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Kapitel: 4: Geographical distribution

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would be interesting to know similar details for other groups of the genus *Antennaria* as they are rather scarce in the literature.

The ratio of the length of the pistillate florets and the pappus presents different values for *A. carpatica* s. str., *A. villifera* and *A. lanata* (Fig. 19). The relative length of the flower organs also differs in the staminate florets (Fig. 12). It should be noted, however, that these quantitative characters may be not always recognizable in poorly collected herbarium specimens; therefore, they should be considered as additional criteria of classification.

Seed development shows notable differences between *A. carpatica* s. str. and *A. villifera*. In addition, the length of the achenes and their colour seem to be helpful in determining of the resp. species: in *A. carpatica* s. str. the achenes are brown and c. 1.5 mm long; those of *A. villifera* are purplish-brown and 0.8 mm long, but exceedingly rare; in *A. lanata* the achenes are c. 1 mm long and their colour is olive-brown whereas *A. pulcherrima* has brownish achenes about 2 mm long.

It should be noted that some of the details found in *Antennaria villifera* seem to correspond with the two cytotypes occurring within this species. In view of the fact that both the pollen types and the stigma types are rahter well separated from each other, it seemed advisable to accomplish the description of *A. villifera* by these details.

Thus, it appear possible that the present concept of species within the *Antennaria carpatica* complex should be based upon a series of minute characters which nevertheless are fairly constant. This chiefly concerns the morphology of the florets. The morphology of the rosette leaves as well as the length of the involucral phyllaries do not seem to have a decisive diagnostic value in view of their notable variability.

It should be added that similar results were obtained by the authors working on the *Antennaria* representatives from North America (Fernald 1924, Porsild 1950, 1965).

4. Geographical distribution

4.1 *Antennaria villifera*

In Scandinavia, *A. villifera* shows a slightly discontinuous unicentric distribution in the northern part of the mountain range (Fig. 22). It is confined to the inland mountains. Its local southern limit corresponds to the Arctic Circle (Saltdalen, Nordland) whereas the northernmost localities were reported

from East Finmark (Masöy, Snøfjord, c. 70°48′, Dahl 1934; Mount Rastigaissa, Nordhagen 1939). The eastern limit in Fennoscandia is in Mount Jordbagaissa and Mount Gednagaissa, also in East Finmark.

The localities of *Antennaria villifera* in Arctic Russia are separated from those of Scandinavia by a gap of c. 700 km. It occurs in Kolguyev, Vaigatsch, Novaya Semlya and in the northernmost part of the Ural Mountains (Lynge 1923, Uhlworn and Pascher 1928, Tolmatschev 1926, 1930, Hultén 1955, Borissova 1959). It should be added that *Antennaria villifera* was also

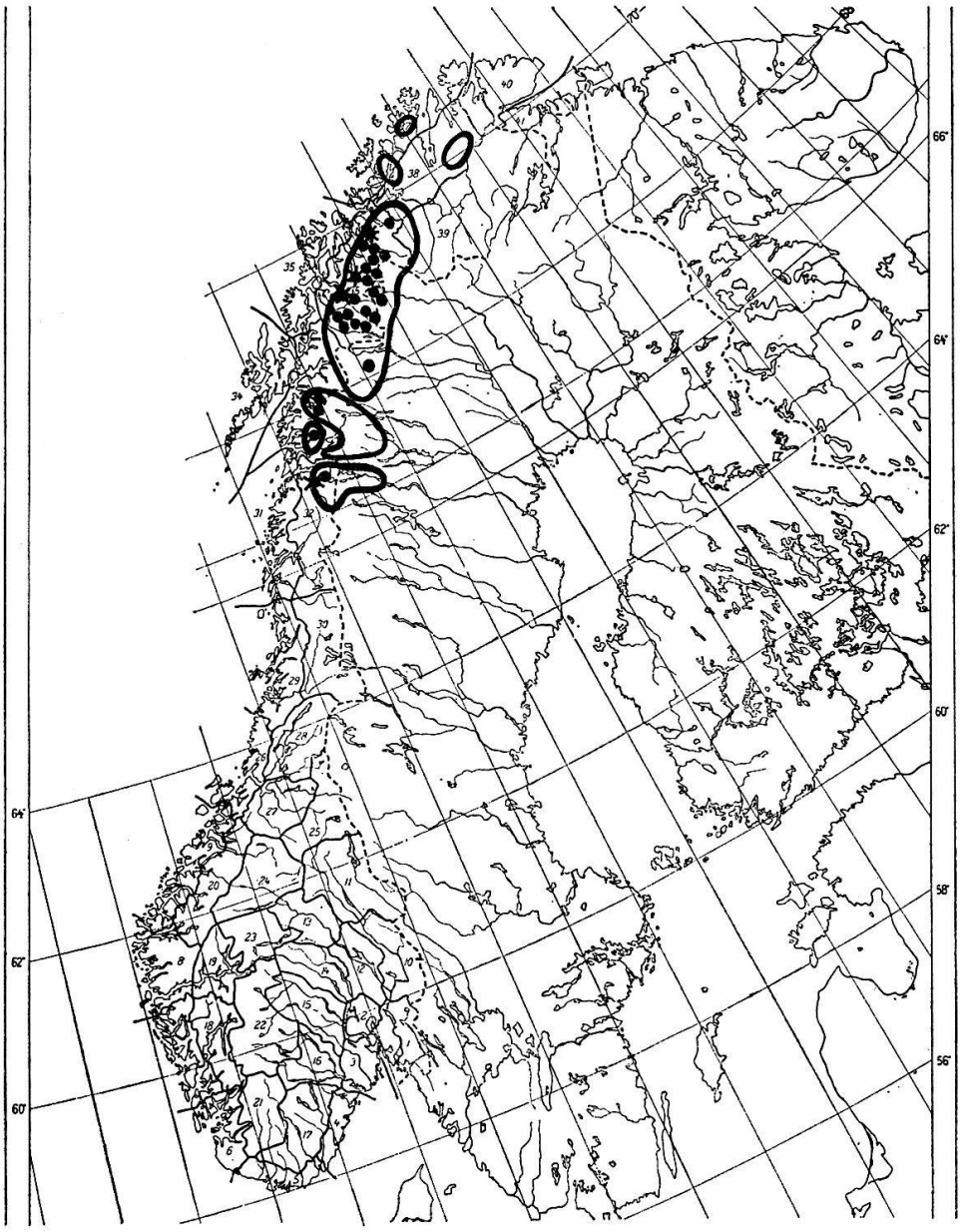

Fig. 22. Distribution of *Antennaria villifera* in Scandinavia. Unbroken lines represent local areas of distribution; dots mark some localities of plants studied cytologically; asterisks correspond to the places from where the herbarium materials with developed achenes were found.

reported from the Asiatic part of the USSR as occurring in Yamal, Taimyr, Yakutia. The easternmost limit of its range corresponds to the Chukotchka Peninsula where *A. villifera* occurs rarely in the region of Anadyr. Some localities of *A. villifera* were noted also in East Siberia, in the region of Irkutsch (the Sayan Mounts: basin of Kitoy river). The distribution of *A. villifera* in Eurasia is presented in Fig. 23.

Localities of *Antennaria villifera* Boriss.

