

Rare Fen-Indicator Species Observed

Rare Fen-Indicator Species Observed	1
<i>Botrychium multifidum</i> Leathery grapefern	2
<i>Carex buxbaumii</i> Buxbaum's sedge	5
<i>Carex cusickii</i> Cusick's sedge	8
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<i>Cicuta bulbifera</i> Bulbet-bearing water hemlock	23
<i>Comarum palustre</i> Marsh cinquefoil	25
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<i>Eriophorum scheuchzeri</i> Scheuchzer's cottongrass	40
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<i>Juncus filiformis</i> Thread rush	45
<i>Lycopus uniflorus</i> Northern bugleweed	47
<i>Menyanthes trifoliata</i> Buckbean	50
<i>Potamogeton epihydrus</i> Ribbon-leaf pondweed	53
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Botrychium multifidum

Leathery grapefern



Figure 1. *Botrychium multifidum* in a forest understory.

Table 1. Sites with confirmed individuals of *Botrychium multifidum* and associated collection numbers.

Sites	Collection Numbers
GRTE-00091	GRTE-00091-BOMU-2
JODR-00208	JODR-00208-BOMU-1
JODR-00841	JODR-00841-BOMU-1

Table 2. Characteristics of *Botrychium multifidum* populations.

Characteristic	Description
Identifying characteristics	Thick, leathery leaves which are three times compound with a sporophore.
General abundance	A few scattered individuals.
General habitat	Adjacent to fens, often in the shade.
Mean and range of peat depths	27.75 cm (0 – 100 cm)

Table 3. Water quality measurements associated with *Botrychium multifidum*.

Site	Depth (cm)	Temp (°C)	pH	Spec Cond (µS/cm)
GRTE-00091	40	23.6	6.95	30

Table 4. Species associated with *Botrychium multifidum*.

Lifeform	Scientific Name
Trees	<i>Pinus contorta</i>
Shrubs	<i>Alnus incana</i>
	<i>Salix geyeriana</i>
Graminoids	<i>Carex microptera</i>

Lifeform	Scientific Name
	<i>Deschampsia cespitosa</i>
	<i>Elymus</i> sp.
	<i>Phleum alpinum</i>
Forbs	<i>Antennaria</i> sp.
	<i>Castilleja</i> sp.
	<i>Comarum palustre</i>
	<i>Pedicularis groenlandica</i> ,
	<i>Potentilla</i> sp.

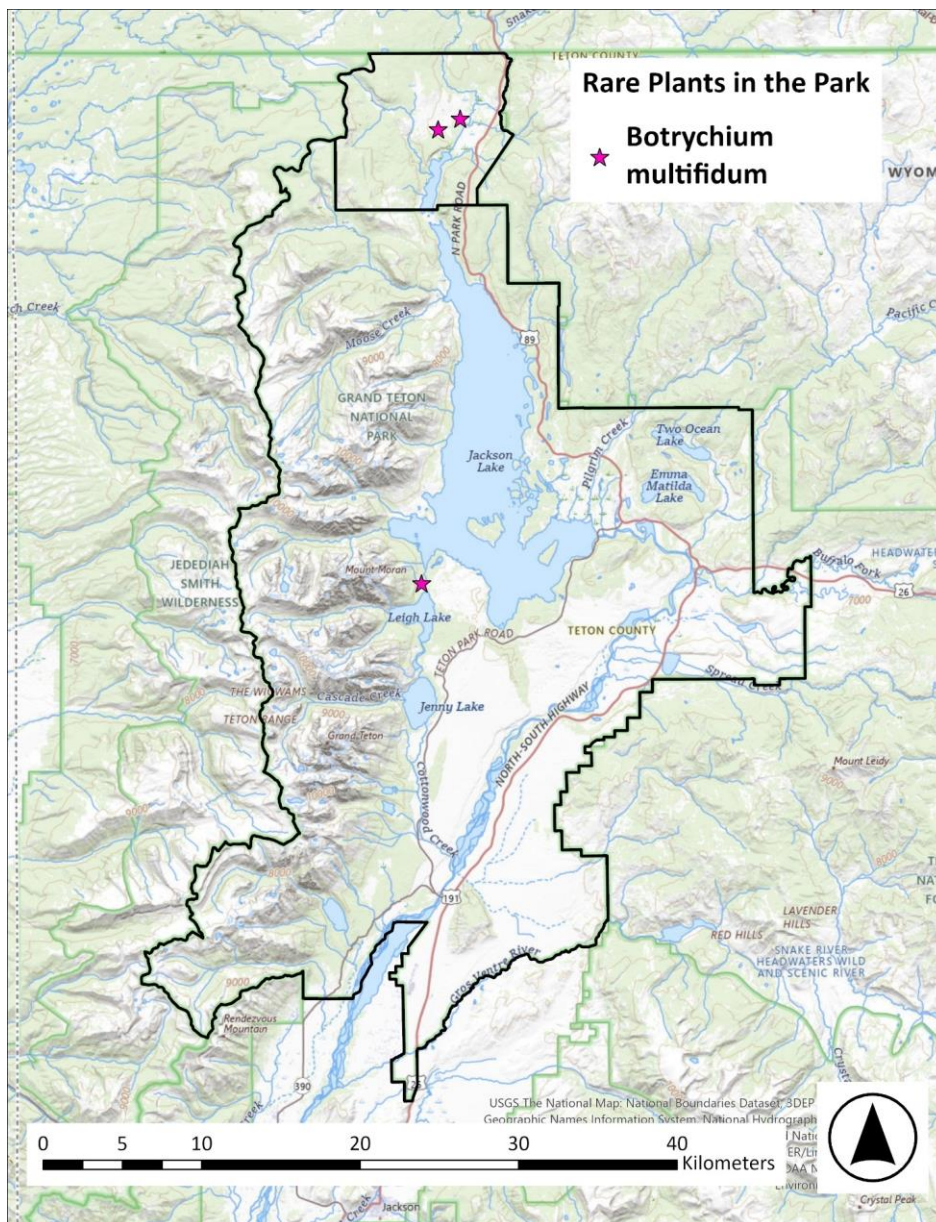


Figure 2. Map of observed *Botrychium multifidum* populations.

Carex buxbaumii

Buxbaum's sedge



Figure 3. *Carex buxbaumii* inflorescence.

Table 5. Sites with confirmed individuals of *Carex buxbaumii* and associated collection numbers.

Sites	Collection Numbers
GRTE-00091	N/A
GRTE-00092	GRTE-00092-CABU6-2
GRTE-00095	GRTE-00095-CABU6-5
GRTE-00099	N/A
GRTE-00104	GRTE-00104-CABU6-2
GRTE-00111	N/A
GRTE-00112	N/A
JODR-00046	JODR-00046-CABU6-8
JODR-00066	N/A
JODR-00082	JODR-00082-CABU6-2
JODR-00184	JODR-00184-CABU6-2
JORD-00192	JODR-00192-CABU6-1
JODR-00195	N/A

Table 6. Characteristics of *Carex buxbaumii* populations.

Characteristic	Description
Identifying characteristics	Hairless, waxy leaves with a bluish tint. Bases are usually red-purple and fibrous. Terminal spikes are gynecandrous, lateral are mostly pistillate. Perigynia are short-beaked, hairless, and usually a light waxy green. Scales are dark brown to black with a green midrib.
General abundance	Often a sizeable population but not the most dominant in the plot
General habitat	Open fens
Mean and range of peat depths	55.67 cm (0 – 140 cm)

Table 7. Water quality measurements associated with *Carex buxbaumii*.

Site	Depth (cm)	Temp (°C)	pH	Spec Cond (µS/cm)
GRTE-00111	5	27.1	6.37	30
GRTE-00095	60	12.6	6.39	48
GRTE-00091	40	23.6	6.95	30
GRTE-00092	65	21.2	7.53	31
JODR-00066	15	44.8	7.86	923
GRTE-00099	60	12.1	6.73	48
JODR-00184	40	13.8	5.58	34
JODR-00192	40	15.2	5.86	31
GRTE-00104	10	21	7.29	111
JODR-00046	80	19.5	6.25	33
JODR-00046	10	13.2	6.37	37

Table 8. Species associated with *Carex buxbaumii*.

Lifeform	Scientific Name
Graminoids	<i>Carex lasiocarpa</i>
	<i>Juncus brevicaudatus</i>
	<i>Carex aquatilis</i>
	<i>Eleocharis quinqueflora</i>
	<i>Juncus nevadensis</i>
	<i>Carex utriculata</i>
	<i>Eriophorum sp.</i>
	<i>Carex echinata</i>
	<i>Juncus ensifolius</i>
	<i>Carex livida</i>
Forbs	<i>Comarum palustre</i>
	<i>Drosera anglica</i>
	<i>Vaccinium uliginosum</i>
	<i>Pedicularis groenlandica</i>
	<i>Menyanthes trifoliata</i>

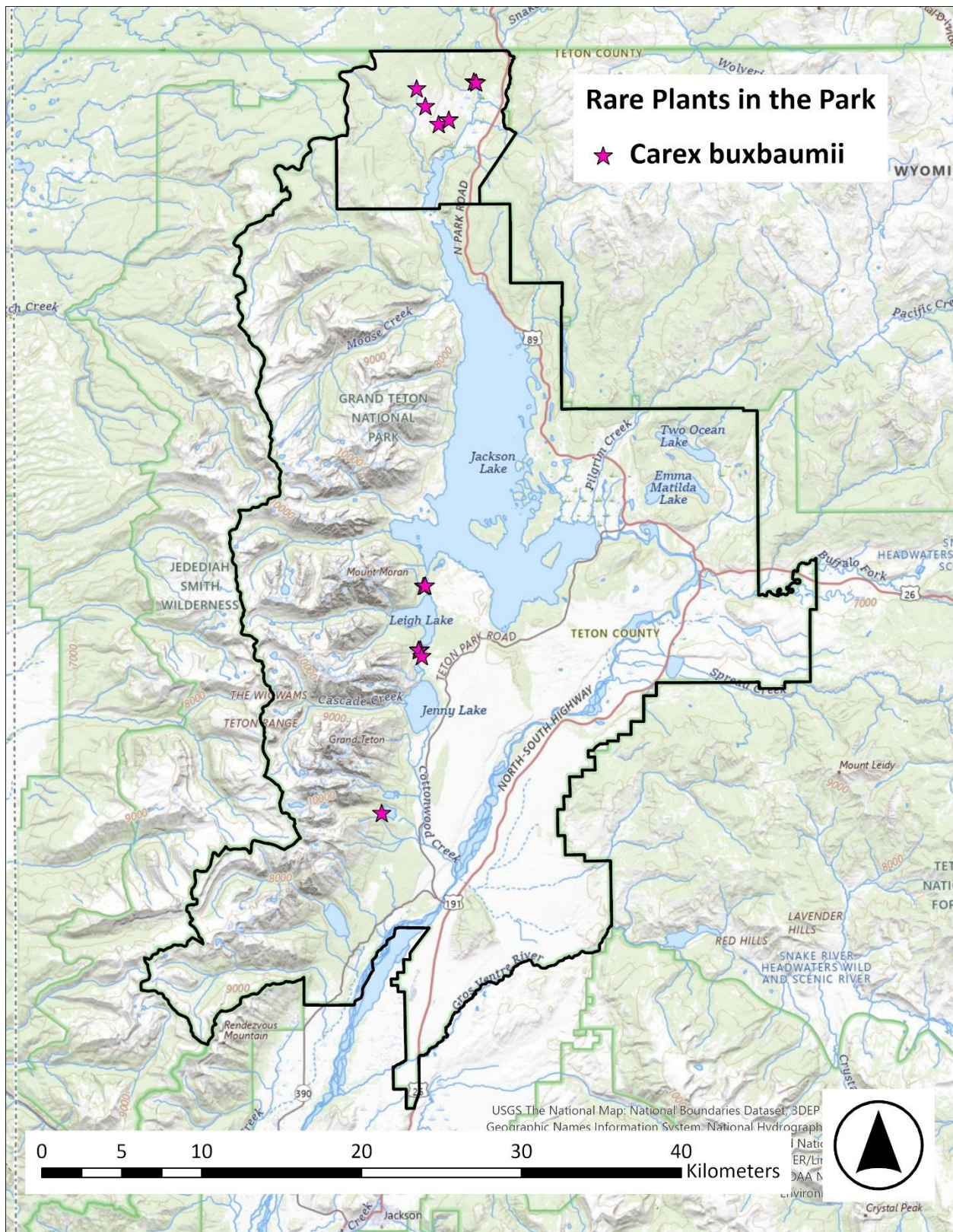


Figure 4. Map of observed *Carex buxbaumii* populations.

Carex cusickii

Cusick's sedge



Figure 5. A clump of *Carex cusickii* growing next to a willow.

Table 9. Sites with confirmed individuals of *Carex cusickii* and associated collection numbers.

Sites	Collection Numbers
JODR-00066	N/A
JODR-00082	JODR-00082-CACU5-1
JODR-00838	JODR-00838-CACU5-1
JODR-00839	JODR-00839-CACU5-1
JODR-00905	N/A

Table 10. Characteristics of *Carex cusickii* populations.

Characteristic	Description
Identifying characteristics	Forming dense clumps. Male and female flowers on separate culms. Leaf sheaths have red dots and often have a copper tinge at the top. Perigynia have long beaks, and spikelets are often distinctly separated, but clustered towards the end of the culm. Leaf blades are 3-5 mm wide.
General abundance	Several large clumps.
General habitat	Typically on the edge of water.
Mean and range of peat depths	57.68 cm (0 – 140 cm)

Table 11. Water quality measurements associated with *Carex cusickii*.

Site	Depth (cm)	Temp (°C)	pH	Spec Cond (µS/cm)
JODR-00839	-10	20.3	6.16	727
JODR-00066	15	44.8	7.86	923
JODR-00838	35	20.7	7.29	715

Table 12. Species associated with *Carex cusickii*.

Lifeform	Scientific Name
Graminoids	<i>Carex microptera</i>
	<i>Eleocharis quinqueflora</i>
	<i>Juncus</i> sp.
	<i>Poa pratensis</i>
	<i>Schoenoplectus acutus</i>
Forbs	<i>Potentilla</i> sp.
	<i>Solidago</i> sp.

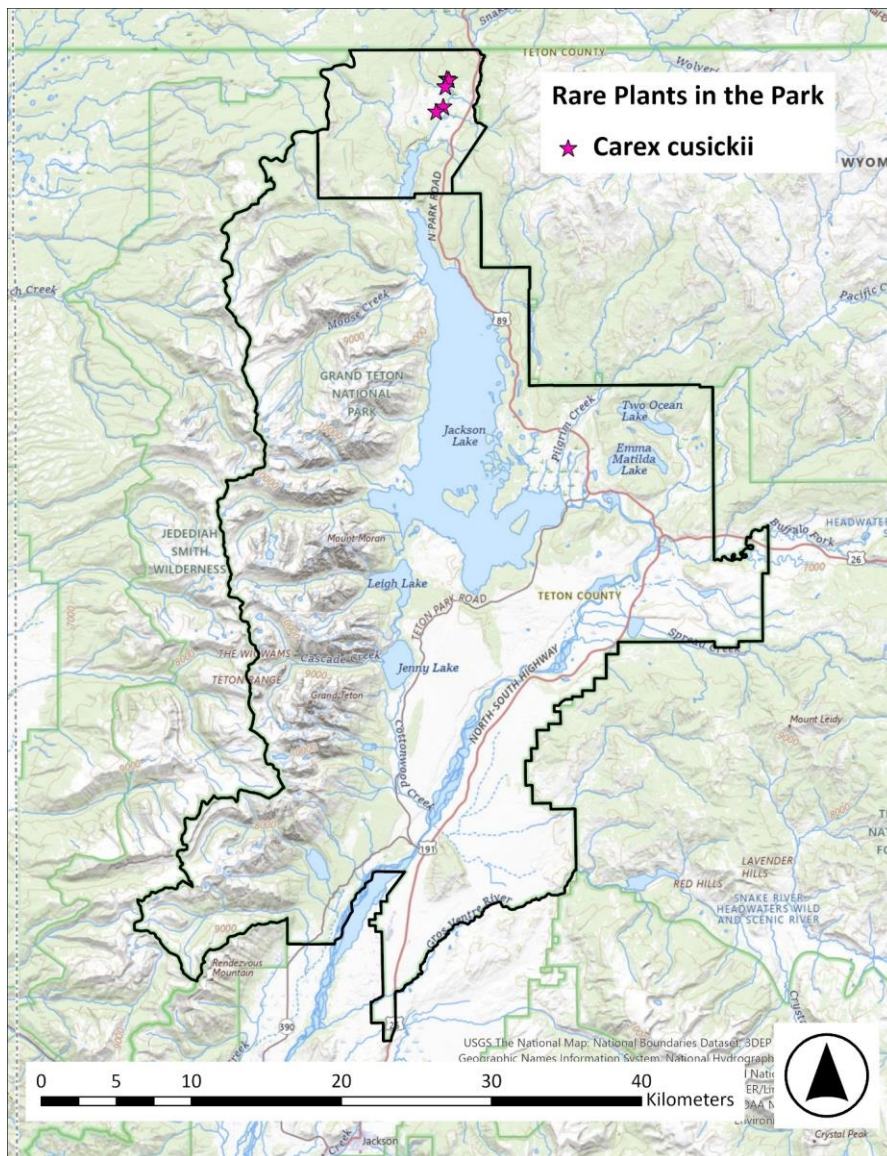


Figure 6. Map of observed *Carex cusickii* populations.

