

# CONFIDENTIAL

**Stribley, Sara**

---

**From:** Johnson, Charlie  
**Sent:** Wednesday, August 02, 2006 10:45 AM  
**To:** Doug.Backlund@state.sd.us  
**Cc:** John\_Cochnar@fws.gov; Castle, Carla; Stribley, Sara; Ellis, Scott  
**Subject:** RE: SDGFP Meeting Minutes (Keystone Pipeline Project)

Thanks Doug. I will incorporate the change, and thanks for the survey contacts.

-----Original Message-----

**From:** Doug.Backlund@state.sd.us [mailto:Doug.Backlund@state.sd.us]  
**Sent:** Wednesday, August 02, 2006 10:30 AM  
**To:** Johnson, Charlie; John.Kirk@state.sd.us  
**Cc:** John\_Cochnar@fws.gov; Alstad, Jon; Castle, Carla  
**Subject:** RE: SDGFP Meeting Minutes (Keystone Pipeline Project)

I have a couple of comment to add to the minutes. The false-map turtle does occur in the project area, in the Missouri River. However, the HHD crossing would have no impact on the species.

I believe we would defer to the FWS on Topeka shiner issues, since it is not state listed.

Attached are survey protocols that are used in MN and would be perfectly appropriate here too. Also attached is a list of DKS surveyors from Minnesota. We have hired Dennis Skadsen for many surveys in South Dakota. I'm sure any of the folks listed would do a credible job. In addition to those on the list, Gary Marrone is well known as the South Dakota butterfly expert. His contact info is: (605) 223-2842 or GMarrone@aol.com.

For the orchid surveys, Dennis Skadsen would be a good choice. Gary Larson at SDSU would be the better choice if you desire a more comprehensive floral inventory. Gary's contact info is:

Dr. Gary E. Larson  
Dept. of Biology/Microbiology  
AGH 316, Box 2207B  
South Dakota State University  
Brookings, SD 57007-2142  
phone: 605-688-6141  
Gary\_Larson@sdstate.edu

Let me know if you have any questions.

Doug  
Doug Backlund  
S. D. Dept. of Game Fish and Parks  
S.D. Natural Heritage Program  
523 E. Capitol-Foss Bldg.  
Pierre, S.D. 57501

<http://www.sdgfp.info/wildlife/diversity/Index.htm>

-----Original Message-----

**From:** Johnson, Charlie [mailto:CJohnson@ensr.aecom.com]  
**Sent:** Tuesday, August 01, 2006 5:24 PM  
**To:** Backlund, Doug; Kirk, John J. (B&G)  
**Cc:** John\_Cochnar@fws.gov; Alstad, Jon; Castle, Carla  
**Subject:** SDGFP Meeting Minutes (Keystone Pipeline Project)

SDGFP Meeting Minutes

# CONFIDENTIAL

Attached are the meeting minutes from the July 11 meeting for the Keystone Pipeline Project. Please review and reply by COB Friday August 4th, if you have any major edits that need to be incorporated into the meeting minutes.

Thanks

Charles Johnson  
Senior Wildlife Biologist  
ENSR|AECOM  
1601 Prospect Parkway  
Fort Collins, CO 80525  
(970) 493-8878  
cjohnson@ensr.aecom.com

**Johnson, Charlie**

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**Attachments:** MNDNR\_Dakota\_Skipper\_Protocol.jpg; MNDNR\_Dakota\_Skipper\_Protocol (2).jpg



MNDNR\_Dakota\_Skipper\_Protocol.jpg  
MNDNR\_Dakota\_Skipper\_Protocol (2).jpg

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cjohnson@ensr.aecom.com

**Johnson, Charlie**

---

**From:** Johnson, Charlie  
**Sent:** Monday, July 31, 2006 12:40 PM  
**To:** 'doug.backlund@state.sd.us'  
**Cc:** Alstad, Jon; Castle, Carla  
**Subject:** FW: Keystone Pipeline Environmental Report

Doug - As discussed on the phone regarding the Keystone Pipeline Project, since the Keystone Environmental Report is a Department of State (DOS) document, ENSR has little control over its distribution and the DOS would like to know who has a copy of the document. Consequently, in order for the SDGF&P to obtain a copy, please request a copy (s) directly from the DOS. Below is the contact information for the DOS lead. Please let me know if you have any problems.

**Matthew T. McManus**  
Division Chief, Energy Producer Country Affairs  
U.S. Department of State  
2201 C Street, N.W.  
EB/ESC/IEC  
Room 7525  
Washington, D.C. 20520  
(202) 647-3423  
[McManusMT@State.gov](mailto:McManusMT@State.gov)

**Charles Johnson**  
Senior Wildlife Biologist  
ENSR/AECOM  
1601 Prospect Parkway  
Fort Collins, CO 80525  
(970) 493-8878  
[cjohnson@ensr.aecom.com](mailto:cjohnson@ensr.aecom.com)

## Johnson, Charlie

---

**From:** Johnson, Charlie  
**Sent:** Wednesday, July 26, 2006 1:12 PM  
**To:** 'John\_Cochnar@fws.gov'  
**Subject:** FW: Higgins Eye, Scaleshell, Winged Mapleleaf Survey Areas - Keystone Pipeline Project

FYI regarding Mussels along the James River.

-----Original Message-----

**From:** Stribley, Sara  
**Sent:** Wednesday, July 26, 2006 12:30 PM  
**To:** Johnson, Charlie  
**Subject:** FW: Higgins Eye, Scaleshell, Winged Mapleleaf Survey Areas - Keystone Pipeline Project

-----Original Message-----

**From:** Doug.Backlund@state.sd.us [mailto:Doug.Backlund@state.sd.us]  
**Sent:** Wednesday, July 26, 2006 12:28 PM  
**To:** Stribley, Sara  
**Cc:** Leslie.Petersen@state.sd.us; John.Kirk2@state.sd.us  
**Subject:** RE: Higgins Eye, Scaleshell, Winged Mapleleaf Survey Areas - Keystone Pipeline Project

Sara:

I don't think there is much chance that winged mapleleaf still occurs in the James River. One of the 12,000 or so specimens we examined during our 2002-03 survey of the James River, only one single valve was id'd as winged mapleleaf and it was an old relic shell. At our July 11th meeting, we discussed a survey of the James River crossing for mussel beds. It is possible that the crossing site could harbor a significant mussel bed that might include rare species, if not T&E species. It is my understanding that the James River crossing is by means of trenching which would be very destructive to mussel beds. Now would be good time to do it, the water is low and a survey would be very simple to accomplish.

Given the method of placing the pipeline under the Missouri River and the avoidance of disturbance of the river bed, I don't see a need for mussel surveys there and I agree with the FWS on that.

Doug

-----Original Message-----

**From:** Stribley, Sara [mailto:sstribley@ensr.aecom.com]  
**Sent:** Wednesday, July 26, 2006 1:02 PM  
**To:** Backlund, Doug  
**Subject:** RE: Higgins Eye, Scaleshell, Winged Mapleleaf Survey Areas - Keystone Pipeline Project

Thanks for the clarification Doug! So would you still recommend that we survey the James River for potential winged mapleleaf mussels? Would you also be in agreement with the FWS that surveys would not be required at the Missouri River for the scaleshell and Higgins eye mussel since the river will be HDD?

