Nebraska Stream Classifications For The 2010-2011 Stream Biological Monitoring Program With Revisions To The Macroinvertebrate And Fish Metrics Classifications

Project Report

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Introduction

The stream biological monitoring program was first initiated in 1997 using R-EMAP sampling methods and continued through the present. Monitoring is conducted yearly for fish, aquatic macroinvertebrates, physical habitat and field water chemistries at 34 wadeable stream sites. The primary objective of the stream biological monitoring program is to collect information necessary to characterize general stream water quality and make beneficial use support assessment. The secondary objective is to add more data for the further development and calibration of metrics and steam types.

The Nebraska Stream Biological Program has been using the ecoregion approach to evaluating streams since 1997. The evaluations worked well with the majority of Nebraska streams, however, the approach did not classify the streams properly in headwater stream situations. Many of these streams were assessed as impaired despite little to no anthropogenic activity in their basins. With this in mind, the Nebraska Department of Environmental Quality decided to take another look at the metrics and the stream groupings to see if there was a better classification and evaluation system.

Methods

Sampling protocols used during the stream biological monitoring program were those established by the EPA for the R-EMAP projects (USEPA 1994; Kaufman et al., 1999). These protocols were developed for use in wadeable streams. Survey crews consisted of five to seven persons, depending on the size of the streams. Further details of methods are discussed in the Nebraska Stream Classification report (Bazata 2005).

Sampling sites

The river basins sampled for this report were the Elkhorn, Missouri Tributaries, North Platte, South Platte, and White River-Hat Creek Basins in 2010 and 2011 (Figure 1). Approximately half of the sites from each basin were hand-selected sites for basin stream evaluations with the other half consisting of random sites. The hand selected sites were from an internal list of sites that were to be sampled for the Integrated Report and the random list of sites was generated at the EPA research lab in Corvallis, Oregon. The site requirements for each selection include 1) a perennial stream; intermittent stream sites and irrigation canals were rejected, 2) a reconnaissance visit that shows the stream to have aquatic macroinvertebrates and fish, 3) the site was relatively accessible for sampling, and 4) the landowner's permission to sample. The lists of sampling sites, stream characteristics, and definitions for each site are shown in Tables 1, 2, and 3.

There were a total of 68 stream sites surveyed during 2010-2011 Stream Biological Monitoring Project (Table 1). Sites were located in the Elkhorn River, Missouri Tributaries, North Platte, South Platte and White-Hat River Basins. The sites were in five ecoregions. Most streams surveyed (85%) were first through third order streams and consisted of cold-water (41%) and warm-water (59%) streams.

Water chemistries and stream discharge measurements

Field water quality measurements were collected prior to disturbance of the area by the sampling team. Water quality parameters measured at the site included: temperature, pH, dissolved oxygen, turbidity, conductivity, and stream discharge. These measurements were taken with a Hydrolab Quanta meter or a Eureka multi-parameter meter. Stream discharge was calculated from measurements of depth and velocity with a wading rod and Marsh-McBirney flow meter at the best possible transect within the study reach.

Physical and habitat measurements

The average width of the stream was determined and was used to determine the total length of the study reach using the equation of 40 times the average width. The length of stream sampled ranged from 150 to 300 m. Physical habitat was measured in the sample reach at 11 evenly spaced cross-sectional transects and at 100 points along the thalweg following the EPA EMAP protocol (Kaufmann and Robison 1998). At each transect, depth, substrate size class, and substrate embeddedness were measured at five equally spaced points between the wetted edges of the stream. At both sides of the stream, the angle of the stream bank relative to the water surface, distance from water surface to bankfull height, stream incision depth, bankfull width and amount of overhang by undercut banks were measured. Canopy cover was measured at the sides and centers of transects. The amounts of fish cover in nine categories (filamentous algae, macrophytes, woody debris, brush, overhanging vegetation, undercut banks, boulders, artificial structures) were visually estimated. Riparian vegetation cover was assessed by visually estimating the amount of canopy (> 5 m high), understory (0.5-5.0 m), and ground cover (<0.5 m) on both banks at transect locations. The presence or absence and proximity of human disturbance (row crops, grazing, buildings, roads, etc.) was visually assessed at each transect. Thalweg measurements included depth, presence of fine substrate (< 16 mm diameter), habitat unit type (pool, riffle, run, dry channel), and presence of side channels and backwaters. A visual Rapid Habitat Assessment (Lazorchak et al. 1998) based on 12 habitat parameters (instream fish cover, epifaunal substrate, pool substrate characterization, pool variability, channel alteration, sediment deposition, channel flow status, bank condition, bank vegetative protection, grazing or disruptive pressure, and riparian vegetated zone width) was also completed for each sampled reach. Water surface slope and azimuth were also measured.

Fish collections

Fish samples were collected at each sampling location. Sampling was dependent on stream size and condition. A backpack shocker was used for small and medium sized streams (flows less than 10 cfs, Table 3). Larger, deeper streams were electroshocked utilizing a portable generator transported in a small boat. Block nets were used downstream on smaller streams when fish collection was hampered by turbidity or other factors. Stunned fish were netted and placed in buckets containing ambient water for holding and recovery. The length of stream sampled was calculated to be 40 times the width of the stream as determined above under physical and habitat measurements and ranged from 150 to 300 m. Seining was conducted with a 30-foot long ¼ inch mesh bag seine. The number of seining attempts was determined by the complexity and size of the stream. Both methods were used to cover the biases of the other sampling method has toward particular sizes and species of fish. Large fish were identified in the field and released unless they were to be used for fish tissue samples. Small fish were preserved for identification in the laboratory and were sent to Dr. Mark Eberle at the Sternberg Museum of Natural History, Fort Hays University, Hays, Kansas for confirmation or identification. Total numbers were derived for all samples.

Macroinvertebrate collections

Aquatic macroinvertebrates were collected at each site using a number of sampling methods and were combined for assessment. The different sampling methods were done to account for the different types of communities and habitats found in each stream. Overhanging vegetation samples were collected from the stream edge in the grasses bent into the water. The samples were collected by sweeping a D-net (500µm Nitex net, 18 inch wide base) in an upward vertical motion through the overhanging vegetation. The surface area sampled was approximately 1.67 m^2. If habitat was limited, fewer sweeps were made, but was noted on the field sheet. Pool substrate was sampled by dragging a D-net through the substrate in a pool area with a silt bottom for a length of one foot and one inch deep. The total sample consisted of 6 drags and had a surface area of 1.67 m^2. Riffles were sampled using a Surber Stream Bottom Sampler (12 inch X 12 inch opening). A riffle area was defined as an area of relatively shallow water with an accelerated velocity where the water surface is rough or broken. The riffle substrate consisted of gravel or larger stones. Six samples were taken from each riffle and were made by agitating the contents of the

substrate to allow the contained and attached organisms to be washed downstream into the Surber net (500 µm Nitex). Surface area was 0.56 m². Qualitative samples were taken to include all other habitats not collected. Habitats included woody debris, log jams, larger rocks, submergent and emergent vegetation. An effort of 15 to 20 minutes for one person was made to sample these additional habitats.

In the field individual samples were placed in a No. 30 mesh sieve or wash bucket (595 µm openings) and washed to remove mud and small debris. Large debris was also removed by hand. Collections from each habitat were placed in plastic jars and preserved in 70 percent ethanol. In the laboratory, samples were rinsed in water. The samples were sent to Rhithron Associates, Inc. for sorting and identification.

Identifications of all organisms were made to the lowest possible taxon using taxonomic keys and literature. Organisms were enumerated per taxa for each sample. Subsampling was not required for most samples but was conducted when taxa numbers were high. This procedure was done by recovering a percent volume of the sample with use of a grid placed underneath the sorting pan. The unanalyzed portion of the subsample was quickly scanned for unusual or unexpected organisms. The remaining portion of the sample was represerved and retained. Final counts were extrapolated to account for 100 percent of the sample.

Several representatives of each taxon of macroinvertebrates were saved for a project reference collection. The specimens were placed in vials, preserved in 70% ethanol, labeled and saved for future reference and comparisons.

All macroinvertebrates were brought to the same taxonomic level for assessment purposes of the project. If an identification made to a lower than required level, the identification was changed to the next level. For example, if an invertebrate was identified to the species level and the other identifications were to the genus level as needed for analysis, the identification was changed to the genus level. However, the species level was recorded in EDAS and STORET.

Metrics

The measurement of overall fish, macroinvertebrate, and habitat community condition present in this report were determined using the Index of Biotic Integrity (IBI), the Invertebrate Community Index (ICI), and Nebraska Habitat Index (NHI). The indices used for the fish, macroinvertebrates, and habitats are modifications of the Index of Biotic Integrity (IBI) as developed by Karr (1981) and modified by Fausch *et al*. (1984), Karr *et al*. (1986), Ohio EPA (1987), Plafkin *et al.* (1989), and Barber *et al*. (1999). The fish IBI metrics used in this study were developed by the EPA Research Laboratory in Corvallis, Oregon and were selected from a list of metrics to best show responsiveness to disturbance, either natural or anthropogenic. The macroinvertebrate ICI consists of four community metrics and were modifications of the invertebrate indices of the Ohio EPA (1987), Herger and Hayslip (2000), and Wilton (2004). The habitat NHI consisted of ten metrics and were selected from a list of metrics to best portray an interaction of habitat and biotic ranges.

Old Metrics

The metrics used to evaluate the fish, macroinvertebrate and habitat are discussed in the Nebraska Stream Classification report (Bazata, 2005). In general, relative abundances, rather than absolute abundances, were used for these metrics because the relative contribution of individuals to the total fauna

or habitat is more informative then abundance data on populations without knowledge of the interaction among taxa and habitats (Plafkin *et al*. 1989, Barbour *et al.* 1999). The premise is that a healthy and stable assemblage will be relatively consistent in its proportional representation, though individual abundances may vary in magnitude.

Fish Index of Biotic Integrity Metrics (IBI)

The follow metrics are used for the Fish Index of Biotic Integrity (IBI8):

Metric 1. Total number of native species (numnatsp).
Metric 2. Total number of native families (numnatfm).
Metric 3. Total number of sensitive species (nssen).
Metric 4. Proportion of tolerant species in sample (ptole).
Metric 5. Total number of benthic species (nsnbenth).
Metric 6. Total number of long-lived species (nslunk).
Metric 7. Proportion of alien species in the sample (pintro).
Metric 8. Proportion of sample carnivore species (pncarn).

Invertebrate Community Index Metrics (ICI)

The following metrics are used for the Invertebrate Community Index (Bugsc):

Metric 1. Total number of invertebrate taxa (TotalTax).
Metric 2. EPT taxa richness (EPTTax).
Metric 3. Modified Hilsenhoff Biotic Index (HBI).
Metric 4. Percent contribution of dominant taxon (Domn01Pct).

Nebraska Habitat Index Metrics (NHI)

The following metrics are used for the Habitat Index (Habscore5):

Metric 1. Incision/width ratio (Inciswid).
Metric 2. Percent sand substrate (Pct_sa_).
Metric 3. Percent rowcrop (w1h_crop).
Metric 4. Percent riffle (Pct_ri).
Metric 5. Percent undercut banks (xfc_ucb).
Metric 6. Percent overhanging vegetation (pfc_ohc).
Metric 7. Percent silt substrate (Pct_fn).
Metric 8. Middle canopy layer along stream bank (xcm).
Metric 9. Percent pools (Pct_pl).
Metric 10. Percent barren banks (xgb).

New metrics

The metrics used for a new approach to evaluate the fish, macroinvertebrate and habitat are discussed in the Bioassessment of the Wadeable Streams and Rivers of Nebraska Using *a posteriori* Classifications (Heatherly, 2012, Appendix 1).

Fish metrics

Metric 1. Family-level richness (Numfam)
Metric 2. Percent tolerant fish (Ptole)
Metric 3. Number benthic species (Nsbenth)
Metric 4. Number lithophilic species (Nsla2)
Metric 5. Percent nest associated species (pnass)

Macroinvertebrate metrics

Metric 1. Taxon richness (Richness)
Metric 2. Intolerant taxon richness (Inttaxa)
Metric 3. Shannon diversity (Swdi)
Metric 4. Pollution tolerance index (Tolindex)
Metric 5. Family-level HBI (Hilbifam)
Metric 6. Percent Scaping Taxa (Pct_scrap)

Habitat metrics

Metric 1. Percent macrophyte cover (Pct_macro)
Metric 2. Percent overhanging vegetation (Pct_ovh)
Metric 3. Percent undercut bank cover (Pct_fcov)
Metric 4. Percent riparian cropland (weighted) (W1h_crop)

Stream Groups

Group 1. Small (<0.6 cfs), cool (<21.6 C) streams
Group 2. Large (>=0.6 cfs), cool (<21.6 C) streams
Group 3. Streams with riffles (>25% Instream habitat)
Group 4. Larger (>= 0.6 cfs) warm (>=21.6 C) streams
Group 5. Small (<0.6 cfs), warm (>=21.6 C), low riparian ag land usage (<37%) streams
Group 6. Small (<0.6 cfs), warm (<=21.6C), high riparian ag land usage (>=37%) streams

Reference sites

The accuracy and precision of any bioassessment method is determined by the proper comparison of test sites with reference sites following the protocols of Wiseman (2003). In order to compare sample sites with previous data, a set of reference scores for each metric and total index score and ecoregion and stream type was calculated in Nebraska Stream Classification report (Bazata 2005). The ratio between the score for the test station and the score for the reference condition provides a percent comparability measure for each station (Figure 2). The station of interest is then classified on the basis of its similarity to expected conditions (reference conditions), and the apparent potential to support an acceptable level of biological health. The sampling sites and reference condition sites were sorted by ecoregion and stream type.

Data Analysis and Results

Fish

A total of 56 fish species were collected during the 2010-2011 sampling (Table 5). Fish species collected within each family consisted of 2 Lepisosteidae (Gar), 1 Clupeidae (Herring), 2 Salmonidae, 1 Esocidae (Pikes), 23 Cyprinidae (Minnow), 6 Catosomidae (Sucker), 6 Ictaluridae (Catfish), 2 Cyprinodontiae (Killifish), 1 Poeciliidae (Livebearers), 1 Gasterosteidae (Sticklebacks), 6 Centrarchidae (Sunfish), 4 Percidae (Perch), and 1 Sciaenidae (Drum) (Table 6). Six sensitive species were collected (Brook stickleback, Johnny darter, Orangethroat darter, Blacknose dace, Golden shiner, and Common shiner);

two threatened species (Northern redbelly dace and Finescale dace); and eight recreationally important species (Brook trout, Rainbow trout, Channel catfish, Flathead catfish, Largemouth bass, Bluegill, Black crappie, and Yellow perch). The most commonly collected fish were all cyprinids and consisted of the Sand shiner (20.2%), Fathead minnow (19.6%), Longnose dace (10.9%), and Creek chub (9.9%). The other 52 species consisted of 39% of the total fish.

Species richness per collection ranged from two to 22 (Table 7). The highest number of species richness was found at two sites: the South Fork of the Elkhorn River near Chambers in Holt County and the Elkhorn River near Atkinson in Holt County. The lowest number of fish was collected at Antelope Creek near Menominee in Cedar County and Hat Creek near Harrison in Sioux County. The Antelope Creek site was 0.6 mile above Chalkrock Reservoir. The extremely low number of fish most likely was due to Rotenone being applied to the upper watershed several months before sampling. This was done to kill the trash fish in the stream from entering the reservoir. Hat Creek is a small coldwater Pine Ridge stream and contain large numbers (82) of Brown trout. Trout species are highly predatory and usually dominate the species composition when present.

IBI Scores ranged from 30.92 and 87.67. The average IBI score for the collection sites was 58.22 and was similar to to 1997-2001 REMAP study averages where the IBI scores were 56.9 for perennial streams and 61.1 for reference streams.

Macroinvertebrates

Since the streams of the state are not uniform, in regards to substrate and habitat, difference types of sampling methods at different habitat types (overhanging vegetation, pool and bottom substrates, riffles, and qualitative) were combined by station and then evaluated. All scoring and stream ratings are based on combining the macroinvertebrate samples for evaluations. The taxa list from each station and from each sampling method was combined to form a total invertebrate list. A total of 295 taxa were collected during the 2010-2011 season (Table 8). Species richness per collection varied from 59 at East Clear Creek near Paxton in the North Platte Basin to six in the Missouri Tributary Basin at an unidentified Tributary to Papillion Creek near Papillion in Sarpy County. The low taxa number most likely is attributable to the very flashy nature and the hardpan substrate of this stream. Planorbidae snails, Chironomidae (midges), Baetidae mayflies, and Simuliidae (black flies) were the most abundant families collected (Table 9).

The most abundant taxa collected from the basins were the snail *Physa* and the blackfly (*Similium* sp.). Both of these organisms make up 69% of all samples combined. Other numerous organisms, although not as abundant (approximately 9.1% combined), were the midges *Chironomus* and *Dicrotendipes*, the amphipod *Hyalella azteca*, and the mayflies *Hexagenia*, *Tricorythodes*, *Baetis tricaudatus* and *Caenis*.

ICI scores ranged from four to 22 (Table 10). The average ICI score for the four basins was 8.6. The highest ICI score was calculated for Bazile Creek in the Missouri Tributary Basin near Creighton in Knox County. The lowest ICI scores (4) were found at Antelope Creek above Chalkrock Reservior near Menominee in Cedar County, at Applegate Slough Drain near Sutherland in Keith County, at the South Platte River near Julesburg, Colorado in Deuel County, and at the South Platte River near Ogallala in Keith County. All of the low ICI scoring streams have shifting sand substrates with little instream habitat. Average ICI scores from the 1997-2004 R-EMAP statewide study were 16.5 for perennial streams and 20.8 for reference streams.

Physical Habitat

The 2010-2011 Nebraska Habitat Index (NHI) scores ranged from 26 to 52 (Table 11). The average score was 39. Two sites had the highest score: Bazile Creek near Creighton in Knox County and the White River near Crawford in the Fort Robinson State Park in Sioux County. The lowest HBI scores were calculated for the South Branch of Humbug Creek near Pilger in Stanton County and Little Logan Creek near Bancroft in Burt County. The average score NHI score for the state in the 1997-2001 study was 32 for perennial streams and 46 for reference streams. The habitat metrics are presently not used in stream evaluations.

Field Parameters and Chemistries

Field data from six variables were collected from 69 sites. Summary statistics from the field parameters are shown in Table 12. Data interpretation of these results reflects a single collection in time. As such, water quality standards cannot be strictly applied to these samples because only a single sample was taken and not a multiple set over time.

For temperature, a single value from a stream is of limited value because temperature is a temporal variable and dependent on climate conditions. During 2010 and 2011, temperature ranged from 11.3º C to 37.5º C. One site, Cache Creek near Chambers in Holt County, exceeded the standard limit of 32º C. with 37.5º C.

Dissolved oxygen (DO) concentration are generally related to turbulence and temperature. Decreased DO levels are usually associated with inputs of organic matter, sedimentation, as well as increased temperature and reduced stream flow (Herger and Hayslip 2000). As with temperature, conclusions must be drawn with caution, as DO is a temporally variable and a single measurement is of questionable value for characterizing stream condition. DO ranged from 4.4 mg/l to 16.04 mg/l. The water quality standard of 5 mg/l for a 1-day minimum was below standards (4.4 mg/l) at 1 site: Blue Creek in Garden County near Oshkosh. The site was surrounded by marshlands.

The pH of the five water basins ranged from 7.32 to 9.48. Only the South Platte River near Julesburg, Colorado in Deul County slightly exceeded the pH standard of 6.5 to 9.

The conductivity of the samples varied from 159.9 µmho/cm to 1966.0 µmho/cm. No collection sites were measured above the state standard of 2000 µmho/cm.

Turbidities ranged from 0.60 NTU to 730 NTU with an average of 55.1 NTU. The majority (75%) of the samples were below 70 NTU. Nebraska does not have a turbidity standard.

Stream discharge varied between 0.44 cfs to 526.3 cfs. Stream discharge in the North Platte River was extremely high during 2011 due to the extremely heavy snowfall in the Rocky Mountains during the winter of 2010-2011. The snow melt caused historic flooding during the spring and summer of 2011, so no samples were taken in the North Platte River. The samples were restricted to the tributaries in the basin.

Stream Classification

The data from the 69 stations were initially grouped into their respective data type (habitat, fish or macroinvertebrate), ecoregion, stream size, cold-water stream, and warm water stream. Stream size was divided into the groupings of small (<1 cfs), medium (1-10 cfs, large (10-100 cfs) and river (>100 cfs) (Table 3). Since previous studies (Bazata 2005) have shown that metric values and stream ratings differ between ecoregions, the classification scheme reflects this difference between ecoregions. Summary statistics (i.e., mean, median, 25th percentile, 75th percentile, and maximum) within each group were calculated for the IBI fish scores and ICI macroinvertebrate scores (Tables 7, 10, and 11) and compared to the reference streams in the 1997-2005 studies. To rate the streams in this study, the 75th percentile and higher of the reference sites was given an excellent rating; the 0 percentile to 74.9 percentile of the reference streams was given a good rating. Below the reference site level, the median and above the

sites was given a fair rating. The scores below the median of the sites were given a poor rating (Figure 2).

For both the ecoregional classifications and the hierarchical cluster classifications, only the fish metric scores and macroinvertebrate scores were the only indices used to give a final rating to the streams. The full support stream ratings for the aquatic life use support included everything with a fair, good, or excellent overall rating. An undetermined or poor rating for the fish and macroinvertebrate metrics was established as the nonsupport use designations for the aquatic life use support. For the overall stream ratings, the lesser rating of the fish and macroinvertebrate rating was given to the stream, however, for the 303d listings, only those samples with poor ratings in both the IBI fish rating and ICI macroinvertebrate rating were listed.

New Classification (Heatherly 2012, Appendix 1)

Due to the difficulty classifying headwater streams using the IBI and ICI metrics the Nebraska stream classification system was reanalyzed using statistical classifications that do not rely on physiographic constraints (Barbour et al. 2000). The objective was to assess the biotic integrity of wadeable Nebraska streams using *a posteriori* classification, which can provide more realistic comparisons than landscape-based classifications.

Heatherly (2012) assessed the integrity of 393 streams, of which 78 were listed as reference streams. The reference streams were reclassified into six groups with 60-80% similarity of macroinvertebrates (Figure 1 in Heatherly 2012). In order to identify combinations of physical variables that were distinct to each group, ANOVA Models were used to test for difference in variables among groups. Next, group means and 95% confidence intervals of physical characteristics from ANOVA models were used to identify those variables with mostly non-overlapping distributions among reference groups (Figure 2, in Heathery 2012). The results of the ANOVA models found four variables were critical for determining stream integrity: percent riffle, temperature, discharge, and percent crops in the riparian zone. A decision tree based on those four variable was developed to assign test sites to reference groups using these four variables (Figure. 3, in Heatherly 2012). The decision tree divides all Nebraska streams into six groups of streams with similar characteristics. These groups are:

Group 1. Small (<0.6 cfs), cool (<21.6º C) streams
Group 2. Large (>=0.6 cfs), cool (<21.6º C) streams
Group 3. Streams with riffles (>25% Instream habitat)
Group 4. Larger (>=0.6 cfs) warm (>= 21.6º C) streams
Group 5. Small (<0.6 cfs) warm (>=21.6º C), low riparian ag land usage (<37%) streams
Group 6. Small (<0.6 cfs) warm (>=21.6º C), high riparian ag land usage (>=37%) streams.

Old vs. New Results

A comparison of 438 streams from the old IBI and ICI methods with the newer or hierarchical cluster classification is shown in Tables 13, 14, and 15. With the old IBI and ICI methods there were 51 excellent, 178 good, 94 fair, and 115 poor or undetermined overall stream ratings. With the hierarchical cluster methods there were 47 excellent, 110 good, 207 fair, and 74 poor overall stream ratings. The invertebrate index (ICI) identified 87 excellent streams and 182, 99,and 63 streams as good, fair and poor or undetermined, while the hierarchical cluster showed 141, 94, 173, and 24 streams as excellent, good, fair, and poor or undetermined, respectively. There were 173 excellent streams in the IBI fish index and 171, 37, and 57 good, fair, and poor or undetermined streams, while the hierarchical cluster classification showed 145 excellent, 119 good, 115 fair, and 55 poor or undetermined stream classifications. The invertebrate index was higher in the cluster-based assessments for 159 streams and was lower and unchanged in 136 and 142 streams (Tables 14 and 15). The fish index was higher in the cluster-based assessments for 105 streams and was lower and unchanged in 167 and 166 streams. Overall stream classifications were higher for 137 streams, unchanged for 137 streams, and lower for 164 streams. For this comparison it should be noted that the metrics were not identical in the different bioassessments.

Conclusions

In the future, Nebraska stream classifications will be based on metrics using stream characteristics rather than the ecoregional-based metrics of the past. Heatherly (2012) predicted that local-scale stream characteristics would make stream classification based on biotic similarity more appropriate than ecoregional classifications. The approach combined the ability of multimetric statistics to identify reference streams with similar biotic assemblages with multimetric indices that measured departures of test sites from reference conditions. Biotically-similar reference streams also had distinct physical templates that could be primarily characterized by stream size and water temperature, which in turn were not limited to ecoregions or watersheds.

The final hierarchical cluster indices were comprised of different core metrics than the ecoregion-based analyses previously used in Nebraska (Bazata 2005, 2011), which made a direct comparison of two methods difficult. However, the Heatherly (2012) study was spurred by the fact that several small streams in the Sandhills region were designated as poor despite little anthropogenic impact. These streams included Goose Creek and a reach of the North Loup River in the Loup River watershed and Spring, Boardman, Gordon, and Rush Creeks in the Niobrara River watershed (Tables 13, 14, and 15). All of these streams improved from poor to fair, good, or excellent using *a posteriori* classifications. These results are indicative that headwater streams in the Sandhills are ecologically different than the larger river reaches, and that they should be compared to other small, coldwater streams. Moreover, this is evidence that local-scale characteristics are determining factors of biotic assemblages in Nebraska streams and rivers.

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Figures

Figure 1. Nebraska Stream Biological Monitoring Stations, 2010-2011.

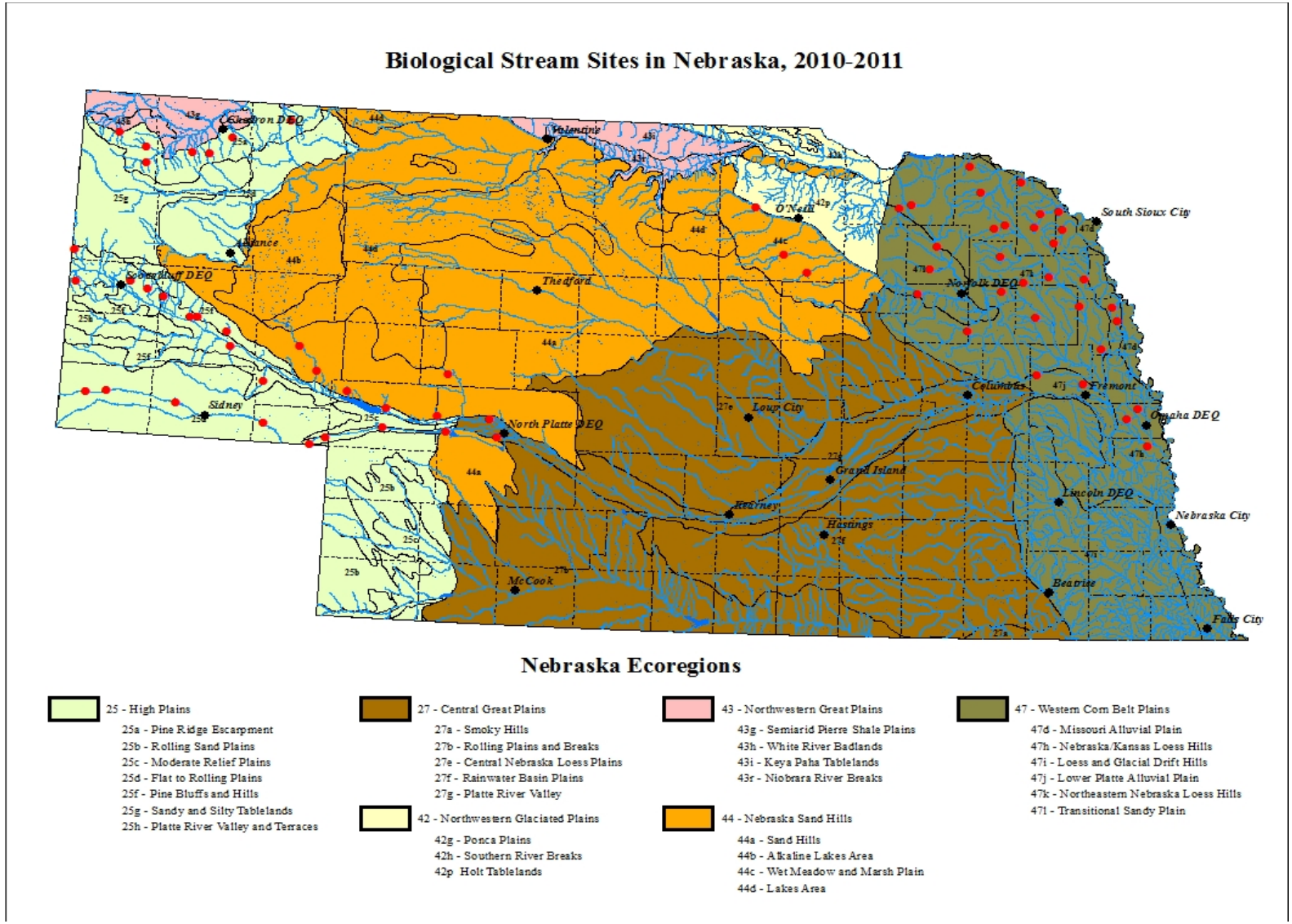
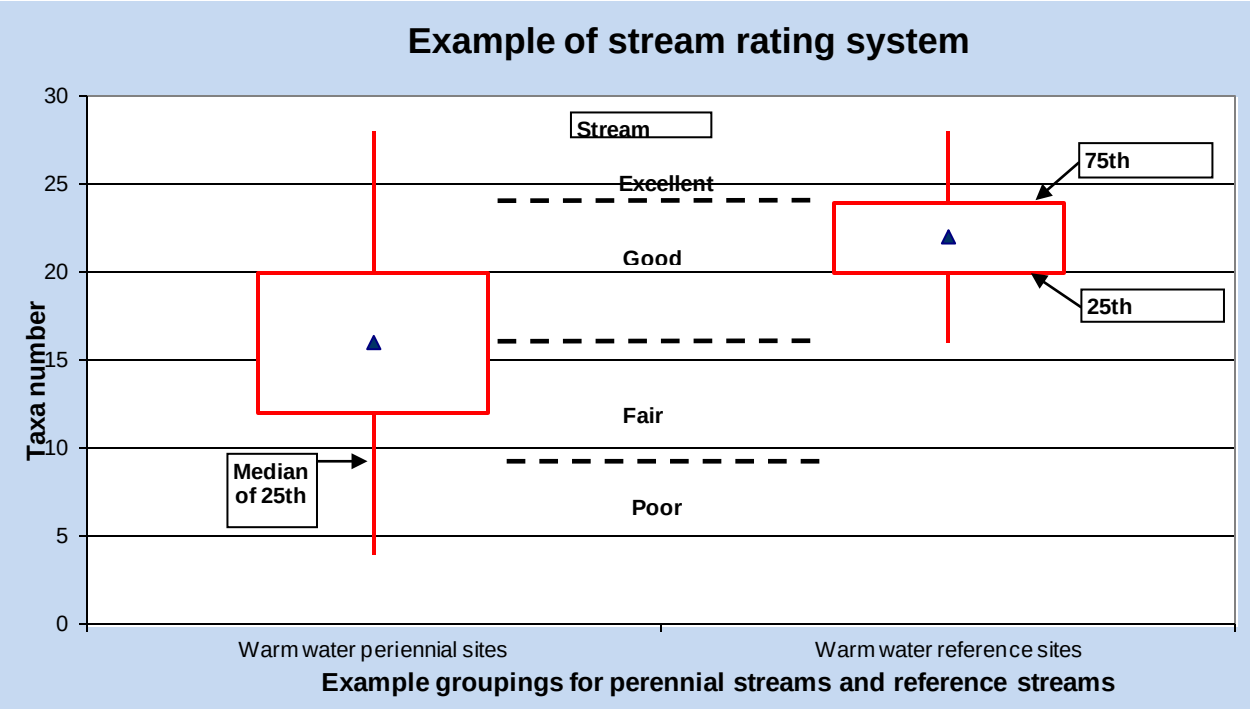


Figure 2. Example of box plots used in rating a stream and how to compare the stream data with reference data.



Tables

Table 1. Nebraska Stream Biological Monitoring Program Station, 2010-2011.

STORET	NDEQ_ID	STRMNAME	STR_SEG	ORDER	FLOW CLASS	HUC	ECOREG	STR CLASS	LAT_DD	LONG_DD
009560	LP1153	PAWNEE CREEK	LP1.11600	1	2	10200202	47	WB	40.981703	-96.287152
009810	NE2185	LORES BRANCH	NE2.12110	1	1	10240007	47	WA	40.073176	-96.106752
010087	LP1023	PAWNEE CREEK	LP1.11500	2	2	10200202	47	WB	41.000045	-96.290683
010112	NE3193	INDIAN CREEK	NE3.10800	1	2	10240006	47	WA	40.317006	-95.769987
EL1113	EL1113	MAPLE CREEK	EL1.10900	3	2	10220003	47	WA	41.550640	-96.889620
EL1115	EL1115	PEBBLE CREEK	EL1.20100	3	4	10220003	47	WA	41.659960	-96.687100
EL1116	EL1116	BELL CREEK	EL1.10700	1	2	10220003	47	WB	41.741710	-96.386740
EL1117	EL1117	W. FORK MAPLE CREEK	EL1.10940	1	2	10220003	47	WB	41.714760	-97.169160
EL1118	EL1118	E. FORK MAPLE CREEK	EL1.10920	1	2	10220003	47	WB	41.799890	-97.038540
EL1119	EL1119	ELKHORN RIVER	EL1.20000	4	7	10220003	47	WA	41.934256	-97.230469
EL1120	EL1120	ELKHORN RIVER	EL1.20000	4	7	10220003	47	WA	41.959950	-97.158590
EL1121	EL1121	HUMBUG CREEK	EL1.21300	2	2	10220003	47	WB	42.034210	-97.090120
EL1122	EL1122	ELKHORN RIVER	EL1.20000	4	8	10220003	47	WA	41.985690	-96.928390
EL1123	EL1123	UNION CREEK	EL1.22100	1	1	10220003	47	WB	41.772450	-97.488380
EL2124	EL2124	MIDDLE LOGAN CREEK	EL2.40200	1	2	10220004	47	WB	42.427760	-97.174660
EL3125	EL3125	DRY CREEK	EL3.20400	1	1	10220002	47	WB	42.277900	-97.663210

Table 1 Continued

STORET	NDEQ_ID	STRMNAME	STR_SEG	ORDER	FLOW CLASS	HUC	ECOREG	STR CLASS	LAT_DD	LONG_DD
EL4126	EL4126	BATTLE CREEK	EL4.10500	1	1	10220001	47	WA	41.957340	-97.625310
EL4127	EL4127	ELKHORN RIVER	EL4.10000	3	7	10220001	47	WA	42.040830	-97.676150
EL4128	EL4128	ELKHORN RIVER	EL4.10000	3	7	10220001	47	WA	42.070560	-97.934230
EL4129	EL4129	ELKHORN RIVER	EL4.20300	1	3	10220001	42	WA	42.108210	-98.338150
EL4130	EL4130	ELKHORN RIVER	EL4.30000	2	5	10220001	42	WA	42.318863	-98.408415
EL4131	EL4131	ELKHORN RIVER	EL4.40000	1	4	10220001	44	WA	42.551110	-99.048020
EL4132	EL4132	HOLT CREEK	EL4.30500	1	2	10220001	44	WA	42.376780	-98.965060
EL4133	EL4133	HOLT CREEK	EL4.30400	1	3	10220001	44	WA	42.378240	-98.926510
LP1170	LP1170	BACHELOR BR TO EIGHT MILE CR.	LP1.10110	2	2	10200202	47	WB	40.990110	-96.005070
LP1171	LP1171	LOST CREEK	LP1.21100	3	3	10200201	27	WB	41.426140	-97.081340
LP1172	LP1172	SHELL CREEK	LP1.20800	4	2	10200201	27	WB	41.698350	-97.704600
LP1173	LP1173	SHELL CREEK	LP1.20800	4	2	10220001	47	WB	41.762100	-97.794800
LP2174	LP2174	SALT CREEK	LP2.20000	4	3	10200203	47	WA	40.783260	-96.720240
LP2175	LP2175	WAHOO CREEK	LP2.10100	5	5	10200203	47	WA	41.068120	-96.406970
LP2176	LP2176	BATES BRANCH	LP2.20612	3	2	10200203	47	WB	41.083410	-96.861640
LP2177	LP2177	MIDDLE CREEK	LP2.21000	3	2	10200203	47	WB	40.805380	-96.766280
LP2178	LP2178	MIDDLE OAK CREEK	LP2.20710	3	1	10200203	47	WB	40.989810	-96.959180
LP2179	LP2179	COTTONWOOD CREEK	LP2.10210	3	1	10200203	47	WB	40.239860	-96.677090

Table 1 Continued

STORET	NDEQ_ID	STRMNAME	STR_SEG	ORDER	FLOW CLASS	HUC	ECOREG	STR CLASS	LAT_DD	LONG_DD
LP2180	LP2180	SILVER CREEK	LP2.10140	3	2	10200203	47	WB	41.235920	-96.541950
LP2181	LP2181	OLIVE BRANCH CREEK	LP2.40310	3	2	10200203	47	WB	40.592758	-96.821866
LP2182	LP2182	ROCK CREEK	LP2.11100	2	2	10200203	47	WB	41.040390	-96.620470
LP2183	LP2183	CLEAR CREEK	LP2.10110	4	3	10200203	47	WA	41.062120	-96.370770
LP2184	LP2184	SAND CREEK	LP2.10170	3	2	10200203	47	WB	41.284380	-96.625400
LP2185	LP2185	DEE CREEK	LP2.10800	2	2	10200203	47	WB	40.925540	-96.445040
LP2186	LP2186	WAHOO CREEK	LP2.10400	3	3	10200203	47	WB	41.189980	-96.748810
LP2187	LP2178	ROCK CREEK	LP2.11010	2	2	10200203	47	WB	41.045850	-96.569670
MT1148	MT1148	S. BRANCH PAPILLION CREEK	MT1.10240	1	1	10230006	47	WB	41.177930	-96.197750
MT1150	MT1150	BIG PAPILLION CREEK	MT1.10120	2	3	10230006	47	WA	41.321220	-96.109990
MT1151	MT1151	LONG CREEK	MT1.10800	1	1	10230006	47	WB	41.437600	-96.080810
MT1152	MT1152	MILL CREEK	MT1.10700	2	2	10230006	47	WB	41.475582	-96.075718
MT1153	MT1153	SILVER CREEK	MT1.11510	1	2	10230001	47	WB	41.822100	-96.235760
MT1154	MT1154	COW CREEK	MT1.12171	1	2	10230001	47	WB	42.174614	-96.577792
MT1156	MT1156	NORTH OMAHA CREEK	MT1.12150	2	3	10230001	47	WB	42.233560	-96.578190
MT1157	MT1157	OMAHA CREEK	MT1.12100	3	4	10230001	47	WB	42.278700	-96.487580
MT2158	MT2158	ELK CREEK	MT2.10300	2	3	10170101	47	WB	42.330480	-96.694550
MT2159	MT2159	ELK CREEK	MT2.10300	2	4	10170101	47	WB	42.433725	-96.667377
MT2160	MT2160	ELK CREEK	MT2.10200	3	4	10170101	47	WB	42.466230	-96.602570

Table 1 Continued

STORET	NDEQ_ID	STRMNAME	STR_SEG	ORDER	FLOW CLASS	HUC	ECOREG	STR CLASS	LAT_DD	LONG_DD
MT2161	MT2161	LIME CREEK	MT2.11000	2	3	10170101	47	WB	42.700170	-96.984640
MT2162	MT2162	WEST BOW CREEK	MT2.11310	2	4	10170101	47	WB	42.763090	-97.183200
MT2163	MT2163	UNNAMED TRIB. NORWEGIAN BOW CREEK	MT2.11521	1	1	10170101	47	WB	42.624120	-97.287700
MT2164	MT2164	NORWEGIAN BOW CREEK	MT2.11520	2	2	10170101	47	WB	42.642300	-97.368350
MT2165	MT2165	WEST BOW CREEK	MT2.11320	1	2	10170101	47	WB	42.699030	-97.401400
MT2166	MT2166	LITTLE BAZILE CREEK	MT2.12510	2	4	10170101	47	WB	42.555470	-97.842420
MT2167	MT2167	UNNAMED TRIB. BAZILE CREEK	MT2.12620	1	1	10170101	47	WB	42.477912	-97.923554
MT2168	MT2168	BAZILE CREEK	MT2.12400	3	6	10170101	47	WA	42.752080	-97.937150
NE1196	NE1196	BIG SLOUGH	NE1.12831	2	2	10240001	47	WB	40.785320	-95.959020
NE1197	NE1197	WINNEBAGO CREEK	NE1.10200	1	1	10240005	47	WB	40.129590	-95.460930
NE2198	NE2198	BIG NEMAHA RIVER	NE2.10000	4	6	10240008	47	WA	40.050470	-95.673070
NE2199	NE2199	WHISKEY RUN	NE2.10751	2	1	10240008	47	WB	40.208620	-95.823810
NE2200	NE2200	LONG BRANCH CREEK	NE2.12330	2	2	10240008	47	WA	40.171560	-95.959580
NE2201	NE2201	UNNAMED TRIB. BALLS BRANCH	NE2.12135.12	1	1	10240007	47	WB	40.164870	-96.292290
NE2202	NE2202	FOURMILE CREEK	NE2.12000	2	1	10240007	47	WA	40.072250	-95.897450
NE2203	NE2203	MIDDLE BRANCH BIG NEMAHA RIVER	NE2.12600	3	2	10240008	47	WB	40.452960	-96.444790
NE2204	NE2204	MUDDY CREEK	NE2.10600	4	4	10240008	47	WA	40.086180	-95.581340
NE2205	NE2205	S. FORK BIG NEMAHA RIVER	NE2.11900	5	4	10240007	47	WA	40.091590	-95.881670

Table 1 Continued

STORET	NDEQ_ID	STRMNAME	STR_SEG	ORDER	FLOW CLASS	HUC	ECOREG	STR CLASS	LAT_DD	LONG_DD
NE2206	NE2206	N. FORK BIG NEMAHA RIVER	NE2.12500	4	5	10240008	47	WA	40.311590	-96.155220
NE2207	NE2207	MID. BR. BIG NEMAHA RIVER	NE2.12610	2	2	10240008	47	WB	40.508360	-96.578320
NE2208	NE2208	LITTLE MUDDY CREEK	NE2.10760	2	2	10240008	47	WB	40.234900	-95.847030
NE2209	NE2209	HOOSIER CREEK	NE2.10810	1	1	10240008	47	WB	40.232060	-95.754520
NE3210	NE3210	HOOPER CREEK	NE3.31200	2	3	10240006	47	WA	40.753460	-96.365230
NE3211	NE3211	LITTLE NEMAHA RIVER	NE3.10000	4	5	10240006	47	WA	40.479480	-95.941680
NE3212	NE3212	SAND CREEK	NE3.12700	2	1	10240006	47	WB	40.546440	-95.981460
NE3213	NE3213	LITTLE NEMAHA RIVER	NE3.10000	4	6	10240006	47	WA	40.360460	95.761050

Table 2. Station Characteristics from the 2010-2011 Nebraska Stream Biological Monitoring Program.

