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Canadian Atlas of Bird Banding

Volume 4: Shorebirds, 1921–1995



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Volume 4:

Shorebirds, 1921–1995

**Special Publication
Canadian Wildlife Service**

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Abstract

This volume is part of a series intended to summarize, for the first time, bird-banding results for Canada, including data on birds banded in Canada and those banded elsewhere but encountered in Canada. Although limited in geographic scope, the data depict patterns that provide insight into movements across North America as a whole. The current volume deals with shorebirds.

A full account is given for each species with at least one record of an individual moving more than 100 km; banding and encounter statistics for all species banded in Canada are summarized in an appendix. Species accounts consist of 1) one or more encounter maps showing lines joining points of banding and encounter; 2) a narrative discussing results and movement patterns and recapping any major analyses of band encounters already published for the species; 3) a list showing details of selected encounters; 4) a table giving summary statistics such as encounter rate and mean distance moved; and 5) an effort map showing frequency of banding by geographic location.

Many of the results for rarely encountered species have not been published before. Results for more frequently encountered species indicate geographic differences in movement patterns, which are often consistent across many species. The information presented here should be of interest not only to banders and students of migration, but also to managers and conservationists wanting to know more about the wintering destinations and migration routes of Canada's birds.

Acknowledgements

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After a decision to extend coverage through 1995, additional people provided help. These included Kathy Meeres, Lucie Métras, Louise Laurin, Ann Demers and Christine Eberl. Jo Anna Lutmerding at the U.S. Bird Banding Laboratory kindly checked original data for certain questionable records. In tracing Canadian encounters of foreign-banded birds, the authors were greatly helped by officers of the banding schemes in Greenland (Denmark) (Kaj Kampp), Iceland (Aevar Petersen), the United Kingdom (the late Chris Mead) and for Europe as a whole (R.D. Wassenaar of EURING).

Several additional people made contributions to Volume 4. We especially thank Cheri Gratto-Trevor, David Hussell and Guy Morrison for reviewing the manuscript, which greatly improved the final document.

Finally, we want to acknowledge the uncountable hours of effort that hundreds of banders have put into amassing the database on which this summary is based. This atlas is a result of your efforts.

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1. Introduction

This publication is part of an atlas series that presents, for the first time, a comprehensive overview of bird-banding results involving Canada. This volume covers shorebirds.

Bird banding involves placing a metal band with a unique serial number on a bird's leg, so that the bird can be individually identified when it is found again. An "encounter" is any subsequent observation of the banded bird, dead or alive. (The term "recovery," though commonly used to refer to all encounters, technically refers only to encounters of dead birds.)

Bird banding in Canada was begun by private individuals in the early years of the twentieth century. Following the 1916–1917 implementation of the Migratory Birds Convention between Great Britain (for Canada) and the United States, the public sector organized the administration of bird banding. The Canadian Bird Banding Office, established in 1923, was originally part of the Dominion government's Parks Branch but is now administered in Ottawa by the Canadian Wildlife Service (CWS) of Environment Canada. The Office works closely with the Bird Banding Laboratory (of the U.S. Geological Survey's Biological Resources Division, formerly part of the U.S. Fish and Wildlife Service), which was established in 1920. These two agencies jointly administer the North American Bird Banding Program for migratory birds. Mexico joined the North American Bird Banding Program in 2006 and is developing a banding system in that country.

In Canada, as in most countries with vigorous banding programs, bird banding has included a great deal of volunteer activity. While many professional biologists use banding in their research and government biologists have done much of North America's banding of game birds, interest in the spectacular migrations of birds has led scores of unpaid enthusiasts to spend much of their spare time banding birds. Most published analyses of band encounters have involved species with numerous records, particularly species of economic importance. For other species, there is an enormous body of encounter data that has never been compiled, covering many decades of effort. This atlas series is intended to fill that gap.

2. Overview of the series

The bulk of this atlas series consists of individual species accounts that depict movement patterns and summarize data to indicate what is available for further analysis. Although species accounts range from those reporting a single encounter to those summarizing 10 000 or more, each is presented in a consistent format that is described in detail in the next section. Here we provide a brief overview of our treatment of the data and point out the limitations of our analyses.

Full accounts are included for species for which there was at least one encounter over 100 km from the banding site; banding statistics for other species banded or encountered in Canada are included in Appendix 1. Each species account provides one or more maps showing movement patterns, followed by a narrative and a listing of selected encounters reported in detail. Each account concludes with a summary table of standard information and a map showing the distribution of bandings for that species in Canada.

The survival or movements of species for which there are 100 or more encounters have often been analyzed in published works. In such cases, we provide a précis of the results in our narrative (including some important references from later than 1995, including Banding Office data on maximum longevity to 2007). When there is little or no literature, we have tried to highlight the most important patterns indicated by the encounters.

The list of selected encounter records in each account includes examples of typical movements, but also includes cases that will interest banders; for example, records showing unusually long-lived or far-travelled birds, movement outside the normal range of distribution, and cases of apparent "reverse" migration. We recognize from our own experience as banders that it is often the unusual or spectacular encounter that stimulates a bander's interest, and we hope that some of those listed will serve this purpose.

The database used in preparing this atlas series includes all records of birds banded under the North American scheme that were 1) banded in Canada and encountered anywhere and 2) banded elsewhere

(usually in the United States but a few in Central America or on Pacific islands) and encountered in Canada. Encounters in Canada of birds banded under other banding schemes (chiefly in northwestern Europe and Greenland) are also included to the extent we could find out about them, because these records add so much to our knowledge of the distribution and movements of Canadian birds (Tuck 1971; Dennis 1981, 1990). Encounters of this sort from the period prior to 1975 were extracted from European banding reports and other published sources. Those from 1975 to 1995 were obtained in part from literature but primarily from EURING, and we recognize that this atlas gives an incomplete picture of European-banded birds encountered in Canada. At some modest risk of creating a diplomatic incident, we have also included in this series a few records that did not involve Canadian territory — from the French islands of St. Pierre and Miquelon (located off the south coast of Newfoundland).

The most obvious limitation of this atlas series is that it deals only with bandings or encounters occurring within Canadian boundaries and the seas immediately offshore. U.S. records that did not involve Canadian territory had to be excluded because the sheer volume of data for North America as a whole was simply beyond our means to handle. (The project was well under way before the dawn of the computer age.) Nevertheless, we felt that the Canadian database was sufficiently large and geographically representative to justify restricting our coverage. We hope that this atlas series will stimulate our American colleagues to collaborate in a more comprehensive continental assessment of banding and encounter data.

Banding data can be misleading if not interpreted carefully with a full understanding of biases and limitations. There is always uncertainty about specific records. The person reporting an encounter has to provide accurate information on the band number (which is usually the means of identifying the species), but band numbers are easily misread, and only rarely is the actual band returned with the report of finding. In addition, the finder must accurately report date, place, and other details, and investigation shows that reports

may often be incomplete or incorrect (Houston and Francis 1993). Data entry is another common source of mistakes. Given the qualifications necessary to get a banding permit, bander error is a less likely source of problems. However, occasional odd encounters are most plausibly explained as mistaken species identification on the part of the bander. This can occur, for example, when chicks are banded in mixed colonies of gull or tern species.

Although we could not check every record, we have checked the details of the most striking encounters. In most cases, there are no data-entry errors and no clue as to whether the band number was read correctly. We therefore had to use our judgment as to whether to include certain odd records. When a record was clearly in error we excluded it, but when it was merely suspicious we retained it, usually calling attention to it in the species account. Readers should regard all individual records with a degree of caution, however, and give greatest credence to overall patterns of movement. Although it was sometimes discouraging (though hardly surprising) to see that errors had crept into this large database, we are convinced that the value of the data set as a whole justifies our summarizing all the available data for public scrutiny.

3. Overview of Volume 4

There are 47 species covered by this volume (full listing in Appendix 1). Of these, 32 had at least one record of an encounter more than 100 km from the site of banding, thereby meriting a full species account.

For the species covered in this volume, there were 164 855 individuals banded in Canada from 1955 through 1995. Of these, 1 579 were later encountered, for an overall encounter rate of 1%. However, this rate includes 12 species for which there were no encounters at all — primarily species that were banded in only small numbers, such as Snowy Plover, Black Turnstone, Surf-bird and Rock Sandpiper — but also Wilson's Phalarope, with over 1 000 banded. Highest encounter rates were for two hunted species (Wilson's Snipe and

American Woodcock, with encounter rates of 2.4% and 6.1%, respectively), and for Whimbrel, whose 7.6% encounter rate was largely the result of intensive banding and recapture in a breeding study. Encounter rates reported here are based on reports of metal bands, but relatively high proportions of shorebirds are given auxiliary marks such as colour bands or feather dyes, which has contributed numerous sight records that are not included in this volume.

In general, band encounter rates are related to body size. As one would expect, shorebirds are more commonly encountered than most songbirds, but less often than larger-bodied raptors and seabirds (Brewer et al. 2000, Dunn et al. 2009, Gaston et al. 2009). Shorebird encounters are relatively common in Latin America, compared to birds of other types, as shorebirds are often hunted for food.

Banding effort for most of the species covered here has remained relatively steady over time, with the exception of increasing effort for several *Calidris* sandpipers that have become model species for detailed study of migration. Indeed, 72% of all shorebirds banded in Canada from 1955–1995 were made up of only three species: Semipalmated, Western and Least Sandpipers — with Semipalmated Sandpiper alone making up 55% of the total.

In addition to the 1 579 encounters of shorebirds banded in Canada between 1955 and 1995, this volume includes 54 encounters of birds banded between 1921 and 1955, and another 212 records for birds banded from 1921–1995 in other countries but encountered in Canada. Most of the latter represent birds banded in the United States, for which we have complete records. There are also many Canada–Europe exchanges, however, and despite modest efforts to obtain details from other banding schemes, it is likely that some such records have been missed.

Temperate-breeding shorebirds tend to be relatively short-distance migrants, but the many Arctic-breeding species are among the champion migrants of all birds, with different breeding populations from Canada moving to wintering areas in Latin America, Europe/North Africa or Southeast Asia — often via

transoceanic flights. Intensive study of shorebird migration has advanced our knowledge of migration physiology, energetics and orientation (Harrington et al. 2002). These birds have special adaptations for long-distance migration, including reduction of internal organs, increase in size of flight muscles, and heavy storage of fat to fuel their highly efficient flight. Shorebirds also tend to concentrate in relatively small, highly productive areas during migration, making them vulnerable to habitat loss, and they cross borders of numerous countries (even continents) during their travels, making it a challenge to coordinate conservation efforts.

As with seabirds, a high proportion of shorebird banding has been carried out by government biologists and academic researchers, often working in remote breeding areas or doing studies at migration stopover sites. Nonetheless, some bird observatories and individual banders appear on the lists of top five banders for each species, even though they usually do not capture many, simply because banding effort has been limited to few localities. With 29 species accounts listing the top five banders for each, there was potential for 145 different names to appear. The actual number is only 55, as many names appear on several species' lists. Indeed, 69% of all shorebird banding in Canada during the study period was done under only four permits, and R.I.G. Morrison, of Environment Canada, was responsible for 34% of the total. His name appears as the number one bander for 10 of the 29 species, with a lower rank for an additional 9.

The maximum distance between banding and encounter location of any individual of a species included in this volume was attained by a Red Knot that moved 11 383 km from its breeding grounds in Nunavut to a site in southern Brazil where it was recaptured five years later. Falling only slightly short of this record was a Hudsonian Godwit banded as a chick at Churchill, Manitoba, and reported a year later 11 128 km away, in Argentina. The oldest individual in the data set was a Least Sandpiper banded as a chick on Sable Island, Nova Scotia, and found nesting there 15 years later.

4. Detailed explanation of species accounts

4.1 Species name

The first items in each account are the species' common and scientific names, for which we follow the seventh edition of the Check-list of North American Birds (American Ornithologists' Union 1998 and updates through the 50th supplement), and the species number from the Bird Banding Manual (Gustafson et al. 1997).

4.2 Encounter maps

Encounter maps show lines joining banding locations with re-encounter sites. The symbol at the end of each line marks the final encounter location.

Prior to mapping, data were screened to delete records showing encounters within 100 km of the banding site (the latter being relatively uninteresting for depiction on maps). Encounters with inexact location codes or coordinates were also excluded except as follows. Records providing degrees of latitude and longitude but lacking the exact 10' block were assigned coordinates at the southeast corner of the 1° block. Some of the older encounters from Mexico report the state but do not give any coordinates; in such cases, we assigned coordinates for the centre of the state. To ensure that scarce long-distance encounters would be mapped, we also assigned coordinates for inexact locations within Central or South American countries, giving coordinates for the centre of the relevant country.

For species with few band encounters, every record of movement greater than 100 km could be mapped individually. However, this was not possible for species with high numbers of encounters, since even maps with fewer than 50 lines can appear too cluttered. We therefore reduced the complexity of the maps using several methods. For example, for a few species (noted in the text), we omitted encounters within 200–400 km of the banding site, as opposed to the usual 100 km. A second approach was to produce several maps for a species to allow depiction of more cases.

Most commonly, we used a thinning process. First, groups of records were identified that shared the same banding and encounter coordinates (i.e., all the birds were banded within one 10' latitude-longitude block and encountered within another 10' block). Then a single line was plotted with a larger symbol to indicate the number of encounters represented by that line (see key on each map). If further thinning was required, coordinates were rounded to form larger degree blocks (instead of 10' blocks), and new (larger) groups of records were formed that shared the new banding and encounter coordinates. From each group, a single record was randomly chosen to represent the group on the map, and these lines were plotted using their original coordinates. Again, the size of the symbol at the end of the selected line shows the number of records represented. If the map was still too crowded, the process was repeated with larger block sizes until the maps became clear. Block size in degrees (in decimal format) is shown with each map for which block size was enlarged above 10' of latitude and longitude for the purposes of thinning. Reference maps in Appendix 2 give the reader an idea of the area encompassed by large degree blocks.

The number of encounters represented by each symbol is consistent across all maps, with only two sets of frequency classes being used: one for large data sets (map symbols are triangles) and one for smaller data sets (map symbols are squares).

The result of the thinning process is a set of lines joining banding and encounter locations that summarizes geographic patterns of movement, rather than showing every encounter separately. The advantage of this system is that sparse or outlier records are not eliminated in the thinning process, whereas dense areas of similar records are rigorously weeded to reduce clutter. The disadvantage is that many individual records (sometimes hundreds) are not shown on the maps. When block size is large (over a few degrees), the text draws attention to that fact and notes any distortions of visual pattern that may result.

4.3 Narrative

Each narrative begins with a clarification of taxonomy if taxa traditionally recognized by banders do not

coincide with those in current use by systematists. A short description of the North American breeding distribution and each species' wintering area follows, based mainly on individual species accounts in *The Birds of North America* series (Poole and Gill, 1991–2001 and online: <http://bna.birds.cornell.edu/bna>).

The main body of the text discusses movement patterns revealed by the encounters and refers to specific records (by number) that are listed below the text. If there are major published analyses of band encounters for the species, relevant results are summarized briefly in the account, even if published later than the cut-off date for including band encounters (end of 1995). Cited longevity records (from the U.S. Banding Office website) were current as of 2007.

4.4 List of selected encounter records

The encounter records are listed in a standard format. Each one occupies two lines, the upper containing mostly the banding information and the lower, the encounter details. The band number is given first. Below it, on the second line, appear either the initials of the bander or, if these cannot be traced, the bander's permit number. (This is the only banding information that appears on the second line rather than the first.) A key to banders' initials appears in Appendix 3.

All codes in the encounter listings are from *The North American Bird Banding Manual* (Gustafson et al. 1997; see Appendix 3 for keys). These codes are used in preference to the "international" symbols because they contain more information (Brewer and Salvadori 1978). Following the band number and the initials or permit number of the bander are two sets of codes: on the upper line, the alphabetic versions of the codes for age (first) and sex (second) of the bird at banding; on the lower line, the numeric codes for "present status of bird and band" and "how obtained" from the encounter data. Together, the latter two codes give some indication of the completeness of information for the particular record.

Next are the dates of banding (above) and encounter (below). Note that these are in the order day/month/year (not month/day/year as they are in the computer files), to conform with common Canadian

usage. Special codes indicate inexact dates of encounter (see details in Appendix 3).

Dates are followed by the names of the places of banding (above) and encounter (below). Most place names were obtained from the gazetteer of banding and encounter localities on file at the U.S. Bird Banding Laboratory. The location names in the gazetteer were assigned by Laboratory personnel and frequently differ from the names that banders assign to their own sites. We have changed site names to those more recognizable by banders in the few cases where we knew which names were more appropriate, but in many cases we were not able to do so. When locations were not given in the gazetteer, we used online maps to find nearby place names. Maps of Canadian provinces, U.S. and Mexican states, and Central and South American countries are shown in Appendix 2 for reader reference.

The next data in the encounter records are the latitude and longitude of banding (upper line) and encounter (lower line), expressed as the coordinates of the southeast corner of the appropriate 10' geographic block (Gustafson et al. 1997). Question marks indicate inexact locations. Where we assigned coordinates (see section 4.2), the distance travelled (see below) is given as approximate. In a few specific cases for which revelation of the breeding locations might be deleterious to the species, precise banding locations have been omitted. In these cases, we have identified only the province or state and rounded the geographical coordinates and the distances travelled.

The last data given are not extracted from the standard computer files but have been calculated separately. On the upper line is the time elapsed between banding and encounter, and on the lower is the calculated distance and direction between banding and encounter locations (see Appendix 4). Elapsed time is left blank if encounter dates are inexact, and approximate distance and direction are shown when locations are inexact.

Most encounters listed in detail are specifically mentioned in the text, but often the bird with the longest period between banding and encounter is listed at the end without any comment.

4.5 Summary of banding statistics

A summary of banding statistics is provided for each species with bandings in Canada. Data are arranged in three columns: birds banded in their first calendar year of life (Hatch Year), those banded in their second or subsequent calendar year of life (After Hatch Year), and the total banded regardless of age (including birds of unknown age when banded). An explanation of each line in the summary table is given below.

No. of Canadian bandings (1955–1995):

Banding numbers were not handled by computer prior to 1955, so this item and the next (“no. encountered per 1 000 banded”) are restricted to the 1955–1995 period. These two lines are italicized in the table to emphasize that they are a restricted subset of the numbers appearing in the remainder of the table. See Appendix 3 for definitions of age at banding, and note that the total includes birds of unknown age.

No. encountered per 1 000 banded (1955–1995):

(No. of encounters of birds banded
in Canada, 1955–1995) × 1 000

Total no. banded in Canada (1955–1995)

The number of encounters includes birds killed, found dead, or captured alive, as well as sight records (i.e., bands read from a distance). If a single bird was encountered multiple times, it was tallied only once.

The encounter rate is influenced by such factors as the size and conspicuousness of a species, density of human population, and whether the species is hunted, as well as by the geographic distribution of bird banders and the number of individuals of the species they handle. The encounter rate is also affected by the number of reports of birds encountered in the same 10' block in which they were banded. Prior to 1958, encounters within 90 days at the site of banding were incorporated into the database (although the numbers are not large), but in 1958 this practice was discontinued. Encounters at the site of banding more than 90 days after banding can still be submitted to the banding office; however, some banders do not submit such encounters, and not all of those sent in are actually entered into the database (L. Métras, pers. comm.).

Total no. encountered (1921–1995):

No. of encounters of birds banded in Canada
(1921–1995) + no. of Canadian encounters of
birds banded elsewhere (1921–1995)

All further calculations in this table are based on this set of encounters.

No. encountered from foreign bandings:

No. of the above encounters (1921–1995)
that involved birds banded in another country but
encountered in Canada

Maximum period from banding to encounter (mo.):

Maximum period for any individual, rounded
to the nearest month

This information is provided as an indicator of a bird's minimum age, so it is not provided when the date of encounter or actual death is highly uncertain. Note also that this figure does not represent longevity, except for birds banded as very young chicks, as no attempt was made to estimate the true age of the bird by guessing its age when banded.

No. of Canadian-banded birds moving >0 km:

This number gives the sample size for the
calculation below.

Mean movement >0 km of Canadian-banded birds (km):

Sum of km moved for all encounters
of Canadian-banded birds that moved > 0 km

No. of Canadian-banded birds moving > 0 km

For individuals encountered more than once, we selected the greatest distance for this calculation, and we included approximate distances travelled (records for which we assigned encounter coordinates; see explanation in section 4.2). The distance between the banding and encounter locations of each record was computed using a great-circle distance, that is, the shortest distance that could be travelled between the two coordinates allowing for the curvature of the earth (Cowardin 1977; Appendix 4). Following a great circle route requires constant change of compass direction, and while there is some recent evidence that shorebirds

migrating in the Arctic do navigate like this (Alerstam et al. 2001), some other birds have been shown to follow constant compass directions (Alerstam 1990, Kerlinger 1995). Regardless of navigation system used, individuals are likely to wander or take detours during their travels. Thus, the straight lines on the maps connecting points of banding and encounter are not intended to illustrate flight paths, and, overall, our calculations likely underestimate real distances moved.

Maximum movement from all encounters (km):

Maximum calculated distance moved for any individual

Unlike the calculation for mean movement of Canadian-banded birds (above), the maximum distance is given for any encounter in the database, regardless of banding location.

% recovered (encountered dead):

$$\frac{(\text{Total no. encountered dead}) \times 100}{\text{Total no. encountered}}$$

Birds with “unknown” present condition codes (see Appendix 3) were treated as dead for this calculation and the next one (“% direct recoveries”), as were birds banded in their Hatch Year and encountered in the same 10’ block within three months of banding.

Birds encountered before 1965 and birds banded outside the North American banding scheme (mainly in Europe and Greenland) did not have true “present condition” codes to indicate whether the encountered bird was alive or dead. We assigned codes to these records based on available information to enable their inclusion in this calculation (see Appendix 3).

% direct recoveries:

$$\frac{(\text{Total no. of direct recoveries}) \times 100}{\text{Total no. of encounters}}$$

A direct recovery is an encounter with a bird “killed or found dead before, during, or immediately after the first period of migratory movement following banding and before return migration would be likely to have occurred” (Gustafson et al. 1997). Appendix 4 shows how this designation was assigned; see also notes above on “% recovered.”

The “% direct recoveries” is used chiefly as a measure of the hunting pressure on species in which most of the mortality is inflicted by hunters. In species that are not hunted, this figure is a rough guide to the magnitude of annual mortality. In the majority of species, this figure will be much higher for birds banded in their Hatch Year than for those banded in later years, reflecting the high mortality of juveniles typical of most birds.

% encountered during banding operations:

$$\frac{(\text{Total no. encountered in banding operations}) \times 100}{\text{Total no. of encounters}}$$

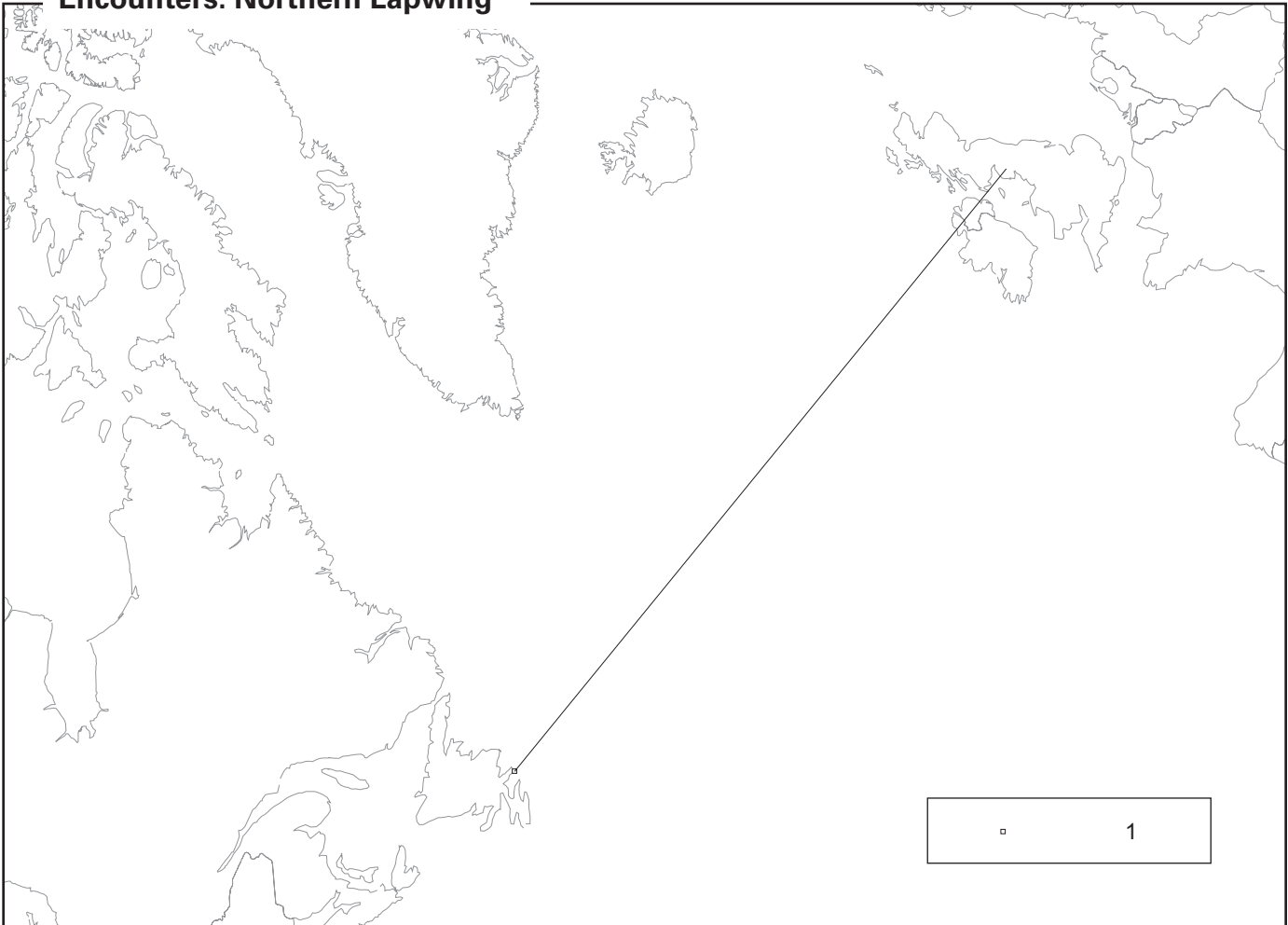
The number of birds encountered during banding operations was the sum of birds with “how obtained” codes of 89 or 99 (see Appendix 3).