Sara

-----Original Message-----

**From:** Doug.Backlund@state.sd.us [mailto:Doug.Backlund@state.sd.us]  
**Sent:** Wednesday, July 26, 2006 7:10 AM  
**To:** Stribley, Sara

# CONFIDENTIAL

Subject: RE: Higgins Eye, Scaleshell, Winged Mapleleaf Survey Areas -  
Keystone Pipeline Project

Sara:

You are right. The winged mapleleaf used to occur in the James River. We have only found old relic shells of that species. The scaleshell and the Higgins eye have only been found in the Missouri River, below Gavins Point Dam.

Doug

-----Original Message-----

From: Stribley, Sara [mailto:sstribley@ensr.aecom.com]  
Sent: Tuesday, July 25, 2006 5:20 PM  
To: Backlund, Doug  
Cc: Johnson, Charlie  
Subject: Higgins Eye, Scaleshell, Winged Mapleleaf Survey Areas -  
Keystone Pipeline Project

Hi Doug,

In reviewing some of the notes from the ENSR-SDGFP meeting on July 11th in Pierre, SD, and the ENSR-USFWS meeting on July 18th in Grand Island, NE, I noticed a divergence between the information provided on required surveys for the Higgins eye pearly, Winged mapleleaf, and Scaleshell mussels. In summary, the information provided by the SDGFP states (please correct me if I am wrong!):

Habitat for the Higgins eye pearly, Winged mapleleaf, and Scaleshell mussel would be limited to the James River. This area should be examined for potential habitat by an experienced biologist (recommend Keith Perkins, University of Sioux Falls).

On the other hand, the information provided from the meeting with the USFWS in NE states:

The Higgins eye pearly, Winged mapleleaf, and Scaleshell mussel would be restricted to the Missouri River. Since the construction method at the Missouri River would be HDD, it was concluded that these species would not be impacted and no surveys would be required.

I think perhaps the Winged mapleleaf occurs in the James River, and the Scaleshell and Higgins eye pearly mussel occur in the Missouri River? In that case, both of the statements could be partially true. Would you be able to provide some clarification or concurrence on the statements made above? Thanks for your input!

Sincerely,  
Sara

Sara Stribley  
Staff Specialist  
ENSR Corporation  
1601 Prospect Pkwy  
Fort Collins, CO 80525  
970.493.8878 ext. 168  
<mailto:sstribley@ensr.aecom.com> sstribley@ensr.aecom.com

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## TransCanada – Keystone Pipeline Contact Summary Form

Location of Meeting ENSR

Date/Time of Meeting 7/26/06

Keystone Team Member(s) Sara Stribley

### Contact Information:

Name	Doug Backlund
Title	Wildlife Biologist
Organization	South Dakota Game, Fish, & Parks
Address	Foss Building, 523 East Capitol Pierre, South Dakota 57501-3182
County	
Phone	605-773-3381
E-mail address	<a href="mailto:Doug.Backlund@state.sd.us">Doug.Backlund@state.sd.us</a>

### Meeting Information:

Type of Contact (phone, in-person, etc.): E-mail

Issue: Clarification on Mussel Surveys

Concern Level: High \_\_\_ Moderate \_\_\_ Low \_\_\_

### Description:

From: Doug.Backlund@state.sd.us [mailto:Doug.Backlund@state.sd.us]  
Sent: Wednesday, July 26, 2006 12:28 PM  
To: Stribley, Sara  
Cc: Leslie.Petersen@state.sd.us; John.Kirk2@state.sd.us  
Subject: RE: Higgins Eye, Scaleshell, Winged Mapleleaf Survey Areas - Keystone Pipeline Project

Sara:

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J:\10000\10623-004-KEYSTONE\Surveys\Biological Surveys\Correspondence\SDGPC\_D Backlund\_072606\_SS.doc

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accomplish.

Given the method of placing the pipeline under the Missouri River and the avoidance of disturbance of the river bed, I don't see a need for mussel surveys there and I agree with the FWS on that.

Doug

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970.493.8878 ext. 168  
<mailto:sstribley@ensr.aecom.com> sstribley@ensr.aecom.com

**Issue:** \_\_\_\_\_ **Concern Level:** High\_\_Moderate\_\_Low\_\_.

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Keystone Pipeline Project

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**Final - South Dakota Game, Fish, and Parks Division of Wildlife; Foss Bldg,  
Pierre, SD  
July 11, 2006. 10:00am – 12:00pm**

## **Attendees:**

Charles Johnson (ENSR)  
Jon Alstad (ENSR)  
Dana Green (Universal ENSCO)  
John Kirk (SDGFP)  
Doug Backlund (SDGFP)  
Leslie Peterson (SDGFP)

## ***Meeting Objectives***

ENSR met with the SDGFP to discuss issues pertaining to wildlife and special status species that could potentially occur along the Keystone Project route. The goal of this discussion was to verify ENSRs habitat approach, species occurrence information, and to discuss required surveys.

ENSR and Universal discussed the proposed construction schedule that would likely begin in early 2008 and would continue through 2009, including possible winter construction.

## ***Response Overview***

The SDGFP has no concerns with winter construction. In fact, from a wildlife standpoint winter construction would be preferable over spring and summer construction.

A number of general questions from SDGFP regarding the project (e.g., size of pipe, width of construction ROW, number of construction spreads, number of construction workers/spread, trenching, laying of pipe, etc.) were answered (in general terms) by Universal and ENSR. Dana Green also discussed how existing water pipelines and electrical lines would be detected, avoided, or repaired during the construction process.

SDGFP would like to be kept informed about the outcome of the ENSR, TransCanada, and Trow meeting with ND and SD USFWS occurring on July 18, 2006, and any reroutes that may occur in SD. SDGFP would also like to be informed when the final route has been determined so that they can provide their final feedback.

SDGFP does not foresee significant impacts to game species from project construction. However, SDGFP is concerned with impacts associated with Game Production Areas (GPA). ENSR should contact Paul Coughlin (SDGFP Habitat Management Program Administrator) regarding restrictions and reclamation associated with GPAs, and to obtain easements across state lands.

Leslie indicated that no "meandered waters" would be crossed by the project. As a result, meandered waterbodies would not be a concern for this project.

SDGFP does not have any issues with breeding prairie chickens along the project route.

## ***Agency Issues, Concerns, and Recommendations:***

**Bald Eagle.** Bald eagles are known to nest along the Missouri River. An old eagle nest location occurs within 0.5 mi of the project ROW along the Missouri River. No other nest areas have been identified along the project route in SD; however, because eagle populations are on the rise, it is possible for new breeding territories to be established within the project area. As a result, surveys for breeding eagles should occur, prior to construction. ENSR indicated that this topic would be discussed at the USFWS meeting in NE on July 18.

Wintering bald eagles could roost within suitable habitat (i.e., large trees near large waterbodies) along the project route, but would primarily occur along the Missouri River. Roost sites would likely consist of scattered individual roosts. No winter concentration areas or communal roosts are known to occur along the project route in SD.

Conclusion: *Conduct breeding and winter surveys within suitable habitat.*

**Eskimo Curlew.** Due to the rarity of this species and the fact that it would occur as a migrant (breeds in the arctic), the SDGFP does not think that this species would be impacted by the project. SDGFP will defer to the USFWS for protection measures, if needed.