Carex diandra

Lesser panicled sedge



Figure 7. *Carex diandra* growing next to a pond.

Table 13. Sites with confirmed individuals of *Carex diandra* and associated collection numbers.

Sites	Collection Numbers
GRTE-00001	GRTE-00001-CADI4-4
GRTE-00278	GRTE-00278-CADI4-8
GRTE-00420	GRTE-00420-CADI4-3
GRTE-00644	GRTE-00644-CADI4-1

Table 14. Characteristics of *Carex diandra* populations.

Characteristic	Description
Identifying characteristics	Leaf blades are less than 3 mm wide. Often clump-forming or short-rhizomatous. Leaf sheaths often have red and/or white dots. Distinct suture flap on the perigynia, visible using a microscope
General abundance	Ranging from a few small clumps to widespread.
General habitat	Open fens.
Mean and range of peat depths	42.13 cm (0 – 105 cm)

Table 15. Water quality measurements associated with *Carex diandra*.

Site	Depth (cm)	Temp (°C)	pH	Spec Cond (µS/cm)
GRTE-00644	Unknown	18.7	7.23	161
GRTE-00001	Unknown	12.6	5.85	103
GRTE-00001	Unknown	15.2	6.39	88
GRTE-00001	Unknown	14.5	5.90	75
GRTE-00278	Unknown	14.4	6.63	182
GRTE-00278	Unknown	15.6	6.77	11
GRTE-00278	Unknown	14.7	6.73	210
GRTE-00420	Unknown	14.4	6.23	390
GRTE-00420	Unknown	15.6	8.38	260

Table 16. Species associated with *Carex diandra*.

Lifeform	Scientific Name
Graminoids	<i>Carex aquatilis</i>
	<i>Carex canescens</i>
	<i>Carex utriculata</i>
Forbs	<i>Comarum palustre</i>
	<i>Sagittaria latifolia</i>
	<i>Typha latifolia</i>
Aquatic	<i>Lemna sp</i>
	<i>Potamogeton sp</i>

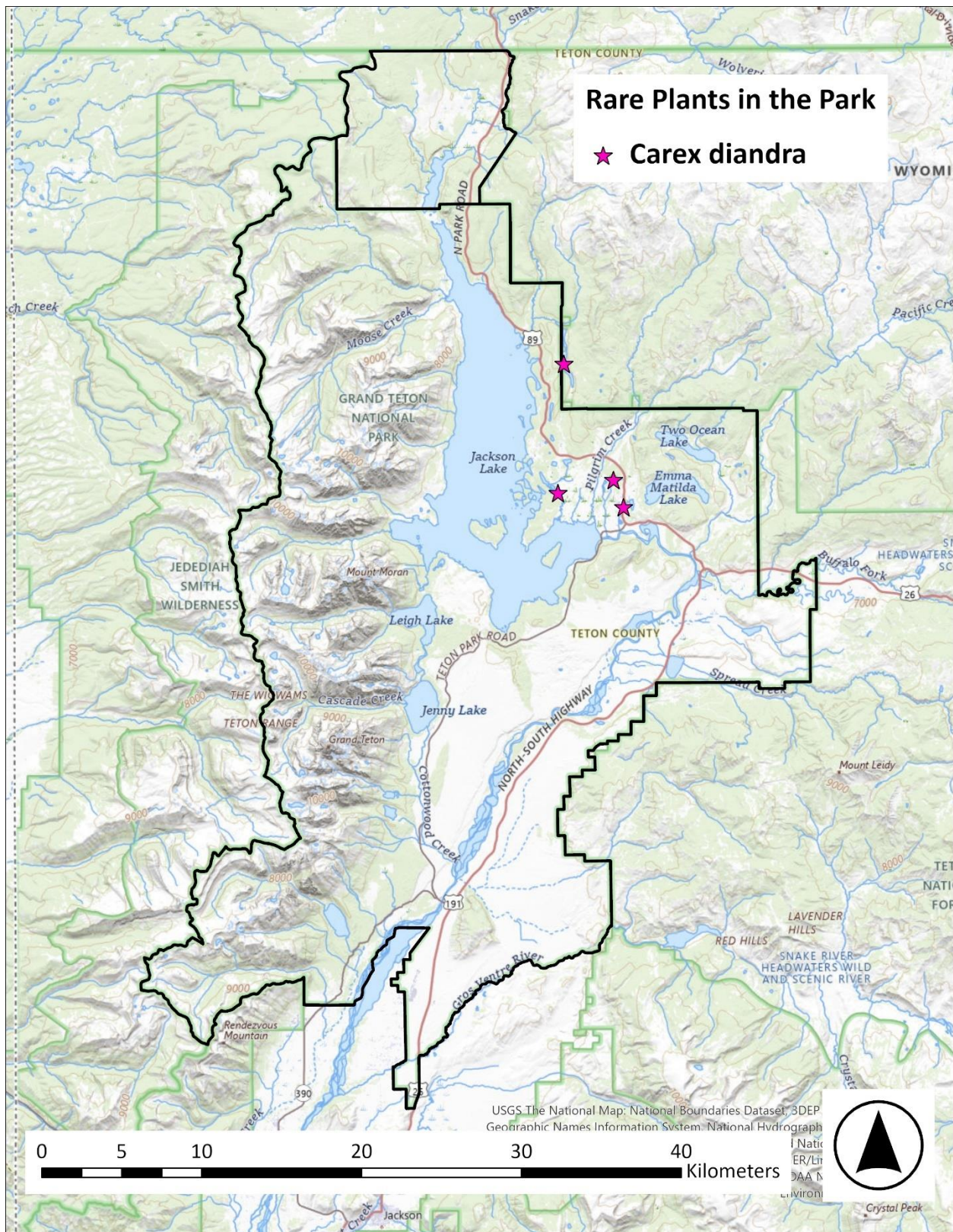


Figure 8. Map of observed *Carex diandra* populations.

Carex echinata

Star sedge



Figure 9. *Carex echinata* inflorescence.

Table 17. Sites with confirmed individuals of *Carex echinata* and associated collection numbers.

Sites	Collection Numbers
GRTE-00091	N/A
GRTE-00092	N/A
GRTE-00095	GRTE-00095-CAEC-1
GRTE-00111	N/A
JODR-00046	JODR-00046-CAEC-9
JODR-00184	JODR-00184-CAEC-5
JODR-00185	JODR-00185-CAEC-5
JODR-00192	N/A

Table 18. Characteristics of *Carex echinata* populations.

Characteristic	Description
Identifying characteristics	3-8 gynecandrous spikes at the end of the culm. The beak of the perigynia is at least half as long as the body, and is gradually tapering
General abundance	A few scattered clumps.
General habitat	Open fens

Mean and range of peat depths	69.72 cm (0 – 140 cm)
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Table 19. Water quality measurements associated with *Carex echinata*.

Site	Depth (cm)	Temp (°C)	pH	Spec Cond (µS/cm)
GRTE-00111	5	27.1	6.37	30
GRTE-00095	20	27	6.35	44
GRTE-00095	60	12.6	6.39	48
GRTE-00091	0	20.7	5.51	64
GRTE-00091	40	23.6	6.95	30
GRTE-00092	65	21.2	7.53	31
JODR-00184	40	13.8	5.58	34
JODR-00046	80	19.5	6.25	33
JODR-00046	10	13.2	6.37	37
JODR-00192	40	15.2	5.86	31

Table 20. Species associated with *Carex echinata*.

Lifeform	Scientific Name
Shrubs	<i>Vaccinium uliginosum</i>
Graminoids	<i>Carex lasiocarpa</i>
	<i>Carex utriculata</i>
	<i>Deschampsia cespitosa</i>
Forbs	<i>Comarum palustre</i>
	<i>Drosera anglica</i>
	<i>Pedicularis groenlandica</i>

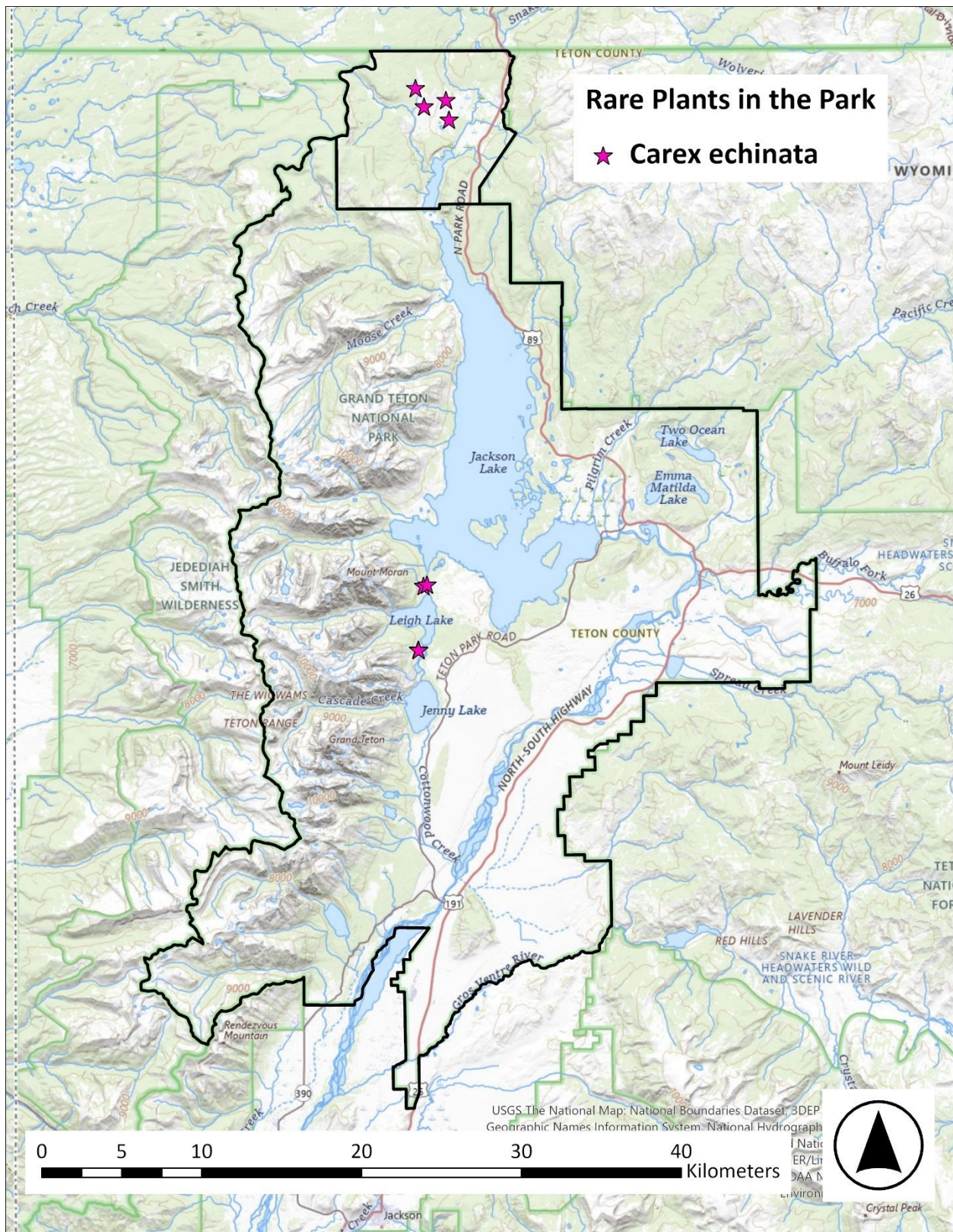


Figure 10. Map of observed *Carex echinata* populations.

Carex lasiocarpa

Wiregrass sedge



Figure 11. *Carex lasiocarpa* in an open fen.

Table 21. Sites with confirmed individuals of *Carex lasiocarpa* and associated collection numbers.

Sites	Collection Numbers
GRTE-00008	N/A
GRTE-00091	N/A
GRTE-00092	N/A
GRTE-00095	GRTE-00095-CALA11-1, GRTE-00095-CALA11-7
GRTE-00099	N/A
GRTE-00104	GRTE-00104-CALA11-5
GRTE-00109	N/A
GRTE-00111	N/A
JODR-00046	JODR-00046-CALA11-1
JODR-00184	JODR-00184-CALA11-1
JODR-00192	JODR-00192-CALA11-2
JODR-00195	N/A
JODR-00196	N/A
JODR-00197	JODR-00197-CALA11-1

Table 22. Characteristics of *Carex lasiocarpa* populations.

Characteristic	Description
Identifying characteristics	Male and female spikes separate. Perigynia are all fuzzy. Plants are rhizomatous and widely spreading. Leaves are thin, 0.7 – 2.2 mm wide
General abundance	Widespread and dominant throughout the site.
General habitat	Open fens.
Mean and range of peat depths	70.01 cm (0 – 150 cm)

Table 23. Water quality measurements associated with *Carex lasiocarpa*.

Site	Depth (cm)	Temp (°C)	pH	Spec Cond (µS/cm)
GRTE-00008	Unknown	18.8	5.70	18
GRTE-00008	Unknown	22.5	6.20	21
GRTE-00008	20	21.7	5.96	35
GRTE-00008	35	16.9	6.30	24
GRTE-00091	0	20.7	5.51	64
GRTE-00091	40	23.6	6.95	30
GRTE-00092	65	21.2	7.53	31
GRTE-00095	20	27	6.35	44
GRTE-00095	60	12.6	6.39	48
GRTE-00099	60	12.1	6.73	48
GRTE-00104	10	21	7.29	111
GRTE-00111	5	27.1	6.37	30
JODR-00046	80	19.5	6.25	33
JODR-00046	10	13.2	6.37	37
JODR-00184	40	13.8	5.58	34
JODR-00192	40	15.2	5.86	31
JODR-00196	20	14.8	5.93	57
JODR-00197	100	12.3	6.57	59

Table 24. Species associated with *Carex lasiocarpa*.

Lifeform	Scientific Name
Shrubs	<i>Salix planifolia</i>
	<i>Vaccinium uliginosum</i>
Graminoids	<i>Carex aquatilis</i>
	<i>Carex buxbaumii</i>
	<i>Carex echinata</i>
	<i>Carex utriculata</i>
	<i>Eriophorum sp.</i>
	<i>Juncus brevicaudatus</i>
	<i>Juncus ensifolius</i>
Forbs	<i>Comarum palustre</i>
	<i>Drosera anglica</i>
	<i>Galium trifidum</i>
	<i>Geum sp.</i>
	<i>Menyanthes trifoliata</i>
Aquatics	<i>Nuphar lutea</i>
	<i>Potamogeton sp.</i>

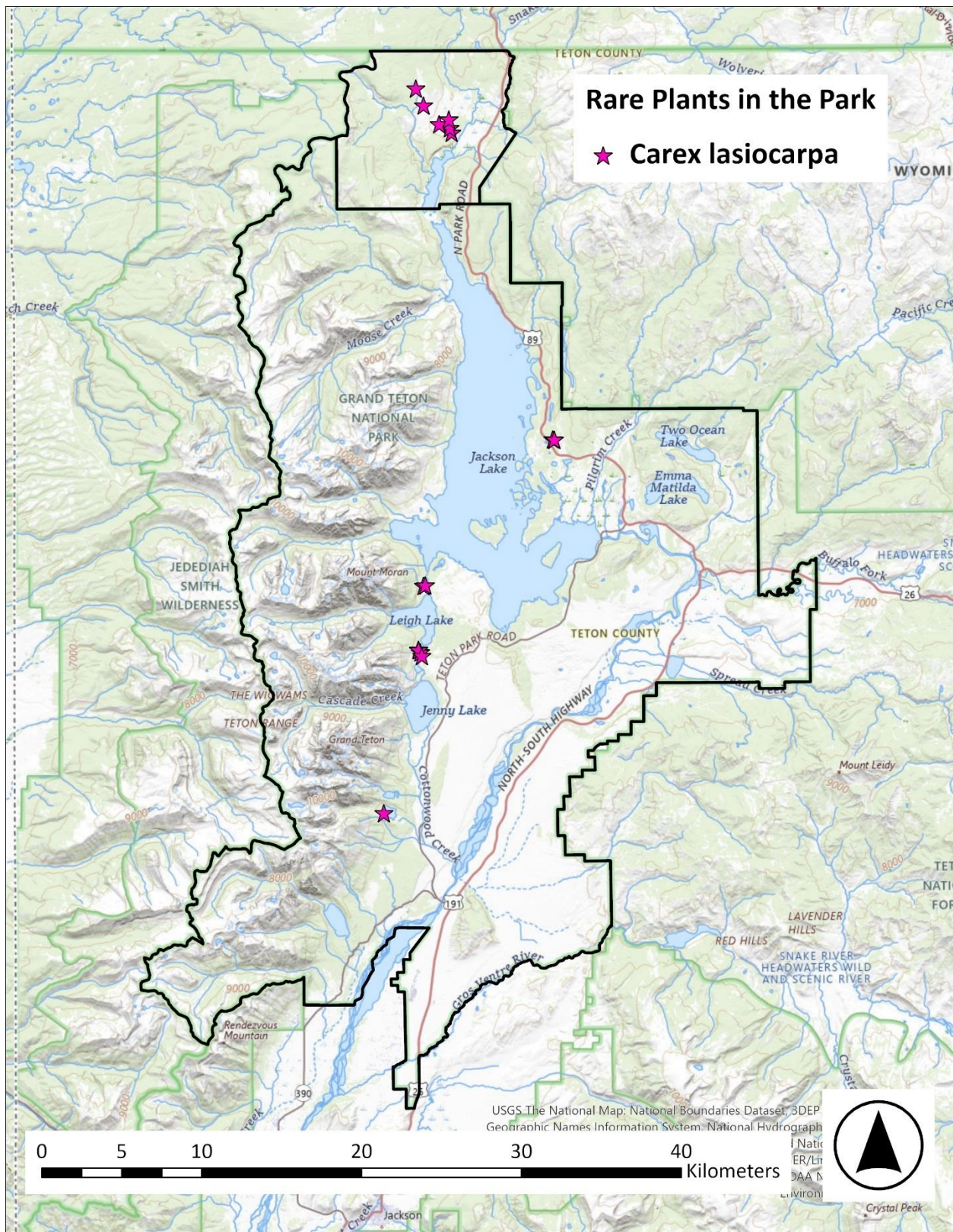


Figure 12. Map of observed *Carex lasiocarpa* populations.