4.6 Banding effort map

The banding effort map shows the numbers of individuals for each species that were banded in Canada from 1955 to 1995 in each location (compiled by 10’ block, with blocks combined if too close to be shown separately on the map). This map helps the reader interpret the distribution of encounters, because it shows where banding effort has been concentrated. Under each map, there is a list of the five master permit holders responsible for the most bandings of the species in Canada from 1955 to 1995 (in descending order; six names are shown if there was a tie for the fifth spot). One to many individuals may band under a single master permit, so this listing does not necessarily identify the most prolific individual banders.

Northern Lapwing (*Vanellus vanellus*) 269.0

Encounters: Northern Lapwing



The Northern Lapwing is an Old World species that breeds over much of western and northern Europe and east to Siberia. It winters from the British Isles to North Africa and southern Asia. Southern extent of the winter range varies with temperature, and during periods of severe weather, major movements of wintering populations may occur. Occasionally flocks of Lapwings, sometimes of substantial size, reach eastern North America. Major

invasions occurred in late 1927 and in January 1966 (Godfrey 1986), accounting for most of the North American records to date. Record 1 (below), which is unique and frequently quoted, arose from the 1927 invasion.

As no Northern Lapwings have been banded in Canada and the sole encounter is cited below, no effort map or banding statistics summary are shown.

Encounter records: Northern Lapwing

1	X5046	L	U	15/05/26	near Ullswater, Cumberland, UK	54°36'N	2°54'W	1 yr. 7 mo.
	BTO	0	0	27/12/27	near Catalina, NL	48°36'N	53°06'W	3463 km N80°W

Black-bellied Plover (*Pluvialis squatarola*) 270.0

Encounters: Black-bellied Plover



The Black-bellied Plover is a holarctic breeder, nesting in arctic Canada and also in Alaska and arctic Eurasia. North American populations winter along the Pacific coast from southern British Columbia to central Chile, as well as on the Galapagos and Hawaiian islands; and on Atlantic and Caribbean coasts from New Jersey through the West Indies to northern Argentina.

Data from specimens indicate that females winter somewhat farther south than males, and immatures farther south than adults. Some yearlings spend the summer within the wintering range (Paulson 1995).

The longest-distance encounter (record 1) was of a bird making its first migration towards the Atlantic coast. A bird of unknown age (record 2) that was banded in August on Sable Island, Nova Scotia, was encountered nine months later along the south coast of Nova Scotia. The only other three band encounters involving Canada showed zero movement.

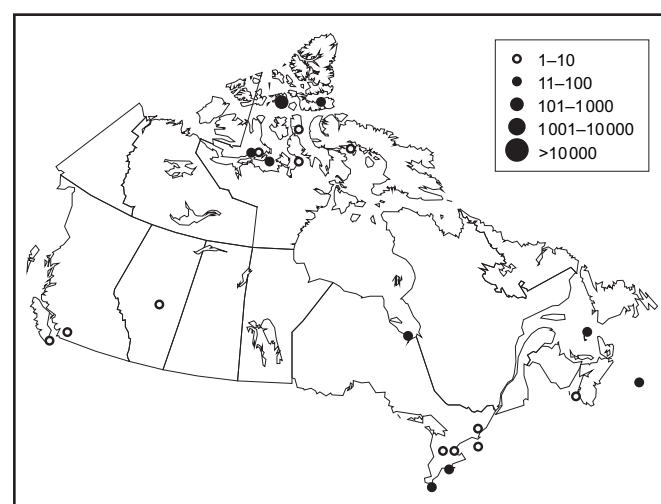
Encounter records: Black-bellied Plover

1	0623-17134	L	U	29/07/74	Bathurst Island, NU	75°40'N	98°20'W	3 mo.
	CMN	5	1	03/10/74	near Lake Chicobi, QC	48°50'N	78°20'W	3 123 km S29°E
2	0963-87806	U	U	14/08/71	Sable Island, NS	43°50'N	60°00'W	9 mo.
	RM	5	0	22/05/72	Clark's Harbour, NS	43°20'N	65°30'W	447 km S85°W

Summary of banding statistics:
Black-bellied Plover

	Age at banding		
	Hatch Year	After Hatch Year	All ages
No. of Canadian bandings (1955–1995)	267	118	487
No. encountered per 1 000 banded (1955–1995)			10
Total no. encountered (1921–1995)	3	1	5
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	37	1	37
No. of Canadian-banded birds moving >0 km	2	1	4
Mean movement >0 km of Canadian-banded birds (km)	1 571	18	902
Maximum movement from all encounters (km)	3 123	18	3 123
% recovered (encountered dead)	100	100	100
% direct recoveries	66	100	60
% encountered during banding operations	0	0	0

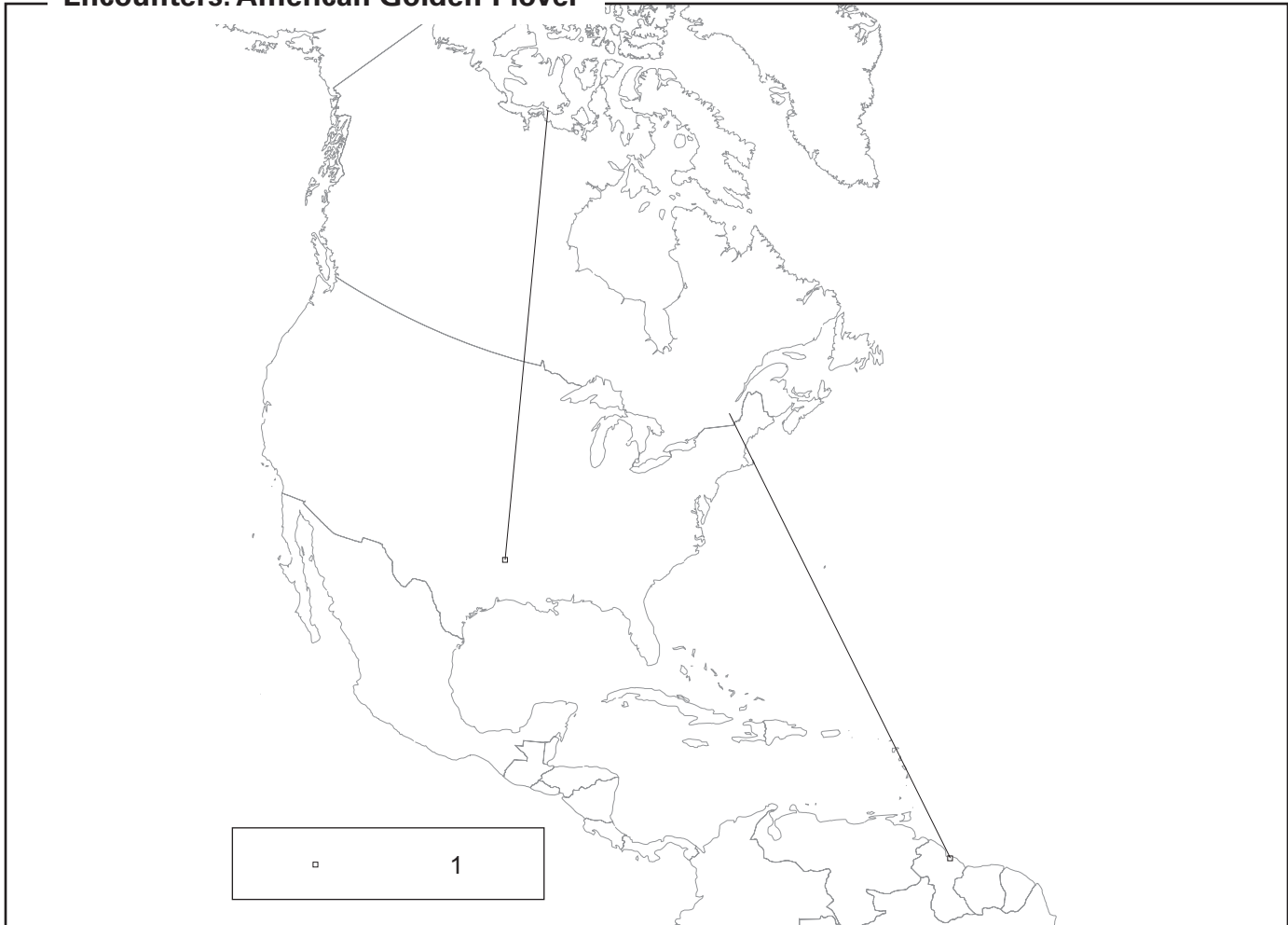
Banding effort: Black-bellied Plover



Top banders: NMC, RM, LMT, DFP, DJTH

American Golden-Plover (*Pluvialis dominica*) 272.0

Encounters: American Golden-Plover



The American Golden-Plover breeds in Canada north of the treeline (excluding Quebec and Labrador) as far north as Devon and Melville islands, as well as in Alaska. It winters in east-central South America from Bolivia, Uruguay and southern Brazil to northern Chile and Argentina.

In autumn, American Golden-Plovers migrate towards the Atlantic provinces and New England (record 1), then fly to northern South America via non-stop transoceanic flight (Johnson and Connors 1996). Spring return northward is through the middle of the continent (record 2). The bird in record 3, banded as a chick, was recaptured a year later in its natal area.

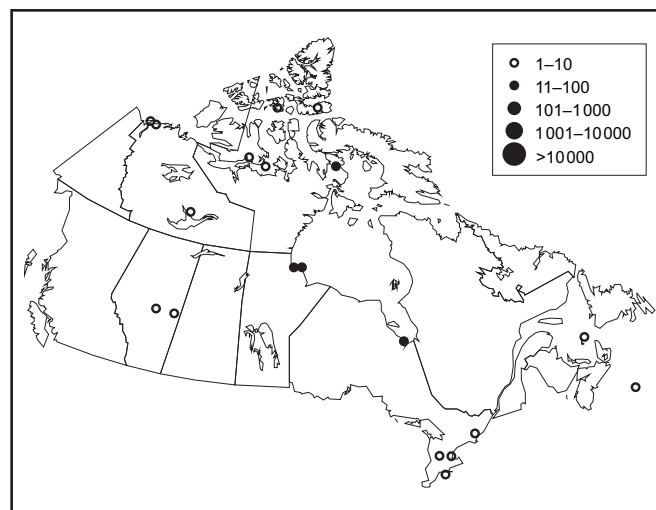
Encounter records: American Golden-Plover

1	0413-47654	U	U	05/09/48	near Mattawin, QC	46°??'N	72°??'W	
	LP	0	98	30/01/49	near Georgetown, Guyana	6°40'N	58°10'W	c. 4 642 km S21°E
2	0623-20509	L	U	13/07/60	Cambridge Bay, NU	69°00'N	105°00'W	
	LMT	0	0	??/03/62	Mt. Pleasant, TX	33°00'N	94°50'W	4 058 km S14°E
3	0623-23313	L	U	21/07/64	Churchill, MB	58°50'N	94°10'W	1 yr. 0 mo.
	JRJ	7	89	07/07/65	Churchill, MB	58°40'N	94°10'W	19 km S

Summary of banding statistics:
American Golden-Plover

	Age at banding		
	Hatch Year	After Hatch Year	All ages
<i>No. of Canadian bandings (1955–1995)</i>	201	51	264
<i>No. encountered per 1 000 banded (1955–1995)</i>			11
Total no. encountered (1921–1995)	3	0	4
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	12	–	12
No. of Canadian-banded birds moving >0 km	3	0	4
Mean movement >0 km of Canadian-banded birds (km)	1 365	–	2 184
Maximum movement from all encounters (km)	4 058	–	4 642
% recovered (encountered dead)	66	–	75
% direct recoveries	33	–	50
% encountered during banding operations	33	–	25

Banding effort: American Golden-Plover



Top banders: RDM, IB, RIGM, JRJ, DJTH

Common Ringed Plover (*Charadrius hiaticula*) 275.0

Encounters: Common Ringed Plover



The Common Ringed Plover is a bird primarily of northern Eurasia, but it breeds in Canada on portions of the Arctic islands bordering Baffin Bay, and also in parts of Greenland and Iceland. All North America breeders migrate across the North Atlantic, leap-frogging breeding populations of Britain and Ireland, which do not move far, to wintering areas in Spain and West Africa (Wernham et al. 2002).

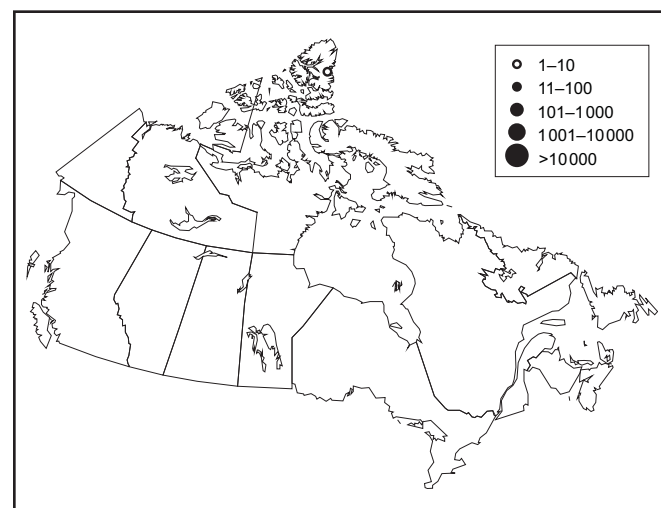
Only eight Common Ringed Plovers have been banded in Canada; seven of them were chicks. The sole encounter involving North America (record 1) was of a plover banded in England during May, long after local breeders have set up territories but at a typical date for birds migrating across the Atlantic. This bird was encountered six years later on its breeding grounds in the Canadian Arctic.

Encounter records: Common Ringed Plover

1	0000-21047	U	U	19/05/73	Bristol, England	51°30'N	2°40'W	6 yr. 2 mo.
		0	97	13/07/79	Flagler Bay, Ellesmere Island, NU	79°10'N	78°50'W	4 140 km N18°W

**Summary of banding statistics:
Common Ringed Plover**

	Age at banding		
	Hatch Year	After Hatch Year	All ages
<i>No. of Canadian bandings (1955–1995)</i>	7	1	8
<i>No. encountered per 1000 banded (1955–1995)</i>			0
Total no. encountered (1921–1995)	0	0	1
No. encountered from foreign bandings	0	0	1
Maximum period from banding to encounter (mo.)	–	–	74
No. of Canadian-banded birds moving >0 km	0	0	0
Mean movement >0 km of Canadian-banded birds (km)	–	–	–
Maximum movement from all encounters (km)	–	–	4040
% recovered (encountered dead)	–	–	100
% direct recoveries	–	–	0
% encountered during banding operations	–	–	0

Banding effort: Common Ringed Plover

Top banders: RIGM

Semipalmated Plover (*Charadrius semipalmatus*) 274.0

Encounters: Semipalmated Plover



Semipalmated Plovers breed in Canada chiefly north of the treeline from the Queen Charlotte Islands in British Columbia to the west coast of Hudson Bay and north to central Banks and Baffin islands, as well as on Arctic coastlines eastward to Newfoundland, Nova Scotia and the north shore of the Gulf of St. Lawrence. The species also breeds in Alaska. The wintering range includes coastlines from southern California and South Carolina south to Argentina and Chile.

Most long-distance records were of birds banded during fall migration at the south end of James Bay, where the most banding has taken place (see banding effort map). Long-distance encounters were typically of birds shot in the Antilles or northeastern South America

between 3 August and 24 September (e.g., records 1 and 2, the former bird reaching the Antilles 18 days after banding). However, the bird in record 3 was in Cuba in late October. There are no encounter records from November through March, presumably because the main wintering area is well into South America, where relatively few band encounters are reported for any species. One April encounter was of a plover that was probably on its way north (record 4).

The sole long-distance encounter involving the breeding range (record 5) was of a bird banded during spring migration through southern Ontario a month earlier. However, another Semipalmated Plover, reported to the banding office too late for inclusion in our analyses, was banded in Saskatchewan during fall

migration in 1991, and recaptured the next summer near Fish Island, in the outer Mackenzie River delta, Northwest Territories (C. Gratto-Trevor, pers. comm.).

Plovers from eastern Canada probably migrate along the Atlantic coast (record 3), and a high proportion of the James Bay and Great Lakes migrants may move to the Atlantic coast before continuing to the Caribbean (Nol and Blanken 1999). Nonetheless, there is broad front movement inland as well. Spring migration may follow a more inland route than fall movements (record 6), as has also been found in certain other shorebird species. Individual Semipalmated Plovers sometimes use the same migration route in different years (Nol and Blanken 1999), as illustrated by the bird in record 7, recaptured in August at the same location as where banded in its first fall two years earlier. The bird in record 8 may have followed different routes in different years, but it is also possible

that birds stopping over on James Bay move through Îles de la Madeleine on their way to the Atlantic Coast. The latter bird, which must be at least eight years old, is the oldest in this data set, slightly short of the current age record of nine years (Klimkiewicz 2008).

Several records involve birds headed the wrong way on migration. The plover in record 9 headed north in fall from Îles de la Madeleine to Newfoundland, where it struck or was struck by a moving aircraft. The bird caught by hand in the Azores (record 10) is literally unprecedented, as it was the first record in the western Palearctic (Cramp and Simmons 1983).

A banding study of Semipalmated Plovers at Churchill, Manitoba, indicated that about 60% of males returned to the same nesting area, while females were more likely to disperse. Only a few chicks returned to breed in their natal area (<2%; Flynn et al. 1999).

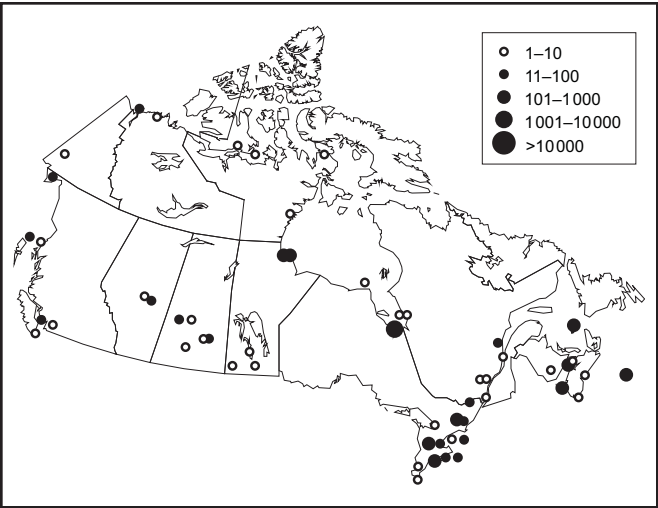
Encounter records: Semipalmated Plover

1	0801-61015	HY	U	03/08/77	17 km northeast of Moosonee, ON	51°20'N	80°20'W	18 dy.
	RIGM	5	1	22/08/77	Habitation Cocotte, St. Lucia	14°30'N	60°50'W	4 456 km S30°E
2	0811-26989	AHY	U	29/07/81	17 km northeast of Moosonee, ON	51°20'N	80°20'W	2 mo.
	RIGM	3	1	16/09/81	Cayenne, French Guiana	4°50'N	52°20'W	5 790 km S36°E
3	8011-47259	HY	U	25/10/92	Cayo Coco, Cuba	22°30'N	78°30'W	1 yr. 8 mo.
	AG	7	89	28/06/94	Îles de la Madeleine, QC	47°10'N	61°50'W	3 125 km N24°E
4	0801-38475	AHY	U	08/06/78	17 km northeast of Moosonee, ON	51°20'N	80°20'W	2 yr. 10 mo.
	RIGM	5	1	08/04/81	southeast of New Amsterdam, Guyana	6°10'N	57°20'W	5 458 km S31°E
5	0221-26402	AHY	U	19/05/58	Brighton, ON	44°00'N	77°40'W	1 mo.
	RB	0	1	23/06/58	Repulse Bay, NU	66°30'N	86°20'W	2 559 km N9°W
6	1051-38641	AHY	U	27/04/68	Ellingwood, KS	38°20'N	98°30'W	4 mo.
	EFM	3	16	01/08/68	15 km southwest of Schuler, AB	50°10'N	110°20'W	1 616 km N32°W
7	0801-61207	HY	U	12/08/77	17 km northeast of Moosonee, ON	51°20'N	80°20'W	2 yr. 0 mo.
	RIGM	8	99	03/08/79	17 km northeast of Moosonee, ON	51°20'N	80°20'W	0 km
8	1091-28278	AHY	U	20/08/72	Îles de la Madeleine, QC	47°20'N	61°50'W	7 yr. 0 mo.
	RM	7	89	09/08/79	17 km northeast of Moosonee, ON	51°20'N	80°20'W	1 409 km N65°W
9	0701-38194	SY	U	05/08/71	Îles de la Madeleine, QC	47°20'N	61°50'W	25 dy.
	RM	5	39	30/08/71	near Quidi Vidi Lake, NL	47°30'N	52°40'W	690 km N85°E
10	1041-84883	SY	U	24/07/72	Îles de la Madeleine, QC	47°20'N	61°50'W	2 mo.
	RM	4	28	23/09/72	Azores Islands, Portugal	36°50'N	25°00'W	3 224 km S82°E

Summary of banding statistics:
Semipalmated Plover

	Age at banding		
	Hatch Year	After Hatch Year	All ages
No. of Canadian bandings (1955–1995)	1 606	2 055	3 946
No. encountered per 1 000 banded (1955–1995)			3
Total no. encountered (1921–1995)	4	13	17
No. encountered from foreign bandings	1	1	2
Maximum period from banding to encounter (mo.)	24	84	84
No. of Canadian-banded birds moving >0 km	2	11	13
Mean movement >0 km of Canadian-banded birds (km)	2 250	2 776	2 695
Maximum movement from all encounters (km)	4 456	5 849	5 849
% recovered (encountered dead)	25	69	58
% direct recoveries	50	46	47
% encountered during banding operations	75	30	41

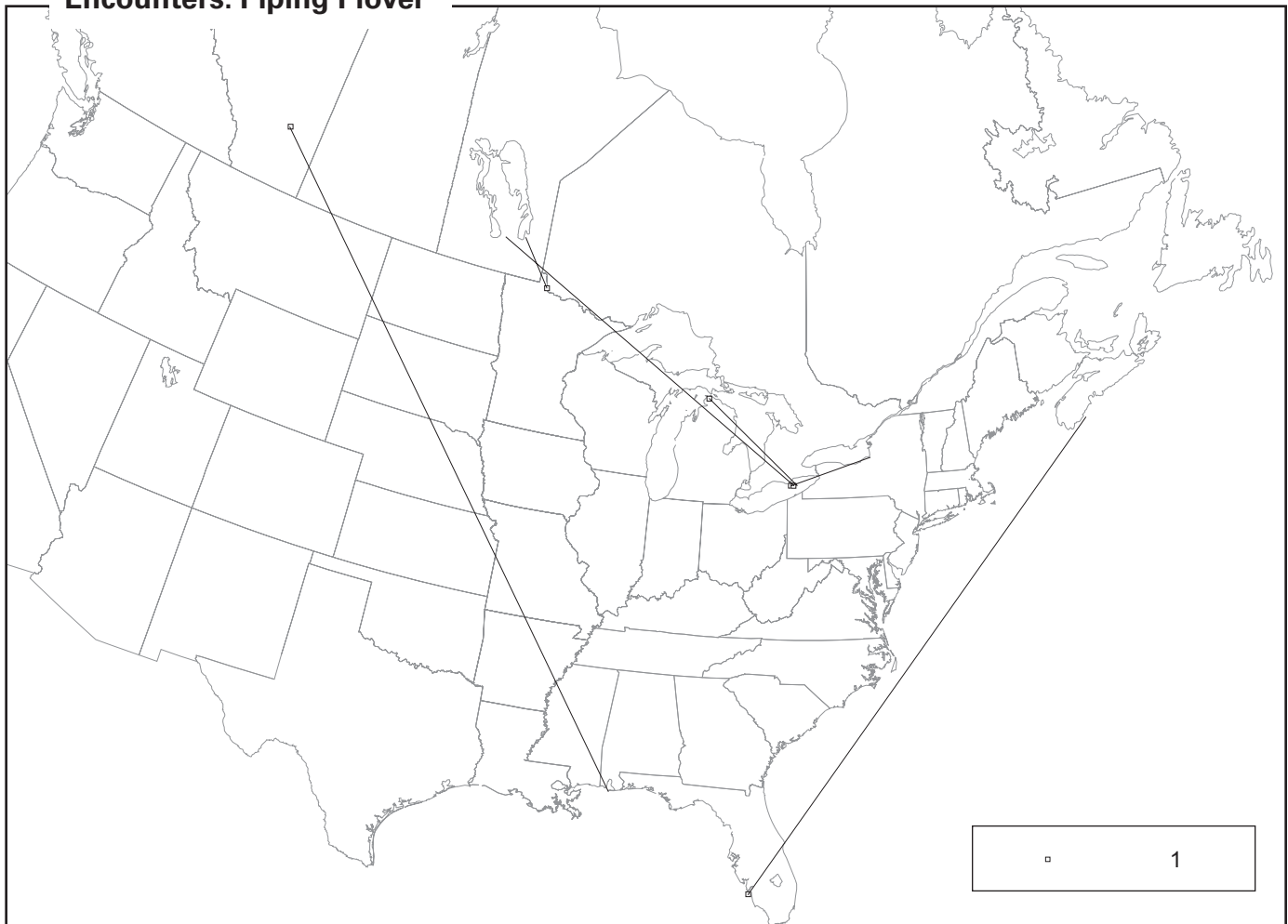
Banding effort: Semipalmated Plover



Top banders: RIGM, RM, EN, LPBO, CWS-NB

Piping Plover (*Charadrius melodus*) 277.0

Encounters: Piping Plover



This plover breeds on coastlines of the Maritime provinces and the Gulf of St. Lawrence, and in southern portions of the Prairie provinces, as well as southward from both these areas into the United States. The wintering area is mainly along coasts of the southeastern United States and Gulf of Mexico, but reaches into Mexico and the Caribbean.