Europe

I. Fennoscandia

A. Norway:

Nordland. Sörfold: Mount Guorkoi (Korken), c. 1060 m, T. Engelskjøn, O. Skifte et H. Saetra, 2n=28, TE*; Fauske, Blåmansisen, c. 1000 m, S. Sivertsen TROM; Blåmansisen V: Stormfjellet, S. Sivertsen TROM; 1.9.1967, S. Sivertsen TROM; Balvand "Sueten" O; Hamarøy, Cokkuljavrre S, c. 800 m, S. Sivertsen TROM; Fauske, Dalen N vor Rautind, S. Sivertsen TROM; fjellet op Ny-Sulitjelma, A. Notø, O; Töfla, A. Notø O; Sörfolden, fjellet vor Fagebak, J.M. Norman O; Ankenes, Skjomen, Slettjord, 600 m, L. et S. Slettjord O; Tysfjord: Rombotindan, 1230 m, W. Apold et G. Brodal O; Bangevatn NW, S. Sivertsen O; Messingmalmvatna, W. Apold, G. Brodal et O. Skifte TROM; Naidi, 950 m, T. Engelskjøn et B. Rørslett TROM; Øvre Tverrelvdal, NNE 1127, 750 m, T. Engelskjøn et B. Rørslett TROM; Kjerringvatn-Giccečocca, 800 m, S. Sivertsen et O. Skifte TROM; Bangeaksla, 1090 m, W. Apold TROM; under Bjørntoppen, T. Engelskjøn et B. Rørslett TROM; Naidivatn, c. 800 m, T. Engelskjøn et B. Rørslett TROM; NE part of glacier Giccečokka, c. 800 m, 2n=42, 2n=28, TE; Ballangen, Mereftasfjell, c. 950 m, Ø. Michelsen et S. Sivertsen TROM; Fauske: riksgrensenströkka NØ vor Sulitjelma, c. 1100 m, O. Skifte, S. Slettjord et R. Wara TROM; riksgrensa, like sör for Hedre Sorjusjavre, c. 1000 m, O. Skifte, S. Slettjord et R. Wara TROM; the same but 885 m, TROM; Nordsida av Øvre Sörjusjavrre, 960–1050 m, W. Apold, G. Brodal et O. Skifte TROM; Sulitjelma trakten, R. Nordhagen BG; Akselfjellet, O. Nyhuus O; Saltdal: V-siden av Saulotjønnene, E. Smalsvik et S. Sivertsen TROM; N-Saulo, foten NW-siden, 800 m, E. Smalsvik et S. Sivertsen TROM; N-Saulo, 1000 m, E. Smalsvik et S. Sivertsen TROM; Sörfold: Boaimac, Riksgrensa, W. Apold, G. Brodal et O. Skifte TROM; Vest for riksgrensa, W. Apold, G. Brodal et O. Skifte TROM; line vest for Ciegkimcorro, 950 m, W. Apold, G. Brodal et O. Skifte TROM; Söransida av Flatkjolen, 795 m, W. Apold, G. Brodal et O. Skifte TROM.

Troms. Kirkestind, SW slope, 1100 m, T. Engelskjøn, 2n=28 O; the same but 1150 m, T. Engelskjøn et S. Thoresen TROM; Balvand, Salten, H. Guldberg LD; Njunis, N slope of summit 1094, K. Urbańska-Worytkiewicz et T. Engelskjøn, 2n=42, UW; Njunis, NW valley, rocks near the river, 760 m, 2n=42, K. Urbańska-Worytkiewicz et T. Engelskjøn UW; Gaicačacca, 820 m, 2n=42, K. Urbańska-Worytkiewicz et T. Engelskjøn UW; Njunis, NW valley, E side of river, 850 m, 2n=42, K. Urbańska-Worytkiewicz et T. Engelskjøn UW; N slope of 1094, 880 m, 2n=42, K. Urbańska-

* TE = herbarium of T. Engelskjøn
* UW = herbarium of the present author

Worytkiewicz et T. Engelskjøn UW; the same but 920 m, 2n=42, UW; Njunis, NW valley, dry hill near the river, 950 m, 2n=42, K. Urbańska-Worytkiewicz et T. Engelskjøn UW; small grassy slope near the river junction, 950 m, 2n=42, K. Urbańska-Worytkiewicz et T. Engelskjøn UW; NE slope of 1094, 1000 m, 2n=42, K. Urbańska-Worytkiewicz et T. Engelskjøn UW; the same but more to the right, 2n=28, UW; NE slope of 1050, upper part, c. 1000 m, 2n=42, K. Urbańska-Worytkiewicz et T. Engelskjøn UW; bajit Riidagier'do, NE slope, c. 1000 m, 2n=28, K. Urbańska-Worytkiewicz et T. Engelskjøn UW; the same, upper parts, 1120 m, 2n=42, K. Urbańska-Worytkiewicz et T. Engelskjøn UW; Riidagier'do, N slope, 900 m, 2n=28, K. Urbańska-Worytkiewicz et T. Engelskjøn UW; Baegasangai'ssa, NW slope, c. 1020 m, 2n=42, K. Urbańska-Worytkiewicz et T. Engelskjøn UW; the same but 950 m, T. Engelskjøn et S. Thoresen TROM; Riidagier'do, NE slope 1000 m, T. Engelskjøn et S. Thoresen TROM; Baegasangai'ssa, NW slope, between the tops 1178 and 1141, 2n=42, c. 1100 m, K. Urbańska-Worytkiewicz et T. Engelskjøn UW; little Jer'ta, SW slope, 890 m, 2n=42, K. Urbańska-Worytkiewicz et T. Engelskjøn UW; the same but 910 m, 2n=42, UW; the same but 930 m, isolated, 2n=42 UW; Rostafjellet, W slope of Rostakulen, c. 1050 m, 2n=42, K. Urbańska-Worytkiewicz et T. Engelskjøn UW; J.M. Norman BG; the same but 1100 m, 2n=42, UW; Rostadalen: Dolpevarre, c. 900 m, P. Benum TROM; Storfjord: Paras, SE ridge, 950 m, 2n=28, K. Urbańska-Worytkiewicz et T. Engelskjøn UW; H. Smith UPS; Paras, E slope, c. 800 m, 2n=42, K. Urbańska-Worytkiewicz UW; N slope, 950 m, 2n=42, K. Urbańska-Worytkiewicz UW; E slope, c. 700 m, 2n=42, K. Urbańska-Worytkiewicz UW; Nordreisa: Vuoddujåkka, 650–700 m, 2n=42, K. Urbańska-Worytkiewicz et M. Elvestadt UW; between Vuoddujåkka and Gaetkuot'aivit, NE slope, 700 m, 2n=42, K. Urbańska-Worytkiewicz et M. Elvestadt UW; Gaetkuot'aivit, NE slope, 750 m, 2n=42, K. Urbańska-Worytkiewicz et M. Elvestadt UW; E. Fridtz O; N slope, 800 m, 2n=28, K. Urbańska-Worytkiewicz et M. Elvestadt UW; the same but in a snow-bed locality, 2n=28, K. Urbańska-Worytkiewicz et M. Elvestadt UW; the same but 900 m, 2n=42, UW; the same but 950 m, 2n=42 UW; Gaetkuot'aivit, the top part, 1020 m, 2n=42, K. Urbańska-Worytkiewicz et M. Elvestadt UW; Javreoaivve, c. 900 m, 2n=28, K. Urbańska-Worytkiewicz et M. Elvestadt UW; R. Ruotsalo HEL; Y. Mejland O; Bihka Hihtama, Y. Mejland O; Gatmasvagge, Y. Mejland BG; Rokkilnjune, 800 m, R.E. Fridtz O; Roggeoaivve, Y. Mejland O; Jahkovarres, Y. Mejland O; Geinačokka, Y. Mejland O, BG; Geidioaivve, Y. Mejland O; Gabmasvagge, Y. Mejland O; Gieidinjudue, Y. Mejland O; Sakkevoarre, Y. Mejland O; Ballusoaivve, Y. Mejland O; Fatavarre, Y. Mejland O; Kåfjord: Guolasjav're, between Gåddečårro and Sinaivarri, c. 800 m, 2n=42, K. Urbańska-Worytkiewicz UW; Gåd'dečårro, c. 850 m, 2n=28, K. Urbańska-Worytkiewicz UW; Sinaivarri, S slope, c. 800 m, 2n=42, K. Urbańska-Worytkiewicz UW; Guolasjav're, A. Notø O; P. Benum TROM; E. Jorgensen O; H. Resvoll-Holmsen O; O. Skifte TROM; Kvaenangen, Nabar S, 2n=28, S. Sivertsen TROM; Cuonja čobba, Y. Mejland TROM; mellom toppen av Stisavarre og molnelva, O. Rönning TROM; Goalsevarre, B. Benum TROM; Storfjord: Govdajaurre, J. Holmboe BG; Troldelvdalen, J. Holmboe BG; Mikkafjellet, J. Holmboe BG, O; Sikka, R. Nordhagen BG; Malla, J. Holmboe UPS; Kåbdåvanka, R.F. Fristedt UPS; Stortind, C.M. Norrman UPS; Agjakreppo, mellom Mandalen og Skibotn, A. Notø O; Benum TROM; Moskogaissa, E. Haglund O; Storfjell (Bjørnen) S, 900–1100 m, S. et T. Engelskjøn O; Madagaissa, 1200 m, T. Engelskjøn et S. Thoresen TROM; Favresvarre, Skibotndalen, J. Holmboe O; Y. Mejland BG; S. Mårtensson UPS; Lyngen: Malla's skraning mot Goodavagge, J. Holmboe O, TROM; Likkavarre, J.M. Norman HEL; Faurevarre, P. Benum TROM; Rippovarre, P. Benum TROM; Dirnoaivve, P. Benum TROM; Sallojaure, P. Benum TROM; Gaskavagge, T. Engelskjøn et S. Thoresen TROM; Hysingjordfjell, S-topp av Båtfjell, 630 m, T. Engelskjøn et S. Thoresen O, TROM; Balsfjord: Hattevarre, P. Benum O, TROM; Dopparčacca, S. Mårtensson O, UPS;