Carex limosa

Mud sedge



Figure 13. *Carex limosa* inflorescence.

Table 25. Sites with confirmed individuals of *Carex limosa* and associated collection numbers.

Sites	Collection Numbers
GRTE-00008	GRTE-00008-CALI7-4
JODR-00046	JODR-00046-CALI7-3

Table 26. Characteristics of *Carex limosa* populations.

Characteristic	Description
Identifying characteristics	Plants are rhizomatous. Male and female spikes are separate. Spikes are attached to a long peduncle and are often drooping. Roots are yellow and hairy
General abundance	Ranging from a few small patches to widespread.
General habitat	Open fens
Mean and range of peat depths	109.26 cm (0 – 150 cm)

Table 27. Water quality measurements associated with *Carex limosa*.

Site	Depth (cm)	Temp (°C)	pH	Spec Cond (µS/cm)
JODR-00046	80	19.5	6.25	33
JODR-00046	10	13.2	6.37	37
GRTE-00008	Unknown	18.8	5.70	18
GRTE-00008	Unknown	22.5	6.20	21
GRTE-00008	20	21.7	5.96	35
GRTE-00008	35	16.9	6.30	24

Table 28. Species associated with *Carex limosa*.

Lifeform	Scientific Name
Graminoids	<i>Carex lasiocarpa</i>
	<i>Carex livida</i>
Forbs	<i>Comarum palustre</i>
	<i>Drosera anglica</i>
	<i>Menyanthes trifoliata</i>

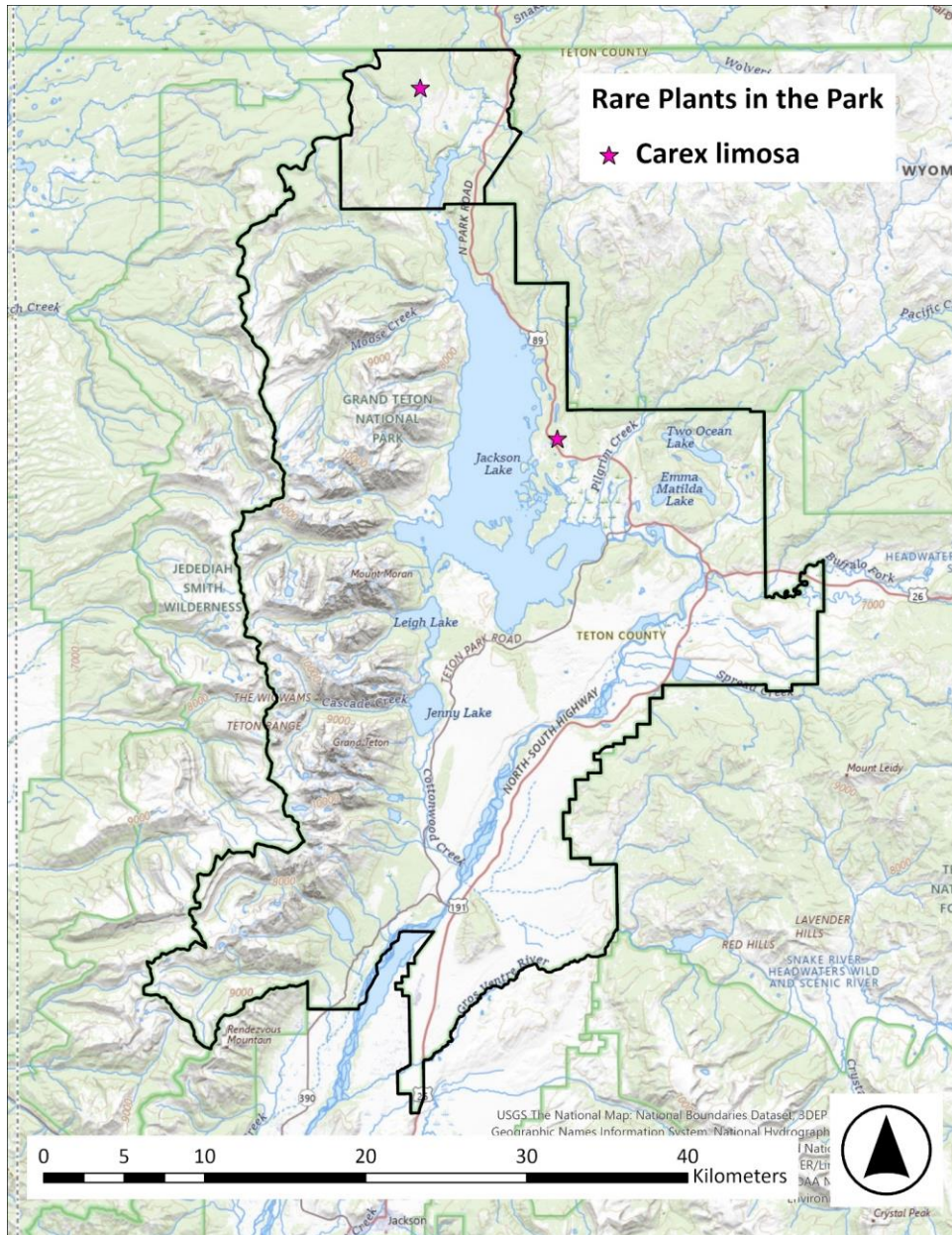


Figure 14. Map of observed *Carex limosa* populations.

Carex livida

Livid sedge



Figure 15. *Carex livida* in a large patch with other rare plants, *Drosera anglica* and *Carex limosa*.

Table 29. Sites with confirmed individuals of *Carex livida* and associated collection numbers.

Sites	Collection Numbers
GRTE-00008	N/A
JODR-00046	JODR-00046-CALI-4
JODR-00184	JODR-00184-CALI-9
JODR-00195	JODR-00195-CALI-3

Table 30. Characteristics of *Carex livida* populations.

Characteristic	Description
Identifying characteristics	Plants are rhizomatous. Leaves and culms are a distinct waxy blue-green color. Male and female spikes are separate. Scales are brown with a distinct green midrib.
General abundance	Widespread throughout the site.
General habitat	Open fens.
Mean and range of peat depths	100.53 cm (0 – 150 cm)

Table 31. Water quality measurements associated with *Carex livida*.

Site	Depth (cm)	Temp (°C)	pH	Spec Cond (µS/cm)
JODR-00184	40	13.8	5.58	34
JODR-00046	80	19.5	6.25	33
JODR-00046	10	13.2	6.37	37
GRTE-00008	Unknown	18.8	5.70	18
GRTE-00008	Unknown	22.5	6.20	21
GRTE-00008	20	21.7	5.96	35

GRTE-00008	35	16.9	6.30	24
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Table 32. Species associated with *Carex livida*.

Lifeform	Scientific Name
Graminoids	<i>Carex buxbaumii</i>
	<i>Carex lasiocarpa</i>
	<i>Carex limosa</i>
	<i>Carex utriculata</i>
	<i>Eriophorum</i> sp.
Forbs	<i>Drosera anglica</i>
	<i>Pedicularis groenlandica</i>

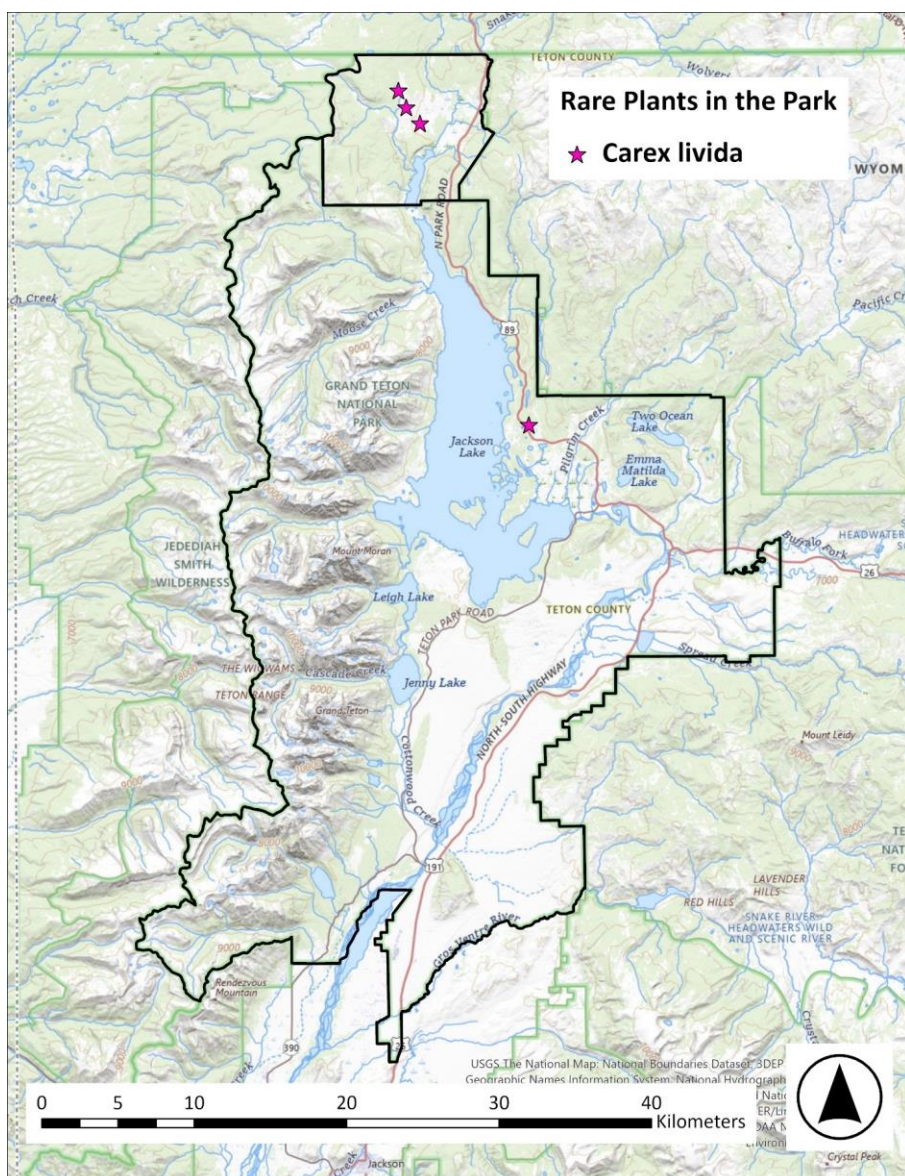


Figure 16. Map of observed *Carex livida* populations.

Cicuta bulbifera

Bulbet-bearing water hemlock

Table 33. Sites with confirmed individuals of *Cicuta bulbifera* and associated collection numbers.

Sites	Collection Numbers
GRTE-00001	N/A

Table 34. Characteristics of *Cicuta bulbifera* populations.

Characteristic	Description
Identifying characteristics	Tiny bulbets bearing seeds are sometimes present in the axils of the leaves. Leaves are thin and compound, sometimes with wide-spaced teeth, sometimes untoothed. Flowers are white umbels with notched petals
General abundance	3 or 4 small individuals, none of which were flowering.
General habitat	On the margin of a channel
Mean and range of peat depths	41.25 cm (0 – 80 cm)

Table 35. Water quality measurements associated with *Cicuta bulbifera*.

Site	Depth (cm)	Temp (°C)	pH	Spec Cond (µS/cm)
GRTE-00001	Unknown	12.6	5.85	103
GRTE-00001	Unknown	15.2	6.93	88
GRTE-00001	Unknown	14.5	5.90	75

Table 36. Species associated with *Cicuta bulbifera*.

Lifeform	Scientific Name
Graminoids	<i>Carex aquatilis</i>
	<i>Carex utriculata</i>
Forbs	<i>Scutellaria galericulata</i>
Aquatics	<i>Potamogeton</i> sp.

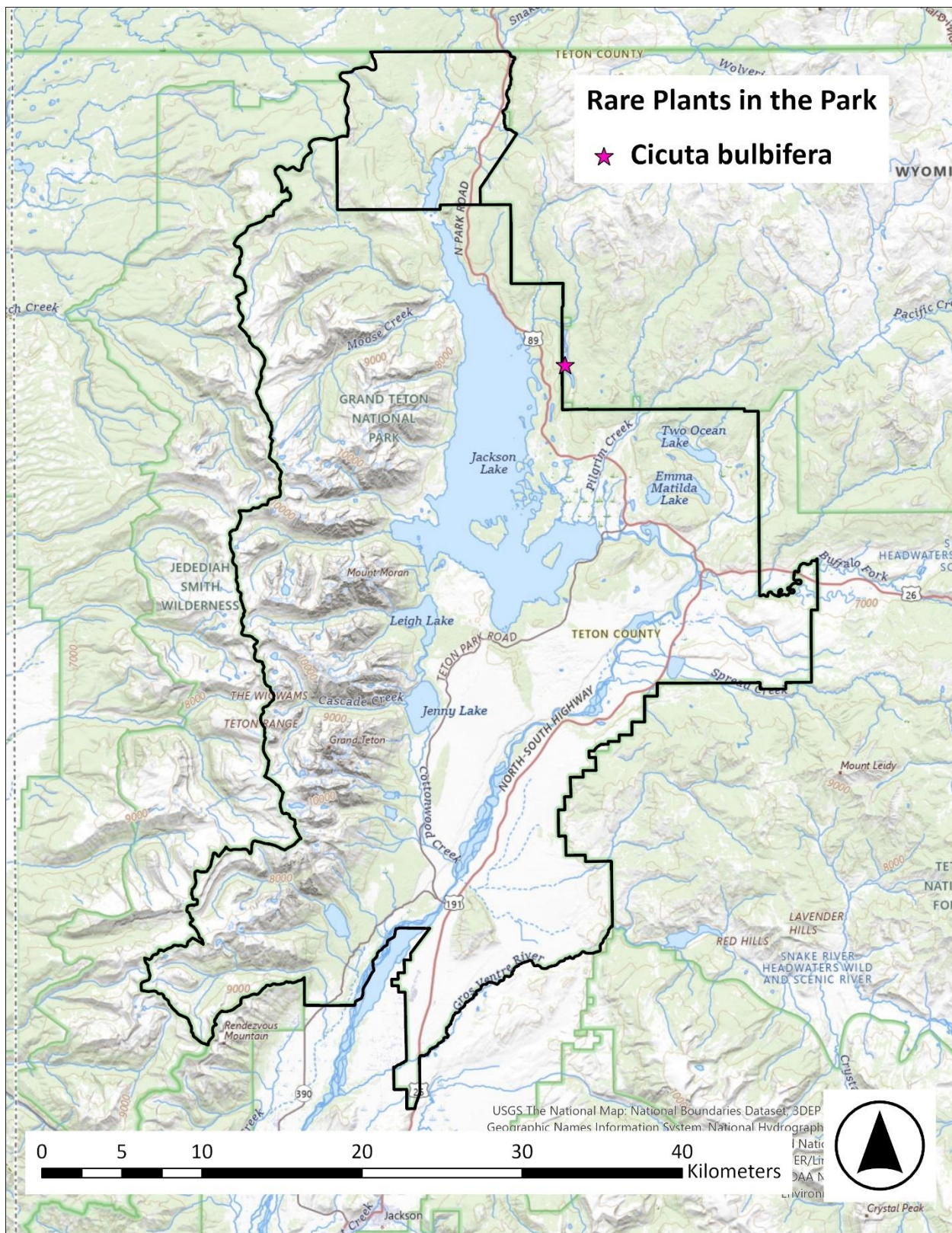


Figure 17. Map of observed *Cicuta bulbifera* populations.