STORET	NDEQ_ID	STRMNAME	COUNTY	BASIN	ECOGROUP	FLOWGRP	AQVEGCLS	TROUTCLAS	SUB_TYPE
EL1134	EL1134	Bell Creek	Burt	Elkhorn	47	East	NV	NT	Hardbed
EL1135	EL1135	Maple Creek	Dodge	Elkhorn	47	East	NV	NT	Sand
EL1136	EL1136	Rock Creek	Cuming	Elkhorn	47	East	NV	NT	Silt
EL1137	EL1137	Plum Creek	Wayne	Elkhorn	47	East	NV	NT	Silt
EL1138	EL1138	South Branch Humbug Creek	Stanton	Elkhorn	47	East	NV	NT	Silt
EL1139	EL1139	Meridian Creek - east of Madison	Madison	Elkhorn	47	East	NV	NT	Silt
EL2124	EL2124	Middle Logan Creek	Cedar	Elkhorn	47	East	NV	NT	Silt
EL2140	EL2140	Little Logan Creek	Burt	Elkhorn	47	East	NV	NT	Silt
EL2141	EL2141	Rattlesnake Creek	Thurston	Elkhorn	47	East	NV	NT	Silt
EL2142	EL2142	Deer Creek	Wayne	Elkhorn	47	East	NV	NT	Silt
EL2143	EL2143	Perrin Creek	Cedar	Elkhorn	47	East	NV	NT	Hardbed
EL3144	EL3144	North Fork Elkhorn River	Pierce	Elkhorn	47	East	NV	NT	Sand
EL3145	EL3145	Willow Creek	Pierce	Elkhorn	47	East	NV	NT	Sand
EL4129	EL4129	Clearwater Creek	Holt	Elkhorn	44	Sandhills	NV	NT	Sand
EL4146	EL4146	Buffalo Creek	Madison	Elkhorn	47	East	NV	NT	Gravel
EL4147	EL4147	Cache Creek	Holt	Elkhorn	44	Sandhills	NV	NT	Sand
EL4148	EL4148	South Fork Elkhorn River	Holt	Elkhorn	44	Sandhills	NV	NT	Sand
EL4149	EL4149	Elkhorn River	Holt	Elkhorn	44	Sandhills	NV	NT	Sand
MT1169	MT1169	Unamed Trib to Papillion Creek	Sarpy	MoTrib	47	East	NV	NT	Gravel
MT1170	MT1170	North Branch West Papillion Creek	Douglas	MoTrib	47	East	NV	NT	Silt
MT1171	MT1171	Thomas Creek	Douglas	MoTrib	47	East	NV	NT	Hardbed
MT1172	MT1172	Big Papillion Creek	Washington	MoTrib	47	East	NV	NT	Silt
MT1173	MT1173	Silver Creek	Burt	MoTrib	47	East	NV	NT	Sand
MT1174	MT1174	Cow Creek	Thurston	MoTrib	47	East	NV	NT	Silt

Table 2 Continued

STORET	NDEQ_ID	STRMNAME	COUNTY	BASIN	ECOGROUP	FLOWGRP	AQVEGCLS	TROUTCLAS	SUB_TYPE
MT1184	MT1184	Elm Creek	Burt	MoTrib	47	East	NV	NT	Silt
MT2161	MT2161	Lime Creek	Dixon	MoTrib	47	East	NV	NT	Sand
MT2175	MT2175	Elk Creek	Dixon	MoTrib	47	East	NV	NT	Silt
MT2176	MT2176	Elk Creek	Dakota	MoTrib	47	East	NV	NT	Silt
MT2177	MT2177	South Creek	Dixon	MoTrib	47	East	NV	NT	Sand
MT2178	MT2178	South Creek	Dixon	MoTrib	47	East	NV	NT	Sand
Mt2179	Mt2179	Badger Creek	Dixon	MoTrib	47	East	NV	NT	Hardbed
MT2180	MT2180	Norwegian Bow Creek	Cedar	MoTrib	47	East	NV	NT	Sand
MT2181	MT2181	Antelope Creek	Cedar	MoTrib	47	East	NV	NT	Gravel
MT2182	MT2182	Little Bazile Creek	Knox	MoTrib	47	East	NV	NT	Sand
MT2183	MT2183	Bazile Creek	Knox	MoTrib	47	East	NV	NT	Sand
NP1002	NP1002	Unnamed Trib of North Platte River	Lincoln	North Platte	44	Sandhills	SV	NT	Sand
NP1006	NP1006	North Fork Birdwood Creek	McPhearson	North Platte	44	Sandhills	SV	NT	Sand
NP1135	NP1135	East Clear Creek	Lincoln	North Platte	44	Sandhills	SV	NT	Sand
NP1136	NP1136	Whitetail Creek	Keith	North Platte	44	Sandhills	SV	NT	Sand
NP2023A	NP2023A	Cedar Creek	Morrill	North Platte	25	West	NV	NT	Sand
NP2105	NP2105	Blue Creek	Garden	North Platte	44	Sandhills	SV	NT	Sand
NP2137	NP2137	Otter Creek	Keith	North Platte	44	Sandhills	SV	AT	Gravel
NP2138	NP2138	Blue Creek	Garden	North Platte	44	Sandhills	SV	NT	Sand
NP2139	NP2139	Rush Creek	Garden	North Platte	44	Sandhills	NV	NT	Sand
NP2144	NP2144	Lower Dugout Creek	Morrill	North Platte	25	West	SV	NT	Sand
NP3145	NP3145	Indian Creek	Morrill	North Platte	25	West	NV	NT	Sand
NP3146	NP3146	Upper Dugout Creek	Morrill	North Platte	25	West	NV	NT	Sand

Table 2 Continued

STORET	NDEQ_ID	STRMNAME	COUNTY	BASIN	ECOGROUP	FLOWGRP	AQVEGCLS	TROUTCLAS	SUB_TYPE
NP3147	NP3147	Wildhorse Drain	Morrill	North Platte	25	West	SV	AT	Gravel
NP3148	NP3148	Ninemile Creek	Scotts Bluff	North Platte	25	West	NV	AT	Gravel
NP3149	NP3149	Winters Creek	Scotts Bluff	North Platte	25	West	NV	AT	Gravel
NP3150	NP3150	Kiowa Creet	Scotts Bluff	North Platte	25	West	NV	NT	Sand
NP3151	NP3151	Sheep Creek	Sioux	North Platte	25	West	SV	AT	Sand
SP1007	SP1007	Applegate Slough Drain	Keith	South Platte	25	West	SV	NT	Sand
SP1012	SP1012	South Platte River	Deuel	South Platte	25	West	NV	NT	Gravel
SP1048	SP1048	Fremont Slough - east	Lincoln	South Platte	27	East	NV	NT	Sand
SP1049	SP1049	South Platte River	Deuel	South Platte	25	West	NV	NT	Gravel
SP1050	SP1050	South Platte River	Keith	South Platte	25	West	NV	NT	Gravel
SP2042	SP2042	Lodgepole Creek	Kimball	South Platte	25	West	SV	NT	Silt
SP2043A	SP2043A	Lodgepole Creek	Deuel	South Platte	25	West	NV	NT	Sand
SP2045	SP2045	Lodgepole Creek - Potter (Vet)	Cheyenne	South Platte	25	West	NV	NT	Gravel
SP2047	SP2047	Lodgepole Creek - Bushnell	Kimball	South Platte	25	West	SV	NT	Silt
WH1037	WH1037	Middle Fork Soldier Creek	Sioux	WhiteHat	25	West	SV	AT	Sand
WH1079	WH1079	Larabee Creek	Sheridan	WhiteHat	25	West	NV	NT	Sand
WH1080	WH1080	Big Bordeaux Creek	Dawes	WhiteHat	25	West	SV	NT	Gravel
WH1081	WH1081	Dead Horse Creek	Dawes	WhiteHat	25	West	SV	AT	Sand
WH1082	WH1082	East Ash Creek	Dawes	WhiteHat	25	West	SV	FT	Sand
WH1083	WH1083	White River, in Ft Rob State Park	Sioux	WhiteHat	25	West	NV	AT	Gravel
WH1084	WH1084	Deep Creek	Sioux	WhiteHat	25	West	NV	FT	Sand

Table 2 Continued

STORET	NDEQ_ID	STRMNAME	COUNTY	BASIN	ECOGROUP	FLOWGRP	AQVEGCLS	TROUTCLAS	SUB_TYPE
WH2085	WH2085	Hat Creek	Sioux	WhiteHat	25	West	NV	AT	Gravel

Table 3. Stream types, flow, vegetation, water temperature, flow groupings, stream conditions and definitions used during the Nebraska Stream Biological Monitoring Program.

Levels	Conditions	Explanation
Level 1 - Temperature or Ecoregion		
	Cold	Watercress or trout present
	East	Ecoregions 27,45,46,47
	Sandhills	Ecoregion 44, 42
	West	Ecoregion25 and 43
Level 2 – Flow type		
	Small Stream (SMLSTRM)	Flow Class 1 (<1 cfs)
	Medium Stream (MEDSTRM)	Flow Class 2-3 (1-10 cfs)
	Large Stream (LGESTRM)	Flow Class 4-6 (10-100 cfs)
	River (River)	Flow Class 7-9 (>100 cfs)
Level 3 – Vegetation Type		
	Watercress (WC)	Watercress common to abundant, cold water only
	Submerged (SV)	Submerged vegetation common to abundant, no watercress
	Emergent (EV)	Emergent vegetation common to abundant, no watercress or submerged vegation
	None (NV)	No aquatic vegetation common or abundant
Level 4A – (Cold water only) Trout Presence		
	No Trout (NT)	No trout collected in standard fish sampling
	Few Trout (FT)	1 to 9 trout collected in standard fish sampling

Table 3 Continued

Levels	Conditions	Explanation
	Abundant Trout (AT)	10 or more trout collected in standard fish sampling
Level 4 B – (Warm water only) Substrate Type		
	Gravel	Gravel or larger is the dominant Substrate
	Sand	Sand is the dominant substrate
	Silt-Clay	Silt or unconsolidated clay is the dominant substrate
	Deeritus	Detritus (unconsolidated organic matter) is the dominant substrate
	Hardbed	Bedrock or hardpan clay is the dominant substrate

Flow Class	Estimated Base Flow (cfs)
1	>0.1 - <1.0
2	1 - 5
3	5 – 10
4	10 – 25
5	25 – 50
6	50 – 100
7	100-250
8	250 – 500
9	>500

Table 4. Reference sites used for the comparisons for the Nebraska Stream Biological Monitoring Program, 1997-2011.

Water Body Name	Storet	NDEQID	Lat_dd	Long_dd	ReachCode	Stream Class	Streamsize	Ecoreg
MIDDLE LOUP RIVER (B)	009563	LO3170	41.256750	-98.957806	10210003	WA	Large	25/27
UNNAMED TRIB. MERRIMAN CREEK	009566	NI2365	42.419333	-98.028722	10150007	WB	Small	47/271
BIG CREEK	009576	LO2145	42.317833	-100.844139	10210006	CB	Medium	44
N. FORK DISMAL RIVER (A)	009577	LO3165	41.860306	-101.137778	10210002	CB	Large	44
ELKHORN RIVER (A)	009579	EL4107	42.037666	-97.717841	10220001	WA	large	44
MIDDLE BRANCH VERDIGRE CREEK	009581	NI2385	42.505167	-98.295167	10150007	CB	Large	42
LONG PINE CREEK	009582	NI3405	42.692500	-99.664444	10150004	CB	Large	43
RATTLESNAKE CREEK	009585	NE2183	40.065816	-95.859694	10240007	WA	Medium	47/27
REPUBLICAN RIVER (A)	009587	RE1150	40.080333	-98.647583	10250016	WA	Large	25/27
NIOBRARA RIVER (C)	009588	NI4392	42.772014	-101.816750	10150003	WA	Large	44
MONROE CREEK	009594	WH2049	42.767236	-103.927531	10120108	CA	Small	25/27
MIDDLE FORK SOLDIER CREEK	009595	WH1037	42.698189	-103.567986	10140201	CA	Medium	25/27
WARBONNET CREEK	009707	WH2070	42.842317	-103.828069	10120108	CB	medium	43
CENTER CREEK	009709	RE1170	40.125942	-98.991969	10250016	CB	Medium	25/27
SHORT PINE CREEK	009715	NI3410	42.698556	-99.638139	10150004	CA	Medium	43
UNNAMED TRIB. ROCK CREEK	009716	NI3400	42.786528	-99.844861	10150004	CB	Large	43
N. BRANCH VERDIGRE CREEK	009717	NI2380	42.619722	-98.241944	10150007	CB	Large	42
NORTH LOUP RIVER (A)	009719	LO2150	42.771861	-99.196944	10210007	CB	Large	42
GOOSE CREEK	009720	LO2140	42.117017	-100.135747	10210006	CB	Large	44
HOWE CREEK	009727	MT2139	42.671113	-97.847821	10170101	CB	Medium	47/27
LODGEPOLE CREEK	009740	SP2042	41.240940	-103.706600	10190016	CB	Medium	25/27
NIOBRARA RIVER (B)	009742	NI4393	42.562389	-102.467333	10150003	WA	Large	44
LORES BRANCH	009810	NE2185	40.073176	-96.106752	10240007	WA	Small	47/27
ROCK CREEK	009814	LB2115	40.110667	-97.058083	10270207	WA	Small	47/27
FARMERS CREEK	009817	RE1181	40.083444	-98.694250	10250016	WB	Medium	25/27
FRENCHMAN CREEK (B)	009818	RE3185	40.432417	-101.625694	10250005	CB	Large	25/27
SPRING CREEK (BB)	009904	BB1003	40.006472	-96.616192	10270206	WB	Medium	47/27
LITTLE BLUE RIVER (B)	009905	LB2080	40.413972	-98.305806	10270206	WA	Large	47/27
MUDDY CREEK	009917	RE2195	40.459172	-100.047439	10250009	WB	Small	25/27
FRENCHMAN CREEK (A)	009924	RE3094	40.322967	-101.043289	10250005	CB	Large	25/27
REPUBLICAN RIVER (F)	009925	RE3113	40.033317	-101.545089	10250004	WA	Large	25/27

Table 4 Continued

Water Body Name	Storet	NDEQID	Lat_dd	Long_dd	ReachCode	Stream Class	Streamsize	Ecoreg
COTTONWOOD CREEK	009926	RE1040	40.104639	-99.069694	10250004	CB	Small	25/27
NIOBRARA RIVER (E)	009983	NI2390	42.718861	-98.056444	10150007	WA	Large	42
VERDIGRE CREEK (B)	009984	NI2371	42.495250	-98.113472	10150007	WB	Large	42
PLUM CREEK	010013	NI3420	42.700833	-99.986406	10150004	CB	Large	43
WILLOW CREEK	010014	NI3425	42.516583	-101.769278	10150004	CB	Small	44
NIOBRARA RIVER (D)	010015	NI3391	42.790917	-100.744944	10150004	WA	Large	44
RAKES CREEK	010099	NE1176	40.871359	-95.879344	10240001	WB	Small	47/27
PONY CREEK	010104	NE2184	40.028776	-95.597274	10240008	WA	Medium	47/27
SOUTH CEDAR CREEK	010103	NE1182	40.895423	-96.140410	10240001	WB	Medium	47/27
INDIAN CREEK	010112	NE3193	40.317006	-95.769987	10240006	WA	Medium	47/27
Pawnee Creek	010152	MP2061	41.018260	-100.379600	10200101	WB	Medium	25/27
MUDDY CREEK	010114	NE3195	40.599031	-96.301660	10240006	WB	small	47/27
RUSH CREEK	010160	NP2108	41.321290	-102.594400	10180009	CB	Medium	25/27
NINEMILE CREEK	010164	NPO3112	41.886770	-103.438200	10180009	CA	Large	25/27
SOUTH PLATTE RIVER (CENT. PARK)	010165	SP1031	41.115267	-100.781317	10190018	WA	Large	25/27
LODGEPOLE CREEK	010174	SP2019	41.241350	-103.649200	10190016	WB	Medium	25/27
PAWNEE CREEK	010175	MP2062	41.020669	-100.373432	10200101	WB	Medium	25/27
WOOD RIVER	010179	MP2054	40.812520	-98.648180	10200102	WB	Medium	25/27
BATTLE CREEK	010191	EL4108	41.981464	-97.613909	10220001	WA	Medium	47/27
ELKHORN RIVER (D)	010192	EL4111	42.003012	-97.423325	10220002	WA	Large	47/27
HOLT CREEK	010193	EL4112	42.463674	-98.845090	10220001	WA	Small	44
UNNAMED TRIB. BLACKBIRD CREEK (A)	010195	MT1050	42.092173	-96.403482	10230001	WB	Medium	47/27
BEAVER CREEK	010200	MT2141	42.772604	-97.471876	10170101	WB	Medium	47/27
OMAHA CREEK	010201	MT1137	42.288462	-96.491296	10230001	WB	Large	47/27
UNNAMED TRIB. NORWEGIAN BOW CREEK	010205	MT2143	42.623892	-97.280976	10170101	WB	Medium	47/27
BOW CREEK (A)	010207	MT2145	42.671192	-97.162743	10170101	WB	Large	47/27

Table 5. Summary of fish species by abundance collected during the Nebraska Stream Biological Monitoring Program, 2010-2011.

Common Name	Scientific Name	Family	Total Count	Percentage
Sand shiner	*Notropis stramineus*	Cyprinidae	6867	20.23
Fathead minnow	*Pimephales promelas*	Cyprinidae	6639	19.56
Longnose dace	*Rhinichthys cataractae*	Cyprinidae	3692	10.88
Creek chub	*Semotilus atromaculatus*	Cyprinidae	3361	9.90
Red shiner	*Cyprinella lutrensis*	Cyprinidae	1937	5.71
Brassy minnow	*Hybognathus hankinsoni*	Cyprinidae	1813	5.34
Bigmouth shiner	*Notropis dorsalis*	Cyprinidae	1524	4.49
White sucker	*Catostomus commersoni*	Catostomidae	1107	3.26
Central stoneroller	*Campostoma anomalum*	Cyprinidae	1021	3.01
Orangethroat darter	*Etheostoma spectabile*	Percidae	562	1.66
Common carp	*Cyprinus carpio*	Cyprinidae	553	1.63
Green sunfish	*Lepomis cyanellus*	Centrarchidae	510	1.50
Brook stickleback	*Culaea inconstans*	Gasterosteidae	466	1.37
Plains topminnow	*Fundulus sciadicus*	Cyprinodontidae	416	1.23
Rainbow trout	*Oncorhynchus mykiss*	Salmonidae	384	1.13
Channel catfish	*Ictalurus punctatus*	Ictaluridae	367	1.08
Brook trout	*Salvelinus fontinalis*	Salmonidae	357	1.05
Bluegill	*Lepomis macrochirus*	Centrarchidae	298	0.88
Largemouth bass	*Micropterus salmoides*	Centrarchidae	254	0.75
Suckermouth minnow	*Phenacobius mirabilis*	Cyprinidae	233	0.69
Black bullhead	*Ameiurs melas*	Ictaluridae	225	0.66
Stonecat	*Noturus flavus*	Ictaluridae	161	0.47
Longnose sucker	*Catostomus catostomus*	Catostomidae	111	0.33
Finescale dace	*Phoxinus neogaeus*	Cyprinidae	108	0.32
Northern redbelly dac	*Phoxinus eos*	Cyprinidae	88	0.26
Yellow perch	*Perca flavescens*	Percidae	86	0.25
Blacknose dace	*Rhinichthys atratulus*	Cyprinidae	84	0.25
Plains killifish	*Fundulus zebrinus*	Cyprinodontidae	75	0.22
Common shiner	*Luxilus cornutus*	Cyprinidae	70	0.21
Western mosquitofish	*Gambusia affinis*	Poeciliidae	63	0.19
Grass pickeral	*Esox americanus*	Cyprinidae	62	0.18
Gizzard shad	*Dorosoma cepedianum*	Clupeidae	61	0.18
Johnny darter	*Etheostoma nigrum*	Percidae	56	0.16
Golden shiner	*Notemigonus crysoleucas*	Cyprinidae	42	0.12
Shorthead redhorse	*Moxostoma macrolepidotum*	Catostomidae	41	0.12
Spotfin shiner	*Notropis spelopterus*	Cyprinidae	32	0.09
Northern pike	*Esox lucius*	Esocidae	30	0.09
Bluntnose minnow	*Pimephales notatus*	Cyprinidae	26	0.08
Flathead chub	*Platygobio gracilis*	Cyprinidae	25	0.07

Table 5 Continued

Common Name	*Scientific Name*	Family	Total Count	Percentage
Yellow bullhead	*Ameiurus natalis*	Ictaluridae	20	0.06
River carpsucker	*Carpiodes carpio*	Catostomidae	20	0.06
Freshwater drum	*Aplodinotus grunniens*	Scianidae	19	0.06
Quillback	*Carpiodes cyprinus*	Catostomidae	12	0.04
Silver chub	*Macrhybopsis storeriana*	Cyprinidae	12	0.04
Bigmouth buffalo	*Ictiobus cyprinellus*	Catostomidae	11	0.03
Iowa darter	*Etheostoma exile*	Percidae	9	0.03
Flathead catfish	*Pylodictis olivaris*	Ictaluridae	7	0.02
Orangespotted sunfish	*Lepomis humilus*	Centrarchidae	5	0.01
Tadpole madtom	*Noturus gyrinus*	Ictaluridae	5	0.01
Shoal chub	*Hybopsis aestivalis*	Cyprinidae	4	0.01
White crappie	*Pomoxis annularis*	Centrarchidae	4	0.01
Black crappie	*Pomoxis nigromaculatus*	Centrarchidae	4	0.01
Grass carp	*Ctenopharynodon idella*	Cyprinidae	3	0.01
Goldfish	*Carassius auratus*	Cyprinidae	2	0.01
Shortnose gar	*Lepisosteus platostomus*	Lepisosteidae	2	0.01
Longnose gar	*Lepisosteus osseus*	Lepisosteidae	1	0.00
		Total Count	33947	

Table 6. Fish families collected during the Nebraska Stream Biological Monitoring Program, 2010-2011.

FAMILY	Frequency	Percent	Cumlative Frequency	Cumlative Percent
Cyprinidae	28198	83.06	28198	83.06
Catostomidae	1302	3.84	29500	86.90
Centrarchidae	1075	3.17	30575	90.07
Ictaluridae	785	2.31	31360	92.38
Salmonidae	741	2.18	32101	94.56
Percidae	713	2.10	32814	96.66
Cyprinodontidae	491	1.45	33305	98.11
Gasterosteidae	466	1.37	33771	99.48
Poeciliidae	63	0.19	33834	99.67
Clupeidae	61	0.18	33895	99.85
Esocidae	30	0.09	33925	99.94
Scianidae	19	0.06	33944	99.99
Lepisosteidae	3	0.01	33947	100.00
Total Count	33947		33947	

Table 7. Minimum, 25th percentile, median, 75th percentile, maximum, and number of samples for fish metrics and fish metric scores during the Nebraska Stream Biological Monitoring Program, 2010-2011.

Metric	Minimum	25%tile	Median	75%tile	Maximum	Number Sampled
2010 (Elkhorn and Missouri Tributaries Basins)						
IBI8	30.929	43.628	55.015	69.631	84.671	
Numnatsp	2	5	9.5	13	22	34
Numfamly	1	3	4	4	7	34
Numsensitive	0	0	0	1	2	34
Proportolerant	0	0.633	0.734	0.887	1	34
Proporbenthsp	0	0.22	0.383	0.516	0.883	34
Numlonglivesp	1	2	4	8	17	34
Proporcarn	0	0.028	0.214	0.375	0.75	34
NatspScore	1.134	3.819	5.476	8.399	10	34
NatfamScore	1.901	4.756	6.829	7.802	10	34
SensitScore	0	0	0	3.691	10	34
TolrntScore	0	1.329	3.199	4.317	10	34
BenticspScore	0	3.764	5.571	7.903	10	34
LongliveScore	0.976	2.352	4.927	9.889	10	34
CarnScore	0	1.733	10	10	10	34
2011 (North Platte, South Platte, White-Hat Basins)						
IBI8	31.156	48.08	61.376	78.042	87.363	35
Numnatsp	2	4	7	11	18	35
Numfamly	1	3	3	6	7	35
Numsensitive	0	1	1	1	5	35
Proportolerant	0	0.03	0.427	0.687	0.909	35
Proporbenthsp	0	0.048	0.273	0.465	0.978	35
Numlonglivesp	0	2	3	6	9	35
Proporcarn	0	0.009	0.062	0.246	0.82	35
NatspScore	1.415	3.274	5.455	8.807	10	35
NatfamScore	3.065	5.078	7.777	9.219	10	35
SensitScore	0	2.69	5.323	9.232	10	35
TolrntScore	1.137	3.912	7.162	10	10	35
BenticspScore	0	2.387	4.586	6.533	10	35
LongliveScore	0	2.953	5.459	9.874	10	35
CarnScore	0	0.36	2.48	9.84	10	35

Table 8. Summary of macroinvertebrate taxa and total number collected from the Nebraska Stream Biological Program, 2010-2011. Macroinvertebrate names are sorted alphabetically by Class, Order, and Family.

Class	Order	Family	FINAL ID	Total counts	Percent
Arachnida			Arachnida (Acarina,mites)	10	0.001
Arachnida	Sarcoptiformes	Euphthiracaroidae	Oribatida	84	0.007
Arachnida	Trombidiformes	Arrenuridae	*Arrenurus*	13	0.001
Arachnida	Trombidiformes	Hydrachnidae	*Hydrachna*	1	0.000
Arachnida	Trombidiformes	Hygrobatidae	*Atractides*	175	0.014
Arachnida	Trombidiformes	Hygrobatidae	*Hygrobates*	306	0.025
Arachnida	Trombidiformes	Lebertiidae	*Lebertia*	34	0.003
Arachnida	Trombidiformes	Prostigmata	*Mideopsis*	4	0.000
Arachnida	Trombidiformes	Sperchonidae	*Sperchon*	1558	0.126
Arachnida	Trombidiformes	Sperchonidae	*Sperchonopsis*	6	0.000
Crustacea	Amphipoda	Crangonyctidae	*Crangonyx*	938	0.076
Crustacea	Amphipoda	Gammaridae	*Gammarus*	4071	0.329
Crustacea	Amphipoda	Talitridae	*Hyalella azteca*	17304	1.399
Crustacea	Amphipoda		Amphipoda	1622	0.131
Crustacea	Decapoda	Cambaridae	*Cambarus*	543	0.044
Crustacea	Decapoda	Cambaridae	*Orconectes*	3207	0.259
Crustacea	Isopoda	Asellidae	*Caecidotea*	3782	0.306
Gastropoda	Basommatophora	Lymnaeidae	*Fossaria*	815	0.066
Gastropoda	Basommatophora	Lymnaeidae	*Lymnaea*	909	0.073
Gastropoda	Basommatophora	Lymnaeidae	*Stagnicola*	1076	0.087
Gastropoda	Prosobranchia	Valvatidae	*Valvata*	4	0.000
Gastropoda	Pulmonata	Ancylidae	*Ferrissia*	132	0.011
Gastropoda	Pulmonata	Physidae	*Physa*	829558	67.054
Gastropoda	Pulmonata	Planorbidae	*Gyraulus*	118	0.010
Gastropoda	Pulmonata	Planorbidae	*Planorbella*	73	0.006
Hirudinea	Arhynchobdellida	Erpobdellidae	*Erpobdella punctata*	85	0.007
Hirudinea	Arhynchobdellida	Erpobdellidae	*Erpobdellidae*	2836	0.229
Hirudinea	Arhynchobdellida	Erpobdellidae	*Mooreobdella*	6	0.000
Hirudinea	Pharyngobdellida	Erpobdellidae	*Erpobdella*	4	0.000
Hirudinea	Pharyngobdellida	Erpobdellidae	*Mooreobdella microstoma*	363	0.029
Hirudinea	Rhynchobdellida	Glossiphoniidae	*Glossiphonia complanata*	165	0.013
Hirudinea	Rhynchobdellida	Glossiphoniidae	*Helobdella stagnalis*	812	0.066
Hirudinea	Rhynchobdellida	Glossiphoniidae	*Placobdella ornata*	13	0.001
Hirudinea	Rhynchobdellida	Glossiphoniidae	*Placobdella parasitica*	1	0.000
Insecta	Coleoptera	Dryopidae	*Helichus*	121	0.010
Insecta	Coleoptera	Dytiscidae	*Agabus*	151	0.012
Insecta	Coleoptera	Dytiscidae	*Dytiscidae*	344	0.028
Insecta	Coleoptera	Dytiscidae	*Hygrotus*	38	0.003
Insecta	Coleoptera	Dytiscidae	*Laccophilus*	257	0.021
Insecta	Coleoptera	Dytiscidae	*Liodessus*	379	0.031
Insecta	Coleoptera	Dytiscidae	*Neoporus*	88	0.007
Insecta	Coleoptera	Dytiscidae	*Stictotarsus*	32	0.003
Insecta	Coleoptera	Elmidae	*Dubiraphia*	10291	0.832
Insecta	Coleoptera	Elmidae	*Elmidae*	3	0.000

Table 8 Continued

Class	Order	Family	FINAL ID	Total counts	Percent
Insecta	Coleoptera	Elmidae	*Macronychus glabratus*	55	0.004
Insecta	Coleoptera	Elmidae	*Microcylloepus*	4455	0.360
Insecta	Coleoptera	Elmidae	*Optioservus*	1481	0.120
Insecta	Coleoptera	Elmidae	*Stenelmis*	302	0.024
Insecta	Coleoptera	Gyrinidae	*Dineutus*	10	0.001
Insecta	Coleoptera	Gyrinidae	*Gyrinus*	491	0.040
Insecta	Coleoptera	Halipidae	*Peltodytes*	456	0.037
Insecta	Coleoptera	Haliplidae	*Haliplidae*	101	0.008
Insecta	Coleoptera	Haliplidae	*Haliplus*	155	0.013
Insecta	Coleoptera	Hydraenidae	*Ochthebius*	22	0.002
Insecta	Coleoptera	Hydrophilidae	*Anacaena*	68	0.005
Insecta	Coleoptera	Hydrophilidae	*Berosus*	83	0.007
Insecta	Coleoptera	Hydrophilidae	*Chaetarthria*	1	0.000
Insecta	Coleoptera	Hydrophilidae	*Cymbiodyta*	36	0.003
Insecta	Coleoptera	Hydrophilidae	*Enochrus*	105	0.008
Insecta	Coleoptera	Hydrophilidae	*Helophorus*	6	0.000
Insecta	Coleoptera	Hydrophilidae	*Hydrochus*	19	0.002
Insecta	Coleoptera	Hydrophilidae	*Hydrophilidae*	184	0.015
Insecta	Coleoptera	Hydrophilidae	*Hydrophilus*	1	0.000
Insecta	Coleoptera	Hydrophilidae	*Laccobius*	32	0.003
Insecta	Coleoptera	Hydrophilidae	*Paracymus*	37	0.003
Insecta	Coleoptera	Hydrophilidae	*Sperchopsis*	3	0.000
Insecta	Coleoptera	Hydrophilidae	*Tropisternus*	114	0.009
Insecta	Coleoptera	Hydropsychidae	*Hydropsyche*	732	0.059
Insecta	Coleoptera	Scirtidae	*Cyphon*	6	0.000
Insecta	Diptera	Athericidae	*Atherix*	29	0.002
Insecta	Diptera	Ceratopogonidae	*Atrichopogon*	20	0.002
Insecta	Diptera	Ceratopogonidae	*Bezzia*	430	0.035
Insecta	Diptera	Ceratopogonidae	*Ceratopogonidae*	4567	0.369
Insecta	Diptera	Ceratopogonidae	*Mallochohelea*	601	0.049
Insecta	Diptera	Ceratopogonidae	*Serromyia*	399	0.032
Insecta	Diptera	Ceratopogonidae	*Sphaeromias*	43	0.003
Insecta	Diptera	Chironomidae	*Ablabesmyia*	152	0.012
Insecta	Diptera	Chironomidae	*Acricotopus*	158	0.013
Insecta	Diptera	Chironomidae	*Brillia*	1087	0.088
Insecta	Diptera	Chironomidae	*Brundiniella*	3204	0.259
Insecta	Diptera	Chironomidae	*Chaetocladius*	454	0.037
Insecta	Diptera	Chironomidae	Chironomini	485	0.039
Insecta	Diptera	Chironomidae	*Chironomus*	20561	1.662
Insecta	Diptera	Chironomidae	*Cladopelma*	1	0.000
Insecta	Diptera	Chironomidae	*Cladotanytarsus*	459	0.037
Insecta	Diptera	Chironomidae	*Clinotanypus*	104	0.008
Insecta	Diptera	Chironomidae	*Conchapelopia*	128	0.010
Insecta	Diptera	Chironomidae	*Corynoneura*	131	0.011
Insecta	Diptera	Chironomidae	*Cricotopus*	364	0.029
Insecta	Diptera	Chironomidae	*Cricotopus bicinctus*	4087	0.330
Insecta	Diptera	Chironomidae	*Cricotopus sylvestris*	592	0.048
Insecta	Diptera	Chironomidae	*Cricotopus tremulus*	72	0.006
Insecta	Diptera	Chironomidae	*Cricotopus trifascia*	2787	0.225

Table 8 Continued

Class	Order	Family	FINAL ID	Total counts	Percent
Insecta	Diptera	Chironomidae	*Cryptochironomus*	6119	0.495
Insecta	Diptera	Chironomidae	*Cryptotendipes*	1404	0.113
Insecta	Diptera	Chironomidae	*Dicrotendipes*	12632	1.021
Insecta	Diptera	Chironomidae	*Diplocladius cultriger*	154	0.012
Insecta	Diptera	Chironomidae	*Epoicocladius*	573	0.046
Insecta	Diptera	Chironomidae	*Eukiefferiella*	1749	0.141
Insecta	Diptera	Chironomidae	*Glyptotendipes*	213	0.017
Insecta	Diptera	Chironomidae	*Harnischia*	21	0.002
Insecta	Diptera	Chironomidae	*Heleniella*	141	0.011
Insecta	Diptera	Chironomidae	*Heterotrissocladius*	254	0.021
Insecta	Diptera	Chironomidae	*Labrundinia*	50	0.004
Insecta	Diptera	Chironomidae	*Larsia*	213	0.017
Insecta	Diptera	Chironomidae	*Lauterborniella*	5	0.000
Insecta	Diptera	Chironomidae	*Limnophyes*	959	0.078
Insecta	Diptera	Chironomidae	*Lopescladius*	53	0.004
Insecta	Diptera	Chironomidae	*Metriocnemus*	29	0.002
Insecta	Diptera	Chironomidae	*Micropsectra*	10842	0.876
Insecta	Diptera	Chironomidae	*Microtendipes*	1398	0.113
Insecta	Diptera	Chironomidae	*Nanocladius*	550	0.044
Insecta	Diptera	Chironomidae	*Natarsia*	60	0.005
Insecta	Diptera	Chironomidae	*Nilotanypus*	81	0.007
Insecta	Diptera	Chironomidae	*Odontomesa*	10540	0.852
Insecta	Diptera	Chironomidae	*Orthocladiinae*	125	0.010
Insecta	Diptera	Chironomidae	*Orthocladius*	8936	0.722
Insecta	Diptera	Chironomidae	*Pagastia*	8	0.001
Insecta	Diptera	Chironomidae	*Parachironomus*	25	0.002
Insecta	Diptera	Chironomidae	*Paracladius*	1097	0.089
Insecta	Diptera	Chironomidae	*Paracladopelma*	1333	0.108
Insecta	Diptera	Chironomidae	*Parakiefferiella*	3821	0.309
Insecta	Diptera	Chironomidae	*Paralauterborniella nigrohalterale*	1603	0.130
Insecta	Diptera	Chironomidae	*Paramerina*	120	0.010
Insecta	Diptera	Chironomidae	*Parametriocnemus*	1268	0.102
Insecta	Diptera	Chironomidae	*Paraphaenocladius*	66	0.005
Insecta	Diptera	Chironomidae	*Paratanytarsus*	827	0.067
Insecta	Diptera	Chironomidae	*Paratendipes*	1210	0.098
Insecta	Diptera	Chironomidae	*Pentaneura*	80	0.006
Insecta	Diptera	Chironomidae	*Phaenopsectra*	486	0.039
Insecta	Diptera	Chironomidae	*Polypedilum*	3943	0.319
Insecta	Diptera	Chironomidae	*Polypedilum fallax*	18	0.001
Insecta	Diptera	Chironomidae	*Polypedilum halterale*	734	0.059
Insecta	Diptera	Chironomidae	*Polypedilum illinoense*	3989	0.322
Insecta	Diptera	Chironomidae	*Polypedilum laetum*	3	0.000
Insecta	Diptera	Chironomidae	*Polypedilum scalaenum*	2996	0.242
Insecta	Diptera	Chironomidae	*Polypedilum tritum*	8	0.001
Insecta	Diptera	Chironomidae	*Procladius*	1563	0.126
Insecta	Diptera	Chironomidae	*Prodiamesa*	8474	0.685
Insecta	Diptera	Chironomidae	*Psectrocladius*	13	0.001
Insecta	Diptera	Chironomidae	*Psectrotanypus*	16	0.001
Insecta	Diptera	Chironomidae	*Pseudochironomus*	18	0.001

Table 8 Continued

Class	Order	Family	FINAL ID	Total counts	Percent
Insecta	Diptera	Chironomidae	*Pseudosmittia*	51	0.004
Insecta	Diptera	Chironomidae	*Rheocricotopus*	105	0.008
Insecta	Diptera	Chironomidae	*Rheotanytarsus*	5040	0.407
Insecta	Diptera	Chironomidae	*Saetheria*	38	0.003
Insecta	Diptera	Chironomidae	*Stempellinella*	5	0.000
Insecta	Diptera	Chironomidae	*Stictochironomus*	9605	0.776
Insecta	Diptera	Chironomidae	*Tanypodinae*	174	0.014
Insecta	Diptera	Chironomidae	*Tanypus*	247	0.020
Insecta	Diptera	Chironomidae	*Tanytarsini*	472	0.038
Insecta	Diptera	Chironomidae	*Tanytarsus*	2313	0.187
Insecta	Diptera	Chironomidae	*Telopelopia okoboji*	1	0.000
Insecta	Diptera	Chironomidae	*Thienemannia*	1	0.000
Insecta	Diptera	Chironomidae	*Thienemanniella*	3162	0.256
Insecta	Diptera	Chironomidae	*Thienemannimyia*	3404	0.275
Insecta	Diptera	Chironomidae	*Thienemannimyia senata*	3	0.000
Insecta	Diptera	Chironomidae	*Tribelos*	8	0.001
Insecta	Diptera	Chironomidae	*Tvetenia*	167	0.013
Insecta	Diptera	Chironomidae	*Tvetenia bavarica*	2597	0.210
Insecta	Diptera	Chironomidae	*Xenochironomus*	5	0.000
Insecta	Diptera	Chironomidae	*Zavreliella marmorata*	20	0.002
Insecta	Diptera	Chironomidae	*Zavrelimyia*	102	0.008
Insecta	Diptera	Culicidae	*Anopheles*	4	0.000
Insecta	Diptera	Culicidae	*Culex*	41	0.003
Insecta	Diptera	Culicidae	*Culicidae*	413	0.033
Insecta	Diptera	Dixidae	*Dixa*	168	0.014
Insecta	Diptera	Dixidae	*Dixella*	125	0.010
Insecta	Diptera	Dolichopodidae	Dolichopodidae	3	0.000
Insecta	Diptera	Empididae	*Chelifera*	61	0.005
Insecta	Diptera	Empididae	Empididae	41	0.003
Insecta	Diptera	Empididae	*Hemerodromia*	591	0.048
Insecta	Diptera	Ephydridae	Ephydridae	837	0.068
Insecta	Diptera	Muscidae	*Muscidae*	117	0.009
Insecta	Diptera	Phryganeidae	*Phryganea*	1	0.000
Insecta	Diptera	Psychodidae	Psychodidae	307	0.025
Insecta	Diptera	Ptychopteridae	*Ptychoptera*	375	0.030
Insecta	Diptera	Sciomyzidae	Sciomyzidae	1	0.000
Insecta	Diptera	Simuliidae	*Simulium*	31834	2.573
Insecta	Diptera	Stratiomyidae	*Caloparyphus*	771	0.062
Insecta	Diptera	Stratiomyidae	*Euparyphus*	127	0.010
Insecta	Diptera	Stratiomyidae	*Nemotelus*	33	0.003
Insecta	Diptera	Stratiomyidae	*Odontomyia*	87	0.007
Insecta	Diptera	Stratiomyidae	*Stratiomys*	50	0.004
Insecta	Diptera	Tabanidae	Tabanidae	450	0.036
Insecta	Diptera	Tipulidae	*Dicranota*	132	0.011
Insecta	Diptera	Tipulidae	*Erioptera*	104	0.008
Insecta	Diptera	Tipulidae	*Pilaria*	31	0.003
Insecta	Diptera	Tipulidae	*Tipula*	456	0.037
Insecta	Diptera	Tipulidae	Tipulidae	207	0.017
Insecta	Ephemeroptera	Baetidae	*Acentrella*	327	0.026

Table 8 Continued

Class	Order	Family	FINAL ID	Total counts	Percent
Insecta	Ephemeroptera	Baetidae	*Acerpenna*	959	0.078
Insecta	Ephemeroptera	Baetidae	Baetidae	2965	0.240
Insecta	Ephemeroptera	Baetidae	*Baetis*	4197	0.339
Insecta	Ephemeroptera	Baetidae	*Baetis brunneicolor*	3310	0.268
Insecta	Ephemeroptera	Baetidae	*Baetis intercalaris*	208	0.017
Insecta	Ephemeroptera	Baetidae	*Baetis tricaudatus*	14574	1.178
Insecta	Ephemeroptera	Baetidae	*Callibaetis*	163	0.013
Insecta	Ephemeroptera	Baetidae	*Camelobaetidius*	7	0.001
Insecta	Ephemeroptera	Baetidae	*Centroptilum*	1966	0.159
Insecta	Ephemeroptera	Baetidae	*Fallceon quilleri*	5991	0.484
Insecta	Ephemeroptera	Baetidae	*Iswaeon*	4264	0.345
Insecta	Ephemeroptera	Baetidae	*Paracloeodes*	34	0.003
Insecta	Ephemeroptera	Baetidae	*Pseudocloeon*	6003	0.485
Insecta	Ephemeroptera	Caenidae	*Caenis*	14014	1.133
Insecta	Ephemeroptera	Caenidae	*Cercobrachys*	2	0.000
Insecta	Ephemeroptera	Ceratopogonidae	*Dasyhelea*	129	0.010
Insecta	Ephemeroptera	Corixidae	*Palmacorixa*	1	0.000
Insecta	Ephemeroptera	Ephemerellidae	*Ephemerella*	32	0.003
Insecta	Ephemeroptera	Ephemeridae	*Hexagenia*	17304	1.399
Insecta	Ephemeroptera	Heptageniidae	*Heptagenia*	2896	0.234
Insecta	Ephemeroptera	Heptageniidae	Heptageniidae	550	0.044
Insecta	Ephemeroptera	Heptageniidae	*Stenacron interpunctatum*	44	0.004
Insecta	Ephemeroptera	Leptophlebiidae	*Leptophlebia*	42	0.003
Insecta	Ephemeroptera	Oligoneuriidae	*Isonychia*	1585	0.128
Insecta	Ephemeroptera	Tricorythidae	*Tricorythodes*	16538	1.337
Insecta	Hemiptera	Belostomatidae	*Belostoma*	74	0.006
Insecta	Hemiptera	Corixidae	Corixidae	2343	0.189
Insecta	Hemiptera	Corixidae	*Hesperocorixa*	47	0.004
Insecta	Hemiptera	Corixidae	*Sigara*	855	0.069
Insecta	Hemiptera	Corixidae	*Trichocorixa*	1371	0.111
Insecta	Hemiptera	Nepidae	*Ranatra*	24	0.002
Insecta	Hemiptera	Notonectidae	*Notonecta*	48	0.004
Insecta	Hemiptera	Pleidae	*Neoplea*	14	0.001
Insecta	Lepidoptera	Crambidae	Crambidae	299	0.024
Insecta	Lepidoptera	Pyralidae	*Petrophila*	56	0.005
Insecta	Megaloptera	Sialidae	*Sialis*	328	0.027
Insecta	Odonata	Aeschnidae	*Aeshna*	200	0.016
Insecta	Odonata	Aeshnidae	*Boyeria*	1	0.000
Insecta	Odonata	Calopterygidae	Calopterygidae	399	0.032
Insecta	Odonata	Calopterygidae	*Calopteryx*	412	0.033
Insecta	Odonata	Calopterygidae	*Hetaerina*	1663	0.134
Insecta	Odonata	Coenagrionidae	*Argia*	581	0.047
Insecta	Odonata	Coenagrionidae	*Coenagrion*	59	0.005
Insecta	Odonata	Coenagrionidae	Coenagrionidae	1251	0.101
Insecta	Odonata	Corduliidae	Corduliidae	2	0.000
Insecta	Odonata	Gomphidae	*Erpetogomphus*	7	0.001
Insecta	Odonata	Gomphidae	*Gomphus*	325	0.026
Insecta	Odonata	Gomphidae	*Ophiogomphus*	55	0.004
Insecta	Odonata	Libelluidae	*Plathemis*	46	0.004
Insecta	Odonata	Libellulidae	*Libellula*	243	0.020

Table 8 Continued

Class	Order	Family	FINAL ID	Total counts	Percent
Insecta	Plecoptera	Perlidae	*Perlidae*	16	0.001
Insecta	Plecoptera	Pteronarcidae	*Pteronarcys*	126	0.010
Insecta	Trichoptera	Brachycentridae	*Brachycentrus*	7488	0.605
Insecta	Trichoptera	Helicopsychidae	*Helicopsyche*	1157	0.094
Insecta	Trichoptera	Hydropsychidae	*Ceratopsyche bronta*	25	0.002
Insecta	Trichoptera	Hydropsychidae	*Cheumatopsyche*	2644	0.214
Insecta	Trichoptera	Hydropsychidae	*Hydropsyche betteni*	342	0.028
Insecta	Trichoptera	Hydropsychidae	*Hydropsyche incommoda*	21	0.002
Insecta	Trichoptera	Hydropsychidae	*Hydropsyche occidentalis*	1982	0.160
Insecta	Trichoptera	Hydropsychidae	*Hydropsyche simulans*	651	0.053
Insecta	Trichoptera	Hydropsychidae	Hydropsychidae	942	0.076
Insecta	Trichoptera	Hydroptilidae	*Hydroptila*	1694	0.137
Insecta	Trichoptera	Hydroptilidae	*Hydroptilidae*	146	0.012
Insecta	Trichoptera	Hydroptilidae	*Neotrichia*	8	0.001
Insecta	Trichoptera	Hydroptilidae	*Ochrotrichia*	30	0.002
Insecta	Trichoptera	Hydroptilidae	*Oxyethira*	436	0.035
Insecta	Trichoptera	Lepidostomatidae	*Lepidostoma*	5	0.000
Insecta	Trichoptera	Leptoceridae	Leptoceridae	346	0.028
Insecta	Trichoptera	Leptoceridae	*Nectopsyche*	132	0.011
Insecta	Trichoptera	Leptoceridae	*Nectopsyche candida*	286	0.023
Insecta	Trichoptera	Leptoceridae	*Nectopsyche diarina*	4359	0.352
Insecta	Trichoptera	Leptoceridae	*Oecetis*	113	0.009
Insecta	Trichoptera	Leptoceridae	*Triaenodes*	2	0.000
Insecta	Trichoptera	Limnephilidae	*Hesperophylax*	32	0.003
Insecta	Trichoptera	Limnephilidae	Limnephilidae	3	0.000
Insecta	Trichoptera	Limnephiloidae	*Ptilostomis*	5	0.000
Insecta	Trichoptera	Philopotamidae	*Chimarra*	282	0.023
Insecta	Trichoptera	Polycentropodidae	*Polycentropus*	29	0.002
Nemata			Nematoda	508	0.041
Nematomorpha	Gordioidea	Gordidae	*Nematomorpha*	44	0.004
Oligochaeta	Branchiobdellida	Citellata	*Branchiobdellida*	15	0.001
Oligochaeta	Haplotaxida	Enchytraeidae	*Enchytraeus*	487	0.039
Oligochaeta	Haplotaxida	Enchytraeidae	*Fridericia*	195	0.016
Oligochaeta	Haplotaxida	Naididae	*Nais behningi*	19	0.002
Oligochaeta	Haplotaxida	Naididae	*Nais bretscheri*	93	0.008
Oligochaeta	Haplotaxida	Naididae	*Nais communis*	98	0.008
Oligochaeta	Haplotaxida	Naididae	*Nais elinguis*	4	0.000
Oligochaeta	Haplotaxida	Naididae	*Nais variabilis*	4223	0.341
Oligochaeta	Haplotaxida	Naididae	*Ophidonais serpentina*	17	0.001
Oligochaeta	Haplotaxida	Naididae	*Slavina appendiculata*	60	0.005
Oligochaeta	Haplotaxida	Tubificidae	*Aulodrilus*	10	0.001
Oligochaeta	Haplotaxida	Tubificidae	*Limnodrilus*	858	0.069
Oligochaeta	Haplotaxida	Tubificidae	*Quistradrilus multisetosus*	118	0.010
Oligochaeta	Haplotaxida	Tubificidae	*Tubificidae*	3107	0.251
Oligochaeta	Lumbriculida	Lumbriculidae	*Lumbriculus*	102	0.008
Pelecypoda	Unionoida	Unionidae	*Lampsilis radiata*	6	0.000
Pelecypoda	Unionoida	Unionidae	*Lampsilis teres*	1	0.000
Pelecypoda	Unionoida	Unionidae	*Pyganodon grandis*	1	0.000
Pelecypoda	Unionoida	Unionidae	*Quadrula quadrula*	16	0.001
Pelecypoda	Veneroida	Pisidiidae	*Pisidium*	3576	0.289

Table 8 Continued

Class	Order	Family	FINAL ID	Total counts	Percent
Pelecypoda	Veneroida	Sphaeriidae	Sphaeriidae	2331	0.188
Pelecypoda	Veneroida	Sphaeriidae	*Sphaerium*	90	0.007
Turbellaria	Tricladida	Planariidae	*Turbellaria*	44	0.004
Turbellaria	Tricladida	Planariidae	*Dugesia tigrina*	1113	0.090
			Total	1237155	100.000
			Total taxa collected: 295		

Table 9. Macroinvertebrate Families collected during the Nebraska Stream Biological Program, 2010-2011.

