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Leena Hämet-Ahti: *Tripleurospermum* (Compositae)
in the northern parts of Scandinavia, Finland and Russia

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EDIDIT
SOCIETAS PRO FAUNA ET FLORA FENNICA

TRIPLEUROSPERMUM (COMPOSITAE) IN
THE NORTHERN PARTS OF SCANDINAVIA,
FINLAND AND RUSSIA

BY

LEENA HÄMET-AHTI

DEPARTMENT OF BOTANY, UNIVERSITY OF HELSINKI

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Abstract

Tripleurospermum maritimum (L.) Koch (excl. *T. inodorum*) is represented in northern Europe by at least three subspecies, viz. ssp. *phaeocephalum* (Rupr.) Hämet-Ahti along and near the coast of the Arctic Ocean from Novaya Zemlya to the Nordland District, ssp. *subpolare* (Pobed.) Hämet-Ahti from the northernmost Ural Mts. to the middle of Norway, and ssp. *maritimum* s. lat. along the Atlantic coast to western Finnmark and on the shores of the Baltic north to Kvarken. The haploid chromosome number of *T. maritimum* ssp. *subpolare* is 9. The hybrids: *T. inodorum* × *T. maritimum* ssp. *subpolare*, *T. maritimum* ssp. *phaeocephalum* ≅ ssp. *subpolare* and *T. maritimum* ssp. *maritimum* ≅ ssp. *phaeocephalum* are reported from northern Fennoscandia.

Introduction

The opinions of various authors on the taxa and their ranks in the genus *Tripleurospermum* in northern Europe are very different. Some authors recognize a single species, *Tripleurospermum maritimum*, consisting of a few subspecies or varieties. For instance, VAARAMA (1953) recognizes one species with three subspecies and several varieties, while HYLANDER (1955) has one species with four varieties and PEDERSEN (1961) has one species with four subspecies. WEIMARCK (1963) accepts two species, *T. maritimum* and *T. inodorum*, LÖVE & LÖVE (1961) three species, *T. maritimum*, *T. inodorum* and

T. ambiguum, while POBEDIMOVA (e.g. 1961b) distinguishes four species in northwestern Russia: *T. inodorum*, *T. maritimum*, *T. subpolare*, and *T. phaeocephalum*.

It is well-known that there are some seashore races of *T. maritimum* occurring along the North and West coasts of Europe (NEUMAN 1882, TURESSON 1922, BENUM 1958, PEDERSEN 1961, CLAPHAM *et al.* 1962, LÖVKVIST 1962, etc.), although their status and ranges are incompletely known. When studying hemerochoric plants in Northern Finland the author found that the *T. maritimum* — *inodorum* group is very variable there also, even far from seashores.

Having considered the many taxonomic opinions on the *T. maritimum* — *inodorum* group, it seems to me to be best to recognize *T. inodorum* (L.) Schultz Bip. and *T. maritimum* as separate species. Apart from differences in their morphological characters, these species have generally been separated from each other by their chromosome numbers: *T. inodorum* is tetraploid ($2n = 36$) and *T. maritimum* diploid ($2n=18$). However, ROTTGARDT (1956) reported also a diploid *T. inodorum* in Schleswig-Holstein, N. Germany, and, according to KAY (1965), it is common in Britain.

I wish to express my deep gratitude to Prof. Hans Luther and Dr. Jaakko Jalas, who have read my manuscript and given valuable help. I thank also my husband, Dr. Teuvo Ahti, who collected part of the material from northern Finland and examined the collections in the Herbarium of the University of Leningrad (LEU), Miss Virpi Virrankoski, B.Sc., who made the chromosome counts, and Mr. F. H. Brightman, who revised my English.

I thank the curators of the following herbaria:

- GB Herbarium, Institute of Systematic Botany, University of Göteborg, Sweden
- H Botanical Museum, University of Helsinki, Finland
- HSI Department of Silviculture, Helsinki, Finland
- LE Botanical Institute of the Academy of Sciences, Leningrad, U.S.S.R.
- LEU Department of Higher Plants, University of Leningrad, U.S.S.R.
- O Botanical Museum, University of Oslo, Norway
- OULU Department of Botany, University of Oulu, Finland
- S Botanical Department, Swedish Museum of Natural History, Stockholm, Sweden
- TRH Botanical Department, Museum of the Royal Norwegian Society for Science and Letters, Trondheim, Norway
- TROM Botanical Department of Tromsø Museum, Tromsø, Norway
- TUR Botanical Institute of the University, Turku, Finland
- TURA Biological Institute of Åbo Academy, Turku, Finland
- UPS Institute of Systematic Botany, University of Uppsala, Sweden

Financial support was received from the Finnish National Research Council for Science.

Tripleurospermum maritimum (L.) Koch ssp. *subpolare* (Pobed.)
Hämet-Ahti, comb. nova

Tripleurospermum subpolare POBEDIMOVA 1961a, p. 347. Holotype: Russia, Archangel Distr., Solovetsk Is., Bol'shoy Zayatzkiy, »in litoralibus lapidosis», 1957 E. Pobedimova & S. Kolomojtzeva 215 (LE). — ? *T. maritimum* var. *boreale* C. J. HARTMAN 1849, p. 2. Orig. coll. (?): Norway, Trondheim, Vahl (UPS). — *T. maritimum* ssp. *ambiguum* (Ledeb.) Vaar. var. *litorale* VAARAMA 1953, p. 280 (nomen nudum).

A comparison of this subspecies with the other taxa of *Tripleurospermum* in northernmost Europe is presented in Table 1. The best characters are the involucre bracts (Figs. 4, 5), which are nearly equal in size, 6 mm long and 2–3 mm wide with fairly broad (up to 0.5 mm) brown to light brown undulate scarios margins. Sometimes the margins may be quite colourless. The green middle part of the bract is oblong but in the outermost bracts it is sometimes slightly triangular. The achenes are about 3 mm long with slightly oblong oil glands and often with an inconspicuous fourth rib on the posterior face. The leaves are pinnatisect, in herbarium specimens often entangled, the leaflets being fairly long and narrow. This subspecies seems to be usually a biennial or a short-lived perennial. The chromosome number is $n=9$ (specimen: Finland, Kuusamo, Kuusamon kirkonkylä, 1966, T. Ahti no. 22434; H). Vaarama made chromosome counts of $2n=18$ from two specimens (Karelian A.S.S.R.: Kesten'ga, and Norway: Trondheim, Buvik; TUR), which belong to this taxon.

T. maritimum ssp. *subpolare* was described at species level by POBEDIMOVA (1961a, p. 347–48) from the Solovetsk Islands, White Sea. VAARAMA (1953) used the preliminary name *T. maritimum* ssp. *ambiguum* var. *litorale* for a race occurring on shores of the northern Baltic and the White Sea. His specimens (TUR) belong to ssp. *subpolare*. Unfortunately, Vaarama published the name without a Latin diagnosis. Also some other names, including the new combinations, in the same paper are invalid, the latter ones owing to the absence of references to the original descriptions. However, Vaarama's paper seems to be the most complete taxonomic study as far made of North European *Tripleurospermum*.

In older Fennoscandian literature this northern taxon, if it was distinguished, was frequently called *Matricaria inodora* var. *ambigua* Ledeb. (e.g. MELA 1895, REGEL 1916, 1924) or *Matricaria inodora* var. *borealis* »Hartm.» (e.g. NEUMAN 1882, CAJANDER 1906, HIITONEN 1933) or *Tripleurospermum maritimum* var. *boreale* Hartm. (HARTMAN 1849, HYLANDER 1955). The specimen from Trondheim, on which Hartman obviously based his variety *boreale*, is

very difficult to determine. It may belong to *T. maritimum* ssp. *subpolare* or to a hybrid between it and *T. maritimum* ssp. *maritimum* s. lat. or it may represent an unknown race of the last-mentioned subspecies. In addition, the name var. *boreale* is used in more than one sense; for instance, VAARAMA (1953, p. 280) applied it to a race occurring on Kullen, Scania, and in Bornholm. For these reasons I have chosen Pobedimova's rather than Hartman's epithet for the northern taxon in question.

