STATUS REPORT

STROGANOWIA TIEHMII

Prepared by:

Arnold Tiehm
P.O. Box 12278
Reno, NV 89510
(702) 348-1483

Arnold Tiehm
8 Sep 1989

TABLE OF CONTENTS

I. Classification and Nomenclature.....1
- Scientific Name
- Original Publication
- Type Specimen
- Synonyms
- Common Name
- Family
- Plant Group
- Taxon History

II. Present Legal Status.....1
- International
- Federal
- State

III. Description.....2
- Non-technical
- Technical
- Field Characters
- Photographs and Line Drawings

IV. SIGNIFICANCE OF TAXON.....3
- Natural
- Human

V. GEOGRAPHICAL DISTRIBUTION.....6
- Geographical Range
- Precise occurrences
- Biogeography

VI. HABITAT DESCRIPTION.....13
- Vegetation Type
- Phenology
- Hybridization
- Reproductive Biology
- Demography
- Aspect
- Slope
- Elevation
- Associated Plants
  - Trees
  - Shrubs
  - Succulents
  - Herbaceous Plants
- Evidence of Threats to Survival
- Disease and Predation
- Geology
- Land Ownership

VII. GENERAL ASSESSMENT.....16

VIII. LITERATURE CITED.....16

APPENDICES

Appendix A - U.S.G.S. topographic maps covering the distribution of Stroganowia tiehmii.
Appendix B - Herbarium specimens of Stroganowia tiehmii.

LIST OF FIGURES

1. Photographs of Stroganowia tiehmii and its habitat.....4
2. Line drawing of Stroganowia tiehmii.....5
3. Distribution of Stroganowia tiehmii.....7
4. Distribution of Stroganowia tiehmii.....8
5. Distribution of Stroganowia tiehmii.....9
6. Distribution of Stroganowia tiehmii.....10
7. Distribution of Stroganowia tiehmii.....11
8. Distribution of Stroganowia tiehmii.....12

1. CLASSIFICATION AND NOMENCLATURE

Scientific Name

Stroganowia tiehmii Rollins.

Original Publication

Rollins, R.C. 1982. A new species of the Asiatic genus Stroganowia (Cruciferae) from North America and its biogeographic implications. Syst. Bot. 7(2): 214-220.

Type Specimen

U.S.A. Nevada., Lyon Co., Virginia Range, southeast of Talapoosa Peak, T19N, R24E, S34, 5900 ft., 1 Jun 1980, Tiehm, Almeda, & Williams 5783 (Holotype: GH; Isotypes: CAS, K, MO, NY, RENO, RSA, US, UTC).

Synonyms

None.

Common Name

Tiehms Stroganowia.

Family

Brassicaceae (Cruciferae), Mustard Family.

Plant Group

Class: Magnoliopsida (Dicotyledons).
Subclass: Dilleniidae.
Order: Capparales.

Taxon History

Stroganowia tiehmii was first collected by Tiehm et al. in 1980 from the Talapoosa Peak area. The following year Rollins made a collection of basal leaves and dried stems from the previous year. Due to scarcity of precipitation the plants did not flower at the type locality in 1981. In 1983 Tiehm discovered a second population near the Ramsey road about five miles west-southwest of the type locality. In 1985 Jack Major, in a letter to Reed Rollins, reported a population from Table Mountain just north of the Carson River and this locality was confirmed by Tiehm and Knight in 1986. This locality is about 15 miles south-southwest of the type locality. During this search many new populations were found, one in the Ramsey Road area and the rest in the Talapoosa Peak area.

II. PRESENT LEGAL STATUS

International

None.

Federal

Listed as a category 2 plant, "Taxa for which information now in possession of the service indicates that proposing to list them as endangered or threatened species is possibly appropriate," in Federal Register 50 CFR, part 17, page 53, 27 Sep 1985.

State

The Northern Nevada Native Plant Society rare plant meeting of 13 Feb 1989 listed Stroganowia as a category C2 plant, "candidate, category 2 - U.S. Fish & Wildlife Service needs more information before listing is possible."

III. DESCRIPTION

Non-technical

Smooth perennial from a stout root which becomes branched with age and is covered with old leaf bases; stems one to 12, up to 2 ft tall, each ending in an assemblage of flowers; basal leaves with stalks, thick, entire, to 6 in long and 2 in wide; stem leaves sessile, reduced upwards; sepals pale green-yellow, 1/10 in long; petals cream to greenish-yellow, spreading, to 1/4 in long and 1/10 in wide; flower stalks spreading to ascending, to 3/4 in long; fruit oval to nearly round, to 1/2 in long and 1/4 in wide, compressed contrary to the partition, narrowed at both ends; styles minute, stigmas unlobed; seeds one per locule, pendulous, to 1/6 in long.

