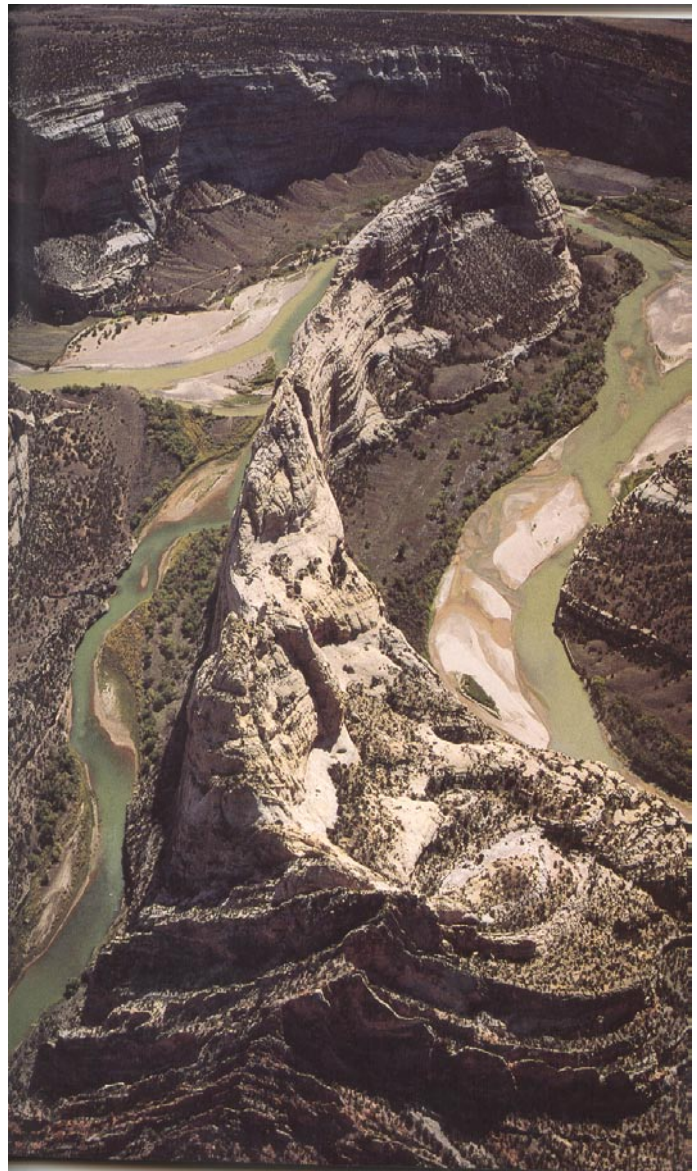


AQUATIC VASCULAR PLANTS OF DINOSAUR NATIONAL MONUMENT, SUMMERS 2009-2010

COLORADO PLATEAU COOPERATIVE ECOSYSTEM STUDIES UNIT

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Mark Vinson and Bennett Hestmark
Department of Watershed Sciences
Utah State University
Logan, Utah



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SUMMARY

This study reports on occurrences and changes that have occurred in aquatic vascular plant and macrophytic algal assemblages in the Green and Yampa Rivers since 1962. Aquatic plant occurrences are compared between those made by us in 2009-2010 and those made by Holmgren (1962) and Woodbury (1963) in 1962 prior to the closure of Flaming Gorge Dam. Comparisons are also made between the present occurrences in the regulated Green River and the unregulated Yampa River.

Aquatic and semi-aquatic vascular plants and macrophytic algae were surveyed at 87 sites within Dinosaur National Monument 2009-2010; 25 in the Green River upstream of the Yampa River, 17 in the Green River downstream of the Yampa River, 25 in the Yampa River, 18 springs, and 2 tributary streams. Nine species of submerged plants, 6 vascular macrophytes, 2 macrophytic algae, and one bryophyte species were widely distributed in the Green River upstream from the Yampa River, and 3 species were collected from springs, 1 vascular macrophyte and 2 macrophytic algal species. No submerged vascular plants were collected in the Yampa River or downstream from the Yampa and Green River confluence. One macrophytic algal species, *Cladophora* was present in the Yampa River and in the Green River downstream from the Yampa River. Thirty-five emergent species were collected throughout the park, 14 in the Yampa River, 30 in the Green River, 25 in springs, and 8 in tributary streams.

Prior to closure of Flaming Gorge Dam no significant aquatic vegetation was present in the Green and Yampa Rivers when surveyed by Holmgren (1962) and Woodbury (1963) in 1962. Woodbury described the Green and Yampa Rivers as being “notoriously poor in algae [and presumably vascular aquatic plants] due to spring floods and the heavy loads of sediment they carry”. Holmgren (1962) collected 6 submerged vascular species in the vicinity of the confluence of the Green and Yampa Rivers near Echo Park. He was not specific if these plants were collected in the Green or Yampa Rivers or in an off-channel pond. This fact, the lack of mention of these species by Woodbury (1963), and our inability to presently find submerged vascular species in the Yampa River or in the Green River downstream from the Yampa River, suggests these species were not collected in the main river channels. We found no major differences in the number of emergent species collected in 1962 and our collections in 2009-2010 in any of the three major river sections.

The major finding of this study was a significant change in occurrence and abundance of aquatic plants in the Green River upstream from the Yampa River between 1962 and present. We found no similar differences in submerged vegetation occurrences in the Yampa River and in the Green River downstream of the Yampa River or in the occurrence of emergent species. The observed changes in submerged species are undoubtedly due to lower magnitude spring flows and increased water clarity due to Flaming Gorge Dam. The effects these plants have in changing habitat conditions for native fish and invertebrates is unknown but worthy of study in the future.

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INTRODUCTION

Aquatic plant communities are important ecological components of rivers and lakes. They provide food and habitat for birds, fish, and invertebrates, influence sediment transport, and nutrient cycling. These communities are composed of emergent and submerged species.

Emergent species are plants which grow in water but which pierce the surface so that it is partially in air. The term emergent vegetation is generally used for angiosperms that root in the near shore riparian zone below the bankfull waterline and generally conforms to classification systems that define these species as facultative wetland taxa. Common emergent plants include sedges (*Carex*), cattails (*Typha*), bulrush (*Scirpus*), and reeds (*Phragmites*).

Submerged species grow entirely underwater, although some may have floating leaves, flowers, and seeds on short stems that extend above the water surface. Submerged plants grow from near shore to deeper water where sufficient light penetration occurs. They may grow in dense mats along the bottom (*Chara* and *Cladophora*), grow with lots of open space between plant stems (*Potamogeton*), or form dense surface mats (*Ranunculus*). Submerged species include vascular plants (e.g., pond weeds), micro (diatoms) and macrophytic algae (e.g., *Chara vulgaris* and *Cladophora*), and aquatic bryophytes (e.g., *Amblystegium*).

In the United States, few broad-scale studies of aquatic macrophytes have been conducted, and those that have been done occur generally in lentic and estuary habitats. Of those done in rivers, even fewer have been done in rivers in the arid intermountain west, where aquatic macrophytes are often less established than in wetter and less mountainous regions of the country. An exception to this rarity however occurs downstream from dams. As compared to their pre-dam state, regulated rivers are often characterized by less frequent and lower magnitude flow events, increased water clarity, and higher nutrient concentrations, all of which enhances aquatic macrophytic vegetation (Rørslett 1988, Rørslett et al. 1989, Walker et al. 1994, French and Chambers 1996, Blanch et al. 2000). In unregulated rivers, the most commonly cited abiotic determinants of aquatic vascular plant assemblage structure are all flow related factors (e.g., discharge extremes and constancy, hydraulics, and substrate composition, Bunn and Arthington 2002).

The goal of this project was to survey the aquatic macrophytic plants of the Green and Yampa Rivers in Dinosaur National Park. We make two major comparisons: 1) we compare present

aquatic plant occurrences in the regulated Green River to the unregulated Yampa River and 2) we compare collections made in 2009-2010 to those made by Holmgren (1962) and Woodbury (1963) prior to the closure of Flaming Gorge Dam in 1962. Additional sampling was conducted in springs and tributary streams, but at a reduced effort compared to the survey of the Green and Yampa Rivers.

STUDY SITE

This study was conducted in Dinosaur National Monument in northeastern Utah and northwestern Colorado (40° N, 106-109° W, Figure 1). The Green River is the largest tributary of the Colorado River and the Yampa River is the largest tributary of the Green River.

The Yampa River originates in northwestern Colorado and flows west for 400 km before meeting the Green River. The Yampa River is one of the last and largest rivers in the United States without a major water control structure. Only a few small dams and diversions occur in the headwaters.

The Green River originates in the Wind River Range in Wyoming and flows south to its confluence with the Yampa River in Dinosaur National Monument in northwestern Colorado. About 100 kilometers upstream from the confluence of the Green and Yampa Rivers is Flaming Gorge Dam. Flaming Gorge Dam was completed in December 1962. The dam rises 149 m above the original river channel. The dam is principally operated for hydroelectric power generation and flood control. It strongly changes the downstream aquatic environment of the Green River (Vinson 2001). Aquatic plants in particular have expanded their distribution in the Green River downstream of Flaming Gorge Dam to at least the Browns Park area near the Utah-Colorado state line since the closure of Flaming Gorge Dam (Vinson 2001).

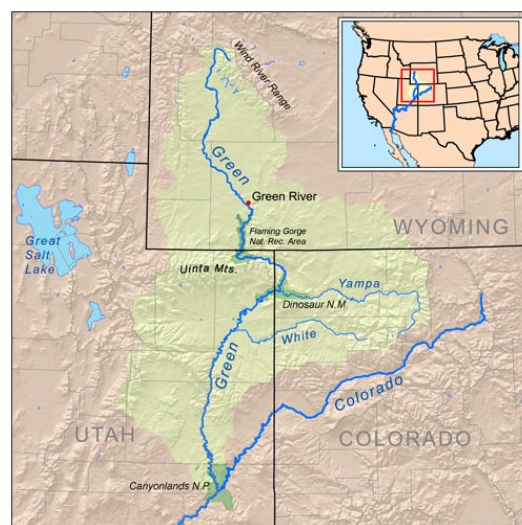


Figure 1 The Green and Yampa River basins and the location of all study sites within Dinosaur National Monument at the confluence of the Green and Yampa Rivers in northwestern Colorado and northeastern Utah.

METHODS

Hydrology

Stream discharge, water temperature, and water chemistry data were obtained from U.S. Geological Survey (USGS) stream gages: Green River at Greendale, Utah (station 09234500, years 1951-2010) and the Yampa River at Maybell, Colorado (Station 09260050, years 1916-2010). The Greendale gage is located 1 km downstream from Flaming Gorge Dam and 100 km upstream from Dinosaur National Monument. The Maybell gage is located about 75 km upstream from Dinosaur National Monument. Mean daily and instantaneous peak annual discharge data were summarized for each station for the period of record. Water temperature, fluvial sediment, and the general descriptions of the pre-dam environment were compiled from USGS gage records, Woodbury (1963), Irons et al. 1965, Madison and Waddell (1973), and Bolke and Waddell (1975).

Aquatic plant collections

Sampling sites were located systematically along the Green and Yampa Rivers and in a subset of off-river springs and tributary streams. Off-river spring locations were provided by Tamara Naumann, Dinosaur National Monument. On-river sites were selected to represent a variety of habitat types (eddies, runs, rapids, riffles, and pools), water depths, water velocities, and substrates within these habitats. Additional sampling location considerations were to sample a similar number of sites in the Yampa River, in the Green River upstream from the Yampa River, and in the Green River downstream from the confluence with the Yampa River and to match the location and distribution of sites sampled in 1962 by Holmgren (1962) and Woodbury (1963). Riverine sites were defined as a 1 km river segment. This approach and sampling distance is similar to the British National River Aquatic Vegetation Survey approach (Holmes et al. 1999), and has been considered adequate for characterizing local plant occurrences and richness in riverine habitats (Ferreira and Moreira 1999). Marginal areas between the water's edge and the bankfull water line were also sampled. These areas were often either inundated or showed signs of recent inundation (wetted sand and soil). These habitats were colonized by emergent aquatic species and terrestrial forbs that are able to live in areas with fluctuating water levels. For submerged species we looked for and collected vascular plants (e.g., pond weeds), the

macrophytic algae, *Chara vulgaris* and *Cladophora*, and the aquatic bryophyte (e.g., *Amblystegium riparium*). Other filamentous algal and bryophyte species such as *Spyrogyra* were not targeted and minor occurrences may have been missed, but no major occurrences of either of these groups were noticed throughout the study period.

Off-river channel habitats sampled included tributary streams and springs. Tributaries and springs connected to the main river channels were evaluated from their terminus at the Green and Yampa Rivers upstream for at least 1 km. Isolated springs were generally small, <20 linear meters of wetted habitat, and were surveyed in their entirety.

Aquatic plants were collected from the Green River between the Gates of Lodore Campground and Split Mountain Campground on three separate trips, June and July 2009 and July 2010. Collections were made in the Yampa River from Deerlodge Park to the confluence with the Green River in August 2009 and August 2010. Springs were sampled July and August 2010. Jones Hole Creek was sampled June and July 2009 and July 2010. Pool Creek was sampled in July 2009 and July 2010.

Plants were collected by hand. Plant parts with diagnostic features such as flowers, fruits, shoots, and rhizomes were placed in labeled plastic bags and kept in coolers. In the laboratory all specimens were identified and pressed following standard procedures. Pressed samples were identified using the taxonomic keys of Goodrich and Neese (1986), Welsh et al. (1987), and Flora of North America (2007) and comparison to voucher specimens housed at the Intermountain Herbarium at Utah State University. Identified specimens were mounted, assigned National Park Service accession numbers, and were retained at the Intermountain Herbarium at Utah State University (<http://herbarium.usu.edu/> for contact information). Holmgren's (1962) 1962 collections from are also archived at the Intermountain Herbarium and these specimens were examined as well.

Plants were classified as aquatic or non-aquatic and aquatic species were separated into emergent or submerged species based on species habitat descriptions in Goodrich and Neese (1986) and DiTomaso and Healy (2003, Table 2). We only report on occurrences of aquatic species.

Green River Environment

Pre-dam Environment —The pre-dam Green River exhibited an extremely variable hydrology typical of most unregulated Rocky Mountain rivers (Poff and Ward 1989). Annual and seasonal variation was high for all measured hydrologic attributes (discharge, temperature, suspended sediment, organic matter transport, and specific conductance). For the gage at Greendale, Utah, annual peak discharges normally exceeded $300 \text{ m}^3 \text{ sec}^{-1}$ (10,594 CFS) during spring runoff (Figure 2) and minimum discharges were less than $10 \text{ m}^3 \text{ sec}^{-1}$ (353 CFS) during winter. The mean annual discharge was $56 \text{ m}^3 \text{ sec}^{-1}$ (1977 CFS) for the years 1928-62. The annual range in instantaneous daily water temperatures was 0-26° C. The concentration of major water chemistry constituents varied similarly to discharge; for example specific conductance was highest during spring and lowest during winter (Irons et al. 1965). Before dam closure, entrainment of coarse bed particles probably occurred a few days a year in this section of the river (Graf 1980, Andrews 1986) and fine sediments (sands and silts) likely overlaid coarser cobble substrates during low flow periods (Topping et al. 2000). Measurements of water clarity, e.g., turbidity are lacking, but likely tracked suspended sediment concentration.