Phylum	Class	Order	Family	Family Total	Family %
Mollusca	Gastropoda	Pulmonata	Planorbidae	832685	67.31
Arthropoda	Insecta	Diptera	Chironomidae	153166	12.38
Arthropoda	Insecta	Ephemeroptera	Baetidae	44968	3.63
Arthropoda	Insecta	Diptera	Simuliidae	31834	2.57
Arthropoda	Crustacea	Amphipoda		23935	1.93
Arthropoda	Insecta	Ephemeroptera	Ephemeridae	17304	1.40
Arthropoda	Insecta	Ephemeroptera	Tricorythidae	16538	1.34
Arthropoda	Insecta	Coleoptera	Elmidae	14804	1.20
Arthropoda	Insecta	Ephemeroptera	Caenidae	14016	1.13
Annelida	Oligochaeta	Haplotaxida	Tubificidae	9289	0.75
Arthropoda	Insecta	Trichoptera	Brachycentridae	7488	0.61
Arthropoda	Insecta	Trichoptera	Hydropsychidae	7339	0.59
Arthropoda	Insecta	Diptera	Ceratopogonidae	6189	0.50
Arthropoda	Insecta	Trichoptera	Leptoceridae	5238	0.42
Arthropoda	Insecta	Hemiptera	Corixidae	4617	0.37
Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	4285	0.35
Arthropoda	Crustacea	Isopoda	Asellidae	3782	0.31
Arthropoda	Crustacea	Decapoda	Cambaridae	3750	0.30
Mollusca	Pelecypoda	Veneroida	Pisidiidae	3576	0.29
Arthropoda	Insecta	Ephemeroptera	Heptageniidae	3490	0.28
Arthropoda	Insecta	Odonata	Coenagrionidae	3115	0.25
Mollusca	Pelecypoda	Veneroida	Sphaeriidae	2421	0.20
Arthropoda	Insecta	Trichoptera	Hydroptilidae	2314	0.19
Arthropoda	Insecta	Coleoptera	Gyrinidae	2284	0.18
Arthropoda	Arachnida	Trombidiformes	Sperchonidae	2191	0.18
Arthropoda	Insecta	Ephemeroptera	Oligoneuriidae	1585	0.13
Arthropoda	Insecta	Coleoptera	Dytiscidae	1289	0.10
Arthropoda	Insecta	Odonata	Coenagrionidae	1251	0.10
Arthropoda	Insecta	Trichoptera	Helicopsychidae	1157	0.09
Platyhelminthes	Turbellaria	Tricladida	Planariidae	1157	0.09
Arthropoda	Insecta	Diptera	Stratiomyidae	1068	0.09
Arthropoda	Insecta	Diptera	Tipulidae	930	0.08

Table 9 Continued

Phylum	Class	Order	Family	Family Total	Family %
Arthropoda	Insecta	Diptera	Ephydridae	837	0.07
Arthropoda	Insecta	Coleoptera	Haliplidae	712	0.06
Arthropoda	Insecta	Diptera	Empididae	693	0.06
Arthropoda	Insecta	Coleoptera	Hydrophilidae	689	0.06
Nemata	Nemata			508	0.04
Arthropoda	Insecta	Diptera	Culicidae	458	0.04
Arthropoda	Insecta	Diptera	Tabanidae	450	0.04
Arthropoda	Insecta	Odonata	Gomphidae	387	0.03
Arthropoda	Insecta	Diptera	Ptychopteridae	375	0.03
Arthropoda	Insecta	Lepidoptera	Pyralidae	355	0.03
Arthropoda	Insecta	Megaloptera	Sialidae	328	0.03
Arthropoda	Insecta	Diptera	Psychodidae	307	0.02
Arthropoda	Insecta	Diptera	Dixidae	293	0.02
Arthropoda	Insecta	Odonata	Libellulidae	289	0.02
Arthropoda	Insecta	Trichoptera	Philopotamidae	282	0.02
Arthropoda	Insecta	Odonata	Aeschnidae	200	0.02
Arthropoda	Insecta	Plecoptera	Pteronarcidae	142	0.01
Arthropoda	Insecta	Coleoptera	Dryopidae	121	0.01
Arthropoda	Insecta	Diptera	Muscidae	117	0.01
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	102	0.01
Arthropoda	Insecta	Hemiptera	Belostomatidae	74	0.01
Arthropoda	Insecta	Hemiptera	Notonectidae	48	0.00
Nematomorpha	Nematomorpha	Gordioidea	Gordidae	44	0.00
Arthropoda	Insecta	Ephemeroptera	Leptophlebiidae	42	0.00
Arthropoda	Insecta	Trichoptera	Limnephiloidae	40	0.00
Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	32	0.00
Arthropoda	Insecta	Diptera	Athericidae	29	0.00
Arthropoda	Insecta	Trichoptera	Polycentropodidae	29	0.00
Arthropoda	Insecta	Hemiptera	Nepidae	24	0.00
Mollusca	Pelecypoda	Unionoida	Unionidae	24	0.00
Arthropoda	Insecta	Coleoptera	Hydraenidae	22	0.00
Annelida	Oligochaeta	Branchiobdellida	Citellata	15	0.00
Arthropoda	Insecta	Hemiptera	Pleidae	14	0.00
Arthropoda	Insecta	Coleoptera	Scirtidae	6	0.00
Arthropoda	Insecta	Trichoptera	Lepidostomatidae	5	0.00
Arthropoda	Insecta	Diptera	Dolichopodidae	3	0.00

Table 9 Continued

Phylum	Class	Order	Family	Family Total	Family %
Arthropoda	Insecta	Odonata	Corduliidae	2	0.00
Arthropoda	Insecta	Diptera	Phryganeidae	1	0.00
Arthropoda	Insecta	Diptera	Sciomyzidae	1	0.00

Table 10. Minimum, 25th percentile, median, 75th percentile, maximum, and number of samples for macroinvertebrate metrics during the Nebaraska Stream Biological Monitoring Program, 2010-2011.

Metric	Minimum	25%tile	Median	75th%tile	Maximum	Number Sampled
2010 (Elkhorn and Missouri Tributaries Basins						
ICI	4	10	12	16	22	34
TotalTax	6	25.5	30.5	40.5	47	34
EPTTax	0	2.5	5.5	8.5	14	34
HBI	4.27	5.24	5.53	5.84	6.34	34
Dom01Pct	19.07	27.68	37.66	49.97	76.79	34
2011 (North Platte, South Platte, White-Hat Basins)						
ICI	4	10	14	16	20	35
TotalTax	20	33	40	45	59	35
EPTTax	2	5	7.5	11	16	35
HBI	3.92	4.65	5.29	5.73	6.82	35
Dom01Pct	0.42	37.11	76.07	95.72	100	35

Table 11. Minimum, 25th percentile, median, 75th percentile, maximum, and number of samples for habitat metrics during the Nebraska Stream Biological Monitoring Program, 2010-2011.

Metric	Minimum	25%tile	Median	75%tile	Maximum	Number Sampled
Nebraska Habitat Index (Habscore5)	26	34	38	44	52	69
Incision/width ratio (inciswid)	0.01	0.22	0.53	1.02	1.89	69
Percent sand substrate (Pct_SA)	0	0	9.1	74.5	100	69
Percent rowcrop (w1h_crop)	0	0	0	0.42	1	69
Percent riffle (Pct_RI)	0	0	0	2	49	69
Percent undercut banks (xfc_ucb)	0	0.004	0.02	0.04	0.19	69
Percent overhanging vegetation (pfc_ohc)	0	0.5	0.81	1	1	69
Percent silt substrate (Pct_FN)	0	0	3.6	54.5	100	69
Middle Canopy layer along styaream bank (xcm)	0.04	0.13	0.25	0.37	0.87	69
Percent pools (Pct_PL)	0	0	0	15	70	69
Percent barren banks (xgb)	0	0.01	0.03	0.09	0.3	69

Table 12. Minimum, 25th percentile, median, 75th percentile, maximum, and number of samples measured for Field Chemistry Parameters for the Nebraska Stream Biological Monitoring Program, 2010-2011.

Field Chemistry Parameter	Minimum	25%tile	Median	75%tile	Maximum	Number Sampled
2010 (Elkhorn and Missouri Tributaries Basins						
Conductivity, µmho/cm	241	614	729	847	1289	34
Dissolved Oxygen, mg/l	6.4	8.2	8.6	9.4	16	34
pH	7.59	7.86	7.94	8.14	8.45	34
Stream Discharge, cfs	0.65	5.97	9.9	19.83	69.13	34
Turbidity, NTU	5.3	27.5	39.5	88.9	238.6	34
Water Temperature,˚C	14.9	18.1	21.2	23.1	37.5	34
2011 (North Platte, South Platte, White-Hat Basins)						
Conductivity, µmho/cm	159	343	461	791	1966	35
Dissolved Oxygen, mg/l	4.4	7.7	8.4	9.3	14.6	35
pH	7.32	7.96	8.18	8.31	9.48	35
Stream Discharge, cfs	0.44	1.72	8.76	18.13	526.3	35
Turbidity, NTU	0.6	4.3	17.1	55	730	35
Water Temperature,˚C	11.3	17.1	19.4	22.8	26.9	35

Table 13. A comparison of Habitat, Macroinvertebrate, and Fish Stream Evaluation Scores Using The Ecoregional Classification scheme, 1997-2011

					Ecoregion classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
1997	009904	BB1003	Big Blue River	Spring Cr. (BB)	28	16	50.39	Excellent	Excellent	Excellent	S	
2007	BB1126	BB1126	Big Blue River	Wolf Cr.	24	12	56.05	Good	Good	Good	S	
1997	009813	BB1115	Big Blue River	Bear Cr.	28	10	62.82	Fair	Good	Fair	S	
2007	BB1129	BB1129	Big Blue River	Cub Cr.	26	18	40.97	Fair	Excellent	Fair	S	
2007	009728	BB1110	Big Blue River	Wolf Cr.	34	16	66.83	Good	Fair	Fair	S	
2007	BB1127	BB1127	Big Blue River	Soap Cr.	36	10	72.64	Good	Excellent	Good	S	
2007	BB1128	BB1128	Big Blue River	Pierce Cr.	28	14	43.70	Fair	Excellent	Fair	S	
2007	009901	BB1120	Big Blue River	Cub Cr.	32	12	49.21	Good	Good	Good	S	
1997	009903	BB1130	Big Blue River	Mud Cr.	32	10	55.37	Fair	Good	Fair	S	
1997	009555	BB2100	Big Blue River	Turkey Cr. (A)	32	16	43.79	Fair	Good	Fair	S	
1997	009910	BB2101	Big Blue River	Turkey Cr. (B)	36	10	61.47	Good	Good	Good	S	
2007	BB2130	BB2130	Big Blue River	Turkey Cr.	30	12	53.13	Fair	Excellent	Fair	S	
2007	BB2131	BB2131	Big Blue River	Turkey Cr.	24	14	43.80	Fair	Good	Fair	S	
2007	BB2132	BB2132	Big Blue River	S. Fk. Swan Cr.	28	18	38.65	Good	Good	Good	S	
2007	BB2133	BB2133	Big Blue River	Turkey Cr.	36	8	45.29	Good	Poor	Undetermined	S	
2007	BB3134	BB3134	Big Blue River	Beaver Cr.	40	20	54.37	Poor	Good	Undetermined	S	
2007	BB3135	BB3135	Big Blue River	W. Fk. Big Blue River	32	4	41.41	Good	Good	Good	S	
2007	BB3136	BB3136	Big Blue River	W. Fk. Big Blue River	30	10	58.53	Poor	Fair	Undetermined	S	
1997	009564	BB4105	Big Blue River	Unnamed Trib Blue River	28	24	43.82	Fair	Good	Fair	S	

Table 13 Continued

					Ecoregion classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
1997	009902	BB4125	Big Blue River	Plum Cr.	32	12	41.77	Excellent	Good	Good	S	
2007	BB4137	BB4137	Big Blue River	Plum Cr.	30	10	41.54	Fair	Fair	Fair	S	
2007	BB4138	BB4138	Big Blue River	Big Blue River	26	10	38.23	Fair	Fair	Fair	S	
2007	BB4139	BB4139	Big Blue River	Lincoln Cr.	32	8	44.10	Fair	Poor	Undetermined	S	
2007	BB4140	BB4140	Big Blue River	Lincoln Cr.	30	14	39.55	Poor	Good	Undetermined	S	
2000	009570	EL1093	Elkhorn River	Tracy Cr.	36	12	44.26	Good	Poor	Undetermined	S	
2000	009569	EL1094	Elkhorn River	Union Cr.	34	14	66.20	Fair	Good	Fair	S	
2000	009704	EL1095	Elkhorn River	Fremont Storm Drainage Canal	28	10	0.00	Good	Excellent	Good	S	
2000	010181	EL1096	Elkhorn River	Unnamed Trib. Pebble Cr.	32	8	80.58	Fair	Poor	Undetermined	S	
2000	010182	EL1097	Elkhorn River	Dry Cr.	36	8	29.93	Poor	Excellent	Undetermined	S	
2000	010183	EL1098	Elkhorn River	Maple Cr.	36	8	46.21	Poor	Poor	Poor	N	x
2000	010184	EL1099	Elkhorn River	Elkhorn River (E)	28	12	29.28	Poor	Good	Undetermined	S	
2005	EL1113	EL1113	Elkhorn River	Maple Cr.	32	10	32.54	Fair	Poor	Undetermined	S	
2005	EL1115	EL1115	Elkhorn River	Pebble Cr.	30	16	42.47	Fair	Poor	Undetermined	S	
2005	EL1116	EL1116	Elkhorn River	Bell Cr.	38	16	22.79	Good	Fair	Good	S	
2005	EL1117	EL1117	Elkhorn River	W. Fork Maple Cr.	38	14	45.64	Good	Poor	Undetermined	S	
2005	EL1118	EL1118	Elkhorn River	E. Fork Maple Cr.	38	10	56.75	Good	Good	Good	S	
2005	EL1119	EL1119	Elkhorn River	Elkhorn River	38	10	51.13	Fair	Good	Fair	S	
2005	EL1120	EL1120	Elkhorn River	Elkhorn River	38	20	67.45	Fair	Good	Undetermined	S	
2005	EL1121	EL1121	Elkhorn River	Humbug Cr.	38	8	47.16	Good	Excellent	Good	S	
2005	EL1122	EL1122	Elkhorn River	Elkforn River	38	10	33.18	Poor	Good	Undetermined	S	
2005	EL1123	EL1123	Elkhorn River	Union Cr.	30	16	33.58	Fair	Poor	Undetermined	S	

Table 13 Continued

					Ecoregion classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
2010	EL1134	EL1134	Elkhorn River	Bell Creek	28	12	34.93	Good	Poor	Undetermined	S	
2010	EL1135	EL1135	Elkhorn River	Maple Creek	36	8	50.79	Fair	Poor	Undetermined	S	
2010	EL1136	EL1136	Elkhorn River	Rock Creek	34	14	70.41	Poor	Good	Undetermined	S	
2010	EL1137	EL1137	Elkhorn River	Plum Creek	26	12	80.76	Good	Excellent	Good	S	
2010	EL1138	EL1138	Elkhorn River	S. Br. Humbug Creek	28	12	51.40	Fair	Excellent	Fair	S	
2010	EL1139	EL1139	Elkhorn River	Meridian Cr. - E. of Madison	32	20	41.75	Fair	Good	Fair	S	
2000	010185	EL2100	Elkhorn River	Logan Cr.	34	14	0.00	Good	Fair	Fair	S	
2000	010186	EL2102	Elkhorn River	Un. Trib. Logan Cr.	28	26	58.97	Good	Poor	Undetermined	S	
2000	010187	EL2103	Elkhorn River	Baker Cr.	32	24	34.27	Excellent	Good	Good	S	
2000	010188	EL2104	Elkhorn River	Dog Cr.	34	12	36.88	Excellent	Poor	Undetermined	S	
2005	EL2124	EL2124	Elkhorn River	Middle Logan Cr.	26	16	59.34	Fair	Poor	Undetermined	S	
2010	EL2140	EL2140	Elkhorn River	Little Logan Cr.	34	8	40.37	Good	Good	Good	S	
2010	EL2141	EL2141	Elkhorn River	Rattlesnake Cr.	38	14	43.63	Poor	Fair	Undetermined	S	
2010	EL2142	EL2142	Elkhorn River	Deer Cr.	36	16	77.66	Good	Good	Good	S	
2000	010189	EL3105	Elkhorn River	Dry Cr.	30		64.50	Good	Excellent	Good	S	
2005	EL3125	EL3125	Elkhorn River	Dry Cr.	34	18	32.91		Excellent	Excellent	S	
2010	EL3144	EL3144	Elkhorn River	N. Fork Elkhrn River	32	14	42.37	Good	Poor	Undetermined	S	
2010	EL3144	EL3144	Elkhorn River	N. Fork Elkhrn River	44	10	75.14	Good	Fair	Fair	S	
2010	EL3145	EL3145	Elkhorn River	Willow Cr.	40	18	57.69	Fair	Excellent	Fair	S	
2000	010194	EL4013	Elkhorn River	S. Fork Elkhorn River	30	16	43.60	Good	Good	Good	S	
2002	009579	EL4107	Elkhorn River	Elkhorn River (A)	32	20	74.61	Good	Good	Good	S	
2002	009725	EL4109	Elkhorn River	Elkhorn River (B)	36	26	75.14	Good	Excellent	Good	S	
2002	009726	EL4110	Elkhorn	Elkhorn River (C)	38	14	52.08	Excellent	Excellent	Excellent	S	

Table 13 Continued

					Ecoregion classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
			River									
2002	010192	EL4111	Elkhorn River	Elkhorn River (D)	38	28	60.99	Good	Good	Good	S	
	EL4126	EL4126	Elkhorn River	Battle Cr.	44	10	46.42	Excellent	Excellent	Excellent	S	
2005	EL4126	EL4126	Elkhorn River	Battle Cr.	32	10	57.42	Fair	Good	Fair	S	
2005	EL4127	EL4127	Elkhorn River	Elkhorn River	36	14	59.13	Fair	Good	Fair	S	
2005	EL4128	EL4128	Elkhorn River	Elkhorn River	40	18	73.83	Good	Good	Good	S	
2005	EL4129	EL4129	Elkhorn River	Clearwater Cr.	34	12	69.63	Poor	Good	Undetermined	S	
2010	EL4129	EL4129	Elkhorn River	Clearwater Cr.	38	6	72.75	Poor	Excellent	Undetermined	S	
2005	EL4130	EL4130	Elkhorn River	Elkhorn River	38	8	63.05	Poor	Good	Undetermined	S	
2005	EL4131	EL4131	Elkhorn River	Elkhorn River	28	6	70.29	Poor	Good	Undetermined	S	
			Elkhorn River	Holt Cr.	42	10	38.01	Poor	Excellent	Undetermined	S	
2005	EL4132	EL4132	Elkhorn River	Holt Cr.	48	18	78.52	Poor	Fair	Undetermined	S	
2010	EL4146	EL4146	Elkhorn River	Buffalo Cr.	38	10	50.80	Good	Excellent	Good	S	
2010	EL4147	EL4147	Elkhorn River	Cache Cr.	34	14	81.63	Poor	Good	Undetermined	S	
2010	EL4148	EL4148	Elkhorn River	S. Fk. Elkhorn River	46	18	73.70	Poor	Excellent	Undetermined	S	
2010	EL4149	EL4149	Elkhorn River	Elkhorn River	28	14	63.59	Good	Excellent	Good	S	
2005	El4133	EL4133	Elkhorn River	Holt Cr.	36		77.03	Poor	Good	Undetermined	S	
1997	009900	LB1002	Little Blue River	Coon Cr.	28	20	41.39		Excellent	Excellent	S	
1997	009906	LB1081	Little Blue River	Little Blue River (A)	38	10	74.37	Good	Fair	Fair	S	
2007	LB1117	LB1117	Little Blue River	Dry Branch	28	18	47.44	Fair	Excellent	Fair	S	
2007	LB1131	LB1131	Little Blue River	Little Blue River	48	22	46.91	Good	Good	Good	S	
1997	009905	LB2080	Little Blue River	Little Blue River (B)	30	26	49.90	Excellent	Good	Good	S	
1997	009584	LB2090	Little Blue River	Big Sandy Cr. (A)	40	6	42.32	Excellent	Good	Good	S	

Table 13 Continued

					Ecoregion classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
1997	009713	LB2091	Little Blue River	Big Sandy Cr. (B)	32	22	58.74	Poor	Fair	Undetermined	S	
1997	009712	LB2095	Little Blue River	Liberty Cr.	26	14	40.14	Excellent	Good	Good	S	
1997	009907	LB2100	Little Blue River	Elk Cr.	30	12	52.55	Good	Fair	Fair	S	
1997	009908	LB2105	Little Blue River	Spring Cr. (LB)	36	20	51.00	Fair	Good	Fair	S	
1997	009909	LB2110	Little Blue River	Dry Sandy Cr.	46	26	69.38	Good	Good	Good	S	
1997	009814	LB2115	Little Blue River	Rock Cr.	38	12	69.14	Excellent	Excellent	Excellent	S	
2010	LB2118	LB2118	Little Blue River	Little Blue River	34	14	22.76	Fair	Excellent	Fair	S	
2007	LB2119	LB2119	Little Blue River	Spring Cr.	36	12	67.65	Good	Poor	Undetermined	S	
2007	LB2120	LB2120	Little Blue River	Liberty Cr.	28	14	62.77	Fair	Excellent	Fair	S	
2007	LB2121	LB2121	Little Blue River	Spring Cr.	34	18	62.78	Good	Excellent	Good	S	
2007	LB2122	LB2122	Little Blue River	Little Blue River	38	12	58.45	Good	Excellent	Good	S	
2007	LB2123	LB2123	Little Blue River	Little Blue River	28	16	58.66	Fair	Good	Fair	S	
2007	LB2124	LB2124	Little Blue River	Elk Cr.	28	18	59.29	Good	Good	Good	S	
2007	LB2125	LB2125	Little Blue River	Big Sandy Cr.	44	20	65.55	Good	Good	Good	S	
2007	LB2126	LB2126	Little Blue River	Litle Blue River	34	16	44.78	Good	Excellent	Good	S	
2007	LB2127	LB2127	Little Blue River	Little Blue River	36	4	60.40	Good	Good	Good	S	
2007	LB2129	LB2129	Loup River	Spring Cr.	30	12	67.10	Poor	Excellent	Undetermined	S	
1998	009721	LO1130	Loup River	S. Branch Timber Cr.	42	10	58.54	Fair	Excellent	Fair	S	
2008	LO1181	LO1181	Loup River	Beaver Cr.	48	16	76.03	Poor	Good	Undetermined	S	
2008	LO1182	LO1182	Loup River	Cedar River	34	12	43.87	Good	Excellent	Good	S	
2008	LO1183	LO1183	Loup River	Cottonwood Cr.	44	18	75.65	Fair	Good	Fair	S	
2008	LO1184	LO1184	Loup River	Beaver Cr.	38	10	74.14	Good	Excellent	Good	S	
1998	009591	LO2037	Loup River	Turtle Cr.	44	26	63.72	Fair	Excellent	Fair	S	
1998	009811	LO2085	Loup River	N. Loup River (B)	40	18	67.78	Excellent	Good	Good	S	
1998	009816	LO2135	Loup River	Calamus River	50	26	80.26	Good	Excellent	Good	S	

Table 13 Continued

					Ecoregion classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
1998	009720	LO2140	Loup River	Goose Cr.	48	16	81.64	Excellent	Excellent	Excellent	S	
1998	009576	LO2145	Loup River	Big Cr.	46	22	77.11	Good	Excellent	Good	S	
1998	009719	LO2150	Loup River	N. Loup River (A)	46	24	76.64	Excellent	Good	Good	S	
1998	009977	LO2151	Loup River	N. Loup River (C)	30	24	76.17	Excellent	Excellent	Excellent	S	
1998	009738	LO2155	Loup River	Davis Cr.	34	18	69.16	Excellent	Excellent	Excellent	S	
1998	009708	LO2160	Loup River	Munson Cr. (A)	32	20	34.72	Good	Excellent	Good	S	
1998	009978	LO2161	Loup River	Munson Cr. (B)	42	16	60.82	Excellent	Poor	Undetermined	S	
1998	009980	LO3172	Loup River	Mid. Loup River (C)	26	10	65.29	Good	Good	Good	S	
2008	LO2185	LO2185	Loup River	Mira Cr.	40	14	59.19	Fair	Excellent	Fair	S	
2008	LO2186	LO2186	Loup River	N. Loup River	44	10	61.87	Good	Good	Good	S	
2008	LO2187	LO2187	Loup River	N. Loup River	30	14	87.80	Poor	Good	Undetermined	S	
2008	LO2192	LO2192	Loup River	N. Loup River	44	14	81.25	Good	Excellent	Good	S	
2008	LO2200	LO2103B	Loup River	Goose Cr.	46	20	59.51	Poor	Excellent	Undetermined	S	
2008	LO3088	LO3088	Loup River	Dismal River	48	16	48.07	Good	Good	Good	S	
2008	LO3165	LO3165	Loup River	N. Fork Dismal River (A)	54	20	49.64	Good	Fair	Fair	S	
1998	009979	LO3166	Loup River	N. Fork Dismal River (B)	48	16	54.12	Good	Good	Good	S	
1998	009563	LO3170	Loup River	Mid. Loup River (B)	24	12	51.76	Good	Good	Good	S	
2008	LO3189	LO3189	Loup River	Mid. Loup River	44	18	72.60	Fair	Good	Fair	S	
2008	LO3190	LO3190	Loup River	Mid. Loup River	30	20	73.48	Good	Excellent	Good	S	
2008	LO3191	LO3191	Loup River	Victoria Cr.	40	4	70.78	Excellent	Excellent	Excellent	S	
2008	LO3193	LO3193	Loup River	Oak Cr.	44	18	68.57	Poor	Excellent	Undetermined	S	
1998	009981	LO4175	Loup River	South Loup River	26	14	63.68	Good	Excellent	Good	S	
2008	LO4196	LO4196	Loup River	Mud Cr.	46	18	70.38	Good	Good	Good	S	
2008	LO4194	LO4194	Loup River	South Loup River	34	6	47.39	Good	Excellent	Good	S	
2008	LO4195	LO4195	Loup River	South Loup River	36	10	24.65	Poor	Good	Undetermined	S	
2008	LO4196	LO4196	Loup River	Mud Cr.	46	14	53.13	Fair	Poor	Fair	S	
2008	LO4197	LO4197	Loup River	S. Loup River	26	14	39.31	Good	Good	Good	S	
1999	LP1002	LP1002	Lower Platte River	Four Mile Cr.	42	22	50.77	Good	Poor	Undetermined	S	
2004	010087	LP1023	Lower Platte River	Pawnee Cr.	46	20	72.76	Excellent	Good	Good	S	
2004	009560	LP1153	Lower Platte River	Pawnee Cr.	34	18	48.13	Good	Excellent	Good	S	
2002	009746	LP1157	Lower Platte	Decker Cr.	42	20	42.23	Good	Good	Good	S	

Table 13 Continued

					Ecoregion classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
			River									
2004	LP1170	LP1170	Lower Platte River	Bachelor Br. To Eight Mile Cr.	34	18	70.41	Good	Fair	Fair	S	
2004	LP1171	LP1171	Lower Platte River	Lost Cr.	28	4	20.11	Good	Excellent	Good	S	
2004	LP1172	LP1172	Lower Platte River	Shell Cr.	30	16	47.33	Poor	Poor	Poor	N	x
2004	LP1173	LP1173	Lower Platte River	Shell Cr.	28	12	62.11	Good	Good	Good	S	
1999	009551	LP2160	Lower Platte River	N. Oak Cr.	36	10	56.78	Fair	Excellent	Fair	S	
1999	009552	LP2161	Lower Platte River	Un. Trib. Little Salt Cr.	30	12	41.46	Fair	Good	Fair	S	
1999	010091	LP2162	Lower Platte River	Sand Cr.	32	14	69.05	Fair	Fair	Fair	S	
1999	010092	LP2163	Lower Platte River	Oak Cr.	28	8	75.00	Good	Excellent	Good	S	
1999	010093	LP2164	Lower Platte River	Un. Trib. Cottonwood Cr.	32	10	42.26	Poor	Excellent	Undetermined	S	
1999	010094	LP2165	Lower Platte River	Duck Cr.	26	18	71.68	Fair	Fair	Fair	S	
1999	010096	LP2167	Lower Platte River	Miller Br.	24	16	65.33	Good	Excellent	Good	S	
1999	010097	LP2168	Lower Platte River	North Br.	30	18	46.81	Good	Excellent	Good	S	
1999	010098	LP2169	Lower Platte River	Hickman Br.	28	14	39.19	Good	Good	Good	S	
2004	LP2174	LP2174	Lower Platte River	Salt Cr.	22	16	46.96	Good	Poor	Undetermined	S	
2004	LP2175	LP2175	Lower Platte River	Wahoo Cr.	34	12	41.91	Good	Good	Good	S	
2004	LP2176	LP2176	Lower Platte River	Bates Br.	36	10	38.42	Fair	Fair	Fair	S	
2004	LP2177	LP2177	Lower Platte River	Middle Cr.	32	14	53.35	Fair	Poor	Undetermined	S	
2004	LP2178	LP2178	Lower Platte River	Middle Oak+E194 Cr.	32	16	33.40	Good	Good	Good	S	
2004	LP2179	LP2179	Lower Platte River	Cottonwood Cr.	30	12	40.14	Good	Poor	Undetermined	S	
2004	LP2180	LP2180	Lower Platte River	Silver Cr.	34	8	44.72	Fair	Fair	Fair	S	
2004	LP2181	LP2181	Lower Platte River	Olive Br.	30	14	49.80	Poor	Good	Undetermined	S	
2004	LP2182	LP2182	Lower Platte River	Rock Cr.	24	20	66.69	Good	Good	Fair	S	

Table 13 Continued

					Ecoregion classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
2004	LP2183	LP2183	Lower Platte River	Clear Cr.	36	20	50.01	Good	Excellent	Good	S	
2004	LP2184	LP2184	Lower Platte River	Sand Cr.	36	18	51.87	Good	Good	Good	S	
2004	LP2185	LP2185	Lower Platte River	Dee Cr.	34	10	41.22	Good	Good	Good	S	
2004	LP2186	LP2186	Lower Platte River	Wahoo Cr.	28	14	62.83	Fair	Fair	Fair	S	
2004	LP2187	LP2187	Lower Platte River	N. Fk. Rock Cr.	40	14	46.12	Good	Excellent	Good	S	
2004	MP1003	MP1003	Middle Platte River	Clear Cr.	40	14	72.59	Good	Good	Good	S	
2001	009580	MP1050	Middle Platte River	Platte River (Side Channel)	36	12	67.26	Good	Excellent	Good	S	
2001	010176	MP1051	Middle Platte River	Silver Cr.	24	14	61.51	Fair	Excellent	Fair	S	
2006	MP1063	MP1063	Middle Platte River	Prairie Cr.	46	6	63.70	Good	Good	Good	S	
2001	010177	MP2052	Middle Platte River	Platte River (Issac Walton)	46	12	63.54	Poor	Good	Undetermined	S	
2001	010178	MP2053	Middle Platte River	Platte River	44	16	48.01	Fair	Good	Good	S	
2001	010179	MP2054	Middle Platte River	Wood River	40	16	61.81	Good	Good	Good	S	
2001	010180	MP2055	Middle Platte River	Platte River (North Channel)	34	14	70.73	Good	Good	Good	S	
2001	010150	MP2057	Middle Platte River	Platte River	36	22	74.14	Good	Excellent	Good	S	
2001	010151	MP2059	Middle Platte River	Spring Cr.	40	12	60.87	Excellent	Excellent	Excellent	S	
2001	009573	MP2060	Middle Platte River	Spring Cr.	38	22	74.58	Fair	Good	Fair	S	
2001	010152	MP2061	Middle Platte River	Pawnee Cr.	48	26	69.87	Excellent	Excellent	Excellent	S	
2001	010175	MP2062	Middle Platte River	Pawnee Cr.	42	12	63.44	Excellent	Excellent	Excellent	S	
2006	MP2064	MP2064	Middle Platte River	Platte River	32	14	16.99	Fair	Good	Fair	S	
2006	MP2065	MP2065	Middle Platte River	Spring Cr.	42	12	61.54	Good	Poor	Undetermined	S	
2006	MP2066	MP2066	Middle Platte River	Platte River	40	8	54.60	Fair	Good	Fair	S	
2006	MP2067	MP2067	Middle Platte River	Platte River	26	22	55.32	Fair	Good	Fair	S	
2000	009556	MT1041	Missouri	Tekamah Cr. (B)	36	18	60.46	Excellent	Good	Good	S	

Table 13 Continued

					Ecoregion classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
			Tribs									
2000	010195	MT1050	Missouri Tribs	Un. Trib. Blackbird Cr. (A)	36	24	51.12	Good	Excellent	Good	S	
2000	009718	MT1130	Missouri Tribs	Un. Trib. Blackbird Cr. (B)	26	8	63.07	Excellent	Good	Good	S	
2000	010196	MT1132	Missouri Tribs	Walnut Cr.	22	4	73.50	Poor	Excellent	Undetermined	S	
2000	010197	MT1133	Missouri Tribs	Un. Trib. Big Papillion Cr.	28	24	59.70	Poor	Excellent	Undetermined	S	
2000	010198	MT1134	Missouri Tribs	Pigeon Cr. (B)	26	10	55.15	Excellent	Good	Good	S	
2000	010199	MT1135	Missouri Tribs	Wood Cr.	36	22	67.92	Fair	Good	Good	S	
2000	010203	MT1336	Missouri Tribs	Tekamah Cr. (A)	38	22	61.25	Excellent	Excellent	Excellent	S	
2000	010201	MT1137	Missouri Tribs	Omaha Cr.	36	14	31.86	Excellent	Excellent	Excellent	S	
2005	MT1148	MT1148	Missouri Tribs	S. Br. Papillion Cr.	34	16	47.52	Good	Poor	Undetermined	S	
2005	MT1150	MT1150	Missouri Tribs	Big Papillion Cr.	36	12	19.18	Good	Good	Good	S	
2005	MT1151	MT1151	Missouri Tribs	Long Cr.	40	14	62.79	Fair	Poor	Undetermined	S	
2005	MT1152	MT1152	Missouri Tribs	Mill Cr.	34	16	37.89	Good	Excellent	Good	S	
2005	MT1153	MT1153	Missouri Tribs	Silver CR.	28	14	38.73	Good	Poor	Undetermined	S	
2005	MT1154	MT1154	Missouri Tribs	Cow Cr.	34	14	32.51	Good	Poor	Undetermined	S	
2005	MT1156	MT1156	Missouri Tribs	N. Omaha Cr.	32	16	52.71	Good	Poor	Undetermined	S	
2005	MT1157	MT1157	Missouri Tribs	Omaha Cr.	40	6	65.70	Good	Good	Good	S	
2010	MT1169	MT1169	Missouri Tribs	Un Trib to Papillion Cr.	44	10	39.86	Poor	Excellent	Undetermined	S	
2010	MT1170	MT1170	Missouri Tribs	North Br West Papillion Cr.	32	8	45.58	Fair	Poor	Undetermined	S	
2010	MT1171	MT1171	Missouri Tribs	Thomas Cr.	40	12	42.52	Poor	Good	Undetermined	S	
2010	MT1172	MT1172	Missouri Tribs	Big Papillion Cr.	36	8	58.63	Fair	Fair	Good	S	
2010	MT1173	MT1173	Missouri Tribs	Silver Cr.	32	14	43.75	Poor	Good	Undetermined	S	
2010	MT1174	MT1174	Missouri Tribs	Cow Cr.	42	16	50.68	Good	Good	Good	S	

Table 13 Continued

					Ecoregion classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
2010	MT1184	MT1184	Missouri Tribs	Elm Cr.	36	6	0.00	Good	Good	Good	S	
2000	009714	MT2138	Missouri Tribs	Un. Trib. South Cr.	52	22	66.88	Poor	Poor	Undetermined	S	
2000	009727	MT2139	Missouri Tribs	Howe Cr.	28	8	47.88	Excellent	Excellent	Excellent	S	
2000	010202	MT2140	Missouri Tribs	E. Bow Cr.	48	24	66.47	Poor	Good	Undetermined	S	
2000	010200	MT2141	Missouri Tribs	Beaver Cr.	26	10	45.80	Excellent	Excellent	Excellent	S	
2000	010204	MT2142	Missouri Tribs	Aowa Cr.	44	22	61.06	Fair	Good	Fair	S	
2000	010205	MT2143	Missouri Tribs	Un. Trib. Norwegian Bow Cr.	38	20	48.05	Excellent	Excellent	Excellent	S	
2000	010206	MT2144	Missouri Tribs	Bow Cr. (B)	40		44.55	Good	Good	Good	S	
2000	010207	MT2145	Missouri Tribs	Bow Cr. (A)	22	16	34.81		Good	Good	S	
2000	010208	MT2146	Missouri Tribs	Jordan Cr.	32	28	90.81	Good	Poor	Undetermined	S	
2000	010209	MT2147	Missouri Tribs	Un. Trib . Bazile Cr.	28	8	35.61	Excellent	Excellent	Excellent	S	
2005	MT2158	MT2158	Missouri Tribs	Elk Cr.	30	16	39.13	Poor	Poor	Undetermined	S	
2005	MT2159	MT2159	Missouri Tribs	Elk Cr.	36	14	58.86	Good	Poor	Undetermined	S	
2005	MT2160	MT2160	Missouri Tribs	Elk Cr.	34	18	76.86	Good	Good	Good	S	
2005	MT2161	MT2161	Missouri Tribs	Lime Cr.	32	14	59.37	Good	Excellent	Good	S	
2005	MT2162	MT2162	Missouri Tribs	W. Bow Cr.	32	12	73.39	Good	Good	Good	S	
2005	MT2163	MT2163	Missouri Tribs	Un. Trib. Norwegian Bow Cr.	38	18	60.58	Fair	Excellent	Excellent	S	
2005	MT2164	MT2164	Missouri Tribs	Norwegian Bow Cr.	34	18	48.21	Good	Excellent	Good	S	
2005	MT2165	MT2165	Missouri Tribs	W. Bow Cr.	34	16	56.58	Good	Good	Good	S	
2005	MT2166	MT2166	Missouri Tribs	Little Bazile Cr.	30	14	91.90	Good	Good	Good	S	
2005	MT2167	MT2167	Missouri Tribs	Unnamed Trib. Bazile Cr.	46	10	60.17	Good	Excellent	Good	S	
2005	MT2168	MT2168	Missouri Tribs	Bazile Cr.	34	10	60.24	Fair	Excellent	Fair	S	
2010	MT2175	MT2175	Missouri	Elk Cr.	32	10	50.69	Fair	Excellent	Fair	S	

Table 13 Continued

					Ecoregion classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
			Tribs									
2010	MT2176	MT2176	Missouri Tribs	Elk Cr.	38	8	47.72	Fair	Good	Fair	S	
2010	MT2177	MT2177	Missouri Tribs	South Cr.	36	18	30.93	Poor	Good	Undetermined	S	
2010	MT2178	MT2178	Missouri Tribs	South Cr.	50		84.67	Good	Poor	Undetermined	S	
2010	MT2179	MT2179	Missouri Tribs	Badger Cr.	40	12	61.59		Excellent	Excellent	S	
2010	MT2180	MT2180	Missouri Tribs	Norwegian Bow Cr.	48	4	31.88	Fair	Excellent	Fair	S	
2010	MT2181	MT2181	Missouri Tribs	Antelope Cr.	38	18	62.93	Poor	Poor	Undetermined	S	x
2010	MT2182	MT2182	Missouri Tribs	Little Bazile Cr.	52	22	66.01	Good	Excellent	Good	S	
2010	MT2183	MT2183	Missouri Tribs	Bazile Cr.	34	12	0.00	Excellent	Excellent	Excellent	S	
1999	009703	NE1177	Nemaha River	Ervine Cr.	38	22	50.27	Fair	Poor	Undetermined	S	
1999	009705	NE1178	Nemaha River	Duck Cr.	30	20	59.63	Excellent	Good	Good	S	
1999	010100	NE1179	Nemaha River	Honey Cr.	36	22	82.26	Good	Good	Good	S	
1999	010101	NE1180	Nemaha River	Cottier Cr.	34	26	51.82	Excellent	Excellent	Excellent	S	
1999	010102	NE1181	Nemaha River	N. Br. Weeping Water Cr.	38	24	53.28	Excellent	Good	Good	S	
1999	010103	NE1182	Nemaha River	S. Cedar Cr.	40	10	42.16	Excellent	Good	Good	S	
2004	NE1196	NE1196	Nemaha River	Big Slough	36	8	76.18	Fair	Fair	Fair	S	
2004	NE1197	NE1197	Nemaha River	Winnebago Cr.	38	26	43.06	Poor	Excellent	Undetermined	S	
1999	009585	NE2183	Nemaha River	Rattlesnake Cr.	42	24	46.79	Excellent	Good	Good	S	
1999	010104	NE2184	Nemaha River	Pony Cr.	36	14	75.99	Excellent	Good	Good	S	
1999	009810	NE2185	Nemaha River	Lores Branch	42	4	59.83	Good	Excellent	Excellent	S	
2004	009810	NE2185	Nemaha River	Lores Branch	32	26	32.60	Poor	Excellent	Undetermined	S	
1999	010106	NE2187	Nemaha River	Long Branch	30	16	41.97	Excellent	Poor	Undetermined	S	
1999	010107	NE2188	Nemaha River	Yankee Cr.	24	20	59.80	Good	Fair	Fair	S	

Table 13 Continued

					Ecoregion classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
1999	010108	NE2189	Nemaha River	N. Fk. Big Nemaha River	28	22	51.69	Good	Good	Good	S	
1999	010109	NE2190	Nemaha River	N. Fk. Big Nemaha River	28	24	46.48	Excellent	Good	Good	S	
1999	010110	NE2191	Nemaha River	Balls Br.	30	10	31.94	Excellent	Good	Good	S	
2004	NE2198	NE2198	Nemaha River	Big Nemaha River	34	24	77.51	Fair	Poor	Undetermined	S	
2004	NE2199	NE2199	Nemaha River	Whiskey Run	26	18	29.22	Excellent	Excellent	Excellent	S	
2004	NE2200	NE2200	Nemaha River	Long Branch	32	12	75.15	Good	Poor	Undetermined	S	
2004	NE2201	NE2201	Nemaha River	Un Trib Balls Br.	34	18	53.50	Good	Excellent	Good	S	
2004	NE2202	NE2202	Nemaha River	Fournile Cr.	24	16	40.17	Good	Good	Good	S	
2004	NE2203	NE2203	Nemaha River	Mid. Br. Big Nemaha River	28	18	32.24	Good	Fair	Fair	S	
2004	NE2204	NE2204	Nemaha River	Muddy Cr.	30	20	40.60	Good	Poor	Undetermined	S	
2004	NE2205	NE2205	Nemaha River	S. Fk. Big Nemaha River	22	12	36.26	Good	Fair	Fair	S	
2004	NE2206	NE2206	Nemaha River	N. Fk. Big Nemaha River	24	14	29.38	Good	Poor	Undetermined	S	
2004	NE2207	NE2207	Nemaha River	Mid. Br. Big Nemaha River	32	12	60.60	Good	Poor	Undetermined	S	
2004	NE2208	NE2208	Nemaha River	Little Muddy Cr.	46	18	51.77	Good	Excellent	Good	S	
2004	NE2209	NE2209	Nemaha River	Hoosier Cr.	24	18	66.41	Good	Good	Good	S	
1999	010111	NE3192	Nemaha River	Little Muddy Cr.	40	18	60.18	Good	Excellent	Good	S	
1999	010112	NE3193	Nemaha River	Indian Cr.	44	16	67.31	Good	Excellent	Good	S	
1999	010114	NE3195	Nemaha River	Muddy Cr.	34	14	51.18	Excellent	Good	Good	S	
2004	NE3210	NE3210	Nemaha River	Hooper Cr.	24	22	41.81	Good	Good	Good	S	
2004	NE3211	NE3211	Nemaha River	Little Nemaha River	28	18	40.21	Excellent	Fair	Fair	S	
2004	NE3212	NE3212	Nemaha River	Sand Cr.	30	16	52.22	Good	Fair	Fair	S	
2004	NE3213	NE3213	Nemaha River	Little Nemaha River	48	8	89.01	Good	Good	Good	S	
2002	009748	NI1238	Niobrara	Un. Trib. Ponca Cr.	36	20	65.40	Poor	Excellent	Undetermined	S	

Table 13 Continued

					Ecoregion classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
			River									
2008	NI1499	NI1499	Niobrara River	Ponca Cr.	52	12	72.80	Excellent	Good	Good	S	
2008	NI2078	NI2078	Niobrara River	Mid. Br. Eagle Creek	38	20	62.50	Poor	Good	Undetermined	S	
2002	009566	NI2365	Niobrara River	Un. Trib. Merriman Cr.	52	18	57.18	Good	Excellent	Good	S	
2002	009565	NI2370	Niobrara River	Verdigre Cr. (A)	48	28	51.28	Poor	Good	Undetermined	S	
2002	009984	NI2371	Niobrara River	Verdigre Cr. (B)	52	28	80.71	Excellent	Good	Excellent	S	
2002	009717	NI2380	Niobrara River	N. Br. Verdigre Cr.	48	26	84.16	Excellent	Excellent	Excellent	S	
2002	009581	NI2385	Niobrara River	Mid. Br. Verdigre Cr.	44	16	51.39	Excellent	Excellent	Excellent	S	
2002	009983	NI2390	Niobrara River	Niobrara River (E)	48	16	60.50	Poor	Good	Undetermined	S	
2008	NI2500	NI2500	Niobrara River	Verdigre Cr.	52	16	54.75	Poor	Good	Undetermined	S	
2008	NI2501	NI2501	Niobrara River	Spring Cr.	50	22	63.36	Poor	Good	Undetermined	S	
2008	NI3180	NI3180	Niobrara River	Muleshoe Cr.	46	10	64.81	Excellent	Good	Good	S	
2008	NI3270	NI3270	Niobrara River	Boardman Cr.	46	22	65.79	Poor	Good	Undetermined	S	
2002	009742	NI4393	Niobrara River	Niobrara River (B)	38	22	58.15	Excellent	Excellent	Excellent	S	
2002	009723	NI3395	Niobrara River	Gordon Cr.	48	16	82.93	Excellent	Good	Good	S	
2002	009716	NI3400	Niobrara River	Un. Trib. Rock Cr.	48	20	69.40	Good	Excellent	Good	S	
2002	009582	NI3405	Niobrara River	Long Pine Cr.	52	22	61.15	Excellent	Excellent	Excellent	S	
2002	009715	NI3410	Niobrara River	Short Pine Cr.	48	22	61.15	Excellent	Good	Good	S	
2002	009715	NI3410	Niobrara River	Short Pine Cr.	44	18	76.20	Excellent	Good	Good	S	
1998	010013	NI3420	Niobrara River	Plum Cr.	48	16	69.08	Excellent	Excellent	Excellent	S	
2008	NI3503	NI3503	Niobrara River	South Fork Plum Cr.	44	14	95.40	Good	Excellent	Good	S	
1998	010014	NI3425	Niobrara River	Willow Cr.	44	14	65.81	Poor	Excellent	Undetermined	S	
2008	NI3504	NI3504	Niobrara River	Gordon Cr.	34	10	87.10	Poor	Excellent	Undetermined	S	