Technical

Perennial, glabrous throughout, 4-8 dm tall; stems one to 12 from a cluster of leaves and a thick crown of old leaf-bases, terete, branched above, each branch terminating in a racemose inflorescence; basal leaves petiolate, thick, coriaceous, blade narrow to broadly, oblanceolate, entire, obtuse above, gradually narrowed to a slender petiole, blade 2-5 cm wide, total leaf length 10-20 cm, midvein prominent to above middle of blade; cauline leaves few, lower similar to basal leaves but cuneate or with a short petiole, those above ultimately reduced to cuneate bracts; inflorescences paniculately arranged with many divaricately ascending to more widely spreading branches, the lowermost branches subtended by bracts; sepals erect, broadly oblong, rounded on back, pale greenish-yellow, scarious above, nonsaccate, 2-3 mm long, ca. 2 mm wide; petals cream to greenish-yellow colored, widely spreading to slightly recurved at anthesis, 5-7 mm long, blade broadly obovate to nearly orbicular, 2.5-3 mm wide, abruptly narrowed to a slender claw; stamens erect, nearly equal, single stamens only slightly shorter than paired stamens, filaments slender, 3.5-4.5 mm long, anthers ca. 1 mm long; glandular tissue nearly continuous above petal bases, subtending filament bases and with

intrusions on both sides; fruiting pedicels divaricately ascending, straight, 1-2 cm long, very gradually and only slightly expanded toward summit; siliques nearly rhomboid to broadly obovate in outline, turning purplish with age, 9-12 mm long, 4-5 mm wide, compressed contrary to septum, gradually narrowed to a stout gynophore 0.5-1 mm long, valves thick and leathery, flattened toward margins and with a thick costa at back of fold; replum rhomboidal in outline, narrowed to an acute angle above and below, the margin forming a rib on the siliques; septum complete, non-costate, cells irregularly isodiametric; styles 0.5-1 mm long; stigma circular, unlobed, barely exceeding style in diameter; ovules one in each loculus, funiculi arising at apex of the replum; seeds oblong, plump, wingless, 3.5-4 mm long, ca. 3 mm wide; radicle exceeding cotyledons, pointed; cotyledons obliquely accumbent (Rollins, 1982).

Field Characters

Stroganowia tiehmii is easily recognized by its basal rosettes of green, shiny, entire leaves, erect stems, greenish-cream to cream colored petals, and nearly round fruit which are compressed contrary to the partition. It is a member of the Lepidieae tribe and is broadly related to Lepidium. In the area of known distribution of Stroganowia tiehmii there are no other mustards with the above characters. Species of ' Lepidium known from this area are annuals or biennials and have lobed to dissected leaves and much smaller pods. The exception to this is the introduced Lepidium latifolium which has white flowers, does not form basal rosettes, is quite leafy up the stem, has rhizomes, flowers in the summer and fall, and forms large colonies. Lepidium latifolium usually occurs on ditch banks, in cultivated fields, on roadsides, or in disturbed areas. Due to its rhizomatious habit it spreads rapidly and in the future could possibly establish itself in the vicinity of Stroganowia tiehmii.

Photographs and Line Drawings

Photographs of Stroganowia tiehmii and its habitat (including those in figure 1) are on file with The Nature conservancy and some slides are in the personal collection of Margaret Williams. A photograph of the holotype, housed at GH, is contained in Rollins (1982). Figure 2 is a copy of an illustration drawn by Jeanne Janish.

IV. SIGNIFICANCE OF TAXON

Natural

Stroganowia tiehmii is the only known North American species of this otherwise Asian genus. The floras of Asia and North America are quite similar and possess many genera in common. Most of these species in common are either

Figure 1. Photographs of Stroganowia tiehmii and its habitat taken 10 May 1989 in the Talapoosa Peak area of Lyon Co., Nevada. Photographs by Arnold Tiehm.

Figure 2. Line drawing of Stroganowia tiehmii drawn from Tiehm 7058

circumpolar or circumboreal genera (hence high elevation plants in the lower latitudes) or are genera which are quite widespread (i.e. Artemisia). Stroganowia is a genus of foothill or low mountain regions and there are no known populations providing geographical links between North America and Asia. There are no other known examples of this kind of complete disjunction.

Human

None known.

V. GEOGRAPHICAL DISTRIBUTION

Geographical Range

Stroganowia tiehmii is only known from the Virginia Range and Table Mountain in Lyon County, Nevada. These two areas are within the Reno Section of the Great Basin Division of the Intermountain Flora Region (Holmgren, 1972).

Precise Occurrences

Stroganowia tiehmii is known to occur in three general regions, Table Mountain between the Pine Nut Mountains and the Virginia Range, near the road from highway 50 to Ramsey, and in the Talapoosa Peak area. The Ramsey and Talapoosa Peak areas are both in the Virginia Range. The following sites are placed in these three broad geographical categories.

Table Mountain. T16N, R23E, S3-4. 4900 ft. Two small populations were found here in 1986 together consisting of over 100 individuals (figure 3). These populations are vouchered by Tiehm & Knight 10524.

Ramsey Road. T18N, R23E, Sl, 11-12. 5050 - 5300 ft. Two populations consisting of over 500 individuals each (figure 4) were found, one in 1983 and the other during this 1989 survey. These sites are vouchered by Tiehm 7735 and 11964.

Talapoosa Peak Area. T18N, R24E, S3-4; T19N, R24E, S13-16, 23-27, 34-36; T19N, R25E, S30-31. 4850-6000 ft. Plants in the Talapoosa Peak area occur in 37 distinct populations (figures 5-8). Five are very extensive populations and are detailed below. The type locality is along the road to Talapoosa Peak in T19N, R24E, S34 (see figure 5). It consists of over 600 plants located mostly above the road. There is a pole line and an old pole line road through the site which has had little visible effect on the population. The plants occur on the road cuts of the main road and appear quite healthy. There is a large continuous population starting in T19N, R24E, S26 which runs through S25 and into T19N, R25E, S30 and 31 (figures 5-6). This population is estimated conservatively to be 50,000+

