

**STUDIES IN THE GENUS CAREX
ON THE
IDAHO PANHANDLE NATIONAL FORESTS**

by

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ABSTRACT

Eleven of thirteen species of the genus *Carex* (sedges) which have been designated as Sensitive Species within Region 1 of the U.S. Forest Service are known to occur in Idaho. In this study, the status of these thirteen species, plus one other species of sedge, on the Idaho Panhandle National Forests was investigated through herbaria searches and field surveys. In individual reports, the taxonomy, description, range, habitat, collection record, and conservation status of nine of the fourteen species are discussed. Each species discussion ends with recommendations for land managers and field personnel. The other five species of sedge are more briefly discussed.

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- Appendix I.** Maps of precise occurrences of Carex buxbaumii and Carex flava.
Appendix II. Slides of Carex flava and its habitat.
Appendix III. List of areas visited during the 1988 field season.

INTRODUCTION

Thirteen taxa of the genus *Carex* (sedges) are considered to be Sensitive Plant Species within the National Forests of Idaho, Montana and the Dakotas; of these thirteen, eleven taxa are known to occur in Idaho (Region 1, U.S. Forest Service, 1987). The primary objective of this study was to assess the status of these eleven taxa, plus *C. flava*, on the Idaho Panhandle National Forests. Funding for the study was provided to the Idaho Department of Fish and Game's Natural Heritage Program by the Idaho Panhandle National Forests. Their support and assistance is gratefully acknowledged.

The methodology included searches of the major herbaria of the Pacific Northwest (U.S. herbaria only) for historic and recent collection locality data, field investigations of some the reported localities for these taxa, and reconnaissance level searches of other selected sites chosen to represent an array of habitats in which sedges can be found.

Four herbaria were searched: the University of Idaho Herbarium (ID), the Forestry, Wildlife and Range Herbarium at the University of Idaho (IDF), the Marion Ownbey Herbarium at Washington State University (WS), and the University of Washington (WTU). Areas visited during the field investigations are listed in Appendix III.

Nine species are discussed in detail in this report; each is discussed individually, in alphabetical order. The format is similar for each species. Taxonomy and current status are discussed first, followed by a non-technical description.

The purpose of the non-technical description is to provide a "search image" for field personnel. Most of these species have distinctive features which can be useful in making a tentative identification in the field. It emphasizes major morphological features including the general appearance of the plant, its height, the nature of the leaves and where their location, the number and size of the flower spikes, the relative location of pistillate and staminate flowers, and the nature of the bracts, if any, which subtend the spikes.

These features are insufficient to confirm the identity of a given specimen, so a reference to the technical description is given next, followed by comments on distinguishing features and similar species.

Additional sections discuss the range and habitat of each species, the results of herbarium searches and field inventory, a status assessment and recommendations. Five other species are more briefly discussed.

Carex aenea Fern.

CURRENT STATUS USFS Region 1 Sensitive Species

TAXONOMY

Family: Cyperaceae

Common Name: bronze sedge Alpha Code: 1006

Citation: Proc. Am. Acad. 37:480. 1902.

Nontechnical Description: Densely tufted plants without creeping rhizomes; stems 3-8 dm in height, with lowest leaves reduced to scales. Leaves 2-5 mm in width, much shorter than the stem, flat or nearly so, and borne on lower half of stem (but not crowded at base). Spikes (3-8) are pale green or straw-colored to medium brown, between 6-25 mm in length and borne loosely and commonly flexuously. Pistillate flowers are borne above the staminate flowers. Bracts are generally short and inconspicuous.

Technical Description: See Hitchcock et al., 1969, page 235; also see illustration on page 236.

Distinguishing Features and Similar Species: The loose and commonly flexuous inflorescence is useful in distinguishing C. aenea from other species with similar technical descriptions.

DISTRIBUTION

Range: According to Cronquist (Hitchcock et al., 1969), the bronze sedge is a northern species which ranges from Labrador, west to the Yukon and as far south as Connecticut and se BC; he also notes its occurrence in Glacier Park, MT, and at scattered stations to Fremont Co., ID. Also known from Sullivan Lake in Pend Oreille Co., WA (R. Schuller, 1988, personal communication). Only three sites for this species have been reported from ID, one each in Fremont, Idaho, and Kootenai Counties (Henderson, 1981a).

Habitat and Associated Species: Moist or wet places (Hitchcock et al., 1969). Henderson (1981a) notes a range of habitats including moist meadows, streambanks, and edges of cultivated fields, low elevations to montane.

RESULTS OF HERBARIA SEARCHES AND FIELD INVENTORY

Two sites for Carex aenea within the Region 1 forests of northern Idaho were documented by a specimen:

Rust 293. Date uncertain. Kootenai County. French Gulch, east side of Coeur d'Alene, Harrison Ave. to French Gulch.

Daubenmire s.n. August 2, 1942. Idaho County. Vicinity of Buffalo Lake, Nez Perce National Forest. Spruce-fir zone. (WTU)

I have not been able to locate the specimen on which the Fremont Co. report is based.

I made a cursory examination of the French Gulch area, but I did not find the bronze sedge. The French Gulch area includes a wooded gulch which leads to a rolling plateau. The plateau within a mile or so of the road is pastureland. I looked in drainage ditches and wet areas along the road across the plateau. The bronze sedge was not found at any of the sites visited on the Idaho Panhandle National Forests during the 1988 field inventory (see Appendix I).

STATUS ASSESSMENT AND RECOMMENDATIONS

Summary: The known occurrences of this species at Sullivan Lake in Pend Oreille County, WA, and the reported locations on the Nez Perce National Forest and east of Coeur d'Alene, suggest that Carex aenea may be present on the Idaho Panhandle National Forests as well.

