Status Report on *Artemisia glomerata* var. *subglabra* Hultén

Taxon name: *Artemisia glomerata* Ledeb. var. *subglabra* Hultén

Common name: None

Family: Asteraceae

States/Nations where taxon occurs: Alaska, USA;

Current federal status: Category 2

Recommended federal status: Category 3B

Author of report: Robert Lipkin

Original date of report: 11 March 1994

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Artemisia glomerata* var. *subglabra

I. SPECIES INFORMATION

1. CLASSIFICATION AND NOMENCLATURE

A. Species or infraspecific taxon

1. Scientific name

a. Binomial or trinomial -

Artemisia glomerata Ledeb. var. *subglabra* Hultén

b. Full bibliographic citation -

Hultén, E. 1967. Comments on the flora of Alaska. Arkiv Bot. 2(7):139. Almqvist and Wiksell, Stockholm, Sweden.

c. Type specimens -

Hultén s.n. 12 September 1965, Kagati Lake, Kilbuck Mountains, Alaska, holotype S!, isotype S!

Hultén s.n. 13 September 1965, Cape Newenham, Alaska, paratype S!.

2. Pertinent synonyms -

Artemisia glomerata var. *subglabrata* Hultén -- orthographic variant; in Hultén 1968.

3. Common names -

None

4. Size of Genus - about 300 species.

B. Family classification

1. Family name - Asteraceae
2. Pertinent synonyms - Compositae
3. Common name for family - Composite; Sunflower; Aster

C. Major plant group- Dicotyledoneae

D. History of knowledge of taxon

Artemisia glomerata was described by Ledebour in 1815 from material collected at St. Lawrence Bay in western Chukotka, Russia. The taxon has a Beringian distribution, ranging from the Indigirka R. (with outliers to the south and west along the Okhotsk coast) to the northern Yukon Territory (Maps 2,3). The main part of its range is in northern Chukotka, extending east across St. Lawrence Island, the Bering Straits and the Brooks Range of Alaska. In 1967 Hultén described var. *subglabra* from material he had collected in 1965 at two sites, approximately 180 km apart from each other, in Southwest Alaska- Cape Newenham and Kagati Lake (Map 1). No additional collections are known for this taxon, and no serious attempts to locate the original populations were made until 1992. In 1992 P. Caswell surveyed a limited area around Kagati Lake but reported no plants matching the original material. In 1993 R. Lipkin and M. B. Cook surveyed both

Artemisia glomerata* var. *subglabra

Cape Newenham and Kagati Lake in an attempt to locate the original populations cited in the protologue. Live material and field observations suggested that the material Hultén described as *A. glomerata* var. *subglabra* fit well within the range of variation of *A. globularia* Bess. Herbarium studies later confirmed this view (see below for a full discussion).

E. Comments on current alternative taxonomic treatments

Hultén (1967) originally described *Artemisia glomerata* var. *subglabra* based on collections he made at Cape Newenham and Kagati Lake in the early fall of 1965. Both of these collections were clearly late season and the flowering heads were well past full flower and were faded. These were the only collections of *Artemisia glomerata* that he made in this area, and are disjunct by more than 600 km from the main range of *A. glomerata* (the nearest populations are on St. Lawrence Island, the western Seward Peninsula and the Brooks Range). Hultén's diagnosis differentiated var. *subglabra* from the typical variety by its glabrous or subglabrous leaves. Murray and Lipkin (1987) examined both collections and were struck by the uniformity of the morphology from these two locations over 150 km apart. The leaves and lower stem were sparsely pubescent to nearly glabrous, as was the corolla (in contrast to typical *A. glomerata* with pilose corollas). The basal leaves were ternately and finely divided. Flower color was difficult to determine because of the late collection date, but they appeared dark rather than yellow. Based on this uniform morphology and geography we felt the collections from Cape Newenham and Kagati Lake did indeed represent a distinct taxon and not a trivial variation.

