

Appendix 1. Summary of linear mixed model results examining variation in stable-isotope ratio ($\delta^2\text{H}$) of feathers from birds captured during spring and fall migration at Canadian Migration Monitoring Network Stations.

Table A1.1. Predicted mean $\delta^2\text{H}_f$ and 95% Confidence Intervals from linear mixed effects models examining variation in $\delta^2\text{H}_f$ from 12 species of passerine captured at Canadian Migration Monitoring Network Stations during spring migration (n = 966 individuals).

Species	Station	Location	N	Predicted $\delta^2\text{H}_f$ (‰)			Difference
				Lower CI	Mean	Upper CI	
SWTH	ACBO	Yukon	16	-144.1	-133.0	-121.8	A
SWTH	TLBBS	Yukon	9	-155.2	-142.5	-129.9	A
SWTH	LSLBO	Northern AB	25	-137.2	-126.4	-115.7	A
SWTH	DMBO	Manitoba	13	-143.4	-131.3	-119.3	A
SWTH	TCBO	Northwestern ON	20	-104.0	-93.9	-83.9	B
SWTH	AuBO	Southwestern ON	3	-111.8	-96.6	-81.4	B
SWTH	BPBO	Southwestern ON	2	-121.8	-105.9	-90.0	AB
SWTH	HBO	Southwestern ON	3	-110.3	-95.1	-80.0	B
SWTH	LPBO	Southwestern ON	3	-106.5	-91.5	-76.5	B
SWTH	PIBO	Southwestern ON	3	-105.5	-90.1	-74.8	B
SWTH	TTPBRS	Southwestern ON	3	-106.0	-90.9	-75.8	B
SWTH	PEPTBO	SE Ontario/SW Quebec	21	-100.9	-90.6	-80.4	B
HETH	AuBO	Southwestern ON	1	-119.2	-102.3	-85.4	A
HETH	BPBO	Southwestern ON	3	-122.2	-107.1	-92.0	A
HETH	LPBO	Southwestern ON	8	-112.7	-100.1	-87.5	A
HETH	TTPBRS	Southwestern ON	5	-111.9	-98.1	-84.2	A
RCKI	ACBO	Yukon	14	-150.7	-139.3	-127.9	A
RCKI	TLBBS	Yukon	6	-151.9	-138.4	-124.8	A
RCKI	DMBO	Manitoba	12	-140.4	-128.2	-116.0	AB
RCKI	TCBO	Northwestern ON	17	-129.3	-118.8	-108.4	AB
RCKI	BPBO	Southwestern ON	5	-124.8	-110.9	-96.9	B
RCKI	HBO	Southwestern ON	2	-118.9	-103.0	-87.1	B
RCKI	LPBO	Southwestern ON	8	-120.2	-107.5	-94.9	B
RCKI	TTPBRS	Southwestern ON	5	-118.3	-104.4	-90.5	B
RCKI	IPBO	SE Ontario/SW Quebec	1	-122.6	-105.7	-88.8	B
RCKI	MBO	SE Ontario/SW Quebec	3	-122.4	-107.0	-91.7	B
RCKI	PEPTBO	SE Ontario/SW Quebec	14	-114.2	-103.1	-91.9	B
NOWA	ACBO	Yukon	9	-130.8	-118.3	-105.9	AB
NOWA	TLBBS	Yukon	6	-145.4	-131.9	-118.3	AB
NOWA	LSLBO	Northern AB	23	-149.7	-138.8	-127.9	A