Comarum palustre

Marsh cinquefoil



Figure 18. *Comarum palustre* growing on a mound of *Sphagnum*.

Table 37. Sites with confirmed individuals of *Comarum palustre* and associated collection numbers.

Sites	Collection Numbers
GRTE-00001	GRTE-00001-COPA28-1
GRTE-00008	GRTE-00008-COPA28-2
GRTE-00035	GRTE-00035-COPA28-1
GRTE-00091	GRTE-00091-COPA28-1
GRTE-00092	N/A
GRTE-00095	GRTE-00095-COPA28-6
GRTE-00096	N/A
GRTE-00099	N/A
GRTE-00104	GRTE-00104-COPA-6
GRTE-00105	N/A
GRTE-00111	N/A
GRTE-00112	N/A
GRTE-00281	N/A
GRTE-00427	GRTE-00427-COPA28-1
GRTE-00644	GRTE-00644-COPA28-2
JODR-00046	N/A
JODR-00867	JODR-00867-COPA28-1

Table 38. Characteristics of *Comarum palustre* populations.

Characteristic	Description
Identifying characteristics	Leaves are alternate and pinnately compound with 5-7 leaflets. Flowers are a distinct shape with a deep red to purple color.
General abundance	Often a sizeable population but not the most dominant in the plot, occasionally only a handful of individuals.
General habitat	Sometimes in open fens, sometimes adjacent to fens in shade under shrubs.
Mean and range of peat depths	59.30 cm (0 – 150 cm)

Table 39. Water quality measurements associated with *Comarum palustre*.

Site	Depth (cm)	Temp (°C)	pH	Spec Cond (µS/cm)
GRTE-00096	25	27.3	6.38	42
GRTE-00111	5	27.1	6.37	30
GRTE-00091	0	20.7	5.51	64
GRTE-00091	40	23.6	6.95	30
GRTE-00092	65	21.2	7.53	31
GRTE-00281	60	12.7	7.23	1
GRTE-00099	60	12.1	6.73	48
JODR-00046	80	19.5	6.25	33
JODR-00046	10	13.2	6.37	37
GRTE-00008	Unknown	18.8	5.70	18
GRTE-00008	Unknown	22.5	6.20	21
GRTE-00008	20	21.7	5.96	35
GRTE-00008	35	16.9	6.30	24
GRTE-00104	10	21	7.29	111
GRTE-00644	Unknown	18.7	7.23	161
GRTE-00001	Unknown	12.6	5.85	103
GRTE-00001	Unknown	15.2	6.93	88
GRTE-00001	Unknown	14.5	5.90	75
GRTE-00095	20	27	6.35	44
GRTE-00095	60	12.6	6.39	48

Table 40. Species associated with *Comarum palustre*.

Lifeform	Scientific Name
Trees	<i>Pinus contorta</i>
Shrubs	<i>Betula glandulosa</i>
	<i>Salix boothii</i>
	<i>Salix geyeriana</i>
	<i>Salix sp.</i>
	<i>Salix wolfii</i>

Lifeform	Scientific Name
	<i>Vaccinium uliginosum</i>
Graminoids	<i>Camlamagrostis canadensis</i>
	<i>Carex aquatilis</i>
	<i>Carex buxbaumii</i>
	<i>Carex interior</i>
	<i>Carex lasiocarpa</i>
	<i>Carex utriculata</i>
	<i>Deschampsia cespitosa</i>
	<i>Juncus sp.</i>
	<i>Schoenoplectus acutus</i>
Forbs	<i>Cirsium sp.</i>
	<i>Epilobium sp.</i>
	<i>Geum macrophyllum</i>
	<i>Mentha arvensis</i>
	<i>Scutellaria galericulata</i>



Figure 19. Additional photograph of *Comarum palustre*.

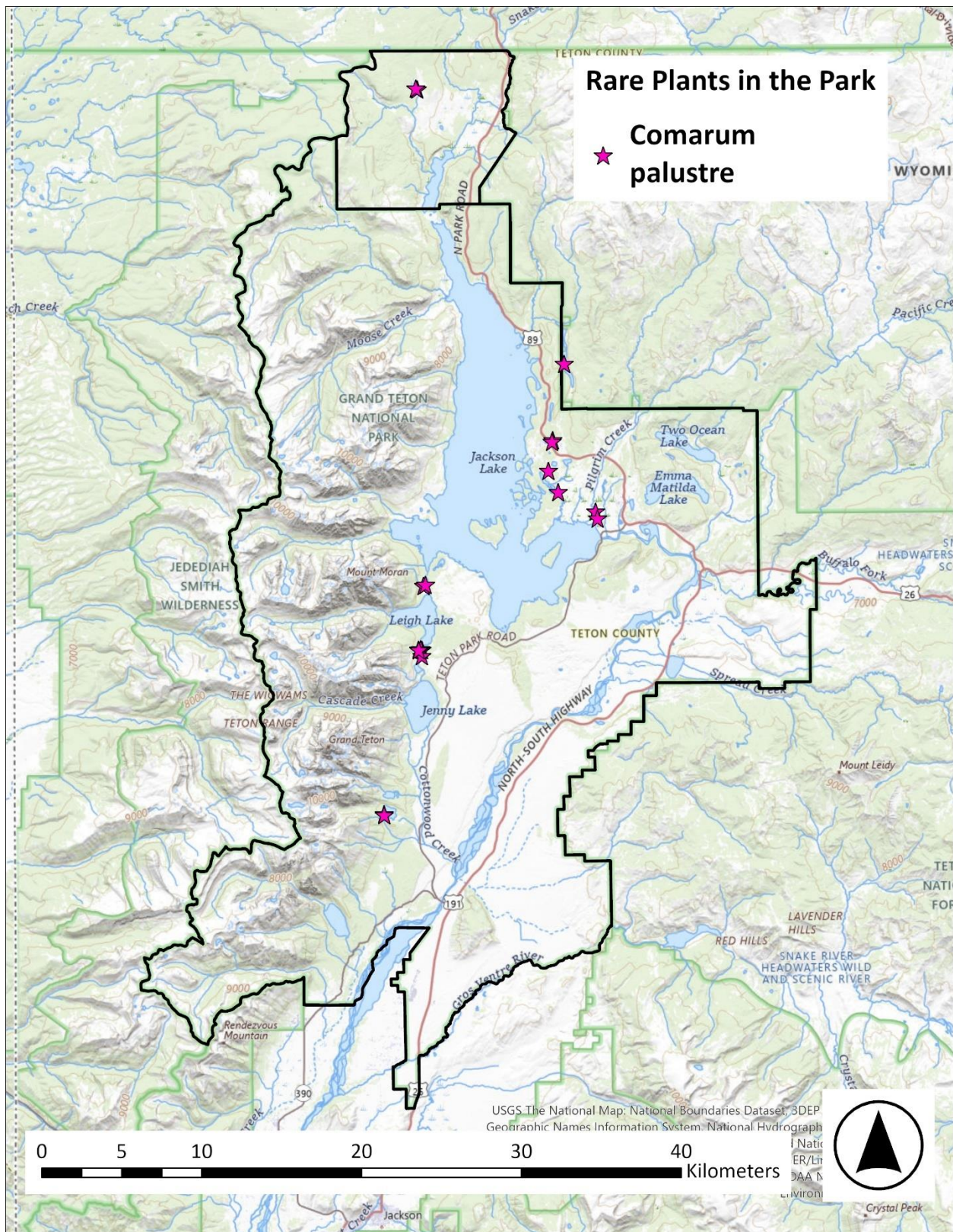


Figure 20. Map of observed *Comarum palustre* populations.

Drosera anglica

English sundew



Figure 21. *Drosera anglica* in bloom.

Table 41. Sites with confirmed individuals of *Drosera anglica* and associated collection numbers.

Sites	Collection Numbers
GRTE-00008	GRTE-00008-DRAN-3
GRTE-00095	GRTE-00095-DRAN-2
GRTE-00109	N/A
GRTE-00111	N/A
JODR-00046	JODR-00046-DRAN-2
JODR-00082	JODR-00082-DRAN-3
JODR-00195	N/A

Table 42. Characteristics of *Drosera anglica* populations.

Characteristic	Description
Identifying characteristics	Flowers are small, white, and 5-petaled. Leaves are narrow and look vaguely spatula-shaped. Leaves are covered in thin, red, glandular hairs to attract and ensnare insects.
General abundance	Often a few individuals, occasionally widespread.
General habitat	Open fens with <i>Sphagnum</i> .
Mean and range of peat depths	86.27 cm (0 – 150 cm)

Table 43. Water quality measurements associated with *Drosera anglica*.

Site	Depth (cm)	Temp (°C)	pH	Spec Cond (µS/cm)
GRTE-00111	5	27.1	6.37	30
JODR-00046	80	19.5	6.25	33
JODR-00046	10	13.2	6.37	37

Site	Depth (cm)	Temp (°C)	pH	Spec Cond (µS/cm)
GRTE-00008	Unknown	18.8	5.70	18
GRTE-00008	Unknown	22.5	6.20	21
GRTE-00008	20	21.7	5.96	35
GRTE-00008	35	16.9	6.30	24
GRTE-00095	20	27	6.35	44
GRTE-00095	60	12.6	6.39	48

Table 44. Species associated with *Drosera anglica*.

Lifeform	Scientific Name
Graminoids	<i>Carex buxbaumii</i>
	<i>Carex lasiocarpa</i>
	<i>Eleocharis quinqueflora</i>
	<i>Juncus sp.</i>
Forbs	<i>Comarum palustre</i>
	<i>Menyanthes trifoliata</i>
	<i>Spiranthes romanzoffiana</i>

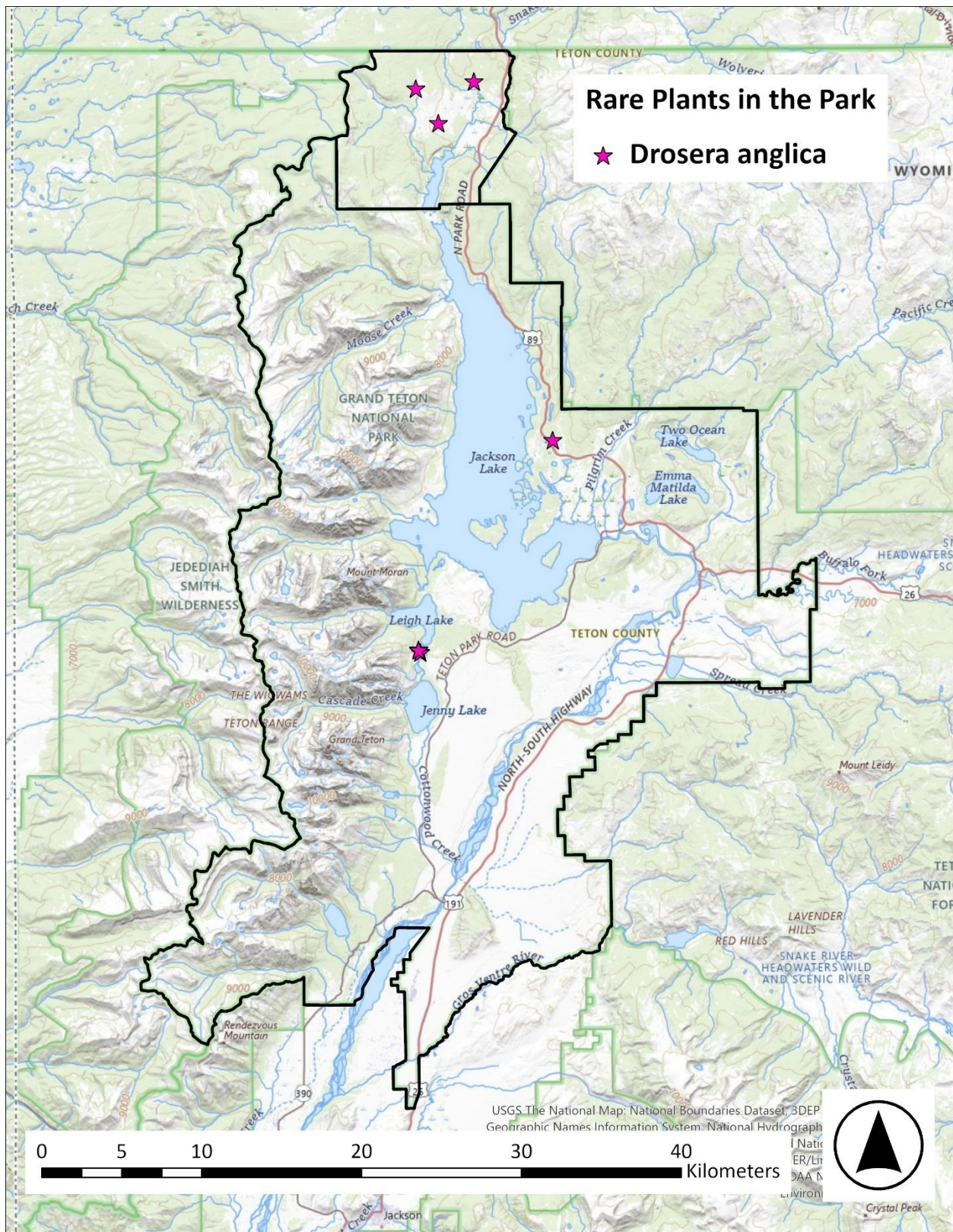


Figure 22. Map of observed *Drosera anglica* populations.

Eriophorum angustifolium

Tall cottongrass



Figure 23. *Eriophorum angustifolium* in an open fen.

Table 45. Sites with confirmed individuals of *Eriophorum angustifolium* and associated collection numbers.

Sites	Collection Numbers
GRTE-00095	N/A
JODR-00046	JODR-00046-ERAN6-6
JODR-00184	JODR-00184-ERAN6-3
JODR-00185	JODR-00185-ERAN6-4
JODR-00192	JODR-00192-ERAN6-6

Table 46. Characteristics of *Eriophorum angustifolium* populations.

Characteristic	Description
Identifying characteristics	Plants are rhizomatous. Multiple spikes clustered at the tip of the stem. Bristles are white. Leaves are few and up to 8 mm wide
General abundance	Often a few individuals, occasionally widespread.
General habitat	Open fens.
Mean and range of peat depths	79.18 cm (0 – 140 cm)

Table 47. Water quality measurements associated with *Eriophorum angustifolium*.

Site	Depth (cm)	Temp (°C)	pH	Spec Cond (µS/cm)
GRTE-00095	20	27	6.35	44
GRTE-00095	60	12.6	6.39	48
JODR-00046	80	19.5	6.25	33
JODR-00046	10	13.2	6.37	37
JODR-00192	40	15.2	5.86	31

Table 48. Species associated with *Eriophorum angustifolium*.