From the Kola Peninsula REGEL (1916, 1924) mentioned a form supposed to be intermediate between *M. inodora* and *M. ambigua* (= *T. maritimum* ssp. *phaeocephalum*); this was apparently ssp. *subpolare*. Also ORLOVA (1966) regards ssp. *subpolare* merely as an intermediate form between *T. hookeri* (= *T. maritimum* ssp. *phaeocephalum*) and *T. inodorum*.

The distribution of ssp. *subpolare* (Fig. 1) covers, judging from the specimens available, the northern parts of Russia, Finland and Sweden and the middle part of Norway. It does not occur along the shores of the Arctic Ocean proper and the North Atlantic, except casually (cf. POBEDIMOVA *et al.* 1959, p. 593), but it seems to be common along the shores of the White Sea (POBEDIMOVA 1960, 1961a), Lake Ladoga (cf. KOTILAINEN 1922, MANNERKORPI 1946, POBEDIMOVA 1964, POBEDIMOVA & GLADKOVA 1966, STANISHCHEVA 1965) and some other large lakes in Karelia (cf. ERKAMO 1947, p. 78).

This distribution is similar to that of a few other seashore plants (cf. ZINSERLING 1926). It has also been collected from the northern shores of the Gulf

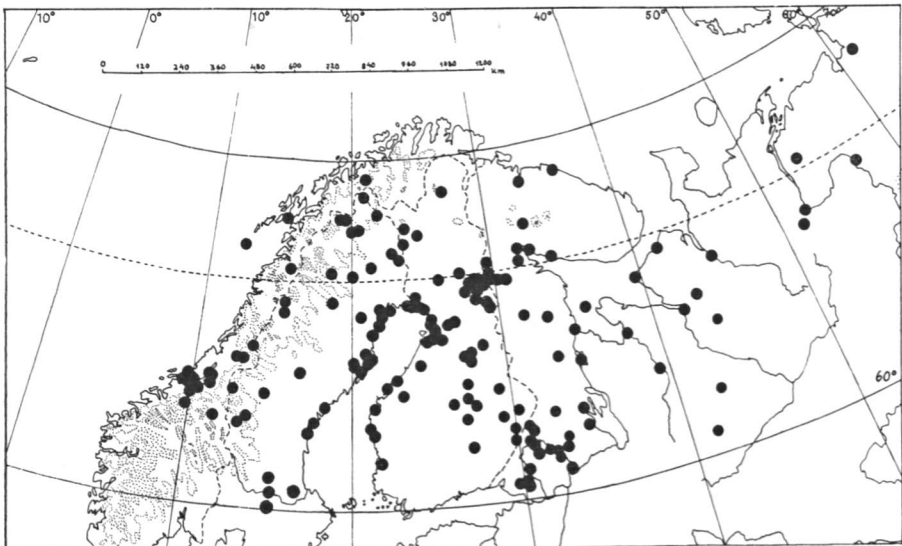


FIG. 1. The total known distribution of *Tripleurospermum maritimum* (L.) Koch ssp. *subpolare* (Pobed.) Hämet-Ahti according to the specimens examined.

of Bothnia. The extent to which it occurs on the shores of the Gulf of Finland is still unclear. Some specimens, especially from the eastern parts of the gulf, approach ssp. *subpolare*, but their status should be decided only after the whole *T. maritimum* complex around the shores of the Baltic is better known. Also the possibility of an indigenous occurrence of ssp. *subpolare* on the shores of some Finnish lakes (e.g. Lake Saimaa) needs confirmation.

Most of the habitats of ssp. *subpolare* in Fennoscandia are ruderal places. In North Finland it seems to favour drained, cultivated peatlands, but is common in all kinds of fields, by roadsides and in ditches.

Specimens examined:

N o r w a y

Sör-Trøndelag. Oppdal: Kongsvoll — Drivstua, 1898 N. Johanson (GB); Jenkin, M. N. Blytt (O). Strinda, 1939 T. Vogt (TRH). Lensvik, 1947 K. Ydse (TRH). Orkedal, 1900 F. Lange (O). Örland, 1943 A. Skogen (TRH). Stadsbygd, 1937 Höeg (TRH). Agdenes, Sör-Leksa, 1949 O. Gjaerevoll (TRH). Glåmos, 1955 E. Fondal (TRH).

Nord-Trøndelag. V. Storm (TRH). Mosvik, 1944 E. Fondal (TRH). Hegra, 1950 J. Gjerstad (TRH). Trosta, Hynnöya, 1899 S. Foslie (O; not mapped). Verdal, 1937 M. Hjelle (O). Nordli, Eidet and Sandmosen, 1942 Y. Mejlund (O).

Nordland. Lofoten, 1903 P. Söderlund (S; not mapped). Junkersdal, 1904 Peters & Petterson (S). Röst, Valvaer, 1936 Anne M. Grönlie (O). Vågan, Svolvaer, 1935, J. Ax. Nannfeldt (UPS).

Troms. Nordreisa, Sappen, 1905 S. Selander (S).

S w e d e n

Dalarna. Bjursås, 1891 H. E. Johansson (UPS). Seter, 1860 C. Gertz (S). Söderbärke, Nor, 1891 S. Persson (GB).

Gästrikland. Hedesunda, Sevalbo, 1898 J. Källström (GB).

Härjedalen. Storsjö, 1947 T. Andersson (S). Tännäs, Funäsdalen, 1908 M. Östman (S). Medelpad. Skön, Tunadal, 1949 K. T. Seth (UPS).

Jämtland. Åre, 1911 A. L. Segerström (S), 1959, 1963 H. Smith (UPS). Frösö, 1897 M. M. Floderus (UPS), 1916 G. O. Erdström (S). Östersund, 1886 C. H. Sundberg (S), 1930 Th. Lange (TURA).

Ångermanland. Härnösand, 1894 T. Arnell (UPS), 1909 N. Johnsson (S). Säbrå: Finsvik, 1906 G. Peters (S), Framnäs 1877 K. Arnell (UPS).

Åsele Lappmark. Åsele, 1886 P. E. Lundquist (UPS).

Lycksele Lappmark. 1810 G. Wahlenberg (S). Tärna, 1937 E. Asplund (S), 1944 H. Lenander (S).

Västerbotten. Umeå, 1902 P. Söderlund (S). Degerfors, 1908 T. Vifell (S). Vindeln, 1910 (S) and 1916 (GB) A. Th. Vifell. Lövången, 1911 O. Holm (UPS). Burträsk, 1916 H. Andersson (UPS). Byske, 1898 E. Häggqvist (UPS).

Pite Lappmark. Arjeplog, 1932 G. Wistrand (S).

Norrbotten. Öjebyn, 1905 E. Marklund (UPS). Luleå: Luleå 1904 H. Witte (UPS); Sandön, 1928 S. v. Sydow (S). Nederluleå; Gammelstad, 1942 J. O. Norrman (UPS). Älvsbyn, 1917 C. G. Alm (UPS). Råneå Isl., Laxön 1928 E. Nordström (GB). Haparanda, 1858 O. R. Fries (S, UPS), 1923 G. Littmark (S). Pajala, Kaunisvaara, 1918 J. Montell (TURA, UPS). Tärendö, 1959 C. G. Alm (UPS).

Lule Lappmark. Jokkmokk, 1904 O. Vesterlund (TURA). Kvikkjokk, 1868 C. Indebetou (S). Gällivare, 1917 Astrid Bore (S), 1918 E. Bore (S).

Torne Lappmark. Jukkasjärvi: Jukkasjärvi, 1956 Svedberg (UPS); Kiruna, 1908 H. G. Simmons (S); Abisko, several specimens (S, UPS); Stordalen, 1941 T. Arwidsson (S). Karesuando, several specimens (S, UPS, GB).

Finland

Satakunta. Pomarkku, Honkakoski, 1960 P. Vanhatalo (TUR).