Recommendation to the Idaho Panhandle National Forest: This species should remain on the Region 1 Sensitive Plant Species list. Land managers and field personnel should be informed of the possible occurrence of this species in their areas. Possible sightings of this plant should be documented by specimens (if the size of the population warrants collecting), and should include both mature fruits and roots. Specimens should be sent to the University of Idaho Herbarium for verification of their identity. Confirmed sightings of this species should be reported to the Idaho Natural Heritage Program for entry into their permanent data base on sensitive species.

Carex buxbaumii Wahl.

CURRENT STATUS USFS Region 1 Sensitive Species

TAXONOMY

Family: Cyperaceae

Common Name: brown bog sedge Alpha Code: 1006

Citation: Svenska Vet.-Akad. Handl. 24:163. 1803.

Nontechnical Description: Stems arising singly or few together from well-developed creeping rhizomes, mostly 3-10 dm in height, lowest leaves strongly reduced to scales; new stems are not surrounded by old sheaths from previous years (though old sheaths can be found separately from the new stems). Leaves are smooth and 2-4 mm in width. Spikes mostly 2-5, borne erect or closely ascending, and loosely sessile on the stem. Terminal spike, pistillate flowers are borne above the staminate flowers; the lateral spikes are entirely pistillate. Bract which subtends the spike is sheathless, and will sometimes exceed the inflorescence.

Technical Description: See Hitchcock et al., 1969, page 251; also see illustration on page 252.

Distinguishing Features and Similar Species: *Carex buxbaumii* is a well-marked and distinct species. The light-gray green, densely-papillate perigynia give the inflorescence a distinctive coloration than makes field inventory for flowering stems rather easy. The plants retain this distinctive aspect until the perigynia cure to a pale straw color, which makes them more difficult to spot at a distance.

DISTRIBUTION

Range: The brown bog sedge is distributed throughout the boreal regions of the Northern Hemisphere; although it is widespread it is relatively uncommon and infrequently collected. In the western United States it reaches as far south as CO, UT, and central CA, but is not recorded for NV. In western and south-central MT, and Yellowstone National Park, it is common enough to be classified as a minor dominance type (Mattson, 1984; Pierce and Johnson, 1986; Hansen et al., 1988).

In ID and WA, *Carex buxbaumii* is rare. It is known from three widely disjunct areas of ID (Henderson, 1981b; Idaho Natural Heritage Program, unpublished data, 1988): 1) Island Park (Fremont Co.), where its current status is unknown; 2) the Sawtooth Valley (Blaine and Custer Counties), where it is found in apparently stable populations along lake edges and associated wetlands; and 3) the Priest River Ranger District of the Kaniksu National Forest. In WA, it is known only from seven recent sightings in widely scattered locations; three of these are from Pend Oreille County (John Gamon, 1989, personal communication).

Habitat and Associated Species: Throughout its range the brown bog sedge can be found in peat bogs, marshes, wet meadows, and other wet places (Hitchcock *et al.*, 1969). In Montana, it is typically found at mid-elevations in flat, wet meadows and forest openings (Hansen *et al.*, 1988). On the Priest River Ranger District, the plant has been found in a flat, wet meadow on the edge of forested land at an elevation of about 2580 feet. *Carex lasiocarpa* and *Deschampsia cespitosa* are both common. Associated shrubs include *Alnus incana*, *Betula glandulosa*, *Salix bebbiana?*, and *Spiraea douglasii*. *Carex rostrata* is common on sites which are apparently too wet for *Carex buxbaumii*.

RESULTS OF HERBARIA SEARCHES AND FIELD INVENTORY

Within the Region 1 forests of northern Idaho, only one site for the species has been documented with specimens:

W.H. Baker 8978. June 1, 1952. Sedge meadow, two miles south of Priest Lake landing strip. (ID,WTU)

The general location of Baker's collection site has been relocated.

STATUS

Ownership: The majority of the population appears to be on private land, although several acres of potential and occupied habitat are present on the adjacent public land administered by the Priest River Ranger District of the Kaniksu National Forest.

Threats: The site has been subjected to hydrologic modification through ditching and draining. It also has a complex grazing history, with remnants of several old fences present; it is not currently heavily grazed, although there was some evidence of limited use by horses. The resulting mosaic of old-field successional pathways is complex, and suggests that the meadow system is undergoing dynamic changes in its species composition and structure. The implications of these changes for *Carex buxbaumii* are unknown.

Management Implications: It is not possible to determine what, if any, effect habitat modification has had on the population. Nor is it currently possible to predict what the current status of the population is. This is the only population of this species known from the Region 1 forests of northern Idaho.

STATUS ASSESSMENT AND RECOMMENDATIONS

Summary: Only one population of Carex buxbaumii is known to exist on the Region 1 forests of northern Idaho. The site at which it occurs has been subjected to hydrologic modification and has an extensive grazing history, and is a complex mosaic of old-field successional pathways. The implications of these dynamic changes for the long-term viability of the brown bog sedge at this site are unknown.

Recommendation to the Idaho Panhandle National Forest: This species should be retained on the Region 1 Sensitive Plant Species list. If the long-term viability of Carex buxbaumii in northern Idaho is to be assured, some limited monitoring of this population is warranted in order to establish the current trend. The recommended protocol is an annual census of flowering culms within quadrats using a nested frequency approach. If an overall decline in the reproductive vigor of the population is indicated, further studies may be warranted.

Land managers and field personnel on the Kaniksu National Forests should be informed of the possible occurrence of this species in their areas. Possible sightings of this plant should be documented by specimens (if the size of the population warrants collecting), and should include both mature fruits and roots. Specimens should be sent to the University of Idaho Herbarium for verification of their identity. Confirmed sightings of this species should be reported to the Idaho Natural Heritage Program for entry into their permanent data base on sensitive species.

