

Konza Prairie Metadata Report (KNZ)

Manhattan, Kansas

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Research Area Information

Konza Prairie.....KNZ

Konza Prairie

Research Area Information

Harvest URL - Option 1

http://www.konza.ksu.edu/data_catalog/meteoro/exchange/awe012.txt

Harvest URL -Option 2

<http://www.konza.ksu.edu/konza/hydrodb/hydrodb.txt>

Site URL

<http://www.konza.ksu.edu/>

Site Climate URL

http://www.konza.ksu.edu/data_catalog/datalog.html

Site Watershed URL

www.konza.ksu.edu

Site Map URL

<http://www.konza.ksu.edu/konza/hydrodb/station.htm>

Experimental Design

The Kings Creek watershed is located within the boundaries of the 3487-ha Konza Prairie Biological Station (KPBS). KPBS is located in the Flint Hills of northeastern Kansas, and was established in 1971 with land acquired by the Nature Conservancy and deeded to Kansas State University. KPBS has been an NSF-funded Long-term Ecological Research (LTER) site since 1981, and the Konza LTER program encompasses studies at, and across, multiple ecological levels and a variety of spatial and temporal scales. KPBS is a C4-dominated grassland with a continental climate characterized by warm, wet summers and dry, cold winters. Mean annual precipitation (835 mm) is sufficient to support woodland or savanna vegetation; consequently, drought, fire and grazing are important in maintaining this grassland. The site is topographically complex (320 to 444 m asl), and soil type and depth varying with topographic position. In general, lowland soils are silty clay loams formed from thick colluvial and alluvial deposits and may extend to 2 m. Hill-side and upland soils are similar, but much shallower. These soils overlay as many as 10 distinct layers of alternating limestone and shale, contributing to the complex subsurface hydrology of the region. Vegetation is primarily (>90%) native tallgrass prairie, dominated by perennial C4 grasses, such as *Andropogon gerardii*, *Sorghastrum nutans*, *Panicum virgatum* and *A. scoparius*. Numerous sub-dominant grasses, forbs and woody species contribute to its relatively high floristic diversity. The KPBS biota includes >600 plant, 40 mammal, >200 bird, 34 reptile and amphibian, 20 fish, and >700 identified invertebrate species (www.konza.ksu.edu/data_catalog/toc.html). Kings Creek, a USGS Benchmark Stream, originates on and traverses 10 km across KPBS. Gallery forests dominated

by *Quercus* spp. and *Celtis occidentalis* occur along major stream courses. Several agricultural fields and restored prairies occur near headquarters. Overall, the site has most features representative of the pre-settlement tallgrass prairie, with fire and large native herbivores incorporated as a shifting mosaic. Thus, Konza serves as a benchmark for detecting and exploring the causes and consequences of environmental change taking place throughout the grasslands of the eastern Central Plains, with results relevant to mesic grasslands worldwide. The Konza LTER program includes a long-term database on ecological patterns and processes derived from a fully replicated watershed-level experimental design, in place since 1977. This design includes replicate watersheds subject to different fire and grazing treatments, as well as a number of long-term plot-level experiments. The effects of climate are addressed by long-term studies encompassing the natural climatic variability, and possible directional changes, characteristic of this region, as well as manipulations of water availability in field experiments. Within core LTER watersheds, permanent sampling transects are replicated at various topographic positions ($n=4$ /topo. position/watershed), where ANPP, plant species composition, plant and consumer populations, soil properties, and key above- and belowground processes are measured.

Publications

www.konza.ksu.edu/general/publications/pub.html

USGS Harvest URL

http://gce-lter.marsci.uga.edu/harvest/usgs/knz_lter.txt

Meteorological Stations

Konza Headquarters.....HQ1MET

Konza Headquarters

Air Temperature

Relative Humidity

Begin Date..... 19870707
Data Logger Sampling Interval..... 10 seconds
Summary Interval daily
Data Accuracy (percent) +/-3.0%
Instrument Height (meters) 3

Instrumentation Description

Campbell Scientific HMP35C Temperature/RH probe

Methods Description

Logged on Campbell Scientific CR10 datalogger.

Minimum QC Threshold (percent)-2
Maximum QC Threshold (percent) 106

Soil Temperature

Begin Date..... 19920623
Data Logger Sampling Interval..... 10 second
Summary Interval Daily
Instrument Height (meters)-0.025

Methods Description

Campbell Scientific CR10 datalogger. Daily Max, Min, and Mean recorded.