Savonia australis. Hirvensalmi, 1958 A. Vaarama (TUR). Karelia ladogensis. Uukuniemi, 1852 E. Niklander (H).

Ostrobothnia australis. Lappfjärd, 1938 A. Railonsala (TUR). Kaskinen, 1939, 1950 A. Railonsala (TUR). Korsnäs, Harrström, 1921 A. Lindfors (H).

Tavastia borealis. Keitele, Vuonamo, Viitaselännmäki, 1951 K. Huuskonen (TUR).

Savonia borealis. Leppävirta, Reinikkala, 1926 A. Vaarama (TUR). Kuopio: 1868 C. E. Roos (H), 1926 A. Vaarama (TUR); Kolmisoppi, 1920 A. Leinonen (TUR). Pielavesi: Sulkavanjärvi, Mustikkamäki, 1953 A. J. Huuskonen (OULU). Iisalmi: Viitaa, 1934 Katri Lyyra (HSI).

Karelia borealis. Kitee, 1863 A. Brander (H). Iiperi, Anttola, 1872 M. A. Europaeus & K. A. Hällström (H). Ilomantsi, 1863 F. V. Woldstedt (H). Juuka, Vuokkojärvi, 1900 Th. Saelan (H).

Ostrobothnia media. Lappajärvi: Salmela, 1904 A. Nyström (H); Veanteensaari and Pikkusaari, 1904 A. L. Backman (HSI). Nykarleby, Bonäs, 1905 R. Kisor (H). Oulainen, 1920 A. Parvela (TUR), 1937 Sirkka Parvela (OULU). Revonlahti, Greus, 1934 E. Palmén (H).

Ostrobothnia kajanensis. Kajaani rural commune, Lahnasjärvi, Korhola, 1957 L. Heikkinen (OULU). Paltamo: Melalahti, Tervola, 1920 O. Kyyhkynen (H, TUR); Uura, 1957 L. Heikkinen (OULU). Hyrynsalmi, Salmi, 1869 M. Brenner (H).

Ostrobothnia borealis. Several specimens from Liminka, Muhos, Oulu, Pudasjärvi, Haukipudas, Ii, Simo, Kemi, Tornio, Ylitornio, Rovaniemi, Kemijärvi (H, OULU, TUR).

Kuusamo. Kuusamo: about 30 specimens (H, OULU, TUR). Posio, Tolva, Ylitolva, 1966 L. & T. Ahti (H).

Lapponia kemensis. Kittilä: 1877 Hj. Hjelt & R. Hult (H); Mantovaara, 1966 I. & T. Ahti (H). Muonio: Tapojärvi, 1947 V. Erkamo (H); Muonio village, 1931 J. Montell (TURA), 1966 L. & T. Ahti (H).

Lapponia enontekiensis. Enontekiö, Kilpisjärvi, 1950 P. J. Jokela (OULU).

Lapponia inarensis. Inari: Inari, 1960 T. Ahti (H), 1962 A. Vuoristo (TUR).

U. S. S. R.

Leningrad Dist. Rautu (Sosnova), 1866 A. J. Malmberg (H). Sakkola, leg. Appelberg (H); 1894 H. Lindberg (H). Valkjärvi, Uosukkala, 1923, I. Hidén (H). Motornoye, 1961 E. Pobedimova & V. Gladkova 275 (LE). Gumbaritsa, 1942 I. Hustich (H).

Karelian A.S.S.R. Ladoga: Valaam (Valamo), 1850 W. Nylander (H), E. Pobedimova & V. Gladkova 1961 562 (LE), 1962 183 and 336 (LE); Uksaloniya, 1961 E. Pobedimova & V. Gladkova 489 (LE); Mantsinsari, 1961 E. Pobedimova & V. Gladkova 371 (LE). Vieljärvi (Vedlozero), Vallittu, 1943 A. Railonsala (TUR). Mouth of Vitele (Vidlitsa) River, 1942 N. Söyrinki (H). Sortavala: Orjatsalo, 1914 V. Pesola & K. Linkola (H); Melloinen, Vuorlahti, 1929 K. Linkola (H); Kotiluoto, 1926 O. Hulkkonen (H). Suistamo, Leppäsjärvi, 1915 V. Pesola & A. Virtanen (H). Soanlahti, Veljakka, 1903 K. J. Ehnberg (TUR). N shore of Nigozero, 1920 V. P. Savich (LE). Tiutia (Tivdiya), 1861 G. Selin (H). Pyhäniemi, 1942 Katri Lyyra (HSI). Ondarvi (Ondozero), 1894 I. O. Bergroth (H). Kem' Dist., Tarrzhevo, 1911 R. Pohle (LE; not mapped). Vygostrov, 1925 G. Zinslerling (LE). Uhtua (Ukhta), 1943 P. Kallio (TUR). On Ukhta highway 93—98 km from Kem', 1928 K. Solonevich (LE). Soroka (Belomorsk), 1917 Bulavkina (LE). Oulanka (Olanga), Pääjärvi (Pyakzero), 1942 N. Söyrinki (H). Paanajärvi: Manninen, 1908 A. L. Backman (H); Soukelo, 1861 N. I. Fellman (H).

Murmansk Dist. »Lapponia Rossica», 1840 Exp. Baer (LE). Kola town, 1861 N. I. Fellman (H), 1914 Shanikova (LE), 1915 Shatkov (LE), 1921 N. Savich (LE). Kol'skiy zaliv, 1924 N. V. Ryndin 153 (LE). Ekaterinskiy Island, 1927 A. Tolmachev (LE). Voronisk, 1887 A. O. Kihlman (H). Murmansk coast, 1903 R. F. Niman (LE; not mapped). Khibiny station, 1920 D. Litvinov (LE), 1921 O. Polyanskaya (LE). Imandra station, 1920 A. Gegott (LEU). Kouta (Kovdozero), 1861 G. Selin (H). Kandalaksha, 1903 R. F. Niman (LE). Kandalaksha Bay, 1921 N. Savich (LE). Kol'vitsa, 1934 Dedov & Florovskaya (LEU). Umba, 1861 G. Selin (H), 1892 A. O. Kihlman (H). Tuutijärvi, 1898 V. Borg (H). Salla, 1933 P. S. Jokela (OULU).

Arkhangel'sk Dist. Solovetsk Is., 1861 G. Selin (H), 1870 Middendorff (LE), 1890 Birulya (LE), 1904 R. Pohle (LE), 1932 V. M. Vechor (LE), 1932 A. M. Oduhov (LE),

1957 E. Pobedimova & S. Kolomojtzeva 215 (LE). Pokrovskoe, 1899 A. Cajander & J. I. Lindroth (H). Shenkursk, Lipovka, 1922 P. Serebryakov (LE). The river Korotaykha, 1931 V. N. Andreev & Z. P. Savkina (LE). Pinega, 1899 R. Pohle (LE). Dorogorskoe, 1929 A. Dedov (LE). Verkola, 1928 M. Preis (LE). Arkhangel'sk, 1840 Exp. Baer (LE), 1922 A. Feodorov (LE). Vel'sk, 1906 R. Pohle (LE). Megra, 1904 R. Pohle (LE). Mezen, 1898, 1899 R. Pohle (LE). Northern part of Malozemel'skaya tundra, 1930 K. I. Igoshina (LE; not mapped). On the river Shapkina, 1921 D. Rudnev (LE). Biryuchevo, 1900 Kalinova (LEU). Simmergorski «Majak» (lighthouse), 1904 R. Pohle (LE). Pechora, the river Ladoganey, 1905 A. V. Zhuravskiy (LE; not mapped).

Komi A.S.S.R. Ust'-Usa, 1905 R. Pohle (LE), 1928 F. Sambuk (LE). On the river Pizhma, 1905, 1922 A. V. Zhuravskiy (LE), 1922 F. V. Sambuk (LE), 1928 O. Gaze (LE).