Lifeform	Scientific Name
Graminoids	<i>Carex aquatilis</i>
	<i>Carex buxbaumii</i>
	<i>Carex echinata</i>
	<i>Carex lasiocarpa</i>
	<i>Deschampsia cespitosa</i>
	<i>Juncus ensifolius</i>
	<i>Muhlenbergia filiformis</i>

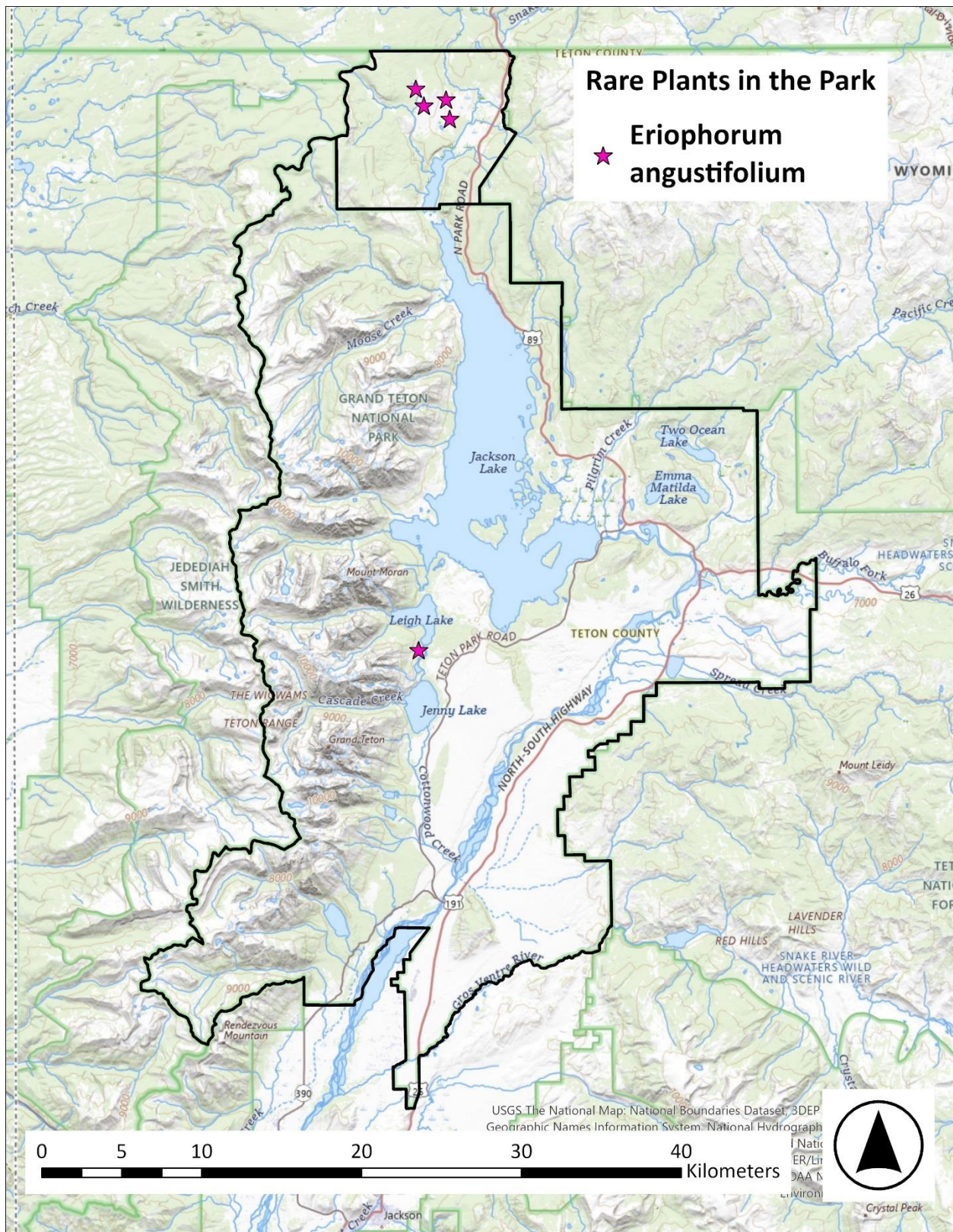


Figure 24. Map of observed *Eriophorum angustifolium* populations.

Eriophorum chamissonis

Chamisso's cottongrass



Figure 25. *Eriophorum chamissonis* in bloom.

Table 49. Sites with confirmed individuals of *Eriophorum chamissonis* and associated collection numbers.

Sites	Collection Numbers
JODR-00046	JODR-00046-ERCH7-5
JODR-00185	N/A
JODR-00187	N/A
JODR-00195	JODR-00195-ERCH7-2

Table 50. Characteristics of *Eriophorum chamissonis* populations.

Characteristic	Description
Identifying characteristics	Plants are loosely rhizomatous. A single flower at the tip of the culm, with off white to reddish brown bristles, about 2 cm long.
General abundance	Often a few individuals.
General habitat	Open fens.
Mean and range of peat depths	99.86 cm (0 – 140 cm)

Table 51. Water quality measurements associated with *Eriophorum chamissonis*.

Site	Depth (cm)	Temp (°C)	pH	Spec Cond (µS/cm)
JODR-00046	80	19.5	6.25	33
JODR-00046	10	13.2	6.37	37
JODR-00187	10	7.8	6.50	38

Table 52. Species associated with *Eriophorum chamissonis*.

Lifeform	Scientific Name
Shrubs	<i>Betula glandulosa</i>
Graminoids	<i>Carex lasiocarpa</i>
	<i>Carex livida</i>
	<i>Carex utriculata</i>
	<i>Eleocharis</i> sp.
	<i>Juncus ensifolius</i>
Forbs	<i>Fragaria virginiana</i>

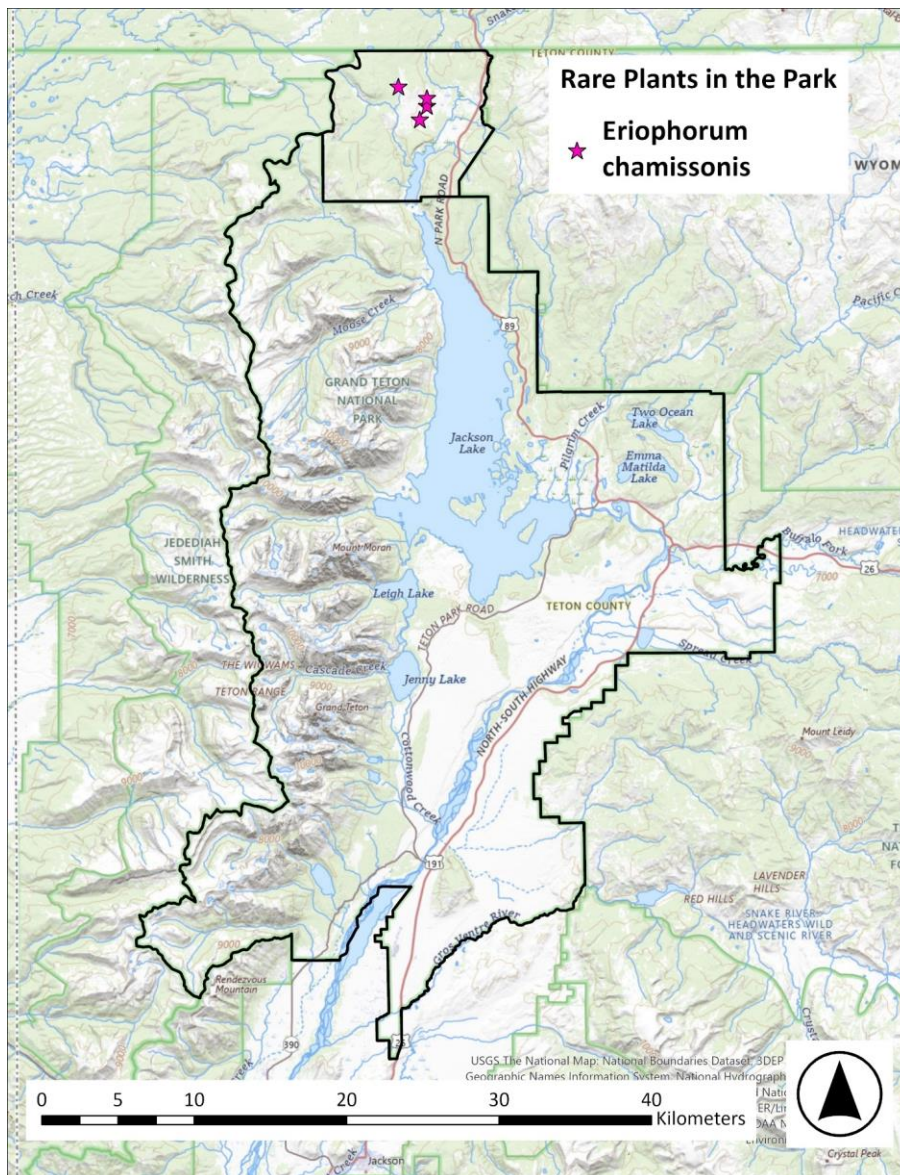


Figure 26. Map of observed *Eriophorum chamissonis* populations.

Eriophorum gracile

Slender cottongrass



Figure 27. *Eriophorum gracile* growing within some sedges.

Table 53. Sites with confirmed individuals of *Eriophorum gracile* and associated collection numbers.

Sites	Collection Numbers
GRTE-00008	GRTE-00008-ERGR8-8
GRTE-00095	GRTE-00095-ERGR8-3
GRTE-00104	GRTE-00104-ERGR8-7
JODR-00187	N/A

Table 54. Characteristics of *Eriophorum gracile* populations.

Characteristic	Description
Identifying characteristics	Plants are loosely rhizomatous. Spikes are 2 -5 clustered at the top of the stem, bristles are white. Leaves are channeled for most of their length, and are 1 – 2 mm wide.
General abundance	A few scattered individuals.
General habitat	Open fens.
Mean and range of peat depths	94.66 cm (10 – 150 cm)

Table 55. Water quality measurements associated with *Eriophorum gracile*.

Site	Depth (cm)	Temp (°C)	pH	Spec Cond (µS/cm)
GRTE-00008	Unknown	18.8	5.70	18
GRTE-00008	Unknown	22.5	6.20	21
GRTE-00008	20	21.7	5.96	35
GRTE-00008	35	16.9	6.30	24
JODR-00187	10	7.8	6.50	38

GRTE-00104	10	21	7.29	111
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Table 56. Species associated with *Eriophorum gracile*.

Lifeform	Scientific Name
Graminoids	<i>Carex aquatilis</i>
	<i>Carex utriculata</i>
Forbs	<i>Comarum palustre</i>
	<i>Menyanthes trifoliata</i>

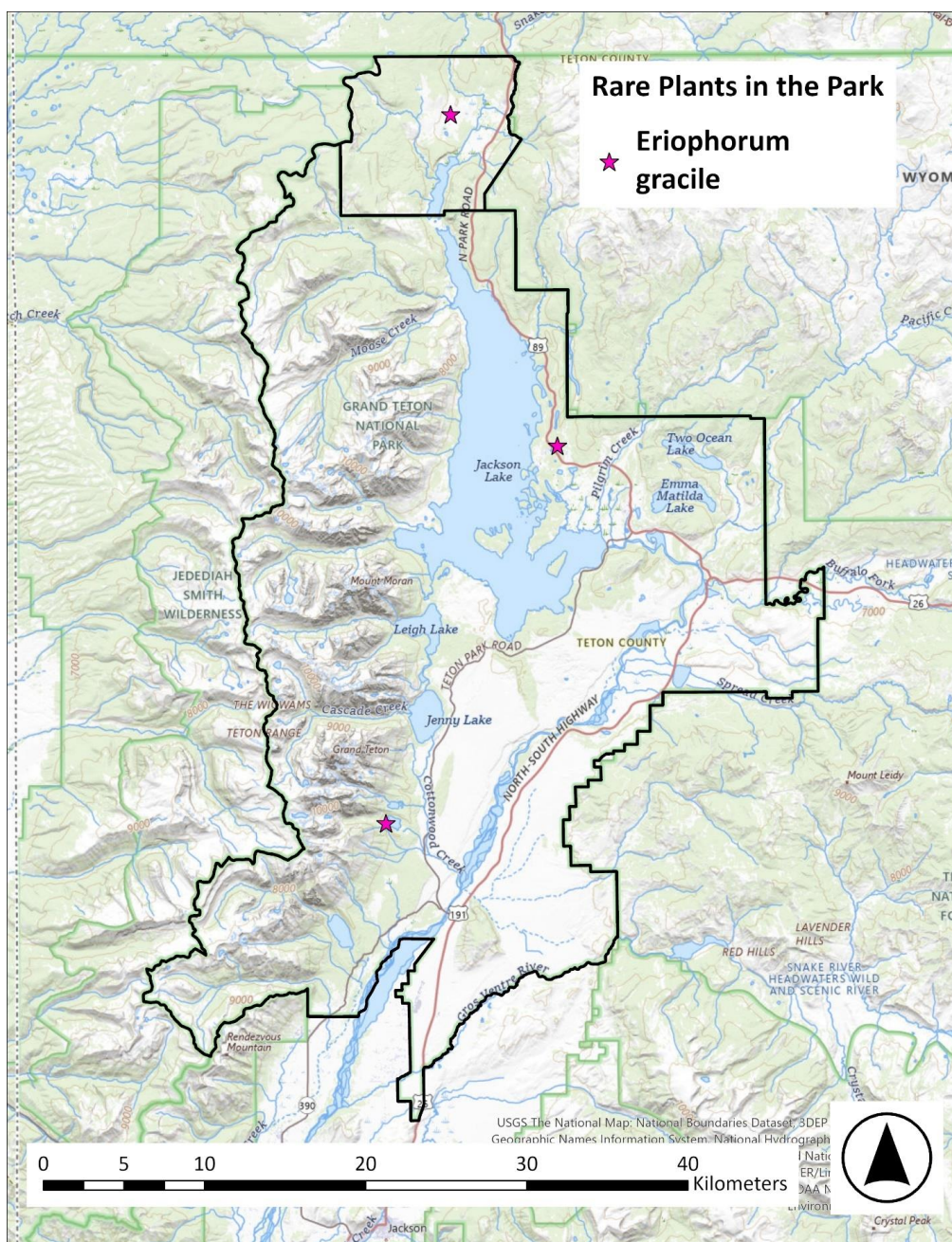


Figure 28. Map of observed *Eriophorum gracile* populations.

Eriophorum scheuchzeri

Scheuchzer's cottongrass

Table 57. Sites with confirmed individuals of *Eriophorum scheuchzeri* and associated collection numbers.

Sites	Collection Numbers
GRTE-00104	GRTE-00104-ERSC2-1
JODR-00185	JODR-00185-ERSC2-3
JODR-00187	N/A

Table 58. Characteristics of *Eriophorum scheuchzeri* populations.

Characteristic	Description
Identifying characteristics	Plants are loosely rhizomatous. A single flower at the tip of the culm, with white, silvery, or slightly reddish bristles, about 3 cm long.
General abundance	A few scattered individuals.
General habitat	Open fens.
Mean and range of peat depths	81.09 cm (30 – 140 cm)

Table 59. Water quality measurements associated with *Eriophorum scheuchzeri*.

Site	Depth (cm)	Temp (°C)	pH	Spec Cond (µS/cm)
GRTE-00104	10	21	7.29	111
JODR-00187	10	7.8	6.50	38

Table 60. Species associated with *Eriophorum scheuchzeri*.

Lifeform	Scientific Name
Shrubs	<i>Salix geyeriana</i>
Graminoids	<i>Carex utriculata</i>
	<i>Juncus ensifolius</i>
Forbs	<i>Pedicularis groenlandica</i>

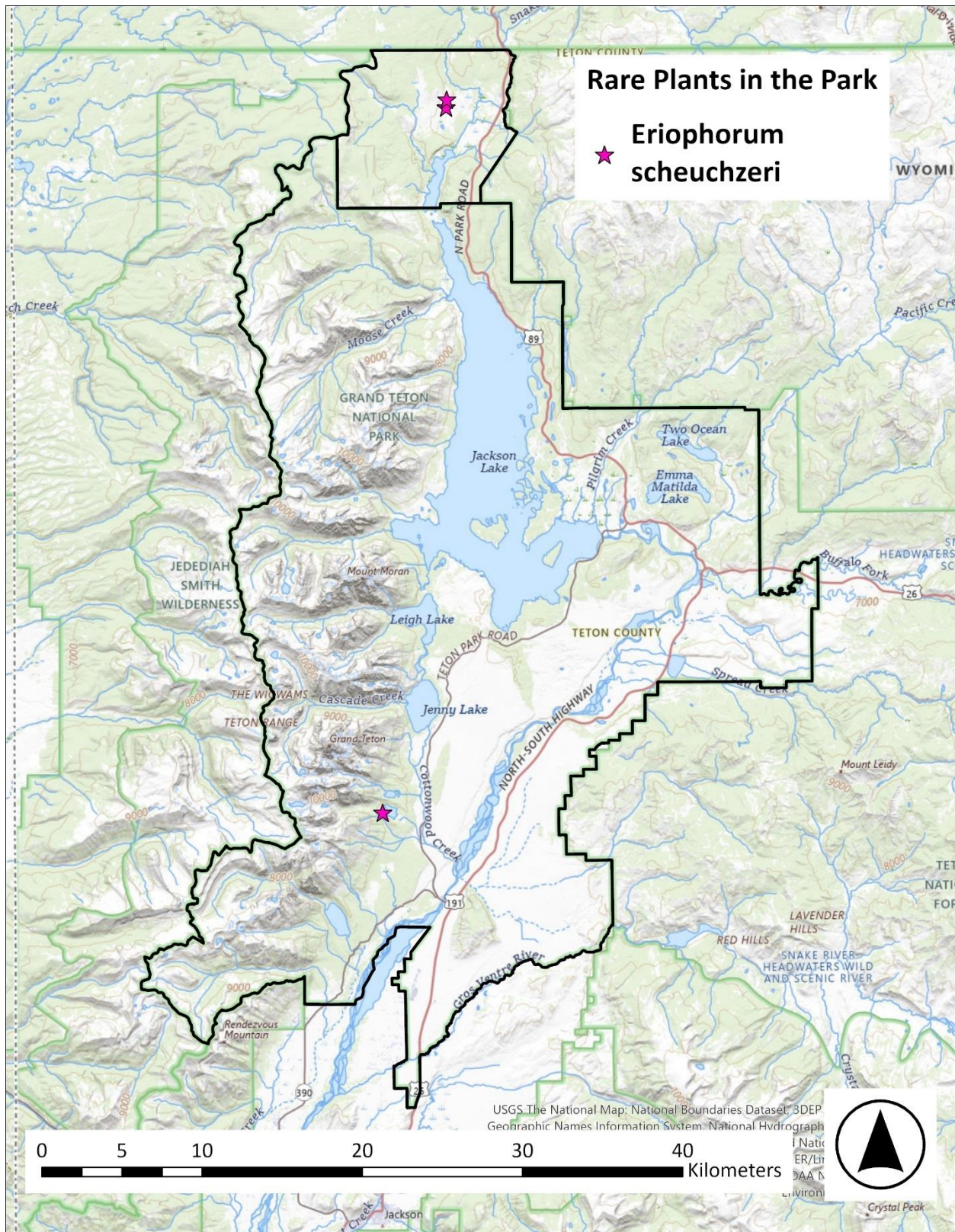


Figure 29. Map of observed *Eriophorum scheuchzeri* populations.