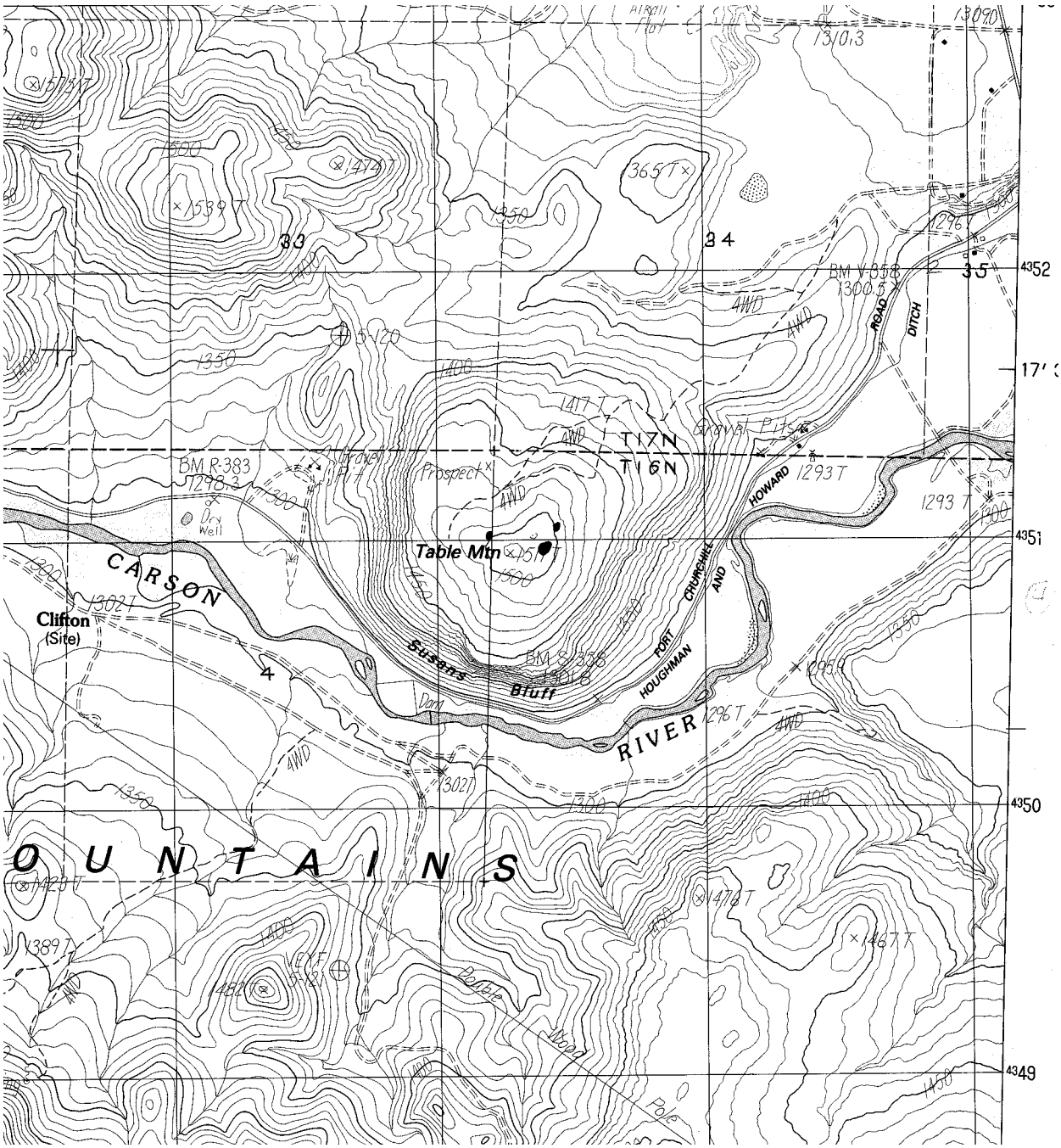

Figure 3. Southeast portion of Misfits Flat, 7.5 minute quadrangle, provisional edition, 1985. Shown are parts of T16-17N and R23E. The distribution of Stroganowia tiehmii is shown in black.