Conclusion: *SDGFP (no concerns); defer to USFWS.*

**Interior Least Tern/ Piping Plover.** These species would only occur along the Missouri River. SDGFP recommends that surveys be conducted at the Missouri River crossing during the breeding season. These species will be discussed further at the USFWS meeting.

Conclusion: *Conduct surveys at Missouri River crossing during breeding season.*

**Whooping Crane.** Occurrence by this species within the project area would be extremely unpredictable. Although whooping cranes have been observed in the project region in past years, there are no major stopover areas along the project route. If present, they would likely occur in the vicinity for up to 2 weeks before moving on. The SDGFP does see this species as being an issue for the project in SD and will defer to the USFWS for protection, if needed.

Conclusion: *Defer to USFWS.*

**Pallid Sturgeon/ Sicklefin Chub/ Sturgeon Chub.** Occurrence would be limited to the Missouri River. Since this river will be HDD'ed, the SDGFP does not have any issues.

Conclusion: *SDGFP (no concerns); defer to USFWS.*

**Topeka Shiner.** Areas identified in the tables are correct for potential habitat and stream systems where the species has been observed.

Conclusion: *Since this species is not state-listed, the SDGFP would defer to USFWS for protection.*

**Higgin's Eye Pearlymussel/ Scaleshell Mussel/ Winged Mapleleaf.** Habitat for this species would be limited to the James River. This area should be examined for potential habitat by an experienced biologist. SDGFP recommends Keith Perkins (University of Sioux Falls).

Conclusion: *Evaluate crossing of James River for suitable habitat by expert.*

**False Map Turtle.** Occurrence would be limited to the Missouri River. Since this river will be HDD'ed, the SDGFP does not have any issues.

Conclusion: *SDGFP (no concerns); defer to USFWS.*

**Dakota Skipper.** Surveys for this species have occurred within the Hecla Sandhill area with no success. However, this species could occur within suitable habitat. The SDGFP recommends that surveys for this species be conducted in 2007 to determine presence. Local experts include Dennis Skadsen and Gary Marrone. Doug Backlund can provide survey protocol and contact information for local experts.

Conclusion: *Conduct surveys in 2007 to determine presence of species.*

**Western Prairie Fringed Orchid.** This species has not been found in the state since 1916. However this species is known to occur in surrounding states (e.g., ND, NE). Consequently, it is likely that this species could occur in suitable habitat in SD. As a result, surveys for this species should occur within suitable within suitable habitats. Local experts include Dennis Skadsen and Gary Larson. Doug Backlund can provide contact information for local experts.

Conclusion: *Conduct surveys in 2007/2008 to determine presence of species.*

***Action Items:***

- Payment of easements (Contact Paul Coughlin SDGFP)
- Wetland Impacts (based on wetland survey analysis)
- Hecla Sandhill's Impacts and outcome of July 18 USFWS meeting
- Seed Mixes (contact Dave Ode [605] 773-4227)

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## TransCanada – Keystone Pipeline Contact Summary Form

Location of Meeting ENSR

Date/Time of Meeting 6/28/06

Keystone Team Member(s) Sara Stribley

### Contact Information:

Name	Doug Backlund
Title	Wildlife Biologist
Organization	South Dakota Game, Fish, & Parks
Address	Foss Building, 523 East Capitol Pierre, South Dakota 57501-3182
County	
Phone	605-773-3381
E-mail address	<a href="mailto:Doug.Backlund@state.sd.us">Doug.Backlund@state.sd.us</a>

### Meeting Information:

Type of Contact (phone, in-person, etc.): Email

Issue: Request for Survey Protocols for Special Status Species

Concern Level: High  Moderate  Low

### Description:

Sara:

I don't have any survey protocols for these species. False-map turtles might be affected if the project will destroy nesting areas, such as sandy beaches that have gently sloping shorelines. Much of the Missouri River has steep banks due to the degradation of the river and the lack of new sandbar habitat, turtles can't climb up these steep banks or over stabilized banks. Oxbows and backwaters with emergent vegetation are important habitats for YOY false-map turtles.

Dakota skippers must be surveyed for in a short time frame from about now to the middle of July. The adults only fly for a one to two weeks, usually peaking about the first week of July.

Esquimo curlews just aren't going to be found. They are so rare that most biologists believe the species is extinct. Even when they were present, they were migrants through this part of the continent, but there have been no sightings for many years.

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Doug

-----Original Message-----

From: Stribley, Sara [<mailto:sstribley@ensr.aecom.com>]  
Sent: Wednesday, June 28, 2006 3:30 PM  
To: Backlund, Doug  
Subject: Survey Protocol

Hi Doug,

I am working on putting together survey information on sensitive species that may possibly be affected by the Keystone Pipeline Project. One of these species is the False Map Turtle, which may be affected during the crossing of the Missouri River. Two additional species are the Eskimo Curlew and Dakota Skipper. Do you have any information on survey protocols/methods for these species? Any help you can provide would be greatly appreciated!

Thanks,  
Sara

Sara Stribley  
ENSR Corporation  
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<<http://www.transcanada.com/keystone/index.html>>  
<http://www.transcanada.com/keystone/index.html>

**Issue:** \_\_\_\_\_ **Concern Level:** High\_\_Moderate\_\_Low\_\_.

**Description:**

**Stribley, Sara**

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**From:** Doug.Backlund@state.sd.us  
**Sent:** Wednesday, June 28, 2006 3:24 PM  
**To:** Stribley, Sara  
**Subject:** RE: Survey Protocol

Sara:

I don't have any survey protocols for these species. False-map turtles might be affected if the project will destroy nesting areas, such as sandy beaches that have gently sloping shorelines. Much of the Missouri River has steep banks due to the degradation of the river and the lack of new sandbar habitat, turtles can't climb up these steep banks or over stabilized banks. Oxbows and backwaters with emergent vegetation are important habitats for YOY false-map turtles.

Dakota skippers must be surveyed for in a short time frame from about now to the middle of July. The adults only fly for a one to two weeks, usually peaking about the first week of July.

Eskimo curlews just aren't going to be found. They are so rare that most biologists believe the species is extinct. Even when they were present, they were migrants through this part of the continent, but there have been no sightings for many years.

Doug

-----Original Message-----

**From:** Stribley, Sara [mailto:sstribley@ensr.aecom.com]  
**Sent:** Wednesday, June 28, 2006 3:30 PM  
**To:** Backlund, Doug  
**Subject:** Survey Protocol

Hi Doug,

I am working on putting together survey information on sensitive species that may possibly be affected by the Keystone Pipeline Project. One of these species is the False Map Turtle, which may be affected during the crossing of the Missouri River. Two additional species are the Eskimo Curlew and Dakota Skipper. Do you have any information on survey protocols/methods for these species? Any help you can provide would be greatly appreciated!