Post-dam environment —The major effect of the dam on the hydrology of the Green River upstream from the Yampa River was a large reduction in the annual and seasonal variation in discharge, sediment transport, water temperature, and a several month change when high and low discharges and water temperatures occurred. Maximum daily discharges declined from $> 300 \text{ m}^3 \text{ sec}^{-1}$ to $< 140 \text{ m}^3 \text{ sec}^{-1}$ ($>10,594$ to < 4944 CFS) (Figure 2), minimum flows increased from $< 10 \text{ m}^3 \text{ sec}^{-1}$ to $> 20 \text{ m}^3 \text{ sec}^{-1}$ (<353 to 800 CFS), and there was no year-to-year consistency in the seasonal or daily occurrence of high and low flows. Prior to dam closure, maximum flows generally occurred around mid-June and minimum flows in late winter, after dam closure, maximum or minimum flows have occurred throughout the year. Mean annual discharge was minimally affected by the dam, except for the first year after dam closure when the reservoir was being filled and the mean discharge dropped to $6.5 \text{ m}^3 \text{ sec}^{-1}$ (229 CFS). The 16 years following the dam closure, hourly fluctuations of $60 \text{ m}^3 \text{ sec}^{-1}$ (2,119 CFS) were common in response to electrical power demands. After 1973, maximum hourly discharge fluctuations were limited to $11 \text{ m}^3 \text{ sec}^{-1}$ (388 CFS), daily fluctuations to $135 \text{ m}^3 \text{ sec}^{-1}$ (4,767 CFS), and minimum streamflow was increased from 11 to $23 \text{ m}^3 \text{ sec}^{-1}$ (388 to 800 CFS) to improve habitat for rainbow trout just downstream from the dam. This reduction in high and low flow fluctuations likely improved

habitat for aquatic plants. Seven larger than power plant capacity discharge events have been released since the dam closure. In 1983, 1984, 1986, 1997, 1999, 2005, and 2006 flows of 388, 244, 227, 244, 297, 195, and 173 $\text{m}^3 \text{sec}^{-1}$ (13,702, 8,616, 8,016, 10,488, 6,886, and 6,109 CFS) were released through the dam's bypass tubes because of high spring runoff. The higher than power plant capacity flows that occurred between 1994 and 2010 decreased aquatic plant biomass by 50-90% in the Red Canyon reach of the Green River downstream from the dam (Figure 3, Vinson and Dinger 2006).

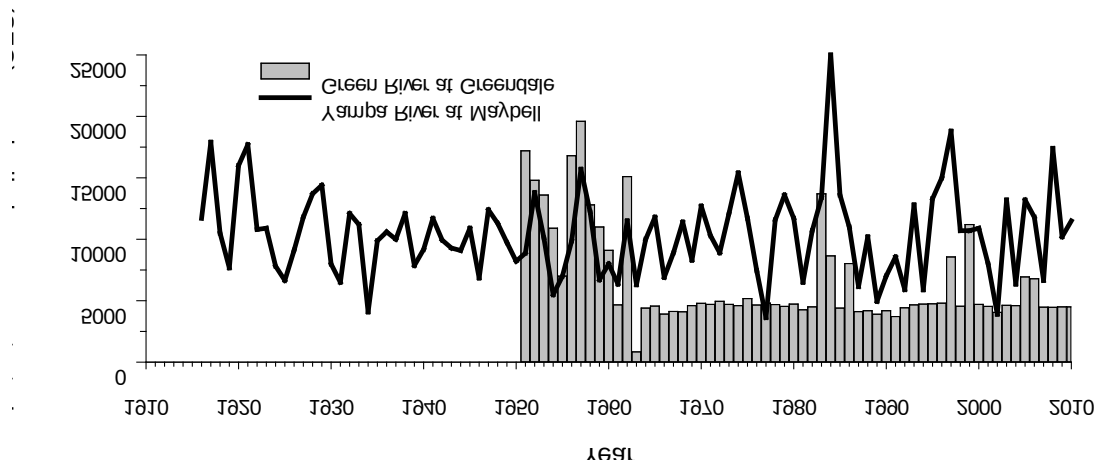


Figure 2. Instantaneous annual peak discharge for the Green River at Greendale, Utah (USGS station 09234500, years 1951-2010) and for the Yampa River at Maybell (USGS Station 09260050, years 1916-2010).

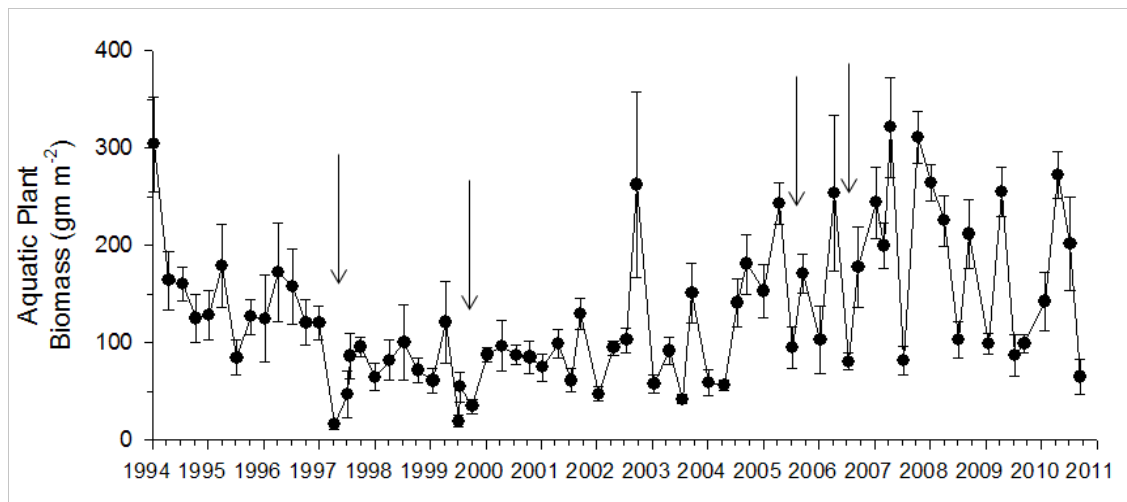


Figure 3 Mean (+ 1 SE) aquatic plant biomass (moss, vascular plants, and algae) sampled seasonally (Jan, April, July, and September) at 7 sites on the Green River between Flaming Gorge Dam and Swallow Canyon Rapid between 1994 and 2005. Arrows indicate the occurrence of above power plant capacity flows.

Post-dam water temperatures were characterized by increased constancy. At the Greendale, Utah gage, between 1963 and 1978, instantaneous maximum daily water temperatures were typically 8-10° C and minimums were generally 3-4.5° C. Maximum water temperatures occurred 3 months later and minimum temperatures 1 month later than in the pre-dam river. The concentrations of all major water chemical constituents increased immediately following dam closure (1962-68, Madison and Waddell 1973) and then declined rather rapidly between 1968 and 1972 (Bolke and Waddell 1975). The long-term trend since 1972 has been a gradual decrease in concentration of all major chemical constituents and a gradual increase in pH.

After dam closure, coarse bed particle movements were mostly eliminated (Graf 1980, Grams 1997) and suspended sediment discharge decreased from $3270 \times 10^6 \text{ kg year}^{-1}$ to near zero from the dam downstream to Red Creek (Andrews 1986). The size range of substrate particles in rapid and riffle habitats appears to be similar to pre-dam conditions (Andrews 1986, Vinson personal observation of pre- and post-dam photographs by the U.S. Bureau of Reclamation archived at Flaming Gorge Dam and pre- and post-dam photographs in Stephens and Shoemaker 1987), but cobble sized particles are presently more armored (Williams and Wolman 1984), and seasonal fine sediment deposits thought to occur before dam closure (Topping et al. 2000) have been reduced (Andrews 1986).

Conversely, depositional habitats – primarily eddies and lower velocity runs have significantly filled with fine sediments (Andrews 1986, Vinson personal observation of pre- and post-dam photographs by the U.S. Bureau of Reclamation archived at Flaming Gorge Dam and pre- and post-dam photographs in Stephens and Shoemaker 1987) and provide good habitat for aquatic vascular plants.

Andrews (1986) found bankfull channel width decreased an average of 13% (171 to 148 m) at 24 cross-sections located 30-65 km downstream from the dam between 1951 and 1980. Further downstream, Lyons et al. (1992) found a ± 1 -3% change in channel width among aerial photographs taken in 1952, 1963-64, 1974, 1978, and 1986, 161-193 km downstream from the dam. Grams (1997) found a 20% decrease in width, 225-270 km downstream from the dam.

Yampa River Environment

The Yampa River is minimally regulated and the present hydrologic regime is highly similar to the pre-dam Green River environment. The river is characterized by large annual and seasonal fluctuations in all hydrologic attributes. For the gage at Maybell, Colorado, annual peak discharges normally exceeded $297 \text{ m}^3 \text{ sec}^{-1}$ (10,500 CFS) during spring runoff (Figure 2) and minimum discharges were less than $9 \text{ m}^3 \text{ sec}^{-1}$ (300 CFS) during winter. The mean daily discharge was $44 \text{ m}^3 \text{ sec}^{-1}$ (1,555 CFS) for the years 1916-2010. The annual range in instantaneous daily water temperatures was 0-30° C. The concentration of major water chemistry constituents varied widely throughout the year; for example specific conductance averaged $>500 \text{ uS cm}^{-1}$ in low flow months and $<300 \text{ uS cm}^{-1}$ during spring runoff. Similar to the Green River, measurements of water clarity, e.g., turbidity are lacking, but annual patterns are likely opposite discharge and suspended sediment concentration, with low water transparency in all but low flow months.

RESULTS

Aquatic and semi-aquatic vascular plants were surveyed at 87 sites within Dinosaur National Monument 2009-2010; 25 in the Green River upstream of the Yampa River, 17 in the Green River downstream of the Yampa River, 25 in the Yampa River, 18 springs, and 2 tributary streams (Table 1).

Green and Yampa Rivers

2009-2010 surveys – A total of 43 aquatic plant species were collected in the two rivers, 35 emergent and 8 submerged species. Thirty-nine species were collected in the Green River; 37 upstream from the Yampa River and 19 downstream from the Yampa River, and 15 species were collected in the Yampa River. In the Green River, 30 emergent and 9 submerged species were collected upstream from the Yampa River and 18 emergent and 1 submerged species were collected in the in the Green River downstream from the Yampa River. In the Yampa River, 14 emergent species were collected and 1 submerged species.

Submerged species collected in the Green River upstream from the Yampa River were the vascular plants *Elodea Canadensis* (Canada waterweed), *Myriophyllum* (watermilfoil), *Rorippa nasturtium-aquaticum* (watercress), *Potamogeton crispus* (curly pondweed), *Potamogeton*

pectinatus (sago pondweed), and *Ranunculus aquatilis* (water buttercup), the macroscopic algae *Chara vulgaris* and *Cladophora*, and the bryophyte, *Amblystegium riparium*. *Cladophora* was not collected and archived during 2009 and 2010, but its occurrence was noted on both the Green and Yampa Rivers.

Dominant emergent species, by occurrence included *Scirpus pungens* (bulrush), *Equisetum laevigatum* (horsetail), *Eleocharis palustris* (spikerush), *Apocynum cannabinum* (Indian hemp), *Juncus torreyi* (rush), *Phragmites australis* (common reed), *Juncus tenuis* (rush), *Mentha arvensis* (wild mint), *Agrostis gigantea* (redtop), *Carex nebrascensis* (Nebraska sedge), *Polygonum amphibium* (water knotweed), and *Hordeum jubatum* (foxtail barley) which were collected in both the Green and Yampa Rivers.

Differences among years – Differences in collections among years within river reaches were least in the Yampa River and greatest in the Green River (Table 3). The differences among years increased with the overall number of species collected within each reach. In the Yampa River, 12 of the 15 species collected were collected in both years. In the Green River, 15 of 37 species collected upstream of the Yampa River and 12 of 19 species collected downstream of the Yampa River were collected in both years. For submerged species, 7 of the 9 species were collected in both years and *Myriophyllum* and *Rorippa nasturtium-aquaticum* (watercress) were only collected in 2010 in the Green River upstream of the Yampa River. In the Yampa River and in the Green River downstream of the Yampa River, *Cladophora*, the only submerged species in these river sections, was observed in both years. In the two tributary streams, 5 of 12 species were collected overall and the single submerged species, *Rorippa nasturtium-aquaticum*, was collected in both years.

Exotic species – One exotic submerged species, *Potamogeton crispus*, and two exotic emergent species, *Festuca arundinacea* (tall fescue) and *Rumex crispus* (curly dock) were collected from in the Green River upstream from the Yampa River. *Myriophyllum* sp. was collected in the Green River upstream from the Yampa River. This specimen could not be confidently identified to specific species. *Myriophyllum spicatum* is an exotic species known to occur in Colorado and Utah.

1962 pre-dam collections – In 1962, Holmgren (1962) collected 6 submerged vascular species, *Potamogeton alpinus*, *Potamogeton nodosus*, *Potamogeton pectinatus*, and *Zannichellia palustris*, *Ranunculus gmelinii*, and *Rorippa nasturtium-aquaticum*. Woodbury (1963) collected 2 species of macrophytic algae, *Cladophora* in the Green and Yampa Rivers and *Chara* in the Yampa River at Deerlodge Park. He also reported collecting several species of aquatic bryophytes in Pool Creek and limited to no bryophyte species in the Green and Yampa Rivers. Holmgren's (1962) submerged vascular plant collections are interesting as other than *Rorippa*, all of the pond weeds were collected only in the vicinity of the confluence of the Green and Yampa Rivers near Echo Park and he was not specific if these plants were collected in the Green or Yampa Rivers or in an off-channel pond. The location description tag attached to the archived specimens at the Intermountain Herbarium is equally non-specific to the habitat or exact location from which these species were collected. The lack of mentioning these collections in the body of the report, suggests these specimens were collected in an off channel pond, but we cannot be certain of this. Regardless of their exact location, it can be taken from Holmgren (1962) and Woodbury's (1963) descriptions that submerged plants were exceedingly rare or nonexistent in the Green and Yampa River channels. Woodbury collected *Rorippa* near Echo Park, likely in Pool Creek, and in the Green River near Park Headquarters and Warren Draw, which may have been where a small spring entered the river.

Holmgren (1962) collected 15 species of emergent vegetation (Table 2), *Apocynum cannabinum* (Indianhemp), *Asclepias speciosa* (showy milkweed), *Beckmannia syzigachne* (American sloughgrass), *Carex nebrascensis* (Nebraska sedge), *Equisetum hyemale* (scouringrush horsetail), *Juncus torreyi* (Torrey's rush), *Mentha arvensis* (wild mint), *Platanthera huronensis* (Huron green orchid), *Polygonum amphibium* (water knotweed), *Potentilla anserina* (silverweed cinquefoil), *Rumex crispus* (curly dock), *Smilacina stellata* (starry false lily of the valley), *Spartina gracilis* (alkali cordgrass), *Triglochin maritima* (seaside arrowgrass), and *Typha latifolia* (broadleaf cattail). All 15 of these species were collected in 2009 and 2010. No major differences in emergent vegetation were identified between the 1962 and 2009-2010 collections.

Springs

Twenty-eight species were collected in 18 springs, 25 emergent and 3 submerged species. Dominant emergent species, by occurrence included *Typha latifolia*, *Eleocharis palustris*, *Equisetum laevigatum*, *Mimulus glabratus* (smooth monkeyflower), *Phragmites australis*, and *Equisetum arvense* (western horsetail). No species was found in more than 40% of the sampling locations and 15 species were found in only a single spring. Submerged species collected in springs were *Chara vulgaris*, *Cladophora*, and *Rorippa nasturtium-aquaticum*. In 1962, Woodbury (1963) collected the bryophyte *Amblystegium irriguum* and the macrophytic algae, *Chara* in Pool Canyon in Echo Park.