Carex californica L.H. Bailey

CURRENT STATUS USFS Region 1 Sensitive Species

TAXONOMY

Family: Cyperaceae

Common Name: California sedge Alpha Code: 1052

Citation: Mem. Torrey Club 1:9. 1889.

Nontechnical Description: Stems arising singly or few together from long, coarse, scaly, creeping rhizomes, 2-7 dm in height, lowest leaves strongly reduced to scales, with purplish or reddish-brown, nearly bladeless basal sheaths. Foliage leaves are flat, 2-5 mm in width, and are borne distinctly on the stem; the upper surface of the leaves is smooth and shiny, but the lower surface is pale and densely covered with minute glands.

The inflorescence is sometimes very loose and open, and sometimes more closely-flowered; several slender spikes are usually borne erectly on relatively short peduncles. The terminal one or two spikes are staminate, or may also have pistillate flowers, and are mostly 1.5-3 cm in length. Other spikes range between 1-5 cm in length, and have between 10-35 pistillate (only) flowers. Bract which subtends the lower/lowest spikes with well-developed sheath mostly 1-4 cm in long, shorter than the inflorescence.

Technical Description: See Hitchcock et al., 1969, page 251; also see illustration on page 252.

Distinguishing Features and Similar Species: The strong reduction of the lowest leaves to scales, the foliage leaves borne distinctly on the stem, and the densely-glandular lower leaf surface serve as useful characters in distinguishing Carex californica from other species with similar technical descriptions.

DISTRIBUTION

Range: The California sedge is a Pacific Coastal species with the majority of its range occurring west of the crest of the Cascade Range from northern WA to northern CA. It was first reported from northern ID by Mackenzie (Hitchcock et al., 1969). It is known from the Clearwater and Nez Perce National Forests (Brunsfield, 1981a), and has also been reported from a site on the Coeur d'Alene and St. Joe National Forests (Idaho Natural Heritage Program, unpublished data, 1988).

Habitat and Associated Species: Throughout most of its range, Carex californica is known from wet prairies and brushy slopes, from near sea-level to nearly 4,000 feet in altitude. Little information is available on its Idaho habitat(s). Idaho sites are mountain peaks which range from 6000-7000 feet. Habitats include wet to dry meadows and brushy slopes (Brunsfield, 1981a)

RESULTS OF HERBARIA SEARCHES AND FIELD INVENTORY

Three Idaho sites were documented by specimens for this species.

All three of these are on Region 1 forests, but only one of them is administered by the Idaho Panhandle National Forest:

L. Constance and F.W. Pennell 1993. July 13, 1937. Idaho Co. Forming a dry meadow, 6900 ft, Hudsonian, dry north end of summit of Coolwater Mountain (at junction of the Selway and Lochsa Rivers) (WTU)

J.H. Christ 51-517 July 14, 1951. Idaho Co. Fog Mt. (ID)

J.H. Christ 51-393. July 09, 1951. Shoshone Co. Striped Peak, 10 miles southeast of Kellogg. (ID,WTU - the latter herbarium has three specimens; all three have the same collection location and date, but one of the three has a different collection number: 51-419)

Striped Peak (6316 ft) lies in the St. Joe Mountains, along the divide between the South Fork of the Coeur d'Alene River and the St. Joe River. It lies about 100 air miles northnorthwest of the other two recorded Region 1 sites for the species, Fog Mountain and Coolwater Ridge.

Due to lack of time, the site was not visited during the 1988 field season.

STATUS

Ownership: The ridgeline along which Striped Peak lies forms the northern boundary of the St. Joe National Forest where it adjoins the Coeur d'Alene National Forest. The southern two sites are on the Clearwater and Nez Perce National Forests.

Threats: Unknown.

Management Implications: The effects of current management practices in the vicinity of Striped Peak on the viability of the only recorded site for Carex californica on the Idaho Panhandle National Forests are unknown.

STATUS ASSESSMENT AND RECOMMENDATIONS

Summary: Carex californica, a Pacific coastal disjunct, has been recorded at only three sites in the northern Rocky Mountains. All three of these sites are on lands administered by the U.S. Forest Service. The effects of current management practices on the viability of these populations are unknown.

Recommendation to the Idaho Panhandle National Forest: *Carex californica* should be retained on the Region 1 Sensitive Plant Species list. Striped Peak and the ridgeline along which it lies should be inventoried for the California sedge. Much of this ridgeline lies within a vast area of brushfields which remain from the catastrophic firestorms of earlier in this century. The Fog Mountain and Coolwater Ridge populations lie within similar brushfields. All three Idaho collections were made after the major fire periods. A site investigation should include an evaluation of the possible effects of fire.

Land managers and field personnel on the Coeur d'Alene and St. Joe National Forests should be informed of the possible occurrence of this species in their areas. Possible sightings of this plant should be documented by specimens (if the size of the population warrants collecting), and should include both mature fruits and roots. Specimens should be sent to the University of Idaho Herbarium for confirmation. Confirmed sightings of this species should be reported to the Idaho Natural Heritage Program for entry into their permanent data base on sensitive species.

Carex flava L.

CURRENT STATUS None

TAXONOMY

Family: Cyperaceae

Common Name: yellow sedge Alpha Code: 1106

Citation: Sp. Pl. 975. 1753.

