

APPENDIX 1

Contrasting migratory chronology and routes of Lesser Scaup: Implications of different migration strategies in a broadly distributed species

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Table S1. Timing of duty cycles for platform transmitter terminals (PTTs) used to mark Lesser Scaup (*Aythya affinis*) at Yukon Flats National Wildlife Refuge in Alaska, USA in 2012. The number of cycles for each on/off period, the number of days elapsed during the cycling, and the start and end months of each set of cycles are given.

No. cycles	On (hours)	Off (hours)	No. days	Start month	End month
3	4	94	12	Late June	Early July
18	2	240	182	Early July	Early January
38	6	92	155	Early January	Mid June
20	2	240	202	Mid June	Early January
39	6	92	159	Early January	Late July
Total	118	20	758		

Table S2. Wintering areas of Lesser Scaup (*Aythya affinis*) marked with platform transmitter terminals (PTTs) at two breeding areas: Yukon Flats National Wildlife Refuge (NWR) in Alaska, USA ($N^\dagger = 11$) in 2012 and Red Rock Lakes NWR in Montana, USA ($N^\ddagger = 11$) in 2009. N_{obs} indicates the number of observations at each area because some Scaup used more than one wintering area.

† Includes observations from one individual that was tracked for > 1 annual cycle.

‡ Includes observations from three individuals that were tracked for > 1 annual cycle.

Breeding area	N_{obs}	Wintering area	City	State/Province	Country	Latitude	Longitude
Yukon Flats NWR	3	San Francisco Bay		CA	USA	37.900	-122.343
Yukon Flats NWR	2	Central Valley	Lost Hills	CA	USA	35.539	-119.728
Yukon Flats NWR	2	La Loba Lake	San Juan	Tamaulipas	Mexico	24.361	-98.625
Yukon Flats NWR	1	Columbia River	Portland	OR	USA	45.646	-122.702
Yukon Flats NWR	1	Humboldt Bay	Eureka	CA	USA	40.738	-124.233
Yukon Flats NWR	1	Agricultural fields and fishponds	Moorhead	MS	USA	33.436	-90.465
Yukon Flats NWR	1	Lake Jacksboro	Jacksboro	TX	USA	33.095	-98.176
Yukon Flats NWR	1	Bay St. Louis		MS	USA	30.417	-89.248
Yukon Flats NWR	1	Rio Grande River	Brownsville	TX	Mexico	25.922	-97.532
Yukon Flats NWR	1	Las Adjuntos Lake	Padilla	Tamaulipas	Mexico	24.043	-98.794
Yukon Flats NWR	1	Contadera Lake	La Pesca	Tamaulipas	Mexico	23.742	-97.854
Yukon Flats NWR	1	San Lorenzo Lake	Nuevo Quintero	Tamaulipas	Mexico	22.987	-98.758
Yukon Flats NWR	1	Lake Miguel Aleman		Oaxaca	Mexico	18.329	-96.617
Yukon Flats NWR	1	Laguna del Rincon	Laguna de Cabral	Independencia	Dominican Republic	18.299	-71.238
Red Rock Lakes NWR	1	Snake River		ID	USA	42.722	-114.822
Red Rock Lakes NWR	1	Great Salt Lake		UT	USA	41.199	-112.192
Red Rock Lakes NWR	1	Rio Grande River	Corrales	NM	USA	35.251	-106.661
Red Rock Lakes NWR	1	Lake Whitney/Brazos River	Lakeside Village	TX	USA	32.036	-97.491
Red Rock Lakes NWR	1	Arnasas NWR		TX	USA	28.378	-96.756
Red Rock Lakes NWR	1	El Sabino	La Barranca	Sinaloa	Mexico	26.410	-108.688

Red Rock Lakes NWR	1	Lic Gustavo Diaz Ordaz (Bacurato)		Sinaloa	Mexico	25.885	-107.903
Red Rock Lakes NWR	1	Baluarte River		Sinaloa	Mexico	23.031	-105.790

Table S3. Spring staging and stopover areas of Lesser Scaup (*Aythya affinis*) marked with platform transmitter terminals (PTTs) at two breeding areas: Yukon Flats National Wildlife Refuge (NWR) in Alaska, USA ($N^\dagger = 11$) in 2012 and Red Rock Lakes NWR in Montana, USA ($N^\ddagger = 11$) in 2009. N_{obs} indicates the number of observations at each area.

† Includes observations from one individual that was tracked for > 1 annual cycle.

‡ Includes observations from three individuals that were tracked for > 1 annual cycle.