Minimum QC Threshold (degree celsius)-24
Maximum QC Threshold (degree celsius)48

Watershed

Kings Creek	Kings
Watershed N01B	WS_N01B
Watershed N02B	WS_N02B
Watershed N04D	WS_N04D
Watershed N20B	WS_N20B

Kings Creek

Watershed Ecological Characteristics

Mean annual precipitation (millimeters)835

Channel length description

Intermittent

Mean snowpack description

521mm snow per year (52mm liquid)

Watershed Descriptions

Pre-treatment vegetation

The watershed is a mosaic of burn frequencies (1-20 year return time) and native bison are on a portion of it

Soil description

Soils are highly variable depth 0-222 cm

Geology description

Konza Prairie lies in the Flint Hills of eastern Kansas, a region of stream-dissected hills eroded from flat-lying to gently dipping, chert-bearing limestones and shales of Permian age. Konza Prairie is part of an erosional landscape produced during millions of years of exposure to weathering and to stripping by streams tributary to the Kansas River.

Treatment History

See link for burn regimes http://www.konza.ksu.edu/data_catalog/toc.html

Watershed N01B

Watershed Spatial Characteristics

North bounding coordinate (decimal degrees)39.088

West bounding coordinate (decimal degrees)-96.579

South bounding coordinate (decimal degrees)39.075

East bounding coordinate (decimal degrees)-96.569

Area (hectares) 121

Aspect (degrees azimuth) N

Minimum watershed elevation (meters; a.m.s.l)	376
Maximum watershed elevation (meters; a.m.s.l)	441

Watershed Ecological Characteristics

Mean annual precipitation (millimeters)	835
Channel length description intermittent	
Mean snowpack description 521 mm snow per year	

Watershed N02B

Watershed Spatial Characteristics

North bounding coordinate (decimal degrees)	39.091
West bounding coordinate (decimal degrees)	-96.599
South bounding coordinate (decimal degrees)	39.076
East bounding coordinate (decimal degrees)	-96.584
Area (hectares)	119
Aspect (degrees azimuth)	NE
Minimum watershed elevation (meters; a.m.s.l)	362
Maximum watershed elevation (meters; a.m.s.l)	437

Watershed Ecological Characteristics

Mean annual precipitation (millimeters)	835
Channel length description intermittent	
Mean snowpack description 521 mm snow per year	

Watershed N04D

Watershed Spatial Characteristics

North bounding coordinate (decimal degrees) 39.09
West bounding coordinate (decimal degrees) -96.59
South bounding coordinate (decimal degrees) 39.07
East bounding coordinate (decimal degrees) -96.577
Area (hectares) 135
Aspect (degrees azimuth) N
Minimum watershed elevation (meters; a.m.s.l) 368
Maximum watershed elevation (meters; a.m.s.l) 434.5

Watershed Ecological Characteristics

Mean annual precipitation (millimeters) 835
Channel length description
intermittent
Mean snowpack description
521 mm snow per year

Watershed N20B

Watershed Spatial Characteristics

North bounding coordinate (decimal degrees) 39.092
West bounding coordinate (decimal degrees) -96.58
South bounding coordinate (decimal degrees) 39.081
East bounding coordinate (decimal degrees) -96.561
Area (hectares) 84
Aspect (degrees azimuth) NW
Minimum watershed elevation (meters; a.m.s.l) 374
Maximum watershed elevation (meters; a.m.s.l) 440

Watershed Ecological Characteristics

Mean annual precipitation (millimeters) 835
Channel length description
intermittent
Mean snowpack description
521 mm snow per year

Gauging Stations

Kings Creek (USGS)	06879650
N01B	N01B
N02B	N02B
N04D	N04D
N20B	N20B

Kings Creek (USGS)

Hydrologic Gauging Station

N01B

Hydrologic Gauging Station

Latitude (decimal degrees)39.0867
Longitude (decimal degrees)-96.577
Elevation (meters; a.m.s.l.)376.1
Begin Date..... January 1, 1987
End Date..... Present
Watershed Area (hectares) 121

Associated Watershed

N01B

Associated meteorological station

N1

Photo URL

<http://www.konza.ksu.edu/konza/hydrodb/station.htm>

History

No change

Weir Description

Add later

Weir Calibration and Modification History

add later

Stream Discharge

Begin Date..... January 1, 1987
End Date..... Present
Data Logger Sampling Interval..... 5 minutes
Summary Intervalweekly
Data Accuracy (liters per second) +/-1 lps

Instrumentation Description

Druck pressure transducer, Campbell data logger, V-notch weir

Methods Description

Campbell data logger used logging at 5 min intervals. Depth measured manually at site and offset collected manually weekly. Pressure transducers re-calibrated yearly. Gauge height transformed to discharge, daily averages minimum, maximum and associated times all calculated with in-house program

Sensor History

Same sensor type used entire record.

