TABLE S1 PCR oligonucleotide primer list used in this study

Species	Genes	Sequences (5'-3')	Reference
Campy-genus specific	16S rRNA	GGA TGA CAC TTT TCG GAG C	Linton et al. (1996)
		CAT TGT AGC ACG TGT GTC	
C. jejuni	*mapA*	GGA CGG TAA CTA GTT TAG TAT T	Stucki et al. (1995)
		CTA TTT TAT TTT TGA GTG CTT GTG	
C. coli	*ceuE*	AAT TGA AAA TTG CTC CAA CTA TG	Gonzalez et al. (1997)
		TGA TTT TAT TAT TTG TAG CAG CG	
C. lari	16S–23 S rRNA ITS region	CTT ACT TTA GGT TTT AAG ACC	Khan and Edge (2007)
		CAA TAA AAC CTT ACT ATC TC	
Campylobacter spp.	16S rRNA	CACGTGCTACAATGGCATAT	Lund et al. (2004)
		GGCTTCATGCTCTCGAGTT	
		FAM-CAGAGAACAATCCGAACTGGGACA-TAMRA	
Catellicoccus-like organisms	16S rRNA	GGTGCTTGCACCGACYTAAG	Ryu, et al. (2012)
		CTCTCACACGTGTTCTTC	
Enterococcus spp.	23S rRNA	AGAAATTCCAAACGAACTTG	Haugland et al. (2005)
		CAGTGCTCTACCTCCATCATT FAM-TGGTTCTCTCCGAAATA GCTTTAGGGCTA-TAMRA	
Escherichia coli	23S rRNA	CATAAGCGTCGCTGCCG	Ludwig and Scheifer (2000)
		AAAGAAAGCGTAATAGCTCACTGGTC	
		FAM-TACATCTTCCGCGCAGGCCGACT-TAMRA	
Bacteroidetes spp.	16S rRNA (HF183-708R)	ATCATGAGTTCACATGTCCCG	Bernhard and Field (2000)
		TCAAATGATACATAGTGCGATAC	
Bacteroidetes spp.	16S rRNA(CF128-708R)	CAATCGGAGTTCTTCGTG	Bernhard and Field (2000)
		TCAAATGATACATAGTGCGATAC	
Bacteroidetes spp.	16S rRNA	AACGCTAGCTACAGGCTTAACA	Dick and Field. 2004
		ACGCTACTTGGCTGGTTCA FAM-CAATATTCCTCACTGCTGCCTCCCGTA-TAMRA	

TABLE S2 PCR results of *Campylobacter* spp. (Camp) and C. *jejuni* (*mapA*) in Sandhill crane excreta

Date	Site	Camp (Bolton broth)	*mapA* (Bolton broth)	Camp (direct DNA)	*mapA* (direct DNA)
3/15/2010	C1	-	-	-	-
3/15/2010	C2	-	-	-	-
3/15/2010	C3	-	-	-	-
3/15/2010	C4	-	-	+	+
3/15/2010	C5	-	-	+	+
3/15/2010	C6	-	-	-	-
3/25/2010	C7			-	-
3/25/2010	C8			-	-
3/25/2010	C9			-	-
3/25/2010	C10			-	-
3/25/2010	C11			+	+
3/25/2010	C12			-	-
3/25/2010	C13			-	-
3/25/2010	C14			-	-
3/25/2010	C15			-	-
3/25/2010	C16			-	-
3/25/2010	C17			-	-
3/25/2010	C18			-	-
3/25/2010	C19			-	-
3/25/2010	C20			+	-
3/25/2010	C21			-	-
3/25/2010	C22			-	-
3/18/2010	C146	+	+	+	+
3/18/2010	C147	+	+	+	+
3/18/2010	C148	-	-	-	-
3/18/2010	C149	-	-	-	-
3/18/2010	C150	+	+	+	+

TABLE S2 Continue:

Date	Site	Camp (Bolton broth)	*mapA* (Bolton broth)	Camp (filtered)	*mapA* (filtered)
3/18/2010	C151	-	-	+	-
3/18/2010	C152	-	-	+	-
3/18/2010	C153	-	-	+	+
3/18/2010	C154	-	-	+	+
3/18/2010	C155	-	-	+	+
3/18/2010	C156	-	-	-	-
3/18/2010	C157	-	-	+	+
3/18/2010	C158	-	-	+	-
3/18/2010	C159	-	-	-	-
3/18/2010	C160	-	-	-	-
3/18/2010	C164	+	+	-	-
4/5/2010	C426	-	-	+	+
4/5/2010	C427	-	-	+	+
4/5/2010	C428	+	-	+	-
4/5/2010	C429	-	-	-	-
4/5/2010	C430	-	-	-	-
4/5/2010	C431	+	+	+	+
4/5/2010	C432	-	-	-	-
4/5/2010	C433	-	-	-	-
4/5/2010	C434	-	-	-	-
4/5/2010	C435	+	-	+	-
4/5/2010	C436	+	-	+	-
4/5/2010	C437	-	-	+	+
4/5/2010	C438	+	-	+	-
4/5/2010	C439	-	+	-	-
4/5/2010	C440	+	+	+	+
4/5/2010	C441	+	+	+	+
4/5/2010	C442	+	+	+	-
4/5/2010	C443	+	+	+	-
4/5/2010	C444	-	-	-	-
4/5/2010	C445	-	-	+	+
4/5/2010	C446	+	+	+	+
4/5/2010	C447	+	+	+	-
4/5/2010	C448	-	+	-	-
4/5/2010	C449	-	-	+	-
4/5/2010	C450	-	-	+	+
4/5/2010	C451	-	-	-	-
Total Counts				31(48.4%)	19(29.7%)

TABLE S3 PCR results of *Campylobacter* spp. (Camp) and C. *jejuni* (*mapA*) in snow goose feces

Date	Site	Camp (Bolton broth)	*mapA* (Bolton broth)	Camp (direct DNA)	*mapA* (direct DNA)
3/15/2010	G20	-	-	-	-
3/15/2010	G21	+	-	+	+
3/15/2010	G22	+	-	+	-
3/15/2010	G23	-	-	-	-
3/15/2010	G24	-	-	-	-
3/15/2010	G25	-	-	-	-
3/15/2010	G26	-	-	-	-
3/15/2010	G27	-	-	-	-
3/15/2010	G28	-	-	-	-
3/15/2010	G29	-	-	-	-
3/15/2010	G30	-	-	-	-
3/15/2010	G31	-	-	-	-
3/15/2010	G32	-	-	-	-
3/15/2010	G33	-	-	-	-
3/15/2010	G34	-	-	-	-
3/15/2010	G35	-	-	-	-
3/15/2010	G36	-	-	-	-
3/15/2010	G37	-	-	-	-
3/15/2010	G38	-	-	-	-
3/15/2010	G39	-	-	-	-
3/15/2010	G40	-	-	-	-
3/15/2010	G41	-	-	-	-
Total Counts				2 (9.1%)	1(4.5%)

TABLE S4 PCR results of *Campylobacter* spp. (Camp), C. *jejuni* (*mapA*), human (HF183) and cattle (CF128) in water samples