Table 13 Continued

					Ecoregion classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
2008	NI3505	NI3505	Niobrara River	Burton Cr.	36	14	73.27	Fair	Excellent	Fair	S	
2008	NI3506	NI3506	Niobrara River	Willow Cr.	42	14	70.74	Good	Excellent	Good	S	
2008	NI3507	NI3507	Niobrara River	Plum Cr.	46	16	85.97	Good	Excellent	Good	S	
2008	NI3509	NI3509	Niobrara River	Minnechaduza Cr.	54	12	84.75	Good	Excellent	Good	S	
2008	NI3510	NI3510	Niobrara River	Minnechaduza Cr. (A)	36	20	74.41	Good	Excellent	Good	S	
2008	NI3511	NI3511	Niobrara River	Bone Cr.	48	16	56.85	Good	Excellent	Good	S	
2008	NI3520	NI3140A	Niobrara River	Fairfield Cr.	32	26	63.04	Good	Good	Good	S	
1998	009596	NI4305	Niobrara River	Pine Cr.	50	28	65.82	Excellent	Good	Good	S	
1998	009588	NI4392	Niobrara River	Niobrara River (C)	42	22	56.59	Excellent	Excellent	Excellent	S	
1998	009742	NI4393	Niobrara River	Niobrara River (B)	56	12	58.11	Excellent	Good	Good	S	
2008	NI4514	NI4514	Niobrara River	Niobrara River near Merriman	38	20	89.91	Poor	Good	Undetermined	S	
2008	NI4515	NI4515	Niobrara River	Niobrara River near Hay Springs	44	8	69.31	Excellent	Excellent	Excellent	S	
2008	NI4516	NI4516	Niobrara River	Niobrara River near Harrison	44	8	72.90	Fair	Excellent	Fair	S	
2002	010160	NI2108	Niobrara River	Rush Cr.	44	14	74.35	Fair	Excellent	Fair	S	
2011	NP1002	NP1002	North Platte River	Un. Trib of North Platte R.	28	12	52.68	Poor	Excellent	Undetermined	S	
2011	NP1006	NP1006	North Platte River	N. Fk. Birdwood Cr.	34	22	76.21	Poor	Good	Undetermined	S	
2002	010153	NP1099	North Platte River	N. Platte River	36	20	65.71	Excellent	Excellent	Excellent	S	
2002	009578	NP1100	North Platte River	N. Platte River	36	18	81.79	Excellent	Excellent	Excellent	S	
2002	010154	NP1101	North Platte River	N. Platte River	42	16	58.68	Good	Excellent	Good	S	
2006	NP1114	NP1114	North Platte River	N. Platte River	36	18	66.32	Good	Good	Good	S	
2006	NP1115	NP1115	North Platte River	N. Platte River	44	20	55.02	Good	Excellent	Good	S	
2006	NP1116	NP1116	North Platte River	Birdwood Cr.	40	12	61.81	Good	Good	Good	S	
2006	NP1117	NP1117	North Platte	N. Platte River	34	16	83.96	Fair	Good	Fair	S	

Table 13 Continued

					Ecoregion classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
			River									
2006	NP1118	NP1118	North Platte River	Whitetail Cr.	36	16	85.56	Good	Excellent	Good	S	
2011	NP1135	NP1135	North Platte River	East Clear Cr.	32	16	86.31	Good	Excellent	Good	S	
2011	NP1136	NP1136	North Platte River	Whitetail Cr.	36	10	82.76	Good	Excellent	Good	S	
2011	NP2023	NP2023A	North Platte River	Cedar Cr.	42	14	69.51	Fair	Excellent	Fair	S	
2011	NP2105	NP2105	North Platte River	Blue Cr.	52	22	61.89	Poor	Excellent	Undetermined	S	
2002	010155	NP2102	North Platte River	N. Platte River (North Channel	46	24	55.78	Excellent	Good	Good	S	
2002	009730	NP2104	North Platte River	Blue Cr.	42	24	74.21	Excellent	Good	Good	S	
2002	010157	NP2105	North Platte River	Blue Cr.	46	24	69.09	Excellent	Excellent	Excellent	S	
2002	010158	NP2106	North Platte River	Blue Cr.	38	16	74.33	Excellent	Excellent	Excellent	S	
2002	010159	NP2107	North Platte River	N. Platte River (South Channel)	48	22	64.38	Good	Excellent	Good	S	
2002	010160	NP2108	North Platte River	Rush Cr.	32	14	62.70	Excellent	Excellent	Excellent	S	
2002	010161	NP2109	North Platte River	Unnamed Trib. Cedar Cr.	44	20	82.63	Good	Good	Good	S	
2006	NP2119	NP2119	North Platte River	Blue Cr.	38	10	77.27	Good	Excellent	Good	S	
2006	NP2121	NP2121	North Platte River	N. Platte River	38	14	67.78	Fair	Excellent	Fair	S	
2006	NP2122	NP2122	North Platte River	N. Platte River	48	14	53.98	Good	Excellent	Good	S	
2011	NP2137	NP2137	North Platte River	Otter Cr.	44	18	54.91	Poor	Good	Undetermined	S	
2011	NP2138	NP2138	North Platte River	Blue Cr.	34	20	86.06	Good	Good	Good	S	
2011	NP2139	NP2139	North Platte River	Rush Cr.	36	10	35.55	Good	Excellent	Good	S	
2011	NP2144	NP2144	North Platte River	Lower Dugout Cr.	42	18	69.32	Fair	Poor	Undetermined	S	
2006	NP3066	NP3066	North Platte River	N. Platte River	48	12	71.65	Good	Excellent	Good	S	
2006	NP3098	NP3098	North Platte River	N. Platte River	56	24	59.69	Fair	Excellent	Fair	S	
2002	010164	NP3112	North Platte River	Ninemile Cr.	34	20	50.18	Excellent	Good	Good	S	

Table 13 Continued

					Ecoregion classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
2002	009702	NP3113	North Platte River	Dry Spottedtail Cr.	36	14	76.64	Excellent	Good	Good	S	
2002	NP3123	NP3123	North Platte River	N. Platte River (North Channel)	34	14	65.60	Good	Excellent	Good	S	
2006	NP3123	NP3123	North Platte River	N. Platte River (North Channel)	34	22	62.05	Good	Excellent	Good	S	
2006	NP3124	NP3124	North Platte River	Red Willow Cr.	44	18	59.44	Excellent	Good	Good	S	
2006	NP3125	NP3125	North Platte River	Wildhorse Dr.	42	20	63.56	Good	Good	Good	S	
2006	NP3126	NP3126	North Platte River	N. Platte River	46	22	76.52	Excellent	Good	Good	S	
2006	NP3127	NP3127	North Platte River	N. Platte River	28	10	56.72	Excellent	Excellent	Excellent	S	
2006	NP3128	NP3128	North Platte River	N. Platte River	44	24	81.48	Fair	Good	Good	S	
2006	NP3130	NP3130	North Platte River	Gering Drain	40	8	40.95	Excellent	Excellent	Excellent	S	
2006	NP3131	NP3131	North Platte River	Sheep Cr.	42	16	72.31	Fair	Fair	Fair	S	
2011	NP3145	NP3145	North Platte River	Indian Cr.	34	12	73.44	Good	Excellent	Good	S	
2011	NP3146	NP3146	North Platte River	Upper Dugout Cr.	50	10	40.22	Fair	Excellent	Fair	S	
2011	NP3147	NP3147	North Platte River	Wildhorse Drain	36	14	35.25	Fair	Fair	Fair	S	
2011	NP3148	NP3148	North Platte River	Ninemile Cr.	56	16	33.95	Good	Poor	Undetermined	S	
2011	NP3149	NP3149	North Platte River	Winters Cr.	48	10	61.37	Good	Poor	Undetermined	S	
2011	NP3150	NP3150	North Platte River	Kiowa Cr.	36	16	48.08	Fair	Good	Fair	S	
2011	NP3151	NP3151	North Platte River	Sheep Cr.	48	14	64.08	Good	Good	Good	S	
1997	009926	RE1040	Republican River	Cottonwood Cr.	48	16	52.28	Good	Excellent	Good	S	
1997	009587	RE1150	Republican River	Republican River (A)	26		19.43	Good	Good	Good	S	
1997	009559	RE1165	Republican River	E. Penny Cr.	30	10	68.31		Poor	Undetermined	N	
1997	009711	RE1175	Republican River	Hicks Cr.	46	24	68.64	Fair	Excellent	Fair	S	x
1997	009817	RE1181	Republican River	Farmers Cr.	40	20	71.44	Excellent	Excellent	Excellent	S	
2007	RE1211	RE1211	Republican	Republican River	40	12	64.47	Excellent	Excellent	Excellent	S	

Table 13 Continued

					Ecoregion classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
			River									
2007	RE1212	RE1212	Republican River	Republican River	30	18	41.65	Fair	Excellent	Fair	S	
1997	009729	RE2151	Republican River	Republican River (B)	44	22	39.61	Good	Fair	Fair	S	
1997	009919	RE2153	Republican River	Republican River (D)	20	14	28.19	Excellent	Fair	Fair	S	
1997	009554	RE2160	Republican River	Beaver Cr. (A)	22	16	33.65	Good	Poor	Undetermined	S	
1997	009710	RE2161	Republican River	Beaver Cr. (B)	30	16	27.71	Good	Poor	Undetermined	S	
1997	009918	RE2200	Republican River	Sappa Cr.	30	12	44.82	Good	Poor	Undetermined	S	
1997	009920	RE2205	Republican River	Prairie Dog Cr.	28	8	67.64	Fair	Good	Fair	S	
2007	RE2213	RE2213	Republican River	Flag Cr.	32	10	40.70	Fair	Excellent	Fair	S	
2007	RE22014	RE2214	Republican River	Prairie Dog Cr.	28	10	56.39	Fair	Fair	Fair	S	
2007	RE2215	RE2215	Republican River	Muddy Cr.	26	18	47.66	Fair	Good	Fair	S	
2007	RE2216	RE2216	Republican River	Sappa Cr.	34	8	42.99	Good	Good	Good	S	
2007	RE2217	RE2217	Republican River	Beaver Cr.	34	12	41.37	Fair	Fair	Fair	S	
2007	RE2227	RE2227	Republican River	Deer Cr.	48	22	64.16	Fair	Fair	Fair	S	
1997	009924	RE3094	Republican River	Frenchman Cr. (A)	50	16	42.01	Excellent	Excellent	Excellent	S	
1997	009925	RE3113	Republican River	Republican River (F)	38	22	57.73	Good	Fair	Fair	S	
1997	009743	RE3252	Republican River	Republican River (C)	44	12	61.51	Excellent	Good	Good	S	
1997	009922	RE3154	Republican River	Republican River (E)	48	20	84.82	Fair	Good	Fair	S	
1997	009818	RE3185	Republican River	Frenchman Cr. (B)	26	22	83.71	Excellent	Excellent	Excellent	S	
1997	009916	RE3190	Republican River	Spring Cr.	42	20	55.67	Excellent	Excellent	Excellent	S	
1997	009917	RE3195	Republican River	Muddy Cr.	32	18	74.88	Excellent	Good	Good	S	
2007	RE3218	RE3218	Republican River	Frenchman Cr.	28	8	77.79	Good	Excellent	Good	S	
2007	RE3219	RE3219	Republican River	Republican River	40	8	55.47	Fair	Excellent	Fair	S	

Table 13 Continued

					Ecoregion classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
2007	RE3220	RE3220	Republican River	Red Willow Cr.	32	22	76.35	Fair	Good	Fair	S	
2007	RE3221	RE3221	Republican River	Frenchman Cr.	40	20	55.79	Excellent	Excellent	Excellent	S	
2007	RE3222	RE3222	Republican River	Medicine Cr.	36	12	61.04	Excellent	Good	Good	S	
2007	RE3223	RE3223	Republican River	Muddy Cr.	44	14	68.09	Fair	Good	Fair	S	
2007	RE3225	RE3225	Republican River	Republican River	36	20	78.38	Good	Excellent	Fair	S	
2007	RE3226	RE3226	Republican River	Stinking Water Cr.	40	4	69.33	Excellent	Excellent	Excellent	S	
2011	SP1007	SP1007	South Platte River	Applegate Drain	40	6	53.04	Poor	Excellent	Undetermined	S	
2011	SP1012	SP1012	South Platte River	South Platte River	40	14	80.13	Poor	Good	Undetermined	S	
2011	SP1048	SP1048	South Platte River	Fremont Slough - East	48	12	65.10	Good	Excellent	Good	S	
2001	010165	SP1031	South Platte River	S. Platte River (Centennial Park)	40	4	61.38	Fair	Excellent	Fair	S	
2011	SP1049	SP1049	South Platte River	South Platte River	42	4	57.19	Poor	Good	Undetermined	S	
2011	SP1050	SP1050	South Platte River	South Platte River	32	22	87.82	Poor	Good	Undetermined	S	
2001	010166	SP1032	South Platte River	Mid. Fremont Slough	32	14	71.99	Excellent	Excellent	Excellent	S	
2001	010167	SP1033	South Platte River	W. Fremont Slough	40		48.73	Poor	Excellent	Undetermined	S	
2001	010168	SP1034	South Platte River	S. Platte River	40		66.25		Good	Good	S	
2001	010169	SP1035	South Platte River	S. Platte River (Sutherland)	34	10	50.73		Excellent	Excellent	S	
2001	010170	SP1036	South Platte River	S. Platte River (Brule)	34	16	54.90	Fair	Good	Fair	S	
2001	009724	SP1037	South Platte River	S. Platte River (Brule)	36	14	42.81	Good	Good	Good	S	
2001	010171	SP1038	South Platte River	Peterson Ditch	38	8	68.54	Good	Fair	Fair	S	
2001	010174	SP2019	South Platte River	Lodgepole Cr.	26	14	0.00	Fair	Excellent	Fair	S	
2001	010172	SP2039	South Platte River	Highline Canal	44	8	52.75	Good	Poor	Undetermined	S	
2001	010173	SP2040	South Platte River	Lodgepole Cr.	48	16	74.81	Fair	Good	Fair	S	

Table 13 Continued

					Ecoregion classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
2001	009740	SP2042	South Platte River	Lodgepole Cr.	36	12	34.13	Good	Excellent	Good	S	
2011	SP2042	SP2042	South Platte River	Lodgepole Cr.	36	16	20.32	Fair	Poor	Undetermined	S	
2006	SP2043	SP2043	South Platte River	Lodgepole Cr.	36	6	31.16	Good	Poor	Undetermined	S	
2011	SP2043	SP2043A	South Platte River	Lodgepole Cr.	40	10	29.50	Poor	Poor	Undetermined	N	
2006	SP2044	SP2044	South Platte River	Lodgepole Cr.	42	16	84.77	Fair	Poor	Undetermined	S	x
2006	SP2045	SP2045	South Platte River	Lodgepole Cr.	36	16	78.04	Good	Excellent	Good	S	
2011	SP2045	SP2045	South Platte River	Lodgepole Cr.	44	4	54.74	Good	Excellent	Good	S	
2006	SP2046	SP2046	South Platte River	Lodgepole Cr.	34	8	42.14	Poor	Good	Undetermined	S	
2011	SP2047	SP2047	South Platte River	Lodgepole Cr. - Bushnell	44	10	37.45	Fair	Fair	Good	S	
2011	WH1037	WH1037	White-Hat River	Mid. Fk. Soldier Creek	32	18	73.43	Fair	Poor	Undetermined	S	
2001	009567	WH1065	White-Hat River	White River	36	14	55.54	Excellent	Excellent	Excellent	S	
2008	WH1071	WH1071	White-Hat River	Beaver Cr.	48	18	72.27	Good	Good	Good	S	
2008	WH1074	WH1074	White-Hat River	Big Bordeaux Cr.	42	14	75.95	Good	Excellent	Good	S	
2008	WH1075	WH1075	White-Hat River	Larabee Cr.	48	20	30.91	Good	Excellent	Good	S	
2008	WH1076	WH1076	White-Hat River	White River N. of Chadron	46	22	52.50	Excellent	Poor	Undetermined	S	
2008	WH1077	WH1077	White-Hat River	White River at Crawford CP	36	20	73.68	Excellent	Good	Good	S	
2008	WH1078	WH1078	White-Hat River	White River S of Ft Robinson SP	30	16	85.15	Excellent	Excellent	Excellent	S	
2011	WH1079	WH1079	White-Hat River	Larabee Cr.	38	16	46.39	Good	Excellent	Good	S	
2008	WH1250	WH1250	White-Hat River	West Ash Cr.	38	8	65.03	Good	Good	Good	S	
2011	WH1080	WH1080	White-Hat River	Big Bordeaux Cr.	36	8	32.04	Fair	Excellent	Fair	S	
2001	009707	WH2070	White-Hat River	Warbonnett Cr.	36	14	62.27	Poor	Fair	Undetermined	S	
2011	WH1081	WH1081	White-Hat River	Dead Horse Cr.	48	10	55.13	Good	Good	Good	S	

Table 13 Continued

					Ecoregion classification							
Year	**STORET**	**NDEQ_ID**	**Watershed**	**Stream**	**Habitat score**	**Invert score**	**Fish score**	**Invert assess**	**Fish assess**	**Overall rating**	**Support**	**303(d) listing**
2011	WH1082	WH1082	White-Hat River	East Ash Cr.	52	14	64.31	Fair	Good	Fair	S	
2011	WH1083	WH1083	White-Hat River	White River, in Ft. Rob. SP	48	10	87.36	Good	Excellent	Good	S	
2011	WH1084	WH1084	White-Hat River	Deep Cr.	50	16	49.40	Fair	Excellent	Fair	S	
2011	WH2085	WH2085	White-Hat River	Hat Cr.				Good	Good	Good	S	

Excerllent	87	173	51
Good	182	171	178
Fair	99	37	94
Poor	63	57	109
Undetermined			5
Total	431	438	438

Table 14. A comparison of Habitat, Macroinvertebrate and Fish Stream Evaluation Scores Using the Hierarchical Cluster Classification Scheme, 1997-2011.

					Hierarchical cluster classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
					10	26	19					
1997	009904	BB1003	Big Blue River	Spring Cr. (BB)	16	24	11	Excellent	Excellent	Excellent	S	
2007	BB1126	BB1126	Big Blue River	Wolf Cr.	6	22	9	Fair	Fair	Fair	S	
1997	009813	BB1115	Big Blue River	Bear Cr.	8	26	13	Excellent	Fair	Fair	S	
2007	BB1129	BB1129	Big Blue River	Cub Cr.	4	26	11	Excellent	Good	Good	S	
2007	009728	BB1110	Big Blue River	Wolf Cr.	8	18	7	Excellent	Fair	Fair	S	
2007	BB1127	BB1127	Big Blue River	Soap Cr.	8	18	11	Fair	Poor	Undetermined	S	
2007	BB1128	BB1128	Big Blue River	Pierce Cr.	4	16	11	Fair	Fair	Fair	S	
2007	009901	BB1120	Big Blue River	Cub Cr.	8	22	13	Fair	Fair	Fair	S	
1997	009903	BB1130	Big Blue River	Mud Cr.	4	20	7	Fair	Good	Fair	S	
1997	009555	BB2100	Big Blue River	Turkey Cr. (A)	4	16	7	Fair	Poor	Fair	S	
1997	009910	BB2101	Big Blue River	Turkey Cr. (B)	8	24	15	Fair	Poor	Fair	S	
2007	BB2130	BB2130	Big Blue River	Turkey Cr.	12	18	11	Excellent	Good	Good	S	
2007	BB2131	BB2131	Big Blue River	Turkey Cr.	4	18	7	Fair	Good	Fair	S	
2007	BB2132	BB2132	Big Blue River	S. Fk. Swan Cr.	6	24	11	Fair	Poor	Undetermined	S	
2007	BB2133	BB2133	Big Blue River	Turkey Cr.	6	18	13	Excellent	Fair	Fair	S	
2007	BB3134	BB3134	Big Blue River	Beaver Cr.	14	22	15	Fair	Good	Fair	S	
2007	BB3135	BB3135	Big Blue River	W. Fk. Big Blue River	6	18	11	Excellent	Good	Good	S	
2007	BB3136	BB3136	Big Blue River	W. Fk. Big Blue River	12	16	7	Fair	Good	Fair	S	
1997	009564	BB4105	Big Blue River	Unnamed Trib Blue River	8	20	9	Fair	Poor	Undetermined	S	

Table 14 Continued

					Hierarchical cluster classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
1997	009902	BB4125	Big Blue River	Plum Cr.	12	20	9	Good	Fair	Fair	S	
2007	BB4137	BB4137	Big Blue River	Plum Cr.	4	20	11	Fair	Fair	Fair	S	
2007	BB4138	BB4138	Big Blue River	Big Blue River	4	20	11	Fair	Fair	Fair	S	
2007	BB4139	BB4139	Big Blue River	Lincoln Cr.	8	22	11	Good	Fair	Fair	S	
2007	BB4140	BB4140	Big Blue River	Lincoln Cr.	6	18	9	Good	Fair	Fair	S	
2000	009570	EL1093	Elkhorn River	Tracy Cr.	6	18	11	Fair	Fair	Fair	S	
2000	009569	EL1094	Elkhorn River	Union Cr.	12	20	13	Fair	Fair	Fair	S	
2000	009704	EL1095	Elkhorn River	Fremont Storm Drainage Canal	12	18	11	Fair	Good	Fair	S	
2000	010181	EL1096	Elkhorn River	Unnamed Trib. Pebble Cr.	14	18	7	Fair	Fair	Fair	S	
2000	010182	EL1097	Elkhorn River	Dry Cr.	8	16	17	Fair	Poor	Undetermined	S	
2000	010183	EL1098	Elkhorn River	Maple Cr.	4	22	11	Fair	Good	Fair	S	
2000	010184	EL1099	Elkhorn River	Elkhorn River (E)	8		9	Fair	Fair	Fair	S	
2005	EL1113	EL1113	Elkhorn River	Maple Cr.	4	20	9		Fair	Fair	S	
2005	EL1115	EL1115	Elkhorn River	Pebble Cr.	6	20	13	Fair	Fair	Fair	S	
2005	EL1116	EL1116	Elkhorn River	Bell Cr.	8	18	5	Good	Good	Good	S	
2005	EL1117	EL1117	Elkhorn River	W. Fork Maple Cr.	8	22	7	Fair	Poor	Undetermined	S	
2005	EL1118	EL1118	Elkhorn River	E. Fork Maple Cr.	10	14	17	Excellent	Poor	Undetermined	S	
2005	EL1119	EL1119	Elkhorn River	Elkhorn River	14	16	17	Fair	Excellent	Fair	S	
2005	EL1120	EL1120	Elkhorn River	Elkhorn River	8	24	13	Fair	Excellent	Fair	S	
2005	EL1121	EL1121	Elkhorn River	Humbug Cr.	10	18	15	Excellent	Good	Good	S	
2005	EL1122	EL1122	Elkhorn River	Elkforn River	8	16	7	Fair	Excellent	Fair	S	
2005	EL1123	EL1123	Elkhorn River	Union Cr.		20	24	Fair	Poor	Undetermined	S	

Table 14 Continued

					Hierarchical cluster classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
2010	EL1134	EL1134	Elkhorn River	Bell Creek		18	24	Good	Excellent	Good	S	
2010	EL1135	EL1135	Elkhorn River	Maple Creek		14	18	Fair	Excellent	Fair	S	
2010	EL1136	EL1136	Elkhorn River	Rock Creek		18	20	Fair	Excellent	Fair	S	
2010	EL1137	EL1137	Elkhorn River	Plum Creek		18	22	Fair	Excellent	Fair	S	
2010	EL1138	EL1138	Elkhorn River	S. Br. Humbug Creek		18	22	Fair	Excellent	Fair	S	
2010	EL1139	EL1139	Elkhorn River	Meridian Cr. - E. of Madison	6	20	11	Fair	Excellent	Fair	S	
2000	010185	EL2100	Elkhorn River	Logan Cr.	8	20	4	Good	Good	Good	S	
2000	010186	EL2102	Elkhorn River	Un. Trib. Logan Cr.	8	24	11	Good	Very poor	Undetermined	S	
2000	010187	EL2103	Elkhorn River	Baker Cr.	8	24	9	Fair	Fair	Fair	S	
2000	010188	EL2104	Elkhorn River	Dog Cr.	8	20	11	Good	Fair	Fair	S	
2005	EL2124	EL2124	Elkhorn River	Middle Logan Cr.		20	22	Fair	Fair	Fair	S	
2010	EL2140	EL2140	Elkhorn River	Little Logan Cr.		10	20	Good	Excellent	Good	S	
2010	EL2141	EL2141	Elkhorn River	Rattlesnake Cr.		12	16	poor	Excellent	Undetermined	S	
2010	EL2142	EL2142	Elkhorn River	Deer Cr.	12	20	15	poor	Good	Undetermined	S	
2000	010189	EL3105	Elkhorn River	Dry Cr.	12		11	Good	Good	Good	S	
2005	EL3125	EL3125	Elkhorn River	Dry Cr.	6	20	13		Fair	Fair	S	
2010	EL3144	EL3144	Elkhorn River	N. Fork Elkhrn River		19	26	Good	Good	Good	S	
2010	EL3144	EL3144	Elkhorn River	N. Fork Elkhrn River		21	22	Fair	Excellent	Fair	S	
2010	EL3145	EL3145	Elkhorn River	Willow Cr.	12	22	15	Good	Excellent	Good	S	
2000	010194	EL4013	Elkhorn River	S. Fork Elkhorn River	4	14	17	Excellent	Good	Good	S	
2002	009579	EL4107	Elkhorn River	Elkhorn River (A)	12	20	19	Fair	Good	Fair	S	
2002	009725	EL4109	Elkhorn River	Elkhorn River (B)	10	18	21	Fair	Excellent	Fair	S	
2002	009726	EL4110	Elkhorn	Elkhorn River (C)	10	20	19	Fair	Excellent	Fair	S	

Table 14 Continued

					Hierarchical cluster classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
			River									
2002	010192	EL4111	Elkhorn River	Elkhorn River (D)	18	28	19	Good	Excellent	Good	S	
	EL4126	EL4126	Elkhorn River	Battle Cr.	12	16	7	Excellent	Excellent	Excellent	S	
2005	EL4126	EL4126	Elkhorn River	Battle Cr.	8	18	17	Fair	Poor	Undetermined	S	
2005	EL4127	EL4127	Elkhorn River	Elkhorn River	12	20	17	Fair	Excellent	Fair	S	
2005	EL4128	EL4128	Elkhorn River	Elkhorn River	12	24	15	Good	Excellent	Good	S	
2005	EL4129	EL4129	Elkhorn River	Clearwater Cr.		21	24	Good	Good	Good	S	
2010	EL4129	EL4129	Elkhorn River	Clearwater Cr.	10	8	17	Good	Excellent	Good	S	
2005	EL4130	EL4130	Elkhorn River	Elkhorn River	8	22	15		Excellent	Excellent	S	
2005	EL4131	EL4131	Elkhorn River	Elkhorn River	12	22	13	Good	Good	Good	S	
			Elkhorn River	Holt Cr.	14	18	9	Excellent	Good	Good	S	
2005	EL4132	EL4132	Elkhorn River	Holt Cr.		19	28	Fair	Fair	Fair	S	
2010	EL4146	EL4146	Elkhorn River	Buffalo Cr.		15	26	Fair	Excellent	Fair	S	
2010	EL4147	EL4147	Elkhorn River	Cache Cr.		20	20	Fair	Excellent	Fair	S	
2010	EL4148	EL4148	Elkhorn River	S. Fk. Elkhorn River		24	24	Good	Excellent	Good	S	
2010	EL4149	EL4149	Elkhorn River	Elkhorn River	14	20	11	Excellent	Excellent	Excellent	S	
2005	El4133	EL4133	Elkhorn River	Holt Cr.	10		15	Fair	Fair	Fair	S	
1997	009900	LB1002	Little Blue River	Coon Cr.	4	16	9		Good	Good	S	
1997	009906	LB1081	Little Blue River	Little Blue River (A)	10	22	13	Fair	Fair	Fair	S	
2007	LB1117	LB1117	Little Blue River	Dry Branch	8	24	15	Excellent	Good	Good	S	
2007	LB1131	LB1131	Little Blue River	Little Blue River	12	26	7	Excellent	Excellent	Excellent	S	
1997	009905	LB2080	Little Blue River	Little Blue River (B)	6	22	9	Excellent	Poor	Undetermined	S	
1997	009584	LB2090	Little Blue River	Big Sandy Cr. (A)	6	22	9	Excellent	Fair	Fair	S	

Table 14 Continued

					Hierarchical cluster classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
1997	009713	LB2091	Little Blue River	Big Sandy Cr. (B)	10	22	11	Excellent	Fair	Fair	S	
1997	009712	LB2095	Little Blue River	Liberty Cr.	16	22	7	Fair	Fair	Fair	S	
1997	009907	LB2100	Little Blue River	Elk Cr.	8	18	9	Excellent	Poor	Undetermined	S	
1997	009908	LB2105	Little Blue River	Spring Cr. (LB)	12	20	13	Fair	Fair	Fair	S	
1997	009909	LB2110	Little Blue River	Dry Sandy Cr.	14	24	13	Good	Good	Good	S	
1997	009814	LB2115	Little Blue River	Rock Cr.	12	22	17	Excellent	Good	Good	S	
2010	LB2118	LB2118	Little Blue River	Little Blue River	10	12	5	Excellent	Excellent	Excellent	S	
2007	LB2119	LB2119	Little Blue River	Spring Cr.	14	22	11	Poor	Poor	Undetermined	N	x
2007	LB2120	LB2120	Little Blue River	Liberty Cr.	12	24	19	Excellent	Fair	Fair	S	
2007	LB2121	LB2121	Little Blue River	Spring Cr.	10	24	15	Fair	Excellent	Fair	S	
2007	LB2122	LB2122	Little Blue River	Little Blue River	12	22	15	Fair	Good	Fair	S	
2007	LB2123	LB2123	Little Blue River	Little Blue River	10	22	7	Excellent	Good	Good	S	
2007	LB2124	LB2124	Little Blue River	Elk Cr.	10	24	19	Fair	Poor	Undetermined	S	
2007	LB2125	LB2125	Little Blue River	Big Sandy Cr.	16	22	11	Excellent	Excellent	Excellent	S	
2007	LB2126	LB2126	Little Blue River	Litle Blue River	12	22	13	Excellent	Fair	Fair	S	
2007	LB2127	LB2127	Little Blue River	Little Blue River	8	20	9	Excellent	Good	Fair	S	
2007	LB2129	LB2129	Loup River	Spring Cr.	14	26	11	Fair	Fair	Fair	S	
1998	009721	LO1130	Loup River	S. Branch Timber Cr.	12	18	13	Excellent	Fair	Fair	S	
2008	LO1181	LO1181	Loup River	Beaver Cr.	18	24	11	Fair	Good	Fair	S	
2008	LO1182	LO1182	Loup River	Cedar River	16	10	11	Excellent	Fair	Fair	S	
2008	LO1183	LO1183	Loup River	Cottonwood Cr.	14	22	17	Poor	Fair	Undetermined	S	
2008	LO1184	LO1184	Loup River	Beaver Cr.	8	24	19	Excellent	Excellent	Excellent	S	
1998	009591	LO2037	Loup River	Turtle Cr.	16	22	17	Excellent	Excellent	Excellent	S	
1998	009811	LO2085	Loup River	N. Loup River (B)	16	18	17	Excellent	Good	Good	S	
1998	009816	LO2135	Loup River	Calamus River	16	26	19	Fair	Good	Good	S	

Table 14 Continued

					Hierarchical cluster classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
1998	009720	LO2140	Loup River	Goose Cr.	14	24	15	Excellent	Excellent	Excellent	S	
1998	009576	LO2145	Loup River	Big Cr.	20	18	17	Excellent	Good	Good	S	
1998	009719	LO2150	Loup River	N. Loup River (A)	20	24	19	Fair	Good	Good	S	
1998	009977	LO2151	Loup River	N. Loup River (C)	6	26	13	Excellent	Excellent	Excellent	S	
1998	009738	LO2155	Loup River	Davis Cr.	12	28	7	Excellent	Good	Good	S	
1998	009708	LO2160	Loup River	Munson Cr. (A)	18	28	5	Excellent	Poor	Undetermined	S	
1998	009978	LO2161	Loup River	Munson Cr. (B)	16	24	17	Excellent	Poor	Undetermined	S	
1998	009980	LO3172	Loup River	Mid. Loup River (C)	14	16	13	Excellent	Excellent	Excellent	S	
2008	LO2185	LO2185	Loup River	Mira Cr.	16	22	9	Fair	Good	Fair	S	
2008	LO2186	LO2186	Loup River	N. Loup River	10	18	17	Excellent	Fair	Fair	S	
2008	LO2187	LO2187	Loup River	N. Loup River	16	20	17	Fair	Excellent	Fair	S	
2008	LO2192	LO2192	Loup River	N. Loup River		22	13	Good	Good	Good	S	
2008	LO2200	LO2103B	Loup River	Goose Cr.	20	22	15	Excellent	Good	Good	S	
2008	LO3088	LO3088	Loup River	Dismal River	20	20	13	Excellent	Excellent	Excellent	S	
2008	LO3165	LO3165	Loup River	N. Fork Dismal River (A)	18	24	13	Fair	Good	Fair	S	
1998	009979	LO3166	Loup River	N. Fork Dismal River (B)	20	16	15	Excellent	Good	Good	S	
1998	009563	LO3170	Loup River	Mid. Loup River (B)	8	18	17	Fair	Good	Fair	S	
2008	LO3189	LO3189	Loup River	Mid. Loup River	14	22	17	Fair	Good	Fair	S	
2008	LO3190	LO3190	Loup River	Mid. Loup River	10	22	15	Excellent	Excellent	Excellent	S	
2008	LO3191	LO3191	Loup River	Victoria Cr.	14	14	9	Excellent	Good	Good	S	
2008	LO3193	LO3193	Loup River	Oak Cr.	16	22	13	Fair	Fair	Fair	S	
1998	009981	LO4175	Loup River	South Loup River	4	28	23	Excellent	Good	Good	S	
2008	LO4196	LO4196	Loup River	Mud Cr.	18	18	17	Excellent	Excellent	Excellent	S	
2008	LO4194	LO4194	Loup River	South Loup River	8	12	15	Fair	Excellent	Fair	S	
2008	LO4195	LO4195	Loup River	South Loup River	8	22	5	Poor	Good	Undetermined	S	
2008	LO4196	LO4196	Loup River	Mud Cr.	16	22	13	Fair	Poor	Undetermined	S	
2008	LO4197	LO4197	Loup River	S. Loup River	6	12	5	Excellent	Good	Good	S	
1999	LP1002	LP1002	Lower Platte River	Four Mile Cr.	10	24	9	Poor	Poor	Undetermined	N	x
2004	010087	LP1023	Lower Platte River	Pawnee Cr.	10	28	7	Excellent	Fair	Fair	S	

Table 14 Continued

					Hierarchical cluster classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
2004	009560	LP1153	Lower Platte River	Pawnee Cr.	4	24	7	Excellent	Poor	Undetermined	S	
2002	009746	LP1157	Lower Platte River	Decker Cr.	8	24	17	Fair	Poor	Undetermined	S	
2004	LP1170	LP1170	Lower Platte River	Bachelor Br. To Eight Mile Cr.	8	22	13	Good	Excellent	Good	S	
2004	LP1171	LP1171	Lower Platte River	Lost Cr.	14	22	9	Good	Good	Good	S	
2004	LP1172	LP1172	Lower Platte River	Shell Cr.	4	12	5	Fair	Fair	Fair	S	
2004	LP1173	LP1173	Lower Platte River	Shell Cr.	6	12	9	Poor	Poor	Undetermined	N	x
1999	009551	LP2160	Lower Platte River	N. Oak Cr.	4	16	7	Poor	Fair	Undetermined	S	
1999	009552	LP2161	Lower Platte River	Un. Trib. Little Salt Cr.	16	24	7	Poor	Poor	Undetermined	N	x
1999	010091	LP2162	Lower Platte River	Sand Cr.	4	22	9	Good	Poor	Undetermined	S	
1999	010092	LP2163	Lower Platte River	Oak Cr.	6	22	15	Excellent	Fair	Fair	S	
1999	010093	LP2164	Lower Platte River	Un. Trib. Cottonwood Cr.	8	16	9	Excellent	Good	Good	S	
1999	010094	LP2165	Lower Platte River	Duck Cr.	8	22	17	Poor	Fair	Undetermined	S	
1999	010096	LP2167	Lower Platte River	Miller Br.	8	26	13	Excellent	Excellent	Excellent	S	
1999	010097	LP2168	Lower Platte River	North Br.	4	26	9	Good	Good	Good	S	
1999	010098	LP2169	Lower Platte River	Hickman Br.	4	18	7	Good	Fair	Good	S	
2004	LP2174	LP2174	Lower Platte River	Salt Cr.	12	22	15	Fair	Poor	Undetermined	S	
2004	LP2175	LP2175	Lower Platte River	Wahoo Cr.	4	18	17	Excellent	Good	Good	S	
2004	LP2176	LP2176	Lower Platte River	Bates Br.	8	18	9	Fair	Excellent	Fair	S	
2004	LP2177	LP2177	Lower Platte River	Middle Cr.	8	20	9	Fair	Fair	Fair	S	
2004	LP2178	LP2178	Lower Platte River	Middle Oak+E194 Cr.	10	22	7	Good	Fair	Fair	S	
2004	LP2179	LP2179	Lower Platte River	Cottonwood Cr.	8	18	7	Good	Poor	Undetermined	S	
2004	LP2180	LP2180	Lower Platte River	Silver Cr.	8	18	9	Fair	Poor	Undetermined	S	
2004	LP2181	LP2181	Lower Platte	Olive Br.	8	18	13	Fair	Fair	Fair	S	

Table 14 Continued

					Hierarchical cluster classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
			River									
2004	LP2182	LP2182	Lower Platte River	Rock Cr.	10	20	11	Fair	Good	Good	S	
2004	LP2183	LP2183	Lower Platte River	Clear Cr.	12	24	15	Good	Fair	Fair	S	
2004	LP2184	LP2184	Lower Platte River	Sand Cr.	10	24	11	Excellent	Good	Good	S	
2004	LP2185	LP2185	Lower Platte River	Dee Cr.	8	24	9	Excellent	Fair	Fair	S	
2004	LP2186	LP2186	Lower Platte River	Wahoo Cr.	8	18	7	Excellent	Fair	Fair	S	
2004	LP2187	LP2187	Lower Platte River	N. Fk. Rock Cr.	12	20	11	Fair	Poor	Undetermined	S	
2004	MP1003	MP1003	Middle Platte River	Clear Cr.	14	18	9	Good	Fair	Fair	S	
2001	009580	MP1050	Middle Platte River	Platte River (Side Channel)	10	18	17	Fair	Fair	Fair	S	
2001	010176	MP1051	Middle Platte River	Silver Cr.	16	16	11	Fair	Excellent	Fair	S	
2006	MP1063	MP1063	Middle Platte River	Prairie Cr.	8	20	13	Poor	Fair	Undetermined	S	
2001	010177	MP2052	Middle Platte River	Platte River (Issac Walton)	16	18	19	Good	Good	Good	S	
2001	010178	MP2053	Middle Platte River	Platte River	16	18	21	Fair	Excellent	Fair	S	
2001	010179	MP2054	Middle Platte River	Wood River	8	26	9	Fair	Excellent	Fair	S	
2001	010180	MP2055	Middle Platte River	Platte River (North Channel)	6	24	21	Good	Fair	Fair	S	
2001	010150	MP2057	Middle Platte River	Platte River	12	18	7	Good	Excellent	Good	S	
2001	010151	MP2059	Middle Platte River	Spring Cr.	8	22	17	Fair	Poor	Undetermined	S	
2001	009573	MP2060	Middle Platte River	Spring Cr.	20	24	13	Excellent	Excellent	Excellent	S	
2001	010152	MP2061	Middle Platte River	Pawnee Cr.	12	26	17	Fair	Good	Fair	S	
2001	010175	MP2062	Middle Platte River	Pawnee Cr.	18	24	15	Excellent	Excellent	Excellent	S	
2006	MP2064	MP2064	Middle Platte River	Platte River	16	22	15	Good	Good	Good	S	
2006	MP2065	MP2065	Middle Platte River	Spring Cr.	8	18	5	Excellent	Good	Good	S	
2006	MP2066	MP2066	Middle Platte River	Platte River	16	24	17	Fair	Poor	Undetermined	S	

Table 14 Continued

					Hierarchical cluster classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
2006	MP2067	MP2067	Middle Platte River	Platte River	14	20	15	Excellent	Good	Good	S	
2000	009556	MT1041	Missouri Tribs	Tekamah Cr. (B)	8	24	9	Good	Good	Good	S	
2000	010195	MT1050	Missouri Tribs	Un. Trib. Blackbird Cr. (A)	12	24	7	Fair	Fair	Fair	S	
2000	009718	MT1130	Missouri Tribs	Un. Trib. Blackbird Cr. (B)	6	22	19	Excellent	Poor	Undetermined	S	
2000	010196	MT1132	Missouri Tribs	Walnut Cr.	6	24	9	Excellent	Excellent	Excellent	S	
2000	010197	MT1133	Missouri Tribs	Un. Trib. Big Papillion Cr.	4	10	9	Good	Fair	Fair	S	
2000	010198	MT1134	Missouri Tribs	Pigeon Cr. (B)	8	26	11	Poor	Fair	Fair	S	
2000	010199	MT1135	Missouri Tribs	Wood Cr.	8	18	11	Excellent	Fair	Fair	S	
2000	010203	MT1336	Missouri Tribs	Tekamah Cr. (A)	10	22	19	Fair	Fair	Fair	S	
2000	010201	MT1137	Missouri Tribs	Omaha Cr.	10	28	17	Fair	Excellent	Fair	S	
2005	MT1148	MT1148	Missouri Tribs	S. Br. Papillion Cr.	10	26	7	Excellent	Excellent	Excellent	S	
2005	MT1150	MT1150	Missouri Tribs	Big Papillion Cr.	6	24	9	Excellent	Poor	Undetermined	S	
2005	MT1151	MT1151	Missouri Tribs	Long Cr.	12	22	5	Excellent	Fair	Fair	S	
2005	MT1152	MT1152	Missouri Tribs	Mill Cr.	10	24	11	Excellent	Poor	Undetermined	S	
2005	MT1153	MT1153	Missouri Tribs	Silver CR.	12	26	7	Excellent	Fair	Fair	S	
2005	MT1154	MT1154	Missouri Tribs	Cow Cr.	8	26	7	Excellent	Poor	Undetermined	S	
2005	MT1156	MT1156	Missouri Tribs	N. Omaha Cr.	8	24	5	Excellent	Poor	Undetermined	S	
2005	MT1157	MT1157	Missouri Tribs	Omaha Cr.		13	16	Excellent	Poor	Undetermined	S	
2010	MT1169	MT1169	Missouri Tribs	Un Trib to Papillion Cr.		15	24	Fair	Excellent	Fair	S	
2010	MT1170	MT1170	Missouri Tribs	North Br West Papillion Cr.		9	14	Fair	Excellent	Fair	S	
2010	MT1171	MT1171	Missouri Tribs	Thomas Cr.		12	22	Poor	Good	Undetermined	S	
2010	MT1172	MT1172	Missouri Tribs	Big Papillion Cr.		9	16	Poor	Excellent	Undetermined	S	

Table 14 Continued

					Hierarchical cluster classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
2010	MT1173	MT1173	Missouri Tribs	Silver Cr.		12	20	Poor	Excellent	Undetermined	S	
2010	MT1174	MT1174	Missouri Tribs	Cow Cr.		14	18	Poor	Excellent	Undetermined	S	
2010	MT1184	MT1184	Missouri Tribs	Elm Cr.	6	18	7	Fair	Excellent	Fair	S	
2000	009714	MT2138	Missouri Tribs	Un. Trib. South Cr.	8	12		Fair	Poor	Undetermined	S	
2000	009727	MT2139	Missouri Tribs	Howe Cr.	20	22	17	Poor		Undetermined	S	
2000	010202	MT2140	Missouri Tribs	E. Bow Cr.	6	18	13	Good	Excellent	Good	S	
2000	010200	MT2141	Missouri Tribs	Beaver Cr.	12	26	17	Fair	Good	Fair	S	
2000	010204	MT2142	Missouri Tribs	Aowa Cr.	6	20	15	Good	Excellent	Good	S	
2000	010205	MT2143	Missouri Tribs	Un. Trib. Norwegian Bow Cr.	18	26	11	Good	Good	Good	S	
2000	010206	MT2144	Missouri Tribs	Bow Cr. (B)	12	24	17	Good	Fair	Fair	S	
2000	010207	MT2145	Missouri Tribs	Bow Cr. (A)	12	22	13	Good	Excellent	Good	S	
2000	010208	MT2146	Missouri Tribs	Jordan Cr.	8	20	11	Excellent	Good	Good	S	
2000	010209	MT2147	Missouri Tribs	Un. Trib . Bazile Cr.	8	22	15	Fair	Fair	Fair	S	
2005	MT2158	MT2158	Missouri Tribs	Elk Cr.	8	18	7	Fair	Good	Fair	S	
2005	MT2159	MT2159	Missouri Tribs	Elk Cr.	8	24	11	Fair	Poor	Undetermined	S	
2005	MT2160	MT2160	Missouri Tribs	Elk Cr.	8	22	11	Excellent	Fair	Fair	S	
2005	MT2161	MT2161	Missouri Tribs	Lime Cr.	14	22	19	Excellent	Fair	Fair	S	
2005	MT2162	MT2162	Missouri Tribs	W. Bow Cr.	10	20	17	Excellent	Excellent	Excellent	S	
2005	MT2163	MT2163	Missouri Tribs	Un. Trib. Norwegian Bow Cr.	10	20	11	Good	Excellent	Good	S	
2005	MT2164	MT2164	Missouri Tribs	Norwegian Bow Cr.	14	26	13	Good	Fair	Fair	S	
2005	MT2165	MT2165	Missouri Tribs	W. Bow Cr.	12	22	15	Excellent	Good	Good	S	
2005	MT2166	MT2166	Missouri Tribs	Little Bazile Cr.	12	24	15	Good	Good	Good	S	
2005	MT2167	MT2167	Missouri	Unnamed Trib. Bazile	10	20	19	Excellent	Excellent	Excellent	S	