Nontechnical Description: Stems clustered, not at all rhizomatous, 1-8 dm in height, with the lowest leaves not reduced to scales. Leaves at both base and along stem are flat, 2-5.5 mm in width. The slender terminal spike usually has only staminate flowers, but some pistillate flowers may occur at the tip. Other spikes (2-5) are short (6-17 mm long) and stout, and nearly sessile. The spikes are usually crowded closely together. The bracts are conspicuous and spreading, and much surpass the inflorescence in length; those subtending lower spikes may have a sheath, but those subtending the terminal cluster are sheathless.

Technical Description: See Hitchcock *et al.*, 1969, page 267; for technical drawing see page 269.

Distinguishing Features and Similar Species: *Carex flava* is an easily recognizable species. The perigynia, which become strongly yellow as they age, give the inflorescence a distinctive coloration than makes field inventory for flower plants rather easy.

DISTRIBUTION

Range: The yellow sedge is distributed throughout the boreal regions of the Northern Hemisphere. In the western part of the North American continent, it reaches south as far as northeastern WA, northern ID, and MT. In western and north-central Montana it is common enough to be classified as a minor dominance type. (Lesica 1986; Hansen *et al.*, 1988).

In ID and WA, *Carex flava* is rare. It is currently known from seven sites in five widely disjunct areas of ID (Idaho Natural Heritage Program, unpublished data, 1988): 1) East of Moyie Springs in the vicinity of Herman and Bonner Lakes; 2) along Bog Creek adjacent to the Canadian border; 3) Sand Lake, south of Naples; 4) Hoodoo Lake, southsoutheast of Priest River; and 5) Boise County.

Habitat and Associated Species: Throughout its range, the yellow sedge can be found in swampy or boggy places, and along the shores of streams and lakes. In Montana, it is typically found at low to high in wet meadows, along pond and lake margins, and in bogs and forest openings (Hansen *et al.*, 1988). In Idaho, sites east of Moyie Springs have been described either as a *Carex lasiocarpa*-dominated fen, or as a shrub and sedge dominated bottomland (Johnson and Brunsfeld, 1983). The Bog Creek site is a "sedge meadow with some sphagnum on the edges" (Trigoboff, 1987). At Hoodoo Lake, *Carex flava* occurs in a muddy substrate along the outlet stream at the southeast end of the lake with

RESULTS OF HERBARIA SEARCHES AND FIELD INVENTORY

Specimens documenting several of the northern Idaho sites are on deposit at the University of Idaho. A specimen from one of these sites has had its identity verified by A. Cronquist at the New York Botanical Garden:

Wellner 2322. June 31, 1981. Bonner Co., Sand Lake west of Sand Mountain and southeast of McArthur. 3200 ft. (ID)

Johnson and Brunsfeld 1968. July 31, 1982. Boundary Co., Kootenai River drainage, Bonner Lake, 15 km ene. of Bonners Ferry, 760 m, *Carex lasiocarpa*-dominated fen above lake inlet. (ID, IDF, NY)

Brunsfeld 2002a. October 28, 1982. Boundary Co., shore of Herman Lake, 18 km e. of Bonners Ferry, 757 m, *Carex lasiocarpa*-dominated fen. (ID, IDF)

Brunsfeld 2006. October 28, 1982. Boundary Co., Herman Lake Road, 5 km nw. of Herman Lake, 16 km ene. of Bonner Ferry, 760 m, shrub and sedge dominated bottomland. (ID, IDF)

During the 1988 field season a population of *Carex flava* was found along the outlet stream of Hoodoo Lake on the Sandpoint Ranger District. No other reported sites were inventoried.

STATUS

Ownership: The Hoodoo Lake site is an isolated tract of Forest Service land administered by the Sandpoint Ranger District of the Kaniksu National Forest. Adjacent tracts in the Hoodoo River Valley bottom are privately owned. The Bog Creek site is on the Priest River Ranger District of the Kaniksu National Forest. The Sand Lake site was transferred from the administration of the U.S. Forest Service to the State of Idaho in recent years. All other northern Idaho sites are on private land.

Threats: There are no apparent threats to the Hoodoo Lake population.

Management Implications: Active management for the maintenance of viable populations of this species on the Idaho Panhandle National Forests does not currently appear necessary. Since it was first collected in Idaho in 1981, five additional sites have been discovered. Only two of the six sites are on National Forest (Kaniksu) lands.

STATUS ASSESSMENT AND RECOMMENDATIONS

Summary: *Carex flava*, while common in Montana, is rare in the states of Idaho and Washington. It was first collected in northern Idaho in 1981; six sites are now known from Bonner and Boundary Counties, although only two are on lands administered by the Forest Service. There have been no threats identified to the species at any of the sites for which information is available.

Recommendation to the Idaho Panhandle National Forest: The status of *Carex flava* in Montana precludes a regional status as a Sensitive Plant Species. It is, however, currently known from only a few sites in Idaho and Washington. It should be considered a Sensitive Plant Species on the Kaniksu National Forest. Land managers and field personnel on the Kaniksu National Forest should be informed of the occurrence of this species in their areas. Possible sightings of this plant should be documented by specimens (if the size of the population warrants collecting), and should include both mature fruits and roots. Specimens should be sent to the University of Idaho Herbarium for verification of their identity. Confirmed sightings of this species should be reported to the Idaho Natural Heritage Program for entry into their permanent data base on sensitive species.

Carex hendersonii L.H. Bailey

CURRENT STATUS USFS Region 1 Sensitive Species

TAXONOMY

Family: Cyperaceae

Common Name: Henderson's sedge Alpha Code: 1130

Citation: Proc. Am. Acad. 22:115. 1887.

Nontechnical Description: Stems tufted, lacking rhizomes, with lowest leaves at times reduced slightly to scales, 5-18 dm in height. Both basal and cauline leaves are large and elongate, 6-14 mm in width. Inflorescence bears several slender erect spikes; the terminal spike bears staminate flowers and is 2-3.5 cm long, while the lateral spikes are entirely pistillate, 2-5 cm long, and loosely flowered. The bracts subtending the lower spikes are large and leafy, with a long sheath (1.5-7 cm).