Date	Site	Camp (Bolton broth)	mapA (Bolton broth)	Camp (direct DNA)	mapA (direct DNA)	CF128	HF183
1/18/2010	Overton	-	-	-	-	++	++
1/18/2010	Denman	-	-	-	-	+	++
1/18/2010	Grand island	-	-	-	-	-	-
2/1/2010	Overton	-	-	-	-	-	-
2/1/2010	Denman	-	-	-	-	-	-
2/1/2010	Grand island	-	-	-	-	-	-
2/15/2010	Overton	-	-	-	-	++	-
2/15/2010	Denman	-	-	-	-	++	+
2/15/2010	Grand island	-	-	-	-	-	-
3/1/2010	Overton	-	-	-	-	-	-
3/1/2010	Denman	-	-	-	-	-	-
3/1/2010	Grand island	-	-	-	-	-	-
3/8/2010	Overton	-	-	-	-	-	-
3/8/2010	Denman	-	-	-	-	-	-
3/8/2010	Grand island	-	-	-	-	-	+
3/15/2010	Overton	-	-	-	-	-	-
3/15/2010	Denman	-	-	-	-	-	-
3/15/2010	Grand island	-	-	-	-	-	-
3/18/2010	Overton	+	+	+	+	-	-
3/18/2010	Denman	+	+	+	+	-	++
3/18/2010	Grand island	+	+	+	+	-	-
3/22/2010	Overton	-	-	+	+	+	++
3/22/2010	Denman	-	-	+	+	-	-
3/22/2010	Grand island	-	-	+	-	+	++
3/24/2010	Overton	-	-	+	-	+	-
3/24/2010	Denman	-	-	-	-	+	-
3/24/2010	Grand island	-	-	-	-	-	-
3/29/2010	Overton	-	-	-	-	-	-
3/29/2010	Denman	-	-	+	-	-	-
3/29/2010	Grand island	-	-	+	-	-	-
4/5/2010	Overton	-	-	+	-	++	++
4/5/2010	Denman	-	-	+	+	+	++
4/5/2010	Grand island	-	-	-	-	-	-

TABLE S4 Continue:

Date	Site	Camp (Bolton broth)	*mapA* (Bolton broth)	Camp (direct DNA)	*mapA* (direct DNA)	CF128	HF183
4/13/2010	Denman	-	-	-	-	-	-
4/13/2010	Grand island	-	-	-	-	-	-
4/21/2010	Overton	-		-	-		
4/21/2010	Denman	-		-	-		
4/21/2010	Grand island	-		-	-		
4/26/2010	Overton	-	-	-	-	+	+
4/26/2010	Denman	-	-	-	-	+	++
4/26/2010	Grand island	-	-	-	-	-	-
5/24/2010	Overton	-	-	-	-	-	-
5/24/2010	Denman	-	-	-	-	-	-
5/24/2010	Grand island	-	-	-	-	-	-
Total Counts		3	3	11	6		
Before		0	0	0	0	44.44	33.33
During		12.5	12.5	45.83	25	25.00	25.00
After		0	0	0	0	33.33	33.33
Overall (%)				24.44	13.33	26.67	26.67

TABLE S5 PCR results of *Campylobacter* spp. (Camp) and C. *jejuni* (*mapA*) in sediment samples

Date	Site	Camp (Bolton broth)	*mapA* (Bolton broth)	Camp (direct DNA)	*mapA* (direct DNA)
3/8/2010	Sediment	-	-	-	-
3/15/2010	Sediment	-	-	-	-
3/18/2010	Sediment	+	+	+	+
3/22/2010	Sediment	-	-	-	-
3/24/2010	Sediment	-	-	-	-
3/29/2010	Sediment1	-	-	-	-
4/5/2010	Sediment	-	-	-	-
4/13/2010	Sediment1	-	-	-	-
4/21/2010	Sediment1	-		-	-
4/26/2010	Sediment1	-	-	-	-
5/24/2010	Sediment1	-	-	-	-
Total Counts				1 (11.1%)	1 (11.1%)

TABLE S6 qPCR standard curve parameters and detection limits for *Campylobacter jejuni* LMG 8842 in different matrices

	Molecular scale water	Sample water[a]	Crane excreta[a]	Sediment
Linear equation[a]	-3.588x + 40.53	-3.373x + 38.21	-3.464x + 43.36	-3.554x + 41.82
Correlation R^2	0.979	0.964	0.964	0.983
qPCR Efficiency[b]	90%	98%	94%	91%
Detection limit (cell equivalence mL^{-1})	100	100	100	100

[a]Sample water and crane excreta were tested negative for *Campylobacter jejuni.* [b]Standard curve with 3 replicates ([a]Efficiency was $100 \times (10^{(-1/slope)} - 1)$

TABLE S7 qPCR standard curve parameters and detection limits by spiking bacterial surrogates into filtered Platte River water for different assays