Breeding area	N_{obs}	Spring staging/stopover area	City	State/ Province	Country	Latitude	Longitude
Yukon Flats NWR	3	Klamath Region		OR	USA	42.162	-121.644
Yukon Flats NWR	2	Yukon River Region		YT	Canada	63.967	-139.077
Yukon Flats NWR	2	Nordenskiold River Region	Carmacks	YT	USA	62.000	-136.281
Yukon Flats NWR	2	Twin Lakes Region	Florence	SD	USA	45.093	-97.396
Yukon Flats NWR	1	Unnamed Lake North of Joe Guay Island		AK	USA	66.404	-147.422
Yukon Flats NWR	1	Upper Mouth Birch Creek/Yukon Flats NWR		AK	USA	66.268	-145.977
Yukon Flats NWR	2	Yukon River	Eagle	AK	USA	64.901	-141.232
Yukon Flats NWR	1	Stewart River		YT	Canada	63.949	-134.094
Yukon Flats NWR	1	Tsolmund Lake	Northway	AK	USA	62.792	-141.694
Yukon Flats NWR	1	Bennett Lake		YT	Canada	60.161	-134.694
Yukon Flats NWR	1	Wabasa River		AB	Canada	58.231	-115.385
Yukon Flats NWR	1	Hollow Lake	Hollow Lake	AB	Canada	54.248	-112.759
Yukon Flats NWR	1	Chip Lake	Northville	AB	Canada	53.574	-115.216
Yukon Flats NWR	1	Bowron Lake Provincial Park		BC	Canada	53.047	-121.113
Yukon Flats NWR	1	Temapho Lake		BC	Canada	52.411	-123.796
Yukon Flats NWR	1	East of Fraser River	Becher House	BC	Canada	52.058	-122.475
Yukon Flats NWR	1	East of Blackstrap Lake	Shields	SK	Canada	51.841	-106.266
Yukon Flats NWR	1	Pend Oreille River		OR	USA	49.050	-117.469
Yukon Flats NWR	1	Unnamed Lake	Palermo	ND	USA	48.284	-102.241
Yukon Flats NWR	1	Flat Lake	George	WA	USA	47.139	-119.888

Yukon Flats NWR	1	Apple Creek	Apple Valley	ND	USA	46.803	-100.622
Yukon Flats NWR	1	West of Grunneich Waterfowl Production Area		ND	USA	46.225	-99.057
Yukon Flats NWR	1	Lake Billy Chinook		OR	USA	44.583	-121.364
Yukon Flats NWR	1	Lutz Waterfowl Production Area	White Lake	SD	USA	43.750	-98.638
Red Rock Lakes NWR	2	Hutton Lake NWR Region		WY	USA	41.228	-105.842
Red Rock Lakes NWR	2	South Platte River		CO	USA	40.331	-104.309
Red Rock Lakes NWR	1	Stickney	Stickney	SD	USA	43.563	-98.481
Red Rock Lakes NWR	1	Snake River		ID	USA	42.566	-113.743
Red Rock Lakes NWR	1	Thompson Lake	Lakeside	NE	USA	42.087	-102.404
Red Rock Lakes NWR	1	Springfield	Springfield	CO	USA	37.480	-102.420
Red Rock Lakes NWR	1	Salt Lake	Wagon Mound	NM	USA	36.036	-104.649

Table S4. Molting areas of Lesser Scaup (*Aythya affinis*) marked with platform transmitter terminals (PTTs) at two breeding areas: Yukon Flats National Wildlife Refuge (NWR) in Alaska, USA ($N^\dagger = 11$) in 2012 and Red Rock Lakes NWR in Montana, USA ($N^\ddagger = 11$) in 2009. N_{obs} indicates the number of observations at each area.

† Includes observations from one individual that was tracked for > 1 annual cycle.

‡ Includes observations from three individuals that were tracked for > 1 annual cycle.

Breeding area	N_{obs}	Molting area	City	State/Province	Country	Latitude	Longitude
Yukon Flats NWR	9	Yukon Flats NWR		AK	USA	66.312	-148.321
Yukon Flats NWR	2	South of Oscar Island		AK	USA	66.189	-147.822
Red Rock Lakes NWR	7	Red Rock Lakes NWR		MT	USA	44.681	-111.789
Red Rock Lakes NWR	1	Crow Indian Lake	Lethbridge	AB	Canada	49.381	-111.649
Red Rock Lakes NWR	1	Kleinschmidt & Browns Lakes		MT	USA	46.981	-113.047
Red Rock Lakes NWR	1	Lima Reservoir		MT	USA	44.655	-112.364
Red Rock Lakes NWR	1	Island Park Reservoir		ID	USA	44.390	-111.451

Table S5. Fall staging and stopover areas of Lesser Scaup (*Aythya affinis*) marked with platform transmitter terminals (PTTs) at two breeding areas: Yukon Flats National Wildlife Refuge (NWR) in Alaska, USA ($N^\dagger = 11$) in 2012 and Red Rock Lakes NWR in Montana, USA ($N^\ddagger = 11$) in 2009. N_{obs} indicates the number of observations at each area.

† Includes observations from one individual that was tracked for > 1 annual cycle.

‡ Includes observations from three individuals that were tracked for > 1 annual cycle.