Technical Description: See Hitchcock et al., 1969, page 275; for technical drawing see page 274.

Distinguishing Features and Similar Species: The robust aspect of this plant makes it easy to identify.

DISTRIBUTION

Range: Carex hendersonii is a Pacific coastal species which ranges from southern BC to northwest CA. Disjunct populations are known in ID from the Clearwater, Selway, and Lochsa River drainages (Brunsfield, 1981b).

Habitat and Associated Species: Boggy or springy places to moist forests (Thuja series with Adiantum pedatum) in the bottoms of river canyons (Brunsfield, 1981b).

RESULTS OF HERBARIA SEARCHES AND FIELD INVENTORY

All Idaho specimens are from the Clearwater, Selway, and Lochsa river canyons. This species was not looked for on the Idaho Panhandle National Forests, but many of its associates can be found in the St. Joe River Canyon.

STATUS

Ownership: Most known Idaho sites for this species are on the public lands administered by the Nez Perce or Clearwater National Forests. No sites are known from the Idaho Panhandle National Forest.

Threats: River bottom activities (e.g., roadbuilding, recreation, etc.)

Management Implications: Although Henderson's sedge is not currently known to occur on the Idaho Panhandle National Forests, it may be found there in the future.

STATUS ASSESSMENT AND RECOMMENDATIONS

Summary: Carex hendersonii is a Pacific coastal disjunct which occurs in northern Idaho, but is not yet known to occur within the Idaho Panhandle National Forest.

Recommendation to the Idaho Panhandle National Forest: Land managers and field personnel on the St. Joe National Forest should be informed of the possible occurrence of this species in their areas. Possible sightings of this plant should be documented by specimens (if the size of the population warrants collecting), and should include both mature fruits and roots. Specimens should be sent to the University of Idaho Herbarium for confirmation. Confirmed sightings of this species should be reported to the Idaho Natural Heritage Program for entry into their permanent data base on sensitive species.

Carex livida (Wahl.) Willd.

CURRENT STATUS USFS Region 1 Sensitive Species

TAXONOMY

Family: Cyperaceae

Common Name: pale sedge Alpha Code: 1170

Citation: Sp. Pl. 4:285. 1805.

Nontechnical Description: Stems arising singly or few together from slender, creeping rhizomes, mostly 1-4 dm in height, with well-developed lower leaves; some new stems may be surrounded by basal sheaths from previous years. Leaves are mainly basal, firm and narrow, often channeled, and from 1-3.5 mm in width. Terminal spike has only staminate flowers and is 1-2.5 cm in length; 1-3 lateral spikes are slender and bear 5-15 pistillate (only) flowers. Bract which subtends the lowest spike is narrow and bristle-like, but is green and may be up to 7 cm in length; it also has a well-developed sheath 5-15 mm.

Technical Description: See Hitchcock et al., 1969, page 285; for technical drawing see page 286.

Distinguishing Features and Similar Species: The plants of this species which I have seen (the population at the Mays Creek Bog in the Sawtooth Valley, Custer Co., ID) have had a whitish-bluish cast to the leaf surfaces (glaucous). I do not know how consistent this trait is, although the common name suggests it is widespread. *Carex livida* comes out close in the key (Hitchcock et al., 1969) to *C. californica*, but they occur in distinctly different habitats; the latter species is also treated here.

DISTRIBUTION

Range: The pale sedge is distributed interruptedly throughout the boreal regions of the Northern Hemisphere. In the western part of the North American continent, it reaches south along the coast to southwestern WA. In the northern Rocky Mountains, it is known from ID and MT. In both states it is rare, with only two known stations in Idaho (Idaho Natural Heritage Program, unpublished data, 1988): 1) Mays Creek Bog in the Sawtooth Valley of Custer Co.; and 2) Bailey Bog at the north end of Priest Lake. The ID sites are separated by over 300 air miles.

Habitat and Associated Species: Throughout its range the pale sedge is known from peat bogs and swampy woods (Hitchcock et al., 1969), although in MT, it occurs in a calcareous fen at Pine Butte Swamp (Lesica, 1986). Both Idaho sites are sphagnum bogs. At Bailey Bog, it occurs with *Andromeda polifolia*, *Carex rostrata*, *Kalmia microphylla*, *Lycopodium inundatum*, *Scheuchzeria palustris*, *Trientalis arctica*, and *Vaccinium oxycoccus* (Michelle Stevens, 1986, personal communication).

RESULTS OF HERBARIA SEARCHES AND FIELD INVENTORY

Only one specimen of Carex livida from northern Idaho was seen during the searches of the three herbaria:

Piper 3710. September 2, 1916. Priest Lake. In a very wet sphagnum bog. (WS-three sheets)

The site of this early collection may be Bailey Bog at the northern end of Priest Lake, Carex livida was reported to occur in 1986 (M. Stevens, personal communication). The collection of a specimen from this site was also reported to the Idaho Natural Heritage Program by Rob Bursick (#109, June 17, 1987); this specimen is on deposit at the University of Idaho Herbarium, but I did not see it during my search of this herbarium.

I found no new populations of this species during the 1988 field season.

STATUS

Ownership: The only known site within the Region 1 forests of northern Idaho is on private land at the head of Priest Lake (Bailey Bog).

Threats: Mr. Bailey is under court order to remove the fill which he had placed illegally into the bog.

Management Implications: Current Forest Service management actions are not likely to affect the status of the only known population of this plant in northern Idaho.