Aismålstind, J. Devold O; Lifjellet, O. Nyhuus O; Målselv: Alappen, O. Nyhuus O, TROM; A. Landmark LD; E. Haglund O; Kirkestind, 1080 m, T. Engelskjøn et S. Thoresen TROM; C.M. Norrman LD; Middagsfjellet, O. Rönning TROM; C.M. Norrman UPS; Kobbrygen: Lifjeld, P. Benum TROM; Rubben, P. Benum TROM; Iselvdal: Sorhallet, 1150 m, P. Benum TROM; Röjelvdal: Balgesoaivve, O. Rönning et O. Skifte TROM; Skjervoy: Jøvanden, O. Rune et O. Rönning TROM; Vaddas, Lohtana, Y. Mejland O; Tverdfjellet, Rostadalen, P. Benum O; Aslakčacca, J. Holmboe O; Galbber (öst for Dividalen), J. Holmboe O; Dreggfjellet, 1150 m, T. Engelskjøn O; Th.C.E. Fries UPS; Skaret NØ Skinskardtind, Ø. Michelsen et S. Sivertsen TROM; Røyvassberget, Ø. Michelsen et S. Sivertsen TROM; Sordalen: Rissovarre, A. Notø TROM.

Finmark. Måsoy: Ryggefjord, O. Dahl O; under Jordbagaissa nor Rastigaissa, O. Dahl O; Polmak, under Gednogaissa, O. Dahl O; Grasfjellet, O. Rune et O. Rönning TROM; Tana, S-skraningen av Uccagaissa, 540 m, L. Ryvanden TROM; Rastigaissa, R. Nordhagen BG.

B. Sweden:

Pite Lappmark. Mount Baatskavat, O. Dahl et R. Nordhagen O; Mavosjaure R. Nordhagen BG; between Mavosjaure and Norwegian border, O. Dahl UPS; Ikesjaureområdet, Neitatjåkko, Th. et A. Arwidsson S; Pieskejaureområdet: Nuorta Saulo, Th. Arwidsson S; Mavas-området: Årjil Saulo, c. 1200 m, O. Rune S.

Lule Lappmark. Alatjåkko, 780–1210 m, S. Selander S; Kappa, S. Selander et N. Dahlbeck S; Jållo vis Sårjåsjaure, S. Selander et N. Dahlbeck S; Vaisaluokka, c. 1200 m, O. Rune S; Vaisa, Kalpik, 925 m, G. Björkman LD; H.W. Rosendahl S; E. Nyman S; S. Selander et N. Dahlbeck S; Vaisa, Rätjat, c. 970 m, G. Björkman UPS; Vaisa, Rautoåive, W part, G. Björkman UPS; Puolaure, C.G. Alm et H. Reuterskiöld LD; UPS; BG; HEL; G. Björkman UPS; A. Nannfeldt S; Njunnats E. A.G. Kleen LD; Kaitumtjåkko, N. Svensson LD; Ruodmas, J. Andersson LD; Virihaure, Stalotjåkko NE, T. Svedberg UPS; J. Andersson UPS; Kierkevare, C.L. Laestadius UPS; E.C.J. Lederstråhle LD; Ahrling et Brandelius UPS; A. Mander HEL; E. Astrid LD; Kautoaive S, c. 1100 m, G. Björkman UPS; Naddit, S. Selander UPS; T. Vestergren LD; Tjågnoisi, Th.A. Tengwall UPS; LD; Gållivarre: Kallaktjåkko, G. Björkman UPS; Särekfjellen, T. Vestergren UPS; Muratjåkko, G. Björkman UPS; Poljats, G. Björkman UPS; Alkavarre, Th.A. Tengwall UPS; LD; HEL; Rissavarre, Th.A Tengwall UPS; Shavvavagge, Th.A. Tengwall UPS; Raulåire N, G. Björkman UPS; Sitasjaure, Skeltas, B. Bohlin LD; Skeron S, Selander et N. Dahlbeck UPS; Jeknaffo Mountain, S. Selander et N. Dahlbeck UPS; Niåtsosvagge, Th.A. Tengwall HEL.

Torne Lappmark. Jukkasjärvi: Mount Nissontjärro, 1000–1200 m, C.G. Alm et H. Smith HEL; UPS; E. Nyholm LD; Moskana, Peldsavagge, C.G. Alm et Th.A. Tengwall HEL; UPS; J. Lid O; G. Samuelsson S; Peldsa, NE slope of Low Peak, 900 m, 2n=42, K. Urbańska-Worytkiewicz et T. Engelskjøn UW; Peldsa, middle part of the slope between Low Peak and High Peak, 1000 m, 2n=42, K. Urbańska-Worytkiewicz et T. Engelskjøn UW; Peldsa, NE slope of Low Peak, upper part, 1100 m, 2n=28, K. Urbańska-Worytkiewicz et T. Engelskjøn UW; Peldsa, c. 1300 m, H. Smith UPS; c. 1100 m, H. Smith UPS; c. 950 m, H. Smith UPS; Pältsamavanka, H. Smith UPS; Moskana SE, c. 900 m, H. Smith UPS; Nirjijaure, H. Smith UPS; mallam Knobletjåkko och Kuolkotjåkko, H. Smith UPS; Tjuonaktjåkko, E sida, H. Smith UPS; Pesisvare, N. Sylvén UPS; G. Samuelsson LD; Abisko: Låktatjåkko, c. 775 m, L. Fagerström HEL; Abisko, c. 1000 m, 2n=42, UW; Låktatjåkko, c. 850 m, L. Fagerström HEL; C.G. Alm et H. Smith UPS; T. et E. Nyholm LD; Lulletjårro, H. Smith O; UPS; Nuolja, R. Nordhagen O; C.G. Alm UPS; Th. Fries UPS; O. Holmberg LD; Moskofjellet, C.P. Laestadius UPS; Nissontjåkko, E-sida, H. Smith UPS; C.G. Alm UPS; G. Björkman S; Btovare, c. 900 m, H. Smith UPS; Tsassinjarkatjåkko, T.A.

Tengwall UPS; Njuonjevarre, c. 900 m, C.G. Alm UPS; Vassitjåkko, c. 700 m, C.G. Alm UPS; T. Håkansson LD; the same but 850 m, C.G. Alm UPS; Gardetjåkko, H. Smith UPS; Nissonräppejokk, c. 900 m, C.G. Alm UPS; Vaddetjåkko, c. 1000 m C.G. Alm UPS; Pallamtjåkko mot Nissonvagge, C.G. Alm UPS; Håikamavagge, c. 1000 m, A. Nygren UPS; Kartetjåkko, c. 1400 m, H. Smith UPS; Tjålmotjåkko mot Kamavagge, H. Smith UPS; Sjangeli: Ruopsok, H. Smith UPS; G. Björkman S; Knobletjåkko, H. Smith UPS; Nisson-rappejokk, H. Smith UPS; Anavares NW, E. Asplund UPS; Latujatjårro, 1000 m, A. Nygren UPS; Tjuonjavagge, c. 1100 m, A. Nygren UPS; LD; Pesisvare, 800–950 m, C.G. Alm et H. Smith UPS; Atjaktjåkko SE, 1200 m, H. Smith UPS; Låktavagge, E. Nyholm LD; Airavarre, S. Ellerström LD; Rankejaure, H. Weimarck LD; Nissontjåkko, c. 1300 m, R. Holmberg LD; N. Sylvén LD; Ortovarre, R. Holmberg LD; Kopparåsen, c. 800 m, R. Holmberg LD; O. Lönquist LD; Suorijokk, F. Lonnquist LD; Nissonjokk, F. Ahlberg LD; Lulletjårro, c. 800 m, G. Samuelsson et A. Zander S; Håikamatjårro, 1000–1100 m, G. Samuelsson S.