Table 14 Continued

					Hierarchical cluster classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
			Tribs	Cr.								
2005	MT2168	MT2168	Missouri Tribs	Bazile Cr.		11	18	Good	Excellent	Good	S	
2010	MT2175	MT2175	Missouri Tribs	Elk Cr.		12	14	Poor	Excellent	Undetermined	S	
2010	MT2176	MT2176	Missouri Tribs	Elk Cr.		15	20	Poor	Good	Undetermined	S	
2010	MT2177	MT2177	Missouri Tribs	South Cr.		18	22	Fair	Excellent	Fair	S	
2010	MT2178	MT2178	Missouri Tribs	South Cr.		13	18	Fair	Excellent	Fair	S	
2010	MT2179	MT2179	Missouri Tribs	Badger Cr.		14	14	Fair	Excellent	Fair	S	
2010	MT2180	MT2180	Missouri Tribs	Norwegian Bow Cr.		9	18	Fair	Good	Fair	S	
2010	MT2181	MT2181	Missouri Tribs	Antelope Cr.		22	28	Poor	Excellent	Undetermined	S	
2010	MT2182	MT2182	Missouri Tribs	Little Bazile Cr.		22	26	Good	Excellent	Good	S	
2010	MT2183	MT2183	Missouri Tribs	Bazile Cr.	6	28	7	Good	Excellent	Good	S	
1999	009703	NE1177	Nemaha River	Ervine Cr.	8	18	4	Excellent	Fair	Fair	S	
1999	009705	NE1178	Nemaha River	Duck Cr.	8	22	7	Fair	Very poor	Undetermined	S	
1999	010100	NE1179	Nemaha River	Honey Cr.	4	22	9	Good	Poor	Undetermined	S	
1999	010101	NE1180	Nemaha River	Cottier Cr.	10	24	15	Good	Fair	Fair	S	
1999	010102	NE1181	Nemaha River	N. Br. Weeping Water Cr.	8	26	7	Fair	Good	Fair	S	
1999	010103	NE1182	Nemaha River	S. Cedar Cr.	8	30	9	Excellent	Poor	Undetermined	S	
2004	NE1196	NE1196	Nemaha River	Big Slough	10	20	7	Excellent	Fair	Fair	S	
2004	NE1197	NE1197	Nemaha River	Winnebago Cr.	10	18	9	Good	Poor	Undetermined	S	
1999	009585	NE2183	Nemaha River	Rattlesnake Cr.	4	28	11	Fair	Fair	Fair	S	
1999	010104	NE2184	Nemaha River	Pony Cr.	8	26	17	Excellent	Good	Good	S	
1999	009810	NE2185	Nemaha River	Lores Branch	10	26	9	Good	Excellent	Good	S	
2004	009810	NE2185	Nemaha River	Lores Branch	4	18	7	Excellent	Fair	Fair	S	

Table 14 Continued

					Hierarchical cluster classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
1999	010106	NE2187	Nemaha River	Long Branch	4	22	9	Fair	Poor	Undetermined	S	
1999	010107	NE2188	Nemaha River	Yankee Cr.	6	20	15	Good	Fair	Fair	S	
1999	010108	NE2189	Nemaha River	N. Fk. Big Nemaha River	6	28	13	Fair	Good	Fair	S	
1999	010109	NE2190	Nemaha River	N. Fk. Big Nemaha River	4	24	9	Excellent	Good	Good	S	
1999	010110	NE2191	Nemaha River	Balls Br.	8	30	13	Excellent	Fair	Fair	S	
2004	NE2198	NE2198	Nemaha River	Big Nemaha River	4	20	13	Excellent	Good	Good	S	
2004	NE2199	NE2199	Nemaha River	Whiskey Run	6	26	13	Good	Good	Good	S	
2004	NE2200	NE2200	Nemaha River	Long Branch	4	20	9	Excellent	Good	Good	S	
2004	NE2201	NE2201	Nemaha River	Un Trib Balls Br.	14	18	11	Fair	Fair	Fair	S	
2004	NE2202	NE2202	Nemaha River	Fournile Cr.	6	22	11	Fair	Fair	Fair	S	
2004	NE2203	NE2203	Nemaha River	Mid. Br. Big Nemaha River	4	24	13	Fair	Fair	Fair	S	
2004	NE2204	NE2204	Nemaha River	Muddy Cr.	4	22	13	Fair	Good	Fair	S	
2004	NE2205	NE2205	Nemaha River	S. Fk. Big Nemaha River	4	22	15	Excellent	Good	Good	S	
2004	NE2206	NE2206	Nemaha River	N. Fk. Big Nemaha River	4	18	13	Good	Good	Good	S	
2004	NE2207	NE2207	Nemaha River	Mid. Br. Big Nemaha River	4	20	7	Fair	Good	Fair	S	
2004	NE2208	NE2208	Nemaha River	Little Muddy Cr.	4	22	13	Fair	Poor	Undetermined	S	
2004	NE2209	NE2209	Nemaha River	Hoosier Cr.	8	18	7	Fair	Good	Fair	S	
1999	010111	NE3192	Nemaha River	Little Muddy Cr.	4	24	9	Fair	Fair	Fair	S	
1999	010112	NE3193	Nemaha River	Indian Cr.	12	28	9	Fair	Fair	Fair	S	
	010112	NE3193	Nemaha River	Indian Cr.	4	26	13	Excellent	Fair	Fair	S	
1999	010114	NE3195	Nemaha River	Muddy Cr.	4	30	9	Good	Good	Good	S	
2004	NE3210	NE3210	Nemaha River	Hooper Cr.	12	18	9	Excellent	Fair	Fair	S	
2004	NE3211	NE3211	Nemaha	Little Nemaha River	4	22	17	Fair	Fair	Fair	S	

Table 14 Continued

					Hierarchical cluster classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
			River									
2004	NE3212	NE3212	Nemaha River	Sand Cr.	8	24	9	Excellent	Good	Good	S	
2004	NE3213	NE3213	Nemaha River	Little Nemaha River	6	20	15	Fair	Fair	Fair	S	
2002	009748	NI1238	Niobrara River	Un. Trib. Ponca Cr.	10	20	15	Good	Good	Good	S	
2008	NI1499	NI1499	Niobrara River	Ponca Cr.	10	20	13	Fair	Good	Fair	S	
2008	NI2078	NI2078	Niobrara River	Mid. Br. Eagle Creek	20	20	15	Fair	Good	Fair	S	
2002	009566	NI2365	Niobrara River	Un. Trib. Merriman Cr.	10	24	5	Good	Good	Good	S	
2002	009565	NI2370	Niobrara River	Verdigre Cr. (A)	12	22	15	Good	Poor	Undetermined	S	
2002	009984	NI2371	Niobrara River	Verdigre Cr. (B)	16	22	11	Good	Good	Good	S	
2002	009717	NI2380	Niobrara River	N. Br. Verdigre Cr.	14	20	17	Good	Good	Good	S	
2002	009581	NI2385	Niobrara River	Mid. Br. Verdigre Cr.	12	24	17	Fair	Excellent	Fair	S	
2002	009983	NI2390	Niobrara River	Niobrara River (E)	10	20	13	Excellent	Excellent	Excellent	S	
2008	NI2500	NI2500	Niobrara River	Verdigre Cr.	16	24	15	Fair	Good	Fair	S	
2008	NI2501	NI2501	Niobrara River	Spring Cr.	20	20	11	Excellent	Excellent	Excellent	S	
2008	NI3180	NI3180	Niobrara River	Muleshoe Cr.	12	22	11	Good	Fair	Fair	S	
2008	NI3270	NI3270	Niobrara River	Boardman Cr.	12	20	15	Excellent	Fair	Fair	S	
2002	009742	NI4393	Niobrara River	Niobrara River (B)	14	24	19	Good	Good	Good	S	
2002	009723	NI3395	Niobrara River	Gordon Cr.	12	24	15	Excellent	Excellent	Excellent	S	
2002	009716	NI3400	Niobrara River	Un. Trib. Rock Cr.	16	24	9	Excellent	Good	Good	S	
2002	009582	NI3405	Niobrara River	Long Pine Cr.	12	24	17	Excellent	Fair	Fair	S	
2002	009715	NI3410	Niobrara River	Short Pine Cr.	16	18	9	Excellent	Excellent	Excellent	S	
2002	009715	NI3410	Niobrara River	Short Pine Cr.	16	22	7	Fair	Fair	Fair	S	
1998	010013	NI3420	Niobrara River	Plum Cr.	12	22	17	Good	Fair	Fair	S	

Table 14 Continued

					Hierarchical cluster classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
2008	NI3503	NI3503	Niobrara River	South Fork Plum Cr.	10	18	19	Excellent	Excellent	Excellent	S	
1998	010014	NI3425	Niobrara River	Willow Cr.	14	22	17	Fair	Excellent	Fair	S	
2008	NI3504	NI3504	Niobrara River	Gordon Cr.	12	24	17	Excellent	Excellent	Excellent	S	
2008	NI3505	NI3505	Niobrara River	Burton Cr.	16	18	17	Excellent	Excellent	Excellent	S	
2008	NI3506	NI3506	Niobrara River	Willow Cr.	10	22	17	Fair	Excellent	Fair	S	
2008	NI3507	NI3507	Niobrara River	Plum Cr.	16	20	15	Excellent	Excellent	Excellent	S	
2008	NI3509	NI3509	Niobrara River	Minnechaduza Cr.	14	22	15	Good	Excellent	Good	S	
2008	NI3510	NI3510	Niobrara River	Minnechaduza Cr. (A)	14	20	19	Excellent	Excellent	Excellent	S	
2008	NI3511	NI3511	Niobrara River	Bone Cr.	12	18	11	Good	Excellent	Good	S	
2008	NI3520	NI3140A	Niobrara River	Fairfield Cr.	16	18	9	Fair	Fair	Fair	S	
1998	009596	NI4305	Niobrara River	Pine Cr.	12	24	17	Fair	Fair	Fair	S	
1998	009588	NI4392	Niobrara River	Niobrara River (C)	16	24	17	Good	Excellent	Good	S	
1998	009742	NI4393	Niobrara River	Niobrara River (B)	14	22	15	Excellent	Excellent	Excellent	S	
2008	NI4514	NI4514	Niobrara River	Niobrara River near Merriman	16	22	15	Good	Good	Good	S	
2008	NI4515	NI4515	Niobrara River	Niobrara River near Hay Springs	20	22	15	Good	Good	Good	S	
2008	NI4516	NI4516	Niobrara River	Niobrara River near Harrison	16	20	15	Excellent	Excellent	Excellent	S	
2002	010160	NI2108	Niobrara River	Rush Cr.		19	24	Good	Good	Good	S	
2011	NP1002	NP1002	North Platte River	Un. Trib of North Platte R.		14	22	fair	excellent	Fair	S	
2011	NP1006	NP1006	North Platte River	N. Fk. Birdwood Cr.	20	24	9	fair	excellent	Fair	S	
2002	010153	NP1099	North Platte River	N. Platte River	14	24	15	Good	Fair	Fair	S	
2002	009578	NP1100	North Platte River	N. Platte River	10	24	11	Excellent	Excellent	Excellent	S	
2002	010154	NP1101	North Platte River	N. Platte River	8	26	17	Excellent	Fair	Fair	S	
2006	NP1114	NP1114	North Platte	N. Platte River	14	24	13	Excellent	Excellent	Excellent	S	

Table 14 Continued

					Hierarchical cluster classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
			River									
2006	NP1115	NP1115	North Platte River	N. Platte River	14	18	11	Excellent	Good	Good	S	
2006	NP1116	NP1116	North Platte River	Birdwood Cr.	16	22	11	Fair	Fair	Fair	S	
2006	NP1117	NP1117	North Platte River	N. Platte River	14	20	11	Excellent	Fair	Fair	S	
2006	NP1118	NP1118	North Platte River	Whitetail Cr.		21	26	Good	Fair	Fair	S	
2011	NP1135	NP1135	North Platte River	East Clear Cr.		20	26	Good	Excellent	Good	S	
2011	NP1136	NP1136	North Platte River	Whitetail Cr.		23	30	Good	Excellent	Good	S	
2011	NP2023	NP2023A	North Platte River	Cedar Cr.	18	24		Excellent	exc+R34ellent	Excellent	S	
2011	NP2105	NP2105	North Platte River	Blue Cr.	16	20	9	Excellent	Fair	Fair	S	
2002	010155	NP2102	North Platte River	N. Platte River (North Channel	12	18	5	Good	Fair	Fair	S	
2002	009730	NP2104	North Platte River	Blue Cr.	16	22	17	Fair	Poor	Undetermined	S	
2002	010157	NP2105	North Platte River	Blue Cr.	20	24	15	Excellent	Excellent	Excellent	S	
2002	010158	NP2106	North Platte River	Blue Cr.	18	26	19	Excellent	Excellent	Excellent	S	
2002	010159	NP2107	North Platte River	N. Platte River (South Channel)	12	18	15	Good	Excellent	Good	S	
2002	010160	NP2108	North Platte River	Rush Cr.	16	28	13	Fair	Excellent	Fair	S	
2002	010161	NP2109	North Platte River	Unnamed Trib. Cedar Cr.	12	18	15	Excellent	Good	Good	S	
2006	NP2119	NP2119	North Platte River	Blue Cr.	20	22	11	Fair	Good	Fair	S	
2006	NP2121	NP2121	North Platte River	N. Platte River	16	22	21	Excellent	Fair	Fair	S	
2006	NP2122	NP2122	North Platte River	N. Platte River		18	26	Excellent	Excellent	Excellent	S	
2011	NP2137	NP2137	North Platte River	Otter Cr.		20	24	Fair	Excellent	Fair	S	
2011	NP2138	NP2138	North Platte River	Blue Cr.		17	28	Good	Excellent	Good	S	
2011	NP2139	NP2139	North Platte River	Rush Cr.		15	24	Fair	Excellent	Fair	S	
2011	NP2144	NP2144	North Platte River	Lower Dugout Cr.	18	22	15	Fair	Excellent	Fair	S	

Table 14 Continued

					Hierarchical cluster classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
2006	NP3066	NP3066	North Platte River	N. Platte River	12	20	19	Excellent	Excellent	Excellent	S	
2006	NP3098	NP3098	North Platte River	N. Platte River	16	22	15	Good	Excellent	Good	S	
2002	010164	NP3112	North Platte River	Ninemile Cr.	16	22	13	Excellent	Excellent	Excellent	S	
2002	009702	NP3113	North Platte River	Dry Spottedtail Cr.	16	14	19	Excellent	Good	Good	S	
2002	NP3123	NP3123	North Platte River	N. Platte River (North Channel)	10	20	15	Fair	Excellent	Fair	S	
2006	NP3123	NP3123	North Platte River	N. Platte River (North Channel)	14	22	17	Good	Good	Good	S	
2006	NP3124	NP3124	North Platte River	Red Willow Cr.	12	22	13	Excellent	Excellent	Excellent	S	
2006	NP3125	NP3125	North Platte River	Wildhorse Dr.	16	22	13	Excellent	Good	Good	S	
2006	NP3126	NP3126	North Platte River	N. Platte River	16	24	15	Excellent	Good	Good	S	
2006	NP3127	NP3127	North Platte River	N. Platte River	18	18	21	Excellent	Excellent	Excellent	S	
2006	NP3128	NP3128	North Platte River	N. Platte River	10	14	7	Fair	Excellent	Fair	S	
2006	NP3130	NP3130	North Platte River	Gering Drain	16	22	21	Fair	Poor	Undetermined	S	
2006	NP3131	NP3131	North Platte River	Sheep Cr.		17	22	Excellent	Excellent	Excellent	S	
2011	NP3145	NP3145	North Platte River	Indian Cr.		14	22	Fair	Excellent	Fair	S	
2011	NP3146	NP3146	North Platte River	Upper Dugout Cr.		19	26	Fair	Excellent	Fair	S	
2011	NP3147	NP3147	North Platte River	Wildhorse Drain		17	24	Good	Excellent	Good	S	
2011	NP3148	NP3148	North Platte River	Ninemile Cr.		20	30	Fair	Excellent	Fair	S	
2011	NP3149	NP3149	North Platte River	Winters Cr.		17	26	Fair	Excellent	Fair	S	
2011	NP3150	NP3150	North Platte River	Kiowa Cr.		15	22	Fair	Excellent	Fair	S	
2011	NP3151	NP3151	North Platte River	Sheep Cr.	20	18	15	Fair	Excellent	Fair	S	
1997	009926	RE1040	Republican River	Cottonwood Cr.	18	20	13	Fair	Excellent	Fair	S	
1997	009587	RE1150	Republican River	Republican River (A)	14	14	13	Good	Good	Good	S	
1997	009559	RE1165	Republican	E. Penny Cr.	20	26	13	Fair	Good	Fair	S	

Table 14 Continued

					Hierarchical cluster classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
			River									
1997	009711	RE1175	Republican River	Hicks Cr.	10	20	11	Excellent	Good	Good	S	
1997	009817	RE1181	Republican River	Farmers Cr.	14	24	21	Fair	Fair	Fair	S	
2007	RE1211	RE1211	Republican River	Republican River	16	20	17	Fair	Excellent	Fair	S	
2007	RE1212	RE1212	Republican River	Republican River	12	24	19	Good	Good	Good	S	
1997	009729	RE2151	Republican River	Republican River (B)	6	22	9	Fair	Excellent	Fair	S	
1997	009919	RE2153	Republican River	Republican River (D)	14	20	7	Excellent	Fair	Fair	S	
1997	009554	RE2160	Republican River	Beaver Cr. (A)	4	16	5	Good	Poor	Undetermined	S	
1997	009710	RE2161	Republican River	Beaver Cr. (B)	4	26	5	Fair	Poor	Undetermined	S	
1997	009918	RE2200	Republican River	Sappa Cr.	8	24	5	Excellent	Poor	Undetermined	S	
1997	009920	RE2205	Republican River	Prairie Dog Cr.	4	22	9	Excellent	Poor	Undetermined	S	
2007	RE2213	RE2213	Republican River	Flag Cr.	6	22	7	Excellent	Fair	Fair	S	
2007	RE22014	RE2214	Republican River	Prairie Dog Cr.	4	18	7	Excellent	Poor	Undetermined	S	
2007	RE2215	RE2215	Republican River	Muddy Cr.	6	20	13	Fair	Poor	Undetermined	S	
2007	RE2216	RE2216	Republican River	Sappa Cr.	4	22	9	Fair	Good	Fair	S	
2007	RE2217	RE2217	Republican River	Beaver Cr.	14	18	11	Fair	Fair	Fair	S	
2007	RE2227	RE2227	Republican River	Deer Cr.	8	20	5	Fair	Fair	Fair	S	
1997	009924	RE3094	Republican River	Frenchman Cr. (A)	14	20	13	Fair	Poor	Undetermined	S	
1997	009925	RE3113	Republican River	Republican River (F)	18	22	9	Fair	Good	Fair	S	
1997	009743	RE3252	Republican River	Republican River (C)	16	18	7	Excellent	Fair	Fair	S	
1997	009922	RE3154	Republican River	Republican River (E)	16	14	9	Fair	Poor	Undetermined	S	
1997	009818	RE3185	Republican River	Frenchman Cr. (B)	16	24	17	Fair	Fair	Fair	S	
1997	009916	RE3190	Republican River	Spring Cr.	8	28	13	Excellent	Excellent	Excellent	S	

Table 14 Continued

					Hierarchical cluster classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
1997	009917	RE3195	Republican River	Muddy Cr.	8	20	11	Excellent	Good	Good	S	
2007	RE3218	RE3218	Republican River	Frenchman Cr.	10	22	11	Fair	Fair	Fair	S	
2007	RE3219	RE3219	Republican River	Republican River	12	16	17	Excellent	Fair	Fair	S	
2007	RE3220	RE3220	Republican River	Red Willow Cr.	16	22	17	Fair	Excellent	Fair	S	
2007	RE3221	RE3221	Republican River	Frenchman Cr.	12	22	17	Excellent	Excellent	Excellent	S	
2007	RE3222	RE3222	Republican River	Medicine Cr.	16	26	9	Good	Excellent	Good	S	
2007	RE3223	RE3223	Republican River	Muddy Cr.	12	20	11	Excellent	Fair	Fair	S	
2007	RE3225	RE3225	Republican River	Republican River	16	20	9	Good	Good	Good	S	
2007	RE3226	RE3226	Republican River	Stinking Water Cr.		17	22	Good	Fair	Fair	S	
2011	SP1007	SP1007	South Platte River	Applegate Drain		17	18	Fair	Excellent	Fair	S	
2011	SP1012	SP1012	South Platte River	South Platte River		21	30	Fair	Excellent	Fair	S	
2011	SP1048	SP1048	South Platte River	Fremont Slough -East	14	26	13	Good	Excellent	Good	S	
2001	010165	SP1031	South Platte River	S. Platte River (Centennial Park)		20	22	Excellent	Good	Good	S	
2011	SP1049	SP1049	South Platte River	South Platte River		22	15	Good	Excellent	Good	S	
2011	SP1050	SP1050	South Platte River	South Platte River	14	20	21	Excellent	Good	Good	S	
2001	010166	SP1032	South Platte River	Mid. Fremont Slough	12	22	17	Good	Excellent	Good	S	
2001	010167	SP1033	South Platte River	W. Fremont Slough	14	22	11	Fair	Excellent	Fair	S	
2001	010168	SP1034	South Platte River	S. Platte River	14		17	Good	Fair	Fair	S	
2001	010169	SP1035	South Platte River	S. Platte River (Sutherland)	14		21		Good	Fair	S	
2001	010170	SP1036	South Platte River	S. Platte River (Brule)	12	18	15		Excellent	Excellent	S	
2001	009724	SP1037	South Platte River	S. Platte River (Brule)	12	24	15	Fair	Good	Fair	S	
2001	010171	SP1038	South Platte River	Peterson Ditch	8	18	15	Good	Good	Good	S	
2001	010174	SP2019	South Platte	Lodgepole Cr.	14	18	11	Fair	Good	Fair	S	

Table 14 Continued

					Hierarchical cluster classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
			River									
2001	010172	SP2039	South Platte River	Highline Canal	8	18	8	Fair	Fair	Fair	S	
2001	010173	SP2040	South Platte River	Lodgepole Cr.	16	24	7	Fair	Fair	Fair	S	
2001	009740	SP2042	South Platte River	Lodgepole Cr.		13	24	Good	Poor	Undetermined	S	
2011	SP2042	SP2042	South Platte River	Lodgepole Cr.	18	28	11	Poor	Excellent	Undetermined	S	
2006	SP2043	SP2043	South Platte River	Lodgepole Cr.		7	14	Excellent	Good	Good	S	
2011	SP2043	SP2043A	South Platte River	Lodgepole Cr.	14	18	7	Poor	Good	Undetermined	S	
2006	SP2044	SP2044	South Platte River	Lodgepole Cr.	16	14	9	Fair	Poor	Undetermined	S	
2006	SP2045	SP2045	South Platte River	Lodgepole Cr.		17	24	Fair	Fair	Fair	S	
2011	SP2045	SP2045	South Platte River	Lodgepole Cr.	12	20	15	Fair	Excellent	Fair	S	
2006	SP2046	SP2046	South Platte River	Lodgepole Cr.	16	12	15	Good	Good	Good	S	
2011	SP2047	SP2047	South Platte River	Lodgepole Cr. - Bushnell		12	20	Poor	Good	Undetermined	S	
2011	WH1037	WH1037	White-Hat River	Mid. Fk. Soldier Creek	16	24	13	Poor	Excellent	Undetermined	S	
2001	009567	WH1065	White-Hat River	White River	8	22	11	Excellent	Good	Good	S	
2008	WH1071	WH1071	White-Hat River	Beaver Cr.	18	18	15	Good	Fair	Fair	S	
2008	WH1074	WH1074	White-Hat River	Big Bordeaux Cr.	16	20	19	Fair	Good	Fair	S	
2008	WH1075	WH1075	White-Hat River	Larabee Cr.	20	26	11	Good	Excellent	Good	S	
2008	WH1076	WH1076	White-Hat River	White River N. of Chadron	10	18	11	Excellent	Fair	Fair	S	
2008	WH1077	WH1077	White-Hat River	White River at Crawford CP	16	20	11	Fair	Fair	Fair	S	
2008	WH1078	WH1078	White-Hat River	White River S of Ft Robinson SP		13	16	Good	Fair	Fair	S	
2011	WH1079	WH1079	White-Hat River	Larabee Cr.	16	18	13	Fair	Excellent	Fair	S	
2008	WH1250	WH1250	White-Hat River	West Ash Cr.		13	22	Fair	Good	Fair	S	
2011	WH1080	WH1080	White-Hat River	Big Bordeaux Cr.	16	20	9	Fair	Excellent	Fair	S	

Table 14 Continued

					Hierarchical cluster classification							
Year	STORET	NDEQ_ID	Watershed	Stream	Habitat score	Invert score	Fish score	Invert assess	Fish assess	Overall rating	Support	303(d) listing
2001	009707	WH2070	White-Hat River	Warbonnett Cr.		15	24	Fair	Fair	Fair	S	
2011	WH1081	WH1081	White-Hat River	Dead Horse Cr.		16	24	Fair	Excellent	Fair	S	
2011	WH1082	WH1082	White-Hat River	East Ash Cr.		15	20	Fair	Excellent	Fair	S	
2011	WH1083	WH1083	White-Hat River	White River, in Ft. Rob. SP		17	26	Fair	Excellent	Fair	S	
2011	WH1084	WH1084	White-Hat River	Deep Cr.		14	24	Fair	Excellent	Fair	S	
2011	WH2085	WH2085	White-Hat River	Hat Cr.				Fair	Excellent	Fair	S	

Excerllent	141	145	47
Good	94	119	110
Fair	173	115	207
Poor	24	55	74
Undetermined			
Total	432	434	438

Table 15. A Comparison Of Macroinvertebrate Assessements, Fish Assessments, and Overall rating changes from the old to new metrics for the Nebraska Stream Biological Monitoring Program, 1997-2011.

					Changes		
Year	STORET	NDEQ_ID	Watershed	Stream	Invert assess	Fish assess	Overall rating
1997	009904	BB1003	Big Blue River	Spring Cr. (BB)	Same	Same	Same
2007	BB1126	BB1126	Big Blue River	Wolf Cr.	Decrease	Decrease	Decrease
1997	009813	BB1115	Big Blue River	Bear Cr.	Increase	Decrease	Same
2007	BB1129	BB1129	Big Blue River	Cub Cr.	Increase	Decrease	Increase
2007	009728	BB1110	Big Blue River	Wolf Cr.	Increase	Same	Same
2007	BB1127	BB1127	Big Blue River	Soap Cr.	Decrease	Decrease	Decrease
2007	BB1128	BB1128	Big Blue River	Pierce Cr.	Same	Decrease	Same
2007	009901	BB1120	Big Blue River	Cub Cr.	Decrease	Decrease	Decrease
1997	009903	BB1130	Big Blue River	Mud Cr.	Same	Same	Same
1997	009555	BB2100	Big Blue River	Turkey Cr. (A)	Same	Decrease	Same
1997	009910	BB2101	Big Blue River	Turkey Cr. (B)	Decrease	Decrease	Decrease
2007	BB2130	BB2130	Big Blue River	Turkey Cr.	Increase	Decrease	Increase
2007	BB2131	BB2131	Big Blue River	Turkey Cr.	Same	Same	Same
2007	BB2132	BB2132	Big Blue River	S. Fk. Swan Cr.	Decrease	Same	Decrease
2007	BB2133	BB2133	Big Blue River	Turkey Cr.	Increase	Increase	Increase
2007	BB3134	BB3134	Big Blue River	Beaver Cr.	Increase	Same	Increase
2007	BB3135	BB3135	Big Blue River	W. Fk. Big Blue River	Increase	Same	Same
2007	BB3136	BB3136	Big Blue River	W. Fk. Big Blue River	Increase	Increase	Increase
1997	009564	BB4105	Big Blue River	Unnamed Trib Blue River	Same	Decrease	Decrease
1997	009902	BB4125	Big Blue River	Plum Cr.	Decrease	Decrease	Decrease
2007	BB4137	BB4137	Big Blue River	Plum Cr.	Same	Same	Same
2007	BB4138	BB4138	Big Blue River	Big Blue River	Same	Same	Same
2007	BB4139	BB4139	Big Blue River	Lincoln Cr.	Increase	Increase	Increase
2007	BB4140	BB4140	Big Blue River	Lincoln Cr.	Increase	Decrease	Increase
2000	009570	EL1093	Elkhorn River	Tracy Cr.	Decrease	Increase	Increase
2000	009569	EL1094	Elkhorn River	Union Cr.	Same	Decrease	Same
2000	009704	EL1095	Elkhorn River	Fremont Storm Drainage Canal	Decrease	Decrease	Decrease
2000	010181	EL1096	Elkhorn River	Unnamed Trib. Pebble Cr.	Decrease	Increase	Increase
2000	010182	EL1097	Elkhorn River	Dry Cr.	Increase	Decrease	Same
2000	010183	EL1098	Elkhorn River	Maple Cr.	Increase	Increase	Increase
2000	010184	EL1099	Elkhorn River	Elkhorn River (E)	Increase	Decrease	Increase

Table 15 Continued

					Changes		
Year	STORET	NDEQ_ID	Watershed	Stream	Invert assess	Fish assess	Overall rating
2005	EL1113	EL1113	Elkhorn River	Maple Cr.	Same	Increase	Increase
2005	EL1115	EL1115	Elkhorn River	Pebble Cr.	Same	Increase	Increase
2005	EL1116	EL1116	Elkhorn River	Bell Cr.	Same	Increase	Same
2005	EL1117	EL1117	Elkhorn River	W. Fork Maple Cr.	Decrease	Same	Same
2005	EL1118	EL1118	Elkhorn River	E. Fork Maple Cr.	Increase	Decrease	Decrease
2005	EL1119	EL1119	Elkhorn River	Elkhorn River	Same	Increase	Same
2005	EL1120	EL1120	Elkhorn River	Elkhorn River	Same	Increase	Increase
2005	EL1121	EL1121	Elkhorn River	Humbug Cr.	Increase	Decrease	Same
2005	EL1122	EL1122	Elkhorn River	Elkforn River	Increase	Increase	Increase
2005	EL1123	EL1123	Elkhorn River	Union Cr.	Same	Same	Same
2010	EL1134	EL1134	Elkhorn River	Bell Creek	Same	Increase	Increase
2010	EL1135	EL1135	Elkhorn River	Maple Creek	Same	Increase	Increase
2010	EL1136	EL1136	Elkhorn River	Rock Creek	Increase	Increase	Increase
2010	EL1137	EL1137	Elkhorn River	Plum Creek	Decrease	Same	Decrease
2010	EL1138	EL1138	Elkhorn River	S. Br. Humbug Creek	Same	Same	Same
2010	EL1139	EL1139	Elkhorn River	Meridian Cr. - E. of Madison	Same	Increase	Same
2000	010185	EL2100	Elkhorn River	Logan Cr.	Same	Increase	Increase
2000	010186	EL2102	Elkhorn River	Un. Trib. Logan Cr.	Same	Same	Same
2000	010187	EL2103	Elkhorn River	Baker Cr.	Decrease	Decrease	Decrease
2000	010188	EL2104	Elkhorn River	Dog Cr.	Decrease	Increase	Increase
2005	EL2124	EL2124	Elkhorn River	Middle Logan Cr.	Same	Increase	Increase
2010	EL2140	EL2140	Elkhorn River	Little Logan Cr.	Same	Increase	Same
2010	EL2141	EL2141	Elkhorn River	Rattlesnake Cr.	Same	Increase	Same
2010	EL2142	EL2142	Elkhorn River	Deer Cr.	Decrease	Same	Decrease
2000	010189	EL3105	Elkhorn River	Dry Cr.	Same	Decrease	Same
2005	EL3125	EL3125	Elkhorn River	Dry Cr.		Decrease	Decrease
2010	EL3144	EL3144	Elkhorn River	N. Fork Elkhrn River	Same	Increase	Increase
2010	EL3144	EL3144	Elkhorn River	N. Fork Elkhrn River	Decrease	Increase	Same
2010	EL3145	EL3145	Elkhorn River	Willow Cr.	Increase	Same	Increase
2000	010194	EL4013	Elkhorn River	S. Fork Elkhorn River	Increase	Same	Same
2002	009579	EL4107	Elkhorn River	Elkhorn River (A)	Decrease	Same	Decrease
2002	009725	EL4109	Elkhorn River	Elkhorn River (B)	Decrease	Same	Decrease
2002	009726	EL4110	Elkhorn River	Elkhorn River (C)	Decrease	Same	Decrease
2002	010192	EL4111	Elkhorn River	Elkhorn River (D)	Same	Increase	Same
	EL4126	EL4126	Elkhorn River	Battle Cr.	Same	Same	Same
2005	EL4126	EL4126	Elkhorn River	Battle Cr.	Same	Decrease	Decrease

Table 15 Continued

					Changes		
Year	STORET	NDEQ_ID	Watershed	Stream	Invert assess	Fish assess	Overall rating
2005	EL4127	EL4127	Elkhorn River	Elkhorn River	Same	Increase	Same
2005	EL4128	EL4128	Elkhorn River	Elkhorn River	Same	Increase	Same
2005	EL4129	EL4129	Elkhorn River	Clearwater Cr.	Increase	Same	Increase
2010	EL4129	EL4129	Elkhorn River	Clearwater Cr.	Increase	Same	Increase
2005	EL4130	EL4130	Elkhorn River	Elkhorn River	Same	Increase	Increase
2005	EL4131	EL4131	Elkhorn River	Elkhorn River	Increase	Same	Increase
			Elkhorn River	Holt Cr.	Increase	Decrease	Increase
2005	EL4132	EL4132	Elkhorn River	Holt Cr.	Increase	Same	Increase
2010	EL4146	EL4146	Elkhorn River	Buffalo Cr.	Decrease	Same	Decrease
2010	EL4147	EL4147	Elkhorn River	Cache Cr.	Increase	Increase	Increase
2010	EL4148	EL4148	Elkhorn River	S. Fk. Elkhorn River	Increase	Same	Increase
2010	EL4149	EL4149	Elkhorn River	Elkhorn River	Increase	Same	Increase
2005	El4133	EL4133	Elkhorn River	Holt Cr.	Increase	Decrease	Increase
1997	009900	LB1002	Little Blue River	Coon Cr.	Same	Decrease	Decrease
1997	009906	LB1081	Little Blue River	Little Blue River (A)	Decrease	Same	Same
2007	LB1117	LB1117	Little Blue River	Dry Branch	Increase	Decrease	Increase
2007	LB1131	LB1131	Little Blue River	Little Blue River	Increase	Increase	Increase
1997	009905	LB2080	Little Blue River	Little Blue River (B)	Same	Decrease	Decrease
1997	009584	LB2090	Little Blue River	Big Sandy Cr. (A)	Same	Decrease	Decrease
1997	009713	LB2091	Little Blue River	Big Sandy Cr. (B)	Increase	Same	Increase
1997	009712	LB2095	Little Blue River	Liberty Cr.	Decrease	Decrease	Decrease
1997	009907	LB2100	Little Blue River	Elk Cr.	Increase	Decrease	Decrease
1997	009908	LB2105	Little Blue River	Spring Cr. (LB)	Same	Decrease	Same
1997	009909	LB2110	Little Blue River	Dry Sandy Cr.	Same	Same	Same
1997	009814	LB2115	Little Blue River	Rock Cr.	Same	Decrease	Decrease
2010	LB2118	LB2118	Little Blue River	Little Blue River	Increase	Same	Increase
2007	LB2119	LB2119	Little Blue River	Spring Cr.	Decrease	Same	Same
2007	LB2120	LB2120	Little Blue River	Liberty Cr.	Increase	Decrease	Same
2007	LB2121	LB2121	Little Blue River	Spring Cr.	Decrease	Same	Decrease
2007	LB2122	LB2122	Little Blue River	Little Blue River	Decrease	Decrease	Decrease
2007	LB2123	LB2123	Little Blue River	Little Blue River	Increase	Same	Increase
2007	LB2124	LB2124	Little Blue River	Elk Cr.	Decrease	Decrease	Same
2007	LB2125	LB2125	Little Blue River	Big Sandy Cr.	Increase	Increase	Increase
2007	LB2126	LB2126	Little Blue River	Litle Blue River	Increase	Decrease	Decrease
2007	LB2127	LB2127	Little Blue River	Little Blue River	Increase	Same	Decrease
2007	LB2129	LB2129	Loup River	Spring Cr.	Increase	Decrease	Increase

Table 15 Continued

					Changes		
Year	STORET	NDEQ_ID	Watershed	Stream	Invert assess	Fish assess	Overall rating
1998	009721	LO1130	Loup River	S. Branch Timber Cr.	Increase	Decrease	Same
2008	LO1181	LO1181	Loup River	Beaver Cr.	Increase	Same	Increase
2008	LO1182	LO1182	Loup River	Cedar River	Increase	Decrease	Decrease
2008	LO1183	LO1183	Loup River	Cottonwood Cr.	Decrease	Decrease	Decrease
2008	LO1184	LO1184	Loup River	Beaver Cr.	Increase	Same	Increase
1998	009591	LO2037	Loup River	Turtle Cr.	Increase	Same	Increase
1998	009811	LO2085	Loup River	N. Loup River (B)	Same	Same	Same
1998	009816	LO2135	Loup River	Calamus River	Decrease	Decrease	Same
1998	009720	LO2140	Loup River	Goose Cr.	Same	Same	Same
1998	009576	LO2145	Loup River	Big Cr.	Increase	Decrease	Same
1998	009719	LO2150	Loup River	N. Loup River (A)	Decrease	Same	Same
1998	009977	LO2151	Loup River	N. Loup River (C)	Same	Same	Same
1998	009738	LO2155	Loup River	Davis Cr.	Same	Decrease	Decrease
1998	009708	LO2160	Loup River	Munson Cr. (A)	Increase	Decrease	Decrease
1998	009978	LO2161	Loup River	Munson Cr. (B)	Same	Same	Same
1998	009980	LO3172	Loup River	Mid. Loup River (C)	Increase	Increase	Increase
2008	LO2185	LO2185	Loup River	Mira Cr.	Same	Decrease	Same
2008	LO2186	LO2186	Loup River	N. Loup River	Increase	Decrease	Decrease
2008	LO2187	LO2187	Loup River	N. Loup River	Decrease	Decrease	Increase
2008	LO2192	LO2192	Loup River	N. Loup River	Same	Decrease	Same
2008	LO2200	LO2103B	Loup River	Goose Cr.	Increase	Decrease	Increase
2008	LO3088	LO3088	Loup River	Dismal River	Increase	Increase	Increase
2008	LO3165	LO3165	Loup River	N. Fork Dismal River (A)	Decrease	Increase	Same
1998	009979	LO3166	Loup River	N. Fork Dismal River (B)	Increase	Same	Same
1998	009563	LO3170	Loup River	Mid. Loup River (B)	Decrease	Same	Decrease
2008	LO3189	LO3189	Loup River	Mid. Loup River	Same	Same	Same
2008	LO3190	LO3190	Loup River	Mid. Loup River	Increase	Same	Increase
2008	LO3191	LO3191	Loup River	Victoria Cr.	Increase	Decrease	Decrease
2008	LO3193	LO3193	Loup River	Oak Cr.	Increase	Decrease	Increase
1998	009981	LO4175	Loup River	South Loup River	Increase	Decrease	Same
2008	LO4196	LO4196	Loup River	Mud Cr.	Increase	Increase	Increase
2008	LO4194	LO4194	Loup River	South Loup River	Decrease	Same	Decrease
2008	LO4195	LO4195	Loup River	South Loup River	Same	Same	Same
2008	LO4196	LO4196	Loup River	Mud Cr.	Same	Same	Decrease
2008	LO4197	LO4197	Loup River	S. Loup River	Increase	Same	Same
1999	LP1002	LP1002	Lower Platte River	Four Mile Cr.	Decrease	Same	Same

Table 15 Continued

					Changes		
Year	STORET	NDEQ_ID	Watershed	Stream	Invert assess	Fish assess	Overall rating
2004	010087	LP1023	Lower Platte River	Pawnee Cr.	Same	Decrease	Decrease
2004	009560	LP1153	Lower Platte River	Pawnee Cr.	Increase	Decrease	Decrease
2002	009746	LP1157	Lower Platte River	Decker Cr.	Decrease	Decrease	Decrease
2004	LP1170	LP1170	Lower Platte River	Bachelor Br. To Eight Mile Cr.	Same	Increase	Increase
2004	LP1171	LP1171	Lower Platte River	Lost Cr.	Same	Decrease	Same
2004	LP1172	LP1172	Lower Platte River	Shell Cr.	Increase	Increase	Increase
2004	LP1173	LP1173	Lower Platte River	Shell Cr.	Decrease	Decrease	Decrease
1999	009551	LP2160	Lower Platte River	N. Oak Cr.	Decrease	Decrease	Decrease
1999	009552	LP2161	Lower Platte River	Un. Trib. Little Salt Cr.	Decrease	Decrease	Decrease
1999	010091	LP2162	Lower Platte River	Sand Cr.	Increase	Decrease	Decrease
1999	010092	LP2163	Lower Platte River	Oak Cr.	Increase	Decrease	Decrease
1999	010093	LP2164	Lower Platte River	Un. Trib. Cottonwood Cr.	Increase	Decrease	Increase
1999	010094	LP2165	Lower Platte River	Duck Cr.	Decrease	Same	Decrease
1999	010096	LP2167	Lower Platte River	Miller Br.	Increase	Same	Increase
1999	010097	LP2168	Lower Platte River	North Br.	Same	Decrease	Same
1999	010098	LP2169	Lower Platte River	Hickman Br.	Same	Decrease	Same
2004	LP2174	LP2174	Lower Platte River	Salt Cr.	Decrease	Same	Same
2004	LP2175	LP2175	Lower Platte River	Wahoo Cr.	Increase	Same	Same
2004	LP2176	LP2176	Lower Platte River	Bates Br.	Same	Increase	Same
2004	LP2177	LP2177	Lower Platte River	Middle Cr.	Same	Increase	Increase
2004	LP2178	LP2178	Lower Platte River	Middle Oak+E194 Cr.	Same	Decrease	Decrease
2004	LP2179	LP2179	Lower Platte River	Cottonwood Cr.	Same	Same	Same
2004	LP2180	LP2180	Lower Platte River	Silver Cr.	Same	Decrease	Decrease
2004	LP2181	LP2181	Lower Platte River	Olive Br.	Increase	Decrease	Increase
2004	LP2182	LP2182	Lower Platte River	Rock Cr.	Decrease	Same	Increase
2004	LP2183	LP2183	Lower Platte River	Clear Cr.	Same	Decrease	Decrease
2004	LP2184	LP2184	Lower Platte River	Sand Cr.	Increase	Same	Same
2004	LP2185	LP2185	Lower Platte River	Dee Cr.	Increase	Decrease	Decrease
2004	LP2186	LP2186	Lower Platte River	Wahoo Cr.	Increase	Same	Same
2004	LP2187	LP2187	Lower Platte River	N. Fk. Rock Cr.	Decrease	Decrease	Decrease
2004	MP1003	MP1003	Middle Platte River	Clear Cr.	Same	Decrease	Decrease
2001	009580	MP1050	Middle Platte River	Platte River (Side Channel)	Decrease	Decrease	Decrease
2001	010176	MP1051	Middle Platte River	Silver Cr.	Same	Same	Same
2006	MP1063	MP1063	Middle Platte River	Prairie Cr.	Decrease	Decrease	Decrease
2001	010177	MP2052	Middle Platte River	Platte River (Issac Walton)	Increase	Same	Increase
2001	010178	MP2053	Middle Platte River	Platte River	Same	Increase	Decrease

Table 15 Continued

					Changes		
Year	STORET	NDEQ_ID	Watershed	Stream	Invert assess	Fish assess	Overall rating
2001	010179	MP2054	Middle Platte River	Wood River	Decrease	Increase	Decrease
2001	010180	MP2055	Middle Platte River	Platte River (North Channel)	Same	Decrease	Decrease
2001	010150	MP2057	Middle Platte River	Platte River	Same	Same	Same
2001	010151	MP2059	Middle Platte River	Spring Cr.	Decrease	Decrease	Decrease
2001	009573	MP2060	Middle Platte River	Spring Cr.	Increase	Increase	Increase
2001	010152	MP2061	Middle Platte River	Pawnee Cr.	Decrease	Decrease	Decrease
2001	010175	MP2062	Middle Platte River	Pawnee Cr.	Same	Same	Same
2006	MP2064	MP2064	Middle Platte River	Platte River	Increase	Same	Increase
2006	MP2065	MP2065	Middle Platte River	Spring Cr.	Increase	Increase	Increase
2006	MP2066	MP2066	Middle Platte River	Platte River	Same	Decrease	Decrease
2006	MP2067	MP2067	Middle Platte River	Platte River	Increase	Same	Increase
2000	009556	MT1041	Missouri Tribs	Tekamah Cr. (B)	Decrease	Same	Same
2000	010195	MT1050	Missouri Tribs	Un. Trib. Blackbird Cr. (A)	Decrease	Decrease	Decrease
2000	009718	MT1130	Missouri Tribs	Un. Trib. Blackbird Cr. (B)	Same	Decrease	Decrease
2000	010196	MT1132	Missouri Tribs	Walnut Cr.	Increase	Same	Increase
2000	010197	MT1133	Missouri Tribs	Un. Trib. Big Papillion Cr.	Increase	Decrease	Increase
2000	010198	MT1134	Missouri Tribs	Pigeon Cr. (B)	Decrease	Decrease	Decrease
2000	010199	MT1135	Missouri Tribs	Wood Cr.	Increase	Decrease	Decrease
2000	010203	MT1336	Missouri Tribs	Tekamah Cr. (A)	Decrease	Decrease	Decrease
2000	010201	MT1137	Missouri Tribs	Omaha Cr.	Decrease	Same	Decrease
2005	MT1148	MT1148	Missouri Tribs	S. Br. Papillion Cr.	Increase	Increase	Increase
2005	MT1150	MT1150	Missouri Tribs	Big Papillion Cr.	Increase	Decrease	Decrease
2005	MT1151	MT1151	Missouri Tribs	Long Cr.	Increase	Increase	Increase
2005	MT1152	MT1152	Missouri Tribs	Mill Cr.	Increase	Decrease	Decrease
2005	MT1153	MT1153	Missouri Tribs	Silver CR.	Increase	Increase	Increase
2005	MT1154	MT1154	Missouri Tribs	Cow Cr.	Increase	Same	Same
2005	MT1156	MT1156	Missouri Tribs	N. Omaha Cr.	Increase	Same	Same
2005	MT1157	MT1157	Missouri Tribs	Omaha Cr.	Increase	Decrease	Decrease
2010	MT1169	MT1169	Missouri Tribs	Un Trib to Papillion Cr.	Increase	Same	Increase
2010	MT1170	MT1170	Missouri Tribs	North Br West Papillion Cr.	Same	Increase	Increase
2010	MT1171	MT1171	Missouri Tribs	Thomas Cr.	Same	Same	Same
2010	MT1172	MT1172	Missouri Tribs	Big Papillion Cr.	Decrease	Increase	Decrease
2010	MT1173	MT1173	Missouri Tribs	Silver Cr.	Same	Increase	Same
2010	MT1174	MT1174	Missouri Tribs	Cow Cr.	Decrease	Increase	Increase
2010	MT1184	MT1184	Missouri Tribs	Elm Cr.	Decrease	Increase	Decrease
2000	009714	MT2138	Missouri Tribs	Un. Trib. South Cr.	Increase	Same	Same