Tripleurospermum maritimum (L.) Koch ssp. *phaeocephalum* (Rupr.) Hämet-Ahti, comb. nova

Matricaria inodora var. *phaeocephala* RUPRECHT 1845, p. 42. — *Tripleurospermum maritimum* var. *phaeocephalum* (Rupr.) HYLANDER 1955, p. 130 (nom. inval.). — *T. phaeocephalum* (Rupr.) POBEDIMOVA 1961 a, p. 347. — Type: Russia, Terra parva Samojedorum, F. J. Ruprecht (LE).

This subspecies is usually a fairly low-growing plant (up to 40 cm high), with a stout stem that is often unbranched at the base. The leaves are stout and pinnatisect, but with fairly few segments, the ultimate segments being long and about 2 mm wide. The involucre bracts are very characteristic: they are broadly triangular with very broad dark brown to blackish scarious margins (Fig. 5). The outermost bracts are much shorter than the innermost ones. The ripe achenes, which are very rare in herbarium specimens, are according to POBEDIMOVA (1961 a) up to 3 mm long with elongated, large oil glands and with a 4–5 lobed pappus up to 0.5 mm long. POBEDIMOVA (op. cit.) says that this plant is perennial or biennial.

T. maritimum ssp. *phaeocephalum* was described at variety level (not as a form as often cited) by RUPRECHT (1845) from arctic Russia. TRAUTVETTER (1871, p. 71; not RUPRECHT as reported by PORSILD 1932, p. 72!) considered it to be a synonym of *Pyrethrum ambiguum* described by LEDEBOUR (1833, p. 118) from the Altai Mts. Thereafter many later authors have applied the epithet *ambiguum* to this taxon. I have seen both Ruprecht's and Ledebour's original specimens, and although Ruprecht's type specimen is very poor, a comparison of other material from northernmost Russia with the Altai material shows so many differences (e.g. the scarious margins of the bracts are narrower, the bracts are only slightly triangular, and the leaf segments are shorter and narrower in the Altai specimens than in those from northern Russia) that I cannot regard them as identical. POBEDIMOVA (1961 b) has come to the same conclusion.

In Fennoscandian floristic literature this race has been usually overlooked or combined with ssp. *subpolare* under various names. It has been clearly se-

parated by a few authors only, e.g. by FELLMAN (1869, p. 33: *Matricaria inodora* var. *phaeocephala*), by REGEL (1916, 1924: *Matricaria ambigua*), by HYLANDER (1945, p. 317: *Matricaria maritima* var. *phaeocephala*), by VAARAMA (1953: *Tripleurospermum ambiguum* var. *nanum*), by BENUM (1958, p. 364: *T. inodorum* var. *phaeocephala*), and by ORLOVA (1966, p. 218: *T. hookeri*).

T. maritimum ssp. *phaeocephalum* occurs along and near the coast of the Arctic Ocean from Novaya Zemlya and Vaigach Island westwards to Nordland county in Norway (Fig. 2). Its range is rather similar to that of *Juncus gerardii* ssp. *atrofuscus* (Rupr.) Printz (cf. HÄMET-AHTI 1966). *T. maritimum* ssp. *phaeocephalum* has also been reported from Iceland, Faroe Is., Shetland Is., Scotland, Greenland and the Arctic coasts of North America and North-east Asia. In America and Asia it is mainly called *Matricaria ambigua* (Ledeb.) K. Miyabe, *M. grandiflora* (Hook.) Britt. or *M. inodora* var. *nana* (Hook.) Ledeb. I have seen only a small amount of material from these areas, but on this basis and also according to the opinions of some other authors (e.g. PORSILD 1932, POBEDIMOVA 1961 b), it seems to be certain that more than one race is involved. One race is common to Iceland, Faeroe Is., Shetland Is., and Scotland (tall, the involucre bracts long, fairly narrow and slightly triangular). The American and Asian specimens are different, and differ also from the European ones. In this I agree with POBEDIMOVA's (1961 b, p. 172) opinion. These races are in need of further taxonomic and nomenclatural studies.

T. maritimum ssp. *phaeocephalum* seems to be fairly variable in size. The specimens collected from Novaya Zemlya and other true arctic areas are small (usually less than 10 cm high) with fairly short leaf segments, but the heads are like those of the taller specimens collected, for instance, in Finnmark and

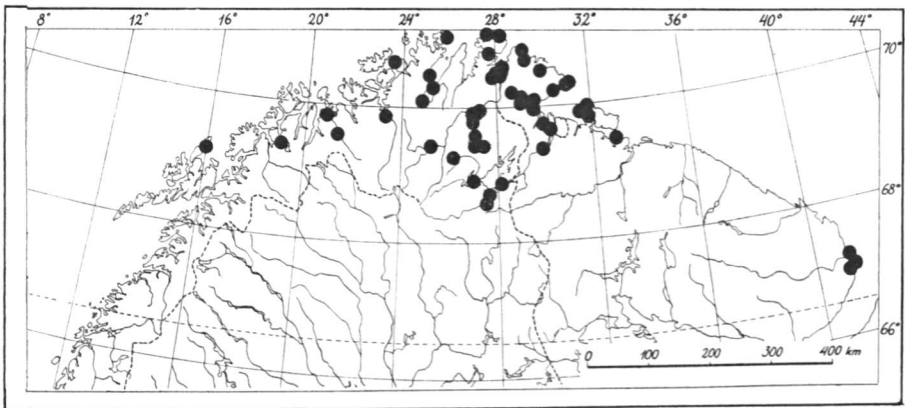


FIG. 2. The distribution of *Tripleurospermum maritimum* (L.) Koch ssp. *phaeocephalum* (Rupr.) Hämet-Ahti in Fennoscandia according to the specimens examined.

northern Russia. Flowering takes place very late in August and September (e.g. EKSTAM 1877) and in herbaria it is difficult to find specimens with well-developed ripe seeds.

Ecologically *T. maritimum* ssp. *phaeocephalum* is both a seashore and a ruderal plant. Most authors have not kept it apart from ssp. *subpolare* and therefore the ecological notes in floristic papers are not fully reliable. It is scattered on Novaya Zemlya (LYNGE 1923), common on Vaigach (TOLMACHEV 1926), and has been reported from several places in the Malozemel'skaya and Bol'shezemel'skaya Tundras and on Kolguev Island (e.g. PERFIL'EV 1934), and in the northernmost part of Komi A.S.S.R. (BOLOTOVA *et al.* 1962) where it is common in Vorkuta town (DOROGOSTAYSKAYA 1963), for instance. It is locally frequent along the shores of Kanin Peninsula (RAMSAY & POPPIUS 1903, ANDREEV 1931, KORCHAGIN 1935), of Kola Peninsula (REGEL 1927, 1928, POBEDIMOVA *et al.* 1959) and of Rybachi Peninsula (KALELA 1939, POBEDIMOVA *et al.* 1959). In Finnmark it is common in inhabited areas and on seashores (DAHL 1934, see also his plate 21!). In Troms county it is present, but rare, as it is in some villages in northernmost Finland.

Specimens examined:

Norway

Nordland. Dverberg, Åse, 1946 P. Benum & J. Reiersen (TROM).

Troms. Balsfjord: Laxvandet, 1900 M. Sondén (S). Nordreisa: Sörkjosen 1936, Pilto 1932, Storvik 1937 Y. Mejland (TRH).

Finnmark. Alta, Ravtasvarre, 1913 O. Dahl (O). Hammerfest, 1949 P. Benum (TROM).