Tributary streams

Jones Hole Creek is a short spring-fed stream with stable flows and substrates and provides ideal habitat for aquatic plants. Pool Creek is a small tributary stream that is subject to high runoff events due to rapid snowmelt or thunderstorm events. The submerged species, *Rorippa nasturtium-aquaticum* was collected in both tributaries. *Rorippa nasturtium-aquaticum* is a watercress species. Watercress is a fast-growing perennial plant and is generally abundant in spring creeks. The aquatic bryophyte (*Amblystegium riparium*) was abundant in Jones Hole Creek. Emergent species included *Mimulus glabratus*, *Carex nebrascensis*, *Eleocharis palustris*, *Equisetum laevigatum*, *Hordeum jubatum*, *Juncus torreyi*, *Marchantia*, and *Scirpus pungens*. *Mimulus glabratus* and *Carex nebrascensis* was collected along both tributaries, the other emergent species were only collected at one of the tributaries. Woodbury (1963) collected *Amblystegium irriguum* and *Chara* and *Cladophora* in Pool Creek in Echo Park and *Cladophora* in Cottonwood Creek near the Gates of Lodore Canyon.

DISCUSSION

Submerged species occurrences were most strongly influenced by river type (regulated, unregulated, tributary, spring). Submerged vascular species were only collected in the regulated section of the Green River, in springs, and in the spring influenced Jones Hole Creek. In 1962, prior to closure of Flaming Gorge Dam submerged vascular species were only found in the

vicinity of the confluence of the Green and Yampa Rivers in Echo Park, perhaps in an off-channel pond, and *Rorippa* which was found on the Green River near Park Headquarters. Woodbury (1963) wrote, “with the exception of a few side streams and springs of fresh clear water, the algal flora [and presumably other aquatic vegetation, as no aquatic vascular plants were collected by the Woodbury expedition in the Green or Yampa Rivers] of Dinosaur National Monument is poor, due mainly to the dry climate, lack of more and varied aquatic situations and to the annual spring flooding by the Green and Yampa Rivers augmented by the heavy sediments they carry”.

Presently, aquatic vascular plants, macrophytic algae, and the bryophyte *Amblystegium riparium* are abundant in the Green River upstream from the confluence with the Yampa River. We found no major differences between our collections and those made by Woodbury (1963) in the Yampa River. The one exception was, Woodbury reported collecting *Chara* in the Yampa River at Deerlodge Park and we did not find this species in the Yampa River. Woodbury reported “poor depauperate plants of *Cladophora* in both the Green and Yampa Rivers” [description from Woodbury 1963, p. 51, also see our cover photograph for this report of a *Cladophora* ringed rock in the Yampa River] and this matches our observations in the Yampa River and in the Green River downstream from the Yampa River. Woodbury felt “*Cladophora* and other filamentous algae were more or less seasonal as the spring floods carry most of them away” (summarized from Woodbury 1963, p. 51 and 52).

There were no major differences in the collection of submerged species between years. This suggests we did not likely miss any submerged species during our survey of any of the habitats sampled. The similarity between years was less for emergent species. Our collection of these species is not likely complete.

The underlying cause of the abundance of aquatic plants now present in the Green River upstream from the Yampa River is undoubtedly due to increased water clarity and lower magnitude spring flows in this reach of the Green River as result of the construction of Flaming Gorge Dam. These plants are now commonly distributed in pools and eddies upstream of confluence. The effects these plants have in changing habitat conditions for native fish and invertebrates is unknown but worthy of study in the future. The lack of change in the occurrence of submerged species in the Yampa River, especially the lack of significant filamentous algae

presence, suggests little increase in nutrient input from sources upstream of the Monument over the past 30 plus years.

There were no major differences in the number of emergent species collected in 1962 and our collections in 2009-2010 in any of the three major river sections. The reason for this is likely that emergent species occur along the river margin and most of the above root plant grows above the water level and is thus not limited by water clarity (turbidity) as compared to submerged species. The frequency and magnitude of disturbance for shoreline habitats is likely different between the Green and Yampa Rivers and between the pre- and post-regulated Green River, but the impact of these differences on emergent species occurrences was not apparent.

One exotic submerged species, *Potamogeton crispus* (curly pondweed), was collected from the Green River. Curly pondweed is native to Eurasia, but presently occurs across most of North America and is considered a nuisance species in some areas and a naturalized exotic throughout most of North America. The two exotic emergent species, *Festuca arundinacea* (tall fescue) and *Rumex crispus* (curly dock) are also widely distributed and are both considered naturalized species throughout North America.

The most significant product of this project is the collection of plants that now join Arthur Holmgren's collection at the Intermountain Herbarium at Utah State University. These specimen collections provide a physical record of the plants present in and along the Green and Yampa Rivers in Dinosaur National Monument in 1962 prior to the closure of Flaming Gorge Dam and 48 years after the closure of Flaming Gorge Dam. Another major finding was the lack of change between 1962 and 2010 in the occurrence of aquatic plants in the Yampa River, in the Green River downstream of the Yampa River, in springs, and tributary streams.

The lack of detectable change in these systems is strong evidence that the management of these habitats in Dinosaur National Monument appears working as Congress intended in the National Park Service Organic Act of 1916, "to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations". The large change detected in the Green River upstream from the Yampa River is due to forces acting outside of the Park's boundary, namely Flaming Gorge Dam.

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Table 1. Sampling locations and the collection dates. Latitude and longitude are degrees north or west and minutes.

Site Name	Collection 1	Collection 2	Collection 3	Latitude	Longitude
Tributary streams					
Jones Hole Creek	4-Jun-09	24-Jul-09	28-Jul-10	40 33.166	109 03.393
Pool Creek	3-Jun-09		28-Jul-10	40 31.190	108 59.530
Springs					
Warm Springs at Warm Springs Rapid	15-Aug-09		12-Aug-10	40 31.833	108 55.722
Bull Spring	13-Aug-09			40 27.797	108 50.331
Elder Spring			13-Jul-10	40 25.863	109 11.282
Hidden Forest Spring			29-Jul-10	40 26.682	109 14.839
Hog Canyon Spring			13-Jul-10	40 25.808	109 10.097
Johnson Seep			10-Aug-10	40 28.463	108 49.616
Lake Bench Spring			9-Aug-10	40 28.504	108 41.844
Limestone Hanging Garden			27-Jul-10	40 33.786	108 57.579
Lower Serviceberry Spring			10-Aug-10	40 27.728	108 50.479
Mile 221 River Left Spring			28-Jul-10	40 32.112	109 01.266
Pool Creek Spring			14-Jul-10	40 29.619	109 01.326
Pool Spring			14-Jul-10	40 29.630	109 01.125
Rat Spring 1			14-Jul-10	40 26.927	108 53.004
Rat Spring 2			14-Jul-10	40 26.896	108 53.075
Red Rock Cottontail Seep			14-Jul-10	40 29.078	108 55.383
Red Wash Spring			14-Jul-10	40 28.899	108 56.444
Split Mountain Warm Spring			29-Jul-10	40 27.679	109 14.493
Mitten Park Fault Spring			28-Jul-10	40 32.529	108 59.742
Green River upstream from Yampa River					
Green River at Gates of Lodore Campground	1-Jun-09	21-Jul-09		40 43.614	108 53.301
Green River at Cub Sand Bar			26-Jul-10	40 43.031	108 53.459
Green River at Gates of Lodore			26-Jul-10	40 42.825	108 53.492
Green River at Wade and Curtis Cabin	1-Jun-09			40 41.763	108 54.083
Green River at Winnies Grotto			26-Jul-10	40 41.255	108 54.169
Green River at Buster Sand Bar			26-Jul-10	40 39.819	108 54.889
Green River at Buster Basin	1-Jun-09	21-Jul-09	26-Jul-10	40 39.760	108 54.881
Green River at upper Disaster Falls		21-Jul-09		40 39.017	108 55.751
Green River at Pot Creek Campground	1-Jun-09	21-Jul-09	26-Jul-10	40 38.028	108 56.497
Green River above Harp Falls			26-Jul-10	40 36.922	108 56.851
Green River at Top of Triplet Falls			27-Jul-10	40 35.913	108 57.365
Green River at Bottom of Triplet		22-Jul-09		40 35.830	108 57.541
Green River at Top of Hells Half Mile		22-Jul-09		40 35.703	108 58.102
Green River downstream from Hells Half Mile	2-Jun-09	22-Jul-09		40 35.725	108 58.508
Green River at Rippling Brook Campground	2-Jun-09			40 35.223	108 59.095
Green River below Rippling Brook			27-Jul-10	40 34.933	108 58.924

Green River at Limestone Campground			27-Jul-10	40 33.519	108 57.798
Green River at Limestone Beach		23-Jul-09		40 33.030	108 57.815
Green River at River mile 227	3-Jun-09	23-Jul-09		40 32.763	108 58.033
Green River at River mile 226.5	3-Jun-09	23-Jul-09		40 32.583	108 58.390
Green River at River Mile 226.2			28-Jul-10	40 32.558	108 58.958
Green River at River mile 226	3-Jun-09	23-Jul-09		40 32.441	108 59.083
Green River upstream from Yampa River confluence	3-Jun-09	23-Jul-09	28-Jul-10	40 32.014	108 59.043
Green River above Yampa Back channel			28-Jul-10	40 31.862	108 59.115
Green River at Yampa River confluence		23-Jul-09		40 31.736	108 59.093

Green River downstream from Yampa River

Green River at Big Island Below Echo Park	3-Jun-09	23-Jul-09	28-Jul-10	40 31.385	108 59.564
Green River at Mitten Park		23-Jul-09		40 32.384	108 59.658
Green River at Seastacks	3-Jun-09	23-Jul-09		40 32.329	109 01.004
Green River at River mile 220.8	4-Jun-09	24-Jul-09		40 32.092	109 01.562
Green River at Jones Hole Creek	4-Jun-09	24-Jul-09		40 32.398	109 03.640
Green River at Compromise Campground			28-Jul-10	40 32.222	109 04.764
Green River at River mile 217.2	4-Jun-09	24-Jul-09		40 32.086	109 05.140
Green River Below Greasey Pliers			29-Jul-10	40 31.142	109 05.682
Green River at Buck Island		24-Jul-09		40 30.765	109 07.430
Green River at Big Island	4-Jun-09	24-Jul-09		40 30.739	109 07.849
Green River at River mile 211	4-Jun-09	24-Jul-09		40 30.670	109 08.892
Green River at Rainbow Park Boat Ramp	4-Jun-09	24-Jul-09		40 29.710	109 10.437
Green River upstream from Moonshine Rapid	4-Jun-09	24-Jul-09		40 28.688	109 10.744
Green River at Schoolboy Rapid			29-Jul-10	40 28.047	109 12.072
Green River at Warm Springs		25-Jul-09		40 27.652	109 14.596
Green River at River Mile 200			29-Jul-10	40 27.013	109 15.506
Green River at Split Mountain Boat Ramp	5-Jun-09	25-Jul-09		40 26.549	109 15.135

Yampa River

Yampa River at Deer Lodge Boat Ramp	11-Aug-09		8-Aug-10	40 27.019	108 31.304
Yampa River downstream from Happy Hollow	11-Aug-09		8-Aug-10	40 27.800	108 33.094
Yampa River at Anderson Hole Campground	11-Aug-09		8-Aug-10	40 28.085	108 34.415
Yampa River downstream from Anderson Hole Campground	12-Aug-09		9-Aug-10	40 27.957	108 34.664
Yampa River at River mile 41	12-Aug-09		9-Aug-10	40 27.769	108 34.780
Yampa River at River mile 39.6	12-Aug-09		9-Aug-10	40 26.983	108 36.065
Yampa River at River mile 39.4	12-Aug-09		9-Aug-10	40 27.051	108 36.197
Yampa River at River mile 38	12-Aug-09		9-Aug-10	40 27.133	108 37.386
Yampa River at Ponderosa Campsite	12-Aug-09		9-Aug-10	40 27.936	108 38.117
Yampa River downstream from Teepee Rapid	12-Aug-09		9-Aug-10	40 28.170	108 38.772
Yampa River at Haystack Rock	12-Aug-09		9-Aug-10	40 27.973	108 40.001
Yampa River at River mile 32.5 back eddie	12-Aug-09		9-Aug-10	40 28.322	108 41.880
Yampa River at River mile 31	12-Aug-09		9-Aug-10	40 28.513	108 43.144
Yampa River at Bower Draw	13-Aug-09		10-Aug-10	40 29.563	108 44.704

Yampa River downstream from Five Springs Rapid	13-Aug-09	10-Aug-10	40 29.929	108 47.118
Yampa River at Bull Canyon	14-Aug-09	10-Aug-10	40 28.042	108 50.470
Yampa River at Mathers Hole Campground	13-Aug-09	10-Aug-10	40 28.245	108 51.926
Yampa River at Cleopatra's Couch Island	13-Aug-09	10-Aug-10	40 28.808	108 51.824
Yampa River downstream from Grand Overhang	14-Aug-09	11-Aug-10	40 29.522	108 52.192
Yampa River at River mile 13.2	14-Aug-09	11-Aug-10	40 29.684	108 52.525
Yampa River upstream from Mantle Ranch	13-Aug-09	11-Aug-10	40 29.251	108 52.894
Yampa River at Castle Park	14-Aug-09	11-Aug-10	40 28.300	108 53.900
Yampa River at Laddie Park	14-Aug-09	11-Aug-10	40 28.555	108 54.440
Yampa River upstream from Warm Springs	14-Aug-09	11-Aug-10	40 31.198	108 55.132
Yampa River downstream from Warm Springs	15-Aug-09	12-Aug-10	40 31.736	108 56.355

Table 2. List of aquatic plants collected in Dinosaur National Monument in summer 2009 – 2010 and by Holmgren (Holmgren 1962) and Woodbury (1963) prior to the closure of Flaming Gorge Dam in 1962. Only species reported in the Green and Yampa River channels by Holmgren and Woodbury are included – see note below table for additional details. A – Absent, P – Present. Habitat classification was based on species habitat descriptions in Goodrich et al. (1986) and DiTomaso and Healy (2003).