Relatively little banding took place in Canada prior to the 1970s, at which time it was realized that populations were declining. The species has since been designated as Endangered, so additional banding is now restricted to authorized research.

Evidence of movement patterns from this data set is sketchy, due to the paucity of encounters. Extensive work in recent years, including a lot of colour-marking,

indicates that birds from the Canadian Prairie provinces overwhelmingly winter on the Texas coast (C. Gratto-Trevor, pers. comm.), with a few encountered farther eastward on the Gulf Coast (e.g., record 1). Piping Plovers from the Maritimes migrate coastally and probably winter primarily in the eastern portion of the wintering range (record 2; C. Gratto-Trevor, pers. comm.).

Several records indicate breeding site fidelity (e.g., record 3); however, the bird in record 4 may have attempted to breed in different locations in different years. Some birds banded as chicks also returned to the same area to breed (record 5, a bird observed at a nest as an adult), while others moved farther afield, such as the birds in records 6 and 7. The bird in record 4

is the oldest of the plovers in this data set, although the maximum age recorded by the banding office is 14 years (Clapp et al. 1982, Klimkiewicz 2008).

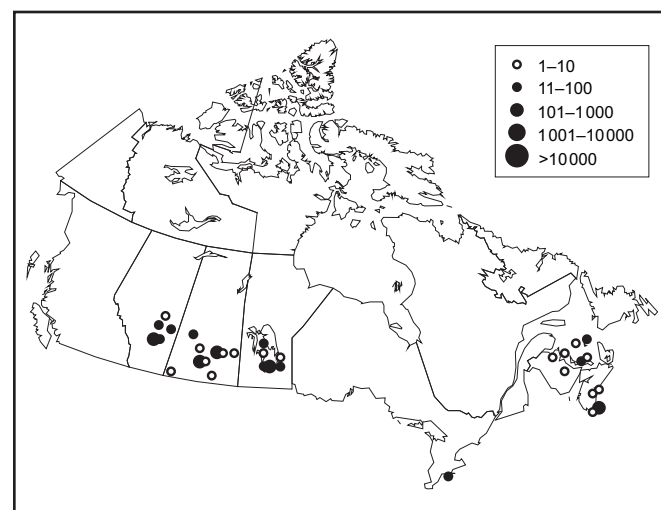
Encounter records: Piping Plover

1	0971-79586	U	U	05/11/85	Dauphin Island, AL	30°10'N	88°00'W	1 yr. 7 mo.
	GB	7	33	03/06/87	14 km northeast of Dorothy, AB	51°20'N	112°00'W	3 078 km N33°W
2	0761-51301	AHY	U	20/05/75	White Point Beach, NS	43°50'N	64°40'W	1 yr. 9 mo.
	RIGM	7	52	11/02/77	Sanibel Island, FL	26°20'N	82°00'W	2 497 km S44°W
3	0761-51303	AHY	U	22/05/75	White Point Beach, NS	43°50'N	64°40'W	1 yr. 1 mo.
	RIGM	7	33	19/06/76	White Point Beach, NS	43°50'N	64°40'W	0 km
4	0701-37304	AHY	U	19/07/69	Long Point, ON	42°30'N	80°00'W	6 yr.11 mo.
	LPBO	8	89	02/06/76	Gull Island, MI	45°40'N	84°50'W	523 km N46°W
5	0761-51312	L	U	06/06/75	White Point Beach, NS	43°50'N	64°40'W	1 yr. 1 mo.
	RIGM	7	33	08/07/76	White Point Beach, NS	43°50'N	64°50'W	13 km N90°W
6	0861-04959	L	U	28/07/86	Belair, MB	50°30'N	96°30'W	1 yr. 11 mo.
	CMN	7	89	21/06/88	Rosseau, MN	48°50'N	94°40'W	228 km S36°E
7	0921-31709	L	U	12/06/85	7 km west of East Shoal Lake, MB	50°20'N	97°40'W	2 mo.
	JVP	7	89	14/08/85	Long Point, ON	42°30'N	80°10'W	1 595 km S64°E

Summary of banding statistics: Piping Plover

	Age at banding		
	Hatch Year	After Hatch Year	All ages
<i>No. of Canadian bandings (1955–1995)</i>	891	184	1 077
<i>No. encountered per 1 000 banded (1955–1995)</i>			10
Total no. encountered (1921–1995)	7	5	13
No. encountered from foreign bandings	1	0	2
Maximum period from banding to encounter (mo.)	24	83	83
No. of Canadian-banded birds moving >0 km	5	2	7
Mean movement >0 km of Canadian-banded birds (km)	378	1 509	701
Maximum movement from all encounters (km)	1 595	2 497	3 078
% recovered (encountered dead)	28	0	15
% direct recoveries	42	0	23
% encountered during banding operations	57	40	46

Banding effort: Piping Plover



Top banders: DWRS, WCH, RIGM, EK, LPBO

Killdeer (*Charadrius vociferous*) 273.0

Encounters: Killdeer



The Killdeer breeds commonly across much of southern and central Canada south of the treeline, and throughout the United States, northern Mexico and the Caribbean. The wintering range includes southern British Columbia and most of the United States, extending south through Central America and the West Indies to western Ecuador and northern Venezuela.

Canadian breeders are mostly migratory, and there is some evidence that birds may move around within the winter range in response to winter weather

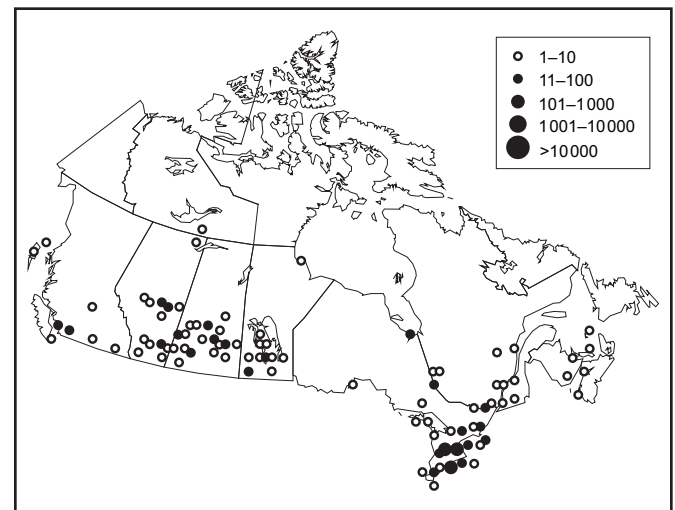
(Jackson and Jackson 2000). Killdeer from western Canada have a southeasterly component to their autumn migration (records 1 and 2), while birds from eastern populations move more directly south (records 3 and 4). Several studies have shown a remarkable degree of breeding site fidelity; successive nests are often within 100 m of previous sites (record 5 and others; Jackson and Jackson 2000). The bird in record 3 is the oldest in this data set, but a nearly 11-year-old has been documented elsewhere (Clapp et al. 1982, Klimkiewicz 2008).

Encounter records: Killdeer

1	0022-89342	J	U	17/06/33	Travers Dam, AB	50°10'N	112°40'W	4 mo.
	JEH	0	1	22/10/33	Belvue, KS	39°10'N	96°10'W	1 783 km S53°E
2	0023-73979	J	U	27/06/33	Regina Beach, SK	50°40'N	104°50'W	2 yr. 7 mo.
	FGB	00 01		05/01/36	Arnaudville, LA	30°20'N	91°50'W	2 508 km S30°E
3	0862-94123	HY	U	09/08/83	Mountsberg, ON	43°20'N	80°00'W	4 yr. 7 mo.
	ADB	5	0	24/03/88	Wildie, KY	37°20'N	84°10'W	755 km S29°W
4	0542-04878	L	U	17/06/75	Toronto Island, ON	43°30'N	79°20'W	1 yr. 7 mo.
	INSS	5	0	23/01/77	Miami, FL	25°40'N	80°10'W	1 987 km S 2°W
5	0403-00067	AHY	F	08/06/45	Hampstead, QC	45°30'N	73°30'W	3 yr. 0 mo.
	JT	0	99	13/06/48	Hampstead, QC	45°30'N	73°30'W	0 km

Summary of banding statistics: Killdeer

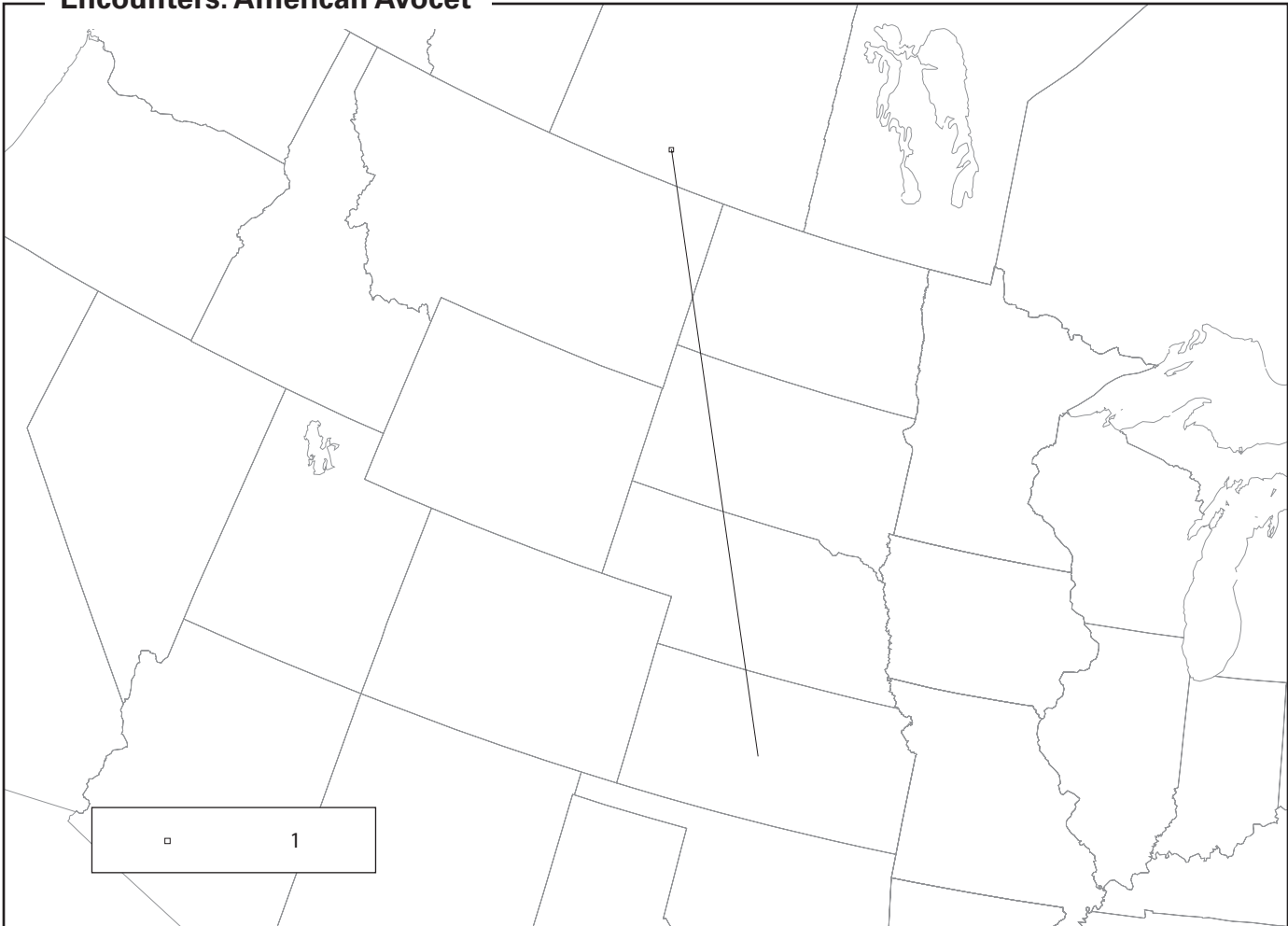
	Age at banding		
	Hatch Year	After Hatch Year	All ages
<i>No. of Canadian bandings (1955–1995)</i>	1 487	324	1 952
<i>No. encountered per 1 000 banded (1955–1995)</i>			2
Total no. encountered (1921–1995)	7	3	11
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	55	36	55
No. of Canadian-banded birds moving >0 km	5	0	6
Mean movement >0 km of Canadian-banded birds (km)	1 409	–	1 177
Maximum movement from all encounters (km)	2 508	0	2 508
% recovered (encountered dead)	100	0	72
% direct recoveries	42	0	27
% encountered during banding operations	0	100	27

Banding effort: Killdeer

Top banders: ADB, LPBO, DRL, ASa, CSH

American Avocet (*Recurvirostra americana*) 225.0

Encounters: American Avocet



The American Avocet breeds in the southern Prairie provinces of Canada, and in various parts of the U.S. West. The wintering range includes coastline from central California and South Carolina south to Costa Rica, as well as inland portions of Mexico.

Migratory patterns are poorly known and may vary among years. There is evidence of breeding site fidelity, but few avocets banded as chicks return to the natal area (Robinson et al. 1997).

Most avocets banded in Canada were Hatch Year birds (see summary of banding statistics). One of the few After Hatch Year birds banded became the only long-distance encounter in this data set (record 1). This bird was found dead on a highway in Saskatchewan during the breeding season, after being banded in Kansas during fall migration nearly eight years earlier (record 1).

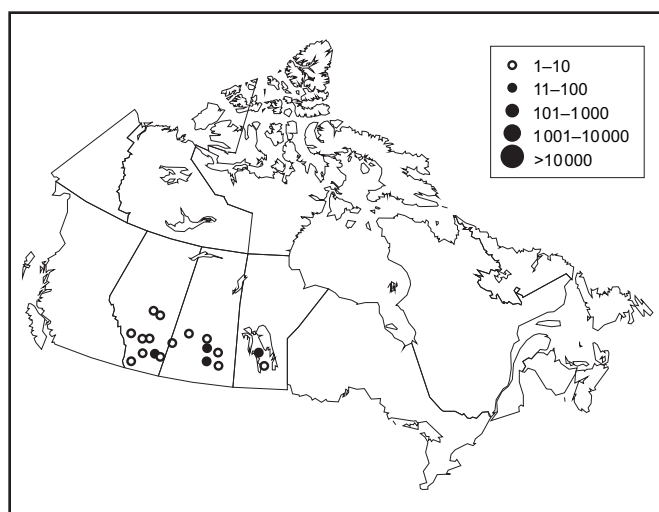
The current record for American Avocet is 14 years (Klimkiewicz 2008).

Encounter records: American Avocet

1	0704-91561	AHY	F	07/09/77	Cheyenne Bottoms, KS	38°20'N	98°40'W	7 yr. 9 mo.
	EFM	5	45	26/06/85	11 km north of Limerick, SK	49°40'N	106°10'W	1 396 km N23°W

**Summary of banding statistics:
American Avocet**

	Age at banding		
	Hatch Year	After Hatch Year	All ages
<i>No. of Canadian bandings (1955–1995)</i>	195	5	207
<i>No. encountered per 1 000 banded (1955–1995)</i>			4
Total no. encountered (1921–1995)	0	1	2
No. encountered from foreign bandings	0	1	1
Maximum period from banding to encounter (mo.)	–	93	93
No. of Canadian-banded birds moving >0 km	0	0	1
Mean movement >0 km of Canadian-banded birds (km)	–	–	18
Maximum movement from all encounters (km)	–	1 396	1 396
% recovered (encountered dead)	–	100	100
% direct recoveries	–	0	50
% encountered during banding operations	–	0	0

Banding effort: American Avocet

Top banders: LS, CLGT, MAC, DRH, JWH

Greater Yellowlegs (*Tringa melanoleuca*) 254.0

Encounters: Greater Yellowlegs



The Greater Yellowlegs is a boreal breeder from central British Columbia across the northern Prairie provinces and Ontario, and through central Quebec, Labrador and Newfoundland. In the United States, the species breeds in southern Alaska. The wintering area includes U.S. coastlines and much of Texas, Mexico and the Caribbean, with some birds wintering as far south as Tierra del Fuego.

While this species appears not to follow completely different migration routes in fall and spring, there is nonetheless a noticeable shift in concentration during spring towards more inland portions of the flight path (Elphick and Tibbetts 1998). The few band encounters involving Canada provide little insight into

this question. Record 1 documents a bird banded on fall migration in Alberta and encountered in North Carolina during winter. The bird in record 2 was also reported in winter — from northern Ohio, where it would be most unexpected at that time of year — but the number of the band was reported with no details on when it was found, and the bird may have been long dead. Two birds encountered during the breeding season, one in Quebec (record 3) and one in Manitoba (record 4), were first banded during earlier fall migrations.

Some Greater Yellowlegs, primarily yearlings, remain within the wintering area during the breeding season. While some individuals are known to return to within a few kilometres of previous nesting sites,

there is no evidence of strong site fidelity (Elphick and Tibbetts 1998). The bird in record 5, shot at an unknown date during the hunting season, may be the

oldest Greater Yellowlegs on record, but is not officially listed by Klimkiewicz (2008), presumably because of the inexact date of recovery.

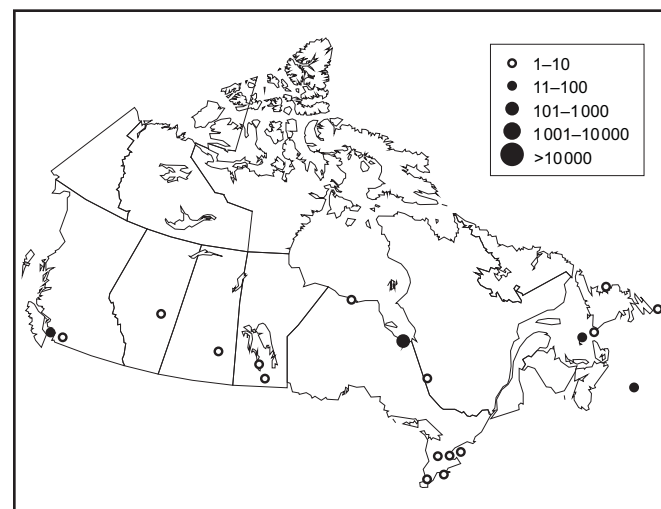
Encounter records: Greater Yellowlegs

1	0445-03796	AHY	M	04/09/48	8 km northeast of Brosseau, AB	53°50'N	111°30'W	
	DUC	0	1	??/WI/50	inexact location, NC	35°??'N	76°??'W	c. 3 386 km S67°E
2	0363-54498	AHY	U	31/10/37	Wellington, ON	43°50'N	77°20'W	
	DM	0	98	23/01/39	Sandusky, OH	41°30'N	82°40'W	508 km S61°W
3	0024-52873	U	U	07/10/35	Great Pond, MA	41°50'N	69°50'W	2 yr. 7 mo.
	OLA	0	1	11/05/38	Îles de Mingan, QC	50°10'N	64°00'W	1 031 km N24°E
4	0474-11323	U	U	28/08/49	Delta, MB	50°10'N	98°10'W	1 yr. 9 mo.
	ASH	0	4	17/05/51	Lake Lawford, MB	54°30'N	96°40'W	493 km N11°E
5	1363-27134	HY	U	16/08/83	Îles de la Madeleine, QC	47°20'N	61°50'W	6 yr. ? mo.
	CWSQR	5	1	??/HS/89	Îles de la Madeleine, QC	47°20'N	61°40'W	13 km N90°E

Summary of banding statistics: Greater Yellowlegs

	Age at banding		
	Hatch Year	After Hatch Year	All ages
No. of Canadian bandings (1955–1995)	91	216	334
No. encountered per 1 000 banded (1955–1995)			2
Total no. encountered (1921–1995)	1	2	5
No. encountered from foreign bandings	0	0	1
Maximum period from banding to encounter (mo.)	—	—	31
No. of Canadian-banded birds moving >0 km	1	2	4
Mean movement >0 km of Canadian-banded birds (km)	12	1 946	1 099
Maximum movement from all encounters (km)	12	3 386	3 386
% recovered (encountered dead)	100	100	100
% direct recoveries	0	0	0
% encountered during banding operations	0	0	0

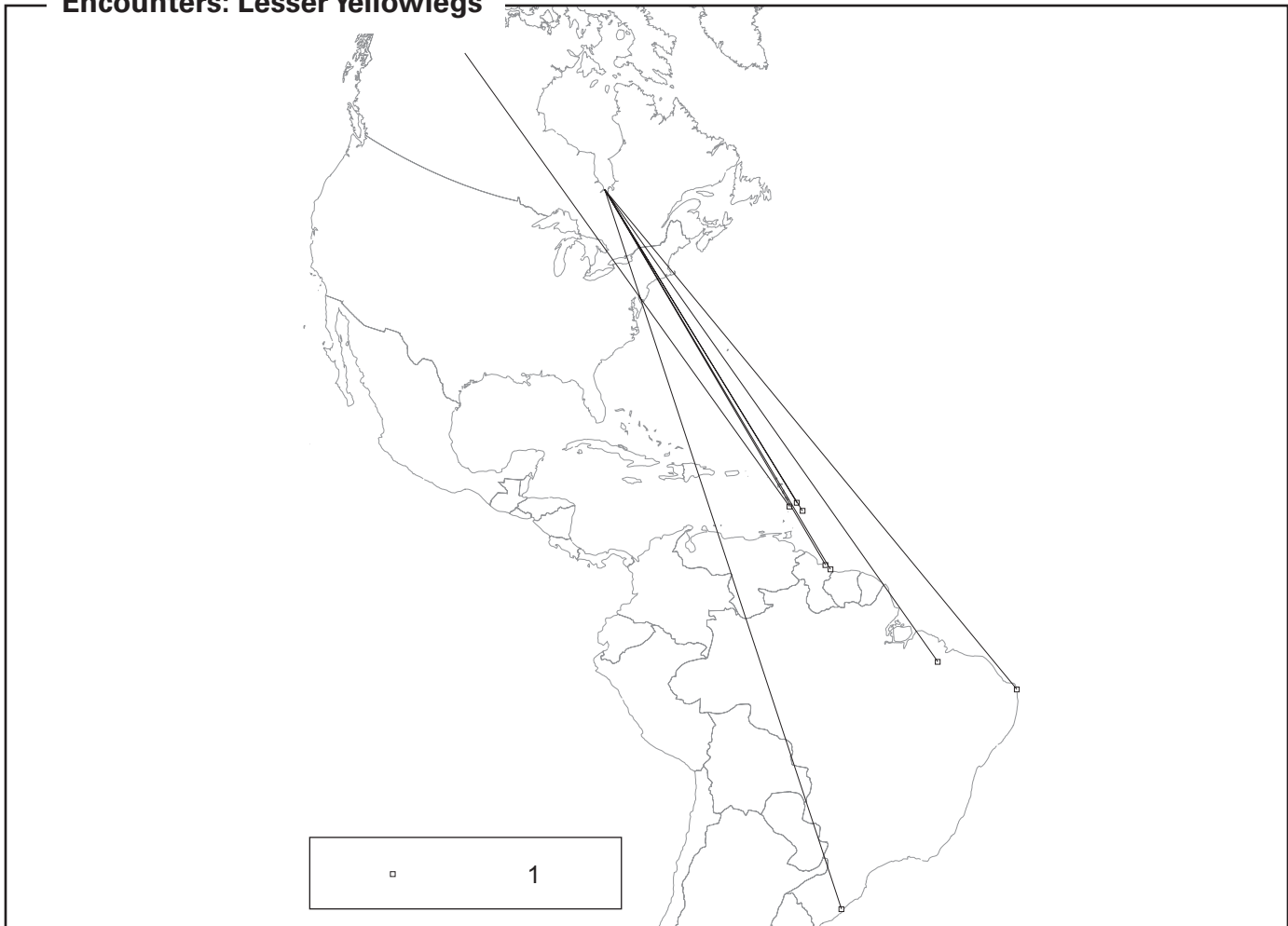
Banding effort: Greater Yellowlegs



Top banders: RIGM, RM, CWS-QC, LMT, RWC

Lesser Yellowlegs (*Tringa flavipes*) 255.0

Encounters: Lesser Yellowlegs



Lesser Yellowlegs breeding range includes Yukon and much of Northwest Territories southward through the northern portions of British Columbia and the Prairie provinces, as well as areas bordering the southern half of Hudson Bay. The species also breeds in Alaska. Lesser Yellowlegs winter along the south coasts of the United States, and throughout Mexico, Central America, the Caribbean and south to southern Chile and Argentina.

All encounters involved birds banded since 1970, and nearly all were long-distance records. Only one case involved banding on the breeding grounds (record 1); all others were of birds banded during fall migration. Several Lesser Yellowlegs banded during migration at James Bay were encountered later in the fall in the eastern Caribbean and Guyana (including

records 2 and 3), and these birds may still have been migrating. One of these, the bird in record 3, moved 4 661 km in just under a month. A bird found in Brazil in November (record 4) may have reached its wintering area, as other yellowlegs have been encountered in Brazil during December–February (records 5 and 6).

Many yellowlegs first breed at two years old, and non-breeders sometimes summer within the winter or migration range (Tibbetts and Moskoff 1999). Returning breeders are faithful to a general region, but often nest kilometers away from previous nest sites. The bird in record 4 had the longest period between banding and encounter in this data set, and was close in age to the oldest Lesser Yellowlegs on record with the Bird Banding Office (Clapp et al. 1982, Klimkiewicz 2008).