Nordkapp: Magerøy, Skibsfjord, 1875 C. Reuterman (GB); Honningsvåg, 1926 A. B. Wessel (O). Kistrand: Russenes, 1955 O. I. Rønning (TROM); Banak, 1949 P. Benum (TROM); Börselv, Sjøkholmene, 1961 Anna Kornas & J. Ax. Nannfeldt (UPS). Lebesby: Nordkyn, Kinnarod-Sandfjord, 1909 Hanna Resvoll-Holmsen (O); 1862 J. M. Norman (TRH); Hopseidet, 1802 G. Wahlenberg (UPS). Gamvik, Sandfjord, 1954 O. Rune & O. I. Rønning (TROM). Tana: Vestertana, 1950 H. Rui (O); Thorhop, 1859 C. Sommerfelt (O); Fjelmanes, 1935 J. Ax. Nannfeldt (UPS); Höiholmen, 1964 B. Christiansen, P. Guldbransen & S. Hafthorn (TROM). Berlevåg: Kjølneset, 1935 J. Ax. Nannfeldt (UPS); Kongsöen, 1916 O. Dahl (O). Nesseby: 1858 C. Sommerfelt (S,O) Nyborg, 1887 Th. M. Fries (UPS), 1900 O. Dahl (O); Mortensnes, 1859 N. C. Kindberg (UPS), 1859 C. Sommerfelt (O), 1863 A. G. Nordvi (O), Grassbakken — Nyelven, 1917 O. Dahl (O). Nord-Varanger, J. M. Norman (TRH). Vadsö, 1956 Svedberg (UPS). Vardö: Langbunes, 1885 J. M. Norman (O, S, TROM); Svartnes — Kiberg, 1963 S. Slethjord (TROM); Vardö, 1960 T. Ahti (H); Vardöya, Skagodden, 1949 N. Hauge (O); Vesterelv, 1957 O. I. Rønning (TROM). Sör-Varanger; Bugöyfjord, 1861 J. M. Norman (O); Kirkenes, 1917 A. B. Wessel (O, TROM). Karasjok, 1883 A. Öwre (TROM).

Finland

Lapponia inarensis. Inari: Törmänen, 1925 E. Mikkola (H, TUR); Ivalo, 1910 H. Lindberg (H); Inari village, several specimens (H, TUR); Tiiaisniemi, 1899 C. W. Fontell (H) Iijärvi farm, 1959 Ritva Nikoskelainen (TUR). Utsjoki: Maituanoja, 1961 E. Koivistoinen (TUR); Mierasjärvi, 1956 Y. Mäkinen (TUR); Kevonsuu, 1952 P. S. Jokela & E. Pallari (OULU), 1956 L. Lindgren (TUR), 1956 U. Laine (TUR); Utsjoki vicarage, 1955 Marja Kairinen (TUR); Utsjoki, 1955 Maiju Malvari (TUR); mouth of Vilgavedje, 1958 Liisa Häkkinen (TUR); bridge of Vetsikko river, 1958 M. Tallgren (TUR).

U. S. S. R.

Murmansk Dist. Pechenga: Heinäsaaret (Sinov Is.), several specimens (H, TUR); Pummanki, several specimens (H, TUR); Vayda Guba, 1928 Anna Andersson (H); Boris Gleb, 1878 E. Wainio (TUR). Menikka (69°10') ad Patsjoki, 1878 E. Wainio (TUR). Jere-tik, 1883 R. Enwald & H. Hollmén (H). Triostrov, 1880 R. Enwald & C. A. Knabe (H, TURA). Orlov, 1889 A. O. Kihlman (H). Ponoy, 1889 J. Montell (H, TURA).

Tripleurospermum inodorum (L.) Schultz Bip.

In the study area this species differs rather distinctly from all subspecies of *T. mariti-mum* (Table 1). Its heads are usually smaller, the stem is fairly slender, the leaf segments are thin, and the involuclal bracts are narrow, with very narrow scarious margins, which may be light brown to dark brown (Figs. 4, 5). The pappus is almost absent and the oil glands are circular. The chromosome number $n=18$ was counted (specimen: Finland, Kuu-samo, Kuusamon kirkonkylä, 1966 T. Ahti no. 22090; H). However, this species appar-ently also contains some infraspecific taxa. For instance, in some places in North Finland there is a tall race (?) with very small involuclres (c. 1 cm in diameter). The involuclal bracts are shorter than 4 mm, and 1 mm broad with blunt tips (Fig. 5 a). The scarious margins are sometimes almost without any brown colour. These individuals have been collected chiefly from newly established sown lawns on recently constructed highway banks. They flower very late, and, perhaps, do not set ripe seeds in the study area. This taxon is apparently being spread among commercial grass seed of foreign origin.

T. inodorum is not uncommon in North Finland, though very little collected. It is mainly found among cultivated timothy in leys. In the sown cattle pas-tures that have recently become common in the area it is almost constant as a weed among *Festuca pratensis*, *Lolium perenne*, and other grass crops. It may also be seen along roadsides, on dumps, etc. but usually as solitary individuals. *T. maritimum* ssp. *subpolare* is much more abundant in N. Finland than *T. inodorum*. In areas with less intensive agriculture it is absent or casual.

Hybridization in *Tripleurospermum* in northern Fennoscandia

In northern Fennoscandia *T. inodorum*, *T. maritimum* ssp. *subpolare* and ssp. *phaeocephalum* meet in ruderal habitats and different hybrids are locally common (cf. VAARAMA 1953).

T. inodorum × *T. maritimum* ssp. *subpolare* occurs fairly often in northern Sweden and Finland. Morphologically this hybrid is intermediate between the

parents: the bracts are fairly narrow with fairly narrow scarious margins (Fig. 4). The achenes are usually poorly developed, variable and largely irregular, often having more than three strong ribs and more than two oil glands which are very variable in form and situation. The pappus is poorly developed (up to 0,25 mm long) or absent. It is questionable, however, whether any true introgression is taking place.

The hybrid of ssp. *phaeocephalum* and ssp. *subpolare* occurs in the northernmost part of Fennoscandia (Fig. 3). Usually it seems to be more fertile than the former hybrid; the heads are fairly long-stalked, with clearly triangular, fairly broad unequal bracts. The scarious margins are brown to nearly black (Fig. 5). The achenes are well developed, and the pappus is conspicuous (often up to 0,5 mm long). The oil glands are fairly large, elongated. Obviously hybridization between these two subspecies is common in the northernmost larger villages in Finland and Sweden and inner Finnmark and it makes the *Tripleurospermum* populations very variable there. Such hybrids seem to extend much farther south than pure ssp. *phaeocephalum*.

Specimens of ssp. *phaeocephalum* \cong ssp. *subpolare* examined:

N o r w a y

Finnmark. Kautokeino, Kautokeino, 1966 L. & T. Ahti 22435, 22442 (H).

S w e d e n

Norrbottnen. Pajala, 1954 J. Lagerkrantz (UPS). Tärenö, 1959 C. G. Alm (S).

Torne Lappmark. Jukkasjärvi: 1955 C. G. Alm (UPS); Abisko, 1917 E. Asplund (S). Karesuando, 1906 J. Montell (TURA).

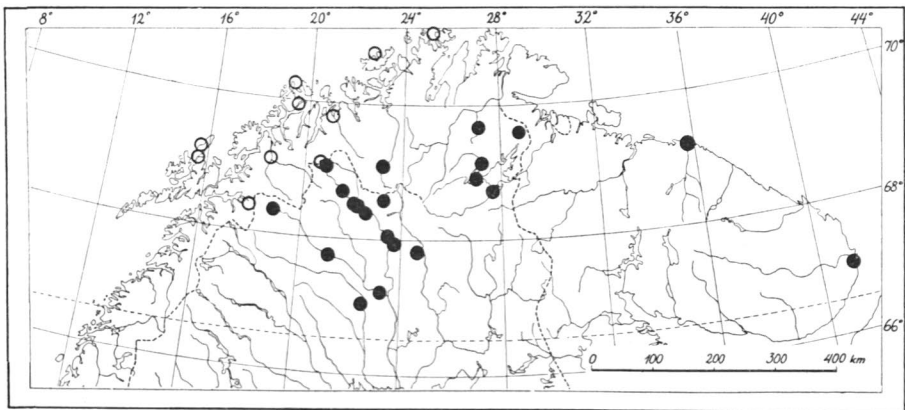


FIG. 3. The distribution of *Tripleurospermum maritimum* (L.) Koch ssp. *maritimum* s. lat. \cong ssp. *phaeocephalum* (open circles) and *T. maritimum* ssp. *phaeocephalum* \cong ssp. *subpolare* (solid circles) in Fennoscandia according to the specimens examined.

