in Yakutia.  
I.G. Sivtsev.
- Abstract 160 Wild reindeer and human disturbance - a study of decreasing human disturbance and use of winter pastures.  
N.R. Sporan, K. Hedegart Flaata, Ø. Holand & O. Strand.
- Abstract 161 Comparison of vigilance behaviour in wild and semi-domestic reindeer (*Rangifer tarandus tarandus*) in Southern Norway.  
Sigurd Svella & Eigil Reimers.
- Abstract 162 Co-management of the Western Arctic Caribou Herd in Alaska.  
J.N. Trent, S. Pedersen, J.W. Coady & P. Schaeffer.
- Abstract 163 Changing management strategies for Alaskan caribou herds.  
Patrick Valkenburg.
- Abstract 164 Avoidance of tourists and power lines by calving semi-domesticated reindeer.  
Ingunn Vistnes & Christian Nellemann.
- Abstract 165 Status and conservation of Amur goral in Russia.  
I. V. Voloshina & A. I. Myslenkov.
- Abstract 166 Encroachment bush as animal feed.  
D.B.R. Wandrag, P. Eloff & R.H. Willats.