Juncus brevicaudatus

Narrow-panicled rush



Figure 30. *Juncus brevicaudatus* inflorescence.

Table 61. Sites with confirmed individuals of *Juncus brevicaudatus* and associated collection numbers.

Sites	Collection Numbers
GRTE-00091	N/A
GRTE-00092	GRTE-00092-JUBR4-6
GRTE-00095	GRTE-00095-JUBR4-8
GRTE-00099	N/A
GRTE-00109	N/A
GRTE-00111	N/A
JODR-00185	JODR-00185-JUBR4-2

Table 62. Characteristics of *Juncus brevicaudatus* populations.

Characteristic	Description
Identifying characteristics	Plants are caespitose. Often many flowers at the top of the stem. 6 tepals, 3 stamens. A few basal leaves are present, as well as a couple alternate leaves on the stem.
General abundance	Several clumps through the site.
General habitat	Open fens.
Mean and range of peat depths	57.53 cm (10 – 140 cm)

Table 63. Water quality measurements associated with *Juncus brevicaudatus*.

Site	Depth (cm)	Temp (°C)	pH	Spec Cond (µS/cm)
GRTE-00111	5	27.1	6.37	30
GRTE-00095	20	27	6.35	44
GRTE-00095	60	12.6	6.39	48

Site	Depth (cm)	Temp (°C)	pH	Spec Cond (µS/cm)
GRTE-00092	65	21.2	7.53	31
GRTE-00099	60	12.1	6.73	48
GRTE-00091	0	20.7	5.51	64
GRTE-00091	40	23.6	6.95	30

Table 64. Species associated with *Juncus brevicaudatus*.

Lifeform	Scientific Name
Graminoids	<i>Calamagrostis canadensis</i>
	<i>Carex aquatilis</i>
	<i>Carex buxbaumii</i>
	<i>Carex lasiocarpa</i>
	<i>Carex utriculata</i>
	<i>Deschampsia cespitosa</i>
Forbs	<i>Comarum palustre</i>

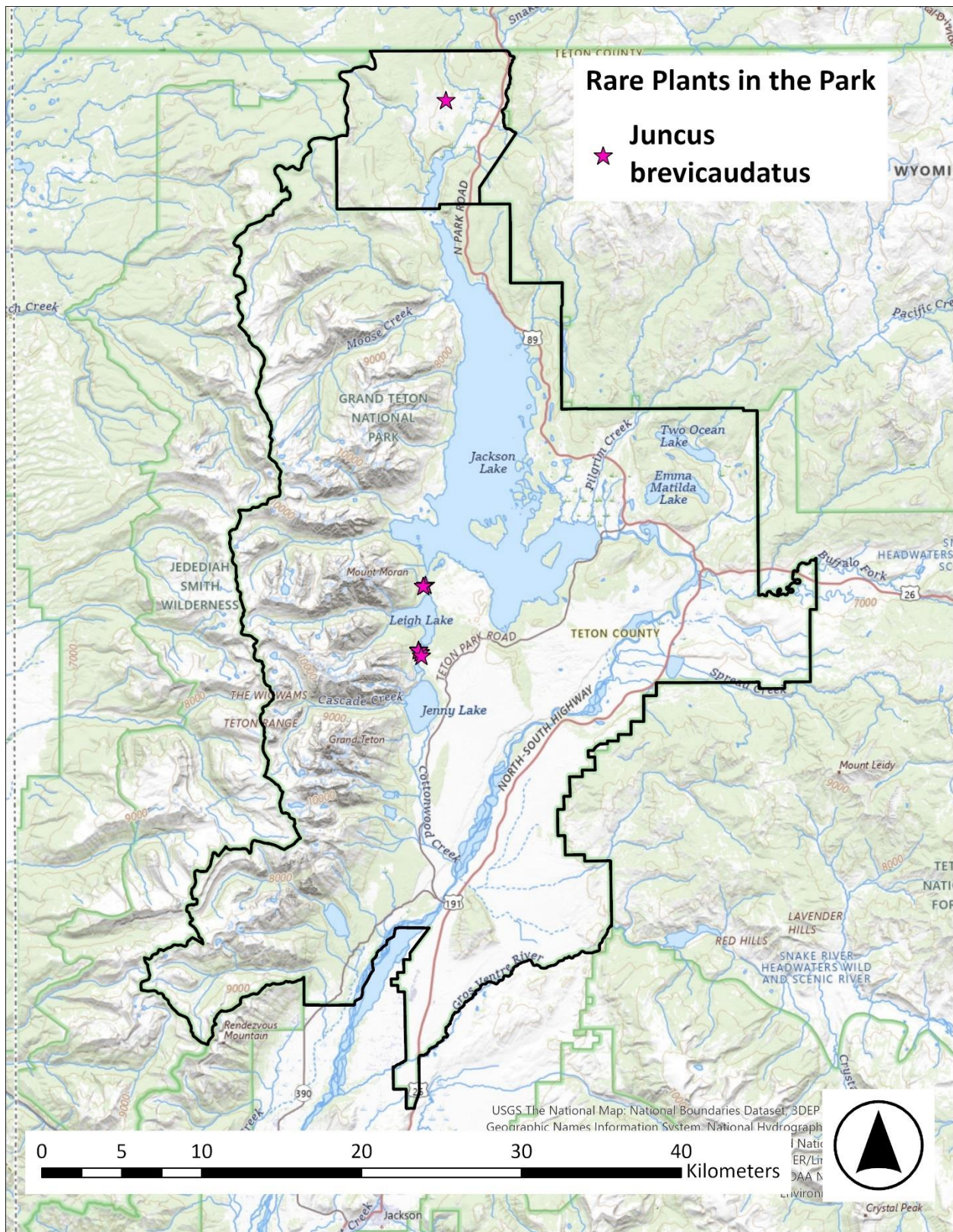


Figure 31. Map of observed *Juncus brevicaudatus* populations.

Juncus filiformis

Thread rush



Figure 32. *Juncus filiformis* next to a channel.

Table 65. Sites with confirmed individuals of *Juncus filiformis* and associated collection numbers.

Sites	Collection Numbers
JODR-00131	JODR-00131-JUFI-1

Table 66. Characteristics of *Juncus filiformis* populations.

Characteristic	Description
Identifying characteristics	Plants are caespitose. Compact cluster of 3-12 flowers at the top of the stem, subtended by an erect bract, which is as long or longer than the stem. The flowering stem has no leaves.
General abundance	Only a few clumps.
General habitat	On the margin of a channel
Mean and range of peat depths	49.5 cm (0 – 120 cm)

Table 67. Water quality measurements associated with *Juncus filiformis*.

Site	Depth (cm)	Temp (°C)	pH	Spec Cond (µS/cm)
JODR-00131	60	9.4	6.78	39

Table 68. Species associated with *Drosera anglica*.

Lifeform	Scientific Name
Shrubs	<i>Salix drummondiana</i>

Graminoids	<i>Carex utriculata</i>
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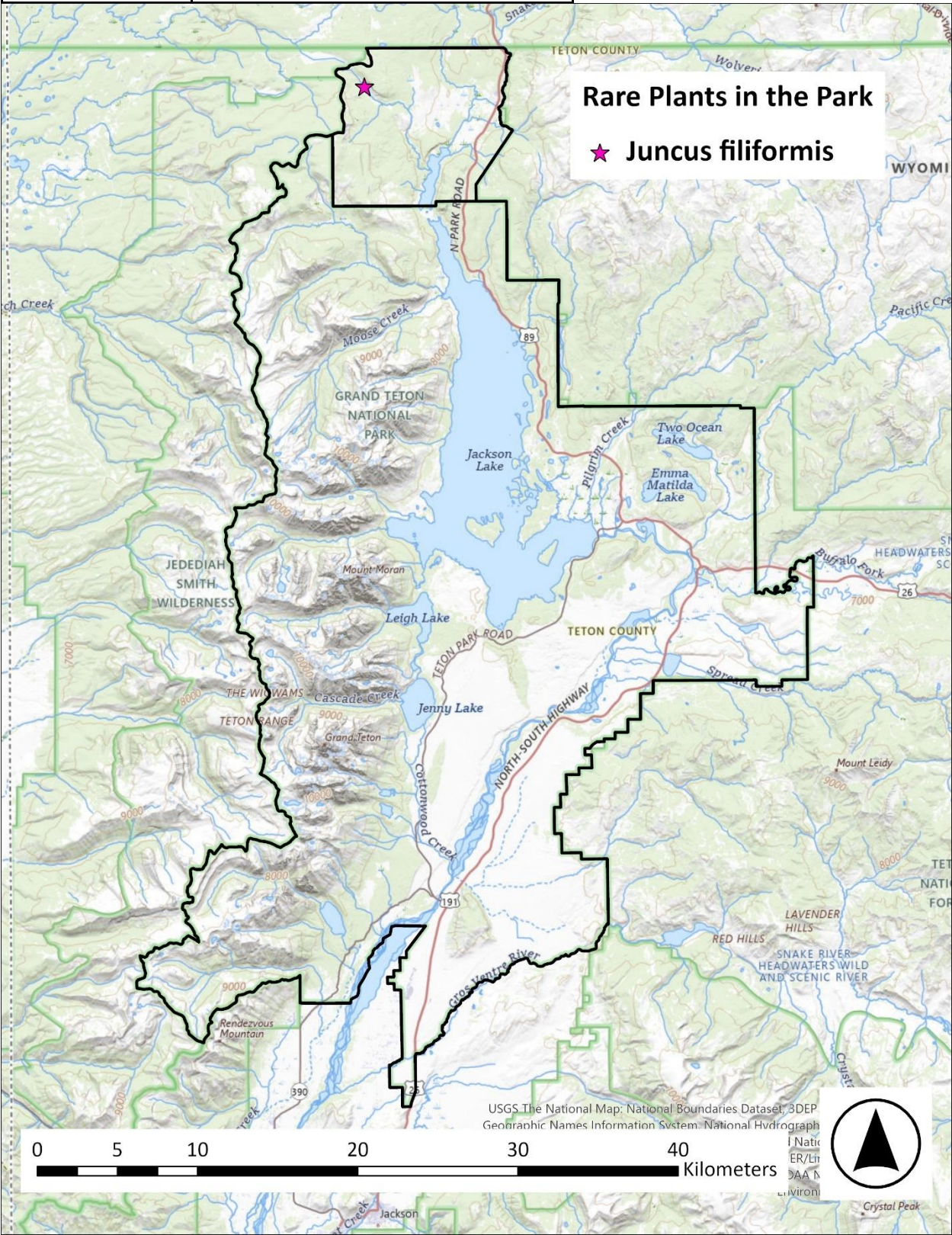


Figure 33. Map of observed *Juncus filiformis* populations.

Lycopus uniflorus

Northern bugleweed



Figure 34. A patch of *Lycopus uniflorus*.

Table 69. Sites with confirmed individuals of *Lycopus uniflorus* and associated collection numbers.

Sites	Collection Numbers
GRTE-00008	GRTE-00008-LYUN-6

Table 70. Characteristics of *Lycopus uniflorus* populations.

Characteristic	Description
Identifying characteristics	Alternate, coarsely toothed leaves with minute hairs. Stolons terminate in a tuber, which produces a flowering stem the following year. The fruit is a set of four nutlets, and the calyx lobes do not extend past the fruits.
General abundance	A few patches.
General habitat	Open fens with <i>Sphagnum</i> .
Mean and range of peat depths	120.83 cm (10 – 150 cm)

Table 71. Water quality measurements associated with *Lycopus uniflorus*.

Site	Depth (cm)	Temp (°C)	pH	Spec Cond (µS/cm)
GRTE-00008	Unknown	18.8	5.70	18
GRTE-00008	Unknown	22.5	6.20	21

GRTE-00008	20	21.7	5.96	35
GRTE-00008	35	16.9	6.30	24

Table 72. Species associated with *Lycopus uniflorus*.

Lifeform	Scientific Name
Graminoids	<i>Carex lasiocarpa</i>
	<i>Scheuchzeria palustris</i>
Forbs	<i>Comarum palustre</i>

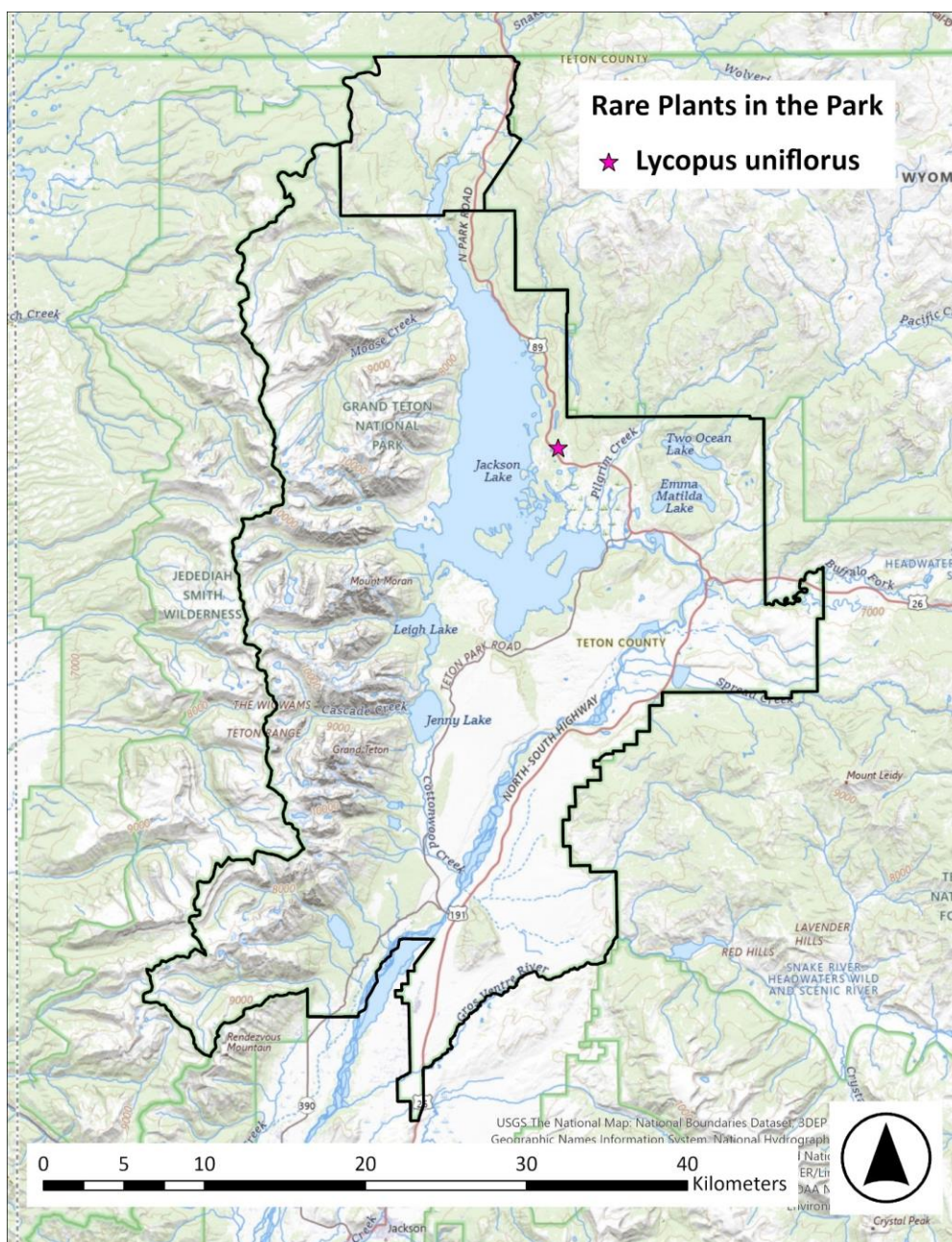


Figure 35. Map of observed *Lycopus uniflorus* populations.