C. Finland:

Le, Riduitstrohka, P. Niamali TUR; Le, Fehkatsoch, H. Såttin TUR; Le, Jehkatn, NW-rin, P. Kallio TUR; Le, Enontekiö, Jahkatsu-tunturi, O.K. Silkkilä TUR; H. Sålzin TUR; Le, Sunjavarri, A. Vuorisato TUR; Le, Guonjavarra N, P. Kallio TUR; Le, Enontekio, NW-osa, T. Laine TUR; Cuontekiö, suurimman Pihtsuavankan, T. Laine TUR; Le, Pikku-Luokkmiobba, T. Laine HEL; NW Le, near Sarijokka, c. 850 m, J.I. Livo et H. Roivanen HEL; Le, W-Ridnitschokka, 950–1000 m, H. Roivainen HEL; Le, Goosjarvaara, M.v.Schantz HEL; Le, mellan Guonjavarri och Tuoljikukpukt, G. Marklund HEL; Le, S-Tuoljikukpukt, 850 m, H. Roivainen HEL; Le, Haltia, K.J. Lounamaa HEL; Le, Guonjavarri "satula", K.J. Lounamaa HEL; Le, N-Koutuskaisi, 900 m, H. Roivainen et U. Saxen HEL; Le, W-Tuoljikukpukt, 1000 m, H. Roivainen HEL; NW-Le, W-Ridnistrokka, L. et H. Roivainen HEL; Le, W-Veaijehoaivi, 800 m, L. et H. Roivainen HEL; NW-Le, N-Koutuskaisi, c. 850 m, H. Roivainen HEL.

II. Kolguyev

Insula Kolguyev, R. Pohle HEL; Kossaya River, A. Tolmatschev LE; Velikaya River, A. Tolmatschev LE; Pestchanka River, S. Kertzelli LE; Dorozhkina River, I. Bogdanovskaya-Gienef LE; Paarchicha River, Z. Smirnova LE.

III. Novaya Semlya

Northern Island. Tschirikina River, Matochkin Shar Strait, A. Tolmatschev LE.

Southern Island. Shumilina River, Matochkin Shar Strait, A. Tolmatschev LE; Matotschkin Shar, O. Ekstam S; M. Weber UPS; Malyje Karmakuly, L. Savicz LE; Karmakola, T. Alm S; O. Ekstam UPS; sinus Karmakulski, O. Ekstam UPS; Peninsula Belushiy, A. Zubkov LE; V. Aleksandrova LE; Inlet Propashkaya Guba, S. Skribova LE; Grebovaya, nordsidum, Lynge HEL; Besemenaya, Lynge UPS; Mezdusharskiy Island, V. Aleksandrova LE; Habarovo, Yugorskiy Shar Strait, A. Tolmatschev LE; P. Polilov LE; Pay-Hoy range, O-yu River, V. Andreev et Z. Savkina LE; mouth Malaya Ussa River, A. Tolmatschev et O. Rebristdya LE; Fontes Kara River, O. Rebristdya LE; ad Ussam, Arep Mikit, R. Pohle LE.

IV. Vaigatsch

Varnek-Harbour, A. Tolmatschev LE; S. Kertzelli LE; O. Ekstam LE; P. Polilov LE; cape North-Eastern, P. Polilov LE; Fretum Jugor, F.R. Kjelman et A.N. Lundström UPS; Ljamtochinabukten, Aagward UPS.

V. The Ural Mountains

Polar Ural Mountains. Region of Longot-Yugan River, K. Igoshina LE; Longot-Yugan Mountain, K. Igoshina LE; sources of Eletz River, K. Igoshina LE; Mount Harbey, K. Igoshina LE; Great Hadata Lake, K. Igoshina LE; mouth of Parova River, K. Igoshina LE; Schtchutchya River, K. Igotschina LE; Nerussovey Lake, K. Igoshina LE; Kara River, V. Sukatschev LE; Pyderata River, V. Sukatschev LE; sources of Huuta River, V. Sukatschev LE; sources of Haramatlau River, B. Gorodkov LE; sources of Voykar River, B. Gorodkov LE.

North Ural Mountains. Kozhim River, V. Sotchava LE; sources of Naroda River, V. Sotchava LE.

Asia

Arctic Siberia. Peninsula Tazovsky, Eselava River, Zh. Belorussova LE; Peninsula Yamal, inter cape Jam-sale and Nahodka-Harbour, LE; Yamal, cape Mare-sale, LE; Yamal, Nahodka-Harbour, A. Bushewitch LE; Yamal, Yurubey River, B. Zhitkov LE; Yamal, Yasovey River, B. Zhitkov LE; Yamal, Novy Port, D. Tchubynin LE; Tazovskaya Bay, cape Krugly, R. Pohle et A. Rozdestvensky LE; mouth of Taz River, R. Pohle et A. Rozdestvensky LE; Hantakya River, N. Kuznetzov et V. Reverdatto LE; sources of Kindun River, F. Sambuk LE; Heta River, F. Sambuk LE; Volotchanka (Taimyr), F. Sambuk LE; Goltchicha, N. Kuznetzov et V. Reverdatto LE; Tchokoto River (Phokina River), N. Kuznetzov et V. Reverdatto LE; Balagan-chan, N. Kuznetzov et V. Reverdatto LE; Dudinka, Yenisei, J. R. Sahlberg HEL; mouth of Dudypta River (Taimyr, basin of Pyagsina River), A. Vinogradova LE; Yenisei, Tolstoinos, H.W. Arnell LE; HEL; Yenisei, c. Kap Gostiuj, A. N. Lundström UPS; ad fluv. Gyda, F. Schmidt LE; mouth of Hatanga River, O. Pigulvskaya LE; E; Taimyr, Yamutarida, A. Tolmatschev LE; LD; S; Taimyr, Yamu-Nery River, A. Tolmatschev LE; Yenisei, Sopotchnaya Karga, A. Tolmatschev LE; Verkhnya Taimyra River, G. Malysheva LE; Pyassino Lake, T. Polozova LE; mouths of Tareya River (region of Pyassina River), Kozlitina LE; Putorana Mountains, sources of Dyamkan River, O. Mironenko LE; Yakutsk, Tiksi harbour, V. Petrovsky LE; mouth of Lena River, Ephimova LE; Urung-Haya (Anabar River), G. Aleksandrova LE; sources of Haraulah River, V. Sheludyakova LE; Balaganach (Lena River), N. H. Nilsson LE; Cape Elidyen, M. Brusnev LE; between Olenek and Lena, near Golimer stream, Czekanovski LE; between Olenek and Lena, sources of Kolung-bas stream, Czekanovski LE; middle part of Tomba stream, A. Czekanovski et F. Muller LE; between Maigda stream and Alakit stream, A. Czekanovski et F. Muller LE; Buckar, H. Nilsson S.

Chukotchka. Kanchalan River (basin of Anadyr River), N. Menshikov LE; Egvekinot (Olovannya-Harbour), T. Derviz-Sokolova LE; Ugatkin River (Anadyr Range), T. Derviz-Sokolova LE; Kuekvun River (Chukotsch Range), 2n=42, P. Zhukova et V. Petrovsky LE; Erguveem River (Chukotschky Peninsula), V. Petrovsky LE; Komarinaya River (Anadyr Range), 2n=28, E. Katienin et V. Petrovsky LE.

East Siberia. Irkutsk: Sayan Mountains, sources of Sagan-Hor River (basin of Kitoy River), M. Nazarov LE.

4.2. *Antennaria carpatica s. str.*

A. carpatica s. str. occurs as an oreophytic species in the Carpathians, the Alps as well as in the Pyrenees. Its easternmost limit corresponds to the Eastern Carpathians from where it is recorded as appearing in a few localities

(Brandza 1879–1883, Borza 1947). The maximal frequency of *A. carpatica* s. str. within the Carpathian range is noted in the Tatra Mountains with a local limit in Western Tatra (Szafer, Pawłowski and Kulczyński 1952, Doštal 1950). It also occurs in the Low Tatra (Ďumbier, Kralova hola).