NOWA	DMBO	Manitoba	25	-143.7	-132.7	-121.7	A
NOWA	TCBO	Northwestern ON	14	-119.5	-108.6	-97.6	B
NOWA	AuBO	Southwestern ON	5	-114.4	-100.2	-86.0	BC
NOWA	BPBO	Southwestern ON	2	-121.0	-105.1	-89.2	B
NOWA	HBO	Southwestern ON	5	-101.6	-87.5	-73.5	BC
NOWA	LPBO	Southwestern ON	5	-116.6	-102.7	-88.9	B
NOWA	PIBO	Southwestern ON	3	-106.5	-91.2	-75.8	BC
NOWA	TTPBRS	Southwestern ON	5	-112.8	-98.9	-85.1	BC
NOWA	IPBO	SE Ontario/SW Quebec	6	-114.1	-100.2	-86.3	BC
NOWA	MBO	SE Ontario/SW Quebec	8	-122.2	-108.6	-95.0	AB
NOWA	PEPTBO	SE Ontario/SW Quebec	11	-108.0	-96.2	-84.5	BC
NOWA	ABO	Maritimes	2	-88.0	-71.7	-55.5	C
OCWA	ACBO	Yukon	12	-136.4	-124.7	-112.9	A
OCWA	TLBBS	Yukon	7	-148.3	-135.1	-121.9	A
OCWA	AuBO	Southwestern ON	2	-124.7	-108.7	-92.8	AB
OCWA	BPBO	Southwestern ON	11	-126.0	-113.9	-101.8	AB
OCWA	LPBO	Southwestern ON	3	-111.7	-96.6	-81.6	B
OCWA	TTPBRS	Southwestern ON	1	-117.3	-100.4	-83.5	AB
OCWA	PEPTBO	SE Ontario/SW Quebec	2	-120.8	-104.9	-89.1	AB
AMRE	BBO	Northern AB	1	-146.1	-129.1	-112.0	A
AMRE	LSLBO	Northern AB	25	-146.4	-135.7	-124.9	A
AMRE	TCBO	Northwestern ON	10	-112.3	-100.5	-88.7	B
AMRE	AuBO	Southwestern ON	5	-98.8	-84.6	-70.4	B
AMRE	BPBO	Southwestern ON	5	-110.8	-96.8	-82.8	B
AMRE	HBO	Southwestern ON	5	-106.6	-92.5	-78.5	B
AMRE	LPBO	Southwestern ON	6	-97.6	-84.2	-70.8	B
AMRE	PIBO	Southwestern ON	3	-100.5	-85.2	-69.8	B
AMRE	TTPBRS	Southwestern ON	8	-103.5	-90.8	-78.1	B
AMRE	IPBO	SE Ontario/SW Quebec	5	-111.1	-96.9	-82.7	B
AMRE	PEPTBO	SE Ontario/SW Quebec	9	-101.2	-88.9	-76.6	B
MAWA	TCBO	Northwestern ON	20	-112.4	-102.4	-92.3	A
MAWA	AuBO	Southwestern ON	1	-120.0	-103.1	-86.2	A
MAWA	BPBO	Southwestern ON	3	-122.8	-107.7	-92.6	A
MAWA	HBO	Southwestern ON	1	-115.8	-98.9	-82.0	A
MAWA	LPBO	Southwestern ON	5	-109.9	-96.0	-82.2	A
MAWA	PIBO	Southwestern ON	3	-108.9	-93.5	-78.2	A
MAWA	TTPBRS	Southwestern ON	5	-114.5	-100.6	-86.8	A
MAWA	IPBO	SE Ontario/SW Quebec	2	-116.7	-100.7	-84.8	A
MAWA	MBO	SE Ontario/SW Quebec	2	-117.1	-101.1	-85.1	A
MAWA	PEPTBO	SE Ontario/SW Quebec	16	-108.7	-97.9	-87.0	A
MAWA	ABO	Maritimes	20	-93.0	-77.8	-62.6	A
YWAR	ACBO	Yukon	11	-152.4	-140.4	-128.4	A