During the 1993 field work done in preparation for the present report, both M. B. Cook and I searched a considerable portion of the terrain at Cape Newenham and, to a lesser degree, at Kagati Lake (Maps 5-8). We were struck by the prevalence of *A. globularia* at sites in both of these areas and by the complete absence of *A. glomerata*, whether the typical form or var. *subglabra*. As the surveys progressed I was further struck by the wide variation in morphology exhibited by *A. globularia*, including variation in degree of pubescence and of division of the leaves. Collections from windswept areas in particular seemed to show gradations that approached "Foliis glabris vel subglabris" as described by Hultén (1967). Collections were made at many of these sites, including specimens showing a complete range of variation in leaf and floral morphology. A comparison of these specimens with both the type material and other collections of *A. glomerata* and *A. globularia* at the herbarium of the University of Alaska, Fairbanks (ALA) revealed that the type material of var. *subglabra* falls well within the range of variation of *A. globularia*. On close examination several of the flowers on the type collection do show the purple to purple-black color and glandular dotted but glabrous corolla typical of *A. globularia* as opposed to the yellow, pilose corollas typical of *A. glomerata*. Leaves on the type material are largely subglabrous, but examination shows several with appressed

white hairs on the lobes and remains of old leaves with tufts of silvery pubescence. The material of *A. globularia* collected at Cape Newenham and especially Kagati Lake shows a continuum of leaf and stem pubescence from the typical silvery gray to nearly glabrous. Leaf morphology of these collections from southwest Alaska shows that *A. globularia* can have more finely divided leaves than is typically seen in northern specimens. It is clear from this morphological comparison, as well as the phytogeographic considerations, that the taxon described by Hultén as *A. glomerata* var. *subglabra* is identical with *A. globularia* Bess. and should be subsumed by it.

2. PRESENT LEGAL AND FORMAL STATUS

A. International

1. Present designated or proposed protection or regulation-
   None
2. Other current formal status recommendations -
   None

B. National

1. United States
   a. Present designated or proposed legal protection or regulation -
      Listed as a Category 2 taxon by the U.S. Fish and Wildlife Service (September 30, 1993 Federal Register 188:51150).
   b. Other current formal status recommendations -
      None
   c. Review of past status -
      Not applicable.

C. State

1. Alaska
   a. Present designation or proposed legal protection or regulation -
   The State of Alaska does not give formal protection to threatened, endangered, or sensitive plants.

3. DESCRIPTION

A. General nontechnical description

Not applicable.

B. Technical description

Artemisia glomerata* var. *subglabra

Originally distinguished from typical *A. glomerata* by its glabrous or subglabrous leaves, but see above for taxonomic discussion.

C. Local Field characters

Not applicable.

D. Identifying characteristics of material which is in inter-state or international trade or commerce

Not applicable.

E. Photographs and/or line drawing -

Illustration:

Murray, D. and R. Lipkin 1987, p. 21.

Photograph:

Alaska Natural Heritage Program, manual files.

4. SIGNIFICANCE OF THE TAXON

A. Natural

This taxon was originally thought to be a narrow Beringian endemic, widely disjunct from the main range of *A. glomerata*. As such, it might have offered valuable insights into the Pleistocene flora and vegetation of Beringia, as well as the development of vicariant taxa and the process of speciation in general. It is now clear that the type material is identical with and subsumed by *A. globularia*, a locally abundant Beringian taxon (see above for taxonomic discussion).

B. Human

Not applicable.

5. GEOGRAPHIC DISTRIBUTION

A. Geographical range

As originally described, this taxon was restricted in distribution to two localities in southwestern Alaska, 180 km apart, Cape Newenham and Kagati Lake.

B. Precise occurrences

1. Populations currently or recently known extant:

001 KAGATI LAKE SITE

(USA: Alaska: Unorganized Borough U.S.G.S. GOODNEWS BAY D3 1:63,360 Topographic map quadrangle; approximate location, lat. 59 45 --N. long. 160 07

--W.)

Kagati Lake (in the Kilbuck Mts., Southwest Alaska) is the only description of the location given on the herbarium label. It is unclear exactly where Hultén made his collection, but it was likely in gravel substrate on one of the knolls near the lake or in the alpine tundra on the ridges east of the lake. Locus classicus.
Elevation range: approximately 340m.
Date last observed :1965-09-12

002 CAPE NEWENHAM SITE

(USA: Alaska: Unorganized Borough U.S.G.S. HAGEMEISTER ISLAND C7 1:63,360 Topographic map quadrangle; approximate location, lat. 58 39 --N. long. 162 05 --W.)

Cape Newenham (Southwest Alaska) is the only description of location on the herbarium label. It is not clear where Hultén collected, but it was likely near either the Air Force site or, more likely (given his use of a small float plane), Security Cove.
Elevation range: unknown
Date last observed:1965-09-13

2. Populations known or assumed extirpated:
   None
3. Historically known populations where current status not known:
   None
4. Locations not yet investigated believed likely to support other possible extant natural occurrences:
   None
5. Reports having ambiguous or incomplete locality information:
   See 001 and 002, above.
6. Locations known or suspected to be erroneous reports:
   None
7. Locations of potential habitat checked but plants not found:
   See appended maps for areas surveyed. This taxon has been subsumed by *A. globularia*.