F i n l a n d

Lapponia kemensis. Kittilä, Sirkka, 1966 L. & T. Ahti 22439 (H). Muonio: Muonio, 1966 L. & T. Ahti 22444 (H); Ylimuonio, 1966 L. & T. Ahti 22440 (H).

Lapponia enontekiensis. Enontekiö: 1867 A. J. Malmberg (H); Leppäjärvi, 1966 L. & T. Ahti 22441 (H); Maunu, 1911 J. Montell (H); Ropinsalmi, 1958 R.-L. Hämet (H); Kilpisjärvi, Siilastupa, 1911 J. Montell (H).

Lapponia inarensis. Inari: 1960 C. F. Lundevall (UPS); Ivalo, 1910 H. Lindberg (H), 1960 C. F. Lundevall (UPS); Kaamanen, 1960 T. Ahti (H); Pakanajoki, 1880 A. Arrhenius & A. O. Kihlman (H). Utsjoki, Kevonsuu, 1961 J. Ax. Nannfeldt (UPS).

U. S. S. R.

Murmansk Dist. Voroninsk, 1887 A. O. Kihlman (S). Ponoy, 1906 A. Torckell (H).

Tripleurospermum maritimum ssp. *maritimum* s. lat. \cong ssp. *phaeocephalum* seems to be fairly common in western Finnmark and in Troms county (Fig. 3). It is taller than ssp. *maritimum* s. lat., the ray florets and leaf segments are longer, the involucre bracts are broader with fairly broad scarious margins, etc. This hybrid needs further study, because it is often difficult to separate from ssp. *phaeocephalum* \cong ssp. *subpolare*. From herbarium specimens it seems that the complexity of this group is greatest in Troms county and adjacent areas (e.g. Kilpisjärvi in Finland). In some places perhaps more than two taxa are involved in the hybridization. BENUM (1958) reported on the taxonomic difficulties of this species in the Troms district as well.

Specimen of ssp. *maritimum* \cong ssp. *subpolare* examined:

N o r w a y

Nordland. Dverberg, Nord-Mela, 1941 P. Benum & J. Reiersen (TROM). Björnscinn, Sör-Mela, 1941 P. Benum & J. Reiersen (TROM). Narvik, 1904 Peters & Peterson (S), 1915 M. Engstedt (S).

Troms. Kvaefjord, Storjorda — Grassboda, 1944 J. Reiersen (TROM). Målselven, Storbakken, 1878 J. R. Landmark (TROM). Tromsø: 1903 B. Ström (TROM); N. Langnes, 1902 A. Notö (TROM). Nordreisa: Röielen, 1932 and Nordkjosen, 1930 Y. Mejland (TRH). Helgøy, Torsvåg, Oterholmen, 1925 A. M. Grønlie (TROM).

Finnmark. Hasvik, Ytre Söröy, Dönnestjord, 1962 O. Skifte (TROM). Måsøy, Gjesvaer, 1915 O. Dahl (O).

F i n l a n d

Lapponia enontekiensis. Enontekiö, Kilpisjärvi, Siilastupa, several specimens coll. by J. Montell (TURA).

In middle Norway and possibly around the Gulf of Bothnia ssp. *subpolare* and ssp. *maritimum* s. lat. meet; some herbarium specimens seem to fit to this hybrid, but the material is still too scanty. *Tripleurospermum inodorum* \times *T. maritimum* ssp. *phaeocephalum* is not definitely known, either, since the first-mentioned species seems to be very rare in North Norway and elsewhere in the extreme north of Fennoscandia.

TABLE 1. A comparison of some characters of *Tripleurospermum inodorum* (L.) Schultz Bip., *T. maritimum* (L.) Koch ssp. *maritimum* s. lat., ssp. *subpolare* (Poved.) Hämet-Ahti and ssp. *phaeocephalum* (Rupr.) Hämet-Ahti

	<i>Tripleurospermum inodorum</i> s. lat.		<i>Tripleurospermum maritimum</i>	
		ssp. <i>subpolare</i>	ssp. <i>phaeocephalum</i>	ssp. <i>maritimum</i> s. lat.
Source of material studied	Finland, Sweden, NW Russia	Norway, Sweden, Finland, Russia	N Norway, NW Russia	N Norway, S Finland
Length of stem	up to 40 cm	up to 60 cm	up to 40 cm	up to 30 cm
Number of flowers	up to 20	up to 20	up to 10	up to 10
Diameter of head	3—5 cm	5—6 cm	4—5 (—6) cm	4—5 cm
Length of ray florets	10—14 cm	18—20 cm	14—16 cm	8—14 cm
Number of ray florets	up to 20—23	over 20 (up to 35)	over 20 (up to 35)	over 20 (up to 30)
Form of involucre bracts	narrow, of different length	broad, oblong, of same length	broadly triangular, of different length	fairly narrow, of different length
Scarious margins of involucre bracts	narrow (0.2 mm), whitish or pale brown	broad (0.5 mm), brown (sometimes pale)	very broad (up to 1 mm), brown to black	fairly broad (up to 0.5 mm), brown
Length of involucre bracts	3—5 mm	6 mm	3—6 mm	5—6 mm
Width of involucre bracts	1—1.5 mm	2—3 mm	3—5 mm	1.5—2 mm
Achene	2 (—1) mm	3 (—2) mm	?	2 (—1.5) mm
Pappus	below 0.2 mm, not lobate	over 0.25 mm, 4—5 lobate	?	?
Oil glands	circular	slightly elongated	elongated	elongated

References

- ANDREEV, V. N. 1931: Materialy k flore severnogo Kanina. *Trudy Bot. Muz. AN SSSR* 23: 147—209.
- BENUM, P. 1958: The flora of Troms fylke. *Tromsø Mus. Skrifter* 6: 1—402 + 546 maps.
- BOLOTOVA, B. M., DEDOV, A. A., LASHCHENKOVA, A. N., TOLMACHEV, A. I. & SHOLENI-NOVA, T. P. 1962: *Opredelitel' vysshikh rasteniy Komi ASSR*. 359 p. Moskva — Leningrad.
- CAJANDER, A. K. 1906: A. J. Melan Suomen kasvio. *Suom. Kirjall. Seuran Toim.* 53 (3): 1—764. Helsinki.
- CLAPHAM, A. R., TUTIN, T. G. & WARBURG, E. F. 1962: *Flora of the British Isles*. 2nd ed. 1267 p. Cambridge.
- DAHL, O. 1934: Floraen i Finnmark fylke. *Nytt. Mag. Naturvidensk.* 69: 1—430.
- DOROGOSTAYSKAYA, E. V. 1963: Opyt kharakteristiki ruderal'noy i sornoy rastitel'nosti goroda Vorkuty i ego okrestnostey. *Bot. Zhurn.* 48: 1015—1021.
- EKSTAM, O. 1897: Einige Blütenbiologische Beobachtungen auf Novaja Semlja. *Tromsø Mus. Årshefter* 18: 109—198.
- ERKAMO, V. 1947: I. O. Bergroths botaniska undersökningar i Karelia Pomorica. *Acta Soc. F. Fl. Fenn.* 67 (1): 1—83.
- FELLMAN, N. I. 1869: Plantae vasculares in Lapponia orientali sponte nascentes. *Not. Sällsk. F. Fl. Fenn. Förhandl.* 8: 1—99.
- HÄMET-AHTI, LEENA 1966: Variation of *Juncus gerardii* Lois. in northern Fennoscandia. *Ann. Bot. Fenn.* 3: 391—398.
- HARTMAN, C. J. 1849: *Handbok i Skandinaviens flora*. 5th ed. 24 + 70 + 503 p. Stockholm.
- HIITONEN, I. 1933: Suomen kasvio. *Vanamon kirjoja* 32:1—392.
- HYLANDER, N. 1945: Nomenklatorische und systematische Studien über nordische Gefäßpflanzen. *Uppsala Univ. Årsskr.* 1945 (7): 1—337.
- 1955: Kärllväxter. *Förteckning över Nordens växter* 1:1—175. Lund.
- KALELA, A. 1939: Über Wiesen und wiesenartige Pflanzengesellschaften auf der Fischerhalbinsel in Petsamo Lappland. *Acta Forest. Fenn.* 48 (2): 1—523.
- KAY, Q. O. N. 1965: Chromosome numbers, breeding system and relationships of *Tripleurospermum inodorum* (L.) Schultz Bip. and *T. maritimum* (L.) Koch. In H. VALENTINE (ed.): *Experimental taxonomy of flowering plants*. *Nature* 206 (4985): 671.
- KORCHAGIN, A. A. 1935: Rastitel'nost' morskikh allyuviev Mezenskogo zaliva i Cheshskoi guby (luga i lugovye bolota). (Ref.: Die Vegetation (der Wiesen und Moore) des Meeralluviums der Mesener Bucht und Tscheschkaja Guba). *Trudy Bot. Inst. Akad. Nauk SSSR* (3) 2: 223—344.
- KOTILAINEN, M. J. 1922: Havaintoja dyynikasvillisuudesta eräällä Laatokan hietaranalla. *Luonnon Ystävä* 26: 105—112.
- LEDEBOUR, C. F. 1833: *Flora altaica*. IV. xiv + 335 p. Berolini.
- LÖVE, A. & LÖVE, D. 1961: Chromosome numbers of Central and Northwest European plant species. *Opera Bot.* 5: 1—581.
- LÖVKVIST, B. 1962: Chromosome and differentiation studies in flowering plants in Skåne, South Sweden. *Bot. Not.* 115: 261—287.
- LYNGE, B. 1923: Vascular plants from Novaya Zemlya. *Norweg. Nov. Zemlya Exp.* 1921 13: 1—151 + I—XLVII.
- MANNERKORPI, P. 1946: *Gentiana pneumonanthe* L. ja Käkisalmen aavarantakasvillisuus. (Ref.: *Gentiana pneumonanthe* L. und die Vegetation der offenen Ufer bei Käkisalmi an Ladoga-See). *Ann. Bot. Soc. Vanamo* 21 (3): 1—41.
- MELA, A. J. 1895: Suomen koulukasvio. *Suom. Kirjall. Seuran Toim.* 53 (2): 1—572 + I—LXVIII.