In the Alps *Antennaria carpatica* s. str. shows a tolerably continuous distribution from the Karawankian Alps to the Maritime Alps (Fig. 25 p. 139). The most frequent records are from the central part of the range.

As far as the distribution of *A. carpatica* s. str. in the Pyrenees is concerned, it appears to be more frequent in the eastern part of this mountain group.

Localities of *Antennaria carpatica* (Wahlenb.) Bluff et Fingerh. s. str.

The Pyrenees

Piz Blanc, P. Bordère TL; W; IB; Castanèse, J. E. Zetterstedt LD; HEL; UPS; Val d'Eyne, 2300 m, H. Coste TL; Héas, crêtes calcaires d'Aguila, 2400 m, H. Coste TL; Piz de Valibierne, südlich des Maladetta, Aragon, G. Müller RUEB; Hourguette d'Aure, E. Timbal-Lagrave et E. Marcais WU; hauteurs de la Mijane, dans Carança près Lhonès (P. O.), A. Guirèr TL; Val des Planès, 2n=56, Ph. Küpfer UW; Port d'Envalira, Andorra, c. 2400 m, 2n=56, Ph. Küpfer UW; Port d'Vo, J. Lange UPS; parties élevées du plateau de Camforeils, P. Baudière UW; La Coume Mijane, Candref. Z.

Fig. 23. Distribution of *Antennaria villifera* Boriss. and *A. carpatica* (Wahlenb.) Bluff et Fingerh. s. str. in Europe and Asia.

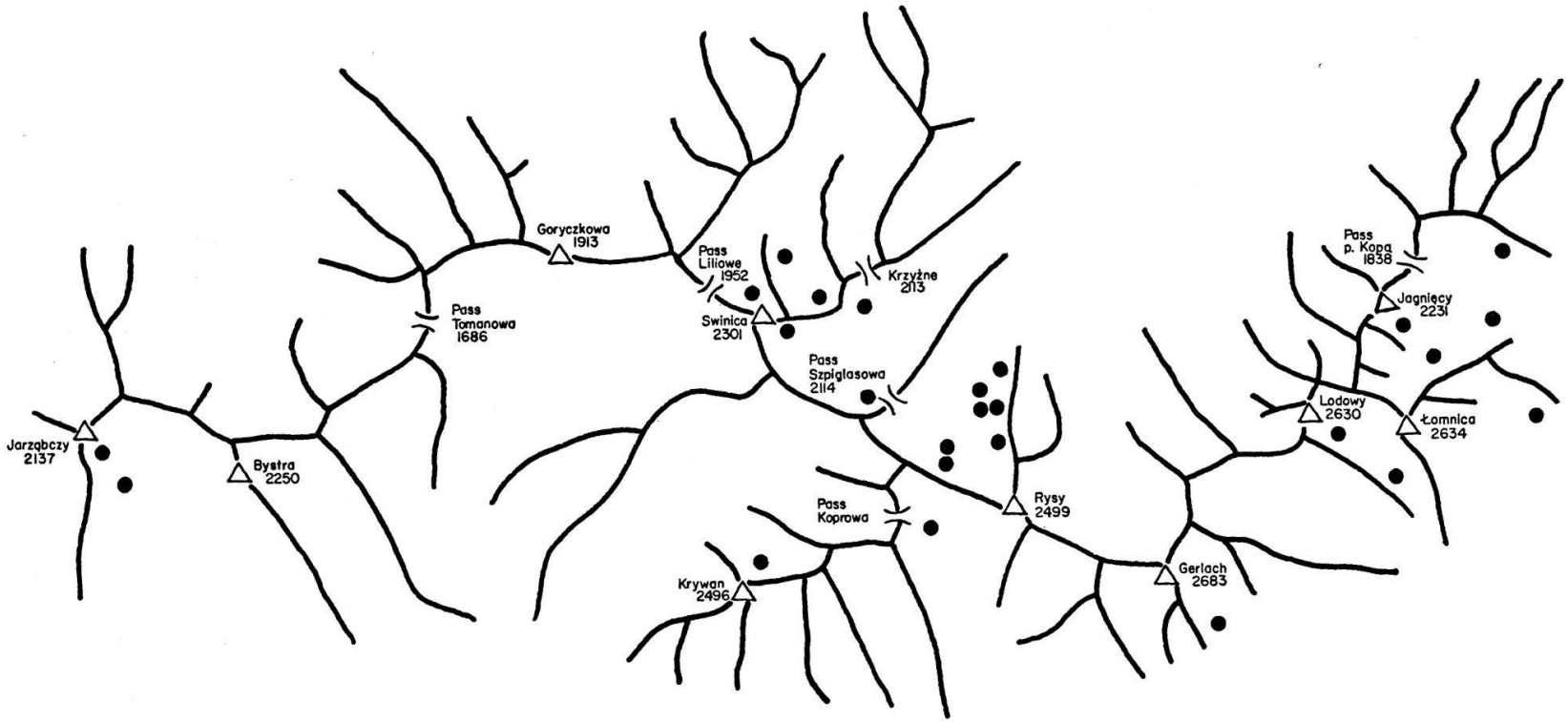

Fig. 24. Localities of *Antennaria carpatica* s.str. studied cytologically from the Tatra Mountains (after URBAŃSKA 1959, completed).

The Alps

A. France

The Maritime Alps. Col du Restefond, S slope, c. 2400 m, 2n=56, K. Urbańska-Worytkiewicz UW; Col de la Cayolle, c. 2500 m, 2n=56, K. Urbańska-Worytkiewicz UW; Vallée du Boréon, Cime de Mercantour, c. 2400 m, 2n=56, K. Urbańska-Worytkiewicz UW; Mont-Formose près du Col de Tende, E. Bourgeau W; Madonna delle Finestre, Moris IB; GR; Vallée du Boréon, sur le lac de Tres Colpas, 2300 m, E. Wilczek et D. Dutoit LAU; Punta di Peyrafica, à l'est du col del Sabbione, 2400 m, E. Wilczek LAU; Haute-Tinée, 2600 m, A.St. Yves LA; Col de Jallorgues, 2500 m, A.St. Yves LAU; Mont-Ubonnier, Carres, 2250 m, A.St. Yves LAU; Col de Crousette, 2500 m, A.St. Yves LAU; Millefuons, Tête-de-Velai, 2620 m, A.St. Yves LAU; Argenton, E. Reverchon et A. Derbez W.

The Cotian Alps. Mont-Vizo, Grenin G; Vallon le Vaeta, A. Maillard G; Vallon d'Escreins, 2400 m, 2n=56, R. Ruffier-Lanche UW; en dessous du lac de Clausis, sur Ceillac (Queyras), 2400 m, 2n=56, C. Favarger UW; Ceilhac, Hautes-Alpes, en Gueyras, G. Didier W; Col de l'Iseran, 2750 m, 2n=56, E. Landolt UW.

The Dauphine Alps. Lautaret, Grenin G; Schukters ZT; Jäggi ZT; TO; Lautaret, vallon de Roche-Noire, 2300 m, Guétal et al. GR; Z; 2100 m, E. Wilczek et G. Maillefer LAU; Faure LAU; Isère, La Salette, col au-dessus sanctuaire, Bec M; La Piolite, 2500 m, Geras G; Trois-Evèches, sur la route après col du Lautaret, c. 2500 m, 2n=56, K. Urbańska-Worytkiewicz UW.

The Graian Alps. Mont-Cenis, M. Bonjeau G; ZT; Mont-Cenis à Patta Creusa, Huguenin G; Bonjeau M.

The Savoyan Alps. Vallon de Zfluhalp, 2530–2550 m, L. Marret G; Cornette de Bise, R.v.Sargneuse G; Dent-d'Oche, F. Besson LAU; Alpe d'Annecy, Tournette, 2000 m, G. Beauverd G; Mont-Meri, 2300–2400 m, Timothée RUEB; ex herb. Payoti LAU; Massif des Arravis, G. Beauverd G; Combe de Cardavant à la Grande-Forclaz, Aravis, 2400 m, G. Beauverd G; Combe de la Balmaz sous la Rouelle, 2500 m, G. Beauverd G; Mont-Clusaz, Haute-Savoie, Duparre G; Brizon, Savoyen, Timothée LD; PRC; Col de Balafac près de Bonneville, A. Huguenin G; Mont-Vergy, E. Bourgeau Z; Timothée Z; LD; Col de Balafrasse, Pittard G; Glacier de Zaufleron, E. Wilczek LAU; Col de Balme, M.E. Moricand G; Mont-Vergy, 2400 m, E. Blachers LAU.