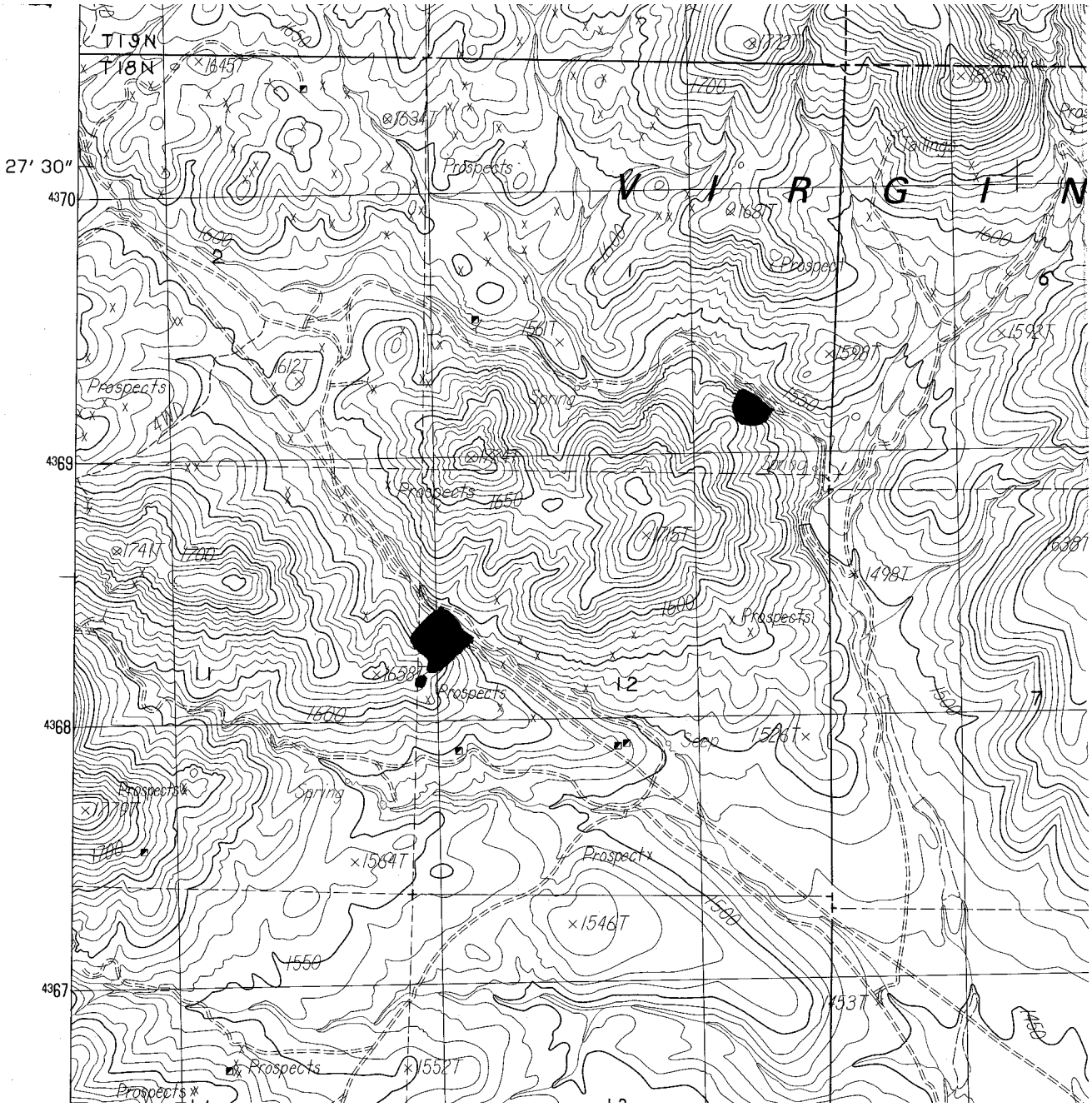

Figure 4. West-central portion of Stockton Well, 7.5 minute quadrangle, provisional edition, 1985. Shown are parts of T18-19N and R23-24E. The distribution of Stroganowia tiehmii is shown in black.