YWAR	TLBBS	Yukon	10	-154.2	-141.8	-129.4	A
YWAR	BBO	Northern AB	8	-149.2	-133.2	-117.3	A
YWAR	DMBO	Manitoba	21	-138.4	-127.2	-116.0	A
YWAR	TCBO	Northwestern ON	17	-132.7	-122.2	-111.8	AB
YWAR	HBO	Southwestern ON	5	-113.9	-99.9	-85.8	B
YWAR	LPBO	Southwestern ON	9	-116.3	-104.0	-91.7	AB
YWAR	PIBO	Southwestern ON	3	-108.6	-93.3	-78.0	B
YWAR	TTPBRS	Southwestern ON	2	-113.5	-97.7	-81.8	B
YWAR	IPBO	SE Ontario/SW Quebec	7	-114.7	-101.2	-87.6	B
YWAR	MBO	SE Ontario/SW Quebec	7	-111.4	-97.6	-83.7	B
PAWA	TCBO	TCBO	20	-119.1	-109.0	-98.9	A
PAWA	BPBO	Southwestern ON	5	-120.8	-106.8	-92.9	A
PAWA	HBO	Southwestern ON	1	-116.2	-99.3	-82.4	A
PAWA	LPBO	Southwestern ON	3	-108.2	-93.2	-78.1	A
PAWA	TTPBRS	Southwestern ON	5	-114.5	-100.6	-86.7	A
PAWA	IPBO	SE Ontario/SW Quebec	3	-118.7	-103.5	-88.3	A
PAWA	PEPTBO	SE Ontario/SW Quebec	16	-107.9	-97.1	-86.2	A
YRWA	LSLBO	Northern AB	25	-158.3	-147.5	-136.8	A
YRWA	TCBO	Northwestern ON	23	-119.7	-109.9	-100.2	B
YRWA	AuBO	Southwestern ON	5	-120.3	-106.2	-92.0	B
YRWA	BPBO	Southwestern ON	5	-118.6	-104.6	-90.7	B
YRWA	HBO	Southwestern ON	5	-122.0	-108.0	-93.9	B
YRWA	LPBO	Southwestern ON	5	-112.3	-98.5	-84.7	B
YRWA	TTPBRS	Southwestern ON	5	-119.5	-105.7	-91.8	B
YRWA	PEPTBO	SE Ontario/SW Quebec	25	-113.8	-103.9	-94.0	B
WIWA	ACBO	Yukon	15	-135.1	-123.8	-112.5	AB
WIWA	TLBBS	Yukon	10	-147.5	-135.1	-122.7	A
WIWA	LSLBO	Northern AB	12	-142.5	-130.4	-118.4	AB
WIWA	TCBO	Northwestern ON	21	-120.3	-110.4	-100.4	B
WIWA	AuBO	Southwestern ON	4	-115.1	-100.5	-85.9	BC
WIWA	BPBO	Southwestern ON	4	-113.1	-98.6	-84.1	BC
WIWA	HBO	Southwestern ON	6	-100.4	-86.7	-73.1	C
WIWA	LPBO	Southwestern ON	3	-112.1	-97.0	-82.0	BC
WIWA	PIBO	Southwestern ON	4	-97.6	-82.8	-68.0	C
WIWA	TTPBRS	Southwestern ON	4	-106.6	-92.2	-77.8	BC
WIWA	IPBO	SE Ontario/SW Quebec	6	-117.4	-103.6	-89.7	BC
WIWA	MBO	SE Ontario/SW Quebec	5	-112.3	-97.9	-83.5	BC
WIWA	PEPTBO	SE Ontario/SW Quebec	14	-99.8	-88.6	-77.5	C
LISP	ACBO	Yukon	12	-159.1	-147.3	-135.5	A
LISP	TLBBS	Yukon	8	-139.6	-126.7	-113.8	AB
LISP	DMBO	Manitoba	9	-151.4	-138.7	-125.9	AB
LISP	TCBO	Northwestern ON	9	-126.8	-114.7	-102.6	B