B. Switzerland

The Pennine Alps. Col du Grand-Saint-Bernard, c. 2500 m, 2n=56, K. Urbańska-Worytkiewicz UW; Saint-Bernard: Chemin de Cheveaux, c. 2700 m, E. Landolt ZT; Saint-Bernard: Mont-Telliers, c. 2600 m, 2n=56, K. Urbańska-Worytkiewicz UW; Col de Fenêtre, Beauverd G; Pâturages col de Fenêtre, 2700 m, H. Romieux RUEB; Alpes d'Alesse, Bas-Valais, J. Muret LAU; Bella Lui, près Cry d'Er, c. 2400 m, 2n=56, K. Urbańska-Worytkiewicz UW; Val d'Anniviers, F. Duflon LAU; Val de Bagnes, R. Renard G; Chanrion, val de Bagnes, Ch. Girardet LAU; Chermontagne, val de Bagnes, 2500 m, E. Wilczek LAU; H.E. Landolt Z; Mauvoisin, val de Bagnes, R. Renard G; entre Mauvoisin et La Liaz, P. Rambert LAU; Col d'Emaney, 2400 m, 2n=56, C. Favarger UW; Glacier de Corbassière, Goudet G; L'Etherolla sur Veysonnaz, c. 2400 m, 2n=56, K. Urbańska-Worytkiewicz UW; Crête de Thyon, F.O. Walberg Z; entre l'Etherolla et Mont-Carré, 2400 m, 2n=56, K. Urbańska-Worytkiewicz UW; entre Mont-Carré et Mont-Rouge, c. 2400 m, 2n=56, K. Urbańska-Worytkiewicz UW; Mont-Rouge, c. 2450 m, 2n=56, K. Urbańska-Worytkiewicz UW; Mont-Loère, c. 2600 m, 2n=56, K. Urbańska-Worytkiewicz UW; près cabane des Diablerets, c. 2400 m, 2n=56, K. Urbańska-Worytkiewicz UW; Riffel, 2500 m, J. Coaz ZT; L. Favrat ZT; I. Peter ZT; Riffelberg sur Zermatt, 2585 m, 2n=56, K. Urbańska-Worytkiewicz UW; Riffelalp, Zermatt, M. Lenzinger Z; Val de Zermatt, 2400 m, ex herb. A. Romieux RUEB;

Hörnli, F. Duflon LAU; Riffel, J. Muret LAU; R. Masson LAU; E. Sieche RUEB; J. Vetter LAU; H. Goudet G; entre Rotenboden et Gornergrat, c. 2850 m, 2n=56, K. Urbańska-Worytkiewicz UW; Gornergrat, 2700 m, Schibler Z; F.O. Walberg Z; Lac Noir sur Zermatt, c. 2800 m, 2n=56, K. Urbańska-Worytkiewicz UW; L. Favrat ZT; E. Wilczek LAU; J.C. Ducommun LAU; Hörnli beim Schwarzsee, A.T. Hottinger LAU; entre Staffelalp et Lac Noir, 2300 m, A. Maillefeler LAU; Plattjen sur Saas-Fee, c. 2350 m, 2n=56, K. Urbańska-Worytkiewicz UW; Maillefeler LAU; Schwarzenbergalp, Saaser Tal, c. 2400 m, K. Egli ZT; Gallenalp ob Fee im Saaser Tal, L. Favrat ZT; C.E. Fries Z; E. Rambert LAU; Egginenhorn, Saas-Fee, P. Rambert LAU; Distelalp, val de Saas, 2300 m, F. Bourgeois LAU; Gletscheralp ob Fee im Saaser Tal, L. Favrat ZT; S. Fries Z; H. Goudet G; Glacier au Ignes Arolla, H. Goudet G; Arolla, Ch. Müller Z; Simplon, L. Favrat ZT; Col du Simplon: moraine frontale du glacier de Kaltwasser, 2320 m, 2n=56, K. Urbańska-Worytkiewicz UW; 2500 m, H.E. Landolt Z; Mäderhorn, NW slope, c. 2700 m, 2n=56, K. Urbańska-Worytkiewicz UW; Mäderhorn, lower peak, c. 2850 m, 2n=56, K. Urbańska-Worytkiewicz UW; Bistinenpass, W slope, c. 2100 m, 2n=56, E. Landolt UW; Rothorn, au-dessus d'Alpjer, 2250 m, 2n=56, K. Urbańska-Worytkiewicz UW.

The Bernese Alps. Kleine Scheidegg: Lauberhorn, versant sud, c. 2400 m, 2n=56, K. Urbańska-Worytkiewicz UW; W. Koch ZT; Kleine Scheidegg: Eigergletscher, F.v. Favel Z; Grande-Scheidegg, S. Jeanjaquet ZT; Mürren, Bietenlucke, 2700 m, E. Rübel RUEB; Faulhorn, c. 2300 m, 2n=56, K. Urbańska-Worytkiewicz UW; Bachalp, Faulhorn, Ducommun LAU; Schwabhorn, J. Murst LAU; Niesen, 2362 m, 2n=56, K. Urbańska-Worytkiewicz UW; Kandersteg, A.R. Paul M; Hochgant, 2200 m, W. Lüdi RUEB; Gantrisch, 2n=56, C. Favarger UW; Grimsel: au-dessus de l'Oberaarsee, c. 2350 m, 2n=56, K. Urbańska-Worytkiewicz UW.

The Fribourg Alps. Kaiseregg, NW slope, 2090 m, 2n=56, K. Urbańska-Worytkiewicz UW; Petit-Moléson, E. Wilczek LAU; Saanenland, Rotthal, val de Gelten, 2100 m, P. Dutoit LAU; Javernaz W; Fauret LAU; Muret LAU; ZT; Z; 2000 m, E. Rambert LAU; J. Vetter LAU; Z; A. Bally LAU; L. Favrat ZT; Dent-de-Morcles, J. Muret LAU; H. Jaccard LAU; 2400 m, E. Wilczek LAU; versant sud de la Dent-de Morcles, J. Muret ZT; Anzeindaz, 2000 m, Jacob LAU; Duflon LAU; Vetter LAU; Vallée d'Avançon d'Anzeindaz, l'Ecuellaz, 2260 m, P. Villaret LAU; Fillasses sur Anzeindaz, gazons près du lac, 2135 m, P. Villaret LAU; Sen Dzen, 1960 m, P. Villaret LAU; Tour d'Anzeindaz, 2100 m, P. Villaret LAU; Col de Poreyttaz, 2050 m, P. Villaret LAU; Paneycrossaz, 2150 m, P. Villaret LAU; Alessa, alpes de Fully, J. Muret ZT; La Croix, E. Secretan LAU; Vanil-Noir, Jaccard LAU; E. Bardet LAU; Dent-de-Brenlière, 2100 m, W. Lüdi RUEB; 2300 m, E. Burdet LAU; Creux-de-Combe, 2000 m, Ch. Gétaz LAU.

Col du Saint-Gothard, au pied du Monte Prosa, c. 2300 m, 2n=56, K. Urbańska-Worytkiewicz UW; Monte Prosa, R. Seeger Z; Kleines Furkahorn, c. 2700 m, 2n=56, K. Urbańska-Worytkiewicz UW; Furka, F. Vogel ZT; Realp, Kleines Furkahorn, 2600 m, C. Correns M; Val Bedretto, C. Correns M; Val Piora, 2150 m, G. Müller RUEB; G. Huguenin Z; Monte Camoghè, 2100 m, J. Bornmüller PRC; Como di Gesone, Camoghègebiet, M. Jäggli Z; Camoghè, 2225 m, M. Jäggli Z; Val Onsernone, Pizzo Medano, I. Bär Z; Gazzirola, Val Colla, J. Coaz ZT; M. Jäggli Z; the top ridge of Gazzirola, c. 2200 m, 2n=56, K. Urbańska-Worytkiewicz et H. Heller UW; Pizzo Cramalene, I. Bär Z; Punta di Robbia, 2400 m, I. Bär Z; Laita dura ob Airolo, 2400 m, J. Coaz ZT; Val Torta im Bedretto-Tal, L. Favrat ZT; Nufenenpass, W slope, c. 2400 m, 2n=56, K. Urbańska-Worytkiewicz, M. Hauser et F. Grossman UW; Poschiavo, Lassalbo, A. Pozzi ZT; Bernhardin, C. Brügger ZT; Sankt Bernhardin, M. Belanger G; Piz Vizan, 2200 m, C. Correns M; Piz Coromba, 2400 m, Furro RUEB; Pizzo Ucello, C. Brügger ZT; Pizzo Lumbredo, C. Brügger ZT; Col du San Bernardino, c. 2150 m, 2n=56, K. Urbańska-Worytkiewicz UW.