Thanks,  
Sara

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## ENSR

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June 26, 2006

John Kirk  
South Dakota Department of Game, Fish, and Parks  
523 East Capital Avenue  
Pierre, SD 57501

Dear Mr. Kirk:

As discussed in the January 24, 2006 letter, TransCanada is planning to construct and operate a 1,830-mile-long interstate crude oil transmission system from an oil supply hub near Hardisty, Alberta, Canada to destinations in the Midwestern United States (U.S). The proposed Project would consist of approximately 1,070 miles of new pipeline constructed from the U.S.-Canada border in Pembina County, North Dakota to terminals and refineries in Salisbury (Chariton County), Missouri, Wood River (Madison County), and Patoka (Marion County), Illinois. Approximately 283 miles would parallel the proposed Rockies Express Pipeline - West (REX-West) Project in Kansas and Missouri. In addition, TransCanada is considering the construction of a 291-mile pipeline extension that would extend the Keystone Pipeline south from the Nebraska/Kansas border to Cushing, Oklahoma. TransCanada proposes to begin construction of the new pipeline in early 2008, with the system in-service by the end of 2009. The project also will require the construction of pump stations, valves, meters, and other ancillary facilities. The hydraulic characteristics of the pipeline will determine pump station and valve locations. Electrical powerlines and facility upgrades will be required in some locations to provide power for the new pump stations.

At this time, ENSR Corporation (ENSR) is providing information regarding the Keystone Mainline portion of the project. As the Cushing Extension portion of the project develops, we will provide additional information for your review and input.

Attached for your review are state-specific special status species tables (i.e., federally listed, proposed and candidate species; state listed species) (**Tables 1 and 2**) that include a brief description of species habitat, miles of potential habitat crossed by the project, and approximate mileposts where potential habitat has been preliminarily identified along the project route. **Table 3** provides potential species habitat by state and county. Habitat for special status species was determined based on species habitat association, known distribution, and agency correspondence (e.g., U.S. Fish and Wildlife Service [FWS], state wildlife agencies, and National Heritage Program/NatureServe), in combination with aerial habitat surveys, Land Use-Land Cover (LULC) data, and aerial photography. Survey data from the REX-West Project also was used to quantify potential habitat that would be crossed in Kansas and Missouri (Buchanan County through Randolph County).

Also attached for your review are 1:100,000-scale maps that identify areas along the pipeline route where potential grassland, wetland/riparian, and upland woodland/forests have been identified. Habitat data within these maps were obtained from LULC data and aerial photography. These preliminary habitat locations may be modified following further habitat analysis and consultations with federal and state agencies. In addition, some pipeline routing modifications continue to be developed and evaluated including those denoted by red "reroute" lines on the attached maps. As a result, habitat analysis and consultation will continue for these routing adjustments as needed in the future. Habitat related to powerlines has not been evaluated at this time.

John Kirk  
June 26, 2006  
Page 2

If you have any questions or concerns regarding the enclosed materials, or if you think that additional meetings would be appropriate, please contact me at (970) 493-8878 ext. 181 or email [cjohnson@ensr.aecom.com](mailto:cjohnson@ensr.aecom.com).

Sincerely,



Charles Johnson  
Senior Wildlife Biologist

CJ/sc

Ref: 10623-004

Enc. 1:100,000-scale maps  
Tables 1 through 3

# CONFIDENTIAL

**Table 1**  
**South Dakota Special Status Species**  
**Habitat by County and Mainline Milepost**  
**Keystone Pipeline Project**

Species	Status	Habitat Association	Primary Habitat	County	Miles (mi) of Associated Habitat Crossed by Keystone Pipeline Project					Mainline Milepost(s)
					Grassland (mi)	Forests and Woodlands (mi)	Riparian (mi)	Nonforested Emergent Wetland (mi) <sup>1</sup>	Open Water (mi) (habitat crossed or within 0.5 mi)	
<b>Bald eagle</b> <i>Haliaeetus leucocephalus</i>	FT; SD-T	This species typically occurs near large bodies of water that support suitable roosting and foraging habitat. Nest sites typically occur in proximity to open water and generally are found in mature heterogeneous stands of multi-storied trees, but also may nest on cliffs. Winter habitat typically includes areas of open water, adequate food sources, and sufficient diurnal perches and night roosts. Breeding season: January through July. Winter season: November 15 through March 15.	riparian forests, open water	Beadle Clark Day Hanson Hutchinson Kingsbury Marshall McCook Miner Yankton					Beadle: 0 Clark: 0 (Fordham Res.) Day: 0 (Amsden Lake) Hanson: 0 (Lutz Lake, Spring Lake, Lake Eli) Hutchinson: 0 (Lake) Kingsbury: 0 Marshall: 0 McCook: 0 Miner: 0 (Twin Lakes) Yankton: 0.1 (James River)	Beadle: N/A Clark: 295.2 - 296.0 Day: 254.8 - 255.2 Hanson: 362.6 - 369.8 Hutchinson: 388.8 - 389.5 Kingsbury: N/A Marshall: N/A McCook: N/A Miner: 351.0 - 352.5 Yankton: 417.9 - 418.0
<b>Eskimo curlew</b> <i>Numenius borealis</i>	FE; SD-E	This species is a rare spring migrant that feeds and rests in burned-over prairies, agricultural areas, wetlands, and marshes.	prairies, wetlands, agriculture	Clark	Clark: 4.5			data pending		Clark: 277.5 - 302.6; data pending
<b>Interior least tern</b> <i>Sterna antillarum athalassos</i>	FE; SD-E	Nesting habitat consists of sparsely vegetated sandy, gravelly, or silty, beaches and sandbars within wide, unobstructed river channels or salt flats along lake shorelines and irrigation reservoirs. Nest locations are generally away from the water's edge since nesting typically begins while river flows are high and relatively small amounts of sandy habitat is exposed. Breeding season: May 1 through August 15.	shorelines and sandbars of rivers, lakes, reservoirs	Clark Hutchinson Yankton				data pending data pending data pending	Clark: 0 (Fordham Res.) Hutchinson: 0 (Lake) Yankton: 0.1 (James River)	Clark: 295.2 - 296.0; data pending Hutchinson: 388.8 - 389.5; data pending Yankton: 417.9 - 418.0; data pending
<b>Piping plover</b> <i>Charadrius melodus</i>	FT; SD-T	This species inhabits open sandy areas and saline flats with little vegetation along rivers, lakes, ponds, and marshlands. It nests on sandbars and sand and gravel beaches with short, sparse vegetation along inland lakes, on natural and dredge islands in rivers, on gravel pits along rivers, and on salt-encrusted bare areas on interior alkali ponds and lakes. Sparse clumps of grass or herbaceous vegetation are important habitat components. Breeding season: May 1 through August 15.	shorelines, sandbars, wetlands, rivers, lakes, ponds	Clark Day Kingsbury Yankton  (Missouri River between Yankton County, South Dakota and Cedar County, Nebraska is designated as critical habitat by USFWS)				data pending data pending data pending data pending	Clark: 0 (Playas, Logan Res., Fordham Res.) Day: 0 (Amsden Lake, Playas) Kingsbury: 0.4 (Playas) Yankton: 0.1 (James River, Playas)	Clark: 269.8 - 296.0; data pending Day: 254.8-255.2; 265.0; data pending Kingsbury: 321.3 - 335.8; data pending Yankton: 410.0 - 418.0; data pending
<b>Whooping crane</b> <i>Grus americana</i>	FE; SD-E	During migration, this species feeds and roosts in a variety of habitats including croplands, large and small freshwater marshes, the margins of lakes and reservoirs, and submerged sandbars in rivers. Spring and Fall migration through the project regions generally occurs from February through April and from October through November, respectively.	wetlands, riparian, agriculture	Beadle Clark Kingsbury Yankton				data pending data pending data pending data pending	Beadle: 0 Clark: 0 (Fordham Res.) Kingsbury: 0 Yankton: 0.1 (James River)	Beadle: data pending Clark: 295.2 - 296.0; data pending Kingsbury: data pending Yankton: 417.9 - 418.0; data pending
<b>Pallid sturgeon</b> <i>Scaphirhynchus albus</i>	FE; SD-E	This species is distributed from the headwaters of the Missouri River (Fort Benton-Great Falls, Montana) through the Mississippi River to New Orleans, Louisiana. It inhabits bottom areas of large turbid rivers that have strong current and a firm sandy substrate. They also may be found along sandbars and behind wing dikes. Spawning period: April through August.	large, turbid rivers, sand substrate	Yankton					Yankton: 0.1 (James River), 0.2 (Missouri River)	Yankton: 417.9-418.0 (James River), 431.9 - 432.3 (Missouri River)
<b>Sicklefin chub</b> <i>Macrhybopsis meeki</i>	SD-E	This species requires continuously and heavily turbid waters of large rivers where it frequents areas of strong current flowing over sand or gravel substrate. Spawning period: spring (likely from late March and May).	large, turbid rivers, sand substrate	Yankton					Yankton: 0.2 (Missouri River)	Yankton: 431.9-432.3