LISP	AuBO	Southwestern ON	2	-119.4	-103.4	-87.5	B
LISP	BPBO	Southwestern ON	1	-123.1	-106.2	-89.3	B
LISP	HBO	Southwestern ON	3	-118.8	-103.6	-88.5	B
LISP	LPBO	Southwestern ON	5	-114.7	-100.9	-87.1	B
LISP	PIBO	Southwestern ON	1	-106.5	-89.6	-72.6	B
LISP	TTPBRS	Southwestern ON	5	-107.4	-93.5	-79.6	B

Table A1.2. Predicted mean $\delta^2\text{H}_f$ and 95% Confidence Intervals from linear mixed effects models examining variation in $\delta^2\text{H}_f$ from 14 species of passerine captured at Canadian Migration Monitoring Network Stations during fall migration (n = 1855 individuals). Stations arranged by numbers in Fig. 1. Identical letters in the Difference column indicate overlap of 95% Confidence Intervals with other CI's for the same species.

Species	Station	Location	N	Predicted $\delta^2\text{H}_f$ (‰)			Difference
				Lower CI	Mean	Upper CI	
ALFL	ACBO	Yukon	20	-167.7	-158.0	-148.4	A
ALFL	MNO	Northern BC	20	-164.4	-155.1	-145.8	A
ALFL	LMBO	Saskatchewan	20	-152.1	-143.1	-134.1	AB
ALFL	DMBO	Manitoba	10	-144.5	-132.8	-121.1	B
ALFL	AuBO	Southwestern Ontario	1	-119.3	-102.7	-86.1	BC
ALFL	BPBO	Southwestern Ontario	1	-127.0	-110.6	-94.3	BC
ALFL	LPBO	Southwestern Ontario	6	-119.0	-107.1	-95.2	BC
ALFL	HBO	Southwestern Ontario	7	-106.5	-94.6	-82.6	C
ALFL	TTPBRS	Southwestern Ontario	5	-118.3	-105.8	-93.4	C
ALFL	PEPTBO	SE Ontario/SW Quebec	12	-109.7	-99.2	-88.7	C
ALFL	MBO	SE Ontario/SW Quebec	8	-118.4	-107.4	-96.3	C
ALFL	ABO	Maritimes	20	-75.8	-65.5	-55.3	D
SWTH	IBS	Southern AB	27	-146.8	-138.9	-130.9	
HETH	MNO	Northern BC	17	-162.6	-153.0	-143.5	A
HETH	VLBO	Southern BC	3	-132.8	-119.1	-105.4	B
HETH	LSLBO	Northern AB	11	-157.3	-146.2	-135.1	A
HETH	LMBO	Saskatchewan	20	-158.2	-149.2	-140.2	A
HETH	TCBO	Northwestern Ontario	12	-138.2	-128.0	-117.9	AB
HETH	PIBO	Southwestern Ontario	2	-126.9	-111.2	-95.6	B
HETH	BPBO	Southwestern Ontario	5	-110.2	-96.9	-83.6	B
HETH	LPBO	Southwestern Ontario	4	-122.3	-109.3	-96.4	B
HETH	HBO	Southwestern Ontario	4	-118.0	-104.8	-91.7	B
HETH	TTPBRS	Southwestern Ontario	5	-124.7	-112.2	-99.8	B
HETH	PEPTBO	SE Ontario/SW Quebec	13	-106.0	-95.7	-85.4	B
HETH	MBO	SE Ontario/SW Quebec	7	-111.4	-100.0	-88.7	B
HETH	OOT	Eastern Quebec	7	-122.8	-110.3	-97.9	B