STATUS ASSESSMENT AND RECOMMENDATIONS

Summary: Carex livida is currently known from two sites in Idaho; one of these lies on a private inholding adjacent to the Kaniksu National Forest. Current forest management practices are not likely to affect the status of the species at this site.

Recommendation to the Idaho Panhandle National Forest: Land managers and field personnel on the Kaniksu National Forest should be informed of the possible occurrence of this species in their areas. Possible sightings of this plant should be documented by specimens (if the size of the population warrants collecting), and should include both mature fruits and roots. Specimens should be sent to the University of Idaho Herbarium for verification of their identity. Confirmed sightings of this species should be reported to the Idaho Natural Heritage Program for entry into their permanent data base on sensitive species.

Carex multicosata Mackenzie

CURRENT STATUS USFS Region 1 Sensitive Species

TAXONOMY

Family: Cyperaceae

Common Name: many-ribbed sedge Alpha Code: 1188

Citation: Bull. Torrey Club 43:604. 1917.

Nontechnical Description: Stems loosely to densely tufted, without creeping rhizomes, mostly 1-5-6 dm in height, lowest leaves strongly reduced to scales. Leaves flat or nearly so, and distinctly shorter than the stems, mostly 2-3.5 mm wide and more or less crowded toward the base of the stem. Spikes 3-7, sessile, with pistillate flowers born above the staminate flowers, and 6-10 mm long. Greenish-brown spikes are crowded in a narrow to roundish head 1-3.5 cm long and up to 1.5 cm thick. The bract subtending the lowest spike is short and inconspicuous, and lacks a sheath.

Technical Description: See Hitchcock et al., 1969, page 309; for technical drawing see page 308.

Distinguishing Features and Similar Species: Carex multicosata is similar to both C. microptera and C. stramineiformis. The three differ primarily in technical features of the perigynia, although Cronquist states that "the individual spikes [of C. multicosata are] more readily distinguishable to the naked eye than in C. microptera, less so than in C. stramineiformis" (Hitchcock et al., 1969).

DISTRIBUTION

Range: The many-ribbed sedge is most common along the Cascade-Sierran axis from central WA, south to southern CA. It is also in the mountains of eastern OR, adjacent ID, east to Montana (Hitchcock et al., 1969). In Idaho, it has been reported from six localities, ranging from the Owyhee Mountains of southwest Idaho, east to the Pioneer Mountains of Custer Co., and north to Pond Peak on the Coeur d'Alene National Forest.

Habitat and Associated Species: Throughout its range, Carex multicosata occurs in moist or dry meadows, along streambanks, and on open moist slopes at moderate elevations in the mountains; it can occasionally be found near timberline. Idaho habitats for sites within the Region 1 forests have been described as "meadow community at edge of pond", "open woods", and "Festuca/Carex community".

RESULTS OF HERBARIA SEARCHES AND FIELD INVENTORY

Three sites within the Region 1 forests of Idaho were documented by specimens on deposit at various herbaria:

Baker 12475. August 13, 1954. Idaho Co., Orogrande Summit Camp, northeast of Buffalo Hump, Nez Perce National Forest. Open woods. (ID,WTU)

Tisdale s.n. July 16, 1979. Idaho Co., Heavens Gate, Seven Devils Mountains, Nez Perce National Forest. Festuca/ Carex community. (ID)

Wellner 1717. September 18, 1978. Shoshone Co. Pond Peak at edge of pond. Elev. 5440 ft., slope = 0, fine silt loam. Meadow community. Several plants present. (ID)

Only the latter site is within the administrative boundaries of the Idaho Panhandle National Forests. I did not visit Pond Peak during the 1988 field season. An as yet unconfirmed specimen, collected by me from the Monumental Buttes area of the St. Joe National Forest during the 1988 field season, may turn out to be Carex multicostata.

STATUS

Ownership: All reported sites in northern Idaho are on lands administered by the U.S. Forest Service. The two sites in Idaho County are within the Nez Perce National Forest. The Pond Peak site is within the Coeur d'Alene National Forest.

Threats: No threats have been identified at the reported sites, although Wellner noted that [only] several plants were present at Pond Peak. Pond Peak is a designated Research Natural Area.

Management Implications: Insufficient information is available at this time upon which to base an evaluation of the management implications. Only a few sites for the species are on record for northern Idaho, but the broad ecological amplitude of the species suggests that it may be more common than is indicated by the collection record.

STATUS ASSESSMENT AND RECOMMENDATIONS

Summary: Carex multicostata appears on the Region 1 sensitive plant species list on the basis of its status in Montana. It has been collected from six widely-scattered localities in Idaho;

three of these sites occur within the Region 1 forests. Despite the few reported locations, the broad ecological amplitude of this species suggests that it may be more common than is indicated by the collection record; it was rejected as being of statewide concern in Idaho by Steele (1981).

Recommendation to the Idaho Panhandle National Forest: Although *Carex multicosata* does not appear to be of statewide concern in Idaho, few locations have been reported from the Northern Region National Forests. Therefore, the species should be maintained as a Region 1 Sensitive Plant Species. Land managers and field personnel on the Coeur d'Alene and St. Joe National Forests should be informed of the possible occurrence of this species in their areas. Possible sightings of this plant should be documented by specimens (if the size of the population warrants collecting), and should include both mature fruits and roots. Specimens should be sent to the University of Idaho Herbarium for confirmation. Confirmed sightings of this species should be reported to the Idaho Natural Heritage Program for entry into their permanent data base on sensitive species.

Carex paupercula Michx.

CURRENT STATUS USFS Region 1 Sensitive Species

TAXONOMY

Family: Cyperaceae

Common Name: poor sedge Alpha Code: 1174

Citation: Fl. Bor. Am. 2:172. 1803.