Pilate, versant SE, c. 1920 m, 2n=56, K. Urbańska-Worytkiewicz UW; c. 2080 m, 2n=56, K. Urbańska-Worytkiewicz UW; Pilatus, 1900 m, Berker PRC; Jäggli ZT; Bauernfeld Z; Klimserhorn am Pilatus, N. Reber ZT; Ch. Brügger ZT; Pilatus-Kulm, S-Seite, 1800 m, H. Jenny ZT; C. Schröter ZT; Titlis: Laubersgrat, c. 2400 m, 2n=56/ K. Urbańska-Worytkiewicz UW; Säntis, Lagger PRC; Säntis: Lisengrat près Rotsteinpass, versant sud, c. 2200 m, 2n=56, K. Urbańska-Worytkiewicz et E. Landolt UW; Säntis: Lisengrat vers Chalbersäntis, exposition est, c. 2300 m, 2n=56, K. Urbańska-Worytkiewicz et E. Landolt UW; à la Scheye, Alpes de Glaris, 2200 m, LAU; Säntisgebiet: Kraialpfirst, 2000–2100 m, A. Koller Z; Käserruck ob Unterwasser, 2050–2200 m, W. Koch ZT; Käserruck, Churfirsten, 1800-1900 m, M. Vogt Z; Churfirsten: Schlachtboden, E. Müller Z; Lehmgipfel, 2200 m, M. Vogt Z; SW vor Mels: Schwarzkopf auf Alp Tamons, 1959 m, H. Seitler ZT; Pizol, c. 2230 m, 2n=56, E. Landolt UW.

The Rhaetian Alps. Bandfluh, Cresta, Avers, H. Zimmerli Z; Val Avers, Lindtan, G. Bachman ZT; C. Sulger-Buel Z; Cresta, Val d'Avers, C. Nachenius ZT; M. Rikli ZT; C. Schröter ZT; Juf (Avers): entre Mozzaspitz et Foppaspitz, c. 2450 m, 2n=56, K. Urbańska-Worytkiewicz UW; Wiessberg, Cresta Avers, Aubert LAU; Val Zawretta, S Piz Muot, W. Koch ZT; Cresta Avers, Cucal-Nair-Berg P 2637, W. Koch ZT; Piz Beverin, Ch. Brügger ZT; Albula, M. Bovelin ZT; L. Favrat ZT; J. Muret LAU; B. Branger RUEB; I. Bär Z; Dschimels, versant NW, c. 2450 m, 2n=56, K. Urbańska-Worytkiewicz UW; Piz Uertsch, 2500 m, ex herb. Romieux RUEB; Palfries Gauschla, 1800 m, H. Hangart Z; ZT; Parpaner Rothorn über Churwalden, C. Brügger ZT; Parpaner Rothorn, c. 2850 m, 2n=56, K. Urbańska-Worytkiewicz UW; Flimserberg, W. Vogel ZT; Flimserstein, c. 2700 m, 2n=56, K. Zarzycki UW; Flimserstein, I. Bär Z; Cassons près Flims, c. 2400 m, 2n=56, K. Zarzycki UW; Alp Grüm, Mandra, c. 2360 m, 2n=56, K. Zarzycki UW; c. 2150 m, K. Zarzycki UW; P. Moesola, exposition SW, c. 2360 m, 2n=56, K. Urbańska-Worytkiewicz UW; Val Medel: Piz Miez, c. 2400 m, 2n=56, K. Urbańska-Worytkiewicz UW; Aroser Weisshorn, 2450 m, H. Beger Z; Schiesshorn, SE-Hang, 2400 m, H. Beger Z; Montalin ob Chur, 2200 m, A. Volkart Z; Arosa-Hörnli, D. Rohrer Z; Carmenapass, I. Bär Z; Strela, Davos, 2550 m, Schibler Z; c. 2450 m, 2n=56, A. Gigon UW; Calanda, Prättigau, 2400 m, C. Schröter ZT; Calanda, L. Favrat ZT; Casanapass, G. Hegi Z; Casanna auf Rase, ex herb. Rübel RUEB; Berggipfel ob Fideris, Hochwang, Prättigau, W. Schibler G; Piz Padella, 2300 m, B. Branger Z; c. 2450 m, W. Koch ZT; Hahnensee bei St. Moritz am Aufstieg zur Furocla Surlej, c. 2300 m, W. Koch ZT; Fuorcla Surlej, J. Coaz ZT; M. Caviezel ZT; Henle M; Rübel RUEB; Claviziel, fl. Bernina, ex herb. C. Correns M; Bernina, ex herb. Lerescher LAU; près de l'hospice de Bernina, T. Brown WU; Bernina, Lago Bianco, 2230 m, W. Koch ZT; Col de la Bernina, c. 2300 m, 2n=56, K. Urbańska-Worytkiewicz UW; Forcla di Cristallina, 2585 m, J. Coaz ZT; Diavolezza, E. Hayren HEL; bei Sils, B. Brauger RUEB; Oberseite des Lunghinpasses bei Maloja, c. 2400 m, W. Koch ZT; F. v. Tavel ZT; Ch. Brügger ZT; SE Piz Lagalb, 2450 m, W. Koch ZT; Piz Nair, E. Oberholzer ZT; B. Kramper Z; B. Branger Z; ex herb. Paiot LAU; Val Grano, Sasso della Guardia, C. Waiser RUEB; Munt da Cherus, Samnaun, C. Sulger-Buel Z.

C. Austria

Massif de la Silvretta: Lobspitze, c. 2500 m, 2n=56, K. Urbańska-Worytkiewicz UW; Ulmerhütte ob St. Kristof am Arlberg, 2230 m, E. Preismann W; auf dem Furgler bei See im Paznauntal, 2600–2800 m, Handel-Mazetti WU; Venetberg bei Landeck, H. Zerny W; Vernagthütte bei Rofen im Ötztal, J. Vetter W; Obergurgl, c. 2100 m, 2n=56, A. Pisek UW; Saile bei Innsbruck IBF; Gamskogel im Senderstal bei Innsbruck, 2600 m, Handel-Mazetti WU; Steinach a. Br. Duterjoch, IBF; Schnurzjoch im Gschnitztal, Kerner WU; Muttenjoch, Schofferer PRC; ob Flix, 2500 m, Arnold M; Prat des Hohen Kammes M; Blaufeld bei Kitzbühel W; A. Sauter M; Trautsteiner W; St. Peter

Heuberge, am Mittagspitz, 2260 m, H. Beger RUEB; Rofanspitze am Sonnenwendjoch, J. Wognar HEL; bei Kitzbühl, IB; Dolliner W; IBF; Traunsteiner G, IBF, M; K. Domin PRC; Grossglockner, W; Grossglockner: Franz-Josephs-Höhe, c. 2500 m, 2n=56, K. Urbańska-Worytkiewicz UW; Pasterze, Sarnthein PRC; UPS; M; Hoppe M; Z; Glocknerhaus, Sterneck PRC; Bergelkogel IBF; Bergeralpe bei Prägraten im Virgener Tal, J. Vetter W; Brennerbad, 2000 m, ex herb. C. Correns M; Monte Zirago am Brenner, 2300 m, Huter W; am Kühkar in der Fuchs im Pinzgau, J. Vetter W; Graukogel bei Badgastein, J. Fryberg LD; Lonza sur Mallnitz, c. 1900 m, 2n=56, F. Widder UW; Felsen der Feldwand am Mallnitzer, T.E. Berroyer W; Pusterthal, in den Alpen im Kalsertal, J. Pischler LD; Lirschbaumer Alpen, au-dessus de Lienz, Lerescher LAU; zwischen Kirschbaumer Alpe und Zoche bei Lienz, W; Witting W; Rosengarten bei Oberdrauburg, 1900–2200 m, L. Keller W; Zochenpass, Wolfert W; Ortascha, Sieber PRC; Steinwänderalpe (Schladmingtal), O. Simony W; Steinkarzinken bei Schladming, WU; oberhalb des Schwarzsees, zwischen Tweng und Zederhaus, 1900–2200 m, Handel-Mazetti WU; unter dem Schwarzsee-Murursprung, 1900 m, F. Vierhapper WU; Pleisnitzkogel, F. Virhapper WU; Laareck, Lungau, 1900 m, F. Vierhapper WU; Hochachwung, F.G. Strobl W; Königseegebiete, Schneibstein, Matten am Gipfel, 2200 m, H. Paul M; bei Rappenseehütte, M; Eisenhut propre Turrach, c. 2000 m, B.F. Murrau Z; Graue Wand, R. Seeger Z.