HETH	ABO	Maritimes	20	-69.2	-59.0	-48.8	C
RCKI	ACBO	Yukon	19	-179.5	-169.8	-160.1	A
RCKI	MNO	Northern BC	21	-169.3	-160.1	-150.8	A
RCKI	VLBO	Southern BC	32	-142.5	-133.2	-123.9	AB
RCKI	IBS	Southern AB	18	-158.4	-149.7	-141.1	B
RCKI	LMBO	Saskatchewan	20	-170.3	-161.3	-152.2	B
RCKI	DMBO	Manitoba	20	-158.6	-147.7	-136.7	AB
RCKI	TCBO	Northwestern Ontario	20	-138.1	-128.8	-119.5	BC
RCKI	LPBO	Southwestern Ontario	5	-120.8	-108.4	-96.0	C
RCKI	TTPBRS	Southwestern Ontario	5	-123.3	-110.8	-98.4	C
RCKI	PEPTBO	SE Ontario/SW Quebec	11	-122.0	-111.4	-100.8	C
RCKI	MBO	SE Ontario/SW Quebec	9	-117.5	-106.7	-96.0	C
RCKI	ABO	Maritimes	20	-95.6	-85.4	-75.1	D
OVEN	IBS	Southern AB	28	-152.7	-144.8	-136.8	
NOWA	IBS	Southern AB	58	-155.7	-148.6	-141.6	
OCWA	ACBO	Yukon	20	-168.2	-158.6	-148.9	A
OCWA	MNO	Northern BC	20	-176.3	-167.0	-157.7	A
OCWA	VLBO	Southern BC	20	-157.8	-148.0	-138.2	A
OCWA	LSLBO	Northern AB	15	-162.1	-151.4	-140.8	A
OCWA	IBS	Southern AB	36	-158.6	-151.0	-143.5	A
OCWA	BBO	Northern AB	12	-163.9	-150.0	-136.1	A
OCWA	LMBO	Saskatchewan	20	-163.2	-154.2	-145.2	A
OCWA	DMBO	Manitoba	16	-149.0	-137.8	-126.7	AB
OCWA	TCBO	Northwestern Ontario	20	-136.4	-127.1	-117.7	AB
OCWA	PIBO	Southwestern Ontario	2	-129.8	-114.2	-98.5	B
OCWA	AuBO	Southwestern Ontario	6	-127.5	-112.7	-97.9	B
OCWA	BPBO	Southwestern Ontario	4	-125.9	-112.3	-98.6	B
OCWA	LPBO	Southwestern Ontario	4	-128.0	-115.1	-102.2	B
OCWA	HBO	Southwestern Ontario	2	-127.3	-112.5	-97.7	B
OCWA	TTPBRS	Southwestern Ontario	2	-131.7	-117.0	-102.3	B
OCWA	PEPTBO	SE Ontario/SW Quebec	2	-128.5	-113.8	-99.1	B
OCWA	MBO	SE Ontario/SW Quebec	7	-133.5	-122.1	-110.7	B
MAWA	ACBO	Yukon	20	-186.1	-176.5	-166.8	A
MAWA	MNO	Northern BC	20	-168.4	-159.1	-149.8	AB
MAWA	LSLBO	Northern AB	11	-162.2	-151.1	-140.0	B
MAWA	LMBO	Saskatchewan	19	-157.2	-148.1	-139.1	B
MAWA	TCBO	Northwestern Ontario	19	-120.3	-110.9	-101.5	C
MAWA	PIBO	Southwestern Ontario	3	-122.1	-106.9	-91.7	CD
MAWA	BPBO	Southwestern Ontario	3	-106.8	-92.6	-78.4	CD
MAWA	LPBO	Southwestern Ontario	3	-124.5	-110.8	-97.1	CD
MAWA	HBO	Southwestern Ontario	5	-118.4	-105.8	-93.1	CD
MAWA	TTPBRS	Southwestern Ontario	5	-121.3	-108.9	-96.5	CD