Taxon	Habitat	Green River					Holmgren and
		Yampa	upstream	downstream	Springs	Tributaries	Woodbury
		River	from Yampa	from Yampa			within the
				River			Green and
							Yampa Rivers
Agrostis gigantea	emergent	P	P	P	P	A	A
Agrostis Stolonifera	emergent	A	P	A	P	A	A
Apocynum cannabinum	emergent	P	P	P	A	A	P
Asclepias speciosa	emergent	A	P	P	A	A	P
Beckmannia syzigachne	emergent	A	P	A	A	A	P
Carex nebrascensis	emergent	P	P	P	P	P	P
Claytonia perfoliata	emergent	A	P	A	A	A	A
Eleocharis palustris	emergent	P	P	P	P	P	A
Elymus canadensis	emergent	A	P	A	P	A	A
Equisetum arvense	emergent	P	A	A	P	A	A
Equisetum hyemale	emergent	A	P	P	A	A	P
Equisetum laevigatum	emergent	P	P	P	P	P	A
Festuca arundinacea	emergent	A	P	A	A	A	A
Glycyrrhiza lepidota	emergent	A	P	P	P	A	A
Hordeum jubatum	emergent	P	P	A	P	P	A
Juncus tenuis	emergent	P	P	P	P	A	A
Juncus torreyi	emergent	P	P	P	P	P	P
Marchantia	emergent	A	A	A	P	A	A
Mentha arvensis	emergent	P	P	P	P	A	P
Mimulus glabratus	emergent	A	A	A	P	P	A
Oenothera elata	emergent	A	P	A	P	A	A
Phragmites australis	emergent	P	P	P	P	P	A
Plantago major	emergent	A	P	P	A	A	A
Platanthera huronensis	emergent	A	A	A	P	A	P
Polygonum amphibium	emergent	P	P	P	P	A	P
Potentilla anserina	emergent	P	P	A	A	A	P
Rumex crispus	emergent	A	P	A	P	A	P
Schoenoplectus maritimus	emergent	A	P	A	P	A	A
Scirpus pungens	emergent	P	P	P	P	P	A
Scirpus validus	emergent	A	P	P	P	A	A
Smilacina stellata	emergent	A	A	A	P	A	P
Spartina gracilis	emergent	A	A	P	A	A	P

Triglochin maritima	emergent	A	A	P	P	A	P
Typha Latifolia	emergent	A	P	A	P	A	P
Veronica anagallis aquatica	emergent	A	P	A	P	A	A
Amblystegium riparium	submerged	A	P	A	P	P	A
Chara vulgaris	submerged	A	P	A	P	A	P
Cladophora glomerata	submerged	P	P	P	P	A	P
Elodea canadensis	submerged	A	P	A	A	A	A
Myriophyllum sp.	submerged	A	P	A	A	A	A
Potamogeton crispus	submerged	A	P	A	A	A	A
Potamogeton pectinatus	submerged	A	P	A	A	A	A
Ranunculus aquatilis	submerged	A	P	A	A	A	A
Rorippa nasturtium-aquaticum	submerged	A	P	A	P	P	A
Species collected		15	37	19	29	10	17
Emergent species		14	28	18	25	8	15
Submerged species		1	9	1	4	2	2

Note – In addition to the species occurrences listed, Holmgren (1962) collected 5 submerged vascular species, *Potamogeton alpinus*, *Potamogeton nodosus*, *Potamogeton pectinatus*, and *Zannichellia palustris*, *Ranunculus gmelinii* in the vicinity of the confluence of the Green and Yampa Rivers near Echo Park. We suggest these were collected in an off-channel pond – see text for details. *Rorippa nasturtium-aquaticum* was collected by Holmgren (1962) in or adjacent to the Green River near Park Headquarters and Warren Draw, which we think may have been where a small spring entered the river – see text for details.

Table 3. Collections of aquatic plants in Dinosaur National Monument in 2009 and 2010.

Taxon	Habitat ¹	Yampa River		Green River upstream from Yampa River		Green River downstream from Yampa River		Tributaries	
		2009	20110	2009	2010	2009	2010	2009	2010
Agrostis gigantea	emergent	P	P	A	P	A	P	A	A
Agrostis Stolonifera	emergent	A	A	A	P	A	A	A	A
Apocynum cannabinum	emergent	P	P	A	P	A	P	A	A
Asclepias speciosa	emergent	A	A	A	P	A	P	A	A
Beckmannia syzigachne	emergent	A	A	A	P	A	A	A	A
Carex nebrascensis	emergent	P	P	A	P	A	P	A	P
Claytonia perfoliata	emergent	A	A	P	P	A	A	A	A
Eleocharis palustris	emergent	P	P	A	P	P	P	P	P
Elymus canadensis	emergent	A	A	P	P	A	A	A	A
Equisetum arvense	emergent	A	P	A	A	A	A	P	A
Equisetum hyemale	emergent	A	A	A	P	A	P	A	A
Equisetum laevigatum	emergent	P	P	P	P	P	P	P	P
Festuca arundinacea	emergent	A	A	A	P	A	A	A	A
Glycyrrhiza lepidota	emergent	A	A	A	P	A	P	A	A
Habernaria huronensis	emergent	A	A	A	A	A	A	A	A
Hordeum jubatum	emergent	A	P	P	P	A	A	A	P
Juncus tenuis	emergent	P	P	P	P	A	P	A	A
Juncus torreyi	emergent	A	P	A	P	A	P	A	P
Marchantia	emergent	A	A	A	A	A	A	A	A
Mentha arvensis	emergent	P	P	P	P	A	P	A	A
Mimulus glabratus	emergent	A	A	A	A	A	A	A	P
Oenothera elata	emergent	A	A	A	P	A	A	A	A
Phragmites australis	emergent	P	P	A	P	P	P	P	P
Plantago major	emergent	A	A	A	P	P	A	A	A
Polygonum amphibium	emergent	P	P	A	P	P	P	P	A
Potentilla anserina	emergent	P	P	P	P	A	A	A	A
Rumex crispus	emergent	A	A	A	P	A	A	A	A
Schoenoplectus maritimus	emergent	A	A	A	P	A	A	A	A
Scirpus pungens	emergent	P	P	P	P	P	P	P	P
Scirpus validus	emergent	A	A	P	P	P	P	A	A
Smilacina stellata	emergent	A	A	A	A	A	A	A	A
Spartina gracilis	emergent	A	A	A	A	A	P	A	A
Triglochin maritima	emergent	A	A	A	A	P	A	A	A
Typha Latifolia	emergent	A	A	P	P	A	A	P	A
Veronica anagallis aquatica	emergent	A	A	P	A	A	A	A	A
Amblystegium riparium	submergent	A	A	P	P	A	A	A	A
Chara vulgaris	submergent	A	A	P	P	A	A	A	A
Cladophora	submergent	P	P	P	P	P	P	A	A
Elodea canadensis	submergent	A	A	P	P	A	A	A	A
Myriophyllum sp.	submergent	A	A	A	P	A	A	A	A

Potamogeton crispus	submergent	A	A	P	P	A	A	A	A
Potamogeton pectinatus	submergent	A	A	P	P	A	A	A	A
Rorippa nasturtium-aquaticum	submergent	A	A	A	P	A	A	P	P
Ranunculus aquatilis	submergent	A	A	P	P	A	A	A	A

Table 4. Occurrences of aquatic plants in 2 tributary streams and 18 springs, summer 2009-2010. A – absent, P – present.

Species	Jones Hole Creek	Pool Creek	Warm Springs at Warm Springs Rapid	Bull Spring	Elder Spring	Hidden Forest Spring	Hog Canyon Spring	Johnson Seep	Lake Bench Spring	Limestone Hanging Garden	Lower Serviceberry Spring	Mile 221 River Left Spring	Pool Creek Spring	Pool Spring	Rat Spring 1	Rat Spring 2	Red Rock Cottontail Seep	Red Wash Spring	Split Mountain Warm Spring	Mitten Park Fault Spring
<i>Agrostis gigantea</i>	A	A	A	A	A	A	A	A	P	P	A	A	A	A	A	A	A	A	A	A
<i>Agrostis Stolonifera</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	P	A	A	A	A	A	A
<i>Amblystegium riparium</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Apocynum cannabinum</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Aquilegia formosa</i>	A	A	A	A	A	A	P	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Artemisia ludoviciana</i>	A	A	A	A	A	A	A	P	A	A	A	A	A	A	A	A	A	A	A	A
<i>Asclepias speciosa</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Beckmannia syzigachne</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Bromus inermis</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Carex nebrascensis</i>	P	A	A	A	A	A	A	A	A	P	A	A	A	A	A	A	P	A	A	A
<i>Chara vulgaris</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	P	P	A	A
<i>Cladophora</i>	A	A	A	P	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Claytonia perfoliata</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Clematis ligusticifolia</i>	A	A	A	A	A	A	A	P	A	A	A	A	A	A	A	A	A	A	A	A
<i>Conyza canadensis</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Dactylis glomerata</i>	A	A	A	A	A	A	P	P	A	A	A	A	A	A	A	A	A	A	A	A
<i>Eleocharis palustris</i>	P	A	P	P	P	A	A	A	A	A	A	A	A	A	P	A	A	A	P	A
<i>Elodea canadensis</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Elymus canadensis</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	P	A
<i>Equisetum arvense</i>	A	A	P	A	A	A	A	P	A	A	A	A	P	P	A	A	A	A	A	A
<i>Equisetum hyemale</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Equisetum laevigatum</i>	P	A	P	P	P	A	P	A	A	A	P	A	A	A	A	A	A	A	A	A
<i>Festuca arundinacea</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Glycyrrhiza lepidota</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	P	A	A
<i>Grindelia squarrosa</i>	A	A	A	A	A	A	A	A	P	A	A	A	A	A	A	A	A	A	A	A
<i>Heterotheca villosa</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Hordeum jubatum</i>	A	P	A	A	A	A	A	A	A	A	A	A	A	A	A	A	P	P	A	A

<i>Iva axillaris</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Juncus tenuis</i>	A	A	A	A	A	A	A	A	P	A	P	A	P	A	A	A	A	A	A	A
<i>Juncus torreyi</i>	P	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	P	P	A
<i>Marchantia</i>	P	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Melilotus alba</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Melilotus officinalis</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Mentha arvensis</i>	A	A	A	A	P	A	A	A	A	P	A	P	A	A	A	A	A	A	A	A
<i>Mimulus glabratus</i>	P	P	A	P	A	A	A	A	A	A	A	P	P	P	A	A	A	A	A	P
<i>Myriophyllum sp.</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Oenothera elata</i>	A	A	A	A	A	A	P	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Phleum pratense</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	P	A	A
<i>Phragmites australis</i>	A	A	A	P	P	P	A	A	A	A	A	A	A	A	P	A	A	A	P	A
<i>Plantago major</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Platanthera huronensis</i>	A	A	A	A	A	A	A	P	A	A	A	A	A	A	A	A	A	A	A	A
<i>Polygonum amphibium</i>	A	A	P	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Potamogeton crispus</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Potamogeton pectinatus</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Potentilla anserina</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Ranunculus aquatilis</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Rorippa nasturtium-aquaticum</i>	P	P	A	P	A	A	P	A	A	P	A	A	P	P	A	A	A	A	A	P
<i>Rumex crispus</i>	A	A	A	A	A	A	P	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Schoenoplectus maritimus</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	P	A	A	A	A
<i>Scirpus pungens</i>	P	A	A	P	A	A	A	A	A	A	A	A	A	A	A	A	P	P	A	A
<i>Scirpus validus</i>	A	A	A	A	A	A	A	A	A	P	A	A	A	A	A	P	A	A	A	A
<i>Sitanion hystrix</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	P	A	A
<i>Smilacina stellata</i>	A	A	A	A	A	A	P	A	A	A	A	A	A	A	A	A	A	A	A	P
<i>Solidago canadensis</i>	A	A	A	A	A	P	A	A	P	A	A	A	A	A	A	A	A	A	A	A
<i>Spartina gracilis</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Triglochin maritima</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	P	A
<i>Typha latifolia</i>	A	A	P	A	P	A	P	A	P	P	P	A	A	A	A	A	P	A	A	A

Veronica anagallis aquatic	A	A	A	A	A	A	A	A	A	A	A	A	P	P	A	A	A	A	A	A
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Table 5. Occurrences of aquatic plants in the Green River upstream of the Yampa River, summer 2009-2010. A – absent, P – present.

Species	Green River at Gates of Lodore Campground	Green River at Cub Sand Bar	Green River at Gate of Lodore	Green River at Wad and Curtis Cabin	Green River at Winnies Grotto	Green River at Buster Sand Bar	Green River at Buster Basin	Green River at upper Disaster Falls	Green River at Pot Creek Campground	Green River above Harper Falls	Green River at Top of Triplet Falls	Green River at Bottom of Tripellet	Green River at Top of Hells Half Mile	Green River downstream from Hells Half Mile	Green River at Rippling Brook Campground	Green River below Rippling Brook	Green River at Limestone Campground	Green River at Limestone Beach	Green River at Rivermile 227	Green River at Rivermile 226.5	Green River at Rivermile 226.2	Green River at Rivermile 226	Green River upstream from the Yampa River confluence	Green River above Yampa Back channel	Green River at Yampa River confluence
River mile	243.6	242.7	242.4	241	240	238.3	238	237	235	234.2	232.5	232.2	232	231.3	230.5	230	228	227.5	227	226.5	226.2	226	225.4	225.2	225
<i>Agrostis gigantea</i>	P	A	P	A	P	P	A	A	P	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Agrostis Stolonifera</i>	A	A	A	A	P	A	A	A	A	A	P	A	A	A	A	A	P	A	A	A	A	A	A	A	A
<i>Apocynum cannabinum</i>	A	A	A	A	A	A	A	P	A	A	A	A	A	P	A	A	A	P	P	A	P	A	A	P	A
<i>Aquilegia formosa</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Artemisia ludoviciana</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Asclepias speciosa</i>	P	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Beckmannia syzigachne</i>	A	A	A	A	P	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Bromus inermis</i>	A	A	A	A	A	A	A	A	P	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Carex nebrascensis</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	P	A	A	A	A	A	A	A	A	A	P	A
<i>Chara vulgaris</i>	P	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	P	A	A	A	A	A	A	A
<i>Cladophora</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Claytonia perfoliata</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	P	A	A	A	A	A	A	A	A	A	A
<i>Clematis ligusticifolia</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Conyza canadensis</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	P	A	A	A	A	A	A	A	A	A	A
<i>Dactylis glomerata</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Eleocharis palustris</i>	A	A	A	A	A	A	A	A	A	A	P	A	A	A	A	A	P	A	A	A	A	A	P	P	P
<i>Elodea canadensis</i>	A	A	A	P	P	A	A	A	A	A	P	A	A	A	A	P	A	A	A	A	A	A	A	A	A
<i>Elymus canadensis</i>	A	A	A	A	P	A	A	A	A	A	A	A	A	A	P	A	A	A	A	P	P	P	A	A	A
<i>Equisetum arvense</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Equisetum hyemale</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	P	A	A	A	A	A	A	A	A	A
<i>Equisetum laevigatum</i>	P	A	A	A	A	P	A	A	P	A	P	P	P	A	A	P	A	A	A	P	P	P	P	A	A
<i>Festuca arundinacea</i>	A	A	A	A	A	A	A	A	P	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
<i>Glycyrrhiza lepidota</i>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	P	P	A	P	A	A

Grindelia squarrosa	A		A	A	A	A	A	A	A		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Heterotheca villosa	A		A	A	A	A	A	A	A		A	A	A	A	A	A	P	A	A	A	A	A	A	A	A
Hordeum jubatum	P		P	A	A	A	P	A	A		A	A	A	A	A	P		A	A	A	A	A	A	A	A
Iva axillaris	A		A	A	A	A	A	A	P		A	A	A	A	A	A		A	A	A	A	A	A	A	A
Juncus tenuis	A		A	A	A	A	P	A	P		A	A	A	A	P	A		A	A	A	A	A	A	P	A
Juncus torreyi	P		A	A	A	A	P	A	A		A	P	A	A	A	A		P	A	A	A	P	P	P	P
Marchantia	A		A	A	A	A	A	A	A		A	A	A	A	A	A		A	A	A	A	A	A	A	A
Melilotus alba	A		A	A	A	A	A	A	p		A	A	A	A	A	A		A	A	A	A	A	A	A	A
Melilotus officinalis	A		A	A	A	A	A	A	p		A	A	A	A	A	A		A	A	A	A	A	A	A	A
Mentha arvensis	A		A	P	A	A	A	A	p		A	A	A	A	A	A		A	P	A	A	P	A	A	A
Mimulus glaberratus	A		A	A	A	A	A	A	A		A	A	A	A	A	A		A	A	A	A	A	A	A	A
Myriophyllum sp.	A		A	A	A	A	A	A	A		P	A	A	A	A	A		A	A	A	A	A	A	A	A
Oenothera elata	P		A	A	A	A	A	A	A		A	A	A	A	A	A		A	A	A	A	A	A	A	A
Phleum pratense	A		A	A	A	A	A	A	A		A	A	A	A	A	A		A	A	A	A	A	A	A	A
Phragmites australis	A		A	A	A	P	P	A	A		A	A	A	A	A	A		P	A	P	P	P	A	A	A
Plantago major	A		A	P	A	A	A	A	A		A	A	A	A	A	A		A	P	A	A	A	A	A	P
Platanthera huronensis	A		A	A	A	A	A	A	A		A	A	A	A	A	A		A	A	A	A	A	A	A	A
Polygonum amphibium	A		A	A	A	A	A	A	A		A	A	A	A	A	A		A	A	A	A	A	A	A	P
Potamogeton crispus	A		P	P	P	A	A	P	P		P	P	P	P	A	A		P	A	P	P	P	A	A	A
Potamogeton pectinatus	P		P	P	P	A	A	A	A		P	P	P	P	A	A		A	P	A	P	A	A	P	A
Potentilla anserina	P		A	A	A	A	A	A	A		A	P	A	A	A	A		A	P	P	A	A	A	A	A
Ranunculus aquatilis	P		P	A	P	A	A	A	A		A	P	P	P	A	P		P	P	A	A	P	A	A	A
Rorippa nasturtium-aquaticum	A		A	A	A	A	A	A	A		A	A	A	A	A	A		A	A	A	A	P	A	A	A
Rumex crispus	P		A	A	A	A	A	A	A		A	A	A	A	A	A		A	A	A	A	A	A	A	A
Schoenoplectus maritimus	A		A	A	A	P	A	A	A		A	A	A	A	A	A		A	A	A	A	A	A	A	A
Scirpus pungens	P		A	A	A	P	P	A	P		A	A	A	P	A	P		P	A	A	P	P	P	A	A
Scirpus validus	P		A	A	A	A	A	A	A		A	A	A	A	A	P		A	A	A	A	A	A	A	A
Sitanion hystrix	A		A	A	A	A	A	A	A		A	A	A	A	A	A		A	A	A	A	A	A	A	A
Smilacina stellata	A		A	A	A	A	A	A	A		A	A	A	A	A	A		A	A	A	A	A	A	A	A
Solidago canadensis	A		A	A	A	A	A	A	A		A	A	A	A	A	A		A	A	A	A	A	A	A	A

Spartina gracilis	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Triglochin maritima	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Typha Latifolia	P	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Veronica anagallis aquatica	A	A	A	A	A	A	A	A	A	A	A	A	A	A	P	A	A	A	A	P	A	A	A	A	A

Table 6. Occurrences of aquatic plants in the Green River downstream of the Yampa River, summer 2009-2010. A – absent, P – present.