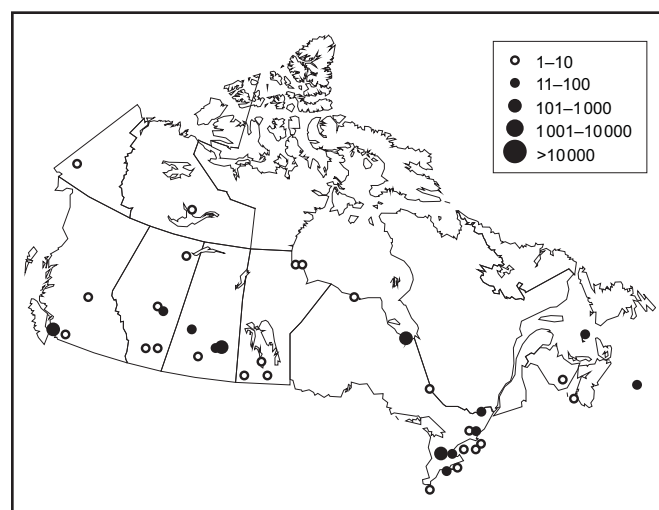
Encounter records: Lesser Yellowlegs

1	0912-57019	AHY	U	28/05/85	Yellowknife, NT	62°20'N	114°20'W	1 yr. 3 mo.
	CWSPNR	5	1	05/08/86	Vieux Fort, St. Lucia	13°40'N	60°50'W	6 843 km S63°E
2	0802-02337	HY	U	05/08/77	17 km northeast of Moosonee, ON	51°20'N	80°20'W	4 yr. 1 mo.
	RIGM	5	4	20/09/81	New Amsterdam, Guyana	6°10'N	57°10'W	5 464 km S31°E
3	0802-08151	HY	U	29/07/79	17 km northeast of Moosonee, ON	51°20'N	80°20'W	27 d.
	RIGM	3	1	25/08/79	Fitts Village, Barbados	13°00'N	59°30'W	4 661 km S31°E
4	0802-08885	HY	U	01/08/80	17 km northeast of Moosonee, ON	51°20'N	80°20'W	4 yr. 3 mo.
	RIGM	5	1	??/11/84	Santa Inês, Brazil	3°40'S	45°20'W	6 964 km S40°E
5	0802-50577	AHY	U	13/08/81	17 km northeast of Moosonee, ON	51°20'N	80°20'W	1 yr. 4 mo.
	RIGM	5	1	??/12/82	Natal, Brazil	5°40'S	35°10'W	7 661 km S49°E
6	0802-08872	HY	U	29/07/80	17 km northeast of Moosonee, ON	51°20'N	80°20'W	7 mo.
	RIGM	5	0	22/02/81	Porto Alegre, Brazil	30°10'S	50°30'W	9 532 km S26°E

Summary of banding statistics:
Lesser Yellowlegs

	Age at banding		
	Hatch Year	After Hatch Year	All ages
<i>No. of Canadian bandings (1955–1995)</i>	767	690	1 728
<i>No. encountered per 1 000 banded (1955–1995)</i>			6
Total no. encountered (1921–1995)	6	3	11
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	51	16	51
No. of Canadian-banded birds moving >0 km	5	3	10
Mean movement >0 km of Canadian-banded birds (km)	6 217	6 632	5 107
Maximum movement from all encounters (km)	9 532	7 661	9 532
% recovered (encountered dead)	100	100	100
% direct recoveries	50	33	54
% encountered during banding operations	0	0	0

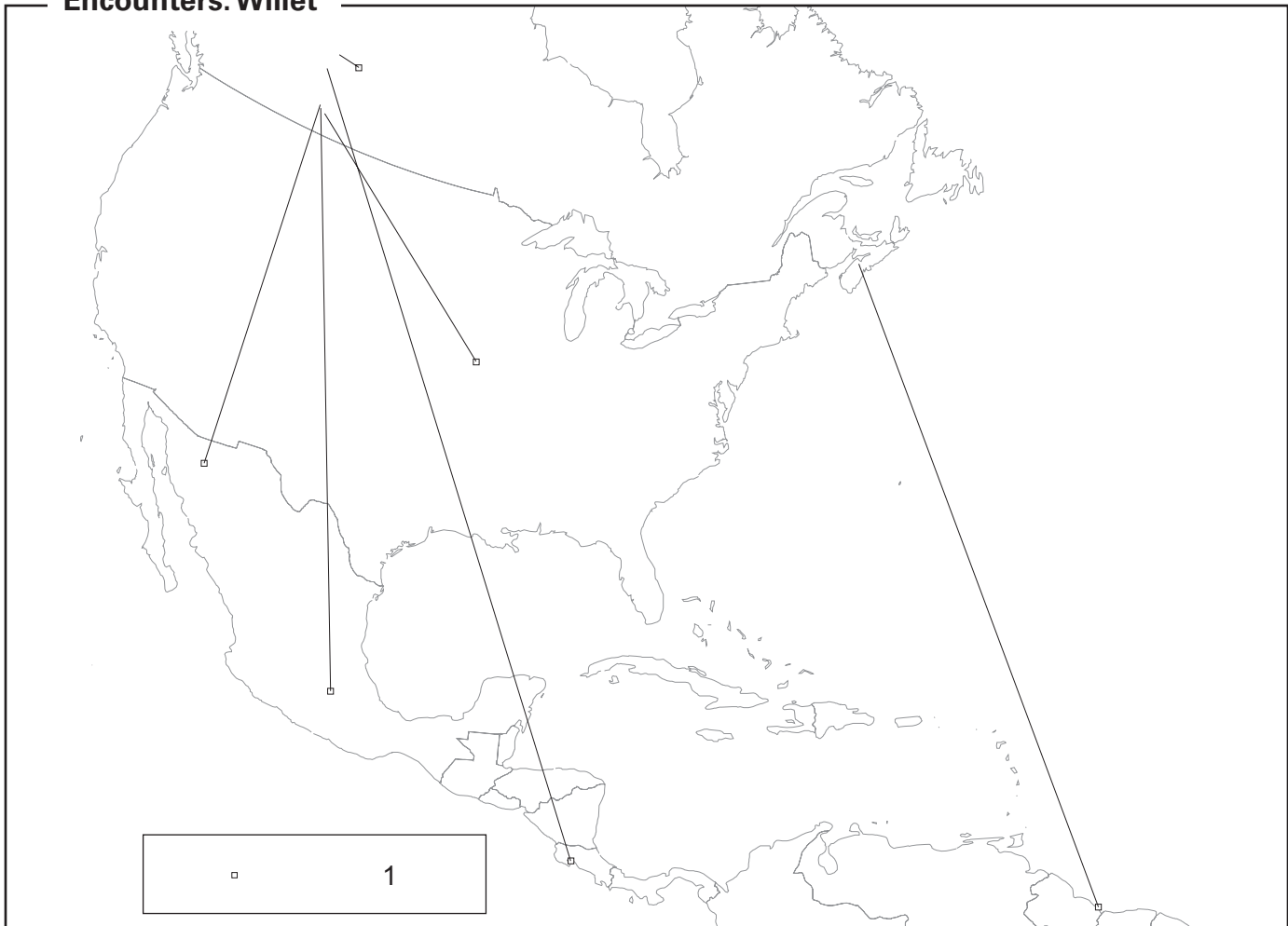
Banding effort: Lesser Yellowlegs



Top banders: RIGM, HLD, RM, ADB, CWS-BC

Willet (*Tringa semipalmata*) 258.0

Encounters: Willet



In the west, the Willet breeds locally in central Alberta, southern Saskatchewan and Manitoba, as well as in parts of the U.S. west. In eastern Canada, it breeds along the Maritimes coast and patchily along the U.S. Atlantic and Gulf coasts. Wintering areas include coasts from California and Virginia south to central Chile and northern Brazil.

Most banding of Willets is of the western subspecies (*T. s. inornatus*), in the Prairie provinces (see effort map). Accordingly, most band encounter records involve birds banded in this region. Western birds migrate along inland routes, as indicated by records 1–4. Lowther et al. (2001) also report a sighting in Galveston, Texas, of a juvenile banded in Saskatchewan two and a half weeks earlier. The bird

in record 4 is remarkable since the Federal District of Mexico is 250 km from the nearest coast and averages over 2 500 m above sea level. The report contained no specific information, and it is always possible that the bird was recovered elsewhere; however, there were two previous records in the District, in September and October (S. Webb, pers. comm.). A few Willets colour-marked in southern Alberta have been sighted in the Baja California region of Mexico (C. Gratto-Trevor, pers. comm.).

Willets from eastern Canada (*T. s. semipalmatus*) are coastal or transoceanic migrants, and winter in eastern portions of the winter range (record 5; Lowther et al. 2001).

Breeding usually begins at age two or three, and non-breeders may spend their first summers within the winter or migration range. The bird in record 6 (the oldest in this data set) moved 145 km from its

presumed hatch location to its breeding site. Once breeding, adults tend to return to the same general area (Lowther et al. 2001). The age record for the species is 10 years and 3 months (Klimkiewicz 2008).

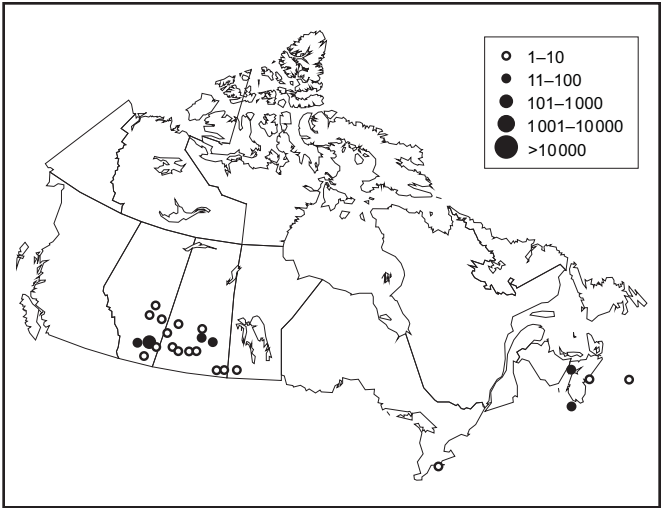
Encounter records: Willet

1	0545-28309	AHY	U	07/08/60	Cassils, AB	50°30'N	112°00'W	9 mo.
	RW	0	1	10/05/61	Sonora State, Mexico	30°00'N	110°00'W	c. 2 288 km S5°E
2	0344-04684	J	U	10/07/38	Bashaw, AB	52°30'N	112°50'W	3 mo.
	GPI	0	1	??/10/38	Region of Golfo de Nicoya, Costa Rica	10°??'N	85°??'W	c. 5 281 km S38°E
3	0024-35411	J	U	06/07/32	Alderson, AB	50°10'N	111°20'W	2 mo.
	JEH	0	0	FT/09/32	Hamilton, MO	39°40'N	94°00'W	1 790 km S56°E
4	0545-16074	L	U	08/07/57	Lake Newell, AB	50°20'N	111°50'W	
	JWH	0	98	29/03/59	Federal District, Mexico	19°20'N	99°00'W	c. 3 633 km S23°E
5	0594-75027	L	U	05/07/76	Wolfville, NS	45°00'N	64°20'W	
	RIGM	14	4	??/SP/78	New Amsterdam, Guyana	6°10'N	57°10'W	4 378 km S11°E
6	0375-15585	HY	U	09/07/37	Mundare, AB	53°30'N	112°20'W	2 yr.
	HEM	0	1	??/07/39	near St. Ives Lake, AB	53°20'N	110°10'W	145 km S84°E

Summary of banding statistics: Willet

	Age at banding		
	Hatch Year	After Hatch Year	All ages
No. of Canadian bandings (1955–1995)	128	75	236
No. encountered per 1 000 banded (1955–1995)			16
Total no. encountered (1921–1995)	6	1	8
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	24	9	24
No. of Canadian-banded birds moving >0 km	5	1	6
Mean movement >0 km of Canadian-banded birds (km)	3 045	c. 2 288	2 919
Maximum movement from all encounters (km)	c. 5 281	c. 2 288	c. 5 281
% recovered (encountered dead)	83	100	87
% direct recoveries	50	0	50
% encountered during banding operations	0	0	0

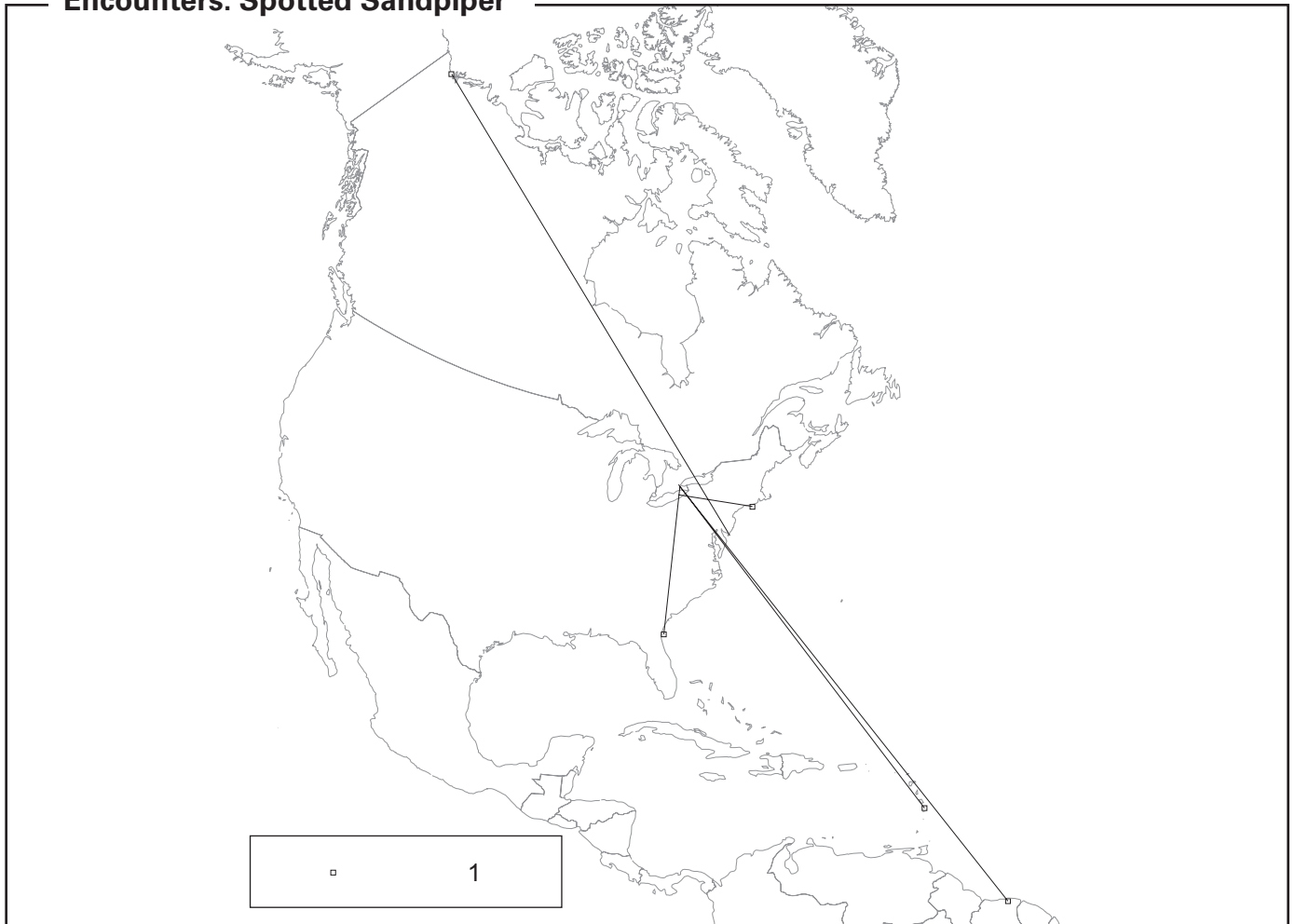
Banding effort: Willet



Top banders: CLGT, RW, HLD, MAC, RIGM

Spotted Sandpiper (*Actitis macularius*) 263.0

Encounters: Spotted Sandpiper



Spotted Sandpipers breed throughout Canada south of the treeline, as well as in Alaska and the northern two-thirds of the United States. The broad wintering area includes the Pacific coast south of southern British Columbia, the southern margin of the United States, all Caribbean islands, Central America, and South America as far as northern Chile, Argentina and Uruguay.

Given the broad range of this species in all seasons, and its status as a broad-front migrant (Oring et al. 1997), one might guess that individuals from western populations would migrate towards Mexico through the western part of the continent. However, there are no banding records to support this. In fact, the bird in record 1, banded during fall migration on the east coast, was encountered at the extreme northern

limit of the breeding range, close to the Alaskan border. Similarly, Oring et al. (1997) report on a bird banded as a breeder in Minnesota and seen in September in Guyana. The other long-distance encounters in the data set for this volume involved Spotted Sandpipers banded in the Great Lakes during fall migration (records 2–5). One of these birds (record 2) moved to the coast before presumably turning south. While there are no mid-winter encounters (December through February), the bird in Suriname in late November (record 4) may have been close to its wintering area. There is only one encounter from spring migration (record 5).

Females are known to winter farther north than males (Oring et al. 1997), but this was learned from museum specimens, as most birds banded could not be sexed in the hand.

Several banding records indicate that adults return to the same breeding site in subsequent seasons. A few other records suggest a degree of natal philopatry as well (returning to the natal area to breed), including

the bird in record 6. The latter is the oldest bird in this data set, but the oldest reported anywhere is nine years (Klimkiewicz 2008).

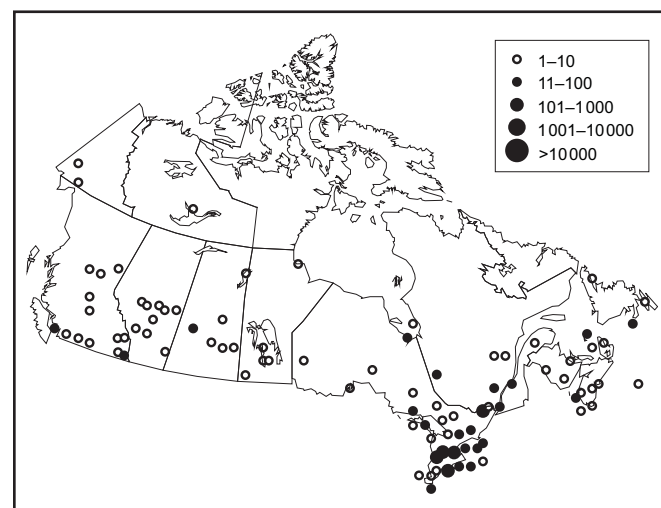
Encounter records: Spotted Sandpiper

1	0321-40043	U	U	20/08/66	Avalon, NJ	39°00'N	74°40'W	2 yr. 11 mo.
	RDB	5	1	??/07/69	46 km southwest of Richard, NT	68°50'N	136°20'W	4 892 km N27°W
2	1051-57238	HY	U	01/08/67	Long Point, ON	42°30'N	80°00'W	9 dy.
	LPBO	7	89	09/08/67	Great Gull Island, NY	41°10'N	72°00'W	680 km S80°E
3	0991-17609	HY	U	02/09/89	Mountsberg, ON	43°20'N	80°00'W	1 mo.
	ADB	3	0	15/10/89	Grand Anse Beach, St. Lucia	14°00'N	60°50'W	3 743 km S35°E
4	0221-28055	AHY	U	18/07/58	Hamilton, ON	43°10'N	79°50'W	4 mo.
	LAG	0	3	27/11/58	Paramaribo, Suriname	5°40'N	55°00'W	4 834 km S37°E
5	0271-40336	HY	U	20/07/63	Hamilton, ON	43°10'N	79°50'W	2 yr. 9 mo.
	JBM	3	0	22/04/66	Little Cumberland Island, GA	30°50'N	81°20'W	1 379 km S6°W
6	1231-05225	HY	U	27/08/79	Mountsberg, ON	43°20'N	80°00'W	3 yr. 11 mo.
	ASa	8	99	26/07/83	Mountsberg, ON	43°20'N	80°00'W	0 km

Summary of banding statistics: Spotted Sandpiper

	Age at banding		
	Hatch Year	After Hatch Year	All ages
<i>No. of Canadian bandings (1955–1995)</i>	1 439	1 214	2 774
<i>No. encountered per 1 000 banded (1955–1995)</i>			2
Total no. encountered (1921–1995)	10	9	20
No. encountered from foreign bandings	0	0	1
Maximum period from banding to encounter (mo.)	47	24	47
No. of Canadian-banded birds moving >0 km	6	1	7
Mean movement >0 km of Canadian-banded birds (km)	977	4 834	1 528
Maximum movement from all encounters (km)	3 743	4 834	4 892
% recovered (encountered dead)	60	11	40
% direct recoveries	40	11	25
% encountered during banding operations	40	77	55

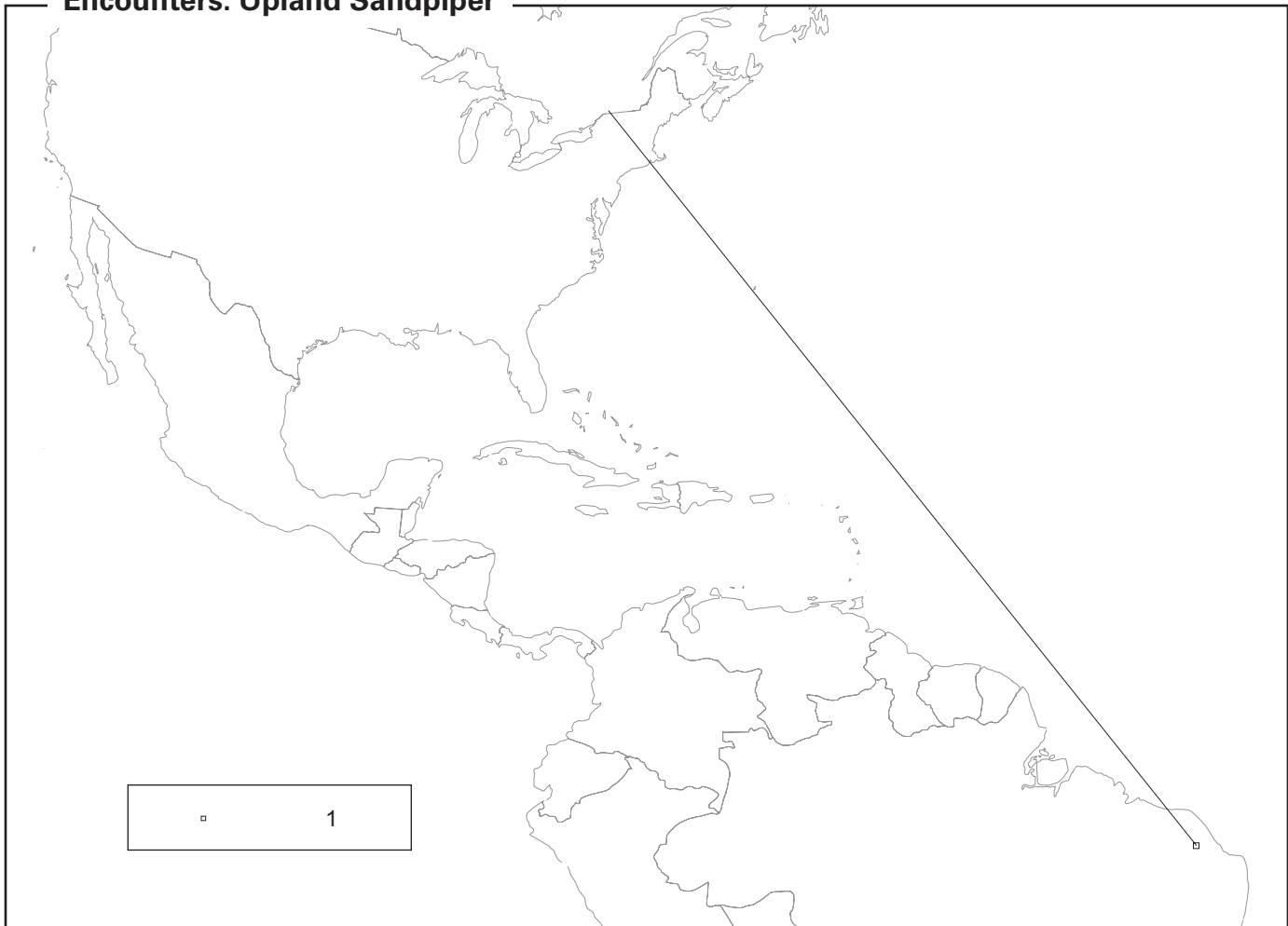
Banding effort: Spotted Sandpiper



Top banders: LPBO, JBMi, IPBO, ADB, LAG

Upland Sandpiper (*Bartramia longicauda*) 261.0

Encounters: Upland Sandpiper



The Upland Sandpiper's main range includes southern Saskatchewan, Manitoba, Ontario and Quebec, and extends through the north-central United States. Additional isolated populations are scattered through Alaska and Yukon and Northwest Territories. Upland Sandpipers go far south for the winter, ranging from Suriname and northern Brazil south to central Argentina and Uruguay.

Nearly all Upland Sandpipers were banded as flightless young. The only individual encountered, however (record 1), was one of the only two banded as After Hatch Year. This bird was shot in Brazil in February, at the northern end of the wintering range.

A summary of Upland Sandpiper banding by Houston et al. (1999) reports on birds banded in the north-central United States that were encountered in Mississippi, Texas and, remarkably, in Spain. There are numerous records of vagrants in Europe, all in autumn, and vagrants have also been reported from Guam and Australia (Houston and Bowen 2001).

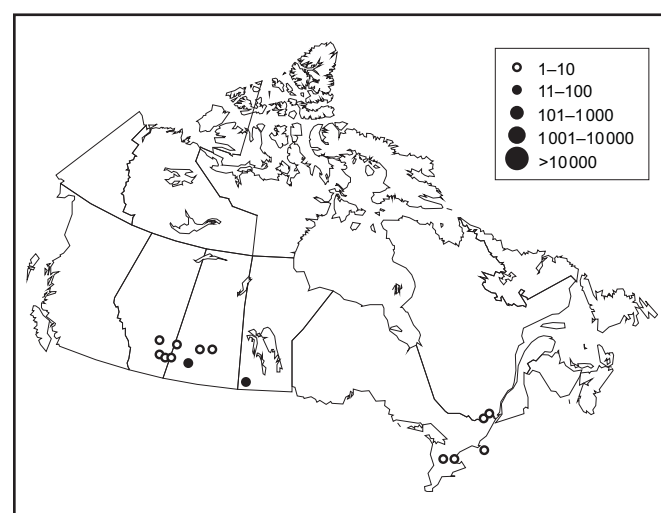
Colonies of Upland Sandpipers may not persist for many years, but returning birds often nest close to their previous site. The oldest known sandpiper was nearly nine years old (Houston and Bowen 2001, Klimkiewicz 2008).