C. Status and location of presently cultivated material -
None known

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D. Biogeographical and phylogenetic history -

Not applicable.

6. GENERAL HABITAT DESCRIPTION

[Because *A. glomerata* var. *subglabra* is treated here as a synonym for the widespread Beringian taxon *A. globularia*, the following remarks on habitat refer to the general habitat of *A. globularia* at the two locations referred to in the protologue: Cape Newenham and Kagati Lake.]

A. Concise statement of general environment and habitat -

Gravel or sandy substrate in maritime or alpine tundra communities.

B. Physical characteristics

1. Climate

a. Koppen climate classification -

Type Dfc, Snowy climate with moist winter, no dry season, and cool, short summer; less than four months over 10° C.

b. Regional macroclimate -

See attached climate summary sheets.

c. Local microclimate -

Maritime or moist alpine tundra, with abundant fog or rain and frequent high winds.

2. Physiographic province - (Wahrhaftig, 1965)

Ahklun Mountains.

3. Physiographic and topographic characteristics and edaphic factors -

Windswept fellfields and alpine gravels; generally acidic substrate.

4. Biological Characteristics

001 KAGATI LAKE

Based on an herbarium collection (Hultén s.n. 12 September 1965, S), presumably in gravel substrate near the lake or on in alpine fellfield. Collections closely matching this taxon were made in the alpine of the Ouchklune Range east of the lake; these collections are identical with *A. globularia*, which is common throughout the area. The Ouchklune Range sites were in windswept solifluction areas of coarse rubble rock stripes with patches of dwarf shrub heath. Other common species included:

Carex microchaeta ssp. *nesophila*
Salix rotundifolia
Oxytropis bryophila
Minuartia macrocarpa

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Rhodiola integrifolia
Saxifraga bronchialis
Anemone narcissiflora
Hierochloe alpina
Festuca brevissima
Turfy patches contained *Salix arctica* and *Dryas octopetala*.

002 CAPE NEWENHAM

Based on an herbarium collection (Hultén s.n. 13 September 1965, S), presumably in sand or gravel substrate. Collections approaching this taxon were made from several locations on deflation scars and alpine fellfield; these collections are well within the range of variation of *A. globularia*, which is common throughout the area. Other common species at these sites included:
Carex microchaeta ssp. nesophila
Hierochloe alpina
Luzula arcuata ssp. unalaschcensis
Lycopodium alpinum
Salix rotundifolia
Rhodiola integrifolia
Diapensia lapponica
Antennaria monocephala

7. POPULATION BIOLOGY OF TAXON

A. General Summary -

A. glomerata var. *subglabra* is here taken as synonymous with *A. globularia*, an abundant to dominant member of alpine and maritime tundra and heath communities at both Kagati Lake and Cape Newenham.

B. Demography -

001 KAGATI LAKE

No information about original collection site; 6 plants originally collected. *A. globularia* is abundant in this area.

002 CAPE NEWENHAM

No information about original collection site. *A. globularia* is abundant in this area.

C. Phenology -

A. globularia flowers early at most sites, shortly after they are snow free.

D. Reproductive biology

1. Types of reproduction and discussion
2. Pollination -
   Unknown
3. Seed dispersal -
   Unknown
4. Survival and mortality of plants-
   Unknown

8. POPULATION ECOLOGY

General summary -

Unknown

9. CURRENT LAND OWNERSHIP AND MANAGEMENT RESPONSIBILITY

Both of the sites noted in the protologue (Kagati Lake and Cape Newenham) are within the Togiak National Wildlife Refuge managed by the U.S. Fish and Wildlife Service. A portion of Cape Newenham contains an Air Force radar facility.

10. MANAGEMENT PRACTICES AND EXPERIENCE

There is some development and disturbance associated with the radar facility at Cape Newenham. Kagati Lake receives some recreational use, especially by commercially guided fishing trips floating the Kanektok River. Most of this use is concentrated at the northwest end of the lake.

11. EVIDENCE OF THREATS TO SURVIVAL

A. Present or threatened destruction, modification, or curtailment of habitat or range -

None

B. Other natural or manmade factors -

None

II. ASSESSMENT AND RECOMMENDATIONS

12. GENERAL ASSESSMENT OF VIGOR

Not applicable.