[illegible]

Table 7. Occurrences of aquatic plants in the Yampa River, summer 2009-2010. A – absent, P – present.

[illegible]

Table 8. Specimens archived at the Utah State University Intermountain Herbarium.

FAMILY	EARLIERN AME	AUTHOREAR LIER	ACCEPTED_N AME	STAT E	COUN TY	SITE_NA ME	RIVER_M ILE	COLLECT ORS	LATITU DE	LONGIT UDE	ELEV _M	DNM_ACCES SION	DNM_CATAL OGUE	UTCACCES SION	COLLD ATE
12. CRUCIFERAE	Nasturtium officinale	R. Br.	Nasturtium officinale	Colora do	Moffat	Pool Creek at Echo Park	224.50	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.5198 330	- 108.99216 70	1548.3 8	DINO-605	43,174.0	252,868.0	03-Jun- 09
21. POLYGONACEAE	Polygonum amphibium	L.	Polygonum amphibium	Colora do	Moffat	Green River at the Confluen ce	225.00	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.5289 330	- 108.98488 30	1548.3 8	DINO-605	43,173.0	252,869.0	23-Jul-09
02. Equisetaceae	Equisetum laevigatum	A. Braun	Equisetum laevigatum	Colora do	Moffat	Green River at Gates of Lodore Campgro und	243.60	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.7269 000	- 108.88835 00	1629.1 6	DINO-605	43,175.0	252,870.0	01-Jun- 09
12. CYPERACEAE	Scripus pungens	Vahl	Schoenoplectus pungens	Colora do	Moffat	Green River at Gates of Lodore Campgro und	243.60	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.7269 000	- 108.88835 00	1629.1 6	DINO-605	43,177.0	252,871.0	01-Jun- 09
12. CYPERACEAE	Eleocharis palustris	(L.) Roem. & Schult.	Eleocharis palustris	Colora do	Moffat	Green River at Gates of Lodore Campgro und	243.60	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.7269 000	- 108.88835 00	1629.1 6	DINO-605	43,176.0	252,872.0	01-Jun- 09
08. Najaaceae	Potamogeton pectinatus	L.	Stuckenia pectinata	Colora do	Moffat	Green River at Rivermile 241	241.00	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.6960 500	- 108.90138 30	1624.8 9	DINO-605	43,191.0	252,873.0	01-Jun- 09
26. RANUNCULACEAE	Ranunculus aquatilis	L.	Ranunculus aquatilis	Colora do	Moffat	Green River at Rivermile 241	241.00	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.6960 500	- 108.90138 30	1624.8 9	DINO-605	43,192.0	252,874.0	01-Jun- 09

08A.HYDROCHARITACEAE	Elodea canadensis	Michx.	Elodea canadensis	Colorado	Moffat	Green River at Rivermile 241	241.00	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.6960500	- 108.9013830	1624.89	DINO-605	43,189.0	252,875.0	01-Jun-09
08. NAJADACEAE	Potamogeton crispus	L.	Potamogeton crispus	Colorado	Moffat	Green River at Rivermile 241	241.00	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.6960500	- 108.9013830	1624.89	DINO-605	43,190.0	252,876.0	01-Jun-09
60. PLANTAGINACEAE	Veronica anagallis-aquatica	L.	Veronica anagallis-aquatica	Colorado	Moffat	Green River at rippling brook Campground	230.50	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.5870500	- 108.9849170	1562.40	DINO-605	43,196.0	252,877.0	02-Jun-09
00. CHARACEAE	Chara vulgaris	L.	Chara vulgaris	Colorado	Moffat	Green River at Limestone Beach	227.50	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.5505150	- 108.9635830	1549.91	DINO-605	43,198.0	252,878.0	23-Jul-09
26. RANUNCULACEAE	Ranunculus aquatilis	L.	Ranunculus aquatilis	Colorado	Moffat	Green River at Rivermile 226.5	226.50	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.5430500	- 108.9731670	1549.30	DINO-605	43,200.0	252,879.0	03-Jun-09
13. JUNCACEAE	Juncus torreyi	Coville	Juncus torreyi	Colorado	Moffat	Green River at Rivermile 226.5	226.50	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.5430500	- 108.9731670	1549.30	DINO-605	43,199.0	252,880.0	03-Jun-09
12. CYPERACEAE	Scirpus validus	Vahl	Schoenoplectus tabernaemontani	Colorado	Moffat	Green River at Rivermile 226.5	226.50	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.5430500	- 108.9731670	1549.30	DINO-605	43,202.0	252,881.0	03-Jun-09

52. COMPOSITAE	<i>Conyza canadensis</i>	(L.) Cronquist	<i>Conyza canadensis</i>	Colorado	Moffat	Green River at Rivermile 226.5	226.50	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.5430500	- 108.9731670	1549.30	DINO-605	43,204.0	252,882.0	03-Jun-09
11. GRAMINEAE	<i>Elymus canadensis</i>	L.	<i>Elymus canadensis</i>	Colorado	Moffat	Green River at Rivermile 226.5	226.50	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.5430500	- 108.9731670	1549.30	DINO-605	43,201.0	252,883.0	03-Jun-09
58. SCROPHULARIACEAE	<i>Veronica anagallis-aquatica</i>	L.	<i>Veronica anagallis-aquatica</i>	Colorado	Moffat	Green River at Limestone Beach	227.50	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.5505150	- 108.9635830	1549.91	DINO-605	43,197.0	252,884.0	23-Jul-09
08. NAJADACEAE	<i>Potamogeton pectinatus</i>	L.	<i>Stuckenia pectinata</i>	Colorado	Moffat	Green River at Pot Creek Campground	235.00	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.6338000	- 108.9416170	1596.54	DINO-605	43,195.0	252,885.0	01-Jun-09
12. CYPERACEAE	<i>Eleocharis palustris</i>	(L.) Roem. & Schult.	<i>Eleocharis palustris</i>	Colorado	Moffat	Green River Above the Confluence	225.40	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.5335670	- 108.9840500	1548.69	DINO-605	43,178.0	252,886.0	03-Jun-09
11. GRAMINEAE	<i>Hordeum jubatum</i>	L.	<i>Hordeum jubatum</i>	Colorado	Moffat	Green River at Rivermile 226.5	226.50	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.5430500	- 108.9731670	1549.30	DINO-605	43,203.0	252,887.0	03-Jun-09
08A. HYDROCHARITACEAE	<i>Elodea canadensis</i>	Michx.	<i>Elodea canadensis</i>	Colorado	Moffat	Green River Above the Confluence	225.40	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.5335670	- 108.9840500	1548.69	DINO-605	43,179.0	252,888.0	03-Jun-09

00. MARCHANTIACEAE	Marchantia	L.	Marchantia polymorpha	Utah	Uintah	Jones Hole Creek	218.50	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.5527 670	- 109.05655 00	1573.3 8	DINO-605	43,184.0	252,889.0	04-Jun-09
58. SCROPHULARIACEAE	Mimulus glabratus	Kunth	Mimulus glabratus	Utah	Uintah	Jones Hole Creek	218.50	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.5527 670	- 109.05655 00	1573.3 8	DINO-605	43,181.0	252,890.0	04-Jun-09
12. CRUCIFERAE	Nasturtium officinale	R. Br.	Nasturtium officinale	Utah	Uintah	Jones Hole Creek	218.50	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.5527 670	- 109.05655 00	1573.3 8	DINO-605	43,183.0	252,891.0	04-Jun-09
12. CYPERACEAE	Carex nebrascensis	Dewey	Carex nebrascensis	Colorado	Moffat	Green River at Big Island Below Echo Park	224.30	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.5230 830	- 108.99273 30	1547.7 7	DINO-605	43,185.0	252,892.0	03-Jun-09
12. CYPERACEAE	Scirpus validus	Vahl	Schoenoplectus tabernaemontani	Utah	Uintah	Green River at Warm Springs	202.50	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.4608 670	- 109.24326 70	1484.6 8	DINO-605	43,187.0	252,893.0	25-Jul-09
09. JUNCAGINACEAE	Triglochin maritima	L.	Triglochin maritima	Utah	Uintah	Green River at Warm Springs	202.50	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.4608 670	- 109.24326 70	1484.6 8	DINO-605	43,188.0	252,894.0	25-Jul-09
12. CYPERACEAE	Scirpus pungens	Vahl	Schoenoplectus pungens	Colorado	Moffat	Green River at Big Island Below Echo Park	224.30	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.5230 830	- 108.99273 30	1547.7 7	DINO-605	43,186.0	252,895.0	03-Jun-09

12. CYPERACEAE	Eleocharis palustris	(L.) Roem. & Schult.	Eleocharis palustris	Utah	Uintah	Jones Hole Creek	218.50	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.5527 670	- 109.05655 00	1573.3 8	DINO-605	43,180.0	252,896.0	04-Jun-09
12. CYPERACEAE	Scripus pungens	Vahl	Schoenoplectus pungens	Utah	Uintah	Jones Hole Creek	218.50	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.5527 670	- 109.05655 00	1573.3 8	DINO-605	43,182.0	252,897.0	04-Jun-09
13. JUNCACEAE	Juncus tenuis	Willd.	Juncus tenuis	Colorado	Moffat	Green River at upper Disaster Falls	237.00	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.5002 830	- 108.92918 30	1606.9 1	DINO-605	43,194.0	252,898.0	21-Jul-09
11. GRAMINEAE	Hordeum jubatum	L.	Hordeum jubatum	Colorado	Moffat	Green River at upper Disaster Falls	237.00	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.5002 830	- 108.92918 30	1606.9 1	DINO-605	43,193.0	252,899.0	21-Jul-09
12. CYPERACEAE	Eleocharis palustris	(L.) Roem. & Schult.	Eleocharis palustris	Colorado	Moffat		46.50	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.4503 170	- 108.52173 30	1707.4 9	DINO-605	43,208.0	252,900.0	11-Aug-09
12. CYPERACEAE	Scripus pungens	Vahl	Schoenoplectus pungens	Colorado	Moffat		46.50	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.4503 170	- 108.52173 30	1707.4 9	DINO-605	43,211.0	252,901.0	11-Aug-09
11. GRAMINEAE	Phragmites australis	(Cav.) Trin. ex Steud.	Phragmites australis	Colorado	Moffat	Yampa River at Anderson Hole Campground	41.80	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.4680 830	- 108.57358 30	1694.6 9	DINO-605	43,213.0	252,902.0	11-Aug-09

21. POLYGONACEAE	Polygonum amphibium	L.	Polygonum amphibium	Colorado	Moffat	Yampa River at Anderson Hole Campground	41.80	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.4680830	- 108.5735830	1694.69	DINO-605	43,212.0	252,903.0	11-Aug-09
11. GRAMINEAE	Agrostis gigantea	Roth	Agrostis gigantea	Colorado	Moffat	Yampa River at Bull Canyon	20.20	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.4673670	- 108.8411670	1585.87	DINO-605	43,220.0	252,904.0	14-Aug-09
12. CYPERACEAE	Carex nebrascensis	Dewey	Carex nebrascensis	Colorado	Moffat	Yampa River at Bull Canyon	20.20	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.4673670	- 108.8411670	1585.87	DINO-605	43,219.0	252,905.0	14-Aug-09
21. POLYGONACEAE	Polygonum amphibium	L.	Polygonum amphibium	Colorado	Moffat	Yampa River below Five Springs Rapid	25.50	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.4988170	- 108.7853000	1608.43	DINO-605	43,217.0	252,906.0	13-Aug-09
12. CYPERACEAE	Scirpus pungens	Vahl	Schoenoplectus pungens	Colorado	Moffat	Yampa River at Bull Canyon	20.20	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.4673670	- 108.8411670	1585.87	DINO-605	43,221.0	252,907.0	14-Aug-09
32. ROSACEAE	Potentilla anserina	L.	Argentina anserina	Colorado	Moffat	Yampa River at Laddie Park	10.50	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.4759170	- 108.9073330	1562.40	DINO-605	43,225.0	252,908.0	14-Aug-09
12. CYPERACEAE	Eleocharis palustris	(L.)Roem. & Schult.	Eleocharis palustris	Colorado	Moffat	Yampa River below Five Springs Rapid	25.50	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.4988170	- 108.7853000	1608.43	DINO-605	43,218.0	252,909.0	13-Aug-09

21. POLYGONACEAE	Polygonum amphibium	L.	Polygonum amphibium	Colorado	Moffat	Yampa River at Bull Canyon	20.20	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.4673670	- 108.8411670	1585.87	DINO-605	43,222.0	252,910.0	14-Aug-09
02. Equisetaceae	Equisetum arvense	L.	Equisetum arvense	Colorado	Moffat	Bull Canyon	20.20	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.4646000	- 108.8393170	1610.87	DINO-605	43,170.0	252,911.0	13-Aug-09
07. TYPHACEAE	Typha latifolia	L.	Typha latifolia	Colorado	Moffat	Bull Canyon	20.20	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.4646000	- 108.8393170	1610.87	DINO-605	43,223.0	252,912.0	13-Aug-09
02. Equisetaceae	Equisetum laevigatum	A. Braun	Equisetum laevigatum	Colorado	Moffat	Bull Canyon	20.20	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.4646000	- 108.8393170	1610.87	DINO-605	43,171.0	252,913.0	13-Aug-09
12. CYPERACEAE	Scripus pungens	Vahl	Schoenoplectus pungens	Colorado	Moffat	Warm Springs at Warm Springs Rapid	4.00	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.5305500	- 108.9287000	1562.40	DINO-605	43,206.0	252,914.0	15-Aug-09
02. Equisetaceae	Equisetum laevigatum	A. Braun	Equisetum laevigatum	Colorado	Moffat	Yampa River below Five Springs Rapid	25.50	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.4988170	- 108.7853000	1608.43	DINO-605	43,216.0	252,915.0	13-Aug-09
51. APOCYNACEAE	Apocynum sibiricum	Jacq.	Apocynum sibiricum	Colorado	Moffat	Yampa River below Five Springs Rapid	25.50	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.4988170	- 108.7853000	1608.43	DINO-605	43,215.0	252,916.0	13-Aug-09