D. Italy

Piemont, de Gressonay au d'Olen, E. Wilczek et P. Jaccard LAU; Vallée de Cogne, 2400–2500 m, E. Burdet LAU; ob Alpe Pila (Granson), c. 2150 m, E. Landolt et H. Hess ZT; Vallée de Cogne, c. 2000 m, TO; Val d'Aosta: Monte Jortin, 2700 m, D. Ferrari TO.

Bergamo Alps. Val di Scalve, 2400 m, E. Wilczek LAU; Val di Scalve, passo di Vivione, 2200 m, 2n=56, E. Landolt UW; oberes Val Brembana, passo di Portula, c. 2300 m, E. Landolt ZT.

Trento Alps. Cornetto di Bondone bei Trento, Luibold IBF; Valsulgano ex alpe Cunelle p. sopra Tornecium, F. Ambrosi LAU; Judicaries, Loss IBF; Monte Tombeau, F.v.Wettstein M.

Dolomites. Val d'Ansiei, piano di Lavaredo, c. 2500 m, 2n=56, K. Urbańska-Worytkiewicz UW; Sciliar, Barnard LAU; Terra rosa ex herb. Tiepffer M; Viezena, 2100 m, K. Kugler LAU; Platkofel, IBF; Tchutchenthaler, IB; WU; 2100 m, M; Bernard LAU; Val Travignolo, Lusia, C. Correns M; Monte Castellazzo, Arnold M; Gröden, am Hochjoch, Geislerspitze, 2500 m, J. Bornmüller IBF; M. d. Sardagna WU; Schwarzhorn bei Bozen, P. Morandel PRC.

Julian Alps. Wischberg prope Predil, 2000 m, Huter LD; Bärenlahner am Wischbergem, Huter PRC; an der Prevala-Alp bei Plezzo, W; Pletzring-Alp bei Plezzo, W.

E. Germany

Allgäu Alps. Himmeleck, 2020 m, 2n=56, H. Merxmüller UW; Himmeleck, H. Paul M; 2000 m, Troll M; Nebelhorn, G. Hegi M; Kreuzeck und Rauheck, M. Linserskopf, F. Dobel M.

Berchtesgaden, Schönanger am Kleinen Teufelshorn, 2050 m, H. Paul M.

The Carpathians

I. Tatra Mountains

Western Tatra. Račkove Stavy, c. 1900 m, G. Wahlenberg S; rocks over the lake Raczkowy Stawek, c. 1800 m, 2n=56, K. Urbańska-Worytkiewicz UW; S slope of Jarząbczy Wierch, c. 2000 m, 2n=56, K. Urbańska-Worytkiewicz UW; Ostry Rohač, c. 1900 m, PRC.

High Tatra. Path to Przełączka pod Żabią Czubą, c. 1600 m, 2n=56, K. Urbańska-Worytkiewicz UW; NW slope of Żabie—over the Valley of the lake Morskie Oko,

c. 1750 m, 2n=56, K. Urbańska-Worytkiewicz UW; near Przełączka pod Żabią Czubą, c. 1800 m, 2n=56, K. Urbańska-Worytkiewicz UW; Żabia Lalka, c. 1900 m, Z. Radwańska-Paryska KR; slopes below Żabi Szczyt Niżni, c. 1800 m, 2n=56, K. Urbańska-Worytkiewicz UW; Owczy Źleb—path to Pass Owcza, c. 1800 m, 2n=56, K. Urbańska-Worytkiewicz UW; Niżnie Rysy, c. 1800 m, 2n=56, K. Urbańska-Worytkiewicz UW; path to Pass pod Chłopkiem—the cirque Kocioł Mięguszowiecki, c. 1850 m, 2n=56, K. Urbańska-Worytkiewicz UW; rocks below the Pass pod Chłopkiem, c. 2200 m, 2n=56, K. Urbańska-Worytkiewicz UW; rocks below the Pass Szpiglasowa near the path from the Valley of Five Polish Lakes, c. 2000 m, 2n=56, K. Urbańska-Worytkiewicz UW; NE slope of Krywań, c. 1850 m, 2n=56, K. Urbańska-Worytkiewicz UW; Pośrednia Turnia, c. 1800 m, 2n=56, K. Urbańska-Worytkiewicz UW; S steep rocky slope of Gąsienicowa Turnia, c. 1900 m, 2n=56, K. Urbańska-Worytkiewicz UW; rocks below Pass Karb, NW slope, c. 1800 m, 2n=56, K. Urbańska-Worytkiewicz UW; Pass Zmarzła, c. 2100 m, 2n=56, K. Urbańska-Worytkiewicz UW; eastern cliffs of Zadni Granat, c. 2000 m, 2n=56, K. Urbańska-Worytkiewicz UW; SE slope below Pass Koprova, c. 2000 m, 2n=56, K. Urbańska-Worytkiewicz UW; Koprova Pass, HEL; Szatan, 2100 m, J. Hustich HEL; E slope of Gerlach, c. 1950 m, 2n=56, K. Urbańska-Worytkiewicz UW; Valley of Five Spish Lakes—at the bottom of Żółta Ściana, c. 1850 m, 2n=56, K. Urbańska-Worytkiewicz UW; path from Pass Czerwona Ławka to the Valley of Five Spish Lakes, c. 2200 m, 2n=56, K. Urbańska-Worytkiewicz UW; S slope of Huncovski Szczyt, c. 1850 m, 2n=56, K. Urbańska-Worytkiewicz UW; Valley Kiezmarska—the neighbourhood of the lake Zielony Staw Kiezmarski, c. 1700 m, 2n=56, K. Urbańska-Worytkiewicz UW; in herboris graniticis supra lacum "Késmarki-Zöld-to" ad cataractas infra vallem Kis Papyrus-völgy, c. 1600 m, F. Filarszky et G. Timko ZT; HEL; UW; Z; N steep rocky slope of Mały Kiezmarski Szczyt, c. 1950 m, 2n=56, K. Urbańska-Worytkiewicz et J. Worytkiewicz UW.

Belan Tatra. Sub cacumine montis Hlupy, c. 1900 m, solo calcareo, J. Chrtek et Z. Krisa LD; Jatki Bielskie, c. 1900 m, K. Urbańska-Worytkiewicz UW.

II. Low Tatra

Ďumbir, c. 1900 m, PRC; Kralova Hola, c. 1850 m, PRC.

III. Eastern Carpathians

Maramures Mountains in alp Bliznica, c. 1700 m, A. Margitai HEL.

5. Ecology

5.1. *Antennaria villifera*

The vegetation zones in which *A. villifera* occurs in Fennoscandia are classified as low-alpine and middle-alpine belts (Du Rietz 1930). The altitudinal limits are as follows: 300 m a. s. l. (Snøfjord, Finmark) and 1440 m a. s. l. (Mesatjåkko, Torne Lappmark Hedberg 1947; Mount Jeknaffo, Lule Lappmark, Selander 1950). The most frequent reports are from 800–1200 m in Nordland, 700–1200 m in Troms and 700–1000 m in Finmark. In Sweden and Finland they comport 400–1300 m and 700–1100 m, respectively. We did not get, unfortunately, more detailed data concerning the Russian material.

In the above mentioned parts of the alpine belt the vegetation period lasts