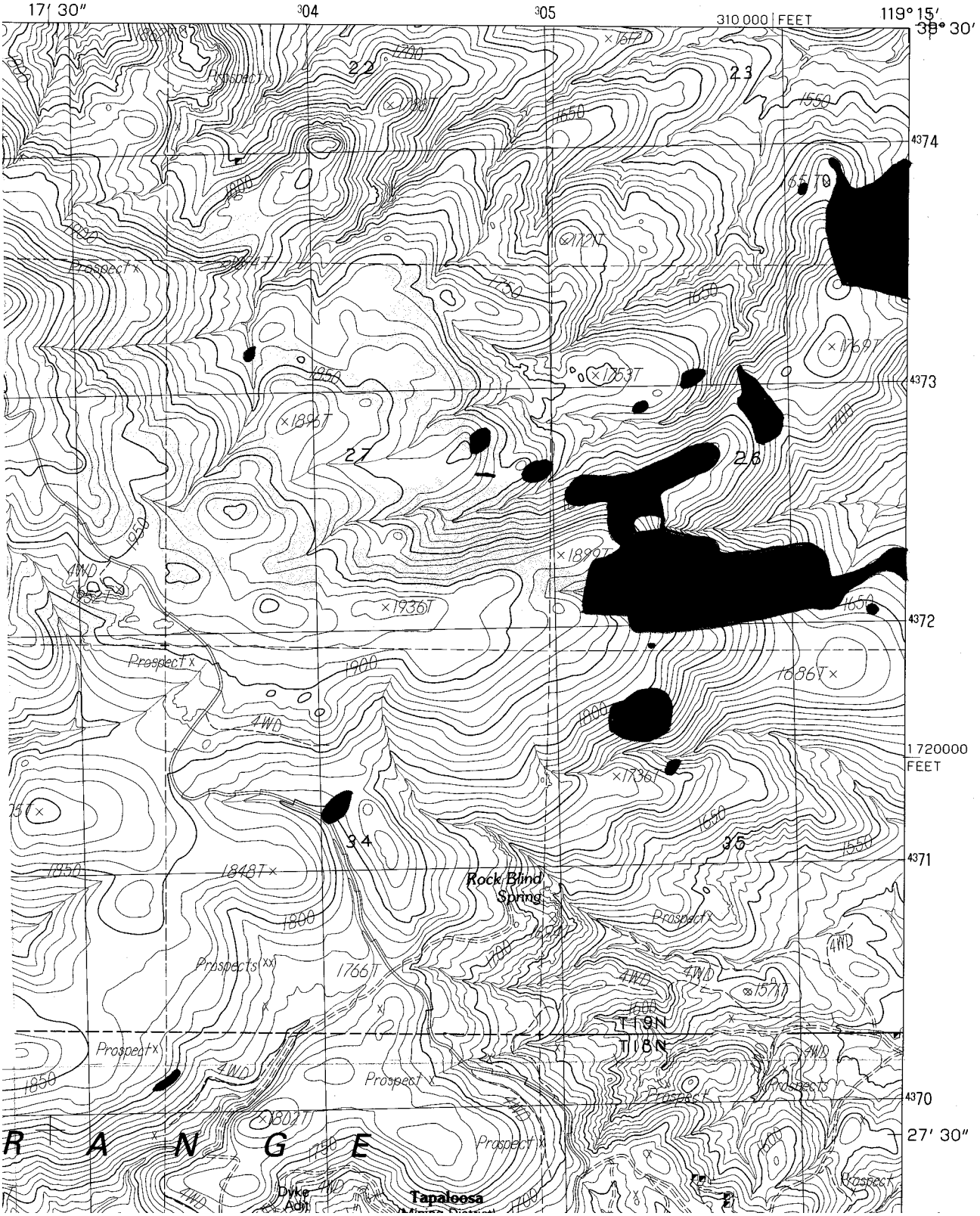

Figure 5. Northeast corner of Stockton Well, 7.5 minute quadrangle, provisional edition, 1985. Shown are parts of T18-19N and R24E. The distribution of Stroganowia tiehmii is shown in black.

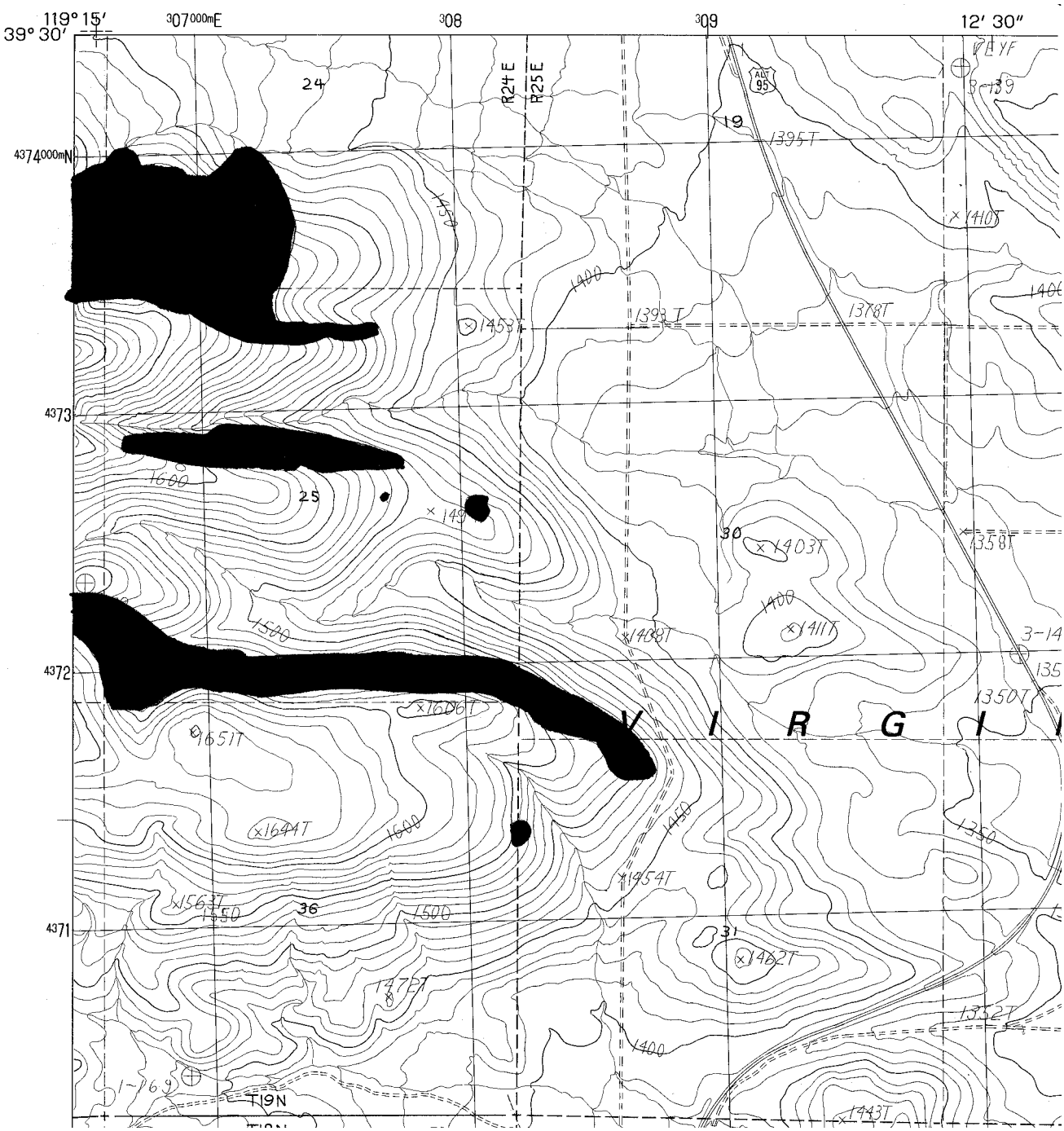

Figure 6. Northwest corner of Silver Springs North, 7.5 minute quadrangle, provisional edition, 1985. Shown are parts of T18-19N and R24-25E. The distribution of Stroganowia tiehmii is shown in black.