Table 15 Continued

					Changes		
Year	STORET	NDEQ_ID	Watershed	Stream	Invert assess	Fish assess	Overall rating
2000	009727	MT2139	Missouri Tribs	How e Cr.	Decrease	Same	Decrease
2000	010202	MT2140	Missouri Tribs	E. Bow Cr.	Increase	Increase	Increase
2000	010200	MT2141	Missouri Tribs	Beaver Cr.	Decrease	Decrease	Decrease
2000	010204	MT2142	Missouri Tribs	Aowa Cr.	Increase	Increase	Increase
2000	010205	MT2143	Missouri Tribs	Un. Trib. Norw egian Bow Cr.	Decrease	Decrease	Decrease
2000	010206	MT2144	Missouri Tribs	Bow Cr. (B)	Same	Decrease	Decrease
2000	010207	MT2145	Missouri Tribs	Bow Cr. (A)	Same	Increase	Same
2000	010208	MT2146	Missouri Tribs	Jordan Cr.	Increase	Increase	Increase
2000	010209	MT2147	Missouri Tribs	Un. Trib . Bazile Cr.	Decrease	Decrease	Decrease
2005	MT2158	MT2158	Missouri Tribs	Elk Cr.	Increase	Increase	Increase
2005	MT2159	MT2159	Missouri Tribs	Elk Cr.	Decrease	Same	Same
2005	MT2160	MT2160	Missouri Tribs	Elk Cr.	Increase	Decrease	Decrease
2005	MT2161	MT2161	Missouri Tribs	Lime Cr.	Increase	Decrease	Decrease
2005	MT2162	MT2162	Missouri Tribs	W. Bow Cr.	Increase	Increase	Increase
2005	MT2163	MT2163	Missouri Tribs	Un. Trib. Norw egian Bow Cr.	Increase	Same	Decrease
2005	MT2164	MT2164	Missouri Tribs	Norw egian Bow Cr.	Same	Decrease	Decrease
2005	MT2165	MT2165	Missouri Tribs	W. Bow Cr.	Increase	Same	Same
2005	MT2166	MT2166	Missouri Tribs	Little Bazile Cr.	Same	Same	Same
2005	MT2167	MT2167	Missouri Tribs	Unnamed Trib. Bazile Cr.	Increase	Same	Increase
2005	MT2168	MT2168	Missouri Tribs	Bazile Cr.	Increase	Same	Increase
2010	MT2175	MT2175	Missouri Tribs	Elk Cr.	Decrease	Same	Decrease
2010	MT2176	MT2176	Missouri Tribs	Elk Cr.	Decrease	Same	Decrease
2010	MT2177	MT2177	Missouri Tribs	South Cr.	Increase	Increase	Increase
2010	MT2178	MT2178	Missouri Tribs	South Cr.	Decrease	Increase	Increase
2010	MT2179	MT2179	Missouri Tribs	Badger Cr.	Same	Same	Decrease
2010	MT2180	MT2180	Missouri Tribs	Norw egian Bow Cr.	Same	Decrease	Same
2010	MT2181	MT2181	Missouri Tribs	Antelope Cr.	Same	Increase	Same
2010	MT2182	MT2182	Missouri Tribs	Little Bazile Cr.	Same	Same	Same
2010	MT2183	MT2183	Missouri Tribs	Bazile Cr.	Decrease	Same	Decrease
1999	009703	NE1177	Nemaha River	Ervine Cr.	Increase	Increase	Increase
1999	009705	NE1178	Nemaha River	Duck Cr.	Decrease	Decrease	Decrease
1999	010100	NE1179	Nemaha River	Honey Cr.	Same	Decrease	Decrease
1999	010101	NE1180	Nemaha River	Cottier Cr.	Decrease	Decrease	Decrease
1999	010102	NE1181	Nemaha River	N. Br. Weeping Water Cr.	Decrease	Same	Decrease
1999	010103	NE1182	Nemaha River	S. Cedar Cr.	Same	Decrease	Decrease
2004	NE1196	NE1196	Nemaha River	Big Slough	Increase	Same	Same

Table 15 Continued

					Changes		
Year	STORET	NDEQ_ID	Watershed	Stream	Invert assess	Fish assess	Overall rating
2004	NE1197	NE1197	Nemaha River	Winnebago Cr.	Increase	Decrease	Same
1999	009585	NE2183	Nemaha River	Rattlesnake Cr.	Decrease	Decrease	Decrease
1999	010104	NE2184	Nemaha River	Pony Cr.	Same	Same	Same
1999	009810	NE2185	Nemaha River	Lores Branch	Same	Same	Decrease
2004	009810	NE2185	Nemaha River	Lores Branch	Increase	Decrease	Increase
1999	010106	NE2187	Nemaha River	Long Branch	Decrease	Same	Same
1999	010107	NE2188	Nemaha River	Yankee Cr.	Same	Same	Same
1999	010108	NE2189	Nemaha River	N. Fk. Big Nemaha River	Decrease	Same	Decrease
1999	010109	NE2190	Nemaha River	N. Fk. Big Nemaha River	Same	Same	Same
1999	010110	NE2191	Nemaha River	Balls Br.	Same	Decrease	Decrease
2004	NE2198	NE2198	Nemaha River	Big Nemaha River	Increase	Increase	Increase
2004	NE2199	NE2199	Nemaha River	Whiskey Run	Decrease	Decrease	Decrease
2004	NE2200	NE2200	Nemaha River	Long Branch	Increase	Increase	Increase
2004	NE2201	NE2201	Nemaha River	Un Trib Balls Br.	Decrease	Decrease	Decrease
2004	NE2202	NE2202	Nemaha River	Fournile Cr.	Decrease	Decrease	Decrease
2004	NE2203	NE2203	Nemaha River	Mid. Br. Big Nemaha River	Decrease	Same	Same
2004	NE2204	NE2204	Nemaha River	Muddy Cr.	Decrease	Increase	Increase
2004	NE2205	NE2205	Nemaha River	S. Fk. Big Nemaha River	Increase	Increase	Increase
2004	NE2206	NE2206	Nemaha River	N. Fk. Big Nemaha River	Same	Increase	Increase
2004	NE2207	NE2207	Nemaha River	Mid. Br. Big Nemaha River	Decrease	Increase	Decrease
2004	NE2208	NE2208	Nemaha River	Little Muddy Cr.	Decrease	Decrease	Decrease
2004	NE2209	NE2209	Nemaha River	Hoosier Cr.	Decrease	Same	Decrease
1999	010111	NE3192	Nemaha River	Little Muddy Cr.	Decrease	Decrease	Decrease
1999	010112	NE3193	Nemaha River	Indian Cr.	Decrease	Decrease	Decrease
	010112	NE3193	Nemaha River	Indian Cr.	Increase	Decrease	Decrease
1999	010114	NE3195	Nemaha River	Muddy Cr.	Decrease	Same	Same
2004	NE3210	NE3210	Nemaha River	Hooper Cr.	Increase	Decrease	Decrease
2004	NE3211	NE3211	Nemaha River	Little Nemaha River	Decrease	Same	Same
2004	NE3212	NE3212	Nemaha River	Sand Cr.	Increase	Increase	Increase
2004	NE3213	NE3213	Nemaha River	Little Nemaha River	Decrease	Decrease	Decrease
2002	009748	NI1238	Niobrara River	Un. Trib. Ponca Cr.	Increase	Decrease	Increase
2008	NI1499	NI1499	Niobrara River	Ponca Cr.	Decrease	Same	Decrease
2008	NI2078	NI2078	Niobrara River	Mid. Br. Eagle Creek	Increase	Same	Increase
2002	009566	NI2365	Niobrara River	Un. Trib. Merriman Cr.	Same	Decrease	Same
2002	009565	NI2370	Niobrara River	Verdigre Cr. (A)	Increase	Decrease	Same
2002	009984	NI2371	Niobrara River	Verdigre Cr. (B)	Decrease	Same	Decrease

Table 15 Continued

					Changes		
Year	STORET	NDEQ_ID	Watershed	Stream	Invert assess	Fish assess	Overall rating
2002	009717	NI2380	Niobrara River	N. Br. Verdigre Cr.	Decrease	Decrease	Decrease
2002	009581	NI2385	Niobrara River	Mid. Br. Verdigre Cr.	Decrease	Same	Decrease
2002	009983	NI2390	Niobrara River	Niobrara River (E)	Increase	Increase	Increase
2008	NI2500	NI2500	Niobrara River	Verdigre Cr.	Increase	Same	Decrease
2008	NI2501	NI2501	Niobrara River	Spring Cr.	Increase	Increase	Increase
2008	NI3180	NI3180	Niobrara River	Muleshoe Cr.	Decrease	Decrease	Decrease
2008	NI3270	NI3270	Niobrara River	Boardman Cr.	Increase	Decrease	Increase
2002	009742	NI4393	Niobrara River	Niobrara River (B)	Decrease	Decrease	Decrease
2002	009723	NI3395	Niobrara River	Gordon Cr.	Same	Increase	Increase
2002	009716	NI3400	Niobrara River	Un. Trib. Rock Cr.	Increase	Decrease	Same
2002	009582	NI3405	Niobrara River	Long Pine Cr.	Same	Decrease	Decrease
2002	009715	NI3410	Niobrara River	Short Pine Cr.	Same	Increase	Increase
2002	009715	NI3410	Niobrara River	Short Pine Cr.	Decrease	Decrease	Decrease
1998	010013	NI3420	Niobrara River	Plum Cr.	Decrease	Decrease	Decrease
2008	NI3503	NI3503	Niobrara River	South Fork Plum Cr.	Increase	Same	Increase
1998	010014	NI3425	Niobrara River	Willow Cr.	Increase	Same	Increase
2008	NI3504	NI3504	Niobrara River	Gordon Cr.	Increase	Same	Increase
2008	NI3505	NI3505	Niobrara River	Burton Cr.	Increase	Same	Increase
2008	NI3506	NI3506	Niobrara River	Willow Cr.	Decrease	Same	Decrease
2008	NI3507	NI3507	Niobrara River	Plum Cr.	Increase	Same	Increase
2008	NI3509	NI3509	Niobrara River	Minnechaduza Cr.	Same	Same	Same
2008	NI3510	NI3510	Niobrara River	Minnechaduza Cr. (A)	Increase	Same	Increase
2008	NI3511	NI3511	Niobrara River	Bone Cr.	Same	Same	Same
2008	NI3520	NI3140A	Niobrara River	Fairfield Cr.	Decrease	Decrease	Decrease
1998	009596	NI4305	Niobrara River	Pine Cr.	Decrease	Decrease	Decrease
1998	009588	NI4392	Niobrara River	Niobrara River (C)	Decrease	Same	Decrease
1998	009742	NI4393	Niobrara River	Niobrara River (B)	Same	Increase	Increase
2008	NI4514	NI4514	Niobrara River	Niobrara River near Merriman	Increase	Same	Increase
2008	NI4515	NI4515	Niobrara River	Niobrara River near Hay Springs	Decrease	Decrease	Decrease
2008	NI4516	NI4516	Niobrara River	Niobrara River near Harrison	Increase	Same	Increase
2002	010160	NI2108	Niobrara River	Rush Cr.	Increase	Decrease	Increase
2011	NP1002	NP1002	North Platte River	Un. Trib of North Platte R.	Decrease	Same	Increase
2011	NP1006	NP1006	North Platte River	N. Fk. Birdwood Cr.	Increase	Increase	Increase
2002	010153	NP1099	North Platte River	N. Platte River	Decrease	Decrease	Decrease
2002	009578	NP1100	North Platte River	N. Platte River	Same	Same	Same
2002	010154	NP1101	North Platte River	N. Platte River	Increase	Decrease	Decrease

Table 15 Continued

					Changes		
Year	STORET	NDEQ_ID	Watershed	Stream	Invert assess	Fish assess	Overall rating
2006	NP1114	NP1114	North Platte River	N. Platte River	Increase	Increase	Increase
2006	NP1115	NP1115	North Platte River	N. Platte River	Increase	Decrease	Same
2006	NP1116	NP1116	North Platte River	Birdwood Cr.	Decrease	Decrease	Decrease
2006	NP1117	NP1117	North Platte River	N. Platte River	Increase	Decrease	Same
2006	NP1118	NP1118	North Platte River	Whitetail Cr.	Same	Decrease	Decrease
2011	NP1135	NP1135	North Platte River	East Clear Cr.	Same	Same	Same
2011	NP1136	NP1136	North Platte River	Whitetail Cr.	Same	Same	Same
2011	NP2023	NP2023A	North Platte River	Cedar Cr.	Increase	Same	Increase
2011	NP2105	NP2105	North Platte River	Blue Cr.	Increase	Decrease	Increase
2002	010155	NP2102	North Platte River	N. Platte River (North Channel	Decrease	Decrease	Decrease
2002	009730	NP2104	North Platte River	Blue Cr.	Decrease	Decrease	Decrease
2002	010157	NP2105	North Platte River	Blue Cr.	Same	Same	Same
2002	010158	NP2106	North Platte River	Blue Cr.	Same	Same	Same
2002	010159	NP2107	North Platte River	N. Platte River (South Channel)	Same	Same	Same
2002	010160	NP2108	North Platte River	Rush Cr.	Decrease	Same	Decrease
2002	010161	NP2109	North Platte River	Unnamed Trib. Cedar Cr.	Increase	Same	Same
2006	NP2119	NP2119	North Platte River	Blue Cr.	Decrease	Decrease	Decrease
2006	NP2121	NP2121	North Platte River	N. Platte River	Increase	Decrease	Same
2006	NP2122	NP2122	North Platte River	N. Platte River	Increase	Same	Increase
2011	NP2137	NP2137	North Platte River	Otter Cr.	Increase	Increase	Increase
2011	NP2138	NP2138	North Platte River	Blue Cr.	Same	Increase	Same
2011	NP2139	NP2139	North Platte River	Rush Cr.	Decrease	Same	Decrease
2011	NP2144	NP2144	North Platte River	Lower Dugout Cr.	Same	Increase	Increase
2006	NP3066	NP3066	North Platte River	N. Platte River	Increase	Same	Increase
2006	NP3098	NP3098	North Platte River	N. Platte River	Increase	Same	Increase
2002	010164	NP3112	North Platte River	Ninemile Cr.	Same	Increase	Increase
2002	009702	NP3113	North Platte River	Dry Spottedtail Cr.	Same	Same	Same
2002	NP3123	NP3123	North Platte River	N. Platte River (North Channel)	Decrease	Same	Decrease
2006	NP3123	NP3123	North Platte River	N. Platte River (North Channel)	Same	Decrease	Same
2006	NP3124	NP3124	North Platte River	Red Willow Cr.	Same	Increase	Increase
2006	NP3125	NP3125	North Platte River	Wildhorse Dr.	Increase	Same	Same
2006	NP3126	NP3126	North Platte River	N. Platte River	Same	Same	Same
2006	NP3127	NP3127	North Platte River	N. Platte River	Same	Same	Same
2006	NP3128	NP3128	North Platte River	N. Platte River	Same	Increase	Decrease
2006	NP3130	NP3130	North Platte River	Gering Drain	Decrease	Decrease	Decrease
2006	NP3131	NP3131	North Platte River	Sheep Cr.	Increase	Increase	Increase

Table 15 Continued

					Changes		
Year	STORET	NDEQ_ID	Watershed	Stream	Invert assess	Fish assess	Overall rating
2011	NP3145	NP3145	North Platte River	Indian Cr.	Decrease	Same	Decrease
2011	NP3146	NP3146	North Platte River	Upper Dugout Cr.	Same	Same	Same
2011	NP3147	NP3147	North Platte River	Wildhorse Drain	Increase	Increase	Increase
2011	NP3148	NP3148	North Platte River	Ninemile Cr.	Decrease	Increase	Increase
2011	NP3149	NP3149	North Platte River	Winters Cr.	Decrease	Increase	Increase
2011	NP3150	NP3150	North Platte River	Kiowa Cr.	Same	Increase	Same
2011	NP3151	NP3151	North Platte River	Sheep Cr.	Decrease	Increase	Decrease
1997	009926	RE1040	Republican River	Cottonwood Cr.	Decrease	Same	Decrease
1997	009587	RE1150	Republican River	Republican River (A)	Same	Same	Same
1997	009559	RE1165	Republican River	E. Penny Cr.	Same	Increase	Increase
1997	009711	RE1175	Republican River	Hicks Cr.	Increase	Decrease	Increase
1997	009817	RE1181	Republican River	Farmers Cr.	Decrease	Decrease	Decrease
2007	RE1211	RE1211	Republican River	Republican River	Decrease	Same	Decrease
2007	RE1212	RE1212	Republican River	Republican River	Increase	Decrease	Increase
1997	009729	RE2151	Republican River	Republican River (B)	Decrease	Increase	Same
1997	009919	RE2153	Republican River	Republican River (D)	Same	Same	Same
1997	009554	RE2160	Republican River	Beaver Cr. (A)	Same	Same	Same
1997	009710	RE2161	Republican River	Beaver Cr. (B)	Decrease	Same	Same
1997	009918	RE2200	Republican River	Sappa Cr.	Increase	Same	Same
1997	009920	RE2205	Republican River	Prairie Dog Cr.	Increase	Decrease	Decrease
2007	RE2213	RE2213	Republican River	Flag Cr.	Increase	Decrease	Same
2007	RE22014	RE2214	Republican River	Prairie Dog Cr.	Increase	Decrease	Decrease
2007	RE2215	RE2215	Republican River	Muddy Cr.	Same	Decrease	Decrease
2007	RE2216	RE2216	Republican River	Sappa Cr.	Decrease	Same	Decrease
2007	RE2217	RE2217	Republican River	Beaver Cr.	Same	Same	Same
2007	RE2227	RE2227	Republican River	Deer Cr.	Same	Same	Same
1997	009924	RE3094	Republican River	Frenchman Cr. (A)	Decrease	Decrease	Decrease
1997	009925	RE3113	Republican River	Republican River (F)	Decrease	Increase	Same
1997	009743	RE3252	Republican River	Republican River (C)	Same	Decrease	Decrease
1997	009922	RE3154	Republican River	Republican River (E)	Same	Decrease	Decrease
1997	009818	RE3185	Republican River	Frenchman Cr. (B)	Increase	Decrease	Decrease
1997	009916	RE3190	Republican River	Spring Cr.	Same	Same	Same
1997	009917	RE3195	Republican River	Muddy Cr.	Same	Same	Same
2007	RE3218	RE3218	Republican River	Frenchman Cr.	Decrease	Decrease	Decrease
2007	RE3219	RE3219	Republican River	Republican River	Increase	Decrease	Same
2007	RE3220	RE3220	Republican River	Red Willow Cr.	Same	Increase	Same

Table 15 Continued

					Changes		
Year	STORET	NDEQ_ID	Watershed	Stream	Invert assess	Fish assess	Overall rating
2007	RE3221	RE3221	Republican River	Frenchman Cr.	Same	Same	Same
2007	RE3222	RE3222	Republican River	Medicine Cr.	Decrease	Increase	Same
2007	RE3223	RE3223	Republican River	Muddy Cr.	Increase	Decrease	Same
2007	RE3225	RE3225	Republican River	Republican River	Same	Decrease	Increase
2007	RE3226	RE3226	Republican River	Stinking Water Cr.	Decrease	Decrease	Decrease
2011	SP1007	SP1007	South Platte River	Applegate Drain	Increase	Same	Increase
2011	SP1012	SP1012	South Platte River	South Platte River	Increase	Increase	Increase
2011	SP1048	SP1048	South Platte River	Fremont Slough -East	Same	Same	Same
2001	010165	SP1031	South Platte River	S. Platte River (Centennial Park)	Increase	Decrease	Increase
2011	SP1049	SP1049	South Platte River	South Platte River	Increase	Increase	Increase
2011	SP1050	SP1050	South Platte River	South Platte River	Increase	Same	Increase
2001	010166	SP1032	South Platte River	Mid. Fremont Slough	Decrease	Same	Decrease
2001	010167	SP1033	South Platte River	W. Fremont Slough	Increase	Same	Increase
2001	010168	SP1034	South Platte River	S. Platte River	Same	Decrease	Decrease
2001	010169	SP1035	South Platte River	S. Platte River (Sutherland)	Same	Decrease	Decrease
2001	010170	SP1036	South Platte River	S. Platte River (Brule)	Same	Increase	Increase
2001	009724	SP1037	South Platte River	S. Platte River (Brule)	Decrease	Same	Decrease
2001	010171	SP1038	South Platte River	Peterson Ditch	Same	Increase	Increase
2001	010174	SP2019	South Platte River	Lodgepole Cr.	Same	Decrease	Same
2001	010172	SP2039	South Platte River	Highline Canal	Decrease	Increase	Increase
2001	010173	SP2040	South Platte River	Lodgepole Cr.	Same	Decrease	Same
2001	009740	SP2042	South Platte River	Lodgepole Cr.	Same	Decrease	Decrease
2011	SP2042	SP2042	South Platte River	Lodgepole Cr.	Decrease	Increase	Same
2006	SP2043	SP2043	South Platte River	Lodgepole Cr.	Increase	Increase	Increase
2011	SP2043	SP2043A	South Platte River	Lodgepole Cr.	Same	Increase	Same
2006	SP2044	SP2044	South Platte River	Lodgepole Cr.	Same	Same	Same
2006	SP2045	SP2045	South Platte River	Lodgepole Cr.	Decrease	Decrease	Decrease
2011	SP2045	SP2045	South Platte River	Lodgepole Cr.	Decrease	Same	Decrease
2006	SP2046	SP2046	South Platte River	Lodgepole Cr.	Increase	Same	Increase
2011	SP2047	SP2047	South Platte River	Lodgepole Cr. - Bushnell	Decrease	Increase	Decrease
2011	WH1037	WH1037	White-Hat River	Mid. Fk. Soldier Creek	Decrease	Increase	Same
2001	009567	WH1065	White-Hat River	White River	Same	Decrease	Decrease
2008	WH1071	WH1071	White-Hat River	Beaver Cr.	Same	Decrease	Decrease
2008	WH1074	WH1074	White-Hat River	Big Bordeaux Cr.	Decrease	Decrease	Decrease
2008	WH1075	WH1075	White-Hat River	Larabee Cr.	Same	Same	Same
2008	WH1076	WH1076	White-Hat River	White River N. of Chadron	Same	Increase	Increase

Table 15 Continued

					Changes		
Year	**STORET**	**NDEQ_ID**	**Watershed**	**Stream**	**Invert assess**	**Fish assess**	**Overall rating**
2008	WH1077	WH1077	White-Hat River	White River at Crawford CP	Decrease	Decrease	Decrease
2008	WH1078	WH1078	White-Hat River	White River S of Ft Robinson SP	Decrease	Decrease	Decrease
2011	WH1079	WH1079	White-Hat River	Larabee Cr.	Decrease	Same	Decrease
2008	WH1250	WH1250	White-Hat River	West Ash Cr.	Decrease	Same	Decrease
2011	WH1080	WH1080	White-Hat River	Big Bordeaux Cr.	Same	Same	Same
2001	009707	WH2070	White-Hat River	Warbonnett Cr.	Increase	Same	Increase
2011	WH1081	WH1081	White-Hat River	Dead Horse Cr.	Decrease	Increase	Decrease
2011	WH1082	WH1082	White-Hat River	East Ash Cr.	Same	Increase	Same
2011	WH1083	WH1083	White-Hat River	White River, in Ft. Rob. SP	Decrease	Same	Decrease
2011	WH1084	WH1084	White-Hat River	Deep Cr.	Same	Same	Same
2011	WH2085	WH2085	White-Hat River	Hat Cr.	Decrease	Increase	Decrease
				Lower ratings	136	167	164
				Same ratings	142	166	137
				High ratings	159	105	137

Appendix 1

Appendix 1

Running title: Bioassessment of Nebraska streams

TITLE: Bioassessment of the Wadeable Streams and Rivers of Nebraska Using *a posteriori* Classifications.

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ABSTRACT/The effectiveness of bioassessments relies on our ability to classify stream types. Our objective was to assess the biotic integrity of wadeable Nebraska streams using *a posteriori* classifications, which can provide more realistic comparisons than landscape-based classifications. We used hierarchical cluster analysis to identify 6 groups of reference streams. We then used ANOVA and 95% confidence intervals to identify 4 physical variables that could discriminate among reference groups: discharge, temperature, the percentage of riffle habitat, and the percentage of agricultural land-usage. Indicator species analysis confirmed the ecological robustness of reference groups. Test sites were assigned to groups for comparison using a decision tree derived from these 4 factors. Next, we compiled multimetric indices of 6 5 habitat, 5 6 macroinvertebrate and 65 fish metrics that discriminated among streams of known good and poor quality and assessed the integrity of test sites. Lastly, we built linear models of invertebrate and fish metrics using chemical and physical variables to identify those that explained a significant amount of variation in core metrics. Habitat features, especially those at local scales, had large effects on the behavior of core metrics. This, combined with the ability of physical characteristics to identify impairment, suggested that *a posteriori* stream classifications based on shared physical features are more appropriate in Nebraska than landscape-based classifications such as ecoregions. Furthermore, restoration of physical habitat should have a greater impact on stream integrity than nutrient or chemical remediation.

Keywords: Bioassessment, Multimetric, Multivariate, Nebraska, Invertebrates, Fish, Habitat

Introduction

Multimetric biological assessments attempt to incorporate biotic assemblages into determinations of the ecological integrity of surface waters (Karr 1981, Yoder and Kulik 2003). These assessments use compiled indices of individual metrics that should respond predictably to perturbation. For example, the presence of anthropogenic stress is expected to decrease overall integrity or increase the relative abundance of pollution-tolerant organisms (Rosenberg and Resh 1993). Multimetric assessments are the preferred method of monitoring the integrity of surface waters in the United States (Roset et al. 2007, Stoddard et al. 2008).

The accuracy and precision of bioassessments is determined by the proper comparison of test sites with reference sites (Milner and Oswood 2000, Hawkins et al. 2000). The traditional method has been to use landscape-based classifications, in which streams are grouped according to pre-determined boundaries in the landscape, such as watersheds or ecoregions (i.e., Omernik 1987). However, these classifications tend to only explain a minimal amount of the differences between streams (Hawkins et al. 2000, Wang et al. 2003). For example, Hawkins and Vinson (2000) compared the utility of 5 types of landscape classification for explaining compositional differences of invertebrates from >2000 streams of the United States: ecoregions, life zones and different sizes of catchments. They suggested that no existing landscape classification scheme was sufficient for partitioning invertebrate assemblages into discrete groups. A lack of strong landscape filters may result in high degrees of biotic overlap among landscpapes (i.e., Heino et al. 2003), which may be partially responsible for the observed high natural and among-ecoregional variability in metrics (Resh 1994, Fore et al. 1996, Bonada et al. 2006). Additionally, Heino and Mykra (2006) explained that weak correspondence between stream type and invertebrate association is likely due to individualistic responses of these taxa and lack of fidelity to a particular area. Regions in which landscape classifications were useful tended to have dramatic differences in elevation and/or climate (e.g., Harding et al. 1997, Gerritsen et al. 2000, Oswood et al. 2000, Hawkins et al. 2000).

An alternative to landscape-based classifications is to use statistical classifications that do not rely on physiographic constraints (Barbour et al. 2000). Multivariate classifications, such as through cluster analysis, are appealing because the organismal data are inherently multivariate (Norris 1995, Milner and Oswood 2000). For example, Barbour et al. (2000) found that streams in Wyoming were better classified using clustering based on biotic similarity, though there were apparent ecoregional affinities. Similarly, Milner and Oswood (2000) found that classification based on multivariate techniques was better at classifying streams around Anchorage than multimetric methods. These approaches incorporate ecologically important, site-specific factors and relax the assumption that streams in close proximity have similar faunas, although some have expressed reservations about the increased complexity of these methods (i.e., Reynoldson et al. 1997).

Here we use multivariate, *a posteriori* classification methods in conjunction with multimetric indices (*sensu* Heatherly et al. 2007) to determine the integrity of wadeable streams and rivers of Nebraska. Previous bioassessments in the state were based on *a priori* ecoregional classifications to compare test sites to reference conditions (Bazata 2005, 2011), which seemed appropriate given the dramatic east-west precipitation gradient across the state. However, there were streams assessed as impaired despite little to no anthropogenic activity in their basins. We hypothesized that local-scale habitat features have large effects on the composition of biotic assemblages. If true, stream assessments based on ecoregion-based classification are based on unrealistic assumptions of biotic potential. For example, larger, wadeable reaches of the Loup River would be compared to headwater streams with little flow. We predict that classifications based on *a posteriori* groupings of streams with similar physical templates are more appropriate than ecoregions in this case. To test our hypothesis, we

performed bioassessments using groupings of streams based on biotic similarity and attempted to identify physical features that are responsible for discrete assemblages. In addition, we compiled linear models of chemical and physical measures to determine what factors explained significant amounts of variation in our chosen core metrics.

Methods

Site choice and sampling

Stream sampling was designed to represent each of the 13 major Nebraska river basins. Streams were chosen randomly for sampling from among all identified wadeable streams in the state, and sampling was dependent on the streams having perennial flows, accessibility, and on landowner permission (Bazata 2011). It was necessary to sample streams with a 5-year basin rotation because of the extent of the state, and this report covers 393 stream reaches that were sampled in the summer of the years 1997-2001 and 2004-2008. Additional information on site selection and sampling methods is found in Bazata (2005, 2011).

At each stream, we established a support reach of approximately 40 times the average stream width for sampling with an upper limit of 300 m. We measured water quality parameters (i.e., temperature, pH, conductivity) with a Hydrolab Quanta or Eureka Manta (Eureka Environmental Engineering, Austin, TX 2 multi-probe meter) Discharge was measured at a single transect using cross-sectional area multiplied by stream velocity, measured with a handheld flow meter (Marsh-McBirney Flow Mate Model 2000, Frederick, MD). Physical habitat measurements were taken at 11 evenly-spaced transects along the study reach (Kaufman and Robison 1998). At each of the 11 transects, we measured stream width, depth, incision, and bank angle, substratum size composition and embeddedness, bankfull width and depth, and canopy cover. Additionally, we used visual surveys to estimate the percentage of riffle, run and pool habitat as well as the relative amounts of cover within the categories of filamentous algae, macrophytes, brush, woody debris, overhanging vegetation, undercut banks, boulders, and artificial subtrata (e.g., lowhead dams and rip-rap at bridges).

We collected fish by electro-fishing the entire reach; we used a backpack shocker for small, shallow streams and a generator-powered shocker mounted on a tote-barge for larger rivers. In addition, at large rivers, we seined with a 30 foot long by ¼ inch mesh bag seine. We identified all large fish at the site before release. We identified smaller fish in the field or preserved them in 10% formalin solution for later identification at the Sternberg Museum of Natural History, where they have been maintained as voucher specimens.

Invertebrate sampling methods were dependent on the habitat of the particular stream. Riffles were sampled by compiling 5 individual Surber samples (30.5 × 30.5 cm, 500-µm mesh). Pools were sampled by 18 drags of a D-frame net (30.5 cm wide at base, 500-µm mesh) through sediments. In addition, we collected a qualitative sample from all available habitats using a kick net or sieve (mesh size = 500 µm) for 15 minutes. This sample accounts for habitat types not easily sampled by traditional methods, such as woody debris, logjams, and emergent and submergent vegetation. All samples were elutriated in the field to remove large inorganic material and fine sediments, rinsed through a 250 µm sieve, and preserved in plastic jars with 70% ethanol. Invertebrates were identified to species when possible, and genus or higher otherwise at Ripple Environmental, Inc.

Data analysis

Determining whether streams attained aquatic life uses was accomplished with the following steps: 1) identification of reference streams; 2) classification of reference groups; 3) identification of physical variables that differentiate between reference groups; 4) assignation of test sites to reference groups; 5) identification of core metrics; and 6) assessment of aquatic integrity. All analyses were performed with the R statistical package program (version 2.13.1, R Development Core Team [2011]).

Reference sites were chosen using a two-step procedure. In the first step, minimally disturbed reference sites were identified as those with habitat index scores in the previous bioassessments (Bazata 2005, 2011) ≥ 90th percentile. Extensive agriculture in much of the state resulted in large areas without minimally disturbed references due to channelization, sedimentation and other impacts associated with agriculture, which is the case for much of the Great Plains (Whittier et al. 2007). In the second step, streams with the highest habitat index scores were chosen to ensure that were at least 8 reference sites in each ecoregion. In both steps, explicit, non-biological characteristics were considered as suggested by Bailey et al. (2004) and Stoddard et al. (2008). We have much to learn about what constitutes a least-impaired condition and also what constitutes a regionally representative set of sites (Whittier et al. 2007). Therefore, reference site choice in these heavily-used regions may change as new methods develop and as data are accrued.

Grouping of reference streams was done by hierarchical cluster analysis of macroinvertebrate presence/absences, which were used to account for the tailored macroinvertebrate sampling methods. We chose invertebrates because they are more diverse than fish and because invertebrate indices identified known healthy Sandhills streams as impaired in previous bioassessments (Bazata 2005, 2011), and thus were the most likely to have used inappropriate classifications. We used hierarchical agglomerative clustering using the "hclust" function on a dissimilarity matrix that was computed with a Jaccard's coefficient of similarity using "vegdist" from the Vegan package (Oksanen et al. 2011). Six groups of reference streams were compiled based on 60 – 80% similarity of assemblages, and reference streams that did not belong to one of these clusters or did not result in a cluster of at least 10 streams were treated as test sites.

The physical habitat of streams is an important determinant of their potential biotic structure (Southwood 1977). Therefore, we assigned test sites to groups of reference streams with similar physical attributes. To choose proper physical attributes for these assignations, we first conducted ANOVA analyses to confirm that candidate measurements were different among reference groups ($P \leq .0.05$). Next, we plotted group means and 95% confidence intervals to identify attributes with non-overlapping distributions among reference groups. Using these tools, we built a decision tree based on physical attributes that was used to assign group membership. Finally, as a test of the ecological robustness of stream assignations, we performed indicator species analyses using "indval" in the labdsv package (Dufrene and Legendre 1997, Roberts 2007) to find what invertebrates and fish are indicative of each group of streams. This latter analysis has been used to define ecosystem types within a region (i.e., Hill et al. 1975), but in this case we use it to confirm that invertebrate assemblages are homogeneous within previously defined stream types.

Core metrics should meet several performance criteria (Stoddard et al. 2008): adequate range, reproducibility; calibration for and responsiveness to natural gradients and independence from other metrics. We addressed range, calibration and responsiveness by determining what metrics could discriminate between known good and poor conditions as defined by no overlap between the 25th and 75th percentiles using boxplots. Good sites were those identified as reference streams, and poor sites were those given poor designations in the previous bioassessment (Bazata 2011). Redundancy among metrics was prevented by using scatterplot matrices and Pearson correlation coefficients. Comparisons

of fish metrics with native fishes and with native plus non-native species were highly redundant (Pearson's r = 0.99), and the invertebrate richness and EPT richness metrics were correlated (r = 0.83). We chose to use metrics measured for native fish species and overall invertebrate richness. All remaining variables were independent (Pearson's r statistic values < 0.55). Stoddard et al. (2008) caution that using correlation to prevent redundancy should only be done with reference data, as was done in our study. We did not have enough replication of metrics to assess reproducibility. Additionally, discharge (correlated with stream area) was tested as a covariate in ANOVA models to remove potential confounding effects stream size on metric scores. Core metrics were compiled into separate indices for habitat, invertebrates and fish. The suite of available habitat, fish and invertebrate metrics was compiled by a SAS program developed by Dave Peck at the USEPA Research Laboratory, Corvallis, OR, and discussed in Huggins and Moffett (1988) or Bazata (2005).

Metrics may have different ranges and scales (i.e., percentages, integers, dimensionless [Barbour et al. 1999]). Therefore, metrics were scored from 0 to 100 using the 5^{th} and 95^{th} percentiles of the range of metric values, following Blocksom (2003). This normalization ensures that each metric has an equal influence on the final index score and reduces the impact of outliers. Additionally, metrics may have high or low values that reflect higher quality streams (e.g., richness vs. percent tolerant taxa). Metrics in which low values indicate high quality were subtracted from 100 so that all metric scores and final indices increased with better quality.

To assess sites, we compared the values of the core metrics of each stream to the reference condition following the protocols of (Wiseman 2003). Excellent sites were those with index scores >= the 75^{th} percentile of the reference condition, and good sites were those >= the 25^{th} percentile and < the 75^{th} percentile. The 25^{th} percentile of the reference condition was trisectioned; streams with index scores in the highest trisection were classified as fair; streams in the middle trisection were classified as poor; and streams in the lowest trisection were classified as very poor. Compilation of indices followed the methods of Barbour et al. (1999) and Blocksom (2003), whereby a metric having a rating of excellent or good was given a score of 5 for that metric in the final index. Ratings of fair were given a score of 3, and a rating of poor or very poor was given a score of 1. This discrete method may increase variability of final indices, however, these effect tend to be minor (Blocksom 2003, Stoddard et al. 2008). The habitat and fish indices had 5 metrics, and the invertebrate index had 6 metrics, which gave a highest potential score of 25 and 30, respectively.

We used general linear models to identify physical and chemical variables that explained a significant amount of variation in core metrics. Backward selection was used to identify significant variables from among ten physical and chemical variables, including composition of the substrata, nitrogen and phosphorus concentrations, turbidity, conductivity, and the percentage of habitats that were macrophytes, overhanging vegetation and undercut stream banks. Metrics were natural log (+1) transformed as necessary to meet model assumptions.

Results

This study assessed the integrity of 393 streams, of which 78 were listed as reference streams. We classified reference streams into 6 groups with 60 – 80% similarity of macroinvertebrates (Fig 1). In order to identify combinations of physical variables that were distinct to each group, we first used ANOVA models to test for differences in variables among groups. Next, we plotted group means and 95% confidence intervals of physical characteristics from ANOVA models to identify those variables with mostly non-overlapping distributions among reference groups (Fig 2). The results of the ANOVA models of these 4 variables were: percent riffle (R^2 = 0.319, F = 5.062, P < 0.001), temperature (R^2 = 0.299, F =

4.625, P = 0.001), discharge (R^2 = 0.316, F = 4.998, P = 0.001), and percent crops in the riparian zone (areas, R^2 = 0.198, F = 3.916, P = 0.002). We developed a decision tree to assign test sites to reference groups using these 4 variables (Figure 3). If riffles comprised >25% of in-stream habitat, the site was assigned to group 3, which otherwise had intermediate values for other test characteristics. Streams were then separated as being above or below 21.6°C and then having discharge above or below 3.01 l/s. Small, cool streams were assigned to group 1 and large, cool streams were assigned to group 2. Large, warm streams were assigned to group 4 and small, warm streams with < and >= 37% agricultural land-usage in riparian zones were assigned to groups 5 and 6, respectively.

There were both regional patterns and site-specificity regarding the location of stream groups in Nebraska (Fig. 4). The agriculturally-dominated group 6 was clustered in the eastern and southern portions of the state, and the North Platte and Loup River systems were placed into group 2, which were larger and cooler streams. Group 3, which had streams with riffles, were restricted to the northern portion of the state. Group 4 contained the larger warm water systems of the Republican and Central Platte watersheds and other streams towards the eastern portion of Nebraska. Group 5 seemed to cover transitional areas between the heavily agriculturalized streams of the east and south and less agriculturalized streams of central Nebraska. The classifications suggest that there is much variability in stream size, temperature, and availability of riffle habitat across the state.

According to the indicator species analysis, there were no invertebrates or fish that were associated with the small, cool streams of group 1. The larger, cool streams of group 2 contained fish with known cold water preferences (Lee et al. 1980), such as longnose sucker (*Catostomus catostomus*), brook stickleback (*Culaea inconstans*), rainbow trout (*Onchorhynchus mykiss*), smallmouth bass (*Micropterus dolomieu*) and the Iowa darter (*Etheostomea exile*) (Table 1). Six of the 8 invertebrates belonging to of this group were mayflies or caddisflies (Table 2), which also demonstrate cold preferences (Merritt et al. 2008, Kernan et al. 2010). Group 3 streams were distinct in their high percentage of riffle habitat. This group had 45 invertebrate taxa but only 3 fish, which included the gravel- and riffle-associated longnose dace (*Rhinichthys cataractae*). Many of the invertebrates in this group have preferences for erosional habitats, including *SimluiumSimulium*, *Hydropsyche occidentalis*, *Brachycentrus*, *Rheocricotopus* and *Zavrelimyia*. Only 5 invertebrates belonged to were associated with the large, warm streams of group 4, and all of them are considered widespread. The 12 fish of this group tended to prefer large rivers with backwaters and silty substrata, including red shiner (*Cyprinella lutrensis*), channel catfish (*Ictalurus punctatus*), river and emerald shiner (*Notropis blennius* and *N. atherinoides*), western silvery minnow (*Hybognathus argyritus*) and goldeye (*Hiodon alosoides*). The small, warm streams of group 5 were typified by western redbelly dace (*Phoxinus eos*), which prefer bogs, and by 5 widespread invertebrate taxa with lentic preferences, such as *Paracymus*. Group 6 contained small, warm, and heavily agriculturalized streams. This group was typified by 15 invertebrate taxa, many of which also preferred lentic habitats, such as *Berosus*, *Cryptochironomus*, *Polypedilum tritum*, *Anopheles* and *Hydroporus*. The black bullhead (*Ameiurus natalis*) was the only fish that belonged toassociated with group 6.

We identified 5 habitat, 5 fish and 6 invertebrate metrics that discerned between good and poor quality streams in at least 2 reference groups. The habitat metrics were the percentage of macrophyte cover, the percentage of overhanging vegetation cover, the percentage of undercut bank cover, mid-channel canopy cover and the percentage of crop land-use. The invertebrate metrics were taxa richness, Shannon-Weiner diversity, intolerant taxa richness (number of taxa with HBI values ≤ 3), tolerance index, family-level Hilsenhoff biotic index and the percentage of scraper taxa. The tolerance index is the numerical average of individual tolerance scores that were based on Huggins and Moffett (1988), and does not include the number of individuals as does the HBI. The richness of Ephemeroptera,

Plecoptera and Trichoptera (EPT) also discerned between good and poor sites, but was redundant with total richness (Pearson correlation coefficient = 0.83) and was not used. The fish metrics were family-level richness, the percentage of tolerant individuals, the number of benthic species, the number of lithophilic species and the percentage of nest-associated fish.

The metrics were combined into separate habitat; invertebrate and fish indices. The habitat index showed an excellent ability to discriminate between good and poor sites in groups 1, 4 and 6 and a reasonable discriminatory ability in groups 2 and 5 (Fig. 5). There was no separation in the distribution of the habitat index between good and poor sites in group 3. The invertebrate index only discriminated between good and poor sites in groups 4 and 6 (Fig. 6). The fish index discriminated between good and poor sites in groups 1, 5 and 6 and did reasonably well for group 4 (Fig. 7). The indices were most applicable to the lowest expected quality streams (group 6) and were least useful for the expected best quality streams (group 3).

The habitat indices labeled 56 streams as excellent and 118, 101, 98 and 14 streams as good, fair, poor and very poor (Appendix 1). The invertebrate index identified 144 excellent streams and 83, 140, 14 and zero streams as good, fair poor and very poor. There were 90 excellent streams according the fish index, and 114, 120, 59 and 2 good, fair, poor and very poor streams. The habitat index was higher in the cluster- versus ecoregion-based assessments for 186 streams, and was lower and unchanged in 89 and 111 streams (Appendix 1). The invertebrate index was higher in the cluster-based assessments for 121 streams and was lower and unchanged in 152 and 116 streams. The fish index was higher in the cluster-based assessments for 178 streams and was lower and unchanged in 70 and 136 streams. For this comparison, it should be noted that the metrics were not identical in the different bioassessments.

Linear models of the metrics used in the invertebrate and fish indices were built using physical parameters that included discharge, substratum composition, nutrient concentrations, mid-channel canopy cover, and the percentages of in-stream habitat of different types. The richness of intolerant invertebrates, percentage of scrapers, percentage of tolerant fish and number of benthic, lithophilic and nest-associated fish species metrics were log (+1) transformed to meet ANOVA assumptions. The models suggested that in-stream habitat availability had the largest effect (largest model coefficients) on both invertebrate and fish metrics, and increases in habitat availability corresponded to increases in biotic integrity as suggested by the direction of effect in the models. For example, the percentage of overhanging vegetation had relatively large effects on invertebrate and fish richness, the richness of intolerant invertebrates, lithophilic fish and nest-associated fish (Table 3; 4). The percentage of undercut banks had a large effect on the number of intolerant invertebrate taxa, lithophilic and nest-associated fish, the family-level HBI and percentage of pollution tolerant fish. Macrophyte cover correlated with increased fish richness (native) and the richness of lithophilic fish. Canopy cover was positively related to increased HBI. The remaining physical parameters had small, but significant effects on metrics. The percentage of fine substrates was negatively related to all invertebrate and fish metrics except the percentage of tolerant fish. Discharge was positively correlated to all fish metrics except the percentage of tolerant fish, and was only related to the percentage of scraper invertebrates (negatively). Total phosphorus and nitrogen concentrations were positively or negatively related to most invertebrate metrics and to the percentage of tolerant fish, but the direction of effect was not always as expected (e.g., total phosphorus was negatively related to the percentage of tolerant fish) and the magnitudes of effect were essentially zero.

Discussion

Local influences vs. ecoregional patterns

We predicted that local-scale stream characteristics would make stream classification based on biotic similarity more appropriate than ecoregional classifications. Our approach combined the ability of multimetric statistics to identify reference streams with similar biotic assemblages with multimetric indices that measured departures of test sites from reference conditions. We found that biotically-similar reference streams also had distinct physical templates that could be primarily characterized by stream size and water temperature, which in turn were not limited to ecoregions or watersheds. Stream size was also used to assign test sites to reference groups by the Ohio Environmental Protection Agency (1987) and by Lyons et al. (1996), temperature was used by Lyons et al. (2001) and Mundahl and Simon (1998), and both temperature and stream size were important in fish groupings by Wang et al. (2003). This research suggested that local factors were important for setting the biotic potential of Nebraska streams, and that low in-stream habitat availability was a primary driver of impairment.

Our final indices were comprised of different core metrics than the ecoregion-based analyses previously used in Nebraska (Bazata 2005, 2011), which made a direct comparison of the two methods difficult. However, this study was spurred by the fact that several small streams in the Sandhills region were designated as poor despite little anthropogenic impact. These streams included Goose Creek and a reach of the North Loup River in the Loup River watershed and Spring, Boardman, Gordon and Rush Creeks in the Niobrara River watershed (Appendix 1). All of these streams improved from poor to fair, good or excellent using *a posteriori* classifications. These results are indicative that headwater streams in the Sandhills are ecologically different than the larger river reaches, and that they should be compared to other small, coldwater streams. Moreover, this is evidence local-scale characteristics are determining factors of biotic assemblages in Nebraska streams and rivers.