02. Equisetaceae	Equisetum laevigatum	A. Braun	Equisetum laevigatum	Colorado	Moffat	Yampa River at Deer Lodge Boat Ramp	46.50	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.4503170	- 108.5217330	1707.49	DINO-605	43,210.0	252,917.0	11-Aug-09
12. CYPERACEAE	Carex nebrascensis	Dewey	Carex nebrascensis	Colorado	Moffat	Yampa River at Deer Lodge Boat Ramp	46.50	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.4503170	- 108.5217330	1707.49	DINO-605	43,209.0	252,918.0	11-Aug-09
12. CYPERACEAE	Eleocharis palustris	(L.) Roem. & Schult.	Eleocharis palustris	Colorado	Moffat	Yampa River at Rivermile 31	31.00	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.4752170	- 108.7190670	1639.82	DINO-605	43,214.0	252,919.0	12-Aug-09
12. CYPERACEAE	Eleocharis palustris	(L.) Roem. & Schult.	Eleocharis palustris	Colorado	Moffat	Yampa River at Laddie Park	10.50	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.4759170	- 108.9073330	1562.40	DINO-605	43,224.0	252,920.0	14-Aug-09
12. CRUCIFERAE	Nasturtium officinale	R. Br.	Nasturtium officinale	Colorado	Moffat	Warm Springs at Warm Springs Rapid	4.00	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.5305500	- 108.9287000	1562.40	DINO-605	43,207.0	252,921.0	15-Aug-09
12. CYPERACEAE	Eleocharis palustris	(L.) Roem. & Schult.	Eleocharis palustris	Colorado	Moffat	Warm Springs at Warm Springs Rapid	4.00	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.5305500	- 108.9287000	1562.40	DINO-605	43,205.0	252,922.0	15-Aug-09
60. PLANTAGINACEAE	Plantago major	L.	Plantago major	Colorado	Moffat	Green River at the Confluence	225.00	Bennett Hestmark; Scott Miller; Joe Kotynek; Brian Hines	40.5289330	- 108.9848830	1548.38	DINO-605	43,172.0	252,923.0	23-Jul-09
11. GRAMINEAE	Agrostis gigantea	Roth	Agrostis gigantea	Colorado	Moffat	Green River at Buster Sand Bar	238.30	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.6636500	- 108.9148170	1617.27	DINO-605	40,532.0	254,590.0	26-Jul-10

11. GRAMINEAE	Agrostis gigantea	Roth	Agrostis gigantea	Colorado	Moffat	Green River at Gates of Lodore	242.40	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.7137500	- 108.8915330	1628.55	DINO-605	40,533.0	254,591.0	26-Jul-10
11. GRAMINEAE	Agrostis gigantea	Roth	Agrostis gigantea	Colorado	Moffat	Green River at Gates of Lodore Campground	243.60	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.7269000	- 108.8883500	1630.68	DINO-605	40,534.0	254,592.0	26-Jul-10
11. GRAMINEAE	Agrostis gigantea	Roth	Agrostis gigantea	Colorado	Moffat	Green River at Pot Creek Campground	235.00	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.6338000	- 108.9416170	1596.54	DINO-605	40,535.0	254,593.0	26-Jul-10
11. GRAMINEAE	Agrostis gigantea	Roth	Agrostis gigantea	Colorado	Moffat	Green River at Winnies Grotto	240.00	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.6875830	- 108.9028170	1623.67	DINO-605	40,536.0	254,594.0	26-Jul-10
11. GRAMINEAE	Agrostis gigantea	Roth	Agrostis gigantea	Colorado	Moffat	lake bench spring	n/a	Bennett Hestmark; Joe Kotynek; Mark Vinson; Cody Vinson	40.4750670	- 108.6974000	1769.36	DINO-605	40,537.0	254,595.0	09-Aug-10
11. GRAMINEAE	Agrostis gigantea	Roth	Agrostis gigantea	Utah	Uintah	Limestone Hanging Garden	n/a	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5631000	- 108.9596500	1707.18	DINO-605	40,538.0	254,596.0	27-Jul-10
11. GRAMINEAE	Agrostis stolonifera	L.	Agrostis stolonifera	Colorado	Moffat	Green River at Limestone Campground	228.00	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5586500	- 108.9633000	1562.10	DINO-605	40,539.0	254,597.0	27-Jul-10
11. GRAMINEAE	Agrostis stolonifera	L.	Agrostis stolonifera	Colorado	Moffat	Green River at Top of Triplet Falls	232.50	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5985500	- 108.9560830	1575.51	DINO-605	40,540.0	254,598.0	27-Jul-10

11. GRAMINEAE	Agrostis stolonifera	L.	Agrostis stolonifera	Colorado	Moffat	Green River at Winnies Grotto	240.00	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.6875830	- 108.9028170	1623.67	DINO-605	40,541.0	254,599.0	26-Jul-10
11. GRAMINEAE	Agrostis stolonifera	L.	Agrostis stolonifera	Colorado	Moffat	Pool Spring	n/a	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.4938330	- 109.0187500	1672.74	DINO-605	40,542.0	254,600.0	14-Jul-10
39. APOCYNACEAE	Apocynum cannabinum	L.	Apocynum cannabinum	Colorado	Moffat	Green River at Limestone Campground	228.00	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5586500	- 108.9633000	1562.10	DINO-605	40,543.0	254,601.0	27-Jul-10
39. APOCYNACEAE	Apocynum cannabinum	L.	Apocynum cannabinum	Colorado	Moffat	Yampa River at Anderson Hole Campground	41.80	Bennett Hestmark; Joe Kotynek; Mark Vinson; Cody Vinson	40.4659500	- 108.5777330	1694.69	DINO-605	40,544.0	254,602.0	08-Aug-10
39. APOCYNACEAE	Apocynum cannabinum	L.	Apocynum cannabinum	Colorado	Moffat	Yampa River at Haystack Rock	34.00	Bennett Hestmark; Joe Kotynek; Mark Vinson; Cody Vinson	40.4662170	- 108.5777330	1653.84	DINO-605	40,545.0	254,603.0	09-Aug-10
26. RANUNCULACEAE	Aquilegia formosa	Fisch. ex DC.	Aquilegia formosa	Utah	Uintah	Hog Canyon Spring	n/a	Bennett Hestmark; Grant Barney	40.4301330	- 109.1682830	1688.90	DINO-605	40,546.0	254,604.0	13-Jul-10
52. COMPOSITAE	Artemisia ludoviciana	Nutt.	Artemisia ludoviciana	Colorado	Moffat	Johnson Seep	n/a	Bennett Hestmark; Joe Kotynek; Mark Vinson; Cody Vinson	40.4743830	- 108.8269330	1657.50	DINO-605	40,547.0	254,605.0	10-Aug-10
52. ASCLEPIADACEAE	Asclepias incarnata	L.	Asclepias incarnata	Utah	Uintah	Elder Spring	n/a	Bennett Hestmark; Grant Barney	40.4310500	- 109.1880330	1638.60	DINO-605	40,548.0	254,606.0	13-Jul-10
52. ASCLEPIADACEAE	Asclepias speciosa	Torr.	Asclepias speciosa	Colorado	Moffat	Green River at Gates of Lodore Campground	243.6	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.7269000	- 108.8883500	1630.68	DINO-605	40,549.0	254,607.0	26-Jul-10

52. ASCLEPIADACEAE	<i>Asclepias speciosa</i>	Torr.	<i>Asclepias speciosa</i>	Colorado	Moffat	Green River at Limestone Campground	228	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40,5586500	- 108.9633000	1562.10	DINO-605	40,550.0	254,608.0	27-Jul-10
52. ASCLEPIADACEAE	<i>Asclepias speciosa</i>	Torr.	<i>Asclepias speciosa</i>	Utah	Uintah	Green River at Rivermile 217.2	217.2	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40,5347670	- 109.0856670	1526.13	DINO-605	40,551.0	254,609.0	28-Jul-10
52. ASCLEPIADACEAE	<i>Asclepias speciosa</i>	Torr.	<i>Asclepias speciosa</i>	Colorado	Moffat	Red Wash Spring	n/a	Bennett Hestmark; Grant Barney	40,4816500	- 108.9407330	1643.48	DINO-605	40,552.0	254,610.0	14-Jul-10
11. GRAMINEAE	<i>Beckmannia syzigachne</i>	(Steud.) Fernald	<i>Beckmannia syzigachne</i>	Colorado	Moffat	Green River at Winnies Grotto	240	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40,6875830	- 108.9028170	1623.67	DINO-605	40,553.0	254,611.0	26-Jul-10
11. GRAMINEAE	<i>Bromus inermis</i>	Leyss.	<i>Bromus inermis</i>	Colorado	Moffat	Green River at Pot Creek Campground	235	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40,6338000	- 108.9416170	1596.54	DINO-605	40,554.0	254,612.0	26-Jul-10
12. CYPERACEAE	<i>Carex nebrascensis</i>	Dewey	<i>Carex nebrascensis</i>	Colorado	Moffat	Green River above Yampa Back channel	225.2	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40,5310330	- 108.9852500	1548.38	DINO-605	40,555.0	254,613.0	28-Jul-10
12. CYPERACEAE	<i>Carex nebrascensis</i>	Dewey	<i>Carex nebrascensis</i>	Colorado	Moffat	Green River above Yampa Back channel	225.2	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40,5310330	- 108.9852500	1548.38	DINO-605	40,556.0	254,614.0	28-Jul-10
00. CHARACEAE	<i>Chara vulgaris</i>	L.	<i>Chara vulgaris</i>	Colorado	Moffat	Red Wash Spring	n/a	Bennett Hestmark; Grant Barney	40,4816500	- 108.9407330	1643.48	DINO-605	40,557.0	254,615.0	14-Jul-10
26. RANUNCULACEAE	<i>Clematis ligusticifolia</i>	Nutt.	<i>Clematis ligusticifolia</i>	Colorado	Moffat	Johnson Seep	n/a	Bennett Hestmark; Joe Kotynek; Mark Vinson; Cody Vinson	40,4743830	- 108.8269330	1657.50	DINO-605	40,558.0	254,616.0	10-Aug-10

26. RANUNCULACEAE	Clematis ligusticifolia	Nutt.	Clematis ligusticifolia	Colorado	Moffat	Johnson Seep	n/a	Bennett Hestmark; Joe Kotynek; Mark Vinson; Cody Vinson	40.4743830	- 108.8269330	1657.50	DINO-605	40,559.0	254,617.0	10-Aug-10
11. GRAMINEAE	Dactylis glomerata	L.	Dactylis glomerata	Utah	Uintah	Hog Canyon Spring	n/a	Bennett Hestmark; Grant Barney	40.4301330	- 109.1682830	1688.90	DINO-605	40,560.0	254,618.0	13-Jul-10
11. GRAMINEAE	Dactylis glomerata	L.	Dactylis glomerata	Colorado	Moffat	Johnson Seep	n/a	Bennett Hestmark; Joe Kotynek; Mark Vinson; Cody Vinson	40.4743830	- 108.8269330	1657.50	DINO-605	40,561.0	254,619.0	10-Aug-10
12. CYPERACEAE	Eleocharis palustris	(L.) Roem. & Schult.	Eleocharis palustris	Colorado	Moffat	Green River above Yampa Back channel	225.2	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5310330	- 108.9852500	1548.38	DINO-605	40,562.0	254,620.0	28-Jul-10
12. CYPERACEAE	Eleocharis palustris	(L.) Roem. & Schult.	Eleocharis palustris	Utah	Uintah	Green River at Big Island	213.3	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5123170	- 109.1308170	1511.81	DINO-605	40,563.0	254,621.0	24-Jul-09
12. CYPERACEAE	Eleocharis palustris	(L.) Roem. & Schult.	Eleocharis palustris	Utah	Uintah	Green River at Compromise Campground	217.8	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5370330	- 109.0794080	1526.74	DINO-605	40,564.0	254,622.0	28-Jul-10
12. CYPERACEAE	Eleocharis palustris	(L.) Roem. & Schult.	Eleocharis palustris	Colorado	Moffat	Green River at Pot Creek Campground	235	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.6338000	- 108.9416170	1596.54	DINO-605	40,565.0	254,623.0	26-Jul-10
12. CYPERACEAE	Eleocharis palustris	(L.) Roem. & Schult.	Eleocharis palustris	Colorado	Moffat	Green River at Pot Creek Campground	235	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.6338000	- 108.9416170	1596.54	DINO-605	40,566.0	254,624.0	26-Jul-10

12. CYPERACEAE	Eleocharis palustris	(L.) Roem. & Schult.	Eleocharis palustris	Utah	Uintah	Green River at Rainbow Park Boat Ramp	207.8	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.4951670	- 109.1739500	1509.98	DINO-605	40,567.0	254,625.0	29-Jul-10
12. CYPERACEAE	Eleocharis palustris	(L.) Roem. & Schult.	Eleocharis palustris	Utah	Uintah	Green River at Schoolboy Rapid	204.5	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.4674500	- 109.8845830	1487.12	DINO-605	40,568.0	254,626.0	29-Jul-10
12. CYPERACEAE	Eleocharis palustris	(L.) Roem. & Schult.	Eleocharis palustris	Utah	Uintah	Green River at Schoolboy Rapid	204.5	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.4674500	- 109.8845830	1487.12	DINO-605	40,569.0	254,627.0	29-Jul-10
12. CYPERACEAE	Eleocharis palustris	(L.) Roem. & Schult.	Eleocharis palustris	Colorado	Moffat	Yampa River at Anderson Hole Campground	41.8	Bennett Hestmark; Joe Kotynek; Mark Vinson; Cody Vinson	40.4659500	- 108.5777330	1694.69	DINO-605	40,570.0	254,628.0	08-Aug-10
12. CYPERACEAE	Eleocharis palustris	(L.) Roem. & Schult.	Eleocharis palustris	Colorado	Moffat	Yampa River at Haystack Rock	34	Bennett Hestmark; Joe Kotynek; Mark Vinson; Cody Vinson	40.4662170	- 108.5777330	1653.84	DINO-605	40,571.0	254,629.0	09-Aug-10
08A.HYDROCHARITACEAE	Elodea canadensis	Michx.	Elodea canadensis	Colorado	Moffat	Green River at Winnies Grotto	240	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.6875830	- 108.9028170	1623.67	DINO-605	40,572.0	254,630.0	26-Jul-10
11. GRAMINEAE	Elymus canadensis	L.	Elymus canadensis	Colorado	Moffat	Green River at River Mile 226.2	226.2	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5426330	- 108.9826330	1549.30	DINO-605	40,573.0	254,631.0	28-Jul-10
11. GRAMINEAE	Elymus canadensis	L.	Elymus canadensis	Colorado	Moffat	Green River at Top of Triplet Falls	232.5	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5985500	- 108.9560830	1575.51	DINO-605	40,574.0	254,632.0	27-Jul-10