Encounter records: Upland Sandpiper

1	0813-10889	AHY	U	07/06/68	Alexandria, ON	45°10'N	74°30'W	
	GLH	5	1	??/02/69	near Fortaleza, Brazil	4°50'S	39°10'W	6 580 km S42°E

**Summary of banding statistics:
Upland Sandpiper**

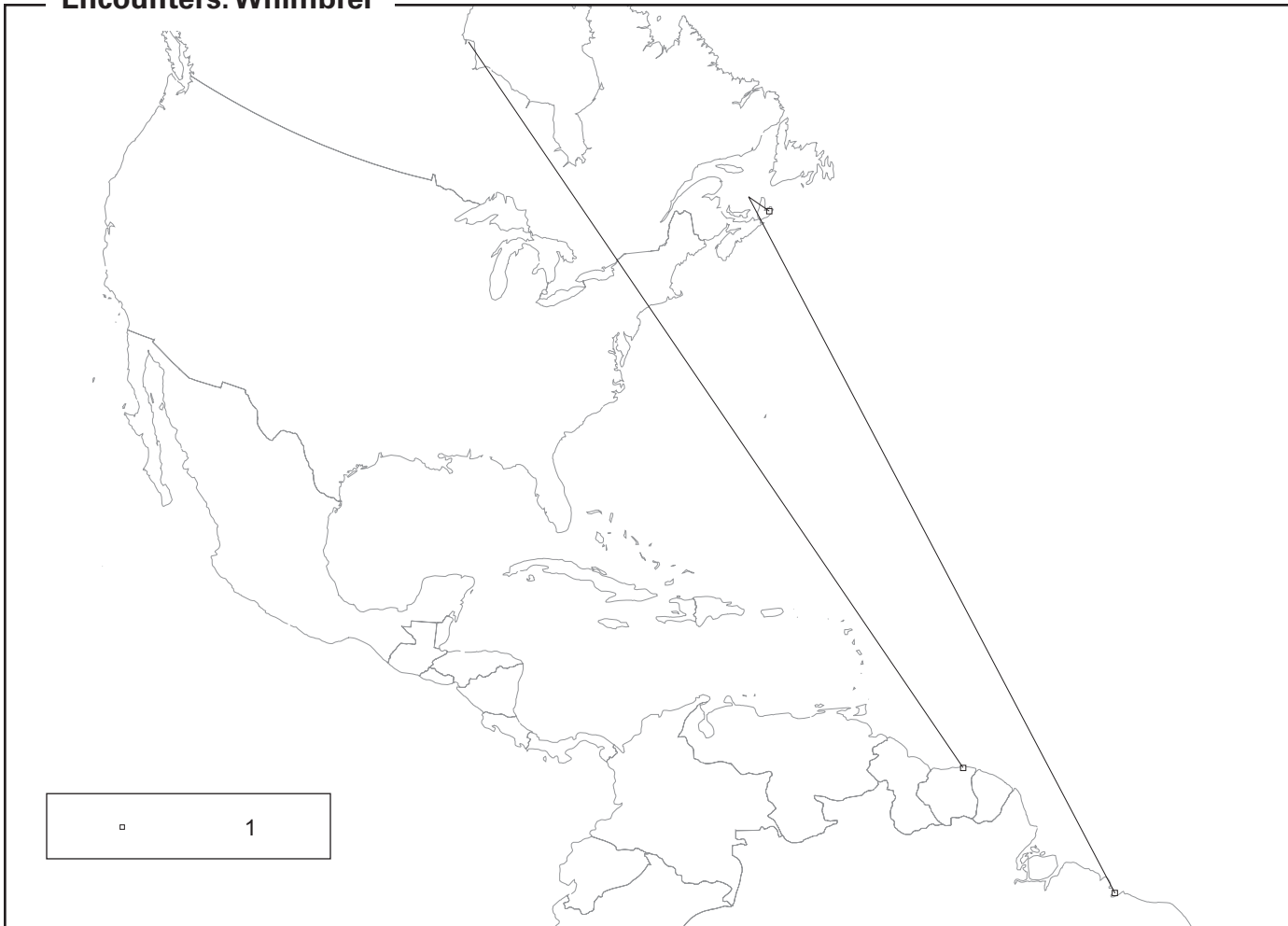
	Age at banding		
	Hatch Year	After Hatch Year	All ages
<i>No. of Canadian bandings (1955–1995)</i>	121	2	124
<i>No. encountered per 1 000 banded (1955–1995)</i>			8
Total no. encountered (1921–1995)	0	1	1
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	—	—	—
No. of Canadian-banded birds moving >0 km	0	1	1
Mean movement >0 km of Canadian-banded birds (km)	—	6 580	6 580
Maximum movement from all encounters (km)	—	6 580	6 580
% recovered (encountered dead)	—	100	100
% direct recoveries	—	100	100
% encountered during banding operations	—	0	0

Banding effort: Upland Sandpiper

Top banders: WM, DRH, PEPO, CSH, GLH

Whimbrel (*Numenius phaeopus*) 265.0

Encounters: Whimbrel



Whimbrels breed in Yukon and northwestern Northwest Territories (as well as Alaska), and, in a disjunct population, along the west and south shores of Hudson Bay. Wintering range includes the Pacific and Atlantic coasts southward from southern Vancouver Island and South Carolina, respectively, extending to the southern end of South America.

The two long-distance encounters (records 1 and 2) were of birds shot in northeastern coastal South America. This is an area of concentration during winter (Morrison and Ross 1989), but given the fall dates, both these birds could have been en route to more distant wintering areas. A Whimbrel fitted with a satellite transmitter in Virginia made its way to the same area (<http://www.ccb-wm.org/programs/migration/Whimbrel/whimbrel.htm>) and spent the winter there.

Satellite data also indicated that many Whimbrel breeding in northwestern North America migrate to the Atlantic coast. The precise origin of birds that winter along Pacific coasts is uncertain.

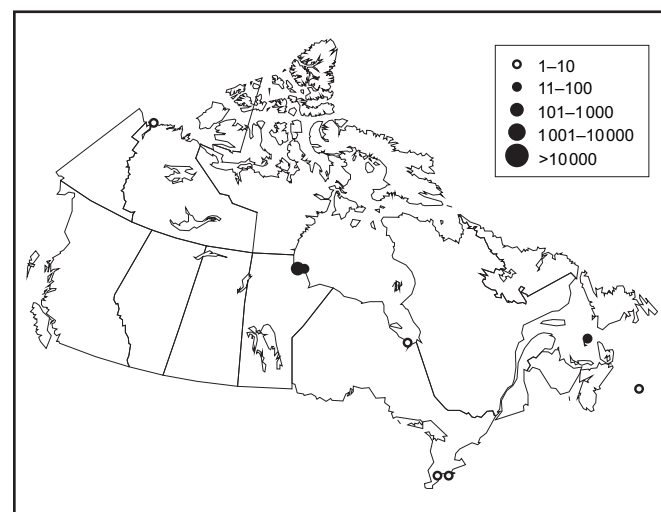
Except for the bird in record 3, which was encountered after hitting a communications tower or wires, all remaining encounters were of birds that were banded and then recaptured or resighted during breeding studies in northern Manitoba (see effort map). Most of these records illustrated breeding site fidelity of adults, including record 4, which documents the oldest Whimbrel in our data set. The oldest known to the Bird Banding Office, however, was estimated to be 13 years old (Klimkiewicz 2008). Record 5 and two others indicate that Whimbrels banded as chicks may sometimes breed where they were raised.

Encounter records: Whimbrel

1	0594-66812	AHY	U	26/06/75	4 km southeast of Churchill, MB	58°40'N	94°00'W	1 yr. 4 mo.
	CMN	5	1	27/10/76	Paramaribo, Suriname	5°50'N	54°50'W	6 768 km S46°E
2	0664-32334	AHY	U	14/08/83	Îles de la Madeleine, QC	47°20'N	61°50'W	6 yr. 1 mo.
	CWSQR	5	1	04/09/89	São Luis, Brazil	2°30'S	44°10'W	5 809 km S23°E
3	0664-32323	AHY	U	13/08/83	Îles de la Madeleine, QC	47°20'N	61°50'W	2 yr. 0 mo.
	CWSQR	5	54	23/08/85	7 km west of Sidney, NS	46°00'N	60°10'W	196 km S41°E
4	0514-30601	AHY	F	21/06/64	Churchill, MB	58°40'N	94°10'W	10 yr. 0 mo.
	JRJ	6	33	26/06/74	Churchill, MB	58°40'N	94°10'W	0 km
5	0494-64029	L	F	05/07/67	Churchill, MB	58°40'N	94°10'W	8 yr.11 mo.
	JRJ	8	89	28/06/76	10 km east of Churchill, MB	58°40'N	93°50'W	19 km N90°E

Summary of banding statistics: Whimbrel

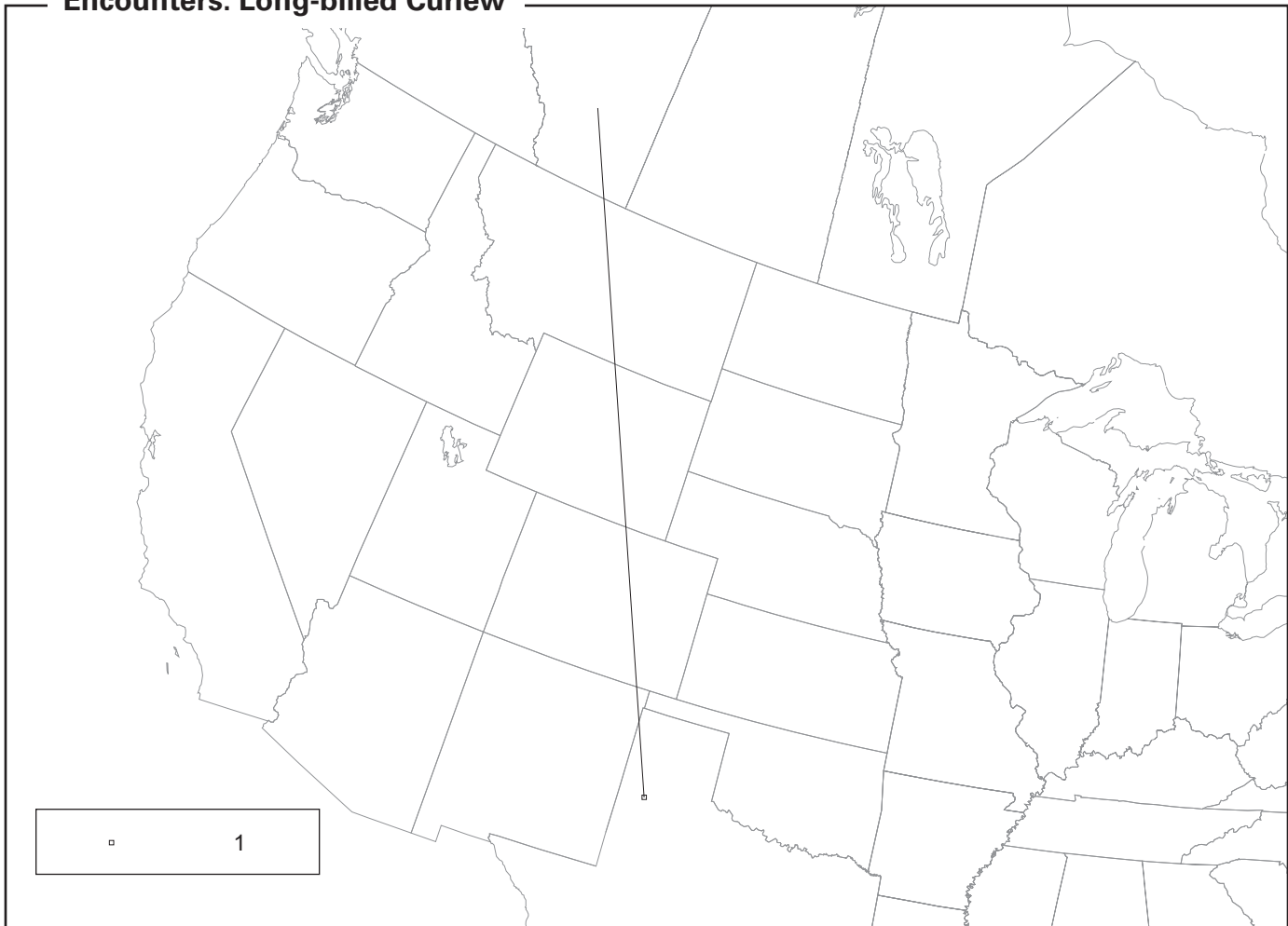
	Age at banding		
	Hatch Year	After Hatch Year	All ages
<i>No. of Canadian bandings (1955–1995)</i>	201	166	369
<i>No. encountered per 1 000 banded (1955–1995)</i>			75
Total no. encountered (1921–1995)	5	24	29
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	107	120	120
No. of Canadian-banded birds moving >0 km	4	17	21
Mean movement >0 km of Canadian-banded birds (km)	12	761	618
Maximum movement from all encounters (km)	19	6 768	6 768
% recovered (encountered dead)	40	16	20
% direct recoveries	40	0	6
% encountered during banding operations	60	79	75

Banding effort: Whimbrel

Top banders: ROM, JRJ, CWS-QC, RIGM, FC

Long-billed Curlew (*Numenius americanus*) 264.0

Encounters: Long-billed Curlew



Long-billed Curlews breed from southern British Columbia across the southern Canadian prairies, and southward from these areas through much of the western United States. They winter from the southern United States (central California to South Carolina) southward to Costa Rica.

The single encounter record for this species (record 1) was a bird reported from Texas during spring migration, with no information on how the bird

and band were obtained. This appears to be a typical movement path, however, as satellite transmitters placed on Long-billed Curlews in Oregon and Nevada indicate that the birds migrate almost directly north-south. They are not particularly long-distance migrants, and individuals may travel between summer and wintering grounds in as little as 2 days (<http://alaska.usgs.gov/science/biology/shorebirds/lbcu.html>). Average life span is 8–10 years (Redmond and Jenni 1986).

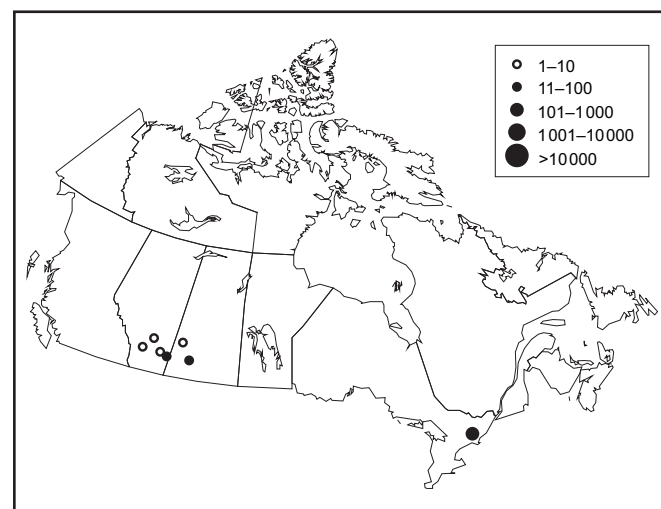
Encounter records: Long-billed Curlew

1	0005-36813	HY	U	20/06/41	Rosebud, AB	51°10'N	112°50'W	
	WRS	0	98	??/04/44	Springlake, TX	34°10'N	102°10'W	2079 km S32°E

Summary of banding statistics: Long-billed Curlew

	Age at banding		
	Hatch Year	After Hatch Year	All ages
<i>No. of Canadian bandings (1955–1995)</i>	62	0	193
<i>No. encountered per 1000 banded (1955–1995)</i>			0
Total no. encountered (1921–1995)	1	0	1
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	–	–	–
No. of Canadian-banded birds moving >0 km	1	0	1
Mean movement >0 km of Canadian-banded birds (km)	2079	–	2079
Maximum movement from all encounters (km)	2079	–	2079
% recovered (encountered dead)	100	–	100
% direct recoveries	0	–	0
% encountered during banding operations	0	–	0

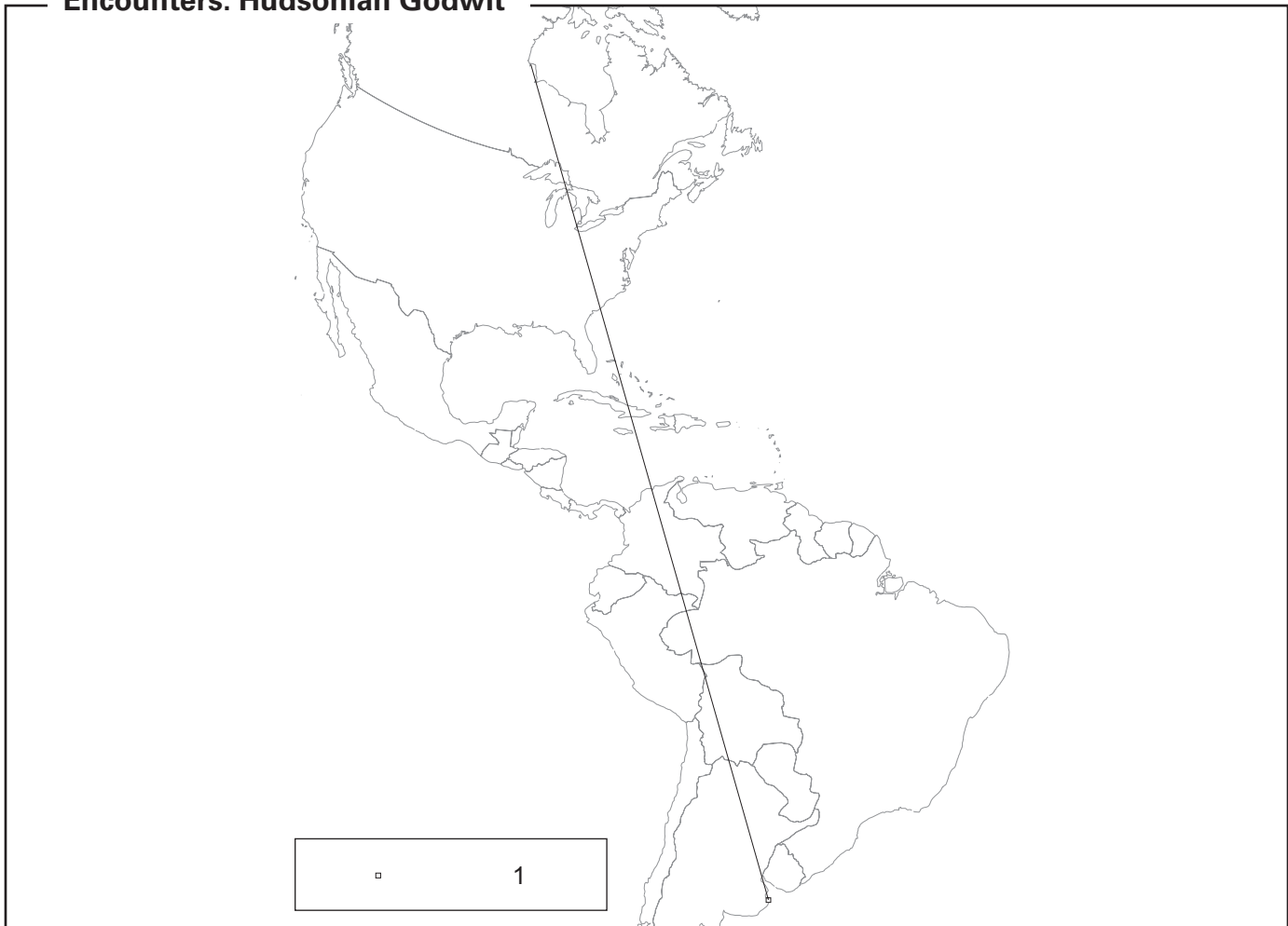
Banding effort: Long-billed Curlew



Top banders: RBr, WM, CSH, DC, SGS

Hudsonian Godwit (*Limosa haemastica*) 251.0

Encounters: Hudsonian Godwit



The breeding range of Hudsonian Godwits is poorly described, but includes disjunct areas in northwestern Northwest Territories and the western coast of Hudson Bay, as well as scattered areas in Alaska. These long-distance migrants winter in southeastern South America, from southern Brazil to Tierra del Fuego.

Several decades ago, it was suggested that Hudsonian Godwits possibly made a direct flight from the major staging area of James Bay to South America, a distance of some 4 500 km (Morrison 1984). However, such a direct flight was thought to be unlikely on energetic grounds, and therefore it was suspected that Hudsonian Godwits must have as-yet-undiscovered stopover sites (probably in northeastern South

America). Satellite transmitter studies have recently shown that the Bar-tailed Godwit, *Limosa lapponica*, can fly up to 11 500 km in eight days of non-stop flight (<http://news.bbc.co.uk/2/hi/science/nature/6988720.stm>); thus, a direct flight by Hudsonian Godwits now seems very possible. Nonetheless, Hudsonian Godwits do use fall staging areas in the Canadian prairies and spring sites in the central U.S. (Elphick and Klima 2002), and it may only be birds using the James Bay staging areas that make the longest and most direct migratory flights.

The only long-distance encounter (record 1) was for a bird shot in Argentina, within the usually accepted winter range of the species, but reported in July. However, no information was sent with the report, and

the date is that of the letter's postmark. It is therefore possible that the bird was shot much earlier. On the other hand, it seems much more likely that the bird was a non-breeder remaining in the wintering area, since it was only one year old. Although age of first breeding is unknown for this species, other godwits do not breed until two years old (Elphick and Klima 2002). Birds remaining on the southern "wintering" grounds during the breeding season appear to be mostly immatures

(Espinosa et al. 2005), as would be expected for a shorebird of this size (van de Kam et. al. 2004).

In light of the above discussion, record 2, the only other encounter in this data set, is noteworthy because it documents a one-year-old bird that returned to the breeding ground. It may also be the oldest Hudsonian Godwit on record (Klimkiewicz 2008 does not list age records for birds less than four years old).

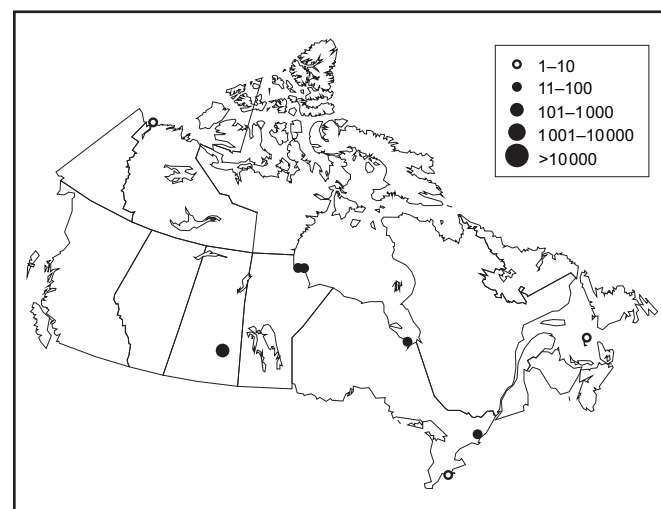
Encounter records: Hudsonian Godwit

1	0514-30616	L	U	15/07/64	Churchill, MB	58°40'N	94°10'W	1 yr. 0 mo.
	JRJ	5	1	??/07/65	near Cabo San Antonio, Argentina	36°20'S	56°50'W	11 128 km S30°E
2	0494-64001	AHY	M	12/06/65	Churchill, MB	58°50'N	94°10'W	1 yr. 1 mo.
	JRJ	3	0	22/07/66	Churchill, MB	58°50'N	94°10'W	0 km

Summary of banding statistics: Hudsonian Godwit

	Age at banding		
	Hatch Year	After Hatch Year	All ages
<i>No. of Canadian bandings (1955–1995)</i>	69	202	274
<i>No. encountered per 1 000 banded (1955–1995)</i>			7
Total no. encountered (1921–1995)	1	1	2
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	12	13	13
No. of Canadian-banded birds moving >0 km	1	0	1
Mean movement >0 km of Canadian-banded birds (km)	11 128	–	11 128
Maximum movement from all encounters (km)	11 128	0	11 128
% recovered (encountered dead)	100	100	100
% direct recoveries	0	0	0
% encountered during banding operations	0	0	0

Banding effort: Hudsonian Godwit



Top banders: HLD, RIGM, JRJ, PEPO, ARS, JAH

Marbled Godwit (*Limosa fedoa*) 249.0

Encounters: Marbled Godwit



The Marbled Godwit breeds in the central and southern Prairie provinces, in the northern U.S. prairies, and locally in Alaska. There is also a small population near James Bay, Ontario. This godwit winters along oceanic coastlines from California and Virginia (a few farther north) to Mexico, and rarely farther south.

Unlike the Hudsonian Godwit, the Marbled Godwit is a relatively short-distance migrant. The listed encounters (records 1–3) all show movement across the Rocky Mountains. The birds in records 1 and 2 were evidently wintering in California. The

godwit in record 3, reported from Baja California, was encountered during fall migration, but sightings of godwits colour-marked in southern Alberta indicate that this region is a wintering area (C. Gratto-Trevor, pers. comm.). Godwits from the James Bay population presumably winter on the Atlantic coast, but firm data are lacking (Morrison et al. 1976).

Age data from resightings of banded birds have indicated these godwits are long-lived, with the oldest known being over 29 years old (Gratto-Trevor 2000). However, the oldest known from Bird Banding Office records is just under 14 years (Klimkiewicz 2008).