<sup>1</sup> Data pending; waiting on completion of wetland/waterbody surveys to determine total wetland habitat crossed by project.

# CONFIDENTIAL

Table 1  
South Dakota Special Status Species  
Habitat by County and Mainline Milepost  
Keystone Pipeline Project

Species	Status	Habitat Association	Primary Habitat	County	Miles (mi) of Associated Habitat Crossed by Keystone Pipeline Project				Mainline Milepost(s)	
					Grassland (mi)	Forests and Woodlands (mi)	Riparian (mi)	Nonforested Emergent Wetland (mi) <sup>1</sup>		Open Water (mi) (habitat crossed or within 0.5 mi)
<b>Sturgeon chub</b> <i>Macrhybopsis gelida</i>	SD-T	This species prefers large turbid sandy rivers over substrate of small gravel and coarse sand. It is often found in areas swept by currents especially at heads of islands or exposed sandbars. Spawning period: late spring to midsummer.	large, turbid rivers, sand substrate	Yankton					Yankton: 0.2 (Missouri River)	Yankton: 431.9-432.3
<b>Topeka shiner</b> <i>Notropis topeka</i>	FE; SD-SC	This species inhabits pool and run areas in the headwaters of small prairie streams with high water quality and cool temperatures. These streams generally exhibit intermittent flow during summer; however pools are maintained by spring or groundwater percolation. The substrate of these occupied streams consist mainly of clean gravel, however bedrock and clay hardpan overlain by a thin silt layer are not uncommon. Spawning period: late spring and summer.	small, cool, [often intermittent] prairie streams	Beadle Hanson Hutchinson Kingsbury McCook Miner Yankton					Beadle: 0.1 (Shue Creek, Middle Fork Pearl Creek) Hanson: 0.1 (Wolf Creek) Hutchinson: 0.1 (Wolf Creek) Kingsbury: 0.1 (South Fork Pearl Creek) McCook: 0.1 (Wolf Creek) Miner: 0.2 (Redstone Creek, Rock Creek) Yankton: 0.3 (James River, Missouri River)	Beadle: 309.4 (Shue Creek), 314.1 (Middle Fork Pearl Creek) Hanson: 371.9 (Wolf Creek) Hutchinson: 387.2 (Wolf Creek) Kingsbury: 322.4 (South Fork Pearl Creek) McCook: 380.4 (Wolf Creek) Miner: 339.3 (Redstone Creek), 358.5 (Rock Creek) Yankton: 417.9-418.0 (James River), 431.9-432.3 (Missouri River)
<b>False map turtle</b> <i>Graptemys pseudogeo-graphica</i>	SD-T	This species inhabits slow to swift current rivers and streams, river sloughs, oxbow lakes, ponds, impoundments, and backwaters. They are devoted baskers, often resting just below the surface on submerged branches from fallen trees and projecting logs.	rivers, streams, sloughs, ponds, backwaters, impoundments	Yankton					Yankton: 0.2 (Missouri River)	Yankton: 431.9 - 432.3
<b>Dakota skipper</b> <i>Hesperia dacotae</i>	FC; SD-SC	This species is considered an obligate of undisturbed native prairie. The butterfly inhabits wet lowland prairie dominated by bluestem grasses and dry upland prairie dominated by mixed bluestem and needle stem grasses. Both habitat types contain an abundance of flowering plants and have alkaline soils. Adults emerge in mid-June to early July, and mate during a flight period that lasts for about three weeks.	lowland and upland prairie	Clark Day Marshall Yankton	Clark: 4.5 Day: 6.7 Marshall: 5.1 Yankton: 2.1					Clark: 277.5 - 302.6 Day: 250.6 - 268.1 Marshall: 215.0 - 222.8 Yankton: 415.0 - 425.1
<b>Higgins' eye pearl mussel</b> <i>Lampsilis higginsii</i>	FE; SD-SC	Found in substrates of mud with a mixture of gravel and stones. Prefers rapidly flowing water. The exact breeding season is unknown.	fast flowing creeks and rivers, mud substrate	Yankton					Yankton: 0.2 (Missouri River)	Yankton: 431.9 - 432.3
<b>Scaleshell mussel</b> <i>Leptodea leptodon</i>	FE; SD-SC	Occurs in riffles with moderate to high gradients in creeks to large rivers. Typically associated with riffles, relatively strong currents, and substrate of mud, sand, or assemblages of gravel, cobble, and boulder. Restricted to rivers with relatively good water quality in stretches with stable channels. Little is known concerning the reproduction of this species.	creeks and rivers with good water quality and stable channels	Yankton					Yankton: 0.2 (Missouri River)	Yankton: 431.9 - 432.3
<b>Winged mapleleaf</b> <i>Quadula gragosa</i>	FE; SD-SC	The species is found in riffles with clean gravel, sand, or rubble bottoms.	rivers, streams	Yankton					Yankton: 0.1 (James River)	Yankton: 417.9-418.0
<b>Western prairie fringed orchid</b> <i>Platanthera praeclara</i>	FT; SD-SC	Occurs in mesic upland tallgrass prairie in the southern part of its range, often in swales, and wet-mesic tallgrass prairie and sedge meadows in the northern part of its range. Also known from prairies and swales in sand dune complexes that are fed by shallow underground water. Flowers June-July.	tallgrass prairie, dune complexes	Clark Day Yankton	Clark: 4.5 Day: 6.7 Yankton: 2.1			<i>data pending</i> <i>data pending</i> <i>data pending</i>		Clark: 277.5 - 302.6; <i>data pending</i> Day: 250.6 - 268.1; <i>data pending</i> Yankton: 415.0 - 425.1; <i>data pending</i>

<sup>1</sup> Data pending; waiting on completion of wetland/waterbody surveys to determine total wetland habitat crossed by project.