- NEUMAN, L. M. 1882: Studier öfver Skånes och Hallands flora. *Bot. Not.* 1882: 167—178.
- ORLOVA, N. I. 1966: Sem. LXXXV. Slozhnotsvetnye — Compositae P. F. Gmelin. *Flora Murm. Obl.* 5: 185—267.
- PEDERSEN, A. 1961: Kurvblomsternes udbredelse i Danmark (ekskl. Hieracium og Taraxacum). (Summary: The distribution of the Compositae within Denmark, excl. Hieracium and Taraxacum). Danmarks Topografisk-Botaniske Undersøgelse 28. *Bot. Tidskr.* 57: 83—289.
- PERFIL'EV, I. A. 1934: *Flora severnogo kraya*. II. 393 p. Archangel'sk.
- POBEDIMOVA, E. G. 1960: K izucheniyu flory poberezhnyy Belomorskikh ostrovov. (Summary: A contribution to the knowledge of the coastal flora of the White Sea islands). *Bot. Zhurn.* 45: 207—220.
- 1961 a: Zametki po sistematike nekotorykh rodov iz semeystva Compositae (Triba Anthemideae). Notulae systematicae de nonnullis generibus familiae Compositarum (Tribus Anthemideae). *Bot. Mat. Gerb. Bot. Inst. AN SSSR* 21: 343—358.
- 1961 b: Rod 1527. Trekhrebernik — Tripleurospermum Sch. Bip. *Flora SSSR* 26: 157—184.
- 1964: O primorskikh elementakh flory poberezhii Ladozhskogo ozera. (Summary: On the maritime elements of the Lake Ladoga coastal flora). *Bot. Zhurn.* 49: 1402—1407.
- POBEDIMOVA, E. G. & GLADKOVA, V. N. 1966: Floristicheskie issledovaniya na o. Valaame. (Summary: Studies in the flora of the Valaam Island (Lake Ladoga)). *Bot. Zhurn.* 51: 495—507.
- POBEDIMOVA, E. G., STANISHCHEVA, O. N. & DROZDOVA, I. N. 1959: O rasteniyakh, sobrannykh v 1956 g. na poberezh'yakh Barentzeva i Belogo morey. De plantis nonnullis in 1956 anno litoralibus Marium Barenzeviani et Albi collectis. *Bot. Mat. Gerb. Bot. Inst. AN SSSR* 19: 572—594.
- PORSILD, M. P. 1932: Alien plants and apophytes of Greenland. *Medd. Grönl.* 92 (1): 1—85+2 plates.
- RAMSAY, W. & POPPIUS, B. 1904: Bericht über eine Reise nach der Halbinsel Kanin im Sommer 1903. *Fennia* 21 (6): 1—72.
- REGEL, K. 1916: Zametki k flore severnoy Rossii. *Vestn. Russkoy Flory* 2 (3): 129—148.
- 1924: Zur Flora der Halbinsel Kola. *Medd. Soc. F. Fl. Fenn.* 48: 246—250.
- 1927, 1928: Die Pflanzendecke der Halbinsel Kola. I, II. *Lietuv. Univ. Mat. Gamt. Fac. Darby* 3: 135—357, 4: 21—210.
- ROTTGARDT, K. 1956: Morphologische, cytologische und physiologische Untersuchungen von Ökotypen in Schleswig-Holstein. *Beitr. Biol. Pflanzen* 32 (?): 225—278.
- RUPRECHT, F. J. 1845: Flores Samojedorum Cisuralensium. *Beitr. Pflanzenkunde Russ. Reiches* 2: 1—67.
- STANISHCHEVA, O. N. 1965: Rod 21. Trekhrebernik — Tripleurospermum Sch. Bip. *Flora Leningradskoy oblasti* 4: 241—243.
- TOLMACHEV, A. 1926: Contributions to the flora of Vaigats and of the mainland coast of the Yugor Straits. *Trudy Bot. Muz.* 19: 121—154.
- TRAUTVETTER, E. R. 1871: Conspectus florum insularum Nowaja-Semlja. *Acta Horti Petrop.* 1: 43—88.
- TURESSON, G. 1922: The genotypical response of the plant species to the habitat. *Hereditas* 3: 211—350.
- VAARAMA, A. 1953: Cytotaxonomical studies on northern Tripleurospermum forms. *Proceed. Seventh. Int. Bot. Congr. Stockholm* 1950: 279—280.
- WEIMARCK, H. 1963: *Skånes flora*. 720 p. Lund.
- ZINSERLING, G. (TSINZERLING, Yu. D.) 1926: Rasteniya morskikh poberezhnyy na beregakh ozer Severo-Zapada SSSR (Ref.: Die Pflanzen des Meeresstrandes an der Seeufer des nord-westlichen Russlands). *Zhurn. Russk. Bot. Obshch.* 10: 355—374.