11. GRAMINEAE	Elymus canadensis	L.	Elymus canadensis	Colorado	Moffat	Green River at Winnies Grotto	240	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.6875830	- 108.9028170	1623.67	DINO-605	40,575.0	254,633.0	26-Jul-10
11. GRAMINEAE	Elymus canadensis	L.	Elymus canadensis	Utah	Uintah	Split Mountain Warm Spring	n/a	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.4613170	- 109.2415580	1474.93	DINO-605	40,576.0	254,634.0	29-Jul-10
02. EQUISETACEAE	Equisetum arvense	L.	Equisetum arvense	Colorado	Moffat	Johnson Seep	n/a	Bennett Hestmark; Joe Kotynek; Mark Vinson; Cody Vinson	40.4743830	- 108.8269330	1657.50	DINO-605	40,577.0	254,635.0	10-Aug-10
02. EQUISETACEAE	Equisetum arvense	L.	Equisetum arvense	Colorado	Moffat	Pool Spring	n/a	Bennett Hestmark; Grant Barney	40.4938330	- 109.0187500	1680.06	DINO-605	40,578.0	254,636.0	14-Jul-10
02. EQUISETACEAE	Equisetum arvense	L.	Equisetum arvense	Colorado	Moffat	Yampa River at Anderson Hole Campground	41.8	Bennett Hestmark; Joe Kotynek; Mark Vinson; Cody Vinson	40.4659500	- 108.5777330	1694.69	DINO-605	40,579.0	254,637.0	08-Aug-10
02. EQUISETACEAE	Equisetum hyemale	L.	Equisetum hyemale	Utah	Uintah	Green River at Compromise Campground	217.8	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5370330	- 109.0794080	1526.74	DINO-605	40,580.0	254,638.0	28-Jul-10
02. EQUISETACEAE	Equisetum hyemale	L.	Equisetum hyemale	Colorado	Moffat	Green River below Rippling Brook	230	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5822170	- 108.9820670	1560.88	DINO-605	40,581.0	254,639.0	27-Jul-10
02. EQUISETACEAE	Equisetum laevigatum	A. Braun	Equisetum laevigatum			Yampa River at Mathers Hole Campground	17.5	Bennett Hestmark; Joe Kotynek; Mark Vinson; Cody Vinson	40.4707500	- 108.8654330	1577.64	DINO-605	40,582.0	254,640.0	10-Aug-10

02. Equisetaceae	Equisetum laevigatum	A. Braun	Equisetum laevigatum	Colorado	Moffat	Bull Spring	n/a	Bennett Hestmark; Joe Kotynek; Mark Vinson; Cody Vinson	40.4632830	-108.8388500	1634.34	DINO-605	40,583.0	254,641.0	10-Aug-10
02. Equisetaceae	Equisetum laevigatum	A. Braun	Equisetum laevigatum	Utah	Uintah	Elder Spring	n/a	Bennett Hestmark; Grant Barney	40.4310500	-109.1880330	1638.60	DINO-605	40,584.0	254,642.0	13-Jul-10
02. Equisetaceae	Equisetum laevigatum	A. Braun	Equisetum laevigatum	Colorado	Moffat	Green River at Buster Sand Bar	238.3	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.6636500	-108.9148170	1617.27	DINO-605	40,585.0	254,643.0	26-Jul-10
02. Equisetaceae	Equisetum laevigatum	A. Braun	Equisetum laevigatum	Colorado	Moffat	Green River at Pot Creek Campground	235	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.6338000	-108.9416170	1596.54	DINO-605	40,586.0	254,644.0	26-Jul-10
02. Equisetaceae	Equisetum laevigatum	A. Braun	Equisetum laevigatum	Colorado	Moffat	Green River at River Mile 226.2	226.2	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5426330	-108.9826330	1549.30	DINO-605	40,587.0	254,645.0	28-Jul-10
02. Equisetaceae	Equisetum laevigatum	A. Braun	Equisetum laevigatum	Utah	Uintah	Green River at Rivermile 217.2	217.2	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5347670	-109.0856670	1526.13	DINO-605	40,588.0	254,646.0	28-Jul-10
02. Equisetaceae	Equisetum laevigatum	A. Braun	Equisetum laevigatum	Colorado	Moffat	Yampa River at Haystack Rock	34	Bennett Hestmark; Joe Kotynek; Mark Vinson; Cody Vinson	40.4662170	-108.5777330	1653.84	DINO-605	40,589.0	254,647.0	09-Aug-10
11. Gramineae	Festuca arundinacea	Schreb.	Schedonorus arundinacea	Colorado	Moffat	Green River at Pot Creek Campground	235	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.6338000	-108.9416170	1596.54	DINO-605	40,590.0	254,648.0	26-Jul-10

33. FABACEAE	Glycyrrhiza lepidota	Nutt.	Glycyrrhiza lepidota	Colorado	Moffat	Green River at River Mile 226.2	226.2	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5426330	- 108.9826330	1549.30	DINO-605	40,591.0	254,649.0	28-Jul-10
33. FABACEAE	Glycyrrhiza lepidota	Nutt.	Glycyrrhiza lepidota	Utah	Uintah	Green River at River mile 217.2	217.2	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5347670	- 109.0856670	1526.13	DINO-605	40,592.0	254,650.0	28-Jul-10
33. FABACEAE	Glycyrrhiza lepidota	Nutt.	Glycyrrhiza lepidota	Utah	Uintah	Green River Below Greasey Pliers	216	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5190330	- 109.0947000	1516.08	DINO-605	40,593.0	254,651.0	29-Jul-10
33. FABACEAE	Glycyrrhiza lepidota	Nutt.	Glycyrrhiza lepidota	Colorado	Moffat	Red Wash Spring	n/a	Bennett Hestmark; Grant Barney	40.4816500	- 108.9407330	1643.48	DINO-605	40,594.0	254,652.0	14-Jul-10
52. COMPOSITAE	Grindelia squarrosa	(Pursh) Dunal	Grindelia squarrosa	Colorado	Moffat	Lake Bench Spring	n/a	Bennett Hestmark; Joe Kotynek; Mark Vinson; Cody Vinson	40.4750670	- 108.6974000	1769.36	DINO-605	40,595.0	254,653.0	09-Aug-10
16. ORCHIDACEAE	Habenaria huronensis	Spreng.	Platanthera hyperborea	Colorado	Moffat	Johnson Seep	n/a	Bennett Hestmark; Joe Kotynek; Mark Vinson; Cody Vinson	40.4743830	- 108.8269330	1657.50	DINO-605	40,596.0	254,654.0	10-Aug-10
52. COMPOSITAE	Heterotheca villosa	(Pursh) Shinnery	Heterotheca villosa	Colorado	Moffat	Green River at Limestone Campground	228	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5586500	- 108.9633000	1562.10	DINO-605	40,597.0	254,655.0	27-Jul-10
11. GRAMINEAE	Hordeum jubatum	L.	Hordeum jubatum	Colorado	Moffat	Pool Creek Spring	n/a	Bennett Hestmark; Grant Barney	40.4936500	- 109.0221000	1672.74	DINO-605	40,598.0	254,656.0	14-Jul-10
11. GRAMINEAE	Hordeum jubatum	L.	Hordeum jubatum	Colorado	Moffat	Red Wash Spring	n/a	Bennett Hestmark; Grant Barney	40.4816500	- 108.9407330	1643.48	DINO-605	40,599.0	254,657.0	14-Jul-10

52. COMPOSITAE	Iva axillaris	Pursh	Iva axillaris	Colorado	Moffat	Green River at Pot Creek Campground	235	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.6338000	- 108.9416170	1596.54	DINO-605	40,600.0	254,658.0	26-Jul-10
13. JUNCACEAE	Juncus tenuis	Willd.	Juncus tenuis	Colorado	Moffat	Green River above Yampa Back channel	225.2	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5310330	- 108.9852500	1548.38	DINO-605	40,601.0	254,659.0	28-Jul-10
13. JUNCACEAE	juncus tenuis	Willd.	Juncus tenuis	Colorado	Moffat	Green River above Yampa Back channel	225.2	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5310330	- 108.9852500	1548.38	DINO-605	40,602.0	254,660.0	28-Jul-10
13. JUNCACEAE	juncus tenuis	Willd.	Juncus tenuis	Colorado	Moffat	Green River at Limestone Campground	228	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5586500	- 108.9633000	1562.10	DINO-605	40,603.0	254,661.0	27-Jul-10
13. JUNCACEAE	Juncus tenuis	Willd.	Juncus tenuis	Colorado	Moffat	lake bench spring	n/a	Bennett Hestmark; Joe Kotynek; Mark Vinson; Cody Vinson	40.4750670	- 108.6974000	1769.36	DINO-605	40,604.0	254,662.0	09-Aug-10
13. JUNCACEAE	Juncus torreyi	Coville	Juncus torreyi	Colorado	Moffat	Green River at Buster Sand Bar	238.3	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.6636500	- 108.9148170	1617.27	DINO-605	40,605.0	254,663.0	26-Jul-10
13. JUNCACEAE	Juncus torreyi	Coville	Juncus torreyi	Colorado	Moffat	Green River at Gates of Lodore Campground	243.6	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.7269000	- 108.8883500	1630.68	DINO-605	40,606.0	254,664.0	26-Jul-10
13. JUNCACEAE	Juncus torreyi	Coville	Juncus torreyi	Colorado	Moffat	Green River at Pot Creek Campground	235	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.6338000	- 108.9416170	1596.54	DINO-605	40,607.0	254,665.0	26-Jul-10

13. JUNCACEAE	Juncus torreyi	Coville	Juncus torreyi	Utah	Uintah	Green River at Rivermile 217.2	217.2	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5347670	- 109.0856670	1526.13	DINO-605	40,608.0	254,666.0	28-Jul-10
13. JUNCACEAE	Juncus torreyi	Coville	Juncus torreyi	Colorado	Moffat	Green River at Top of Triplet Falls	232.5	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5985500	- 108.9560830	1575.51	DINO-605	40,609.0	254,667.0	27-Jul-10
13. JUNCACEAE	Juncus torreyi	Coville	Juncus torreyi	Colorado	Moffat	Red Wash Spring	n/a	Bennett Hestmark; Grant Barney	40.4816500	- 108.9407330	1643.48	DINO-605	40,610.0	254,668.0	14-Jul-10
33. FABACEAE	Melilotus alba	Medik.	Melilotus alba	Colorado	Moffat	Green River at Pot Creek Campground	235	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.6338000	- 108.9416170	1596.54	DINO-605	40,611.0	254,669.0	26-Jul-10
33. FABACEAE	Melilotus officinalis	(L.) Lam.	Melilotus officinalis	Colorado	Moffat	Green River at Pot Creek Campground	235	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.6338000	- 108.9416170	1596.54	DINO-605	40,612.0	254,670.0	26-Jul-10
57. LAMIACEAE	Mentha arvensis	L.	Mentha arvensis	Utah	Uintah	Elder Spring	n/a	Bennett Hestmark; Grant Barney	40.4310500	- 109.1880330	1638.60	DINO-605	40,613.0	254,671.0	13-Jul-10
57. LAMIACEAE	Mentha arvensis	L.	Mentha arvensis	Colorado	Moffat	Green River above Yampa Back channel	225.2	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5310330	- 108.9852500	1548.38	DINO-605	40,614.0	254,672.0	28-Jul-10
57. LAMIACEAE	Mentha arvensis	L.	Mentha arvensis	Utah	Uintah	Green River at Compromise Campground	217.8	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5370330	- 109.0794080	1526.74	DINO-605	40,615.0	254,673.0	28-Jul-10
57. LAMIACEAE	Mentha arvensis	L.	Mentha arvensis	Colorado	Moffat	Green River at Gates of Lodore	242.4	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.7137500	- 108.8915330	1628.55	DINO-605	40,616.0	254,674.0	26-Jul-10

57. LAMIACEAE	Mentha arvensis	L.	Mentha arvensis	Colorado	Moffat	Green River at Limestone Campground	228	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5586500	- 108.9633000	1562.10	DINO-605	40,617.0	254,675.0	27-Jul-10
57. LAMIACEAE	Mentha arvensis	L.	Mentha arvensis	Colorado	Moffat	Green River at Limestone Campground	228	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5586500	- 108.9633000	1562.10	DINO-605	40,618.0	254,676.0	27-Jul-10
57. LAMIACEAE	Mentha arvensis	L.	Mentha arvensis	Colorado	Moffat	Green River at Pot Creek Campground	235	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.6338000	- 108.9416170	1596.54	DINO-605	40,619.0	254,677.0	26-Jul-10
57. LAMIACEAE	Mentha arvensis	L.	Mentha arvensis	Utah	Uintah	Green River at Rainbow Park Boat Ramp	207.8	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.4951670	- 109.1739500	1509.98	DINO-605	40,620.0	254,678.0	29-Jul-10
57. LAMIACEAE	Mentha arvensis	L.	Mentha arvensis	Colorado	Moffat	Limestone Hanging Garden	n/a	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5631000	- 108.9596500	1707.18	DINO-605	40,621.0	254,679.0	27-Jul-10
58. SCROPHULARIACEAE	Mimulus glabratus	Kunth	Mimulus glabratus	Colorado	Moffat	Bull Spring	n/a	Bennett Hestmark; Joe Kotynek; Mark Vinson; Cody Vinson	40.4632830	- 108.8388500	1634.34	DINO-605	40,622.0	254,680.0	10-Aug-10
58. SCROPHULARIACEAE	Mimulus glabratus	Kunth	Mimulus glabratus	Utah	Uintah	Hog Canyon Spring	n/a	Bennett Hestmark; Grant Barney	40.4301330	- 109.1682830	1688.90	DINO-605	40,623.0	254,681.0	13-Jul-10
58. SCROPHULARIACEAE	Mimulus glabratus	Kunth	Mimulus glabratus	Colorado	Moffat	Mitten Park Fault Spring	n/a	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5421500	- 108.9957000	1549.30	DINO-605	40,624.0	254,682.0	28-Jul-10
58. SCROPHULARIACEAE	Mimulus glabratus	Kunth	Mimulus glabratus	Colorado	Moffat	Pool Spring	n/a	Bennett Hestmark; Grant Barney	40.4938330	- 109.0187500	1680.06	DINO-605	40,625.0	254,683.0	14-Jul-10