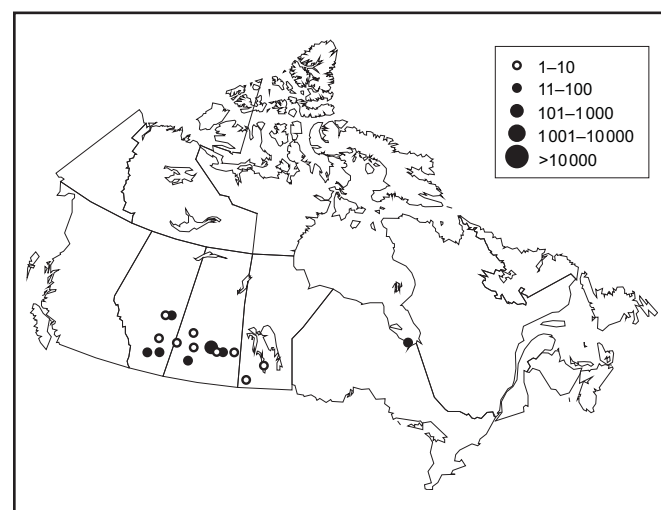
Encounter records: Marbled Godwit

1	0425-14050	AHY	M	02/08/44	Yorkton, SK	51°10'N	102°20'W	4 mo.
	DUC	0	0	15/12/44	McGrath St Beach, CA	34°10'N	119°10'W	2 329 km S42°W
2	0534-77902	AHY	U	19/02/73	Calaveras Point, CA	37°20'N	112°00'W	3 mo.
	HLC	7	29	06/05/73	Indus, AB	50°50'N	113°40'N	1 641 km N21°E
3	0474-13362	U	U	20/08/52	Delta, MB	50°10'W	98°10'W	28 d.
	CSW	0	0	17/09/52	Baja California State, Mexico	27°00'N	113°00'W	c. 2 872 km S32°W

Summary of banding statistics:
Marbled Godwit

	Age at banding		
	Hatch Year	After Hatch Year	All ages
<i>No. of Canadian bandings (1955–1995)</i>	124	52	301
<i>No. encountered per 1 000 banded (1955–1995)</i>			6
Total no. encountered (1921–1995)	3	3	7
No. encountered from foreign bandings	0	1	1
Maximum period from banding to encounter (mo.)	2	4	4
No. of Canadian-banded birds moving >0 km	2	1	4
Mean movement >0 km of Canadian-banded birds (km)	31	2 329	1 315
Maximum movement from all encounters (km)	51	2 329	c. 2 872
% recovered (encountered dead)	100	66	85
% direct recoveries	100	100	100
% encountered during banding operations	0	0	0

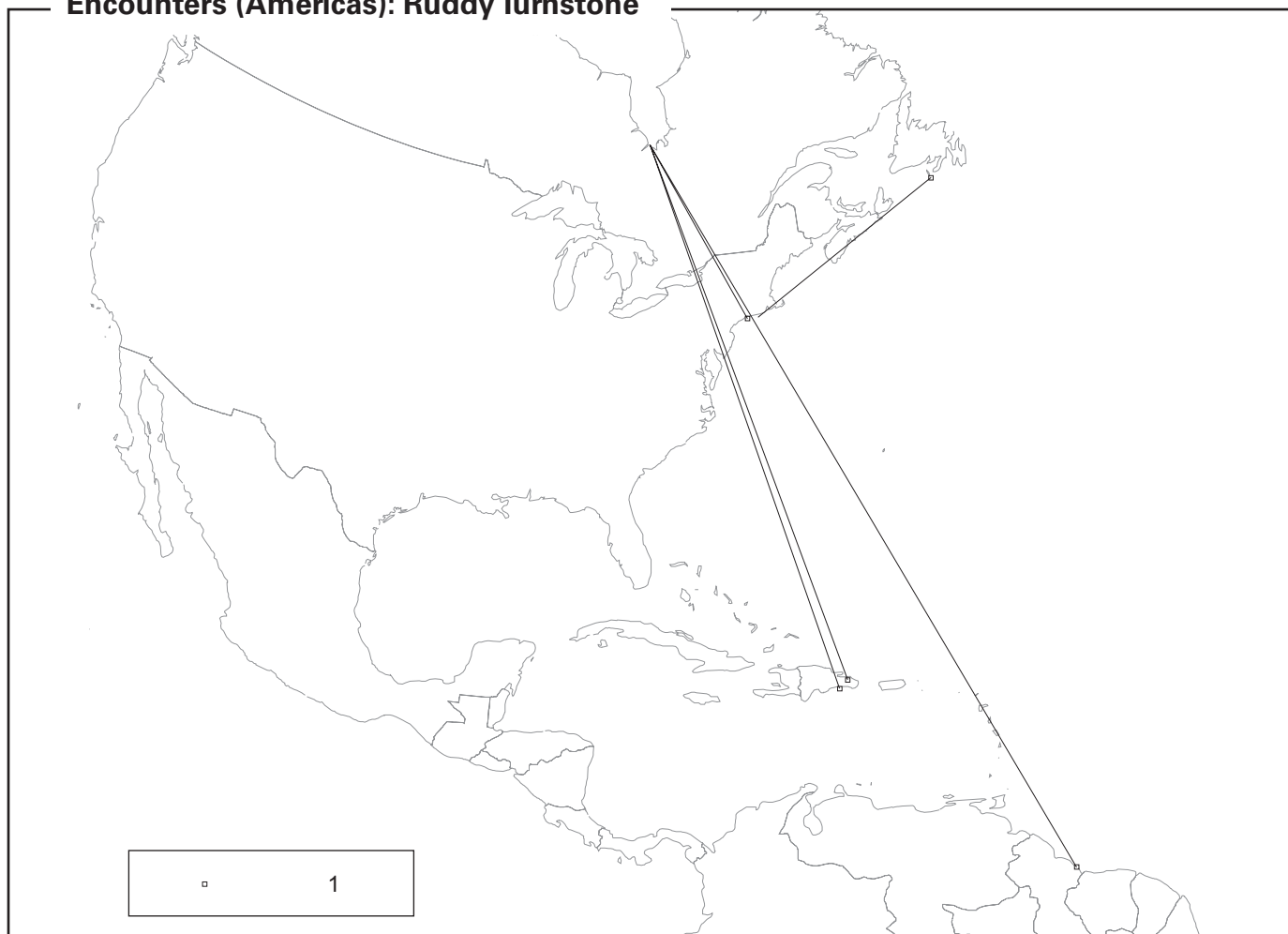
Banding effort: Marbled Godwit



Top banders: JBS, CLGT, RWP, MAC, WM

Ruddy Turnstone (*Arenaria interpres*) 283.0

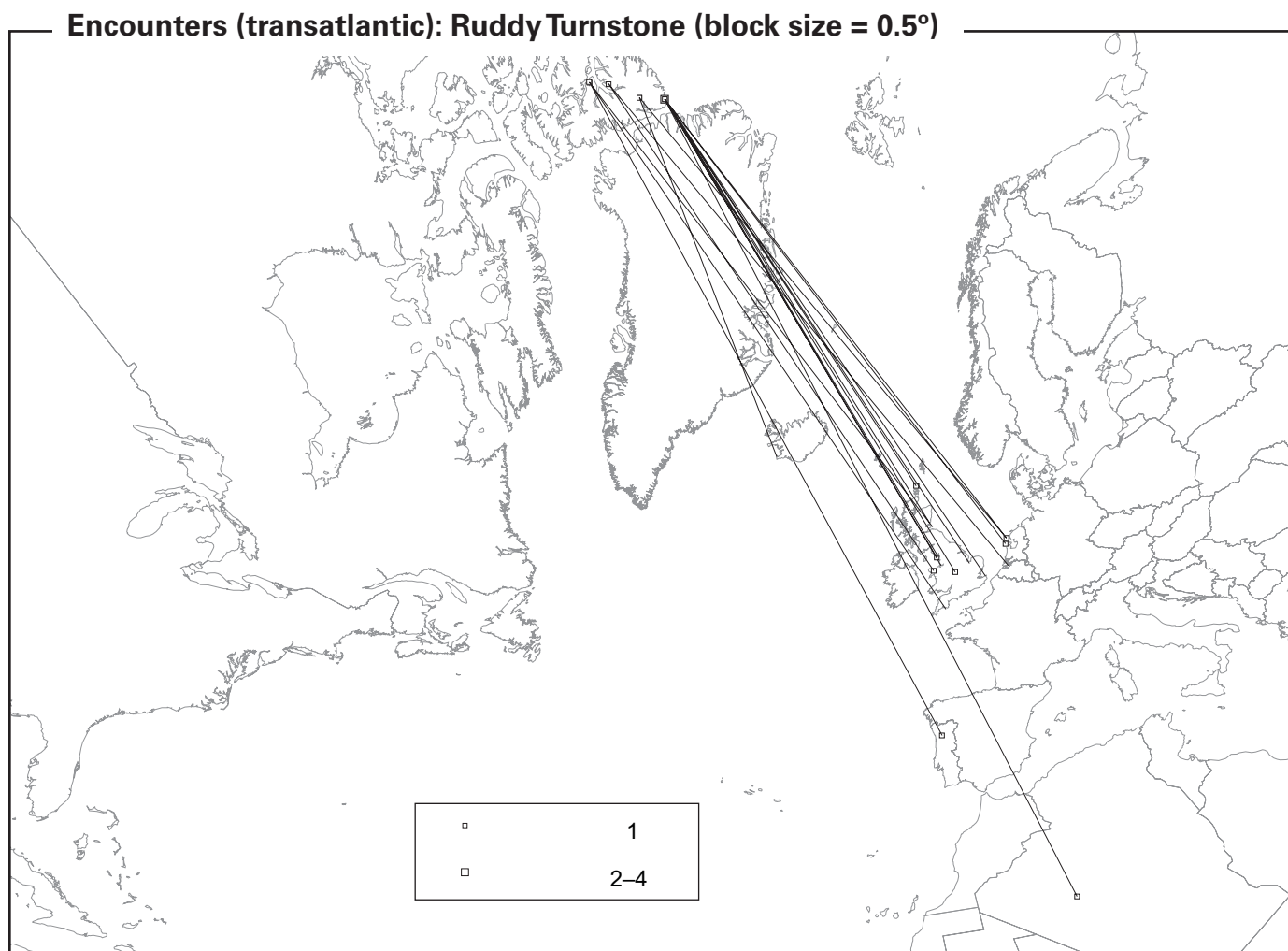
Encounters (Americas): Ruddy Turnstone



The Ruddy Turnstone is a holarctic species, breeding in Canada mainly on the Arctic islands, and in the United States in north coastal Alaska. Birds breeding in the central Canadian Arctic belong to the subspecies *A. i. morinella* and winter largely in northern Brazil, as well as along all oceanic coasts from the United States south to Tierra del Fuego. The other subspecies, *A. i. interpres*, occurs in two main breeding populations in North America, one breeding in northwestern Alaska and wintering throughout the Pacific, and the other breeding in the northeastern Canadian High Arctic (especially Ellesmere Island) and in High Arctic areas of Greenland. Canadian breeders of this subspecies cross the Atlantic to winter in western Europe, with vagrants ranging south into Africa (Nettleship 2000).

Only five encounters involve the subspecies *A. i. morinella*. Four birds banded at James Bay during fall migration were encountered within a year, three in the Caribbean area (see records 1 and 2), and one in Connecticut (record 3). The latter travelled at least 127 km/day over a 10-day period. Record 4 documents a bird banded near Long Island, New York, during spring migration and found in a subsequent fall migration near Newfoundland. Despite a lot of banding of this subspecies on Baffin Island (see effort map), there are no encounters of turnstones from that area.

Substantial banding of *A. i. interpres* on Ellesmere Island has led to many encounters in western Europe, including the Netherlands and Portugal (records 5–6). The longest-distance encounter (record 7) was a bird



caught in a trap in Algeria, but this record should be regarded with some caution. Exact location was not reported, so the encounter was mapped for the centre of the country even though it was likely to have been on the coast, where there are other records of the species. Moreover, the bird was caught during the breeding season when it should have been in Canada. Nonetheless, non-breeding individuals do sometimes remain within the wintering area. A turnstone colour-marked on Ellesmere Island was seen in several years on the same beach in Namibia (R.I.G. Morrison, pers. comm.), far south of the range of vagrants reported by Nettleship (2000).

Most encounters of Ellesmere turnstones are from Great Britain (records 8 and 9), although this concentration is perhaps biased by the extent of

shorebird banding in that country. The bird in record 9 was recaptured at the same location in England in its first migration and again two years later. Other data also indicate fidelity to wintering area, as well as to migration stopover sites and breeding locations after the first breeding attempt (Nettleship 2000). Records of return movements are also common: nine turnstones banded in Europe and one banded in Iceland (a stopover location for many transatlantic migrants) have been recaptured during banding operations in the Canadian Arctic (records 10–14). It has been estimated that about half of the New World turnstones stage in Iceland (Wernham et al. 2002), but the proportion of Canadian breeders among those stopping over may be much higher than the proportion of birds that breed in eastern Greenland.

The turnstone in record 14 is the oldest in the data set, but the oldest on record with the Bird Banding Office is over 14 years old (Clapp et al. 1982, Klimkiewicz 2008).

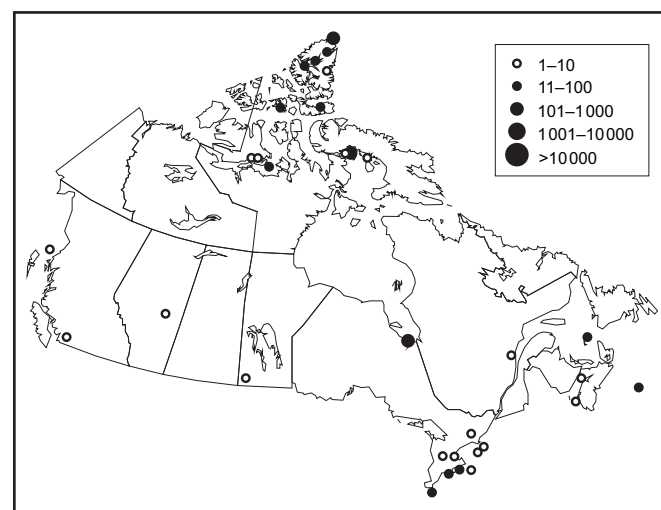
Encounter records: Ruddy Turnstone

1	0802-02305	AHY	U	29/07/77	17 km northeast of Moosonee, ON	51°20'N	80°20'W	3 mo.
	RIGM	4	28	02/10/77	southeast of New Amsterdam, Guyana	6°10'N	57°20'W	5458 km S31°E
2	0802-02645	HY	U	25/08/76	17 km northeast of Moosonee, ON	51°20'N	80°20'W	7 mo.
	RIGM	5	1	06/03/77	Hato Mayor, Dominican Republic	18°50'N	69°00'W	3753 km S20°E
3	0802-50217	AHY	U	12/08/79	17 km northeast of Moosonee, ON	51°20'N	80°20'W	10 dy.
	RIGM	7	29	22/08/79	West Haven, CT	41°10'N	72°50'W	1269 km S30°E
4	0612-75841	AHY	U	28/05/67	Great Gull Island, NY	41°10'N	72°00'W	3 yr. 3 mo.
	FSS	5	0	20/08/70	St. Pierre and Miquelon	46°40'N	56°10'W	1406 km N59°E
5	1313-50968	AHY	M	13/07/92	near Alert, Ellesmere Island, NU	82°30'N	62°20'W	2 mo.
	RIGM	7	52	27/09/92	Den Helder, Netherlands	52°50'N	4°40'E	3877 km S77°E
6	0502-75249	L	U	05/07/55	Fosheim Peninsula, Ellesmere Island, NU	80°00'N	85°00'W	2 mo.
	DFP	0	1	11/09/55	Espinho, Portugal	41°00'N	8°30'W	5278 km N85°E
7	1313-50725	AHY	U	01/06/87	near Alert, Ellesmere Island, NU	82°30'N	62°20'W	4 yr. 0 mo.
	RIGM	7	4	30/06/91	inexact location, Algeria	27°??'N	1°??'W	c. 6512 km
8	1313-59103	L	U	12/08/94	near Alert, Ellesmere Island, NU	82°30'N	62°20'W	9 mo.
	RIGM	5	12	15/05/95	Orkney Islands, Scotland	59°20'N	2°50'W	3067 km S72°E
9	1313-50721	AHY	U	01/06/87	near Alert, Ellesmere Island, NU	82°30'N	62°20'W	2 mo.
	RIGM	7	89	24/08/87	Morecambe Bay, England	54°00'N	3°10'W	3641 km S69°E
		7	89	31/08/89	Morecambe Bay, England	54°00'N	3°10'W	3641 km S69°E
10	CE 03166	U	U	14/10/73	Fife, Scotland	56°10'N	2°30'W	8 mo.
	BTO	0	97	23/06/74	Eureka, Ellesmere Island, NU	80°00'N	85°50'W	3782 km N18°W
11	K 225015	U	U	10/09/64	Vlieland, Netherlands	53°10'N	5°00'E	1 yr. 9 mo.
	Netherlands	0	97	27/06/66	Lake Hazen, Ellesmere Island, NU	81°40'N	71°10'W	3967 km N14°W
12	0008-13374	U	U	07/03/88	near Ternenzen, Belgium	51°20'N	4°00'E	3 mo.
	Belgium	0	97	26/06/88	NE of Eureka, Ellesmere Island, NU	80°50'N	81°40'W	4329 km N15°W
13	0007-23389	U	U	10/05/72	Kevlafik, Iceland	64°00'N	22°40'W	3 yr. 1 mo.
	Iceland	0	97	17/06/75	Lake Hazen, Ellesmere Island, NU	81°40'N	71°10'W	2376 km N17°W
14	0000-73214	U	U	25/03/78	Birkenhead, England	53°20'N	3°00'W	8 yr. 3 mo.
	United Kingdom	0	97	02/06/86	near Alert, Ellesmere Island, NU	82°30'N	62°20'W	3716 km N12°W

Summary of banding statistics: Ruddy Turnstone

	Age at banding		
	Hatch Year	After Hatch Year	All ages
<i>No. of Canadian bandings (1955–1995)</i>	575	668	1 285
<i>No. encountered per 1 000 banded (1955–1995)</i>			14
Total no. encountered (1921–1995)	10	9	31
No. encountered from foreign bandings	0	1	13
Maximum period from banding to encounter (mo.)	14	48	99
No. of Canadian-banded birds moving >0 km	10	7	17
Mean movement >0 km of Canadian-banded birds (km)	1 986	4 085	2 850
Maximum movement from all encounters (km)	5 278	6 512	6 512
% recovered (encountered dead)	100	22	77
% direct recoveries	80	22	35
% encountered during banding operations	0	22	6

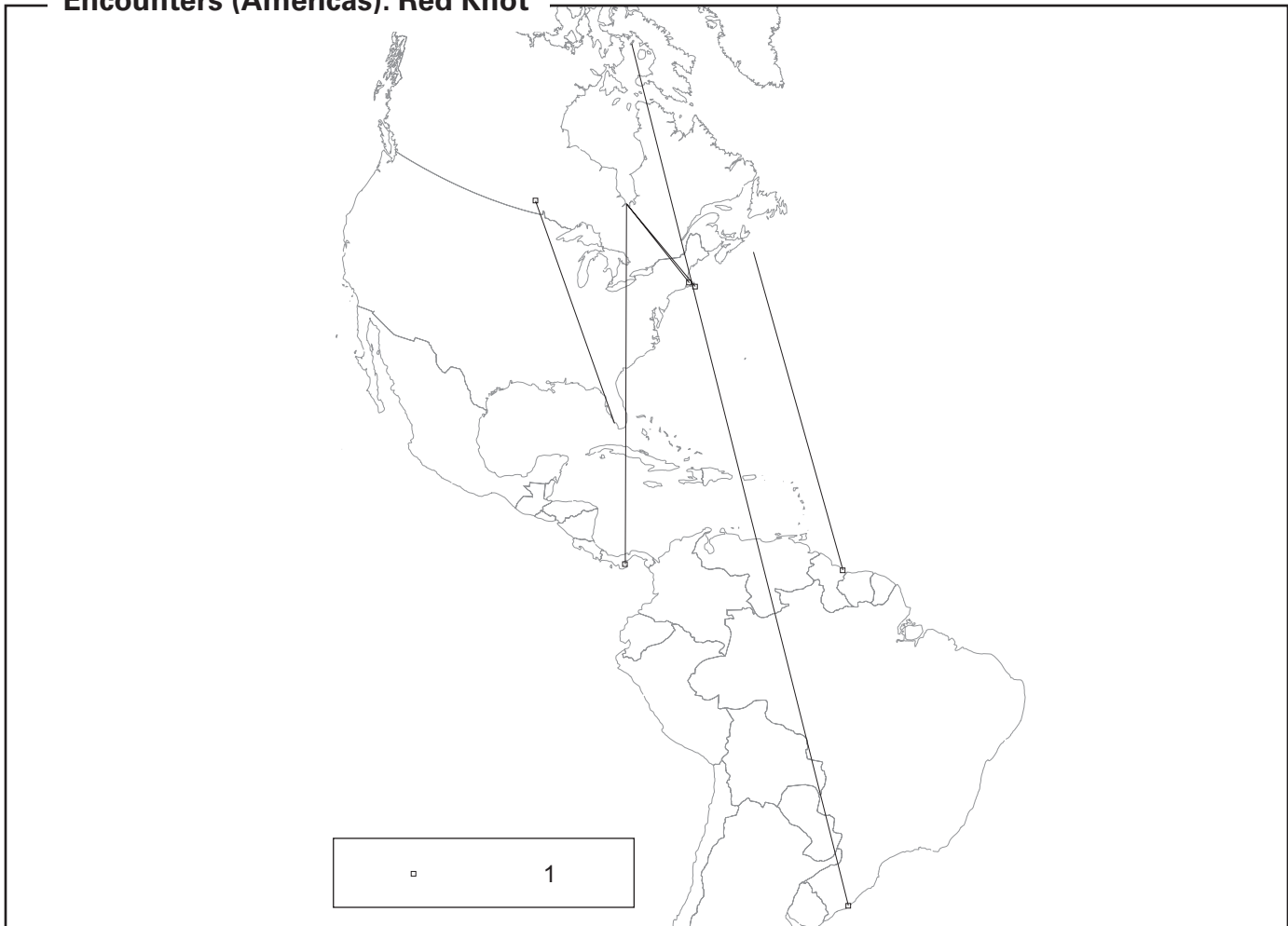
Banding effort: Ruddy Turnstone



Top banders: RIGM, DFP, LPBO, DND, RM

Red Knot (*Calidris canutus*) 234.0

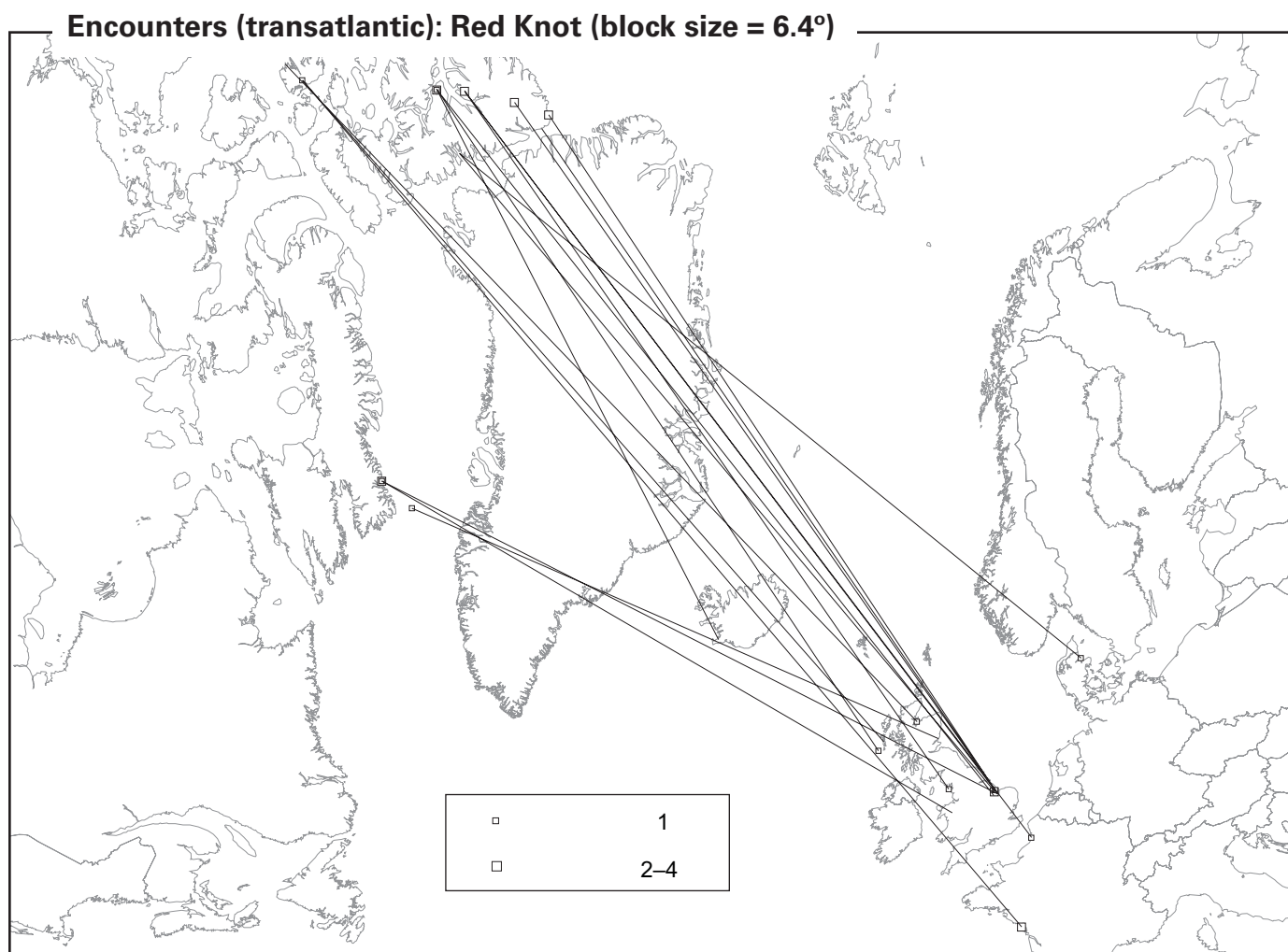
Encounters (Americas): Red Knot



Two subspecies of the holarctic Red Knot breed in Canada's High Arctic. The "European" subspecies (*C.c. islandica*) breeds on Ellesmere and Devon Islands and crosses the Atlantic to winter on the north European seaboard. The North American race (*C. c. rufa*) breeds on other High Arctic islands from southern Victoria Island east to Southampton Island and probably also on the Adelaide peninsula and Mansel Island. The main wintering grounds of *C. c. rufa* are in Tierra del Fuego at the southern tip of South America; smaller groups winter on the north coast of Brazil and in Florida (Morrison and Harrington 1992).