Calibration History

Current calibration June 2005, approximately yearly before that

Minimum QC Threshold (liters per second) 0 lps

N02B

Hydrologic Gauging Station

Latitude (decimal degrees)39.0898

Longitude (decimal degrees)-96.5886

Elevation (meters; a.m.s.l.)362

Begin Date..... January 1, 1987

End Date..... Present

Watershed Area (hectares)82.7

Associated Watershed

N02B

Associated meteorological station

N2

Photo URL

<http://www.konza.ksu.edu/konza/hydrodb/station.htm>

History

No change

Weir Description

add info later

Weir Calibration and Modification History

add info later

Stream Discharge

Begin Date..... January 1, 1987
End Date Present
Data Logger Sampling Interval..... 5 minutes
Summary Intervalweekly
Data Accuracy (liters per second) +/-1 lps

Instrumentation Description

Druck pressure transducer, Campbell data logger, V-notch weir

Methods Description

Campbell data logger used logging at 5 min intervals. Depth measured manually at site and offset collected manually weekly. Pressure transducers re-calibrated yearly. Gauge height transformed to discharge, daily averages minimum, maximum and associated times all calculated with in-house program

Sensor History

Same sensor type used entire record.

Calibration History

Current calibration June 2005, approximately yearly before that

Minimum QC Threshold (liters per second) 0 lps

N04D

Hydrologic Gauging Station

Latitude (decimal degrees)39.0874
Longitude (decimal degrees)-96.5844
Elevation (meters; a.m.s.l.)368.1
Begin Date..... June 14, 1985
End Date Present
Watershed Area (hectares) 120.8

Associated Watershed

N04D

Associated meteorological station

N4U and N4F

Photo URL

<http://www.konza.ksu.edu/konza/hydrodb/station.htm>

History

No change

Weir Description

No

Weir Calibration and Modification History

No

Stream Discharge

Begin Date..... June 14, 1985

End Date..... Present

Data Logger Sampling Interval..... 5 minutes

Summary Intervalweekly

Data Accuracy (liters per second) +/-1 lps

Instrumentation Description

Druck pressure transducer, Campbell data logger, V-notch weir

Methods Description

Campbell data logger used logging at 5 min intervals. Depth measured manually at site and offset collected manually weekly. Pressure transducers re-calibrated yearly. Gauge height transformed to discharge, daily averages minimum, maximum and associated times all calculated with in-house program

Sensor History

Same sensor type used entire record

Calibration History

Current calibration June 2005, approximately yearly before that

Minimum QC Threshold (liters per second) 0 lps

N20B

Hydrologic Gauging Station

Latitude (decimal degrees)39.0886

Longitude (decimal degrees)-96.5766

Elevation (meters; a.m.s.l.)374.2

Begin Date..... January 1, 1987

End Date..... Present

Watershed Area (hectares)84

Associated Watershed

N20B

Photo URL

K4

History

There is a two year data gap in station N20B (also referred to as N00B in earlier publications) in 1998 and 1999. This gap is the result of a fire that burned the structure housing the data logger. Smaller data gaps exist at all weirs. Those gaps are represented by missing data (as opposed to zero values when no-flow conditions were known to Exist).

Stream Discharge

Begin Date..... January 1, 1987

End Date..... Present

Data Logger Sampling Interval..... 5 minutes

Summary Intervalweekly

Data Accuracy (liters per second) +/-1 lps

Instrumentation Description

Druck pressure transducer, Campbell data logger, V-notch weir

Methods Description

Campbell data logger used logging at 5 min intervals. Depth measured manually at site and offset collected manually weekly. Pressure transducers re-calibrated yearly. Gauge height transformed to discharge, daily averages minimum, maximum and associated times all calculated with in-house program

Sensor History

Same sensor type used entire record.

Calibration History

Current calibration June 2005, approximately yearly before that

Minimum QC Threshold (liters per second) 0 lps