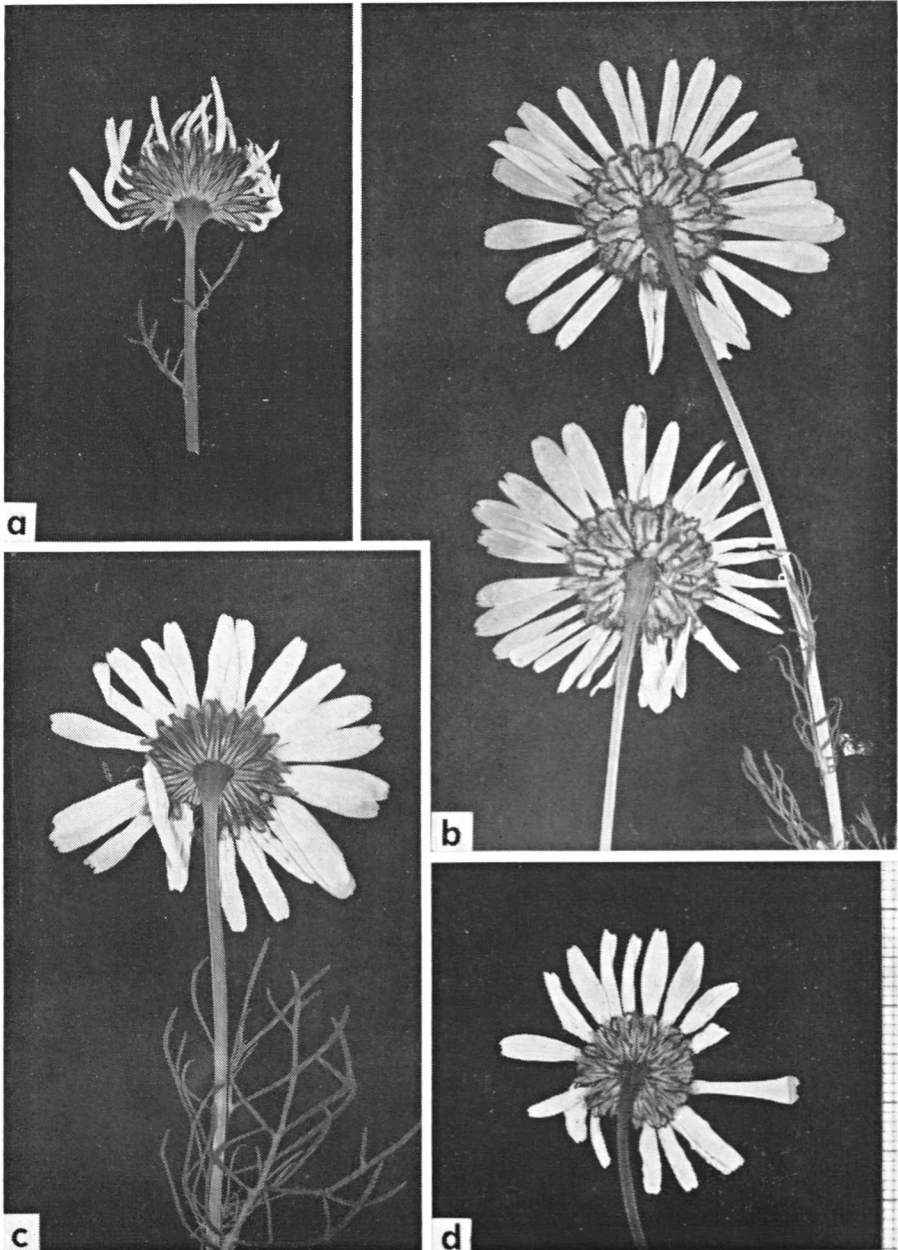


FIG. 4. Involucre of *Tripleurospermum*. — a. *T. inodorum* (L.) Schultz Bip. Finland, Lapponia kemensis, Kittilä, Kaukonen, 1966 L. & T. Ahti (H). — b. *T. maritimum* ssp. *subpolare* (Pobed) Hämet-Ahti. Finland, Lapponia kemensis, Muonio, Muonio village, 1931 J. Montell (TURA). — c. *T. inodorum* × *T. maritimum* ssp. *subpolare*. Finland, Ostrobotnia borealis, Rovaniemi, Lohiniva, 1966 L. & T. Ahti (H). — d. *T. inodorum* × *T. maritimum* ssp. *subpolare*. Finland, Ostrobotnia borealis, Rovaniemi, Tapionkylä, 1966 L. & T. Ahti (H).

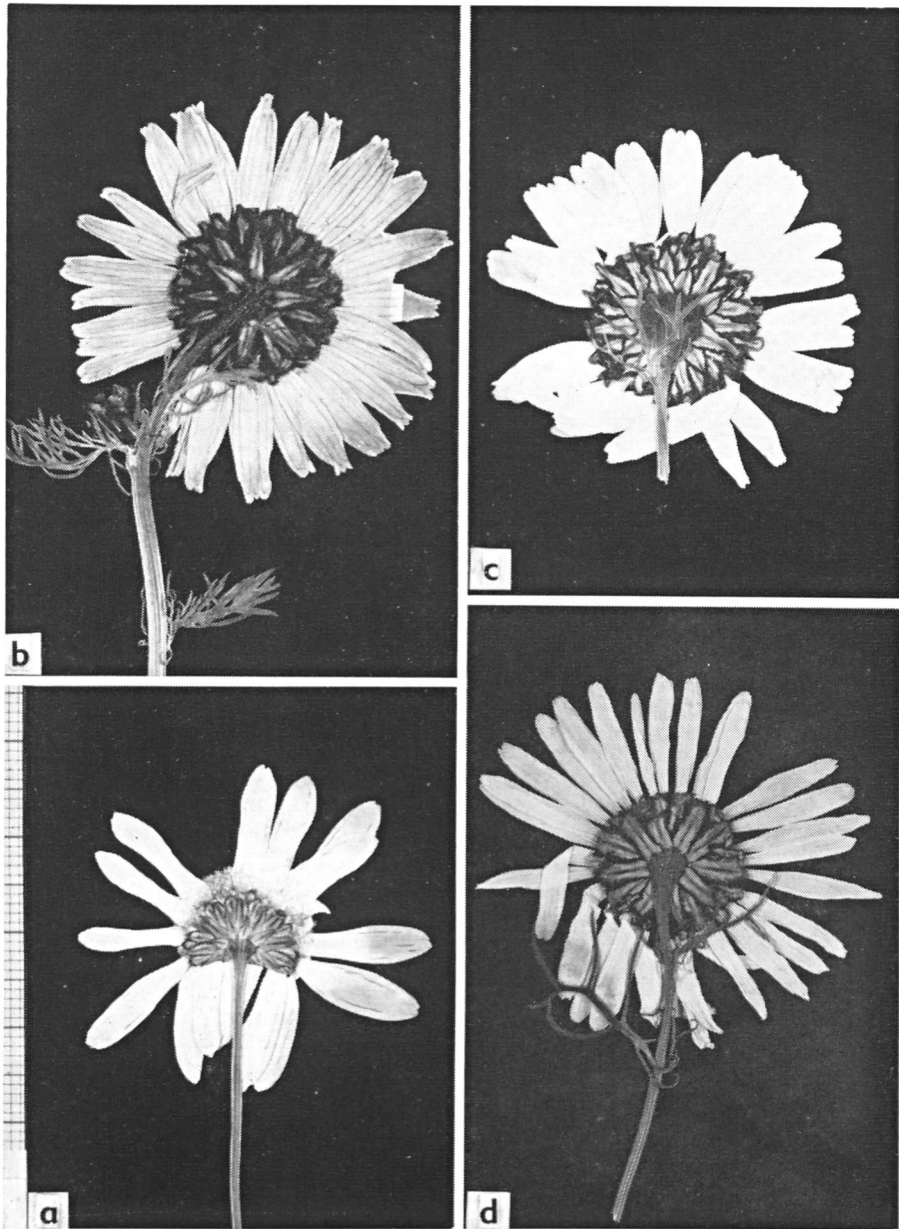


FIG. 5. Involucres of *Tripleurospermum*. — a. *T. inodorum* (L.) Schultz Bip. s. lat. Finland, Lapponia kemensis, Kittilä, Kaukonen, on highway bank, 1966 L. & T. Ahti (H). — b. *T. maritimum* ssp. *phaeocephalum* (Rupr.) Hämet-Ahti. U.S.S.R., Murmansk District, Pechenga, Pummanki, 1935 J. Montell (TURA). — c. *T. maritimum* ssp. *phaeocephalum* \cong ssp. *subpolare*. Finland, Lapponia kemensis, Kittilä, Sirkka, 1966 L. & T. Ahti 22439 (H.). — d. *T. maritimum* ssp. *subpolare* (Pobed.) Hämet-Ahti. Finland, Lapponia kemensis, Muonio, Muonio village, 1966 L. & T. Ahti (H).

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