The North American subspecies migrates in autumn chiefly southeast to the Atlantic provinces and New England, thence directly over the ocean to northern South America. Recent information from colour-marked

birds indicates that the Mingan Archipelago on the north shore of the St. Lawrence is the most important staging area in eastern Canada, and birds marked there have been resighted in Tierra del Fuego and Patagonia (R.I.G. Morrison, pers. comm.). Most band encounters of *C. c. rufa* involve migrant Knots (records 1–4). There is only one encounter during December–February (record 5) of a bird wintering in Panama. However, the bird in record 3 was closer to the main wintering area for this subspecies, which is in northeastern Tierra del Fuego. Knots returning north in spring probably pass through northern South America and move up the Atlantic coast (McNeil and Burton 1973, 1977). Part of the population wintering in Florida may move northwards through the interior (Morrison and Harrington 1992), as suggested by the bird in record 4.



Most band encounters involving Canadian Red Knots are of the European race, resulting from extensive banding at both ends of the migration route and high human population density in the wintering area. Movement may be direct from breeding grounds in northern Canada to Europe, or there may be stopovers in Iceland (Wernham et al. 2002). Records 6 and 7 show rapid movement; the bird in record 6 travelled at least 115 km/day on average, in a little over a month, although the journey was likely done in a small number of long-distance flights. Many Knots go first to the Netherlands to moult, and perhaps elsewhere as well (records 7 and 8). Once moult is complete, many individuals move back to Great Britain for the winter (Davidson and Wilson 1992), and most winter (December–February) records are

from the United Kingdom (e.g., records 9 and 10). However, scattered encounters across Europe indicate that some Canadian Knots winter elsewhere (records 11–12). Spring migration back to Canada can be rapid (record 13), although most birds stage in Iceland for up to three weeks (record 14; Davidson and Wilson 1992, Wernham et al. 2002).

The oldest Red Knot known is the bird in record 15. The oldest listed in Klimkiewicz (2008) is just under 14 years old; this website does not include overseas records. Male Knots are more faithful to breeding location than are females, but both sexes are faithful to stopover sites (Harrington et al. 1988).

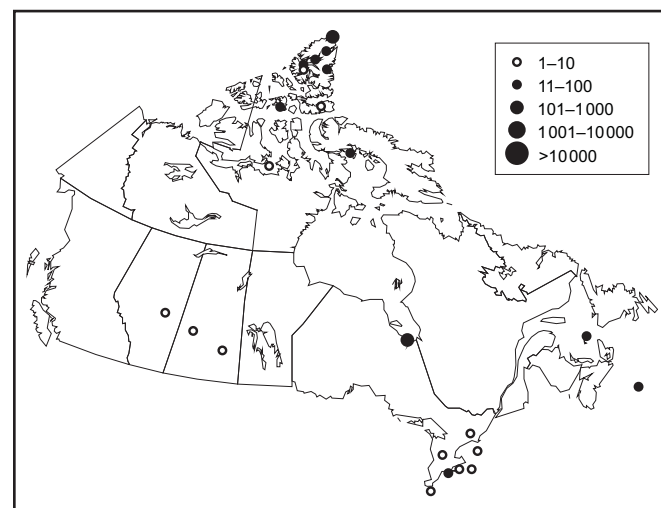
Encounter records: Red Knot

1	0802-50267	HY	U	27/08/79	17 km northeast of Moosonee, ON	51°20'N	80°20'W	2 mo.
	RIGM	7	52	14/10/79	Monomoy Island, MA	41°30'N	69°50'W	1 356 km S40°E
2	0542-09675	HY	U	31/08/71	Sable Island, NS	43°50'N	60°00'W	
	RM	5	4	66/11/78	southeast of New Amsterdam, Guyana	6°10'N	57°20'W	4 201 km S 4°E
3	1313-50922	ASY	U	15/07/89	Rowley Island, NU	69°00'N	79°00'W	4 yr. 9 mo.
	RIGM	7	89	16/04/94	near Porto Alegre, Brazil	31°10'S	51°00'W	11 384 km S24°E
4	0932-31040	U	U	30/11/85	Marco, FL	25°50'N	81°40'W	6 mo.
	ASp	5	0	23/05/86	Matlock, MB	50°20'N	96°50'W	3 020 km N21°W
5	0802-02126	AHY	U	31/07/76	17 km northeast of Moosonee, ON	51°20'N	80°20'W	6 mo.
	RIGM	5	0	10/01/77	10 km east of Chitre, Panama	7°50'N	80°20'W	4 842 km S
6	0802-51210	L	U	26/07/80	Eastern Ellesmere Island, NU	79°20'N	75°40'W	1 mo.
	RIGM	3	1	28/08/80	Hadsund, Denmark	56°40'N	10°20'E	3 795 km N78°E
7	0762-30120	AHY	U	06/08/74	Franklin, NWT	82°30'N	62°20'W	2 mo.
		7	89	18/08/74	Waddeweitz, Germany	53°00'N	11°00'E	3 949 km S83°E
8	0623-17194	L	U	15/07/76	Bathurst Island, NU	75°40'N	98°20'W	1 yr. 3 mo.
	CMN	5	1	16/10/77	near La Rochelle, France	46°10'N	1°20'W	5 267 km N69°E
9	CP 88654	AHY	U	14/02/71	near Kirkcudbright, Scotland	54°54'N	3°36'W	1 yr. 9 mo.
	BTO	0	1	06/11/72	Broughton Island, Baffin Island, NU	67°36'N	64°00'W	3 368 km N41°W
10	0000-70750	U	U	28/02/87	King's Lynn, England	52°50'N	0°20'E	5 mo.
	United Kingdom	0	97	23/07/87	near Lake Hazen, Ellesmere Island, NU	82°00'N	71°30'W	3 938 km N13°W
11	K388037	AHY	U	06/01/73	Wieringen, Netherlands	52°54'N	4°59'E	1 yr. 5 mo.
	Netherlands	0	0	23/06/74	Eureka, Ellesmere Island, NU	80°00'N	86°00'W	4 282 km N16°W
12	0802-51328	L	U	05/07/88	NE of Eureka, Ellesmere Island, NU	80°50'N	81°50'W	5 mo.
	RIGM	5	1	11/12/88	Le Crotoy, France	50°10'N	1°30'E	4 414 km N86°E
13	CC 84316	ASY	U	19/03/72	near Hunstanton, Norfolk, England	52°54'N	00°30'E	2 mo.
	BTO	0	97	09/06/72	Broughton Island, Baffin Island, NU	67°30'N	64°00'W	3 701 km N39°W
14	0007-23193	ASY	U	02/05/72	Hlídsnes, Iceland	64°00'N	22°00'W	2 yr. 2 mo.
	CIE	0	0	23/06/74	Eureka, Ellesmere Island, NU	80°00'N	85°50'W	2 590 km N23°W
15	0000-98132	U	U	07/03/70	King's Lynn, England	52°50'N	0°20'E	18 yr. 3 mo.
	United Kingdom	0	97	30/06/88	northeast of Eureka, Ellesmere Island, NU	80°50'N	81°50'W	4 106 km N15°W

Summary of banding statistics: Red Knot

	Age at banding		
	Hatch Year	After Hatch Year	All ages
<i>No. of Canadian bandings (1955–1995)</i>	488	351	849
<i>No. encountered per 1 000 banded (1955–1995)</i>			22
Total no. encountered (1921–1995)	12	6	36
No. encountered from foreign bandings	0	0	17
Maximum period from banding to encounter (mo.)	159	65	219
No. of Canadian-banded birds moving >0 km	12	6	19
Mean movement >0 km of Canadian-banded birds (km)	3 697	4 805	3 891
Maximum movement from all encounters (km)	5 267	11 384	11 384
% recovered (encountered dead)	66	33	77
% direct recoveries	50	50	30
% encountered during banding operations	25	66	19

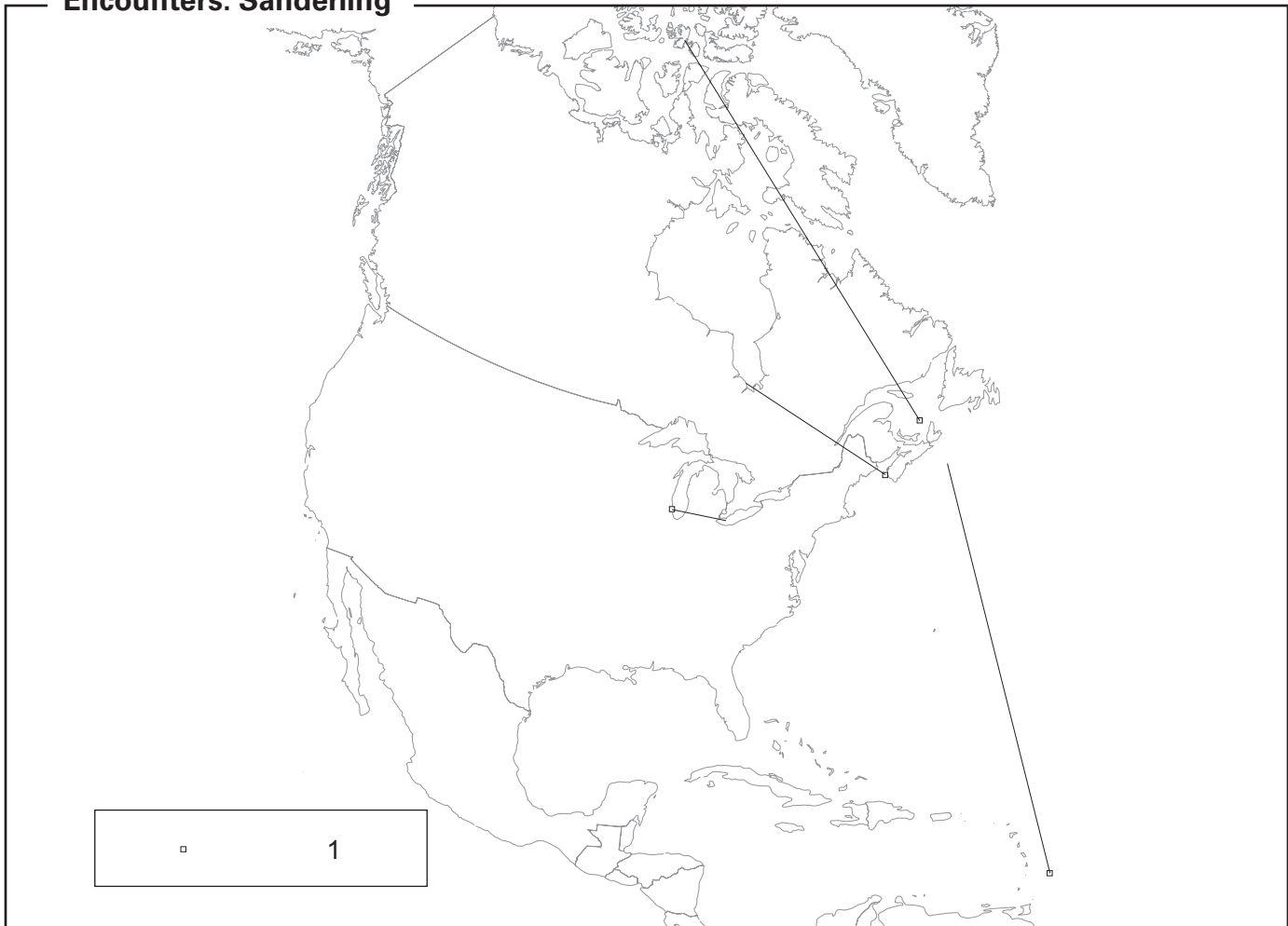
Banding effort: Red Knot



Top banders: RIGM, CWS-QC, NMC, DFP, CWS-ER

Sanderling (*Calidris alba*) 248.0

Encounters: Sanderling



The Sanderling is a holarctic species that breeds in Canada primarily in the Arctic islands. The wintering range includes coastal areas from southern Alaska in the west and Massachusetts in the east, south through the Gulf coast of the United States and the West Indies to southern Chile and Argentina. As with Red Knots and Ruddy Turnstones, Sanderling from northeastern Ellesmere Island may regularly winter in Europe (based on a sighting in France of a bird colour-marked on Ellesmere; R.I.G. Morrison, pers. comm.).

Sanderling are common in fall migration along the Atlantic coast, and although records 1–3 suggest over-ocean southward flight from Atlantic Canada, a

route followed by Red Knot, White-rumped Sandpiper and American Golden Plover, most Sanderling probably follow coastal or inland routes (record 4; Macwhirter et al. 2002). The bird in record 3 made a rapid trip to the northeast coast, where it was seen two weeks after being colour-marked at a stopover site on James Bay.

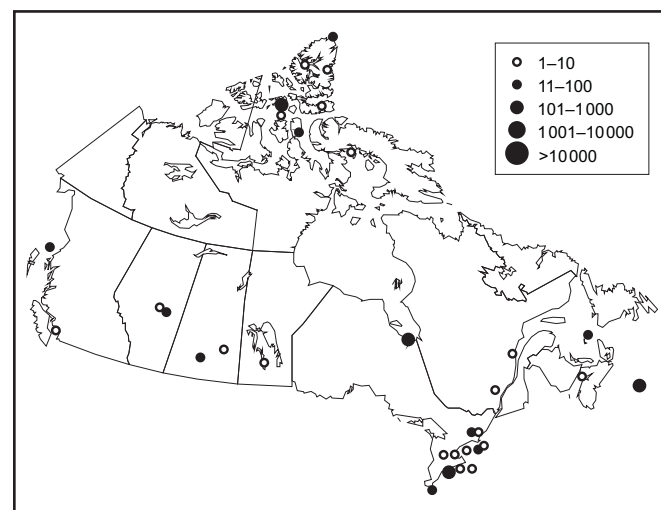
Record 5 illustrates site fidelity of breeding adults, while record 6 suggests that individual birds may be faithful to migration stopover sites. The latter bird is the oldest Sanderling on record with the Bird Banding Office (Klimkiewicz 2008). It was killed when struck by a truck on Sable Island, Nova Scotia (Boates and McNeil 1984) — an improbable accident on this island with only two approved roads.

Encounter records: Sanderling

1	0581-25141	L	U	20/07/68	Bathurst Island, NU	75°40'N	98°20'W	3 mo.
	DFP	5	1	20/10/68	Îles de la Madeleine, QC	47°20'N	61°40'W	3 575 km S50°E
2	0741-81365	HY	U	27/08/71	Sable Island, NS	43°50'N	60°00'W	2 mo.
	RM	3	1	04/10/71	near St. Andrew, Barbados	13°00'N	59°20'W	3 433 km S1°E
3	0801-39180	HY	U	16/08/77	34 km northwest of Moosonee, ON	51°40'N	80°40'W	13 dy.
	RIGM	7	29	29/08/77	Westport, NS	44°10'N	66°20'W	1 353 km S58°E
4	0271-41729	U	U	20/09/63	near Point Pelee, ON	41°50'N	82°30'W	1 yr. 11 mo.
	JOLR	5	0	08/08/65	Gurnee, IL	42°20'N	87°50'W	444 km N81°W
5	0581-25101	AHY	U	02/07/68	Bathurst Island, NU	75°40'N	98°20'W	11 mo.
	DFP	4	33	28/06/69	Bathurst Island, NU	75°40'N	98°20'W	0 km
6	0741-81593	AHY	U	04/08/71	Sable Island, NS	43°50'N	60°00'W	11 yr. 11 mo.
	RM	3	14	24/07/83	Sable Island, NS	43°50'N	60°00'W	0 km

Summary of banding statistics: Sanderling

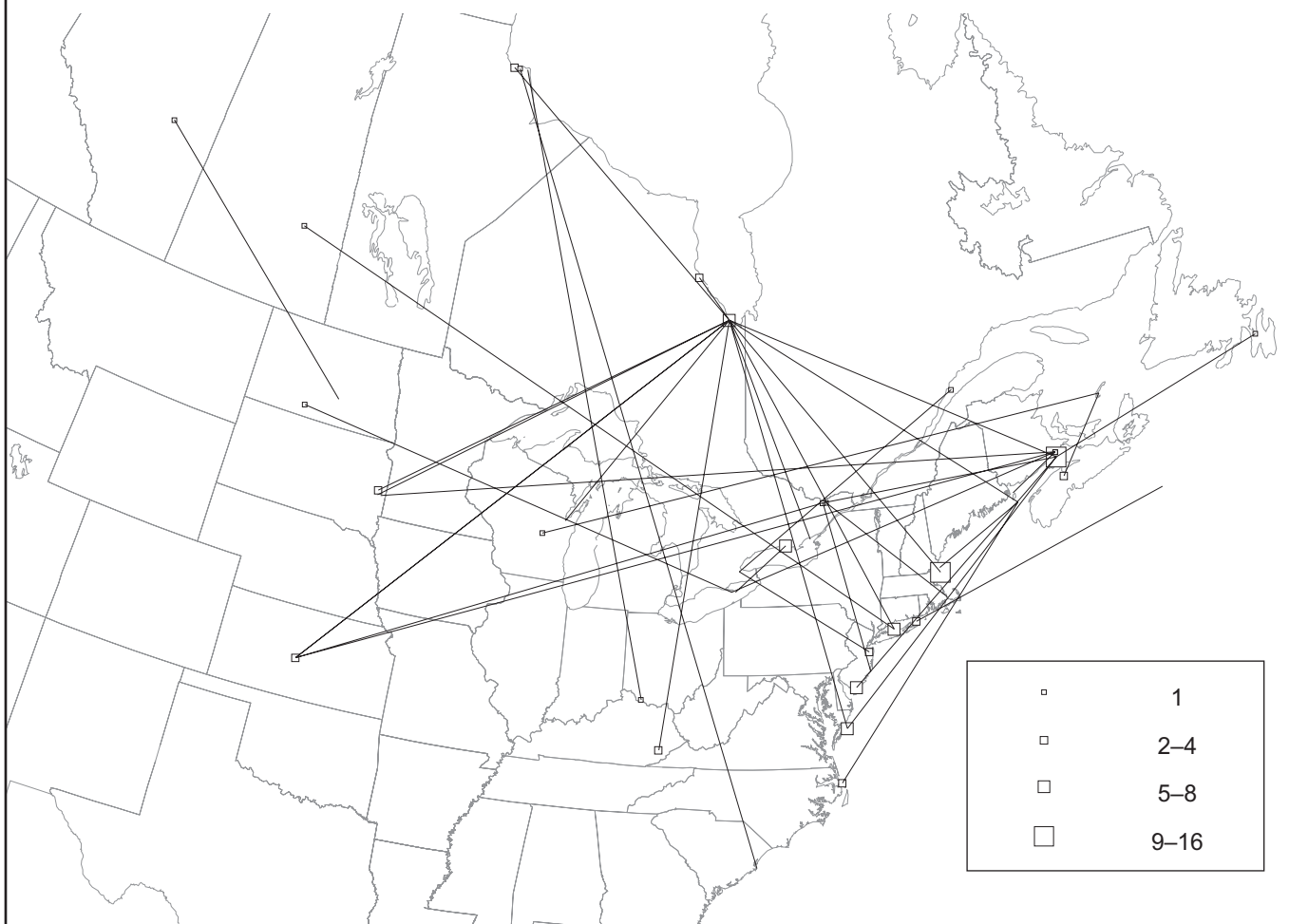
	Age at banding		
	Hatch Year	After Hatch Year	All ages
<i>No. of Canadian bandings (1955–1995)</i>	757	812	1 834
<i>No. encountered per 1 000 banded (1955–1995)</i>			5
Total no. encountered (1921–1995)	5	3	10
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	3	143	143
No. of Canadian-banded birds moving >0 km	5	0	6
Mean movement >0 km of Canadian-banded birds (km)	1 699	–	1 490
Maximum movement from all encounters (km)	3 575	0	3 575
% recovered (encountered dead)	80	66	70
% direct recoveries	100	0	60
% encountered during banding operations	0	33	20

Banding effort: Sanderling

Top banders: LPBO, RIGM, RM, NMC, DFP

Semipalmated Sandpiper (*Calidris pusilla*) 246.0

Encounters (North America): Semipalmated Sandpiper (block size = 8.1°)



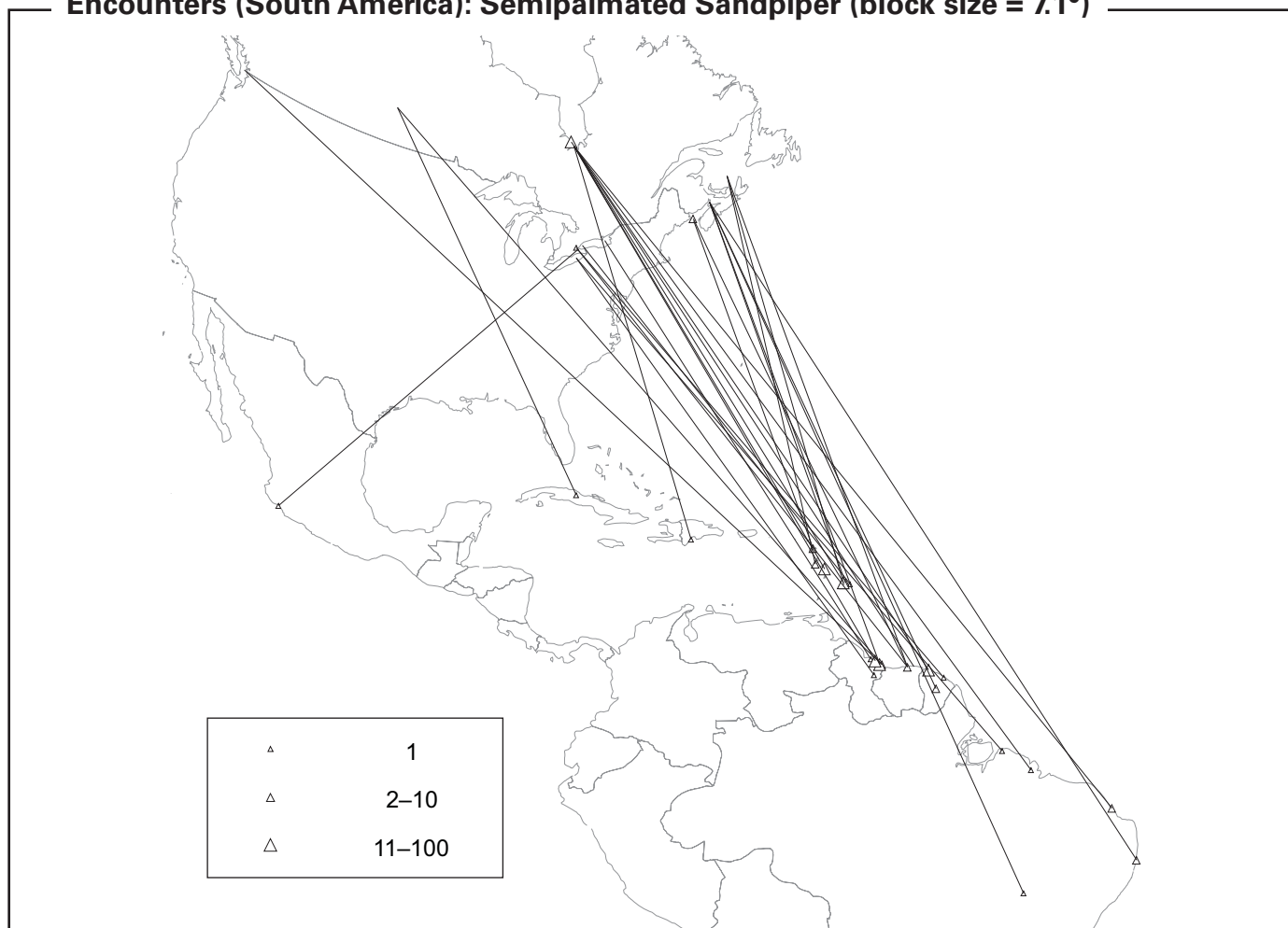
The Semipalmated Sandpiper breeds in a broad zone across the Low Arctic of Canada from Labrador to Alaska, north to central Baffin Island, the Boothia Peninsula, and southern Victoria and Banks Islands; also on the north coast of Alaska. This species winters primarily on the northeastern coast of South America, with small numbers in the West Indies and Pacific coast of Central America.

Most band encounters were of birds banded on fall migration at one of very few places, including James Bay, Ontario; Îles de la Madeleine, Quebec; and the Bay of Fundy (see effort map). Colour-marking at these sites has yielded many sightings along the migration routes (Morrison 1984), but these are not included in the data set presented here. Note that the encounter maps discussed below have large block sizes,

indicating that similar encounter records have been grouped into single lines (see Introduction).

Of 177 Semipalmated Sandpipers encountered during September through November, relatively few were still in North America; all reported from eastern provinces or U.S. states. Most birds encountered in these months (81%) were already south of the U.S., and there were heavy concentrations of encounters in the Lesser Antilles, Guyana and Suriname. A disproportionate number of encounters came from Guyana, where birds are hunted in winter, though Guyana holds only 0.5% of the winter population. In contrast, Suriname and French Guiana hold a larger proportion of the population, but contributed fewer band encounters. Four sandpipers arrived in Brazil before the end of November (record 1). There are

Encounters (South America): Semipalmated Sandpiper (block size = 7.1°)



13 records of birds encountered within a month of banding that moved at least 100 km/day. Nine of these were birds banded in Canada and found in Guyana or Suriname within 2–4 weeks. The speediest of these (the bird in record 2) moved a minimum of 769 km/day in a week. In fact, eastern Canadian birds probably make non-stop flights to South America of 4 800–6 400 km (Morrison 1984).

Like the eastern Canadian birds, western Semipalmated Sandpipers also move to the northeast coast of South America in autumn (records 3–5). They take a more western route, largely overland (Gratto-Trevor 1992), but this is not well illustrated by the data set for this book.