MAWA	PEPTBO	SE Ontario/SW Quebec	12	-118.0	-107.5	-97.0	CD
MAWA	MBO	SE Ontario/SW Quebec	4	-125.8	-113.0	-100.2	C
MAWA	OOT	Eastern Quebec	12	-124.4	-112.7	-100.9	C
MAWA	SABBS	Maritimes	10	-109.9	-95.2	-80.5	CD
MAWA	ABO	Maritimes	13	-97.4	-86.7	-75.9	D
YWAR	ACBO	Yukon	19	-184.3	-174.6	-164.9	A
YWAR	MNO	Northern BC	20	-172.6	-163.3	-154.0	A
YWAR	VLBO	Southern BC	20	-141.3	-131.5	-121.7	B
YWAR	LSLBO	Northern AB	20	-170.1	-159.8	-149.5	A
YWAR	IBS	Southern AB	107	-170.3	-163.7	-157.0	A
YWAR	BBO	Northern AB	18	-158.6	-144.8	-131.0	AB
YWAR	LMBO	Saskatchewan	16	-172.4	-163.0	-153.6	A
YWAR	DMBO	Manitoba	20	-136.6	-125.6	-114.7	BC
YWAR	TCBO	Northwestern Ontario	15	-149.3	-139.6	-129.8	B
YWAR	LPBO	Southwestern Ontario	6	-132.1	-120.2	-108.3	BC
YWAR	HBO	Southwestern Ontario	8	-117.4	-105.7	-94.0	C
YWAR	TTPBRS	Southwestern Ontario	5	-126.0	-113.5	-101.1	BC
YWAR	PEPTBO	SE Ontario/SW Quebec	2	-120.4	-105.7	-91.0	C
YWAR	MBO	SE Ontario/SW Quebec	18	-118.9	-109.5	-100.0	C
YWAR	OOT	Eastern Quebec	11	-145.6	-133.7	-121.9	B
YWAR	SABBS	Maritimes	4	-116.6	-101.6	-86.6	C
YWAR	ABO	Maritimes	12	-104.8	-94.0	-83.1	C
PAWA	LMBO	Saskatchewan	17	-166.5	-157.2	-147.9	A
PAWA	TCBO	Northwestern Ontario	20	-123.1	-113.8	-104.5	B
PAWA	AuBO	Southwestern Ontario	2	-125.1	-109.4	-93.8	B
PAWA	LPBO	Southwestern Ontario	10	-121.9	-111.1	-100.2	B
PAWA	HBO	Southwestern Ontario	3	-124.4	-110.5	-96.7	B
PAWA	TTPBRS	Southwestern Ontario	5	-124.7	-112.2	-99.8	B
PAWA	PEPTBO	SE Ontario/SW Quebec	4	-121.3	-108.4	-95.5	B
PAWA	MBO	SE Ontario/SW Quebec	14	-120.7	-110.9	-101.0	B
YRWA	IBS	Southern AB	101	-159.3	-152.6	-145.9	
LISP	ACBO	Yukon	20	-169.7	-160.1	-150.4	A
LISP	MNO	Northern BC	14	-168.6	-158.7	-148.8	A
LISP	VLBO	Southern BC	20	-152.8	-143.0	-133.2	A
LISP	LSLBO	Northern AB	11	-161.6	-150.5	-139.4	A
LISP	IBS	Southern AB	25	-154.0	-145.9	-137.8	A
LISP	LMBO	Saskatchewan	15	-156.4	-146.9	-137.4	A
LISP	TCBO	Northwestern Ontario	20	-122.9	-113.6	-104.2	BC
LISP	BPBO	Southwestern Ontario	7	-108.2	-95.5	-82.7	C
LISP	LPBO	Southwestern Ontario	5	-124.5	-112.1	-99.8	BC
LISP	HBO	Southwestern Ontario	2	-122.9	-108.1	-93.3	BC
LISP	TTPBRS	Southwestern Ontario	5	-128.7	-116.2	-103.8	BC

LISP	PEPTBO	SE Ontario/SW Quebec	3	-118.2	-104.5	-90.8	BC
LISP	MBO	SE Ontario/SW Quebec	15	-128.1	-118.4	-108.6	B
LISP	OOT	Eastern Quebec	8	-123.6	-111.3	-99.0	BC
WTSP	IBS	Southern AB	30	-152.5	-144.7	-136.9	