46. HALORAGIDACEAE	Myriophyllum sp.		Myriophyllum	Colorado	Moffat	Green River above Harp Falls	234.2	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.6153670	- 108.9475170	1585.87	DINO-605	40,626.0	254,684.0	26-Jul-10
12. CRUCIFERAE	Nasturtium officinale	R. Br.	Nasturtium officinale	Utah	Uintah	Hog Canyon Spring	n/a	Bennett Hestmark; Grant Barney	40.4301330	- 109.1682830	1688.90	DINO-605	40,627.0	254,685.0	13-Jul-10
12. CRUCIFERAE	Nasturtium officinale	R. Br.	Nasturtium officinale	Colorado	Moffat	Limestone Hanging Garden	n/a	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5631000	- 108.9596500	1707.18	DINO-605	40,628.0	254,686.0	27-Jul-10
12. CRUCIFERAE	Nasturtium officinale	R. Br.	Nasturtium officinale	Colorado	Moffat	Limestone Hanging Garden	n/a	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5631000	- 108.9596500	1707.18	DINO-605	40,629.0	254,687.0	27-Jul-10
12. CRUCIFERAE	Nasturtium officinale	R. Br.	Nasturtium officinale	Colorado	Moffat	Pool Spring	n/a	Bennett Hestmark; Grant Barney	40.4938330	- 109.0187500	1680.06	DINO-605	40,630.0	254,688.0	14-Jul-10
12. CRUCIFERAE	Nasturtium officinale	R. Br.	Nasturtium officinale	Colorado	Moffat	Warm Springs at Warm Springs Rapid	n/a	Bennett Hestmark; Joe Kotynek; Mark Vinson; Cody Vinson	40.5305500	- 108.9295330	1562.40	DINO-605	40,631.0	254,689.0	12-Aug-10
45. ONAGRACEAE	Oenothera elata	Kunth	Oenothera elata	Colorado	Moffat	Green River at Gates of Lodore Campground	243.6	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.7269000	- 108.8883500	1630.68	DINO-605	40,632.0	254,690.0	26-Jul-10
45. ONAGRACEAE	Oenothera elata	Kunth	Oenothera elata	Utah	Uintah	Hog Canyon Spring	n/a	Bennett Hestmark; Grant Barney	40.4301330	- 109.1682830	1688.90	DINO-605	40,633.0	254,691.0	13-Jul-10
11. GRAMINEAE	Phleum pratense	L.	Phleum pratense	Colorado	Moffat	Red Wash Spring	n/a	Bennett Hestmark; Grant Barney	40.4816500	- 108.9407330	1643.48	DINO-605	40,634.0	254,692.0	14-Jul-10
11. GRAMINEAE	Phleum pratense	L.	Phleum pratense	Colorado	Moffat	Red Wash Spring	n/a	Bennett Hestmark; Grant Barney	40.4816500	- 108.9407330	1643.48	DINO-605	40,635.0	254,693.0	14-Jul-10
11. GRAMINEAE	Phleum pratense	L.	Phleum pratense	Colorado	Moffat	Red Wash Spring	n/a	Bennett Hestmark; Grant Barney	40.4816500	- 108.9407330	1643.48	DINO-605	40,636.0	254,694.0	14-Jul-10

11. GRAMINEAE	Phleum pratense	L.	Phleum pratense	Colorado	Moffat	Red Wash Spring	n/a	Bennett Hestmark; Grant Barney	40.4816500	- 108.9407330	1643.48	DINO-605	40,637.0	254,695.0	14-Jul-10
60. PLANTAGINACEAE	Plantago major	L.	Plantago major	Colorado	Moffat	Green River at Gates of Lodore	242.4	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.7137500	- 108.8915330	1628.55	DINO-605	40,638.0	254,696.0	26-Jul-10
60. PLANTAGINACEAE	Plantago major	L.	Plantago major	Colorado	Moffat	Green River at Limestone Campground	228	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5586500	- 108.9633000	1562.10	DINO-605	40,639.0	254,697.0	27-Jul-10
21. POLYGONACEAE	Polygonum amphibium	L.	Polygonum amphibium	Utah	Uintah	Green River Below Greasey Pliers	216	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5190330	- 109.0947000	1516.08	DINO-605	40,640.0	254,698.0	29-Jul-10
21. POLYGONACEAE	Polygonum amphibium	L.	Polygonum amphibium	Utah	Uintah	Green River upstream from Moonshine Rapid	206.5	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.4781330	- 109.1790670	1502.66	DINO-605	40,641.0	254,699.0	29-Jul-10
21. POLYGONACEAE	Polygonum amphibium	L.	Polygonum amphibium			Yampa River downstream from Five Springs Rapid	25.5	Bennett Hestmark; Joe Kotynek; Mark Vinson; Cody Vinson	40.4988170	- 108.7853000	1608.43	DINO-605	40,642.0	254,700.0	10-Aug-10
08. NAJADACEAE	Potamogeton crispus	L.	Potamogeton crispus	Colorado	Moffat	Green River above Harp Falls	234.2	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.6153670	- 108.9475170	1585.87	DINO-605	40,643.0	254,701.0	26-Jul-10
08. NAJADACEAE	Potamogeton crispus	L.	Potamogeton crispus	Colorado	Moffat	Green River at River Mile 226.2	226.2	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5426330	- 108.9826330	1549.30	DINO-605	40,644.0	254,702.0	28-Jul-10

08. NAJADACEAE	Potamogeton crispus	L.	Potamogeton crispus	Colorado	Moffat	Green River at Winnies Grotto	240	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.6875830	- 108.9028170	1623.67	DINO-605	40,645.0	254,703.0	26-Jul-10
08. NAJADACEAE	Potamogeton crispus	L.	Potamogeton crispus	Colorado	Moffat	Green River below Rippling Brook	230	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5822170	- 108.9820670	1560.88	DINO-605	40,646.0	254,704.0	27-Jul-10
08. NAJADACEAE	Potamogeton pectinatus	L.	Stuckenia pectinata	Colorado	Moffat	Green River above Harp Falls	234.2	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.6153670	- 108.9475170	1585.87	DINO-605	40,647.0	254,705.0	26-Jul-10
32. ROSACEAE	Potentilla anserina	L.	Argentina anserina	Colorado	Moffat	Green River at Gates of Lodore Campground	243.6	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.7269000	- 108.8883500	1630.68	DINO-605	40,648.0	254,706.0	26-Jul-10
32. ROSACEAE	Potentilla anserina	L.	Argentina anserina	Colorado	Moffat	Green River at Limestone Campground	228	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5586500	- 108.9633000	1562.10	DINO-605	40,649.0	254,707.0	27-Jul-10
32. ROSACEAE	Potentilla anserina	L.	Argentina anserina	Utah	Uintah	Green River at Schoolboy Rapid	204.5	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.4674500	- 109.8845830	1487.12	DINO-605	40,650.0	254,708.0	29-Jul-10
32. ROSACEAE	Potentilla anserina	L.	Argentina anserina	Colorado	Moffat	Yampa River at Anderson Hole Campground	41.8	Bennett Hestmark; Joe Kotynek; Mark Vinson; Cody Vinson	40.4659500	- 108.5777330	1694.69	DINO-605	40,651.0	254,709.0	08-Aug-10
21. POLYGONACEAE	Rumex crispus	L.	Rumex crispus	Colorado	Moffat	Green River at Gates of Lodore Campground	243.6	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.7269000	- 108.8883500	1630.68	DINO-605	40,652.0	254,710.0	26-Jul-10

21. POLYGONACEAE	Rumex crispus	L.	Rumex crispus	Utah	Uintah	Hog Canyon Spring	n/a	Bennett Hestmark; Grant Barney	40.4301330	- 109.1682830	1688.90	DINO-605	40,653.0	254,711.0	13-Jul-10
12. CYPERACEAE	Schoenoplectus maritimus	(L.) Lye	Bulboschoenus maritimus	Colorado	Moffat	Green River at Winnies Grotto	240	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.6875830	- 108.9028170	1623.67	DINO-605	40,654.0	254,712.0	26-Jul-10
12. CYPERACEAE	Scirpus pungens	Vahl	Schoenoplectus pungens	Colorado	Moffat	Bull Spring	n/a	Bennett Hestmark; Joe Kotynek; Mark Vinson; Cody Vinson	40.4632830	- 108.8388500	1634.34	DINO-605	40,655.0	254,713.0	10-Aug-10
12. CYPERACEAE	Scirpus pungens	Vahl	Schoenoplectus pungens	Utah	Uintah	Green River at Big Island	213.3	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5123170	- 109.1308170	1511.81	DINO-605	40,656.0	254,714.0	24-Jul-09
12. CYPERACEAE	Scirpus pungens	Vahl	Schoenoplectus pungens	Colorado	Moffat	Green River at Buster Sand Bar	238.3	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.6636500	- 108.9148170	1617.27	DINO-605	40,657.0	254,715.0	26-Jul-10
12. CYPERACEAE	Scirpus pungens	Vahl	Schoenoplectus pungens	Colorado	Moffat	Green River at Pot Creek Campground	235	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.6338000	- 108.9416170	1596.54	DINO-605	40,658.0	254,716.0	26-Jul-10
12. CYPERACEAE	Scirpus pungens	Vahl	Schoenoplectus pungens	Utah	Uintah	Green River at Rainbow Park Boat Ramp	207.8	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.4951670	- 109.1739500	1509.98	DINO-605	40,659.0	254,717.0	29-Jul-10
12. CYPERACEAE	Scirpus pungens	Vahl	Schoenoplectus pungens	Colorado	Moffat	Green River at River Mile 226.2	226.2	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5426330	- 108.9826330	1549.30	DINO-605	40,660.0	254,718.0	28-Jul-10

12. CYPERACEAE	Scirpus pungens	Vahl	Schoenoplectus pungens	Colorado	Moffat	Green River at River Mile 226.2	226.2	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5426330	- 108.9826330	1549.30	DINO-605	40,661.0	254,719.0	28-Jul-10
12. CYPERACEAE	Scirpus pungens	Vahl	Schoenoplectus pungens	Utah	Uintah	Green River at Rivermile 217.2	217.2	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5347670	- 109.0856670	1526.13	DINO-605	40,662.0	254,720.0	28-Jul-10
12. CYPERACEAE	Scirpus pungens	Vahl	Schoenoplectus pungens	Utah	Uintah	Green River at Schoolboy Rapid	204.5	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.4674500	- 109.8845830	1487.12	DINO-605	40,663.0	254,721.0	29-Jul-10
12. CYPERACEAE	Scirpus pungens	Vahl	Schoenoplectus pungens	Utah	Uintah	Green River at Schoolboy Rapid	204.5	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.4674500	- 109.8845830	1487.12	DINO-605	40,664.0	254,722.0	29-Jul-10
12. CYPERACEAE	Scirpus pungens	Vahl	Schoenoplectus pungens	Colorado	Moffat	Green River below Rippling Brook	230	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5822170	- 108.9820670	1560.88	DINO-605	40,665.0	254,723.0	27-Jul-10
12. CYPERACEAE	Scirpus pungens	Vahl	Schoenoplectus pungens	Colorado	Moffat	Red Wash Spring	n/a	Bennett Hestmark; Grant Barney	40.4816500	- 108.9407330	1643.48	DINO-605	40,666.0	254,724.0	14-Jul-10
12. CYPERACEAE	Scirpus pungens	Vahl	Schoenoplectus pungens	Colorado	Moffat	Yampa River at Deer Lodge Boat Ramp	46.5	Bennett Hestmark; Joe Kotynek; Mark Vinson; Cody Vinson	40.4503170	- 108.5217330	1707.49	DINO-605	40,667.0	254,725.0	08-Aug-10
12. CYPERACEAE	Scirpus pungens	Vahl	Schoenoplectus pungens	Colorado	Moffat	Yampa River at Haystack Rock	34	Bennett Hestmark; Joe Kotynek; Mark Vinson; Cody Vinson	40.4662170	- 108.5777330	1653.84	DINO-605	40,668.0	254,726.0	09-Aug-10

12. CYPERACEAE	Scirpus validus	Vahl	Schoenoplectus tabernaemontani	Colorado	Moffat	Green River at Gates of Lodore Campground	243.6	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.7269000	- 108.8883500	1630.68	DINO-605	40,669.0	254,727.0	26-Jul-10
12. CYPERACEAE	Scirpus validus	Vahl	Schoenoplectus tabernaemontani	Colorado	Moffat	Limestone Hanging Garden	n/a	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5631000	- 108.9596500	1707.18	DINO-605	40,670.0	254,728.0	27-Jul-10
12. CYPERACEAE	Scirpus validus	Vahl	Schoenoplectus tabernaemontani	Colorado	Moffat	Rat Spring 2	n/a	Bennett Hestmark; Grant Barney	40.4482670	- 108.8845830	1791.61	DINO-605	40,671.0	254,729.0	14-Jul-10
14. LILIACEAE	Smilacina stellata	(L.) Desf.	Maianthemum stellatum	Utah	Uintah	Hog Canyon Spring	n/a	Bennett Hestmark; Grant Barney	40.4301330	- 109.1682830	1688.90	DINO-605	40,672.0	254,730.0	13-Jul-10
14. LILIACEAE	Smilacina stellata	(L.) Desf.	Maianthemum stellatum	Utah	Uintah	Hog Canyon Spring	n/a	Bennett Hestmark; Grant Barney	40.4301330	- 109.1682830	1688.90	DINO-605	40,673.0	254,731.0	13-Jul-10
14. LILIACEAE	Smilacina stellata	(L.) Desf.	Maianthemum stellatum	Colorado	Moffat	Mitten Park Fault Spring	n/a	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.5421500	- 108.9957000	1549.30	DINO-605	40,674.0	254,732.0	28-Jul-10
52. COMPOSITAE	Solidago canadensis	L.	Solidago canadensis	Utah	Uintah	Elder Spring	n/a	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.4310500	- 109.1880330	1638.60	DINO-605	40,675.0	254,733.0	13-Jul-10
52. COMPOSITAE	Solidago canadensis	L.	Solidago canadensis	Utah	Uintah	Hidden Forest Spring	n/a	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.4447000	- 109.2473170	1495.65	DINO-605	40,676.0	254,734.0	29-Jul-10
52. COMPOSITAE	Solidago canadensis	L.	Solidago canadensis	Colorado	Moffat	Lake Bench Spring	n/a	Bennett Hestmark; Joe Kotynek; Mark Vinson; Cody Vinson	40.4750670	- 108.6974000	1769.36	DINO-605	40,677.0	254,735.0	09-Aug-10

11. GRAMINEAE	<i>Spartina gracilis</i>	Trin.	<i>Spartina gracilis</i>	Utah	Uintah	Green River at River Mile 200	200	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.4502170	- 109.2584330	1460.30	DINO-605	40,678.0	254,736.0	29-Jul-10
11. GRAMINEAE	<i>Spartina gracilis</i>	Trin.	<i>Spartina gracilis</i>	Colorado	Moffat	Red Wash Spring	n/a	Bennett Hestmark; Grant Barney	40.4816500	- 108.9407330	1643.48	DINO-605	40,679.0	254,737.0	14-Jul-10
11. GRAMINEAE	<i>Spartina gracilis</i>	Trin.	<i>Spartina gracilis</i>			Yampa River downstream from Five Springs Rapid	25.5	Bennett Hestmark; Joe Kotynek; Mark Vinson; Cody Vinson	40.4988170	- 108.7853000	1608.43	DINO-605	40,680.0	254,738.0	10-Aug-10
09. JUNCAGINACEAE	<i>Triglochin maritima</i>	L.	<i>Triglochin maritima</i>	Utah	Uintah	Split Mountain Warm Spring	n/a	Bennett Hestmark; Joe Kotynek; Dave Axford; Stephanie Peterson	40.4613170	- 109.2415580	1474.93	DINO-605	40,681.0	254,739.0	29-Jul-10
07. TYPHACEAE	<i>Typha latifolia</i>	L.	<i>Typha latifolia</i>	Utah	Uintah	Elder Spring	n/a	Bennett Hestmark; Grant Barney	40.4310500	- 109.1880330	1638.60	DINO-605	40,682.0	254,740.0	13-Jul-10
07. TYPHACEAE	<i>Typha latifolia</i>	L.	<i>Typha latifolia</i>	Colorado	Moffat	lake bench spring	n/a	Bennett Hestmark; Joe Kotynek; Mark Vinson; Cody Vinson	40.4750670	- 108.6974000	1769.36	DINO-605	40,683.0	254,741.0	09-Aug-10
58. SCROPHULARIACEAE	<i>Veronica anagallis-aquatica</i>	L.	<i>Veronica anagallis-aquatica</i>	Colorado	Moffat	Pool Spring	n/a	Bennett Hestmark; Grant Barney	40.4938330	- 109.0187500	1680.06	DINO-605	40,684.0	254,742.0	14-Jul-10
58. SCROPHULARIACEAE	<i>Veronica anagallis-aquatica</i>	L.	<i>Veronica anagallis-aquatica</i>	Colorado	Moffat	Pool Spring	n/a	Bennett Hestmark; Grant Barney	40.4938330	- 109.0187500	1680.06	DINO-605	40,685.0	254,743.0	14-Jul-10