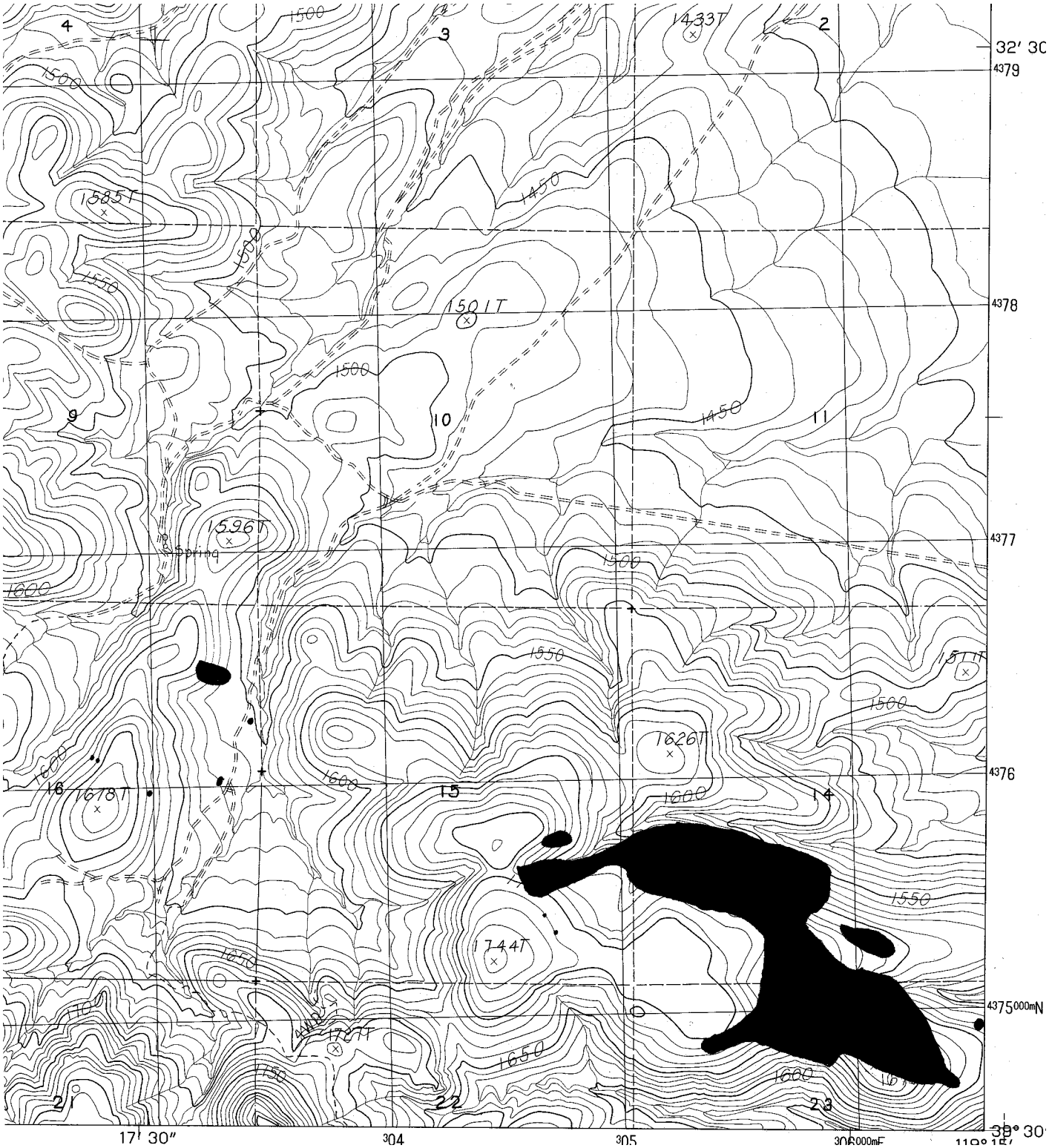

Figure 7. Southeast corner of Fernley West, 7.5 minute quadrangle, provisional edition, 1985. Shown are parts of T19N, R24E. The distribution of Stroganowia tiehmii is shown in black.