Surrogates	*Escherichia coli* K12 MG1655	*Enterococcus faecalis* ATCC 29212	*Bacteriodes thetaiotaomicron* ATCC 29741	*Catellicoccus*-like organisms
Linear equation[a]	-2.956x + 35.16	-3.578x + 42.41	-3.212x + 44.53	-3.580x + 39.50
Correlation R^2	0.996	0.995	0.942	0.990
qPCR Efficiency[b]	118%	90%	105%	90%
Detection limit (cell equivalence mL^{-1})	100	520	100	0.1[b]

[a]standard curve with 3 replicates ([a]Efficiency was $100 \times (10^{(-1/slope)} - 1)$; [b]pg/reaction.

TABLE S8 Mean quantity and fold changes of *Campylobacter* spp. and fecal indicators before-, during- and after Sandhill crane migration

Migration period	*Campylobacter* spp.	*Bacteroidetes* spp.	*Enterococcus* spp.	*E. coli*
Jan-Feb15 (Before: CE/100 mL)	194	1×10^{6}	5×10^{4}	86
Mar1-Apr5 (During; CE/100 mL)	1100	6×10^{5}	6×10^{5}	1580
Apr13-May24 (After: CE/100 mL)	0	1×10^{5}	7×10^{3}	55
Ratio (During/Before)	6	1	11	18
During/After)	Not available	5	90	29

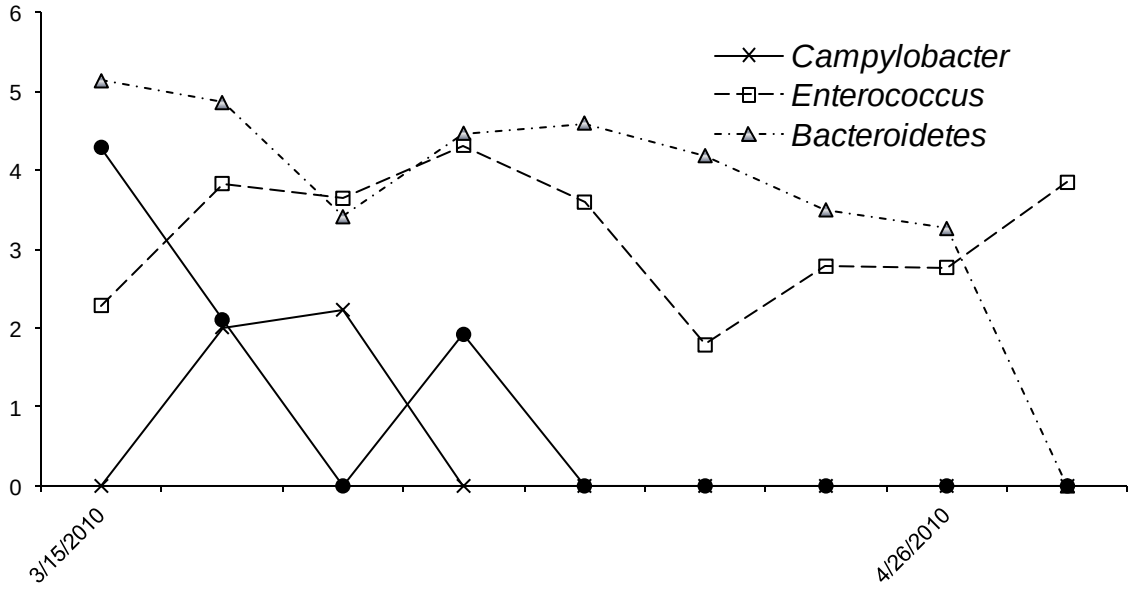

FIG S1 Variation in the relative abundance of *Campylobacter* spp., fecal indicator bacteria (*E. coli* , *Enterococcus* spp. and *Bacteroidetes* spp.) in Central Platte River sediment samples during - (Mar – Apr5) and after (Apr14 –May) Sandhill crane migration