Nontechnical Description: Stems loosely clustered in small tufts on short or long rhizomes, mostly 1.5-7 dm in height, lowest leaves not strongly reduced to scales, and remains of old leaves commonly persistent around the base; the rhizomes are covered with a yellowish-brown felty covering of wooly hairs. Smooth and shiny leaves are flat, and 1-3 mm wide. A solitary terminal spike, 0.7-1.5 cm long, bears only staminate flowers. The 1-4 lateral spikes are mostly pistillate, 0.7-1.5 cm long, not crowded, and are nodding on slender peduncles; some staminate flowers are often present at the base of the spike. The lowest spike is subtended by a leafy bract 2-10 cm in length, which is more or less sheathless.

Technical Description: See Hitchcock *et al.*, 1969, page 309; for technical drawing see page 308.

Distinguishing Features and Similar Species: Carex paupercula is similar to the more common C. limosa, with which it can be found growing in northern Idaho. C. limosa differs in having its lowest leaves strongly reduced to scales, leaves which tend to be channeled, pistillate spikes 1-2.5 cm in length; the pistillate flowers sometimes have a few staminate flowers at the tip, but never at the base.

DISTRIBUTION

Range: The poor sedge is distributed throughout the boreal regions of the Northern Hemisphere. In the western part of the North American continent, it occurs south at increasing elevations to CO, UT, northern ID, and northeastern WA. It is rare in ID, WA, and MT. All known sites in northern Idaho are in Boundary and Bonner Counties.

Habitat and Associated Species: Throughout its range, Carex paupercula is restricted to sphagnum bogs. Both known Idaho sites are from sphagnum bogs where its associates include Carex leptalea, Menyanthes trifoliata, and Potentilla palustris.

RESULTS OF HERBARIA SEARCHES AND FIELD INVENTORY

Two Idaho sites were documented by herbarium specimens.

Johnson and Brunfeldt 1918. July 28, 1982. Bonner Co., Potholes Proposed Research Natural Area. At edge of pond on sphagnum mats in water with Carex leptalea, Menyanthes trifoliata, and Potentilla palustris. (ID, IDF)

Wellner 3173. July 25, 1984. Boundary Co., Kaniksu National Forest. West Fork of the West Fork of Smith Creek Proposed Research Natural Area. Plants rooted in sphagnum moss at edge of pond. (ID)

Neither site was visited during the 1988 field season. No new populations were discovered.

STATUS

Ownership: Both sites for the poor sedge in Idaho are on the Kaniksu Forest. The Potholes is on the Priest River Ranger District (RD), and Smith Creek is on the Bonners Ferry RD.

Threats: No threats were identified at either of the sites.

Management Implications: Smith Creek is a designated Research Natural Area (RNA). Designation the Potholes RNA will probably enhance the long-term viability of this species on the Idaho Panhandle National Forests.

STATUS ASSESSMENT AND RECOMMENDATIONS

Summary: Carex paupercula is known from only two sites in the state of Idaho; both of these sites are on the Kaniksu National Forest. One of these sites is within a designated RNA, while the other site is proposed for RNA status.

Recommendation to the Idaho Panhandle National Forest: Carex paupercula should be retained on the Region 1 Sensitive Plant Species list. Establishment of both RNAs will probably enhance the long-term viability of known populations of the poor sedge on the Kaniksu National Forest, and protect other sensitive plant species. Land managers and field personnel on the Coeur d'Alene and St. Joe National Forests should be informed of the possible occurrence of this species in their areas. Possible sightings of this plant should be documented by specimens (if the size of the population warrants collecting), and should include both mature fruits and roots. Specimens should be sent to the University of Idaho Herbarium for confirmation. Confirmed sightings of this species should be reported to the Idaho Natural Heritage Program for entry into their permanent data base on sensitive species.

Carex tumulicola Mackenzie

CURRENT STATUS USFS Region 1 Sensitive Species

TAXONOMY

Family: Cyperaceae

Common Name: foothill sedge Alpha Code: 2434

Citation: Bull. Torrey Club 34:154. 1907.

Nontechnical Description: Stems clustered on a freely rooting (somewhat elongate, but not long-creeping) rhizome, mostly 2-8 dm in height, with lowest leaves reduced to scales. Leaves are flat and more or less elongate, but shorter than the stems, 1-2.5 mm wide; they are borne on the lower portion of the stem, are generally not closely clustered. There are usually several (often widely spaced) spikes, that are sessile; they are small and few-flowered and bear staminate flowers above the pistillate flowers. The bract subtending the inflorescence is well developed and sheathless.

Technical Description: See Hitchcock et al., 1969, page 339; for technical drawing see page 338.

Distinguishing Features and Similar Species: Well-developed bracts have a broad, somewhat transparent (not green) base. Several of the lower bracts will usually be longer than the spike they subtend, and end in a needle-like tip.

Cronquist has the following to say about similar species (Hitchcock et al., 1969):

C. tumulicola is very closely allied to C. hookerana Dewey, of the northern Great Plains, which . . . is wholly disjunct geographically. C. occidentalis L.H. Bailey, of the southern Rocky Mountains and the Great Basin region, is a third microspecies of this complex.

See also my comments below under "Range", and under C. occidentalis (page 24). C. tumulicola also is similar in many aspects to C phaeocephala.

DISTRIBUTION

Range: Carex tumulicola is a Pacific coastal species which occurs from southern WA to central CA; it extends up the Columbia River Gorge as far as Bingen, WA. According to Holte (1981), disjunct populations are known from Shoshone and Bannock Counties, ID. The comments of Cronquist (quoted above) suggest that the Bannock County specimen may be referable to Carex occidentalis.