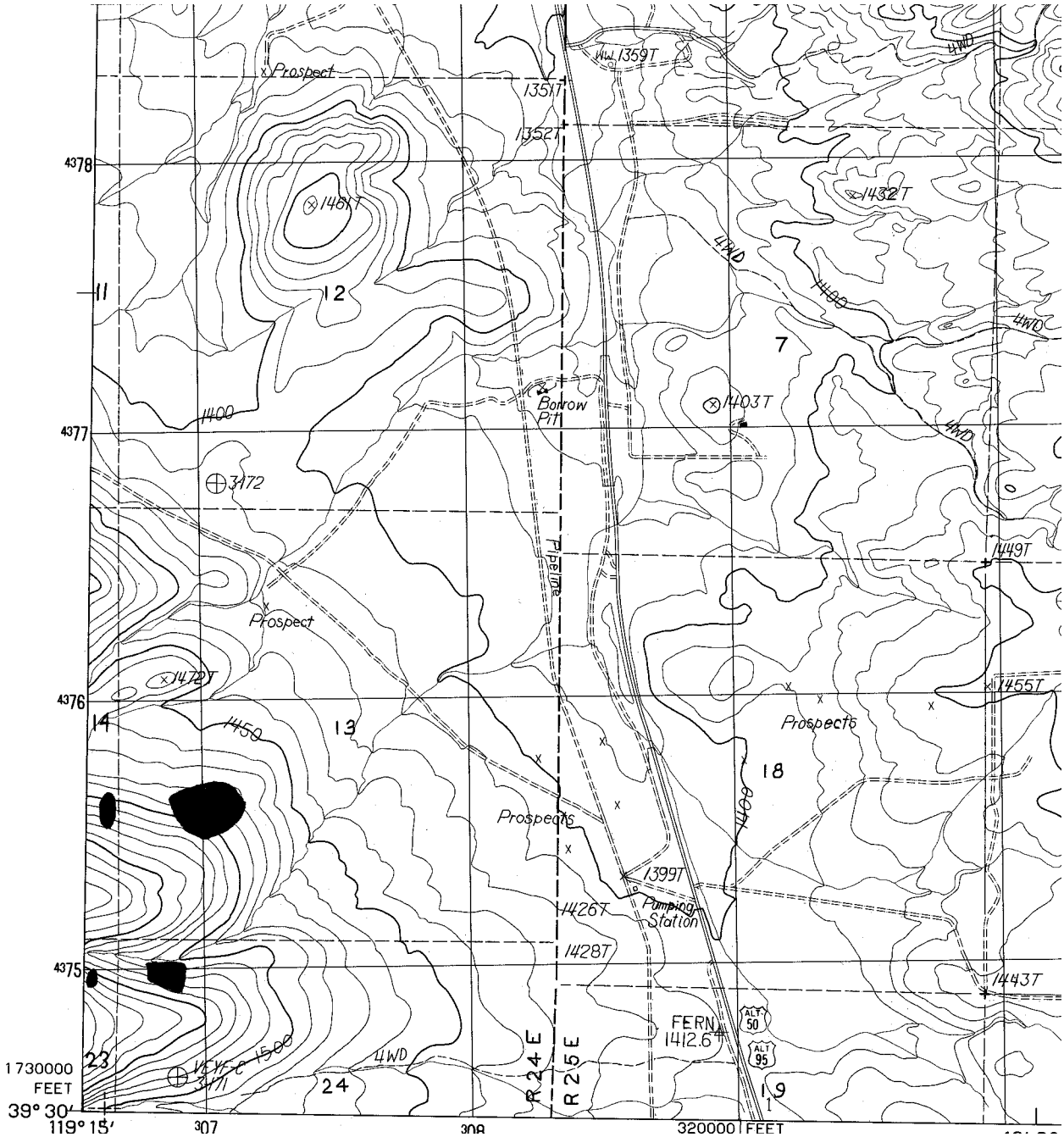

Figure 8. Southwest corner of Fernley East, 7.5 minute quadrangle, provisional edition, 1985. Shown are parts of T19N and R24-25E. The distribution of Stroganowia tiehmii is shown in black.

individuals. Another large population is located in T19N, R24E, S23 and 26 (figures 5-6). This population is estimated conservatively at 20,000+ individuals. A third large population is located in T19N, R24E, S25 (figure 6). This population is estimated conservatively at 10,000+ individuals. A fourth large population is located in T19N, R24E, S14, 15, and 23 (figure 7). This population is estimated conservatively at 30,000+ individuals. The type locality is vouchered by Tiehm et al. 5783.

Biogeography

Stroganowia tiehmii is the only known North American occurrence of this otherwise Asian genus. Its relationship within the genus remains unknown, awaiting a comprehensive study of the Asian species.

VI. HABITAT DESCRIPTION

Vegetation Type

Stroganowia tiehmii is found most often within the sagebrush (Artemisia tridentata) zone. In one instance it was associated with sagebrush and Utah Juniper (Juniperus osteosperma) and at its lowest elevational occurrence it was with shadscale (Atriplex confertifolia) and small-leaved brittlebrush (Brickellia microphylla). Within the higher elevation sagebrush areas, Stroganowia tends to occur most abundantly near or in rocky screes or in clayey soils at the base of rock outcrops. The plant's habitat occurs in pockets surrounded by sagebrush, however the sagebrush is not dominant on these sites.

Phenology

In the spring of 1989 Stroganowia tiehmii was in full flower in late April. In past years I have observed the plant in flower and fruit on the first of June and plants with just a couple of flowers left in mid-June.

Hybridization

None observed.

Reproductive Biology

Not known.

Demography

Population estimates are conservative and were made by counting small areas, about 100 square meters, and then extrapolating to the total population size. Most of the small populations contained at least 100 plants while the largest population was estimated at 50,000+. The total number of plants found was greater than 125,000.

Aspect

Plants were found on all slope aspects, but north to southeast aspects were most common.

Slope

Plants were found on slopes of 5 to 45 percent.

Elevation

Plants were found at elevations from 4850 to 6000 ft.

Associated Plants

Stroganowia tiehmii is known to occur in association with the following plants:

Trees

Juniperus osteosperma

Shrubs

Artemisia tridentata
Atriplex confertifolia
Brickellia microphylla
Chrysothamnus viscidiflorus
Grayia spinosa
Tetradymia glabrata

Succulents

Opuntia polyacantha

Herbaceous Plants

Amsinckia tessellata
Arabis puberula
Astragalus obscurus
Balsamorhiza hookeri var. neglecta
Bromus tectorum
Crepis acuminata
Delphinium andersonii
Descurainia pinnata var. filipes
D. sophia
Erigeron aphanactis
Eriogonum ovalifolium var. nevadense
E. umbellatum
Erodium cicutarium
Hymenoxys cooperi var. canescens
Lomatium nevadense var. nevadense
Microseris linearifolia
Microsteris gracilis
Phlox longifolia
Poa secunda
Sitanion hystrix
Zigadenus paniculatus

Evidence of Threats to Survival

At most locations there are mining claim markers within or

near the populations of Stroganowia tiehmii. In some cases there are also exploratory pits present. Within a mile of the Ramsey occurrences there are new mining exploration roads, but the evidence of exploration activity seems to be concentrated on a substrate different from that on which Stroganowia occurs. There is a large scale mining operation in the Talapoosa mining district in and about T18N, R24E, S3 which is just across the canyon from one small population of Stroganowia. Again, the activity is on a different substrate than that on which Stroganowia occurs. If the main road to the relay towers and Talapoosa peak is ever widened, it would affect the type population. However, few plants would actually be destroyed.