Several other lines of evidence demonstrate the importance of incorporating local-scale features into stream bioassessments in Nebraska. First, we were able to discriminate between groups of reference streams that had discrete invertebrate assemblages using physical characteristics with proven ecological importance: discharge, temperature, percentage of riffle habitat and agricultural riparian land use. Temperature is a driver of the metabolism of ectotherms, and influences distributions, growth rates and fecundity of aquatic organisms (Newell and Minshall 1978, Sweeney and Vannote 1978, Vannote and Sweeney 1980). Discharge is also a fundamental component of stream ecology. Dewson et al. (2007) found that reductions in flow caused decreases in invertebrate density and lower percentages of Ephemeroptera, Plecoptera and Trichoptera in pristine streams, presumably from reductions in habitat quality and availability. Similarly, increases in habitat space are considered responsible for the logarithmic increase in fish richness with increases in discharge (Xenopoulos and Lodge 2006). Numerous invertebrates are adapted to resource acquisition in riffle habitats (Huryn and Wallace 1987, Merritt et al. 2008). Lastly, agriculture has been demonstrated to have long-term impacts on aquatic diversity (Harding et al. 1998), and has been proven to be an influence on stream assemblages in Nebraska (Frenzel and Swanson 1996, Whiles et al. 2000).

The ecological robustness of the physical characteristics that were distinct for each reference group was supported by indicator species analysis. Invertebrates and fish were associated with those reference groups that had combinations of physical features that matched known preferences, such as for temperature, stream size, and erosional or depositional habitats. Our expected worst quality groupings (reference groups 5 & 6) were largely comprised of lentic taxa, whereas our expected best quality streams (reference group 3) had many more indicator invertebrates than other groups.

Therefore, it should be expected that the structure of the biotic assemblages will be determined by the distributions of these physical attributes across the state, which are not strongly associated with ecoregions. Only the streams of group 6 showed strong ecoregional affinities, which was likely due to the intense agriculture of the east. In some watersheds, such as the North Platte and Loup Rivers, most streams belonged to a single group. However, groups were not restricted to any single watershed and there were indistinct boundaries around groups.

Lastly, evidence of local influences was found in the habitat parameters that explained significant amounts of variance in core metrics. Discharge was an important driver of 5 of 6 fish metrics, and different sized streams are of course found throughout the state. Local habitat features, especially the percentage of emergent and submergent vegetation and percentage of undercut banks, were significant predictors of all invertebrate and fish metrics. Taken together, we believe that such local influences warrant stream classifications, such as cluster analyses, that can account for site-specific influences.

Stream condition and recommendations for improving integrity

The wadeable streams assessment (WSA) attempted to assess the health of streams across the conterminous 48 states (USEPA 2006). The Southern Plains ecoregion, which comprises much of Nebraska, had 54% of sites rated as poor, and 20% and 22% rated as fair and good using a macroinvertebrate biotic index (MBI). For streams listed as poor by the MBI, 30-48% of the lengths of these streams were poor because of nitrogen and phosphorus concentrations, loss of fish habitat, riparian vegetation impairment and sedimentation. Our study identified habitat impairments and riparian cover loss as the primary stressors to invertebrates and fish, with nitrogen, phosphorus and the percentage of fine sediments being significant yet with a smaller effect on biota. Our indices rated stream condition generally higher than the WSA. Our habitat index rated 29, 26 and 45% of streams as poor (or very poor), fair and good (or excellent), respectively. Poor, fair and good ratings for the invertebrate index were 4, 37 and 60% and for the fish index were 16, 31 and 53%. The increases in stream ratings were almost certainly due to adjustments specifically for Nebraska that decreased expectations for biotic integrity.

Our results suggest that the biota of Nebraska streams are primarily limited by habitat availability. As such, the most successful remediation efforts would be those that enhance the availability of in-stream habitat, especially vegetation cover. A review by Roni et al. (2002) evaluated the use of habitat modifications. Placing natural and artificial structures into streams often provided desirable morphological improvements, such as restored riffle-pool sequences, increased habitat heterogeneity and organic matter retention, which in turn enhanced biotic diversity and promoted desirable taxa. Roni et al. (2002) also found that the responses of macroinvertebrate assemblages were less predictable after habitat restoration than fish, perhaps because the invertebrates in the systems studied were limited by factors other than habitat availability.

Macrophytes and overhanging vegetation were particularly strong predictors of fish and invertebrate metrics. The important influences of vegetation include the generation (Hemminga and Duarte 2000) and retention (Cotton et al. 2006) of organic matter (Strayer 2007), as sites for biogeochemical cycling (Shupryt and Stelzer 2009), and as physical habitat (Kalff 2002, Strayer 2007, Burdett and Watts 2009). Also, many invertebrates show strong preferences for macrophytes (Phillips 2003, Merrit et al. 2008, Shupryt and Stelzer 2009). Lastly, the benefits of vegetation as physical

structures may be especially beneficial in streams with otherwise soft substrates (i.e., Benke et al. 1985, Grubaugh et al. 1997, Shupryt and Stelzer 2009), such as those found across Nebraska. It is therefore unsurprising that the percentage of vegetation cover explained significant amounts of variation in invertebrate and fish assemblages.

There was a lack of concordance both between the ability of invertebrate and fish indices to identify impaired streams. Streams were overall given better scores using the invertebrate index than the fish index (144 excellent and 14 poor assignations using invertebrates versus 114 and 59 excellent and poor streams using fish). The lack of concordance was likely due in part to the different stressors we identified as having significant effects on invertebrate and fish metrics. There has been demonstrated a general lack of concordance among taxonomic groups in their response to natural gradients and stressors (Paavola et al. 2006, Virtanen et al. 2009, Dolph et al. 2011). For example, Virtanen et al. (2009) found that bryophytes responded most strongly to water chemistry and macroinvertebrates responded most strongly to physical habitat factors in Finnish streams. Additionally, in Minnesota streams Dolph et al. (2011) found that although fish and macroinvertebrates responded similarly to stream size, these assemblages had different responses to other environmental variables. However, Johnson and Hering (2010), comparing diatoms, macrophytes, macroinvertebrates and fish in montane and lowland European streams, found that more variance in the composition of any taxonomic group could be explained by the composition of another group than by environmental factors. Overall, concordance of responses of different taxonomic groups appeared weak in previous studies. Therefore, bioassessment may be improved by having separate classifications of groups for each taxonomic group used (Hawkins et al. 2000) if the increase in effort is warranted.

Conclusion

Nebraska has a dramatic precipitation gradient from the wetter, agriculturally important regions in the east that gradually give way to arid and semi-arid conditions in the shadow of the Rocky Mountains in the west (Chapman et al. 2001). The dramatic climate differences seem on the surface to provide an excellent template for the use of ecoregional classifications of streams for bioassessment. However, our research provided several lines of evidence that show biotic assemblages are structured by local habitat features, and that similar assemblages should not be expected to always occur in adjacent systems. We therefore concluded that an *a posteriori* classification of streams that can account for local stream conditions is more appropriate for the biological assessment of streams in Nebraska.

Acknowledgments

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Figure Captions

Fig 1. Hierarchical cluster dendrogram of similarity of macroinvertebrate presence/absence in Nebraska reference streams. Height is scaled by the percentage of biotic similarity.

Fig, 2. Group means and 95% confidence intervals for the percentage of riffle habitat, temperature, discharge and percentage of crop land-usage in reference groups (x-axis).

Fig 3. Decision tree for assigning test sites to reference groups.

Fig. 4. Location of sampled streams in Nebraska with assigned reference grouping.

Fig. 5. Boxplots of habitat index performance in known poor and reference sites.

Fig. 6. Boxplots of invertebrate index performance in known poor and reference sites.

Fig. 7. Boxplots of fish index performance in known poor and reference sites.

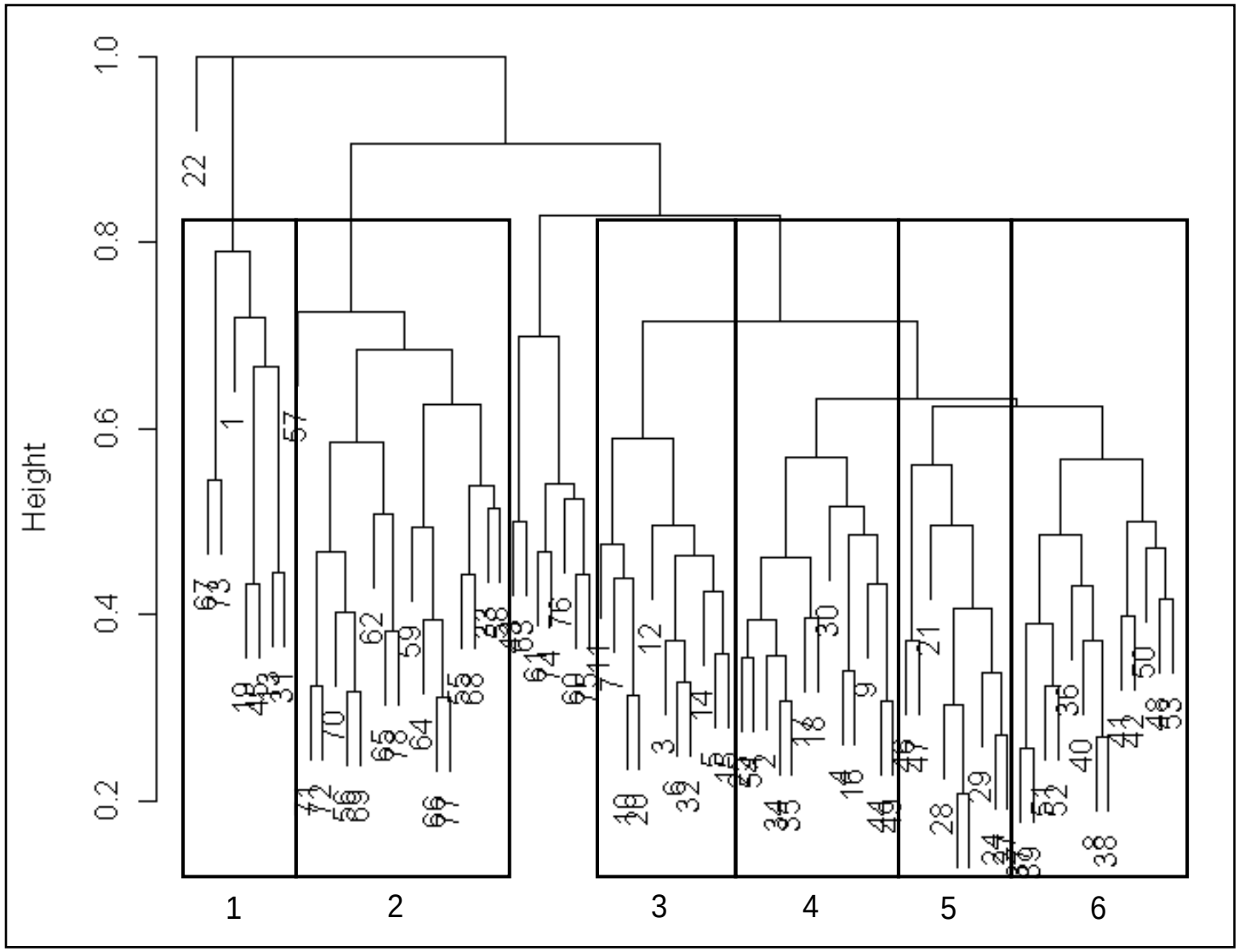
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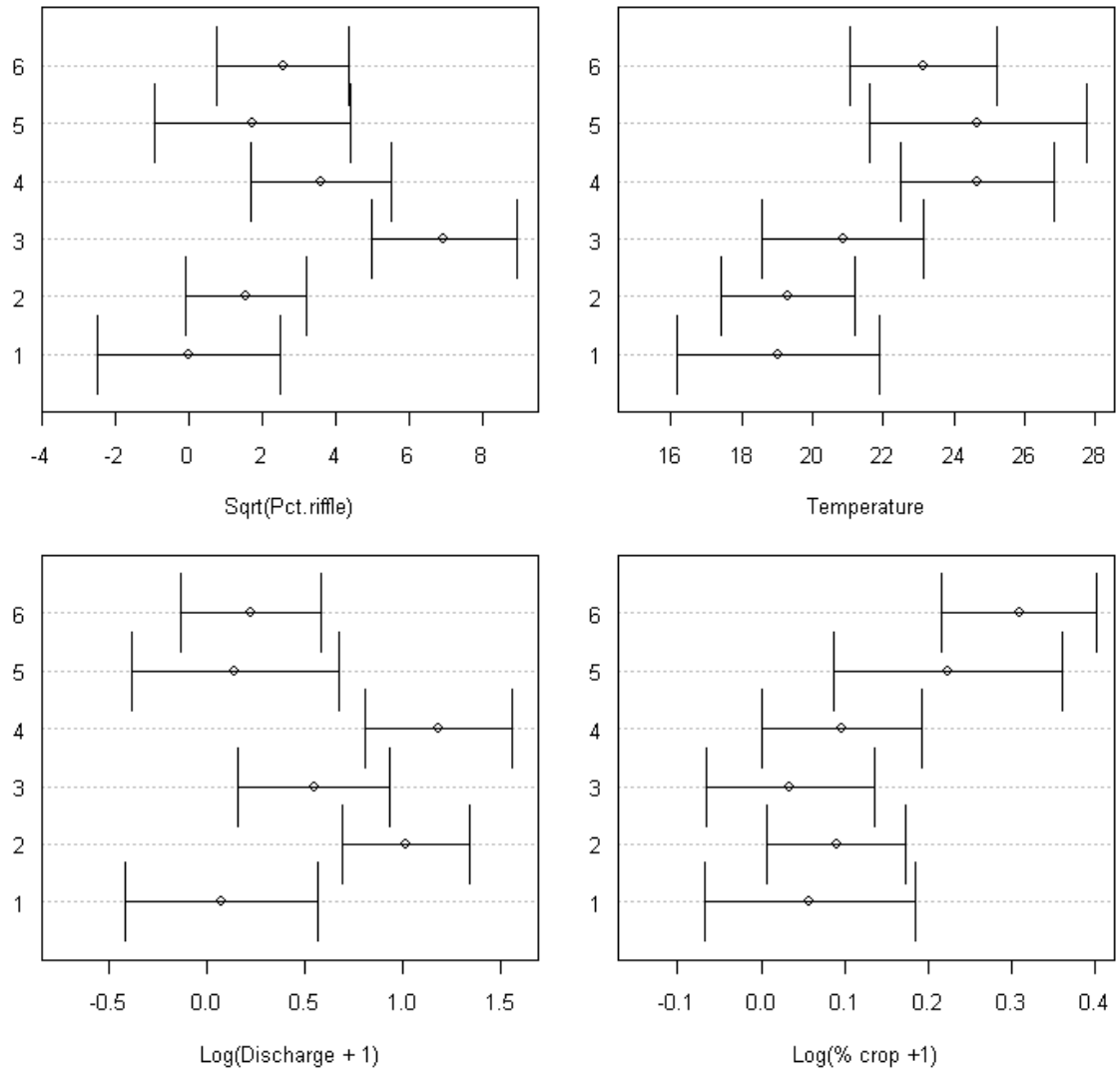
Fig. 1.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24
26
28
Temperature
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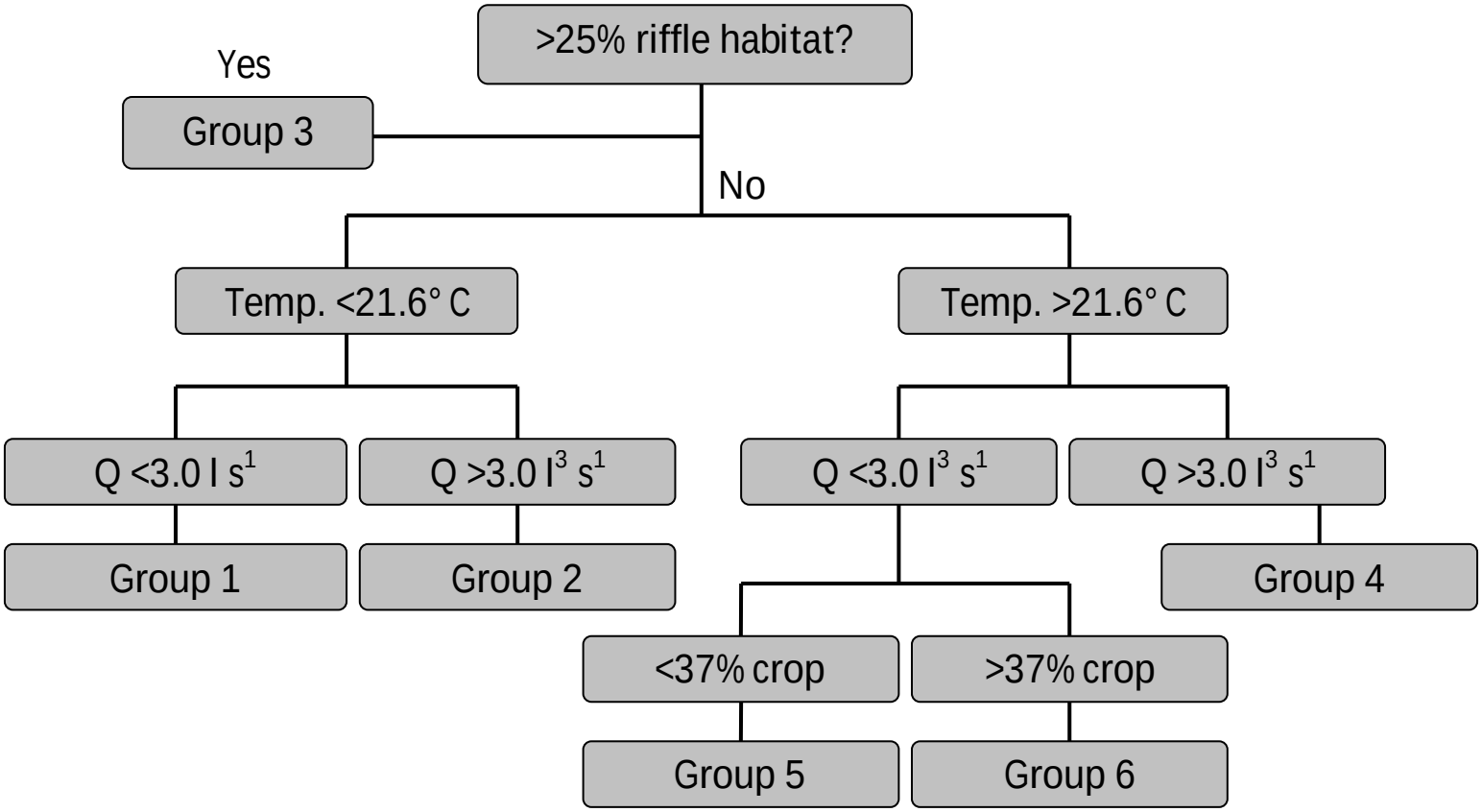
Log(% crop +1)

Fig. 2.


>25% riffle habitat?
Yes
Group 3
No
Temp. <21.6° C
Temp. >21.6° C
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Q >3.0 l3 s1
Q <3.0 l3 s1
Q >3.0 l3 s1
Group 1
Group 2
Group 4
<37% crop
>37% crop
Group 5
Group 6

Fig. 3.

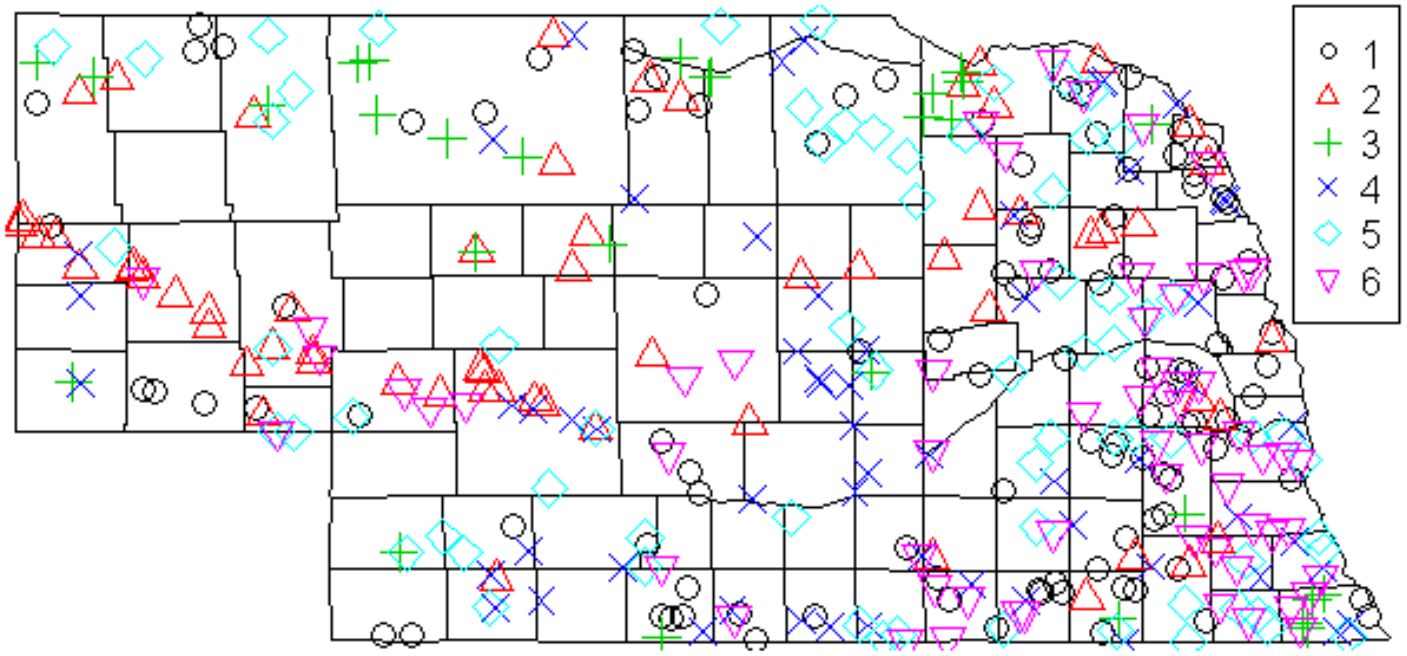

Fig. 4.

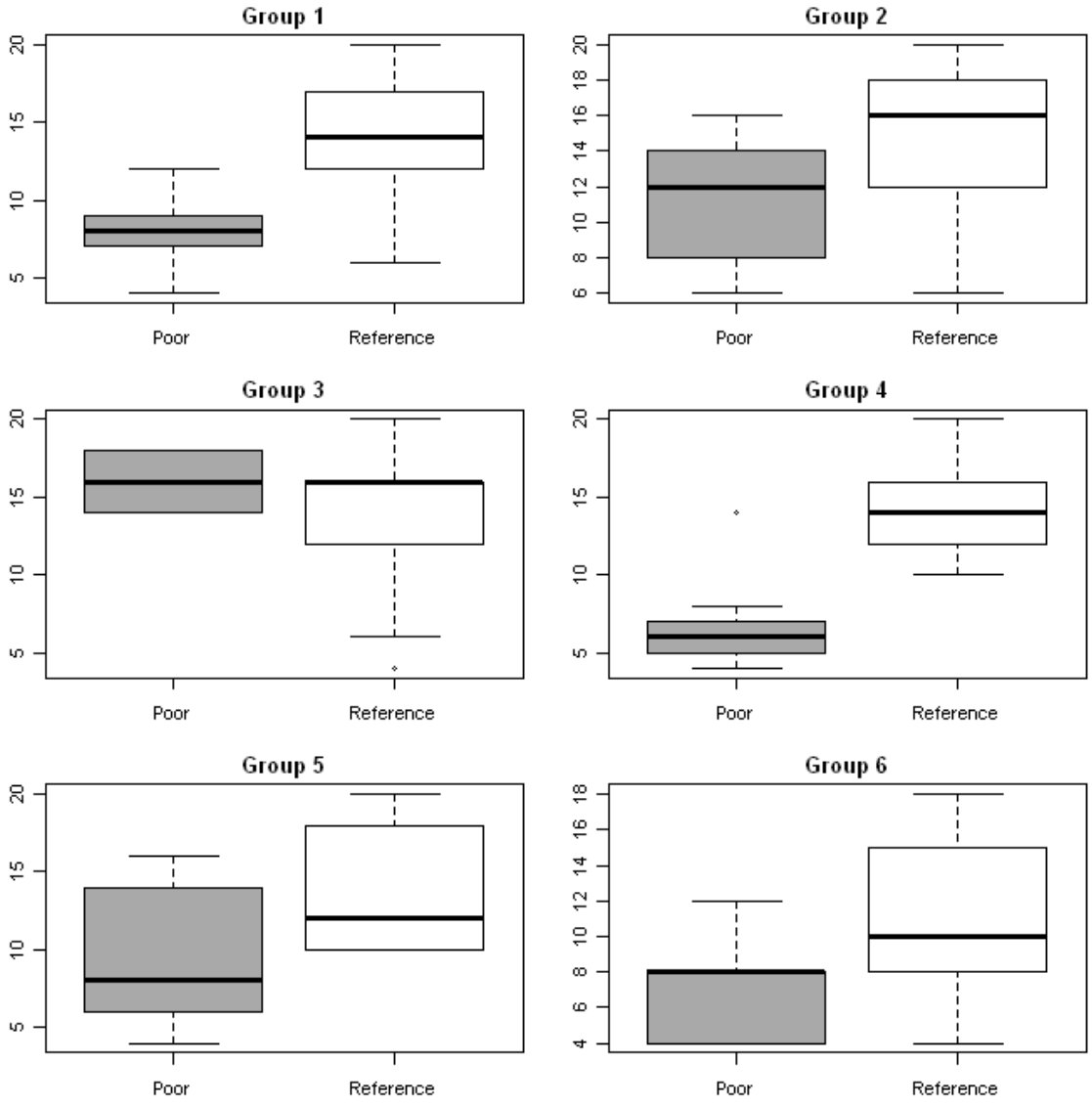

Fig. 5.

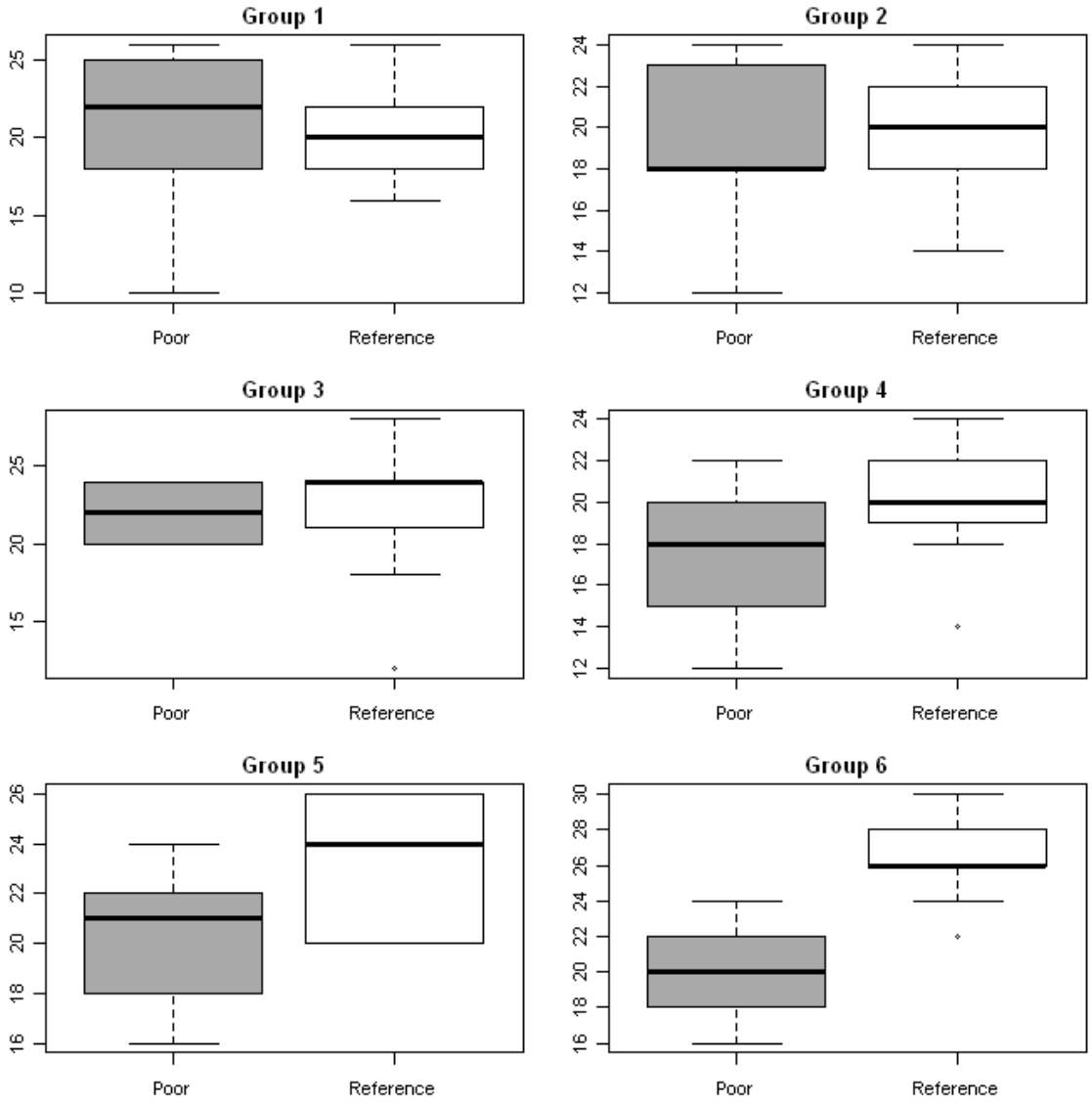
Group 1
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Fig. 6.

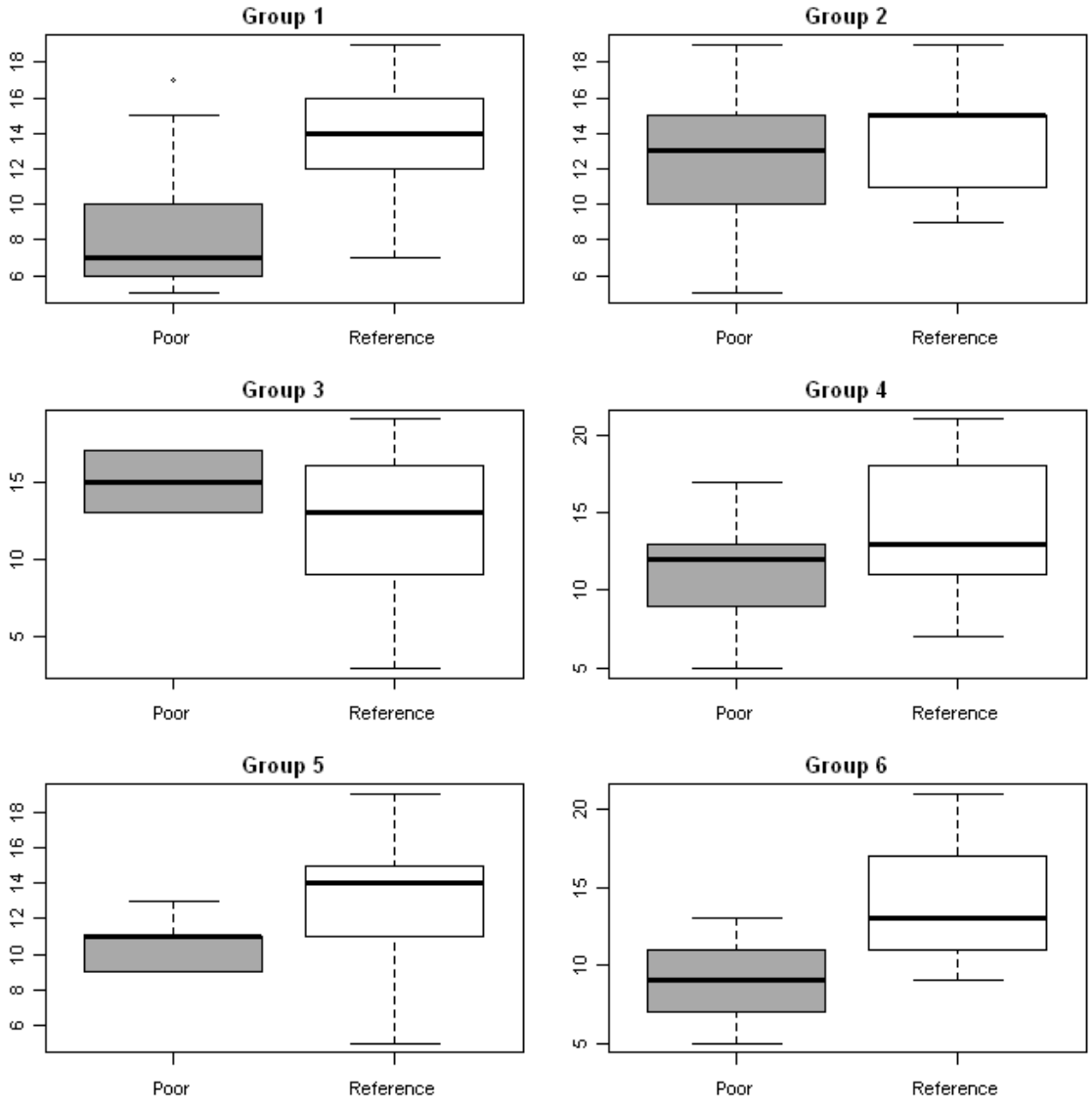

Fig. 7.

Table 1. Results of indicator species analysis to identify fish that were associated with reference groups.

Group	Species	Indicator value	P-value
2	*Catostomus catostomus*	0.225	0.001
2	*Catostomus commersoni*	0.152	0.008
2	*Moxostoma macrolepidatum*	0.141	0.003
2	*Noturus flavus*	0.140	0.005
2	*Hybognathus hankinsoni*	0.135	0.005
2	*Dorosoma cepedianum*	0.119	0.004
2	*Gambusia affinis*	0.108	0.003
2	*Fundulus zebrinus*	0.089	0.003
2	*Culaea inconstans*	0.064	0.014
2	*Oncorhynchus mykiss*	0.060	0.007
2	*Micropterus dolomieu*	0.053	0.021
2	*Etheostoma exile*	0.049	0.023
3	*Rhinichthys cataractae*	0.152	0.001

3	*Platygobio gracilis*	0.083	0.018
3	*Fundulus kansae*	0.066	0.012
4	*Cyprinella lutrensis*	0.197	0.004
4	*Ictalurus punctatus*	0.186	0.002
4	*Cyprinus carpio*	0.179	0.002
4	*Pylodictus olivares*	0.151	0.001
4	*Carpiodes carpio*	0.145	0.005
4	*Aplodinotus grunniens*	0.123	0.003
4	*Notropis atherinoides*	0.123	0.001
4	*Hybognathus placitus*	0.066	0.012
4	*Notropis blennius*	0.057	0.016
4	*Lepomis humilis*	0.056	0.048
4	*Hybognathus argyritus*	0.052	0.033
4	*Hiodon alosoides*	0.036	0.038
5	*Phoxinus eos*	0.037	0.043

6	*Ameiurus natalis*	0.146	0.004

Table 2. Results of indicator species analysis to identify invertebrates that were associated with reference groups.

Group	Taxon	Indicator value	P-value
2	*Isonychia*	0.228	0.001
2	Simuliidae	0.226	0.001
2	*Fallceon*	0.202	0.001
2	*Heptagenia*	0.195	0.001
2	*Tricorythodes*	0.190	0.002
2	*Cricotopus trifacia*	0.126	0.003
2	*Nectopsyche diarina*	0.118	0.041
2	*Pseudocloeon*	0.117	0.007
3	*Simulium*	0.276	0.001
3	*Limnodrilus*	0.276	0.001
3	*Plauditus*	0.252	0.001
3	*Leptophlebia*	0.242	0.001
3	*Nais*	0.231	0.001

3	*Hydropsyche occidentalis*	0.228	0.001
3	*Acentrella*	0.223	0.001
3	*Baetis*	0.216	0.001
3	*Dugesia tigrina*	0.212	0.001
3	*Brachycentrus*	0.210	0.001
3	*Ophiogomphus*	0.204	0.002
3	*Dero*	0.201	0.001
3	*Tipula*	0.189	0.001
3	*Parametriocnemus*	0.186	0.001
3	*Hetaerina*	0.179	0.007
3	Enchytraeidae	0.178	0.001
3	*Pristina*	0.177	0.001
3	Chironomini	0.171	0.001
3	*Cricotopus*	0.159	0.007
3	*Nais behningi*	0.158	0.001
3	*Gomphus*	0.153	0.012
3	*Stenochironomus*	0.148	0.005
3	*Cryptochironomus fulvus*	0.141	0.003

3	*Nais bretscheri*	0.138	0.001
3	*Orthocladius*	0.133	0.005
3	*Heterelmis*	0.132	0.001
3	*Nectopsyche*	0.128	0.004
3	*Dactylobaetis*	0.128	0.002
3	*Polypedilum scalaneum*	0.122	0.020
3	*Rheocricotopus*	0.118	0.046
3	*Brillia*	0.111	0.020
3	*Hexagenia limbata*	0.108	0.005
3	*Nais communis*	0.108	0.003
3	*Probezzia*	0.102	0.004
3	*Chrysops*	0.098	0.034
3	*Phaenospectra*	0.089	0.012
3	*Paratendipes*	0.088	0.006
3	*Ceratopsyche*	0.086	0.006
3	*Zavrelemyia*	0.080	0.014
3	*Helicopsyche*	0.074	0.012
3	*Polypedilum halterale*	0.072	0.023

3	*Prodiamesa*	0.071	0.010
3	*Odontomyia*	0.057	0.046
3	Gomphidae	0.047	0.046
3	*Pristinella*	0.046	0.031
4	*Rheotanytarsus*	0.174	0.017
4	*Polypedilum*	0.161	0.029
4	*Paracladopelma*	0.144	0.005
4	*Stenonema*	0.087	0.006
4	*Macronychus*	0.075	0.034
5	*Dubiraphia*	0.186	0.007
5	*Argia*	0.138	0.048
5	*Stenacron*	0.104	0.018
5	*Labrudinia*	0.102	0.028
5	*Paracymus*	0.092	0.031
6	*Berosus*	0.188	0.001

6	*Cryptochironomus*	0.186	0.003
6	*Procladius*	0.184	0.004
6	*Helichus*	0.135	0.017
6	*Cryptotendipes*	0.133	0.004
6	*Polypedilum tritum*	0.133	0.019
6	*Anopheles*	0.127	0.006
6	*Callibaetis*	0.123	0.033
6	*Hydroporus*	0.121	0.006
6	*Stenacron interpunctatum*	0.112	0.042
6	*Hydropsyche betteni*	0.111	0.019
6	*Calopteryx*	0.109	0.013
6	*Plathelmis*	0.096	0.029
6	*Pisidium*	0.092	0.025
6	*Sphaeromias*	0.074	0.021

Table 3. Best model for each core invertebrate metric using physical and chemical variables. Intolerant invertebrate richness and the percentage of scrapers were log (+1) transformed.

Metric	Parameter	Estimate	Std. error	T value	P value
Richness	Intercept	41.58	1.946	21.367	<0.001
	% fine substrata	-0.120	0.021	-5.600	<0.001
	Turbidity	-0.060	0.013	-4.660	<0.001
	Total nitrogen	0.001	0.000	2.273	0.024
	% overhanging veg.	8.613	2.264	3.804	<0.001
Intolerant richness	Intercept	0.981	0.073	13.348	<0.001
	% fine substrata	-0.007	0.000	-8.522	<0.001
	Total phosphorous	-0.001	0.000	-3.167	0.002
	% overhanging veg.	0.296	0.086	3.441	0.001
	% undercut bank	0.296	0.120	2.464	0.014
Shannon diversity	Intercept	3.456	0.048	72.733	<0.001
	% fine substrata	-0.003	0.001	-3.144	0.002

Tolerance index	Intercept	0.218	0.012	18.796	<0.001
	% fine substrata	0.001	0.000	6.897	<0.001
	Turbidity	-0.002	0.000	-2.974	0.003
	Total phosphorus	0.000	0.000	2.703	0.007
	Canopy cover	0.058	0.029	2.005	0.046
	% undercut bank	-0.075	0.017	-4.317	<0.001
Family-level HBI	Intercept	5.134	0.123	71.780	<0.001
	% fine substrata	0.004	0.001	2.804	0.005
	Total phosphorus	0.001	0.000	4.122	<0.001
	Canopy cover	0.981	0.332	2.951	0.003
	% undercut bank	-0.829	0.199	-4.163	<0.001
% Scrapers	Intercept	2.134	0.066	32.163	<0.001
	Discharge	-0.036	0.014	-2.641	0.009

Table 4. Best model for each core native-fish metric using physical and chemical variables. All metrics were log (+1) transformed except for family-level richness.

Metric	Parameter	Estimate	Std. error	T value	P value
Family-level richness	Intercept	3.418	0.237	14.404	<0.001
	Discharge	0.100	0.019	5.201	<0.001
	% fine substrata	-0.008	0.003	-2.660	0.008
	% sand substrata	0.011	0.003	3.725	<0.001
	% macrophyte cover	0.840	0.225	3.740	<0.001
% tolerant	Intercept	0.220	0.025	8.920	<0.001
	% fine substrata	-0.002	0.000	-5.796	<0.001
	Total phosphorus	-0.001	0.000	-3.272	0.001
	% macrophyte cover	0.072	0.027	2.614	0.009
	% overhanging veg.	0.125	0.028	4.462	<0.001
# benthic species	Intercept	1.156	0.071	16.384	<0.001
	Discharge	0.016	0.006	2.883	0.004

	% fine substrata	-0.005	0.001	-5.536	0.001
	% sand substrata	0.002	0.001	2.120	0.034
	% undercut bank	0.198	0.095	2.079	0.038
# lithophilic species	Intercept	0.179	0.044	4.066	<0.001
	Discharge	0.017	0.005	3.617	<0.001
	% fine substrata	-0.004	0.001	-6.619	<0.001
	% macrophyte cover	0.387	0.060	6.442	<0.001
	% overhanging veg.	0.234	0.059	3.990	<0.001
	% undercut bank	0.266	0.086	3.087	0.002
# nest-assoc. species	Intercept	0.627	0.070	8.914	<0.001
	Discharge	0.020	0.006	3.291	0.001
	% sand substrata	0.002	0.001	2.354	0.019
	Turbidity	0.001	0.000	2.714	0.007
	% overhanging veg.	-0.220	0.080	-2.751	0.006

Appendix 1. List of Nebraska streams with bioassessment scores and water quality attainment (assess) as determined with ecoregional and cluster analysis classifications. The maximum possible for habitat, invertebrate and fish scores for ecoregional and cluster classification are 60, 30 and 100 and 25, 30, and 25, respectively.