13. RECOMMENDATIONS FOR LISTING OR STATUS CHANGE

Based on field surveys and herbarium studies (see taxonomic discussion above) it is now

clear that the taxon described by Hultén as *A. glomerata* var. *subglabra* is identical with *A. globularia* Bess. My recommendation, therefore, is that the status of this taxon be changed to Category 3B.

14. RECOMMENDED CRITICAL HABITAT

Not applicable.

15. CONSERVATION/RECOVERY RECOMMENDATIONS

A. General conservation recommendations

None

B. Monitoring activities and further studies recommended-

None

16. INTERESTED PARTIES

Office of Endangered Species, U. S. Fish and Wildlife Service.

III. INFORMATION SOURCES

17. SOURCES OF INFORMATION

A. Publications

1. References cited in report:

Caswell, P. 1993. Report on 1992 botanical activity. Unpublished report to US Fish and Wildlife Service, Togiak National Wildlife Refuge.

Hultén, E. 1966. Contributions to the knowledge of flora and vegetation of the Southwestern Alaskan mainland. Svensk Botanisk Tidskrift 60(1):175-189.

Hultén, E. 1967. Comments on the flora of Alaska. Arkiv Bot. 2(7):1-47. Almqvist and Wiksell, Stockholm, Sweden.

Hultén, E. 1968. Flora of Alaska and neighboring territories. Stanford Univ. Press, Stanford, CA. 1,008 p.

Murray, D.F. and R. Lipkin. 1987. Candidate threatened and endangered plants of Alaska with comments on other rare plants. Univ. of Alaska Museum, Fairbanks, AK. 76 p.

B. Museum collections consulted -

Hultén s.n. 12 September 1965, Kagati Lake, Kilbuck Mt's, Alaska, holotype S! isotype S!

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Hultén s.n. 13 September 1965, Cape Newenham, Alaska, S!.

C. Fieldwork-

In 1992 Phil Caswell surveyed areas around Kagati Lake from 13-30 June, principally Ata-ai-ach Mountain and the peninsula between Kagati and Pegati Lakes, but also making a brief survey of the mountains east of the Lake.

In 1993 Mary Beth Cook and Robert Lipkin surveyed both Cape Newenham (13-20 July) and Kagati Lake (21-25 July) in preparation of this report. See appended maps for survey routes. Aaron Archibeque, Refuge manager of the Togiak Refuge and his staff (especially Mike Hinkes and Lisa Haggblom) were indispensible in making these surveys possible and their help is gratefully acknowledged.

D. Knowledgeable individuals

R. Lipkin, Alaska Natural Heritage Program, Anchorage, AK.
D.F. Murray, Herbarium, Univ. Ak. Fairbanks, AK.

18. SUMMARY OF MATERIALS ON FILE

All materials used to prepare this report are on file at the Alaska Natural Heritage Program. Files are periodically updated to reflect current knowledge.

IV. AUTHORSHIP

19. INITIAL AUTHORSHIP

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20. MAINTENANCE OF STATUS REPORT

U.S. Fish and Wildlife Service - Region 7
1011 East Tudor Rd.
Anchorage, Alaska 99503.

V. NEW INFORMATION

21. RECORD OF REVISION -

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VI. APPENDIX

A. Maps
B. Photographs

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APPENDIX A

Distribution and Survey Maps

1. Range of *Artemisia glomerata* var. *subglabra*
2. Range of *Artemisia glomerata*
3. Range of *Artemisia glomerata* in Asia
4. Range of *Artemisia globularia*
5. Cape Newenham and areas searched
6. Cape Newenham and areas searched (CIR)
7. Kagati Lake and areas searched
8. Kagati Lake and areas searched (CIR)

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APPENDIX B

Photographs

1. Cape Newenham, looking west from Security Cove.
2. Cape Newenham, looking east from Radar Mt.
3. Cape Newenham, Jagged Mt. from east, above "Slipbreak Lake".
4. Kagati Lake, looking west from Ouchklune Range.
5. North end of Kagati L., looking east.
6. Ouchklune Range, east of Kagati L., looking east to Outuchiwena Mt.
7. Typical windswept fellfield alpine site in Ouchklune Range, with *Artemisia globularia* showing similar morphology to holotype of *A. glomerata* var. *subglabra*.
8. *Artemisia globularia* from site in photo 7 showing subglabrous leaves and stem and old yellow-brown flowering heads.
9. *Artemisia globularia* from site in photo 7 showing subglabrous leaves and stem and old yellow-brown flowering heads.