Disease and Predation

Occurring within the range of Stroganowia tiehmii are feral horses, mule deer, and rodents. I saw no evidence of grazing or browsing of Stroganowia tiehmii. It is unknown if any animals utilize the seeds. Plants in the mustard family are known for being attacked by rusts and insects but I saw no evidence of this. Stroganowia tiehmii produces volatile oils which is reminiscent of a strong cauliflower smell and these oils may make the plant unpalatable.

Geology

The following geological information is taken directly from Moore (1969).

All of the Talapoosa Peak populations are on two substrates, basalt and sedimentary rocks. **Basalt -** "Predominantly thin lava flows with interbeds of scoriaceous basalt breccia and diatomaceous sediments. Includes McClellen Peak and Lousetown formations. In part younger than older alluvium." **Sedimentary rocks -** "Lacustrine and fluvatile sediments, sandstones, mudstones, shale, marl, diatomite, limestone, and calcareous tufa. Interbedded tuffaceous rocks, lava flows, and breccias. Includes Truckee formation and Aldrich Station, Coal Valley, and Morgan Ranch formations of Axelrod (1956)."

The Ramsey sites are also on two substrates, Hartford Hill rhyolite tuff and andesitic rocks. **Hartford Hill rhyolite tuff -** "Widespread biotite rhyolite pumice tuff breccia and welded tuff. Welded, block glassy basal layer is locally present." **Andesitic rocks -** "Flow breccias, lava flows, and agglomerates with interbedded sediments. Locally includes basaltic and rhyolitic rocks. Includes Alta and Kate Peak formations, and Chloropagus formation of Axelrod (1956)."

The Table Mountain sites are entirely on basalt.

Land ownership

The Table Mountain and Ramsey Road populations are all on private land. Most of the Talapoosa Peak populations are also on private land with the exceptions being T19N, R24E,

S24 and 36 which are government lands administered by the BLM.

VII. GENERAL ASSESSMENT

Stroganowia tiehmii is known from 37 populations containing 125,000+ plants. The only foreseeable threat to their continued existence is large-scale mining operations. Such large-scale operations are possible and existing activities should be monitored and checked for expansion. Despite the numerous populations found during this survey Stroganowia tiehmii remains a geographically restricted species. In lieu of any serious threats, I recommend that Stroganowia tiehmii remain on a "species under consideration" list.

VIII. LITERATURE CITED

Axelrod, D.I. 1956. Mio-Pliocene floras from West-central Nevada. Univ. Calif. Publ. Geol. Sci. 33: 1-322.

Holmgren, N.H. 1972. Plant geography of the Intermountain region, pp 77-161. In: A. Cronquist, A.H. Holmgren, N.H. Holmgren & J.L. Reveal. Intermountain Flora 1: 1-270. Hafner Publishing Co., New York, NY.

Moore, J.G. 1969. Geology and mineral deposits of Lyon, Douglas, and Ormsby counties, Nevada. Nevada Bur. Mines Bull. 75: 1-45.

Rollins, R.C. 1982. A new species of the Asiatic genus Stroganowia (Cruciferae) from North America and its biogeographic implications. Syst. Bot. 7(2): 214-220.

APPENDIX A

U.S.G.S. topographic maps covering the distribution of *Stroganowia tiehmii*.

Fernley West Quadrangle
T19N, R24E, S14-16, 23.

Fernley East Quadrangle
T19N, R24E, S13-14, 23-24.

Misfits Flat Quadrangle
T16N, R23E, S3-4.

Silver Springs North Quadrangle
T19N, R24E, S23-26, 36.
T19N, R25E, S30-31.

Stockton Well Quadrangle
T18N, R23E, S1, 11-12.
T18N, R24E, S3-4.
T19N, R24E, S23, 26-27, 34-35.

APPENDIX B

Herbarium specimens of *Stroganowia tiehmii*.

Lyon Co., Virginia Range, 6 road miles north-northwest of highway 50 on the road to Ramsey, T18N, R23E, S12. 5100 ft., 26 May 1983, Tiehm 7735 (CAS, GH, NY)

Lyon Co., Table Mountain, 7.7 road miles west of highway 95 on the road past Ft. Churchill, bluffs on north side of the Carson River, T16N, R23E, S3-4, 4900 ft., 30 May 1986, Tiehm & Knight 10524 (CAS, GH, NSMC, NY).

Lyon Co., Virginia Range, 6.1 road miles north of highway 50 on the road to Talapoosa Peak, T19N, R24E, S34, 5900 ft., 30 May 1982, Tiehm, Almeda, Barneby & Williams 7058 (GH, RENO).

Lyon Co., Virginia Range, 6.6 road miles north of highway 50 on the main Ramsey Road, then 1.4 road miles northeast then southwest on a road along a wash which circles a hill, T18N, R23E, S1. 5050 ft., 1 May 1989, Tiehm 11964 (GH, NSMC, NY, RENO).