Breeding area	N_{obs}	Fall staging/stopover area	City	State/ Province	Country	Latitude	Longitude
Yukon Flats NWR	3	Tulebagh Lake Region		AK	USA	66.366	-148.640
Yukon Flats NWR	3	Lubicon Lake		AB	Canada	56.425	-115.884
Yukon Flats NWR	2	Roaring Bear Lake		AK	USA	66.361	-148.071
Yukon Flats NWR	2	Marack Lake		AK	USA	66.310	-148.259
Yukon Flats NWR	2	Moberly Lake		BC	Canada	55.901	-120.902
Yukon Flats NWR	2	Klamath Region		OR	USA	42.460	-122.056
Yukon Flats NWR	1	East of Tiinkdhul Lake		AK	USA	66.607	-143.023
Yukon Flats NWR	1	East of Yukon River		AK	USA	66.353	-143.332
Yukon Flats NWR	1	South of Upper Mouth Birch Creek/Yukon Flats NWR		AK	USA	66.332	-146.265
Yukon Flats NWR	1	West of Big Meadow Lake		AK	USA	66.185	-147.181
Yukon Flats NWR	1	Twin Lakes		AK	USA	66.167	-147.510
Yukon Flats NWR	1	West of Diamain Lake	Pelly Crossing	YT	Canada	62.895	-136.371
Yukon Flats NWR	1	Trout Lake		NT	Canada	60.425	-120.776
Yukon Flats NWR	1	Bennett Lake		YT	Canada	60.027	-133.486
Yukon Flats NWR	1	Bistcho Lake		AB	Canada	59.708	-118.716
Yukon Flats NWR	1	Niloil Lake	Coal River	BC	Canada	59.553	-126.982
Yukon Flats NWR	1	Beaver River	Beaver Crossing	AB	Canada	54.360	-110.174
Yukon Flats NWR	1	Chip Lake	Northville	AB	Canada	53.605	-115.270
Yukon Flats NWR	1	Unnamed Lake	Claysmore	AB	Canada	53.436	-110.808
Yukon Flats NWR	1	Lac Natal		SK	Canada	52.983	-106.563

Yukon Flats NWR	1	Narcosli Lake Ecological Reserve		BC	Canada	52.950	-124.108
Yukon Flats NWR	1	Rosita Lake		BC	Canada	52.413	-123.156
Yukon Flats NWR	1	Temapho Lake		BC	Canada	52.339	-123.702
Yukon Flats NWR	1	Goose Lake	Laura	SK	Canada	51.740	-107.359
Yukon Flats NWR	1	Unnamed Lake	Lestock	SK	Canada	51.404	-103.923
Yukon Flats NWR	1	North of Missouri River	White Shield	ND	USA	47.796	-101.677
Yukon Flats NWR	1	Faul Waterfowl Production Area	Goodrich	ND	USA	47.562	-100.084
Yukon Flats NWR	1	Unnamed Lake	McClusky	ND	USA	47.466	-100.328
Yukon Flats NWR	1	Columbia River		OR	USA	46.259	-123.606
Yukon Flats NWR	1	Lake Winnebago		WI	USA	43.941	-88.463
Yukon Flats NWR	1	Lake Texoma		OK	USA	34.110	-96.542
Yukon Flats NWR	1	Tampa Bay		FL	USA	27.898	-82.567
Yukon Flats NWR	1	Unnamed Lake	Sempre		Cuba	20.210	-75.282
Red Rock Lakes NWR	4	Henry's Lake		ID	USA	44.661	-111.430
Red Rock Lakes NWR	2	Island Park Reservoir		ID	USA	44.445	-111.356
Red Rock Lakes NWR	2	Great Salt Lake		UT	USA	41.454	-112.262
Red Rock Lakes NWR	1	Eyebrow Lake	Bridgeford	SK	Canada	50.947	-106.243
Red Rock Lakes NWR	1	Many Island Lake	Medicine Hat	AB	Canada	50.126	-109.891
Red Rock Lakes NWR	1	Yellow Lake	Juno	AB	Canada	49.748	-111.479
Red Rock Lakes NWR	1	Red Rock Lakes NWR		MT	USA	44.612	-111.911
Red Rock Lakes NWR	1	Snake River		ID	USA	42.649	-113.748
Red Rock Lakes NWR	1	South Platte River		CO	USA	40.262	-104.101
Red Rock Lakes NWR	1	Utah Lake		UT	USA	40.186	-111.695
Red Rock Lakes NWR	1	Juanita and Hallenbeck Reservoirs	Grand Junction	CO	USA	38.972	-108.289
Red Rock Lakes NWR	1	Bartlett Lake		NM	USA	36.904	-105.129
Red Rock Lakes NWR	1	Sabine NWR		LA	USA	29.745	-93.608
Red Rock Lakes NWR	1	Rio Mayo	Guaymitas	Sonora	Mexico	27.201	-109.445

Red Rock Lakes NWR	1	Eustaquio Balbuena		Sinaloa	Mexico	25.501	-108.054
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