Menyanthes trifoliata

Buckbean



Figure 36. *Menyanthes trifoliata* growing in a pool of water.

Table 73. Sites with confirmed individuals of *Menyanthes trifoliata* and associated collection numbers.

Sites	Collection Numbers
GRTE-00008	GRTE-00008-METR3-1
GRTE-00096	GRTE-00096-METR3-1
GRTE-00104	GRTE-00104-METR3-3
GRTE-00287	GRTE-00287-METR3-2
JODR-00046	JODR-00046-METR3-10

Table 74. Characteristics of *Menyanthes trifoliata* populations.

Characteristic	Description
Identifying characteristics	Flowers many and white in color, with wiry crinkled hairs arising from their petals. Leaves are three and palmately compound. Often found growing in water on a horizontal rhizome.
General abundance	Many scattered individuals in patches.
General habitat	Shallow standing water
Mean and range of peat depths	85.64 cm (0 – 150 cm)

Table 75. Water quality measurements associated with *Menyanthes trifoliata*.

Site	Depth (cm)	Temp (°C)	pH	Spec Cond (µS/cm)
GRTE-00096	25	27.3	6.38	42
GRTE-00287	20	18.2	5.69	30
GRTE-00008	Unknown	18.8	5.70	18
GRTE-00008	Unknown	22.5	6.20	21
GRTE-00008	20	21.7	5.96	35

Site	Depth (cm)	Temp (°C)	pH	Spec Cond (µS/cm)
GRTE-00008	35	16.9	6.30	24
GRTE-00104	10	21	7.29	111
JODR-00046	80	19.5	6.25	33
JODR-00046	10	13.2	6.37	37

Table 76. Species associated with *Menyanthes trifoliata*.

Lifeform	Scientific Name
Graminoids	<i>Carex lasiocarpa</i>
	<i>Carex livida</i>
	<i>Carex sp.</i>
	<i>Carex utriculata</i>
	<i>Eriophorum scheuchzeri</i>
	<i>Schoenoplectus acutus</i>
Forbs	<i>Comarum palustre</i>
	<i>Drosera anglica</i>
Aquatics	<i>Nuphar lutea</i>
	<i>Potamogeton sp.</i>

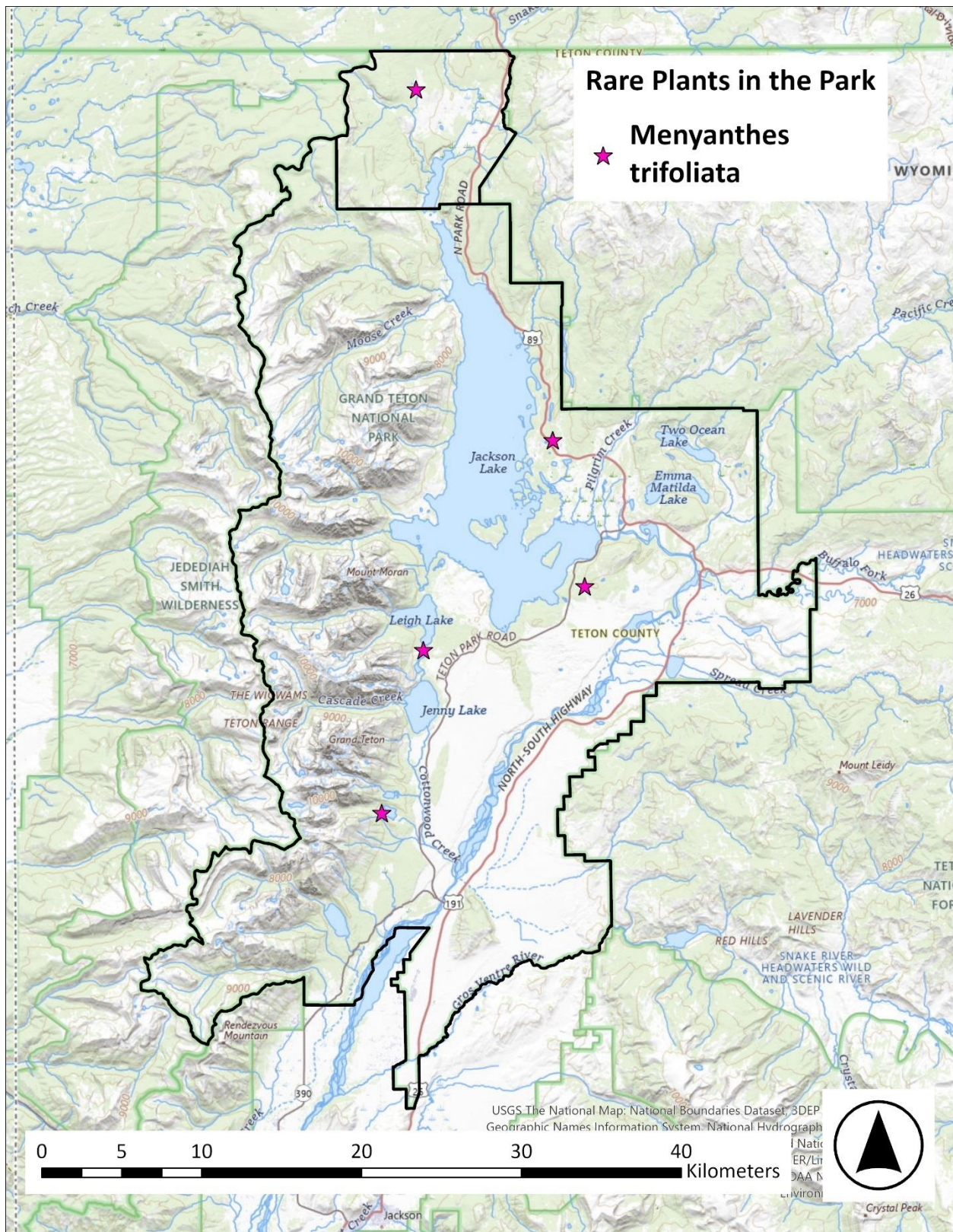


Figure 37. Map of observed *Menyanthes trifoliata* populations.

Potamogeton epihydrus

Ribbon-leaf pondweed



Figure 38. *Potamogeton epihydrus* growing on wet soil.

Table 77. Sites with confirmed individuals of *Potamogeton epihydrus* and associated collection numbers.

Sites	Collection Numbers
GRTE-00008	GRTE-00008-POEP2-2
GRTE-00248	GRTE-00248-POEP2-1
GRTE-00287	GRTE-00287-POEP2-1
GRTE-00292	N/A
GRTE-00293	N/A
GRTE-00294	N/A

Table 78. Characteristics of *Potamogeton epihydrus* populations.

Characteristic	Description
Identifying characteristics	Both submersed and floating leaves are present. Submersed leaves have a prominent midvein. Floating leaves have 11 – 41 veins and can be over 3.5 cm long, and 2 cm wide.
General abundance	Many individuals in the water.
General habitat	Shallow to deep water.
Mean and range of peat depths	75.61 cm (0 – 150 cm)

Table 79. Water quality measurements associated with *Potamogeton epihydrus*.

Site	Depth (cm)	Temp (°C)	pH	Spec Cond (µS/cm)
GRTE-00287	20	18.2	5.69	30
GRTE-00008	Unknown	18.8	5.70	18
GRTE-00008	Unknown	22.5	6.20	21
GRTE-00008	20	21.7	5.96	35
GRTE-00008	35	16.9	6.30	24
GRTE-00293	30	18	5.79	55
GRTE-00294	40	18	5.98	54
GRTE-00248	Unknown	21.2	4.66	33

Table 80. Species associated with *Potamogeton epihydrus*.

Lifeform	Scientific Name
Graminoids	<i>Carex utriculata</i>
	<i>Carex vesicaria</i>
	<i>Glyceria borealis</i>
Forbs	<i>Sagittaria latifolia</i>
	<i>Sium suave</i>
Aquatics	<i>Lemna sp.</i>
	<i>Nuphar lutea</i>

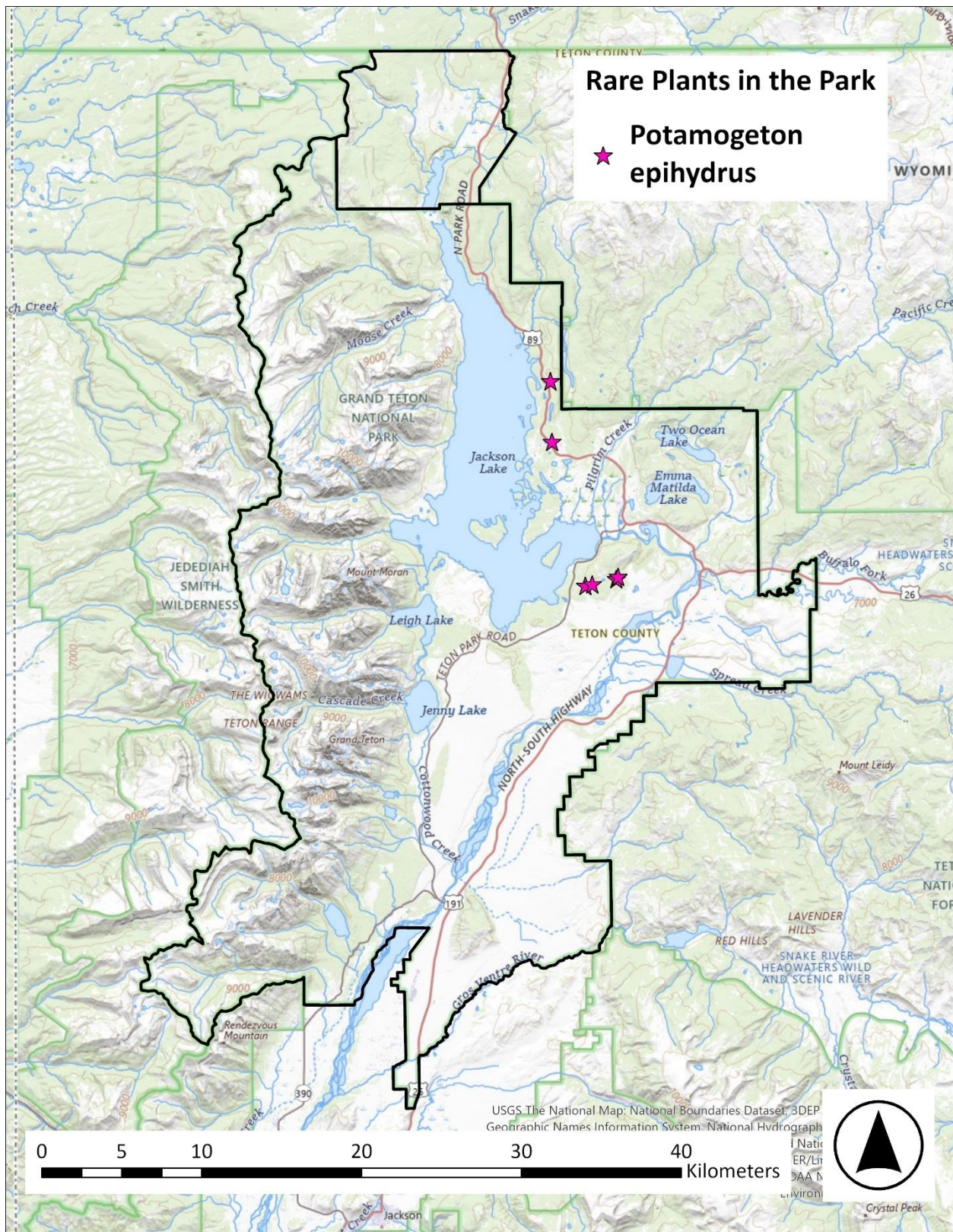


Figure 39. Map of observed *Potamogeton epihydrus* populations.

Potamogeton praelongus

Whitestem pondweed

Table 81. Sites with confirmed individuals of *Potamogeton praelongus* and associated collection numbers.

Sites	Collection Numbers
JODR-00046	JODR-00046-POPR5-11

Table 82. Characteristics of *Potamogeton praelongus* populations.

Characteristic	Description
General abundance	Many individuals in the water.
General habitat	Shallow to deep water
Mean and range of peat depths	75.61 cm (0 – 150 cm)

Table 83. Water quality measurements associated with *Potamogeton praelongus*.

Site	Depth (cm)	Temp (°C)	pH	Spec Cond (µS/cm)
JODR-00046	80	19.5	6.25	33
JODR-00046	10	13.2	6.37	37

Table 84. Species associated with *Potamogeton praelongus*.

Lifeform	Scientific Name
Graminoids	<i>Carex lasiocarpa</i>

Scheuchzeria palustris

Rannoch-rush



Figure 41. *Scheuchzeria palustris* up close.

Table 85. Sites with confirmed individuals of *Scheuchzeria palustris* and associated collection numbers.

Sites	Collection Numbers
GRTE-00008	GRTE-00008-SCPA2

Table 86. Characteristics of *Scheuchzeria palustris* populations.

Characteristic	Description
Identifying characteristics	Fruit is three erect green-yellow capsules. Leaves are grass-like with parallel veins, but they are more or less circular, with a pore at the tip of the leaf. Flowers vary from whitish to purple to brown.
General abundance	Many individuals throughout.
General habitat	Open fen with <i>Sphagnum</i> .
Mean and range of peat depths	120.83 cm (10 – 150 cm)

Table 87. Water quality measurements associated with *Scheuchzeria palustris*.

Site	Depth (cm)	Temp (°C)	pH	Spec Cond (µS/cm)
GRTE-00008	Unknown	18.8	5.70	18
GRTE-00008	Unknown	22.5	6.20	21
GRTE-00008	20	21.7	5.96	35
GRTE-00008	35	16.9	6.30	24

Table 88. Species associated with *Scheuchzeria palustris*.

Lifeform	Scientific Name
Graminoids	<i>Carex lasiocarpa</i>
	<i>Carex limosa</i>
Forbs	<i>Menyanthes trifoliata</i>
	<i>Drosera anglica</i>

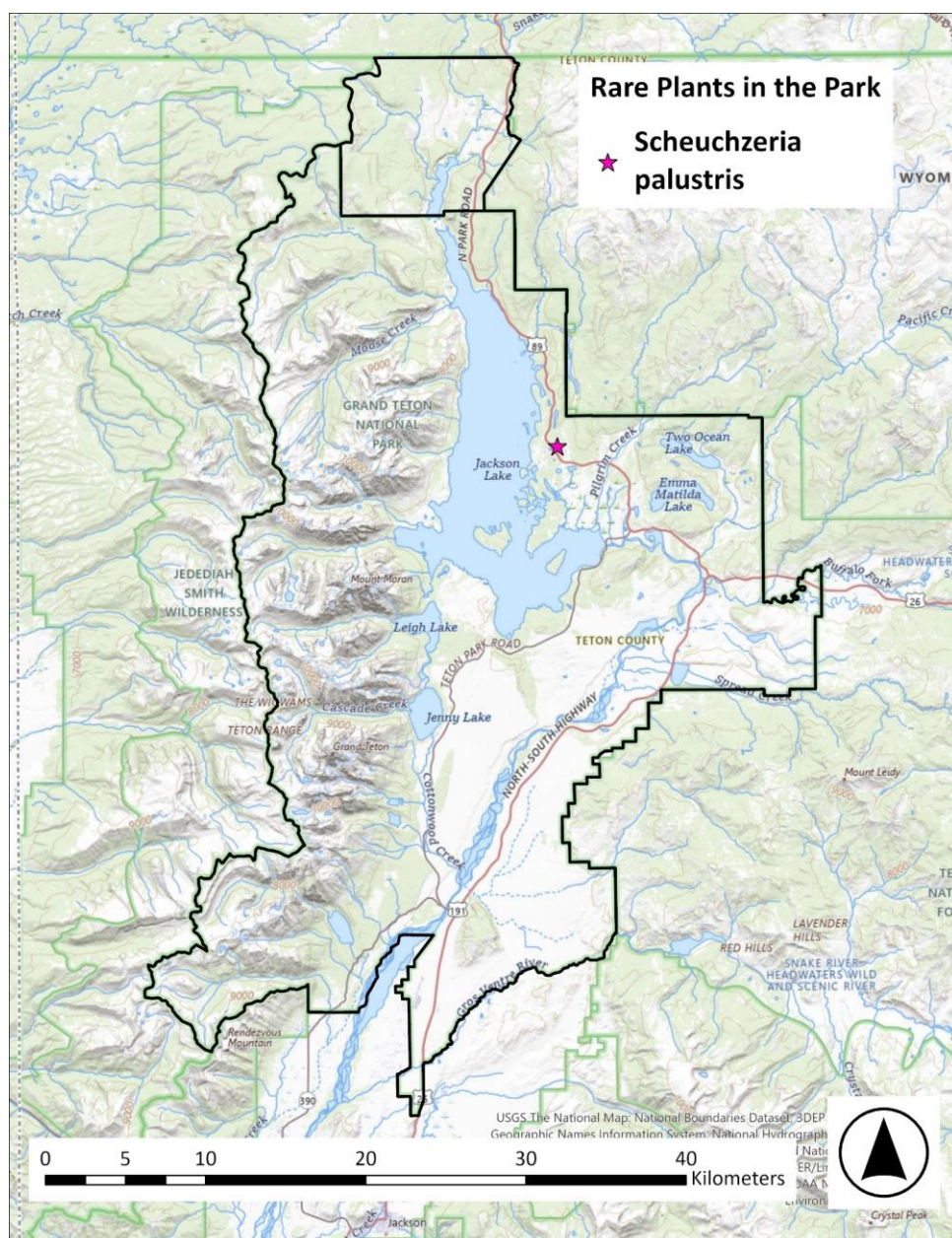


Figure 42. Map of observed *Scheuchzeria palustris* populations.