**Table 2  
Keystone Special Status Species  
Total Habitat Crossed by State**

Species	Status	Habitat Association	Primary Habitat	Habitat by County and State, and Total Distance (mi) Crossed							
				ND	SD	NE	KS	MO	IL		
<b>Mammals</b>											
<b>Gray bat</b> <i>Myotis grisescens</i>	FE; MO-E; IL-E	This species forages primarily within forested areas along streams and lakes. Winter roosts are in deep vertical caves with domed halls. Large summer colonies utilize caves that trap warm air and provide restricted rooms or domed ceilings. Maternity roosts typically are in caves with stream flow and are separate from summer bachelor roosts.	Riparian woodlands, caves						Madison	6.7	
<b>Indiana bat</b> <i>Myotis sodalis</i>	FE; MO-E; IL-E	This species forages primarily in riparian forests and flood-plains, as well as in upland forests, low field, and pastures. Maternity roosts are located beneath loose bark of living and dead trees (especially oak and hickory spp.). Young are generally born in June. Winter hibernacula occur in caves and mines with 85% of this species population hibernating in Shannon, Washington, and Iron counties, MO.	Riparian woodlands, upland forests, pastures, caves					Audrain Buchanan Caldwell Carroll Chariton Clinton Lincoln Montgomery Randolph St. Charles	3.7 4.5 3.1 3.4 4.1 1.4 10.1 4.6 3.6 0.6	Bond Fayette Madison Marion	1.9 3.4 6.7 0.0
<b>Gray wolf</b> <i>Canis lupus</i>	FT; ND-SC	No particular habitat preference. Habitats may include: alpine, desert, conifer forest, hardwood forest, mixed forest, grasslands, savannas, shrubland/ chaparral, tundra, and woodlands.	Any	Cavalier Grnd Fks Nelson Pembina Sargent Walsh	0.0 0.0 0.2 2.9 8.4 1.7						
<b>Fisher</b> <i>Martes pennanti</i>	FC; ND-SC	This species inhabits upland and lowland forests, including coniferous, mixed, and deciduous forests. Fishers generally avoid areas with little forest cover or significant human disturbance and conversely prefer large areas of contiguous interior forest.	Forests and woodlands	Pembina	2.9						
<b>Plains spotted skunk</b> <i>Spilogale putorius interrupta</i>	SD-SC; MO-E	This species inhabits upland grassland prairie, brushy areas, cultivated land, and forests. Their dens are located below ground in grassy banks, rocky crevices or along fence rows, as well as above ground in hay stacks, woodpiles, hollow logs, trees, or on brushy heaps. Young are born from April to July.	Grasslands, shrublands, upland forests, agriculture edge					Chariton	17.0		
<b>Eastern spotted skunk</b> <i>Spilogale putorius</i>	KS-T; MO-E; SD-SC	This species prefers forest edge, prairie, brushy areas, and cultivated land, especially if rock outcrops and shrubs are present. Their dens are located below ground in grassy banks, rocky crevices or along fence rows, as well as above ground in hay stacks, woodpiles, brushy heaps, hollow logs, and abandoned buildings or outbuildings. Young are born in May or June.	Grasslands, shrublands, upland forests, agriculture edge				Brown Doniphan Marshall Nemaha	7.9 4.2 6.9 5.3	St. Charles	1.1	

<sup>1</sup> Data pending; waiting on completion of wetland/waterbody surveys to determine total habitat crossed (mi); totals likely to change

**Table 2  
Keystone Special Status Species  
Total Habitat Crossed by State**

Species	Status	Habitat Association	Primary Habitat	Habitat by County and State, and Total Distance (mi) Crossed													
				ND		SD		NE		KS		MO		IL			
<b>River otter</b> <i>Lontra Canadensis</i>	IL-E	Key habitats are rivers, streams, lakes, ponds, marshes, estuaries, and beaver flowages, especially near waterbodies with wooded shorelines or nearby wetlands. When inactive, occupies hollow logs, spaces under roots, logs, or overhangs, abandoned beaver lodges, dense thickets near water, or burrows of other animals; such sites also are used for rearing young	rivers, streams, lakes, ponds, marshes, wetlands					Colfax Stanton	0.5 0.2							Bond Fayette	0.1 3.1
<b>Birds</b>																	
<b>Least bittern</b> <i>Ixobrychus exilis</i>	MO-SC; IL-T	Nest in freshwater wetlands with dense, tall growths of emergent vegetation (particularly <i>Typha</i> spp, <i>Carex</i> spp., <i>Scirpus</i> spp., or <i>Phragmites australis</i> ) interspersed with some woody vegetation and open, fresh water. In the north-central U.S., breeding and nesting may occur from May-July. Incubation lasts for 17-20 days; young usually leave nest by the 13 <sup>th</sup> -15th day.	Wetlands, lakes, open water													Fayette Madison	0.0 <sup>1</sup> 0.0 <sup>1</sup>
<b>Bald eagle</b> <i>Haliaeetus leucocephalus</i>	FT; ND-SC; SD-T; NE-T; KS-T; MO-E; IL-T; OK-T	This species typically occurs near large bodies of water that support suitable roosting and foraging habitat. Nest sites are located in proximity to open water and generally are found in mature heterogeneous stands of multi-storied trees, but also may nest on cliffs. Winter habitat typically includes areas of open water, adequate food sources, and sufficient diurnal perches and night roosts. Breeding season: January through July. Winter season: November 15 through March 15.	Riparian forests, open water	Barnes Cavalier Grnd Fks Nelson Pembina Ransom Sargent Steele Walsh	0.0 0.0 0.0 0.0 0.1 0.2 0.0 0.0 0.3	Beadle Clark Day Hanson Hutchinson Kingsbury Marshall McCook Miner Yankton	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.1	Butler Cedar Colfax Gage Jefferson Platte Saline Seward Stanton Wayne	0.0 0.2 0.5 0.0 0.0 0.0 0.2 0.1 0.2 0.0	Brown Doniphan Marshall Nemaha	0.0 0.2 0.1 0.0	Buchanan Carroll Chariton Clinton Lincoln Montgomery St. Charles	0.2 0.0 0.7 0.0 0.2 0.0 0.3	Bond Fayette Madison	0.1 3.1 1.1		
<b>Peregrine falcon</b> <i>Falco peregrinus</i>	IL-T; NE-SC; KS-E	This species is found over a wide variety of habitats, but are generally located near open water or marshes that support high concentration of shorebirds or waterfowl. Nest sites occur on tall steep-walled cliffs, bridges, or buildings. Preferred foraging habitat includes lakes, rivers, and wet meadows. Breeding season: April 15 to July 15.	Wetlands, lakes, open water							Brown Doniphan Marshall Nemaha	0.0 <sup>1</sup> 0.0 <sup>1</sup> 0.0 <sup>1</sup> 0.0 <sup>1</sup>				Madison	2.1 <sup>1</sup>	
<b>Greater Prairie-chicken</b> <i>Tympanuchus cupido</i>	MO-E; ND-SC	Prime habitat for this species includes mid-grass and tall-grass prairies bordered by open oak woodlands, oak forests, and cropland. In western Kansas, they nest in sand-sage prairie and forage in corn and wheat fields. In Missouri, nesting habitat is limited to cropland and nearby prairies mainly on the Osage Plains. Breeding season: March through July.	Shortgrass, tallgrass, upland forest, agriculture									Audrain Carroll	5.9 13				
<b>King rail</b> <i>Rallus elegans</i>	MO-E; NE-SC	This species inhabits fresh and brackish wetlands. King rails prefer wetlands with abundant grasses, sedges, rushes and cattails. Nest sites occur in herbaceous cover over shallow water in river floodplains. The adult King Rail molts completely after nesting and is flightless for nearly a month. Breeding season: April-June	Wetlands									Carroll Lincoln St. Charles	0.0 <sup>1</sup> 0.0 <sup>1</sup> 0.0 <sup>1</sup>				