		Ecoregion classification						Hierarchical cluster classification					
Watershed	**Stream**	**Habitat score**	**Invert score**	**Fish score**	**Habitat asses**	**Invert assess**	**Fish assess**	**Habitat score**	**Invert score**	**Fish score**	**Habitat asses**	**Invert assess**	**Fish assess**
Big Blue River	Spring Cr. (BB)	44	22	68.29	Excellent	Excellent	Excellent	10	26	19	Good	Excellent	Excellent
Big Blue River	Wolf Cr.	28	16	50.39	Poor	Good	Good	16	24	11	Good	Fair	Fair
Big Blue River	Bear Cr.	24	12	56.05	Poor	Fair	Good	6	22	9	Poor	Excellent	Fair
Big Blue River	Cub Cr.	28	10	62.82	Poor	Fair	Excellent	8	26	13	Poor	Excellent	Good
Big Blue River	Wolf Cr.	26	18	40.97	Poor	Good	Fair	4	26	11	Very poor	Excellent	Fair
Big Blue River	Soap Cr.	34	16	66.83	Good	Good	Excellent	8	18	7	Fair	Fair	Poor
Big Blue River	Pierce Cr.	36	10	72.64	Good	Fair	Excellent	8	18	11	Poor	Fair	Fair
Big Blue River	Cub Cr.	28	14	43.70	Poor	Good	Good	4	16	11	Very poor	Fair	Fair
Big Blue River	Mud Cr.	32	12	49.21	Fair	Fair	Good	8	22	13	Fair	Fair	Good
Big Blue River	Turkey Cr. (A)	32	10	55.37	Fair	Fair	Good	4	20	7	Poor	Fair	Poor
Big Blue River	Turkey Cr. (B)	32	16	43.79	Fair	Good	Good	4	16	7	Poor	Fair	Poor
Big Blue River	Turkey Cr.	36	10	61.47	Good	Fair	Excellent	8	24	15	Poor	Excellent	Good
Big Blue River	Turkey Cr.	30	12	53.13	Fair	Fair	Good	12	18	11	Good	Fair	Good
Big Blue River	S. Fk. Swan Cr.	24	14	43.80	Poor	Good	Good	4	18	7	Very poor	Fair	Poor
Big Blue River	Turkey Cr.	28	18	38.65	Poor	Good	Poor	6	24	11	Poor	Excellent	Fair
Big Blue River	Beaver Cr.	36	8	45.29	Good	Poor	Good	6	18	13	Poor	Fair	Good
Big Blue River	W. Fk. Big Blue River	40	20	54.37	Excellent	Good	Good	14	22	15	Good	Excellent	Good

Big Blue River	W. Fk. Big Blue River	32	4	41.41	Fair	Poor	Fair	6	18	11	Poor	Fair	Good
Big Blue River	Unnamed Trib Blue River	30	10	58.53	Fair	Fair	Good	12	16	7	Fair	Fair	Poor
Big Blue River	Plum Cr.	28	24	43.82	Poor	Excellent	Good	8	20	9	Poor	Good	Fair
Big Blue River	Plum Cr.	32	12	41.77	Fair	Fair	Fair	12	20	9	Good	Fair	Fair
Big Blue River	Big Blue River	30	10	41.54	Fair	Fair	Fair	4	20	11	Poor	Fair	Fair
Big Blue River	Lincoln Cr.	26	10	38.23	Poor	Fair	Poor	4	20	11	Very poor	Good	Fair
Elkhorn River	Lincoln Cr.	32	8	44.10	Fair	Poor	Good	8	22	11	Fair	Good	Fair
Elkhorn River	Tracy Cr.	30	14	39.55	Fair	Good	Poor	6	18	9	Poor	Fair	Fair
Elkhorn River	Union Cr.	36	12	44.26	Good	Fair	Good	6	18	11	Poor	Fair	Fair
Elkhorn River	Fremont Storm Drainage Canal	34	14	66.20	Good	Good	Excellent	12	20	13	Good	Fair	Good
Elkhorn River	Fremont Storm Drainage Canal	34	14	66.20	Good	Good	Excellent	4	16		Poor	Poor	
Elkhorn River	Unnamed Trib. Pebble Cr.	28	10	0.00	Poor	Fair	Poor	12	18	11	Good	Fair	Fair
Elkhorn River	Dry Cr.	32	8	80.58	Fair	Poor	Excellent	14	18	7	Good	Fair	Poor
Elkhorn River	Maple Cr.	36	8	29.93	Good	Poor	Poor	8	16	17	Fair	Fair	Good
Elkhorn River	Elkhorn River (E)	36	8	46.21	Good	Poor	Good	4	22	11	Poor	Fair	Fair
Elkhorn River	Maple Cr.	28	12	29.28	Poor	Fair	Poor	8		9	Fair		Fair
Elkhorn River	Pebble Cr.	32	10	32.54	Fair	Fair	Poor	4	20	9	Poor	Fair	Fair
Elkhorn River	Bell Cr.	30	16	42.47	Fair	Good	Fair	6	20	13	Poor	Good	Good
Elkhorn River	W. Fork Maple Cr.	38	16	22.79	Excellent	Good	Poor	8	18	5	Poor	Fair	Poor
Elkhorn River	E. Fork Maple Cr.	38	14	45.64	Excellent	Good	Good	8	22	7	Poor	Excellent	Poor

Elkhorn River	Elkhorn River	38	10	56.75	Excellent	Fair	Good	10	14	17	Fair	Fair	Excellent
Elkhorn River	Elkhorn River	38	10	51.13	Excellent	Fair	Good	14	16	17	Fair	Fair	Excellent
Elkhorn River	Humbug Cr.	38	20	67.45	Excellent	Good	Excellent	8	24	13	Poor	Excellent	Good
Elkhorn River	Elkforn River	38	8	47.16	Excellent	Poor	Good	10	18	15	Fair	Fair	Excellent
Elkhorn River	Union Cr.	38	10	33.18	Excellent	Fair	Poor	8	16	7	Poor	Fair	Poor
Elkhorn River	Logan Cr.	32	20	34.77	Fair	Good	Poor	6	20	11	Poor	Good	Good
Elkhorn River	Middle Logan Cr.	26	14	44.60	Poor	Good	Good	8	20	11	Fair	Fair	Fair
Elkhorn River	Unnamed Trib. Logan Cr.	34	14	0.00	Good	Good	Poor	8	20	4	Poor	Good	Very poor
Elkhorn River	Baker Cr.	28	26	58.97	Poor	Excellent	Good	8	24	11	Fair	Fair	Fair
Elkhorn River	Dog Cr.	32	24	34.27	Fair	Excellent	Poor	8	24	9	Fair	Good	Fair
Elkhorn River	Mid. Logan Cr.	34	14	36.88	Good	Good	Poor	8	26	7	Poor	Excellent	Poor
Elkhorn River	Dry Cr.	30		64.50	Fair		Excellent	12		11	Good		Fair
Elkhorn River	N. Fork Elkhrn River	34	18	32.91	Good	Good	Poor	6	20	13	Poor	Good	Good
Elkhorn River	Dry Creek	36	16	77.66	Good	Good	Excellent	12	20	15	Fair	Good	Good
Elkhorn River	S. Fork Elkhorn River	40	18	57.69	Good	Good	Good	12	22	15	Good	Excellent	Good
Elkhorn River	Elkhorn River (A)	30	16	43.60	Fair	Good	Good	4	14	17	Poor	Fair	Good
Elkhorn River	Battle Cr.	38	28	60.99	Excellent	Excellent	Excellent	18	28	19	Excellent	Excellent	Excellent
Elkhorn River	Elkhorn River (B)	32	20	74.61	Poor	Good	Excellent	12	20	19	Good	Fair	Excellent
Elkhorn River	Elkhorn River (C)	36	26	75.14	Fair	Excellent	Excellent	10	18	21	Good	Fair	Excellent
Elkhorn River	Elkhorn River (D)	38	14	52.08	Excellent	Good	Good	10	20	19	Fair	Good	Excellent
Elkhorn River	Holt Cr.	42	10	38.01	Good	Poor	Fair	14	18	9	Good	Fair	Fair

Elkhorn River	Battle Cr.	44	10	46.42	Excellent	Fair	Good	12	16	7	Fair	Fair	Poor
Elkhorn River	Elkhorn River	32	10	56.68	Fair	Fair	Good	8	18	17	Poor	Fair	Excellent
Elkhorn River	Elkhorn River	36	16	59.13	Good	Good	Good	12	20	17	Fair	Good	Excellent
Elkhorn River	Elkhorn River	40	18	73.83	Fair	Poor	Good	12	24	15	Good	Good	Good
Elkhorn River	Elkhorn River	38	6	72.75	Fair	Poor	Good	10	8	17	Good		Excellent
Elkhorn River	Elkhorn River	38	8	63.05	Good	Poor	Good	8	22	15	Fair	Good	Good
Elkhorn River	Holt Cr.	28	6	70.29	Poor	Poor	Excellent	12	22	13	Fair	Excellent	Good
Little Blue River	Holt Cr.	28	14	63.59	Poor	Poor	Good	14	20	11	Good	Fair	Fair
Little Blue River	Coon Cr.	36		77.03	Good		Excellent	10		15	Good		Good
Little Blue River	Little Blue River (A)	28	20	41.39	Poor	Good	Fair	4	16	9	Poor	Fair	Fair
Little Blue River	Dry Branch	38	10	74.37	Excellent	Fair	Excellent	10	22	13	Fair	Excellent	Good
Little Blue River	Little Blue River	28	18	47.44	Poor	Good	Good	8	24	15	Poor	Excellent	Excellent
Little Blue River	Little Blue River (B)	48	22	46.91	Excellent	Excellent	Good	12	26	7	Good	Excellent	Poor
Little Blue River	Big Sandy Cr. (A)	30	26	49.90	Fair	Excellent	Good	6	22	9	Poor	Excellent	Fair
Little Blue River	Big Sandy Cr. (B)	40	6	42.32	Excellent	Poor	Fair	6	22	9	Poor	Excellent	Fair
Little Blue River	Liberty Cr.	32	22	58.74	Fair	Excellent	Good	10	22	11	Good	Fair	Fair
Little Blue River	Elk Cr.	26	14	40.14	Poor	Good	Fair	16	22	7	Good	Excellent	Poor
Little Blue River	Spring Cr. (LB)	30	12	52.55	Fair	Fair	Good	8	18	9	Poor	Fair	Fair
Little Blue River	Dry Sandy Cr.	36	20	51.00	Good	Good	Good	12	20	13	Fair	Good	Good
Little Blue River	Rock Cr.	46	26	69.38	Excellent	Excellent	Excellent	14	24	13	Good	Excellent	Good
Little Blue River	Little Blue River	38	12	69.14	Excellent	Fair	Excellent	12	22	17	Fair	Excellent	Excellent
Little Blue River	Spring Cr.	34	14	22.76	Good	Good	Poor	10	12	5	Good	Poor	Poor

Little Blue River	Liberty Cr.	36	12	67.65	Good	Fair	Excellent	14	22	11	Good	Excellent	Fair
Little Blue River	Spring Cr.	28	16	62.77	Poor	Good	Excellent	12	24	19	Good	Fair	Excellent
Little Blue River	Little Blue River	34	18	62.78	Good	Good	Excellent	10	24	15	Good	Fair	Good
Little Blue River	Little Blue River	38	12	58.45	Excellent	Fair	Good	12	22	15	Good	Excellent	Good
Little Blue River	Elk Creek	28	16	58.66	Poor	Good	Good	10	22	7	Good	Fair	Poor
Little Blue River	Big Sandy Creek	28	18	59.29	Poor	Good	Good	10	24	19	Fair	Excellent	Excellent
Little Blue River	Litle Blue River	44	20	65.55	Excellent	Good	Excellent	16	22	11	Good	Excellent	Fair
Little Blue River	Little Blue River	34	16	44.78	Good	Good	Good	12	22	13	Good	Excellent	Good
Loup River	Spring Cr.	36	4	60.40	Good	Poor	Excellent	8	20	9	Fair	Fair	Fair
Loup River	S. Branch Timber Cr.	30	12	67.10	Poor	Fair	Excellent	14	26	11	Good	Excellent	Fair
Loup River	Beaver Cr.	42	10	58.54	Good	Poor	Good	12	18	13	Fair	Fair	Good
Loup River	Cedar River	48	16	76.03	Excellent	Good	Excellent	18	24	11	Good	Excellent	Fair
Loup River	Cottonwood Cr.	34	12	43.87	Fair	Fair	Good	16	10	11	Good	Poor	Fair
Loup River	Beaver Cr.	44	18	75.65	Good	Good	Excellent	14	22	17	Fair	Excellent	Excellent
Loup River	Turtle Cr.	38	10	74.14	Fair	Fair	Excellent	8	24	19	Fair	Excellent	Excellent
Loup River	N. Loup River (B)	44	26	63.72	Good	Excellent	Good	16	22	17	Excellent	Excellent	Good
Loup River	Calamus River	40	18	67.78	Good	Good	Excellent	16	18	17	Excellent	Fair	Good
Loup River	Goose Cr.	50	26	80.26	Excellent	Excellent	Excellent	16	26	19	Excellent	Excellent	Excellent
Loup River	Big Cr.	48	16	81.64	Excellent	Good	Excellent	14	24	15	Good	Excellent	Good
Loup River	N. Loup River (A)	46	22	77.11	Good	Excellent	Good	20	18	17	Excellent	Fair	Good
Loup River	N. Loup River (B)	46	24	76.64	Good	Excellent	Excellent	20	24	19	Excellent	Excellent	Excellent
Loup River	Davis Cr.	30	24	76.17	Poor	Excellent	Excellent	6	26	13	Poor	Excellent	Good

Loup River	Munson Cr. (A)	34	18	69.16	Fair	Good	Excellent	12	28	7	Good	Excellent	Poor
Loup River	Munson Cr. (B)	32	20	34.72	Fair	Excellent	Poor	18	28	5	Excellent	Excellent	Poor
Loup River	Mira Cr.	26	10	65.29	Poor	Fair	Excellent	14	16	13	Good	Fair	Good
Loup River	N. Loup River	40	14	59.19	Good	Good	Good	16	22	9	Good	Excellent	Fair
Loup River	N. Loup River	44	10	61.87	Good	Poor	Good	10	18	17	Fair	Fair	Excellent
Loup River	N. Loup River	30	14	87.80	Poor	Good	Excellent	16	20	17	Excellent	Good	Good
Loup River	Goose Cr.	44	14	81.25	Good	Poor	Excellent		22	13		Excellent	Good
Loup River	Dismal River	46	20	59.51	Good	Good	Good	20	22	15	Excellent	Excellent	Excellent
Loup River	N. Fork Dismal River (A)	52	24	49.15	Excellent	Excellent	Good	20	20	9	Excellent	Good	Fair
Loup River	N. Fork Dismal River (A)	48	16	48.07	Excellent	Good	Fair	20	20	13	Excellent	Fair	Good
Loup River	N. Fork Dismal River (B)	54	20	49.64	Excellent	Good	Good	18	24	13	Excellent	Excellent	Good
Loup River	Mid. Loup River (B)	48	16	54.12	Excellent	Good	Good	20	16	15	Excellent	Fair	Good
Loup River	Mid. Loup River (A)	48	28	71.25	Excellent	Excellent	Excellent	14	24	17	Good	Excellent	Excellent
Loup River	Mid. Loup River (C)	42	16	60.82	Good	Good	Good	16	24	17	Excellent	Excellent	Excellent
Loup River	Mid. Loup River	24	12	51.76	Poor	Fair	Good	8	18	17	Fair	Fair	Good
Loup River	Mid. Loup River	44	20	72.60	Good	Good	Excellent	14	22	17	Fair	Excellent	Excellent
Loup River	Victoria Cr.	30	20	73.48	Poor	Excellent	Excellent	10	22	15	Fair	Excellent	Good
Loup River	Oak Cr.	40	4	70.78	Good	Poor	Excellent	14	14	9	Good	Fair	Fair
Loup River	S. Loup River	44	18	68.57	Good	Good	Excellent	16	22	13	Excellent	Excellent	Good
Loup River	Mud Cr.	26	14	63.68	Poor	Good	Good	4	28	23	Poor	Excellent	Excellent

Loup River	S. Loup River	46	18	70.38	Good	Good	Excellent	18	18	17	Good	Fair	Excellent
Loup River	S. Loup River	34	8	47.39	Fair	Fair	Good	8	12	15	Fair	Poor	Good
Loup River	Mud Cr.	36	10	24.65	Fair	Fair	Poor	8	22	5	Fair	Fair	Poor
Lower Platte River	S. Loup River	46	14	53.13	Good	Good	Good	16	22	13	Good	Excellent	Good
Lower Platte River	Pawnee Cr.	42	22	50.77	Excellent	Excellent	Good	10	24	9	Fair	Excellent	Fair
Lower Platte River	Pawnee Cr.	46	20	72.76	Excellent	Good	Excellent	10	28	7	Good	Excellent	Poor
Lower Platte River	Four Mile Cr.	26	14	39.31	Poor	Good	Poor	6	12	5	Poor	Poor	Poor
Lower Platte River	Shell Cr.	26	26	53.19	Poor	Excellent	Good	8	28	9	Poor	Excellent	Fair
Lower Platte River	Decker Cr.	34	18	48.13	Good	Good	Good	4	24	7	Poor	Fair	Poor
Lower Platte River	Bachelor Br. To Eight Mile Cr.	42	20	42.23	Excellent	Good	Fair	8	24	17	Fair	Good	Excellent
Lower Platte River	Lost Cr.	34	18	70.41	Fair	Good	Excellent	8	22	13	Fair	Good	Good
Lower Platte River	Shell Cr.	28	4	20.11	Poor	Poor	Poor	14	22	9	Good	Fair	Fair
Lower Platte River	Shell Cr.	30	16	47.33	Fair	Good	Good	4	12	5	Very poor	Poor	Poor
Lower Platte River	Salt Cr.	30	6	43.60	Fair	Poor	Good	4	18	7	Very poor	Fair	Poor
Lower Platte River	Middle Cr.	32	26	51.82	Fair	Excellent	Good	6	12	9	Poor	Poor	Fair
Lower Platte River	Middle Cr.	34	26	51.82	Good	Excellent	Good	8	30	7	Fair	Excellent	Poor
Lower Platte River	Wahoo Cr.	28	4	32.62	Poor	Poor	Poor	8	22	7	Fair	Fair	Poor
Lower Platte River	N. Oak Cr.	28	12	62.11	Poor	Fair	Excellent	6	12	9	Poor	Poor	Fair
Lower Platte River	Unnamed Trib. Little Salt Cr.	36	10	56.78	Good	Fair	Good	4	16	7	Poor	Poor	Poor
Lower Platte River	Sand Cr.	30	12	41.46	Fair	Fair	Fair	16	24	7	Excellent	Good	Poor
Lower Platte River	Oak Cr.	32	14	69.05	Fair	Good	Excellent	4	22	9	Poor	Excellent	Fair
Lower Platte River	Unnamed Trib.	28	8	75.00	Poor	Poor	Excellent	6	22	15	Poor	Excellent	Good

	Cottonwood Cr.													
Lower Platte River	Duck Cr.	32	10	42.26	Fair	Fair	Fair	8	16	9	Fair	Poor	Fair
Lower Platte River	Middle Cr.	36	18	59.81	Good	Good	Good	6	26	11	Poor	Excellent	Fair
Lower Platte River	Miller Br.	26	18	71.68	Poor	Good	Excellent	8	22	17	Poor	Excellent	Excellent
Lower Platte River	N. Br.	24	16	65.33	Poor	Good	Excellent	8	26	13	Fair	Good	Good
Lower Platte River	Hickman Br.	30	18	46.81	Fair	Good	Good	4	26	9	Poor	Good	Fair
Lower Platte River	Salt Cr.	28	14	39.19	Poor	Good	Poor	4	28	11	Very poor	Excellent	Fair
Lower Platte River	Wahoo Cr.	22	16	46.96	Poor	Good	Good	12	22	15	Fair	Excellent	Good
Lower Platte River	Bates Br.	34	12	41.91	Good	Fair	Fair	4	18	17	Very poor	Fair	Excellent
Lower Platte River	Middle Cr.	36	10	38.42	Good	Fair	Poor	8	18	9	Poor	Fair	Fair
Lower Platte River	M. Oak Cr.	32	14	53.35	Fair	Good	Good	8	20	9	Poor	Good	Fair
Lower Platte River	Cottonwood Cr.	32	16	33.40	Fair	Good	Poor	10	22	7	Good	Good	Poor
Lower Platte River	Silver Cr.	30	12	40.14	Fair	Fair	Fair	8	18	7	Fair	Fair	Poor
Lower Platte River	Olive Br.	34	8	44.72	Good	Poor	Good	8	18	9	Fair	Fair	Fair
Lower Platte River	Rock Cr.	30	14	49.80	Fair	Good	Good	8	18	13	Poor	Fair	Good
Lower Platte River	Clear Cr.	24	20	66.69	Poor	Good	Excellent	10	20	11	Fair	Good	Fair
Lower Platte River	Sand Cr.	36	20	50.01	Good	Good	Good	12	24	15	Fair	Excellent	Good
Lower Platte River	Dee Cr.	36	18	51.87	Good	Good	Good	10	24	11	Fair	Excellent	Fair
Lower Platte River	Wahoo Cr.	34	10	41.22	Good	Fair	Fair	8	24	9	Poor	Excellent	Fair
Lower Platte River	N. Fk. Rock Cr.	28	14	62.83	Poor	Good	Excellent	8	18	7	Poor	Fair	Poor
Middle Platte River	Clear Cr.	40	14	46.12	Good	Good	Good	12	20	11	Fair	Good	Fair
Middle Platte River	Platte River (Side Channel)	40	14	72.59	Good	Good	Excellent	14	18	9	Good	Fair	Fair

Middle Platte River	Silver Cr.	36	12	67.26	Fair	Fair	Excellent	10	18	17	Good	Fair	Excellent
Middle Platte River	Prairie Cr.	24	14	61.51	Poor	Good	Good	16	16	11	Good	Poor	Fair
Middle Platte River	Platte River (Issac Walton)	46	6	63.70	Good	Poor	Good	8	20	13	Poor	Good	Good
Middle Platte River	Platte River	46	12	63.54	Good	Fair	Good	16	18	19	Good	Fair	Excellent
Middle Platte River	Wood River	44	16	48.01	Good	Good	Good	16	18	21	Excellent	Fair	Excellent
Middle Platte River	Platte River (North Channel)	40	16	61.81	Good	Good	Good	8	26	9	Fair	Good	Fair
Middle Platte River	Platte River	34	14	70.73	Fair	Good	Excellent	6	24	21	Poor	Good	Excellent
Middle Platte River	Platte River	44	10	54.70	Good	Fair	Good	14	20	21	Good	Good	Excellent
Middle Platte River	Spring Cr.	36	22	74.14	Fair	Excellent	Excellent	12	18	7	Good	Fair	Poor
Middle Platte River	Spring Cr.	40	12	60.87	Good	Fair	Good	8	22	17	Poor	Excellent	Excellent
Middle Platte River	Pawnee Cr.	38	22	74.58	Fair	Excellent	Excellent	20	24	13	Excellent	Fair	Good
Middle Platte River	Pawnee Cr.	48	26	69.87	Excellent	Excellent	Excellent	12	26	17	Fair	Excellent	Excellent
Middle Platte River	Platte River	42	12	63.44	Good	Fair	Good	18	24	15	Excellent	Good	Good
Middle Platte River	Spring Cr.	32	14	16.99	Fair	Good	Poor	16	22	15	Excellent	Excellent	Good
Middle Platte River	Platte River	42	12	61.54	Good	Fair	Good	8	18	5	Poor	Fair	Poor
Middle Platte River	Platte River	40	8	54.60	Excellent	Fair	Good	16	24	17	Excellent	Excellent	Good
Missouri River	Tekamah Cr. (A)	26	22	55.32	Poor	Excellent	Good	14	20	15	Good	Good	Good
Missouri River	Unnamed Trib. Blackbird Cr. (A)	36	18	60.46	Good	Good	Excellent	8	24	9	Fair	Fair	Fair
Missouri River	Unnamed Trib. Blackbird Cr. (A)	38	18	60.46	Excellent	Good	Excellent	8	24	11	Fair	Fair	Fair
Missouri River	Unnamed Trib. Blackbird Cr. (B)	36	24	51.12	Good	Excellent	Good	12	24	7	Good	Excellent	Poor

Missouri River	Walnut Cr.	26	8	63.07	Poor	Poor	Excellent	6	22	19	Poor	Excellent	Excellent
Missouri River	Unnamed Trib. Big Papillion Cr.	22	4	73.50	Poor	Poor	Excellent	6	24	9	Poor	Good	Fair
Missouri River	Pigeon Cr. (B)	28	24	59.70	Poor	Excellent	Good	4	10	9	Very poor	Poor	Fair
Missouri River	Wood Cr.	26	10	55.15	Poor	Fair	Good	8	26	11	Poor	Excellent	Fair
Missouri River	Tekamah Cr. (B)	36	22	67.92	Good	Excellent	Excellent	8	18	11	Poor	Fair	Fair
Missouri River	Omaha Cr.	38	22	61.25	Excellent	Excellent	Excellent	10	22	19	Good	Fair	Excellent
Missouri River	S. Br. Papillion Cr.	36	14	31.86	Good	Good	Poor	10	28	17	Good	Excellent	Excellent
Missouri River	Big Papillion Cr.	34	16	47.52	Good	Good	Good	10	26	7	Fair	Excellent	Poor
Missouri River	Long Cr.	36	12	19.18	Good	Fair	Poor	6	24	9	Poor	Excellent	Fair
Missouri River	Mill Cr.	40	14	62.79	Excellent	Good	Excellent	12	22	5	Fair	Excellent	Poor
Missouri River	Silver CR.	34	18	37.89	Good	Good	Poor	10	24	11	Fair	Excellent	Fair
Missouri River	Cow Cr.	28	14	38.73	Poor	Good	Poor	12	26	7	Fair	Excellent	Poor
Missouri River	N. Omaha Cr.	34	14	32.51	Good	Good	Poor	8	26	7	Poor	Excellent	Poor
Missouri River	Omaha Cr.	32	16	52.71	Fair	Good	Good	8	24	5	Poor	Excellent	Poor
Missouri River	Unnamed Trib. South Cr.	36	6	0.00	Good	Poor	Poor	6	18	7	Poor	Fair	Poor
Missouri River	Howe Cr.	52	22	66.88	Excellent	Excellent	Excellent	8	12		Fair	Poor	
Missouri River	E. Bow Cr.	28	8	47.88	Poor	Poor	Good	20	22	17	Excellent	Good	Excellent
Missouri River	Beaver Cr.	48	24	66.47	Excellent	Excellent	Excellent	6	18	13	Poor	Fair	Good
Missouri River	Aowa Cr.	26	10	45.80	Poor	Fair	Good	12	26	17	Good	Good	Excellent
Missouri River	Unnamed Trib. Norwegian Bow Cr.	44	22	61.06	Excellent	Excellent	Excellent	6	20	15	Poor	Good	Good
Missouri River	Bow Cr. (B)	38	20	48.05	Excellent	Good	Good	18	26	11	Excellent	Good	Fair

Missouri River	Bow Cr. (A)	40		44.55	Excellent		Good	12	24	17	Good	Good	Excellent
Missouri River	Jordan Cr.	22	16	34.81	Poor	Good	Poor	12	22	13	Good	Excellent	Good
Missouri River	Unnamed Trib . Bazile Cr.	32	28	90.81	Fair	Excellent	Excellent	8	20	11	Fair	Fair	Fair
Missouri River	Elk Cr.	28	8	35.61	Poor	Poor	Poor	8	22	15	Fair	Fair	Good
Missouri River	Elk Cr.	30	16	39.13	Fair	Good	Poor	8	18	7	Poor	Fair	Poor
Missouri River	Elk Cr.	36	14	58.86	Good	Good	Good	8	24	11	Poor	Excellent	Fair
Missouri River	Lime Cr.	40	4	73.63	Excellent	Poor	Excellent	8	22	11	Poor	Excellent	Fair
Missouri River	W. Bow Cr.	32	14	59.37	Fair	Good	Good	14	22	19	Good	Excellent	Excellent
Missouri River	Unnamed Trib. Norwegian Bow Cr.	32	12	73.39	Fair	Fair	Excellent	10	20	17	Fair	Good	Excellent
Missouri River	Norwegian Bow Cr.	38	18	60.58	Excellent	Good	Excellent	10	20	11	Fair	Good	Fair
Missouri River	W. Bow Cr.	34	18	48.21	Good	Good	Good	14	26	13	Good	Excellent	Good
Missouri River	Little Bazile Cr.	34	16	56.58	Good	Good	Good	12	22	15	Good	Good	Good
Missouri River	Unnamed Trib. Bazile Cr.	30	14	91.90	Fair	Good	Excellent	12	24	15	Fair	Excellent	Excellent
Missouri River	Bazile Cr.	46	10	60.17	Excellent	Fair	Excellent	10	20	19	Fair	Good	Excellent
Nemaha RIver	Rakes Cr.	38	16	57.45	Excellent	Good	Good	12	22	13	Fair	Excellent	Good
Nemaha RIver	Ervine Cr.	34	12	0.00	Good	Fair	Poor	6	28	7	Poor	Excellent	Fair
Nemaha RIver	Duck Cr.	38	22	50.27	Excellent	Excellent	Good	8	18	4	Poor	Fair	Very poor
Nemaha RIver	Honey Cr.	30	20	59.63	Fair	Good	Good	8	22	7	Fair	Good	Poor
Nemaha RIver	Cottier Sp.	36	22	82.26	Good	Excellent	Excellent	4	22	9	Poor	Good	Fair
Nemaha RIver	N. Br. Weeping	34	26	51.82	Good	Excellent	Good	10	24	15	Good	Fair	Good

	Water Cr.													
Nemaha RIver	S. Cedar Cr.	38	24	53.28	Excellent	Excellent	Good	8	26	7	Poor	Excellent	Poor
Nemaha RIver	Big Slough	40	10	42.16	Excellent	Fair	Fair	8	30	9	Fair	Excellent	Fair
Nemaha RIver	Winnebago Cr.	36	8	76.18	Good	Poor	Excellent	10	20	7	Fair	Good	Poor
Nemaha RIver	Rattlesnake Cr.	38	26	43.06	Excellent	Excellent	Good	10	18	9	Fair	Fair	Fair
Nemaha RIver	Pony Cr.	42	24	46.79	Excellent	Excellent	Good	4	28	11	Poor	Excellent	Good
Nemaha RIver	Lores Br.	36	14	75.99	Good	Good	Excellent	8	26	17	Fair	Good	Excellent
Nemaha RIver	Lores Br.	42	4	59.83	Good	Poor	Excellent	10	26	9	Good	Excellent	Fair
Nemaha RIver	Long Br.	32	26	32.60	Fair	Excellent	Poor	4	18	7	Poor	Fair	Poor
Nemaha RIver	Yankee Cr.	30	16	41.97	Fair	Good	Fair	4	22	9	Poor	Good	Fair
Nemaha RIver	N. Fk. Big Nemaha River	24	20	59.80	Poor	Good	Good	6	20	15	Poor	Fair	Good
Nemaha RIver	N. Fk. Big Nemaha River	28	22	51.69	Poor	Excellent	Good	6	28	13	Poor	Excellent	Good
Nemaha RIver	Balls Br.	28	24	46.48	Poor	Excellent	Good	4	24	9	Very poor	Excellent	Fair
Nemaha RIver	Big Nemaha River	30	10	31.94	Fair	Fair	Poor	8	30	13	Fair	Excellent	Good
Nemaha RIver	Whiskey Run	34	24	77.51	Good	Excellent	Excellent	4	20	13	Poor	Good	Good
Nemaha RIver	Long Br. Cr.	26	18	29.22	Poor	Good	Poor	6	26	13	Poor	Excellent	Good
Nemaha RIver	Unnamed Trib Balls Br.	32	14	75.15	Fair	Good	Excellent	4	20	9	Poor	Fair	Fair
Nemaha RIver	Fourmile Cr.	34	18	53.50	Good	Good	Good	14	18	11	Good	Fair	Fair
Nemaha RIver	Mid. Br. Big Nemaha River	24	18	40.17	Poor	Good	Fair	6	22	11	Poor	Fair	Fair
Nemaha RIver	Muddy Cr.	28	20	32.24	Poor	Good	Poor	4	24	13	Poor	Fair	Good
Nemaha RIver	S. Fk. Big Nemaha	30	20	40.60	Fair	Good	Fair	4	22	13	Poor	Excellent	Good

	River													
Nemaha RIver	N. Fk. Big Nemaha River	22	14	36.26	Poor	Good	Poor	4	22	15	Poor	Good	Good
Nemaha RIver	Mid. Br. Big Nemaha River	24	14	29.38	Poor	Good	Poor	4	18	13	Poor	Fair	Good
Nemaha RIver	Little Muddy Cr.	32	14	60.60	Fair	Good	Excellent	4	20	7	Poor	Fair	Poor
Nemaha RIver	Hoosier Cr.	46	18	51.77	Excellent	Good	Good	4	22	13	Poor	Fair	Good
Nemaha RIver	Little Muddy Cr.	24	18	66.41	Poor	Good	Excellent	8	18	7	Fair	Fair	Fair
Nemaha RIver	Indian Cr.	40	18	60.18	Excellent	Good	Excellent	4	24	9	Poor	Fair	Fair
Nemaha RIver	Indian Cr.	44	16	67.31	Excellent	Good	Excellent	12	28	9	Good	Excellent	Fair
Nemaha RIver	Muddy Cr.	26	22	57.64	Poor	Excellent	Good	4	26	13	Poor	Good	Good
Nemaha RIver	Hooper Cr.	34	14	51.18	Good	Good	Good	4	30	9	Poor	Excellent	Fair
Nemaha RIver	Little Nemaha River	24	22	41.81	Poor	Excellent	Fair	12	18	9	Good	Fair	Fair
Nemaha RIver	Sand Cr.	28	18	40.21	Poor	Good	Fair	4	22	17	Poor	Excellent	Good
Nemaha RIver	Little Nemaha River	30	16	52.22	Fair	Good	Good	8	24	9	Fair	Fair	Fair
Niobrara River	Unnamed Trib. Ponca Cr.	48	8	89.01	Excellent	Poor	Excellent	6	20	15	Poor	Good	Good
Niobrara River	Ponca Cr.	36	20	65.40	Fair	Excellent	Good	10	20	15	Good	Fair	Good
Niobrara River	Middle Branch Eagle Creek	52	12	72.80	Excellent	Poor	Good	10	20	13	Good	Fair	Good
Niobrara River	Unnamed Trib. Merriman Cr.	38	20	62.50	Excellent	Good	Excellent	20	20	15	Excellent	Good	Good
Niobrara River	Verdigre Cr. (A)	52	18	57.18	Excellent	Poor	Good	10	24	5	Good	Good	Poor
Niobrara River	Verdigre Cr. (B)	48	28	51.28	Excellent	Excellent	Good	12	22	15	Good	Good	Good

Niobrara River	N. Br. Verdigre Cr.	52	28	80.71	Excellent	Excellent	Excellent	16	22	11	Excellent	Good	Good
Niobrara River	Mid. Br. Verdigre Cr.	48	26	84.16	Excellent	Excellent	Excellent	14	20	17	Good	Fair	Excellent
Niobrara River	Niobrara River (E)	44	16	51.39	Good	Poor	Good	12	24	17	Good	Excellent	Excellent
Niobrara River	Verdigre Cr.	48	16	60.50	Excellent	Poor	Good	10	20	13	Fair	Fair	Good
Niobrara River	Spring Cr.	52	16	54.75	Excellent	Poor	Good	16	24	15	Good	Excellent	Excellent
Niobrara River	Muleshoe Cr.	50	22	63.36	Excellent	Excellent	Good	20	20	11	Excellent	Good	Fair
Niobrara River	Boardman Cr.	46	10	64.81	Good	Poor	Good	12	22	11	Fair	Excellent	Fair
Niobrara River	Niobrara River (B)	46	22	65.79	Good	Excellent	Excellent	12	20	15	Fair	Good	Good
Niobrara River	Gordon Cr.	38	22	58.15	Good	Excellent	Good	14	24	19	Good	Excellent	Excellent
Niobrara River	Unnamed Trib. Rock Cr.	48	16	82.93	Excellent	Good	Excellent	12	24	15	Fair	Excellent	Good
Niobrara River	Long Pine Cr.	48	20	69.40	Excellent	Excellent	Excellent	16	24	9	Excellent	Excellent	Fair
Niobrara River	Short Pine Cr.	52	22	61.15	Excellent	Excellent	Good	12	24	17	Good	Excellent	Excellent
Niobrara River	Short Pine Cr.	48	22	61.15	Excellent	Excellent	Good	16	18	9	Excellent	Fair	Fair
Niobrara River	Plum Cr.	44	18	76.20	Good	Excellent	Excellent	16	22	7	Excellent	Good	Fair
Niobrara River	Willow Cr.	44	14	95.40	Good	Poor	Excellent	10	18	19	Fair	Fair	Excellent
Niobrara River	South Fork Plum Cr.	48	16	69.08	Excellent	Good	Excellent	12	22	17	Fair	Excellent	Excellent
Niobrara River	Gordon Cr.	44	14	65.81	Good	Poor	Excellent	14	22	17	Good	Excellent	Excellent
Niobrara River	Burton Cr.	34	10	87.10	Fair	Fair	Excellent	12	24	17	Fair	Excellent	Excellent
Niobrara River	Willow Cr.	36	14	73.27	Good	Good	Excellent	16	18	17	Excellent	Fair	Excellent
Niobrara River	Plum Cr.	42	14	70.74	Good	Good	Excellent	10	22	17	Fair	Excellent	Excellent
Niobrara River	Minnechaduza	46	16	85.97	Good	Good	Excellent	16	20	15	Good	Good	Excellent

	Cr.													
Niobrara River	Minnechaduza Cr. (A)	54	14	84.75	Excellent	Good	Excellent	14	22	15	Fair	Excellent	Excellent
Niobrara River	Bone Cr.	36	20	74.41	Fair	Good	Excellent	14	20	19	Good	Good	Excellent
Niobrara River	Fairfield Cr.	48	16	56.85	Excellent	Good	Good	12	18	11	Fair	Fair	Fair
Niobrara River	Dry Cr.	38	8	53.30	Good	Poor	Good						
Niobrara River	Pine Cr.	32	26	63.04	Poor	Excellent	Good	16	18	9	Excellent	Fair	Fair
Niobrara River	Niobrara River (C)	50	28	65.82	Excellent	Excellent	Excellent	12	24	17	Good	Good	Excellent
Niobrara River	Niobrara River (B)	42	22	56.59	Good	Excellent	Good	16	24	17	Excellent	Excellent	Excellent
Niobrara River	Niobrara River near Merriman	56	12	58.11	Excellent	Poor	Good	14	22	15	Good	Good	Good
Niobrara River	Niobrara River near Hay Springs	38	20	89.91	Excellent	Excellent	Excellent	16	22	15	Excellent	Good	Good
Niobrara River	Niobrara River near Harrison	44	8	69.31	Excellent	Fair	Excellent	20	22	15	Excellent	Excellent	Excellent
Niobrara River	Rush Cr.	36	14	69.47	Fair	Poor	Excellent	16	20	15	Good	Good	Good
North Platte River	N. Platte River	34	22	76.21	Fair	Excellent	Excellent	20	24	9	Excellent	Good	Fair
North Platte River	N. Platte River	36	20	65.71	Fair	Excellent	Excellent	14	24	15	Fair	Excellent	Excellent
North Platte River	N. Platte River	36	18	81.79	Good	Good	Excellent	10	24	11	Fair	Excellent	Fair
North Platte River	N. Platte River	42	18	58.68	Good	Good	Good	8	26	17	Poor	Excellent	Excellent
North Platte River	N. Platte River	36	18	66.32	Fair	Good	Excellent	14	24	13	Fair	Excellent	Good
North Platte River	Birdwood Cr.	44	20	55.02	Good	Good	Good	14	18	11	Fair	Fair	Fair
North Platte River	N. Platte River	40	12	61.81	Good	Fair	Good	16	22	11	Good	Excellent	Fair
North Platte River	Whitetail Cr.	34	16	83.96	Fair	Good	Excellent	14	20	11	Fair	Good	Fair
North Platte River	N. Platte River	52	22	61.89	Excellent	Excellent	Good	16	20	9	Good	Good	Fair

	(North Channel													
North Platte River	Ash Cr.	28	16	19.43	Poor	Good	Poor							
North Platte River	Blue Cr.	46	24	55.78	Good	Excellent	Good	12	18	5	Good	Fair	Poor
North Platte River	Blue Cr.	42	24	74.21	Good	Excellent	Excellent	16	22	17	Good	Excellent	Excellent
North Platte River	Blue Cr.	46	24	69.09	Good	Excellent	Excellent	20	24	15	Excellent	Excellent	Excellent
North Platte River	N. Platte River (South Channel)	38	16	74.33	Excellent	Good	Excellent	18	26	19	Excellent	Good	Excellent
North Platte River	Rush Cr.	48	22	64.38	Excellent	Excellent	Excellent	12	18	15	Fair	Fair	Excellent
North Platte River	Unnamed Trib. Cedar Cr.	32	14	62.70	Fair	Good	Good	16	28	13	Good	Excellent	Good
North Platte River	Blue Cr.	44	20	82.63	Good	Good	Excellent	12	18	15	Good	Fair	Good
North Platte River	N. Platte River	38	10	77.27	Excellent	Fair	Excellent	20	22	11	Excellent	Excellent	Fair
North Platte River	N. Platte River	38	14	67.78	Excellent	Good	Excellent	16	22	21	Good	Excellent	Excellent
North Platte River	N. Platte River	42	18	69.32	Excellent	Good	Excellent	18	22	15	Good	Excellent	Excellent
North Platte River	N. Platte River	48	12	71.65	Excellent	Fair	Excellent	12	20	19	Fair	Good	Excellent
North Platte River	N. Platte River (North Channel	36	14	76.64	Good	Good	Excellent	16	14	19	Good	Fair	Excellent
North Platte River	Red Willow Cr.	42	16	84.83	Excellent	Good	Excellent						
North Platte River	Ninemile Cr.	56	24	59.69	Excellent	Excellent	Good	16	22	15	Good	Excellent	Excellent
North Platte River	Dry Spottedtail Cr.	34	20	50.18	Fair	Excellent	Good	16	22	13	Good	Excellent	Good
North Platte River	N. Platte River	34	14	65.60	Fair	Good	Excellent	10	20	15	Fair	Good	Good
North Platte River	Red Willow Cr.	34	22	62.05	Fair	Excellent	Good	14	22	17	Fair	Excellent	Excellent
North Platte River	Wildhorse Dr.	44	18	59.44	Excellent	Good	Good	12	22	13	Fair	Excellent	Good
North Platte River	N. Platte River	42	20	63.56	Excellent	Excellent	Good	16	22	13	Good	Excellent	Good

North Platte River	N. Platte River	46	22	76.52	Excellent	Excellent	Excellent	16	24	15	Good	Excellent	Excellent
North Platte River	N. Platte River	28	10	56.72	Poor	Fair	Good	18	18	21	Excellent	Fair	Excellent
North Platte River	Gering Dr.	44	24	81.48	Excellent	Excellent	Excellent	10	14	7	Fair	Fair	Poor
North Platte River	Sheep Cr.	40	8	40.95	Excellent	Fair	Fair	16	22	21	Good	Excellent	Excellent
Republican River	Cottonwood Cr.	48	14	64.08	Excellent	Good	Excellent	20	18	15	Excellent	Fair	Excellent
Republican River	Republican River (A)	48	16	52.28	Excellent	Good	Good	18	20	13	Excellent	Good	Good
Republican River	E. Penny Cr.	26		19.43	Poor		Poor	14	14	13	Good	Fair	Good
Republican River	Center Cr.	48	20	53.88	Excellent	Excellent	Good	8			Poor		
Republican River	Hicks Cr.	30	10	68.31	Poor	Fair	Excellent	20	26	13	Excellent	Excellent	Good
Republican River	Farmers Cr.	46	24	68.64	Good	Excellent	Excellent	10	20	11	Good	Fair	Fair
Republican River	Republican River	40	20	71.44	Good	Excellent	Excellent	14	24	21	Good	Fair	Excellent
Republican River	Republican River	40	12	64.47	Good	Fair	Excellent	16	20	17	Excellent	Good	Good
Republican River	Republican River (B)	30	18	41.65	Poor	Good	Fair	12	24	19	Good	Fair	Excellent
Republican River	Republican River (D)	44	22	39.61	Good	Excellent	Fair	6	22	9	Poor	Excellent	Fair
Republican River	Beaver Cr. (A)	20	14	28.19	Poor	Good	Poor	14	20	7	Good	Good	Poor
Republican River	Beaver Cr. (B)	22	16	33.65	Poor	Good	Poor	4	16	5	Very poor	Fair	Poor
Republican River	Sappa Cr.	30	16	27.71	Poor	Good	Poor	4	26	5	Very poor	Excellent	Poor
Republican River	Prairie Dog Cr.	30	12	44.82	Poor	Fair	Good	8	24	5	Poor	Excellent	Poor
Republican River	Flag Cr.	28	8	67.64	Poor	Fair	Excellent	4	22	9	Very poor	Excellent	Fair
Republican River	Prairie Dog Cr.	32	10	40.70	Fair	Fair	Fair	6	22	7	Poor	Excellent	Poor
Republican River	Muddy Cr.	28	10	56.39	Poor	Fair	Good	4	18	7	Very poor	Fair	Poor

Republican River	Sappa Cr.	26	18	47.66	Poor	Good	Good	6	20	13	Poor	Fair	Good
Republican River	Beaver Cr.	34	8	42.99	Fair	Fair	Fair	4	22	9	Poor	Fair	Fair
Republican River	Deer Cr.	34	12	41.37	Fair	Fair	Fair	14	18	11	Good	Fair	Fair
Republican River	Frenchman Cr. (A)	48	22	64.16	Excellent	Excellent	Excellent	8	20	5	Fair	Fair	Poor
Republican River	Republican River (F)	50	16	42.01	Excellent	Good	Fair	14	20	13	Good	Fair	Good
Republican River	Republican River (C)	38	22	57.73	Fair	Excellent	Good	18	22	9	Excellent	Excellent	Fair
Republican River	Republican River (E)	44	12	61.51	Good	Fair	Good	16	18	7	Excellent	Fair	Poor
Republican River	Frenchman Cr. (B)	48	20	84.82	Excellent	Excellent	Excellent	16	14	9	Excellent	Fair	Fair
Republican River	Spring Cr.	26	22	83.71	Poor	Excellent	Excellent	16	24	17	Excellent	Excellent	Excellent
Republican River	Muddy Cr.	42	20	55.67	Good	Excellent	Good	8	28	13	Fair	Excellent	Good
Republican River	Red Willow Cr.	34	22	42.83	Fair	Excellent	Fair						
Republican River	Frenchman Cr.	32	18	74.88	Fair	Good	Excellent	8	20	11	Fair	Fair	Fair
Republican River	Republican River	28	8	77.79	Poor	Fair	Excellent	10	22	11	Fair	Excellent	Fair
Republican River	Red Willow Cr.	40	8	55.47	Good	Fair	Good	12	16	17	Fair	Fair	Excellent
Republican River	Frenchman Cr.	32	22	76.35	Fair	Excellent	Excellent	16	22	17	Good	Excellent	Excellent
Republican River	Medicine Cr.	40	20	55.79	Good	Excellent	Good	12	22	17	Good	Good	Excellent
Republican River	Muddy Cr.	36	12	61.04	Fair	Fair	Good	16	26	9	Excellent	Excellent	Fair
Republican River	Medicine Cr.	34	6	64.92	Fair	Poor	Excellent	16	20	7	Excellent	Fair	Poor
Republican River	Republican River	44	14	68.09	Good	Good	Excellent	12	20	11	Good	Good	Good
Republican River	Stinking Water Cr.	36	20	78.38	Good	Excellent	Excellent	16	20	9	Excellent	Good	Fair

South Platte River	S. Platte River (Centennial Park)	48	12	65.10	Excellent	Fair	Excellent	14	26	13	Good	Excellent	Good
South Platte River	Mid. Fremont Slough	32	22	87.82	Fair	Excellent	Excellent	14	20	21	Good	Good	Excellent
South Platte River	W. Fremont Slough	32	14	71.99	Poor	Poor	Excellent	12	22	17	Good	Fair	Excellent
South Platte River	S. Platte River	40		48.73	Excellent		Good	14	22	11	Good	Good	Fair
South Platte River	S. Platte River (Sutherland)	40		66.25	Excellent		Excellent	14		17	Good		Good
South Platte River	S. Platte River (Brule)	34	10	50.73	Fair	Fair	Good	14		21	Good		Excellent
South Platte River	S. Platte River (Brule)	34	16	54.90	Fair	Good	Good	12	18	15	Good	Fair	Good
South Platte River	Peterson Ditch	36	14	42.81	Good	Good	Fair	12	24	15	Good	Good	Good
South Platte River	Lodgepole Cr.	38	8	68.54	Excellent	Fair	Excellent	8	18	15	Fair	Fair	Good
South Platte River	Highline Canal	26	14	0.00	Poor	Good	Poor	14	18	11	Good	Fair	Fair
South Platte River	Lodgepole Cr.	44	8	52.75	Excellent	Fair	Good	8	18	8	Fair	Fair	Fair
South Platte River	Lodgepole Cr.	48	16	74.81	Excellent	Good	Excellent	16	24	7	Excellent	Good	Poor
South Platte River	Lodgepole Cr.	36	16	20.32	Good	Good	Poor	18	28	11	Excellent	Excellent	Good
South Platte River	Lodgepole Cr.	40	10	29.50	Excellent	Fair	Poor	14	18	7	Good	Fair	Poor
South Platte River	Lodgepole Cr.	42	16	84.77	Excellent	Good	Excellent	16	14	9	Good	Fair	Fair
South Platte River	Lodgepole Cr.	44	4	54.74	Excellent	Poor	Good	12	20	15	Fair	Good	Good
White Hat River	Mid. Fk. Soldier Cr.	48	24	64.46	Excellent	Excellent	Excellent	16	12	15	Good	Poor	Good
White Hat River	White River	32	18	73.43	Poor	Excellent	Excellent	16	24	13	Excellent	Excellent	Good
White Hat River	Beaver Cr.	36	14	55.54	Good	Good	Good	8	22	11	Fair	Good	Fair

White Hat River	Big Bordeaux Cr.	48	18	72.27	Excellent	Good	Excellent	18	18	15	Excellent	Fair	Good
White Hat River	Larabee Cr.	42	14	75.95	Excellent	Good	Excellent	16	20	19	Good	Good	Excellent
White Hat River	White River n. of Chadron	48	20	30.91	Excellent	Excellent	Poor	20	26	11	Excellent	Excellent	Fair
White Hat River	White River at Crawford CP	46	22	52.50	Excellent	Excellent	Good	10	18	11	Fair	Fair	Fair
White Hat River	White River s. of Ft Robinson SP	36	20	73.68	Good	Excellent	Excellent	16	20	11	Good	Good	Fair
White Hat River	West Ash Cr.	38	16	46.39	Excellent	Good	Good	16	18	13	Good	Fair	Good
White Hat River	Monroe Cr.	50	24	41.57	Excellent	Excellent	Fair						
White Hat River	Warbonnett Cr.	36	8	32.04	Good	Poor	Fair	16	20	9	Excellent	Fair	Fair