Habitat and Associated Species: Open, often grassy slopes and dry meadows (Hitchcock et al., 1969). No information is available on the Idaho habitats.

RESULTS OF HERBARIA SEARCHES AND FIELD INVENTORY

No specimens of Carex tumulicola collected from Idaho were seen during the herbaria searches. The specimens are probably on deposit at the Idaho State University (IDS). The exact locality of the Shoshone County collection remains undetermined.

No sites for this species were discovered during the 1988 field season.

STATUS

Ownership: Holte (1980) indicates that the Shoshone Co. collection locality is under the administration of the Coeur d'Alene National Forest.

Threats: Unknown.

Management Implications: The effects of current management practices on the viability of the only reported location of Carex tumulicola within Region 1 of the U.S. Forest Service are unknown.

STATUS ASSESSMENT AND RECOMMENDATIONS

Summary: Carex tumulicola, a Pacific coastal disjunct, has been reported from one locality within Region 1 of the U.S. Forest Service. The exact locality is currently unknown.

Recommendation to the Idaho Panhandle National Forest: Carex tumulicola should be retained on the Region 1 Sensitive Plant Species list. An assessment of the status of the species should be a top Sensitive Species priority for the Coeur d'Alene National Forest.

NOTES ON OTHER SPECIES

Carex idahoa Bailey.

This taxon is treated as a synonym of C. parryana Dewey by Cronquist (Hitchcock et al., 1969). In doing so he notes that it is a "form with relatively long, narrow, acute pistillate scales". The range of C. parryana lies primarily east of the continental divide, but extends into central and eastern Idaho. Even if C. idahoa is a good species, its range probably does not include the Idaho Panhandle National Forests.

Carex lenticularis var. dolia (Jones) Standley

This is a new combination for a taxon with a distribution from southeastern Alaska, through southeastern British Columbia and adjacent Alberta, to Glacier National Park, Montana (Standley, 1985). From within this area, few localities are known. It is not known to occur in Idaho.

Carex occidentalis Bailey

This is a southern Rocky Mountain and Great Basin species, which is known to occur in MT. It may also occur in southern ID, but it seems unlikely that it will be found within the Northern Region National Forests of ID. Also see comments on "Similar Species" and "Range" under Carex tumulicola in this report.

Carex richardsonii R. Br.

This is a Great Plains species which does not occur in Idaho.

Carex sitchensis Prescott

This taxon is treated as Carex aquatilis var. dives by Standley (1985). I examined specimens at WTU which had been annotated by Standley to the two varieties of C. aquatilis; none of these specimens were collected from Idaho. The specimens appeared to fit Standley's description well: "extensive intergradation . . . lack of consistent distinguishing characters, and underlying similarity of anatomy . . .".

I recommend that Region 1 of the Forest Service adopt the taxonomy proposed by Standley, thereby considering C. sitchensis to be a synonym of C. aquatilis var. dives. Given the ubiquity and general adaptability of C. aquatilis, I further recommend that the var. dives not be included on the Region 1 Sensitive Plant Species list, unless it can be shown: 1) that it occurs in Region 1; **and**, 2) that it meets minimum criteria for sensitivity.

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APPENDIX I

Maps of precise occurrences of
Carex buxbaumii and Carex flava

APPENDIX II

Slides of Carex flava and its habitat

APPENDIX III

List of areas visited
during the 1988 field season

St. Joe National Forest

Monumental Buttes area. Vicinity of South Butte Unconfirmed collection from this site may be Carex multicosata.

Fortynine Meadows. Interesting bog system. No sensitive species seen.

Coeur d' Alene National Forest

Rainy Hill Campground. Disturbed area with Phalaris arundinacea and Equisetum. No sensitive species seen.

Granite Lake area. Disturbed area with Phalaris arundinacea and Typha. No sensitive species seen.

Hoodoo Lake area. Carex flava was found here. Hypericum majus also occurs here. See text for further details.

Kaniksu National Forest

Mt. Roothan area. Vicinity of upper West Branch of Pack River. No sensitive species seen.

Roman Nose Lakes Area. Investigated all three lakes. There is some sphagnum development along lake edges, in seeps, and along streams. Kalmia microphylla, Carex scirpoidea, C. scopulorum, Calamagrostis canadensis, and Pedicularis groenlandica are often present. No sensitive species seen.

Upper Cow Creek. A blanket sphagnum bog is developed on an impermeable claypan between the end of the road and Cow Creek. Betula glandulosa, Kalmia microphylla, Carex rostrata, and Deschampsia cespitosa are common. I found a few Trientalis arctica at the base of the Betula near the lower (downstream) end of the bog. No other sensitive species were seen.

Isolated parcel below Smith Falls. No sphagnum development and no sensitive species seen.

Brush Lake. Highly disturbed area. Lake margins, and upper "lake" (it was dry in late August) are dominated by Phalaris arundiacea. No sensitive species seen.

Small unnamed lake in depression in NW 1/4 of Section 15, T64N, R1E. It was highly disturbed also. I saw no sensitive species there either. No sphagnum development was seen in this area.

Lower end of Dawson Lake. Disturbed area with Phalaris arundinacea. No sphagnum development and no sensitive species seen.

Smith Lake area. Another highly disturbed area dominated by Phalaris arundinacea. No sphagnum development or sensitive species seen.

Bradley Lake area. Highly disturbed system dominated by Phalaris arundinacea. No sphagnum development or sensitive species seen.

Wet meadow 2 miles south of Priest River Ranger Station. Found Carex buxbaumii. See text for further details.

Armstrong Meadows. No sphagnum development in this area. Mostly Alnus incana, Carex cusickii, C. lasiocarpa, and C. rostrata. No sensitive species seen.