<sup>1</sup>Data pending; waiting on completion of wetland/waterbody surveys to determine total habitat crossed (mi); totals likely to change

**Table 2  
Keystone Special Status Species  
Total Habitat Crossed by State**

Species	Status	Habitat Association	Primary Habitat	Habitat by County and State, and Total Distance (mi) Crossed											
				ND		SD		NE		KS		MO		IL	
<b>Whooping crane</b> <i>Grus americana</i>	FE; ND-SC; SD-E; NE-E; OK-E; KS-E	During migration, this species feeds and roosts in a variety of habitats including croplands, large and small freshwater marshes, the margins of lakes and reservoirs, and submerged sandbars in rivers. Spring and Fall migration through the project regions generally occurs from February through April and from October through November, respectively.	Wetlands, riparian, agriculture	Barnes Cavalier Nelson	0.0 <sup>1</sup> 0.0 <sup>1</sup> 0.2 <sup>1</sup>	Beadle Clark Kingsbury Yankton	0.0 <sup>1</sup> 0.0 <sup>1</sup> 0.0 <sup>1</sup> 0.1 <sup>1</sup>	Colfax Saline Seward Stanton	0.5 <sup>1</sup> 0.2 <sup>1</sup> 0.1 <sup>1</sup> 0.2 <sup>1</sup>	Brown Doniphan Marshall Nemaha	0.0 <sup>1</sup> 0.2 <sup>1</sup> 0.1 <sup>1</sup> 0.0 <sup>1</sup>				
<b>Snowy plover</b> <i>Charadrius alexandrinus</i>	KS-T	This species inhabits open alkaline flats, mudflats, sandy shorelines, sandbars with little vegetation along rivers, lakes, ponds, and marshlands. Nesting often occurs on white saline flats. Breeding season: May 1 through August 15.	Shorelines, sandbars, wetlands, rivers, lakes, ponds							Brown Doniphan Marshall Nemaha	0.0 <sup>1</sup> 0.2 <sup>1</sup> 0.0 <sup>1</sup> 0.0 <sup>1</sup>				
<b>Piping plover</b> <i>Charadrius melodus</i>	FT; ND-SC; SD-T; NE-T; KS-T	This species inhabits open sandy areas and saline flats with little vegetation along rivers, lakes, ponds, and marshlands. It nests on sandbars and sand and gravel beaches with short, sparse vegetation along inland lakes, on natural and dredge islands in rivers, on gravel pits along rivers, and on salt-encrusted bare areas on interior alkali ponds and lakes. Sparse clumps of grass or herbaceous vegetation are important habitat components. Breeding season: May 1 through August 15.	Shorelines, sandbars, wetlands, rivers, lakes, ponds	Sargent		Clark Day Kingsbury Yankton	0.0 <sup>1</sup> 0.0 <sup>1</sup> 0.4 <sup>1</sup> 0.1 <sup>1</sup>	Butler Cedar Colfax Gage Jefferson Platte Saline Seward Stanton	0.0 <sup>1</sup> 0.2 <sup>1</sup> 0.5 <sup>1</sup> 0.0 <sup>1</sup> 0.0 <sup>1</sup> 0.0 <sup>1</sup> 0.2 <sup>1</sup> 0.1 <sup>1</sup> 0.2 <sup>1</sup>	Brown Doniphan Marshall Nemaha	0.0 <sup>1</sup> 0.2 <sup>1</sup> 0.1 <sup>1</sup> 0.0 <sup>1</sup>				
<b>kimo curlew</b> <i>Numenius borealis</i>	FE; SD-E; KS-E	This species is a nearly extinct spring migrant that feeds and rests in burned-over prairies, agricultural areas, wetlands, and marshes.	Prairies, wetlands, agriculture			Clark	4.5 <sup>1</sup>			Brown Doniphan Marshall Nemaha	4.9 <sup>1</sup> 1.8 <sup>1</sup> 5.6 <sup>1</sup> 4.7 <sup>1</sup>				
<b>Interior least tern</b> <i>Sterna antillarum athalassos</i>	FE; SD-E; NE-E; MO-E; OK-E; KS-E	Nesting habitat consists of sparsely vegetated sandy, gravelly, or silty beaches and sandbars within wide, unobstructed river channels or salt flats along lake shorelines and irrigation reservoirs. Nest locations are generally away from the water's edge since nesting typically begins while river flows are high and relatively small amounts of sandy habitat is exposed. Breeding season: May 1 through August 15.	Shorelines and sandbars or rivers, lakes, reservoirs			Clark Yankton	0.0 <sup>1</sup> 0.1 <sup>1</sup>	Butler Cedar Colfax Gage Jefferson Platte Saline Seward Stanton	0.0 <sup>1</sup> 0.2 <sup>1</sup> 0.5 <sup>1</sup> 0.0 <sup>1</sup> 0.0 <sup>1</sup> 0.0 <sup>1</sup> 0.2 <sup>1</sup> 0.1 <sup>1</sup> 0.2 <sup>1</sup>	Brown Doniphan Marshall Nemaha	0.0 <sup>1</sup> 0.2 <sup>1</sup> 0.1 <sup>1</sup> 0.0 <sup>1</sup>	Chariton St. Charles	0.7 <sup>1</sup> 0.3 <sup>1</sup>		
<b>Barn owl</b> <i>Tyto alba</i>	MO-E; IL-E	This cavity-nesting species is primarily a bird of open country - residential and agricultural areas, old fields and woodland edges. Nests in buildings, tree cavities, caves, cliff crevices, and cut bank burrows Breeding season: late winter, spring, and/or early summer.	Grasslands, woodlands, agriculture									St. Charles	1.7	Fayette Marion	0.0 0.0
<b>Loggerhead shrike</b> <i>Lanius ludovicianus</i>	MO-SC; IL-T	This species is found in open areas with mixed shrub/brush hedgerows and scattered thorny trees. Thorny plant species (osage orange, honey locus, multiflora rose, wild crabapple) are important for impaling prey. In MO and IL, nesting peaks in late April, with a second peak in late May in MO.	Shrublands, uplands											Bond Fayette Marion	2.1 0.0 0.0

<sup>1</sup> Data pending; waiting on completion of wetland/waterbody surveys to determine total habitat crossed (mi); totals likely to change