Sparganium natans

Small bur-reed



Figure 43. *Sparganium natans* in a pool of water.

Table 89. Sites with confirmed individuals of *Sparganium natans* and associated collection numbers.

Sites	Collection Numbers
GRTE-00091	N/A
GRTE-00092	GRTE-00092-SPNA-7
GRTE-00104	GRTE-00104-SPNA-4
JODR-00192	JODR-00192-SPNA-4

Table 90. Characteristics of *Sparganium natans* populations.

Characteristic	Description
Identifying characteristics	Female heads of densely packed seeds are small, approximately 12 mm in diameter. Leaves are thin, linear and long, and are often resting on the surface of the water.
General abundance	Many individuals in the water.
General habitat	Shallow standing water.
Mean and range of peat depths	52.35 cm (10 – 100 cm)

Table 91. Water quality measurements associated with *Sparganium natans*.

Site	Depth (cm)	Temp (°C)	pH	Spec Cond (µS/cm)
GRTE-00091	0	20.7	5.51	64
GRTE-00091	40	23.6	6.95	30
GRTE-00092	65	21.2	7.53	31
JODR-00192	40	15.2	5.86	31
GRTE-00104	10	21	7.29	111

Table 92. Species associated with *Sparganium natans*.

Lifeform	Scientific Name
Graminoids	<i>Carex lasiocarpa</i>
	<i>Carex utriculata</i>
	<i>Eleocharis palustris</i>
	<i>Eriophorum</i> sp.
Forbs	<i>Menyanthes trifoliata</i>
	<i>Sagittaria latifolia</i>
	<i>Typha latifolia</i>
Aquatics	<i>Utricularia minor</i>

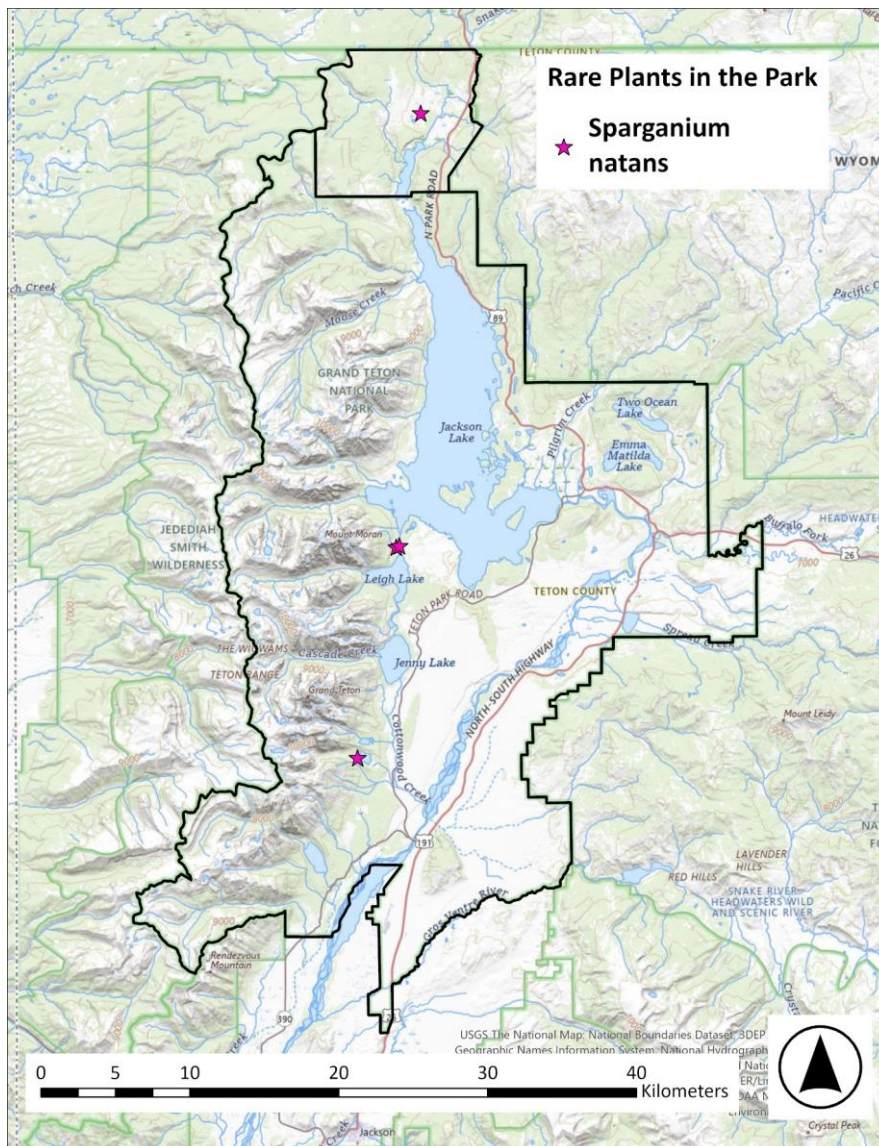


Figure 44. Map of observed *Sparganium natans* populations.

Symphyotrichum boreale

Northern bog-aster

Table 93. Sites with confirmed individuals of *Symphyotrichum boreale* and associated collection numbers.

Sites	Collection Numbers
GRTE-00342	GRTE-00342-SYBO2-2

Table 94. Characteristics of *Symphyotrichum boreale* populations.

Characteristic	Description
Identifying characteristics	Plants are rhizomatous. Leaves are linear and 2 – 5 mm wide, slightly clasping the thin stem. Flowers are white to pale bluish with 20 – 50 narrow ray flowers. Stems are hairless at the base, becoming hairy from the midsection up to the flowering branches.
General abundance	A few scattered individuals.
General habitat	Open fen with some shrubs.
Mean and range of peat depths	41.43 cm (0 – 70 cm)

Table 95. Water quality measurements associated with *Symphyotrichum boreale*.

Site	Depth (cm)	Temp (°C)	pH	Spec Cond (µS/cm)
GRTE-00342	25	13.2	7.67	276

Table 96. Species associated with *Symphyotrichum boreale*.

Lifeform	Scientific Name
Shrubs	<i>Betula glandulosa</i>
Graminoids	<i>Carex simulata</i>

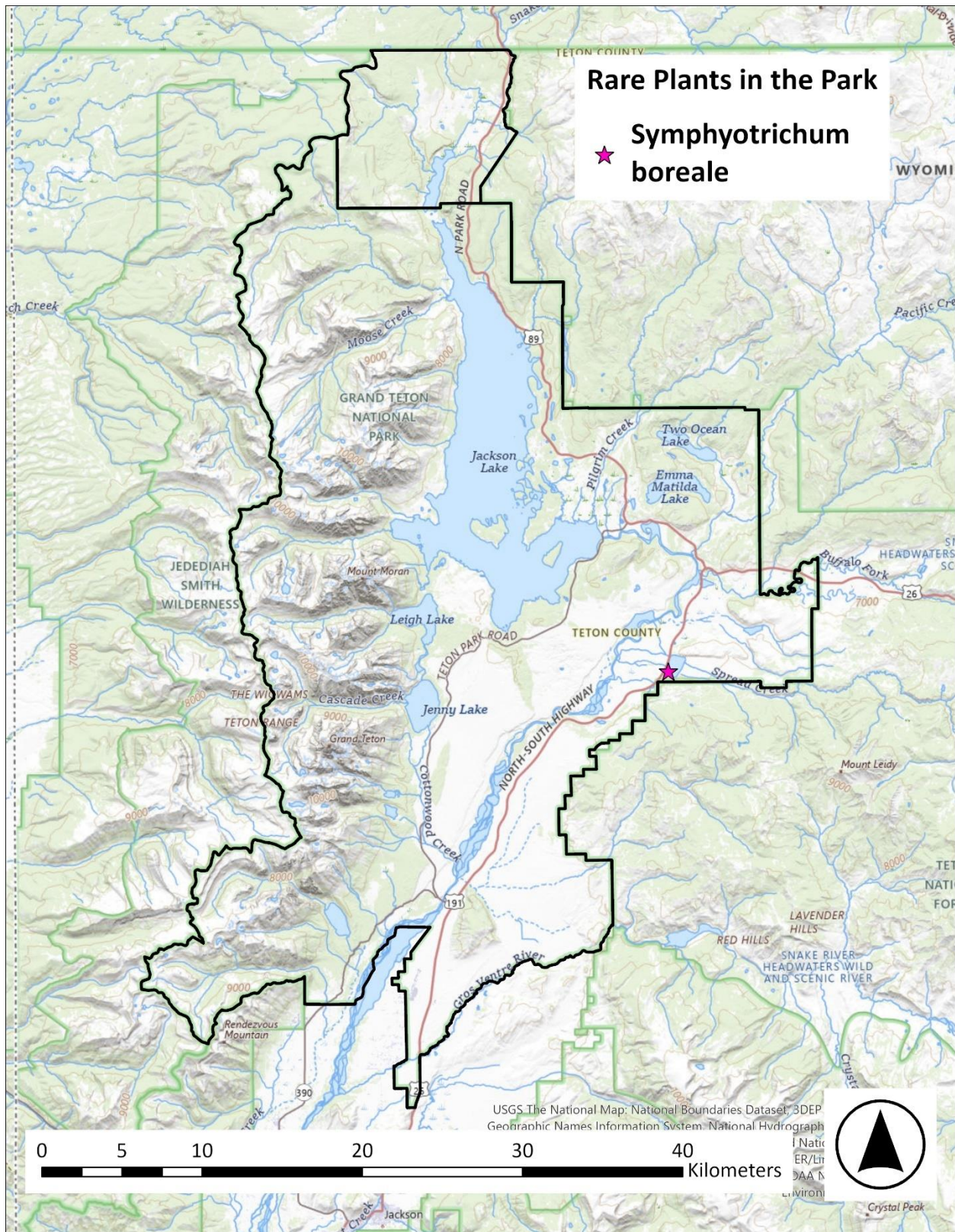


Figure 45. Map of observed *Symphyotrichum boreale* populations.

Utricularia minor

Lesser bladderwort



Figure 46. *Utricularia minor* growing in shallow water.

Table 97. Sites with confirmed individuals of *Utricularia minor* and associated collection numbers.

Sites	Collection Numbers
GRTE-00008	N/A
GRTE-00104	N/A
JODR-00066	JODR-00066-UTMI-1
JODR-00839	JODR-00839-UTMI-3

Table 98. Characteristics of *Utricularia minor* populations.

Characteristic	Description
Identifying characteristics	Leaves are alternate. Carnivorous bladders can occur on all leaves, not just on specialized branches, as with <i>Utricularia intermedia</i> . Plants are small and have a round appearance, approximately 1.7 cm in diameter. Flowers are pale yellow with an elongated lower lip.
General abundance	Many individuals in the water.
General habitat	Shallow standing water.

Mean and range of peat depths	87.55 cm (0 – 150 cm)
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Table 99. Water quality measurements associated with *Utricularia minor*.

Site	Depth (cm)	Temp (°C)	pH	Spec Cond (µS/cm)
JODR-00066	15	44.8	7.86	923
JODR-00839	-10	20.3	6.16	727
GRTE-00092	65	21.2	7.53	31
JODR-00192	40	15.2	5.86	31
GRTE-00104	10	21	7.29	111
GRTE-00008	Unknown	18.8	5.70	18
GRTE-00008	Unknown	22.5	6.20	21
GRTE-00008	20	21.7	5.96	35
GRTE-00008	35	16.9	6.30	24
GRTE-00104	10	21	7.29	111

Table 100. Species associated with *Utricularia minor*.

Lifeform	Scientific Name
Graminoids	<i>Carex lasiocarpa</i>
	<i>Carex nebrascensis</i>
	<i>Eleocharis quinqueflora</i>
	<i>Schoenoplectus acutus</i>
Forbs	<i>Menyanthes trifoliata</i>
	<i>Pedicularis groenlandica</i>
Aquatics	<i>Nuphar lutea</i>

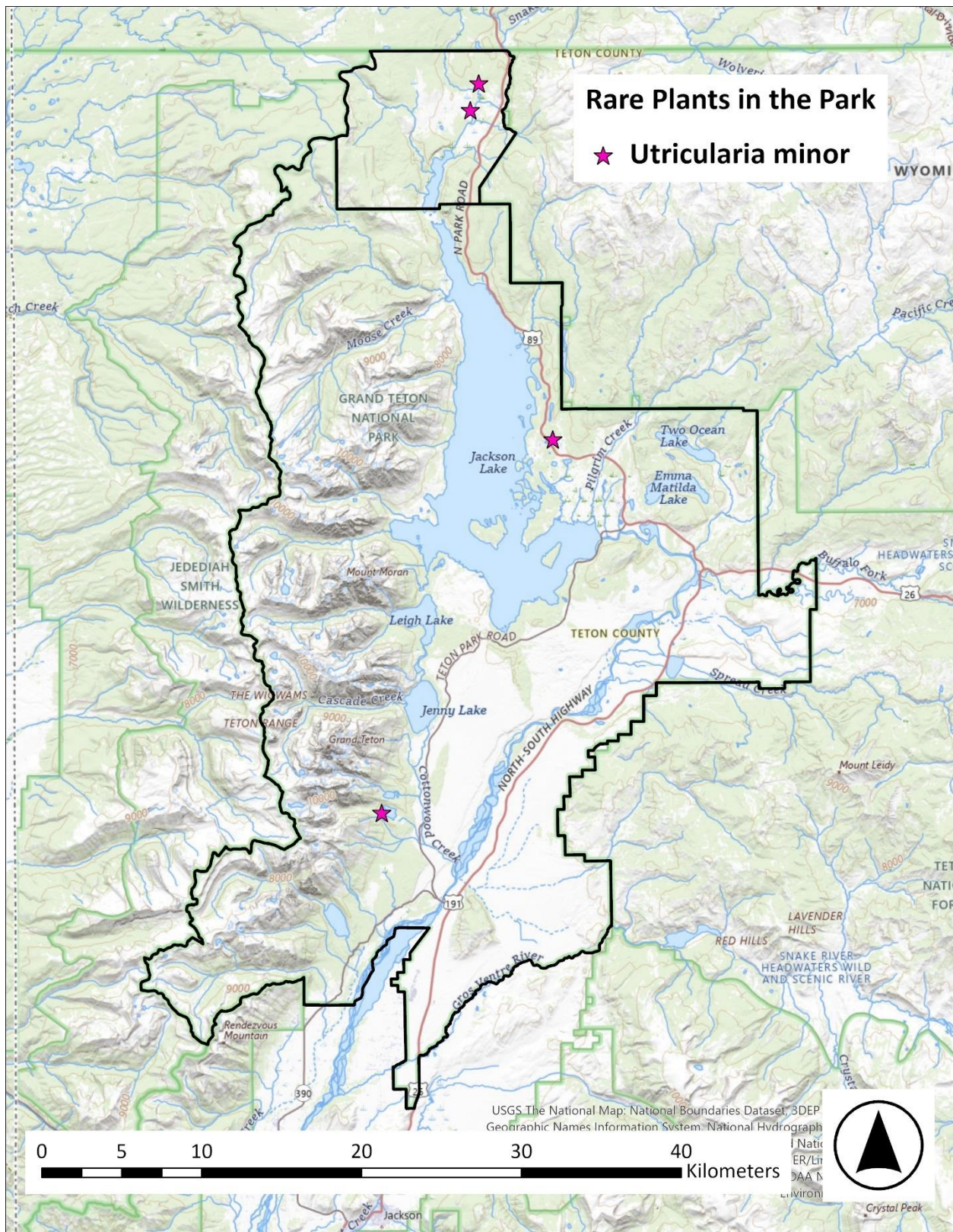


Figure 47. Map of observed *Utricularia minor*.