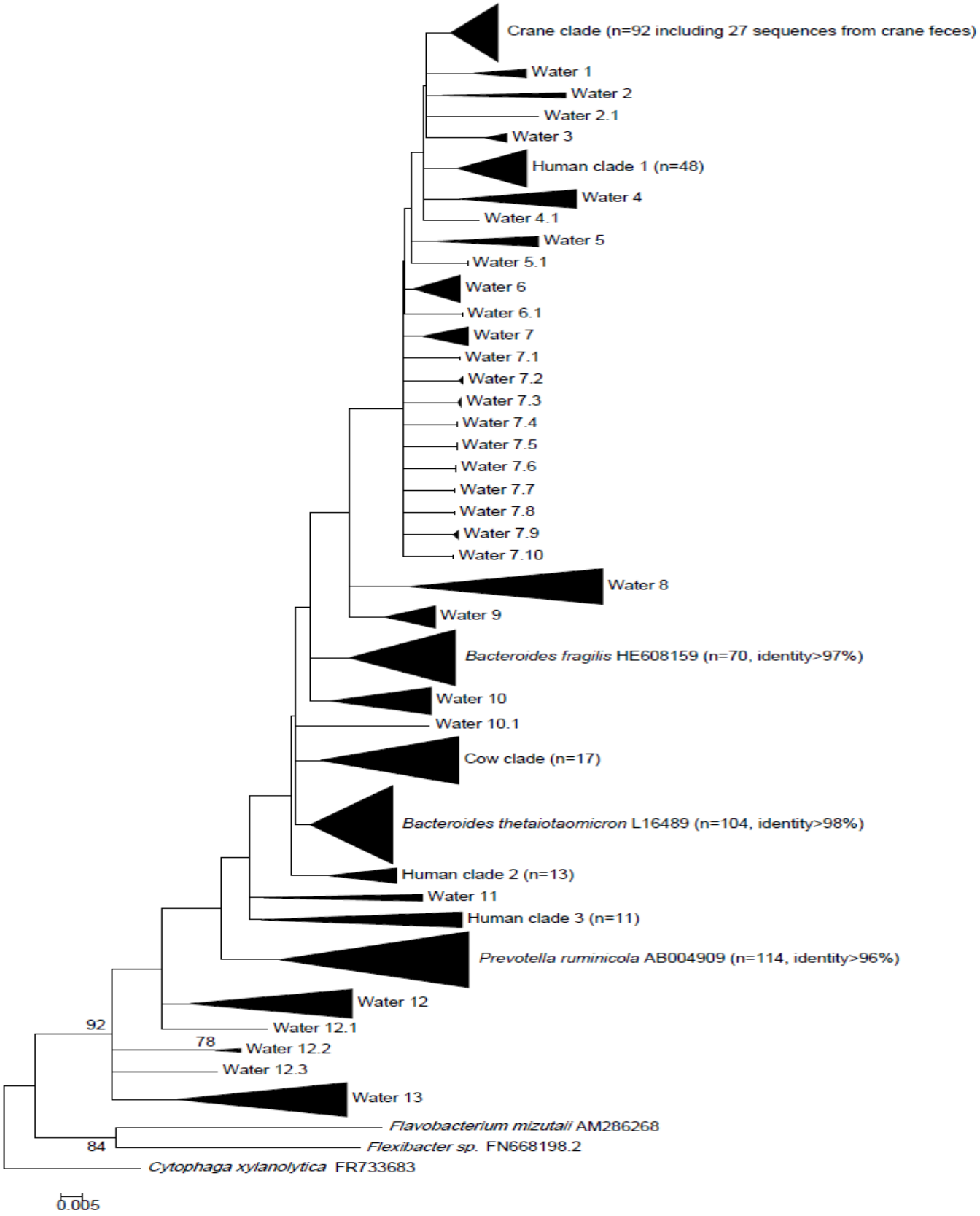

FIG S2 Unrooted neighbor-joining tree of 16S rRNA gene sequences (n=878) for *Bacteroidales* including samples of water (n=851) and Sandhill crane excreta (n=27), created with MEGA 4.1 (2 $\%_0$ divergence)