**Table 2  
Keystone Special Status Species  
Total Habitat Crossed by State**

Species	Status	Habitat Association	Primary Habitat	Habitat by County and State, and Total Distance (mi) Crossed						
				ND	SD	NE	KS	MO	IL	
<b>Henslow's sparrow</b> <i>Ammodramus henslowii</i>	KS-SC; MO-SC; IL-E	This species breeds in a variety of grassland habitats with tall, dense grass and herbaceous vegetation. Meadows, open grasslands and weedy and abandoned fields, all with wet areas, dense grass-forb mosaics and scattered small woody growths appear to be essential. Breeding season: April-July.	Grasslands, meadows, shrublands						Madison	1.6
<b>Yellow-crowned night heron</b> <i>Nyctanassa violacea</i>	IL-E	This species nests on barrier islands, dredge spoil islands, and bay islands that contain forested wetlands or scrub/shrub thickets. Colonies may be located in dense shrubby thickets, forests with an open understory. They use similar habitat types for nesting and roosting, avoiding areas with insufficient cover. They hunt along the shores of tidal creeks and tide pools within salt and brackish marshes dominated by salt marsh cordgrass.	wetlands, scrub-shrub thickets,						Fayette	3.4 <sup>1</sup>
<b>Pied-billed grebe</b> <i>Podilymbus podiceps</i>	IL-T	This species breeds on seasonal or permanent ponds with dense stands of emergent vegetation, bays and sloughs. Uses most types of wetlands in winter.	ponds, wetlands, sloughs						Fayette	6.5 <sup>1</sup>
<b>Northern Harrier</b> <i>Circus cyaneus</i>	MO-E	This species breeds in marshes, meadows, grasslands, and cultivated fields. Perches on ground or on stumps or posts. Nests on the ground, commonly near low shrubs, in tall weeds or reeds, sometimes in bog; or on top of low bush above water, or on knoll of dry ground, or on higher shrubby ground near water, or on dry marsh vegetation.	marshes, meadows, grasslands, cultivated fields					Carroll	13.0 <sup>1</sup>	
<b>Fish</b>										
<b>Chestnut lamprey</b> <i>Ichthyomyzon castaneus</i>	KS-T	This species is found in moderate-sized rivers and large creeks. Spawning occurs in smaller tributary streams in swift shallow riffles where the gravel is clean. Eggs are laid in a nest in the river bottom. Spawning period: spring or summer.	Rivers and creeks					Doniphan: Missouri River		
<b>Pallid sturgeon</b> <i>Scaphirhynchus albus</i>	FE; SD-E; NE-E; KS-E; MO-E; IL-E	This species is distributed from the headwaters of the Missouri River (Fort Benton-Great Falls, Montana) through the Mississippi River to New Orleans, Louisiana. It inhabits bottom areas of large turbid rivers that have strong current and a firm sandy substrate. They also may be found along sandbars and behind wing dikes. Spawning period: April through August.	Large, turbid rivers, sand substrate		Yankton: James River Missouri River	Cedar: Missouri River  Colfax: Platte River	Doniphan: Missouri River	Buchanan: Missouri River  St. Charles: Mississippi River	Madison: Mississippi River  Fayette: Kaskaskia River	
<b>Lake sturgeon</b> <i>Acipenser fulvescens</i>	NE-T; MO-E; IL-E	This species is generally bottom dwelling and occurs in large rivers and shallow areas of large lakes. They are most often associated with silt-free deep run and pool habitats of rivers (i.e., >5 ft deep), and generally avoid aquatic vegetation. Gravelly tributary streams of rivers and lakes serve as spawning habitat, although rocky, wave-swept areas near lake shores and islands serve as spawning habitat when preferred habitats are unavailable. Spawning period: late-spring.	Large rivers and lakes, gravelly substrate		Yankton: Missouri River	Cedar: Missouri River		St. Charles: Mississippi River		

<sup>1</sup> Data pending; waiting on completion of wetland/waterbody surveys to determine total habitat crossed (mi); totals likely to change

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Keystone Special Status Species  
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Species	Status	Habitat Association	Primary Habitat	Habitat by County and State, and Total Distance (mi) Crossed					
				ND	SD	NE	KS	MO	IL
<b>Flathead chub</b> <i>Platygobio gracilis</i>	KS-T	This species occurs from the Rio Grande to the Arctic Circle in small creeks and the largest rivers that have turbid fluctuating water levels and unstable sand bottoms. This species relies on flood flows to spawn successfully. Spawning occurs after water levels have subsided after peak flows, when water temperatures are warmer and substrate is more stable. Relies on flood flows to spawn successfully. Spawns after rivers have subsided following peak flow.	Creeks and rivers with turbid, fluctuating flow and sandy substrates				Nemaha: S.F. Nemaha River  Doniphan: Missouri River		
<b>Sturgeon chub</b> <i>Macrhybopsis gelida</i>	NE-E; KS-T MO-SC SD-T	This species prefers large turbid sandy rivers over substrate of small gravel and coarse sand. It is often found in areas swept by currents especially at heads of islands or exposed sandbars. Spawning period: late spring to midsummer.	Large sandy rivers, sand/gravel substrate		Yankton: Missouri River	Cedar: Missouri River  Colfax County: Platte River	Doniphan: Missouri River	Buchanan: Missouri River	
<b>Sicklefin chub</b> <i>Macrhybopsis meeki</i>	NE-SC; KS-E MO-SC SD-E	This species requires continuously and heavily turbid waters of large rivers where it frequents areas of strong current flowing over sand or gravel substrate. Spawning period: spring (likely from late March and May).	Large turbid rivers, sand/gravel substrate		Yankton: Missouri River	Colfax: Platte River	Doniphan: Rock Creek Missouri River	Buchanan: Missouri River	
<b>Western silvery minnow</b> <i>Hybognathus argyritis</i>	KS-T; MO-SC	This species prefers protected areas in large, turbid rivers and prairie streams. In streams they are typically found in water less than one foot deep and shallow shore water heavily vegetated with emergent grasses and reeds. In protected areas of larger rivers, they move in large schools of 50 to 100 individuals along the bottom in deep, quiet water. While little is known about spawning, this species probably scatters eggs on silt substrate in quiet water.	Protected areas of rivers and streams				Nemaha: S.F. Nemaha River  Doniphan: Missouri River	Buchanan: Missouri River	
<b>Blacknose shiner</b> <i>Notropis heterolepsis</i>	ND-SC; NE-E; MO-SC	This species prefers clean weedy lakes and streams.	Lakes, streams			Cedar: Missouri River  Stanton: Elkhorn River	Doniphan: Missouri River		
<b>Topeka shiner</b> <i>Notropis topeka</i>	FE; SD-SC; KS-T; MO-E	This species inhabits pool and run areas in the headwaters of small prairie streams with high water quality and cool temperatures. These streams generally exhibit intermittent flow during summer; however pools are maintained by spring or groundwater percolation. The substrate of these occupied streams consist mainly of clean gravel, however bedrock and clay hardpan overlain by a thin silt layer are not uncommon. Spawning period: late spring and summer.	Small, cool (often intermittent) prairie streams		Miner: Wolf Creek  Hanson: Wolf Creek  Hutchinson: Wolf Creek  Yankton: James River Missouri River	Cedar: Missouri River  Saline: W.F. Big Blue River	Marshall: N. Elm Creek  Doniphan: Missouri River	Clinton: Castile Creek Little Platte River Shoal Creek  Caldwell: Log Creek Crush Creek Crabapple Creek	
<b>Northern redbelly dace</b> <i>Chrosomus eos</i>	NE-T	This species occurs in a variety of habitats ranging from streams to bog lakes.	Streams to bog lakes			Cedar: Missouri River			
<b>Shinescale dace</b> <i>Phoxinus neogaeus</i>	NE-T	This species occurs a variety of habitats ranging from streams to bog lakes.	Streams to bog lakes			Cedar: Missouri River			

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