Of 23 encounters during mid-winter (December–February), 19 were of birds in Guyana or Suriname (record 6) and four were in Brazil (record 7). In spring (March–May), nearly half of the 66 encounter records (31 cases) showed birds to be still in Latin America (e.g., records 8 and 9). The latter, a bird reported from Colima State in Mexico, was unusually far west, in an area where transients are uncommon. Most of the remaining spring encounter records were of birds passing through the United States. Birds from the central Arctic breeding population, which move south in fall via the east coast, are thought to move north in spring through the interior (Harrington and Morrison 1979, Gratto-Trevor and Dickson 1994, as suggested by records 10–12).

Most one-year-old birds remain in the wintering area during their first summer (Gratto-Trevor 1992), but there are no examples in the data set for this book. Breeding site fidelity is high: 82 birds banded as adults were re-encountered 1+ years later at same breeding location, and there is evidence of stopover site fidelity as well (Gratto-Trevor 1992). Two birds banded as chicks were caught two and eight years later in June or

July at the same location, indicative of natal philopatry. The oldest Semipalmated Sandpiper on record at the Bird Banding Office is approximately nine years old (Klimkiewicz 2008), but the individual in record 13 is older, and the current record is held by a bird resighted on the breeding grounds near Churchill, Manitoba, that was at least 16 years old (Gratto-Trevor and Vacek 2001).

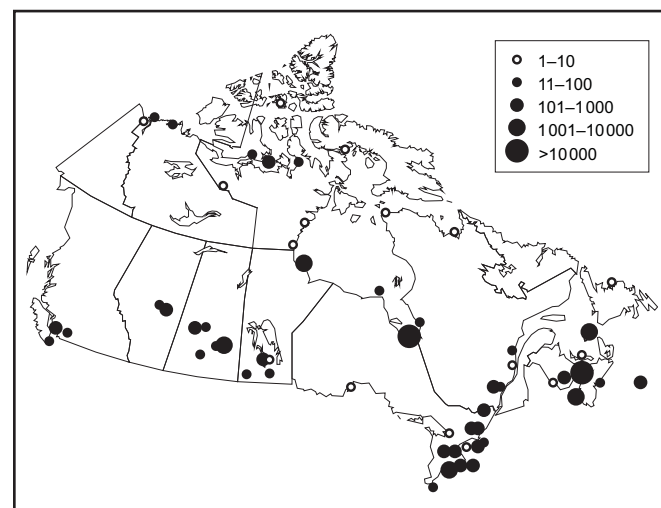
Encounter records: Semiplamated Sandpiper

1	1151-15277	AHY	U	24/08/88	Daniel, NB	45°40'N	64°30'W	2 yr. 3 mo.
	CWSAR	7	89	08/11/90	Goiana, Brazil	7°40'S	34°50'W	6 632 km S35°E
2	1181-94464	AHY	U	21/08/76	17 km northeast of Moosonee, ON	51°20'N	80°20'W	7 d.
	RIGM	5	4	28/08/76	Georgetown, Guyana	6°40'N	58°00'W	5 382 km S30°E
3	1151-88697	HY	U	07/08/90	7 km west of Wadena, SK	51°50'N	103°50'W	1 mo.
	HLD	5	97	09/09/90	Georgetown, Guyana	6°40'N	58°00'W	6 539 km S56°E
4	1231-84309	HY	U	16/08/87	4 km west of Ladner, BC	49°00'N	123°10'W	2 mo.
	CWSPYR	5	54	20/10/87	New Amsterdam, Guyana	6°10'N	57°10'W	7 763 km S76°E
5	1401-62578	HY	U	18/08/91	7 km west of Wadena, SK	51°50'N	103°50'W	1 yr. 2 mo.
	HLD	5	1	24/10/92	Corriverton, Suriname	5°50'N	57°00'W	6 676 km S57°E
6	0780-59266	SY	U	03/08/71	Îles de la Madeleine, QC	47°20'N	61°50'W	5 mo.
	RM	5	1	31/01/72	Paramaribo, Suriname	5°50'N	55°10'W	4 663 km S10°E
7	1401-53600	AHY	U	30/07/88	Daniel, NB	45°40'N	64°30'W	3 yr. 5 mo.
	CWSAR	7	89	06/12/91	Goiana, Brazil	7°40'S	34°50'W	6 632 km S35°E
8	1151-67980	AHY	U	26/07/79	17 km northeast of Moosonee, ON	51°20'N	80°20'W	1 yr. 8 mo.
	RIGM	3	1	11/03/81	Aracati, Brazil	4°30'S	37°40'W	7 417 km S47°E
9	0590-21052	AHY	U	27/07/58	Hamilton, ON	43°10'N	79°50'W	8 mo.
	RGCM	0	0	03/03/59	Colima State, Mexico	19°00'N	104°00'W	c. 3 515 km S48°W
10	1151-32387	AHY	U	18/05/82	Cheyenne Bottoms, KS	38°20'N	98°40'W	6 yr. 3 mo.
	EFM	7	89	17/08/88	Rockport, NB	45°50'N	64°30'W	2 919 km N62°E
11	0970-98919	AHY	U	27/05/83	Brookings, SD	44°10'N	96°40'W	3 yr. 9 mo.
	JDH	7	89	29/08/87	Rockport, NB	45°50'N	64°30'W	2 036 km S52°W
12	0820-10528	HY	U	30/08/72	Îles de la Madeleine, QC	47°20'N	61°50'W	8 mo.
	RM	7	89	22/04/73	near Pine River, WI	44°00'N	89°00'W	2 134 km N90°W
13	1141-16784	HY	U	09/08/75	17 km northeast of Moosonee, ON	51°20'N	80°20'W	13 yr. 9 mo.
	RIGM	7	89	10/05/89	Cheyenne Bottoms, KS	38°20'N	98°40'W	2 036 km S52°W

Summary of banding statistics: Semipalmated Sandpiper

	Age at banding		
	Hatch Year	After Hatch Year	All ages
<i>No. of Canadian bandings (1955–1995)</i>	26 490	60 273	90 235
<i>No. encountered per 1 000 banded (1955–1995)</i>			9
Total no. encountered (1921–1995)	166	756	935
No. encountered from foreign bandings	6	41	48
Maximum period from banding to encounter (mo.)	165	133	165
No. of Canadian-banded birds moving >0 km	111	199	317
Mean movement >0 km of Canadian-banded birds (km)	3 398	3 814	3 633
Maximum movement from all encounters (km)	7 763	7 417	7 763
% recovered (encountered dead)	48	17	23
% direct recoveries	48	15	21
% encountered during banding operations	45	78	72

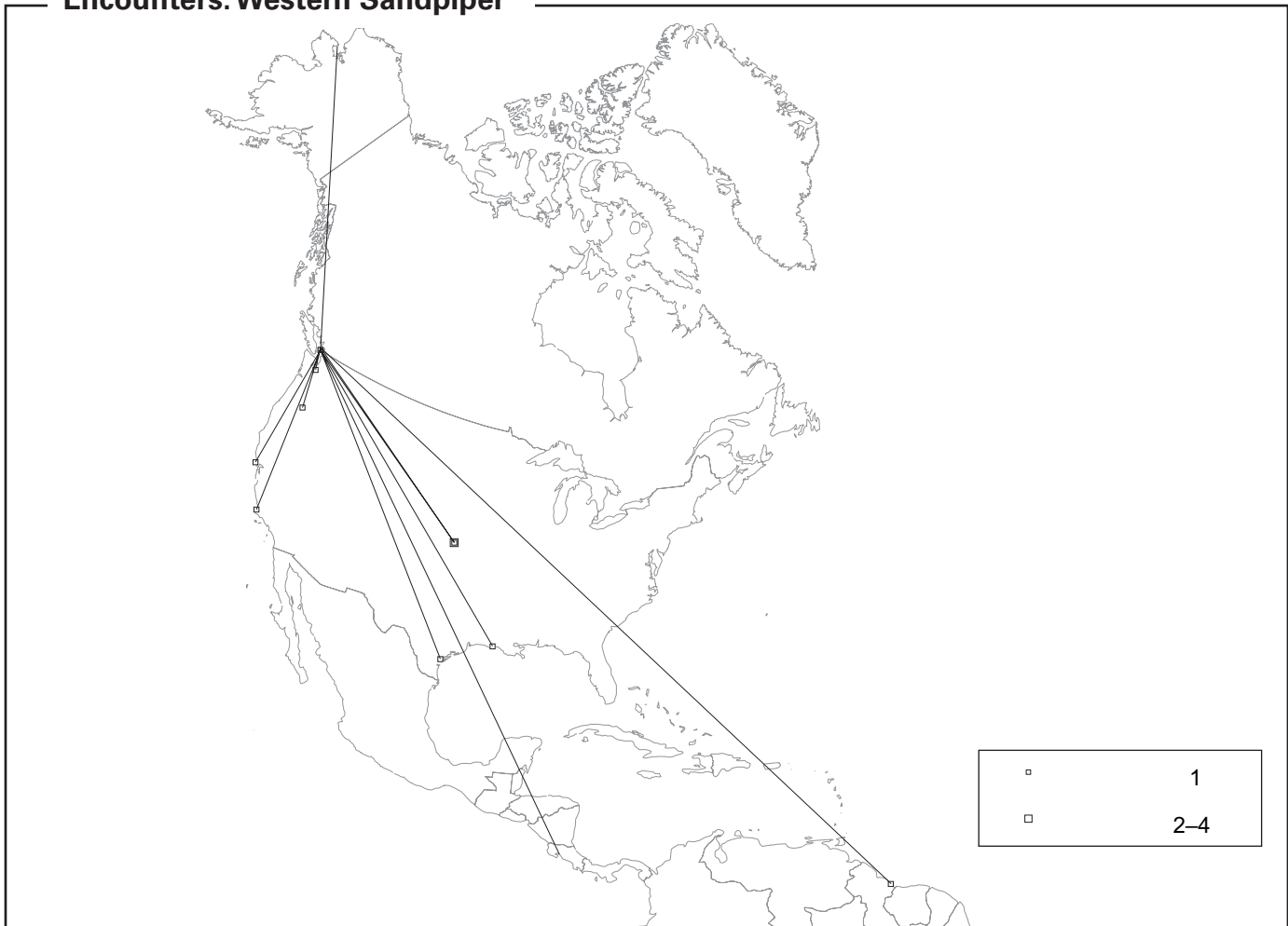
Banding effort: Semipalmated Sandpiper



Top banders: RIGM, CWS-NB, RM, HLD, DL

Western Sandpiper (*Calidris mauri*) 247.0

Encounters: Western Sandpiper



In North America, Western Sandpipers breed only in Alaska. They are spring and autumn transients in Canada, abundant on the coast of British Columbia, fairly common in the Prairies (Salt and Salt 1976) and sparse in southern Ontario (Godfrey 1986). The core wintering area includes the Pacific coast from northern California south to Peru, but some birds go to the West Indies and the Atlantic coast of South America east to Suriname.

Of the 18 Western Sandpipers encountered, 17 involved the Fraser River delta, a well-studied stopover site near Vancouver, and the other (record 1) was encountered close by. The bird in record 2 represents the sole direct link between Canada and the breeding grounds. Several records indicate fall movement along the Pacific coast (record 3), while many others support

cross-country migration (records 4–6). The encounter location of the bird in record 4, Cheyenne Bottoms, Kansas, is an important stopover site for the species. The two birds encountered in Latin America, one captured in Costa Rica in autumn (record 7) and one in Guyana in spring (record 8), might have wintered farther south.

Intensive colour-marking and observation of Western Sandpipers all along the Pacific coast support the picture presented by the banding records, including movement primarily along the coast but also transcontinentally to wintering areas on the Atlantic coast (Butler et al. 1996). That study also documented strong winter site fidelity. The banding data set indicates there is also regular use of important stopover sites from year to year (record 9 and another

bird with similar banding and encounter dates), and other banding evidence suggests breeding site fidelity (Wilson 1994).

The bird in record 4 is the oldest in this data set, but a nine-year-old has been documented elsewhere (Clapp et al. 1982, Klimkiewicz 2008).

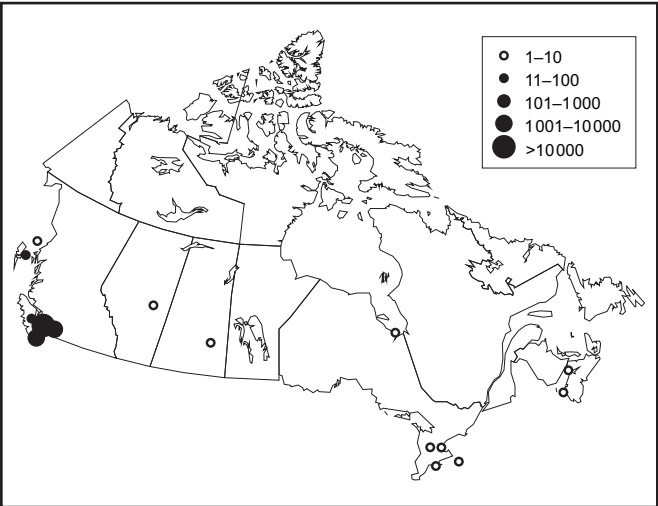
Encounter records: Western Sandpiper

1	0780-61166	AHY	U	09/05/71	4 km west of Ladner, BC	49°10'N	123°10'W	3 yr. 0 mo.
	RWC	4	14	31/05/74	Bend, OR	44°00'N	121°10'W	595 km S16°E
2	0880-84113	AHY	U	11/06/77	4 km east of Espenberg, AK	66°30'N	163°40'W	2 yr. 10 mo.
	GCW	7	89	20/04/80	Ladner, BC	49°00'N	123°00'W	3012 km S70°E
3	0910-28761	AHY	U	24/07/80	Ladner, BC	49°00'N	123°00'W	2 yr. 4 mo.
	CWSPYR	5	0	14/11/82	Guadalupe, CA	34°50'N	120°30'W	1590 km S 8°E
4	0890-53451	AHY	F	01/07/79	4 km west of Ladner, BC	49°10'N	123°10'W	3 yr. 0 mo.
	CWSPYR	8	89	22/07/82	Cheyenne Bottoms, KS	38°20'N	98°40'W	2294 km S68°E
5	1151-82619	HY	U	07/08/87	Ladner, BC	49°00'N	123°00'W	1 mo.
	CWSPYR	7	89	22/09/87	Taft, TX	27°50'N	97°20'W	3219 km S52°E
6	0940-42832	HY	M	18/08/82	Ladner, BC	49°00'N	123°00'W	
	CWSPYR	5	0	??/12/85	11 km south of Gueydan, LA	29°50'N	92°30'W	3342 km S62°E
7	1211-72542	U	U	08/10/77	Puntarenas, Costa Rica	10°00'N	84°50'W	2 yr. 6 mo.
	FGS	7	89	20/04/80	Ladner, BC	49°00'N	123°00'W	5597 km N32°W
8	0890-67222	HY	F	06/09/79	4 km west of Ladner, BC	49°10'N	123°10'W	7 mo.
	CWSPYR	5	1	16/04/80	southeast of New Amsterdam, Guyana	6°10'N	57°20'W	7756 km S75°E
9	0880-82489	AHY	M	27/04/79	Ladner, BC	49°00'N	123°00'W	1 yr. 0 mo.
	CWSPYR	7	99	30/04/80	Ladner, BC	49°00'N	123°00'W	0 km

Summary of banding statistics:
Western Sandpiper

	Age at banding		
	Hatch Year	After Hatch Year	All ages
No. of Canadian bandings (1955–1995)	7 841	6 590	14 950
No. encountered per 1 000 banded (1955–1995)			1
Total no. encountered (1921–1995)	5	11	18
No. encountered from foreign bandings	0	1	2
Maximum period from banding to encounter (mo.)	14	36	36
No. of Canadian-banded birds moving >0 km	5	7	12
Mean movement >0 km of Canadian-banded birds (km)	3 148	1 617	2 255
Maximum movement from all encounters (km)	7 756	3 012	7 756
% recovered (encountered dead)	60	18	33
% direct recoveries	20	18	22
% encountered during banding operations	40	81	66

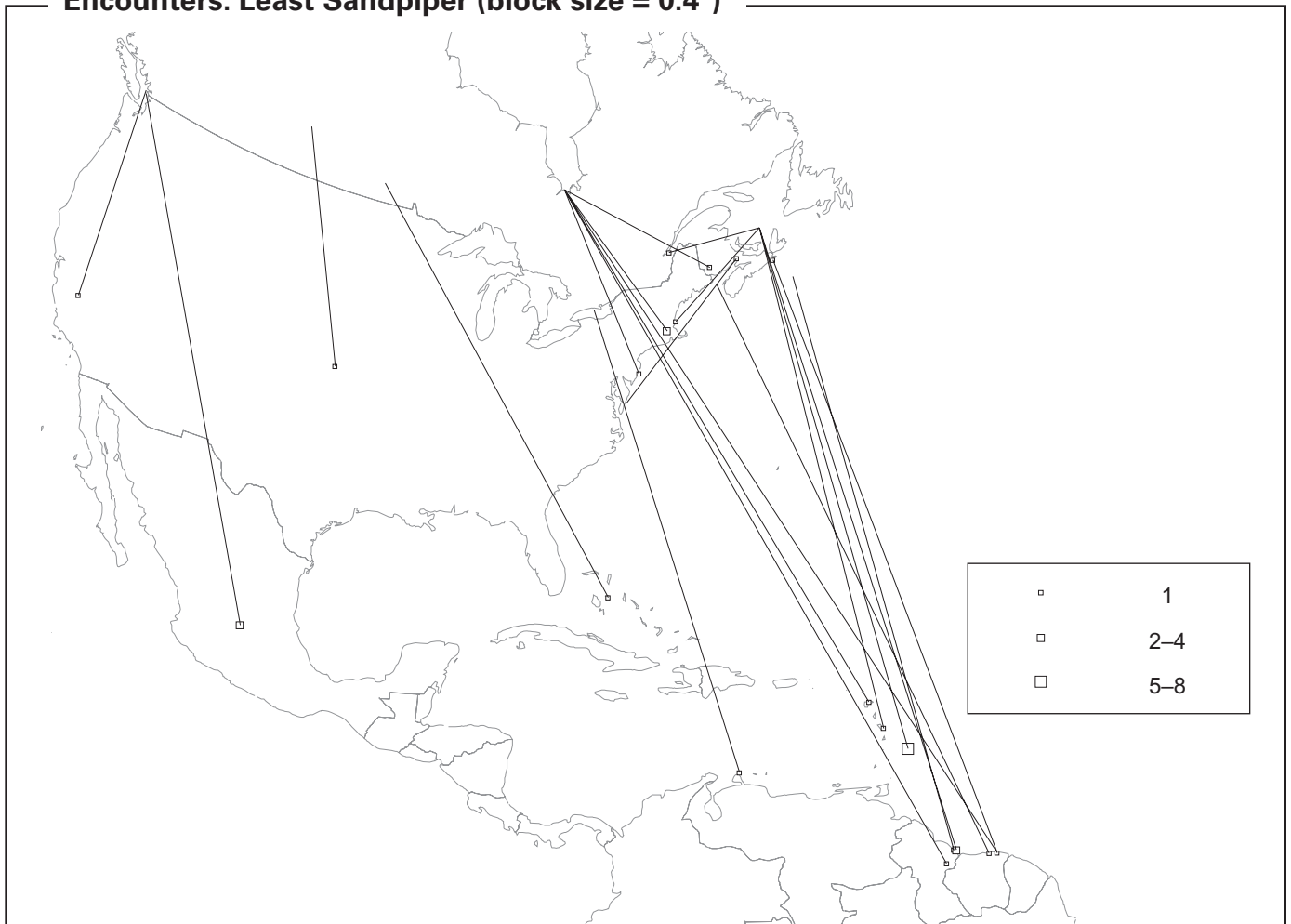
Banding effort: Western Sandpiper



Top banders: CWS-BC, CVM, RWC, BAP, ETJ

Least Sandpiper (*Calidris minutilla*) 242.0

Encounters: Least Sandpiper (block size = 0.4°)



Least Sandpipers breed in Alaska, and across northern Canada south of the Arctic islands, into the northern portions of most provinces and in Newfoundland, and locally in Nova Scotia. They winter both coastally and inland, from the southern United States south to central Peru and Brazil, and in the West Indies and Galapagos Islands.

There were three encounters of birds banded near Vancouver during fall migration. One of these wintered in California (record 1). The other two were shot in Mexico, one the same fall and one the following spring (record 2), and may have wintered much farther south. Least Sandpipers also use inland migration routes; one bird passing through Saskatchewan reached Kansas seven days later (record 3), averaging 236 km/day.

Birds from the eastern half of the Canadian range winter in the West Indies and on the northeast coast of South America. The bird in record 4 may have done so as well, though evidently originating from further west. Eastern birds move towards the Atlantic coast in fall (e.g., record 5), then make over-ocean flights towards South America (Nebel and Cooper 2008; records 6–9). The latter is the only case of a mid-winter (December–February) encounter of a bird banded in eastern Canada.

In spring, Least Sandpipers follow a more western route than in fall (Nebel and Cooper 2008), although the most southerly record from the U.S. east coast, in Virginia, was a bird found there in May (record 10). The only other record documenting northward spring

migration was a bird banded in Suriname in March and found dead in Nova Scotia four months later (record 11).

The bird in record 12 is the oldest in the data set, and close to the maximum age of 16 years reported

by the Bird Banding Office (Klimkiewicz and Fitcher 1989, Klimkiewicz 2008). This record also indicates breeding site fidelity.

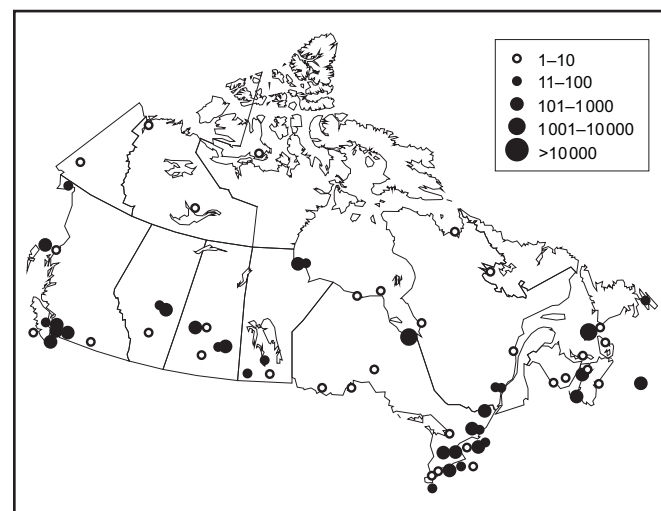
Encounter records: Least Sandpiper

1	0890-53380	HY	U	06/08/79	4 km west of Ladner, BC	49°10'N	123°10'W	4 mo.
	CWSPYR	5	0	22/12/79	Fresno, CA	36°40'N	119°40'W	1 420 km S13°E
2	0890-66517	AHY	U	06/08/79	4 km west of Ladner, BC	49°10'N	123°10'W	7 mo.
	CWSPYR	5	1	05/03/80	Guanajuato State, Mexico	21°00'N	101°00'W	3 699 km S40°E
3	1041-77408	U	U	02/09/67	6 km west of Vanscoy, SK	52°00'N	107°00'W	7 d.
	CSH	7	89	09/09/67	Cheyenne Bottoms, KS	38°20'N	98°40'W	1 653 km S26°E
4	0800-02237	U	U	08/08/71	Big Lake, MB	50°10'N	98°20'W	7 mo.
	DWRS	3	1	11/03/72	New Providence Island, Bahamas	25°00'N	77°20'W	3 333 km S41°E
5	1151-73792	HY	U	07/08/80	17 km northeast of Moosonee, ON	51°20'N	80°20'W	15 d.
	RIGM	7	4	22/08/80	Hopkinton, MA	42°10'N	71°30'W	1 221 km S37°E
6	1200-41416	AHY	U	30/07/70	Îles de la Madeleine, QC	47°20'N	61°50'W	2 mo.
	RM	5	1	12/09/70	mouth of Courantyne River, Guyana	6°00'N	57°10'W	4 623 km S7°E
7	0221-20965	HY	U	11/09/68	Presqu'île Provincial Park, ON	43°50'N	77°40'W	1 mo.
	GPa	5	23	21/10/68	Mangel Cora, Aruba	12°20'N	69°50'W	3 586 km S14°E
8	1151-04947	HY	U	06/08/77	17 km northeast of Moosonee, ON	51°20'N	80°20'W	1 mo.
	RIGM	5	1	03/09/77	Blanchet, Guadeloupe	16°20'N	61°30'W	4 240 km S30°E
9	0830-01186	AHY	F	03/06/75	Sable Island, NS	43°50'N	60°00'W	8 mo.
	RIGM	8	28	27/02/76	southeast of New Amsterdam, Guyana	6°10'N	57°20'W	4 201 km S 4°E
10	2010-19336	AHY	U	18/05/85	Chincoteague, VA	37°50'N	75°20'W	3 yr. 3 mo.
	JHB	7	89	13/08/88	Rockport, NB	45°50'N	64°30'W	1 263 km N42°E
11	1211-82431	SY	U	28/03/77	Paramaribo, Suriname	5°50'N	54°40'W	4 mo.
	ALS	5	0	26/07/77	Larry's River, NS	45°10'N	61°20'W	4 426 km N 7°W
12	1230-23204	HY	F	22/07/70	Sable Island, NS	43°50'N	60°00'W	14 yr. 11 mo.
	RM	7	33	08/06/85	Sable Island, NS	44°00'N	60°00'W	19 km N 0°W

Summary of banding statistics: Least Sandpiper

	Age at banding		
	Hatch Year	After Hatch Year	All ages
<i>No. of Canadian bandings (1955–1995)</i>	8 055	4 884	14 090
<i>No. encountered per 1 000 banded (1955–1995)</i>			2
Total no. encountered (1921–1995)	15	17	36
No. encountered from foreign bandings	0	2	2
Maximum period from banding to encounter (mo.)	179	39	179
No. of Canadian-banded birds moving >0 km	12	11	26
Mean movement >0 km of Canadian-banded birds (km)	2 593	3 580	3 074
Maximum movement from all encounters (km)	5 528	5 593	5 593
% recovered (encountered dead)	60	64	58
% direct recoveries	60	58	61
% encountered during banding operations	26	29	33

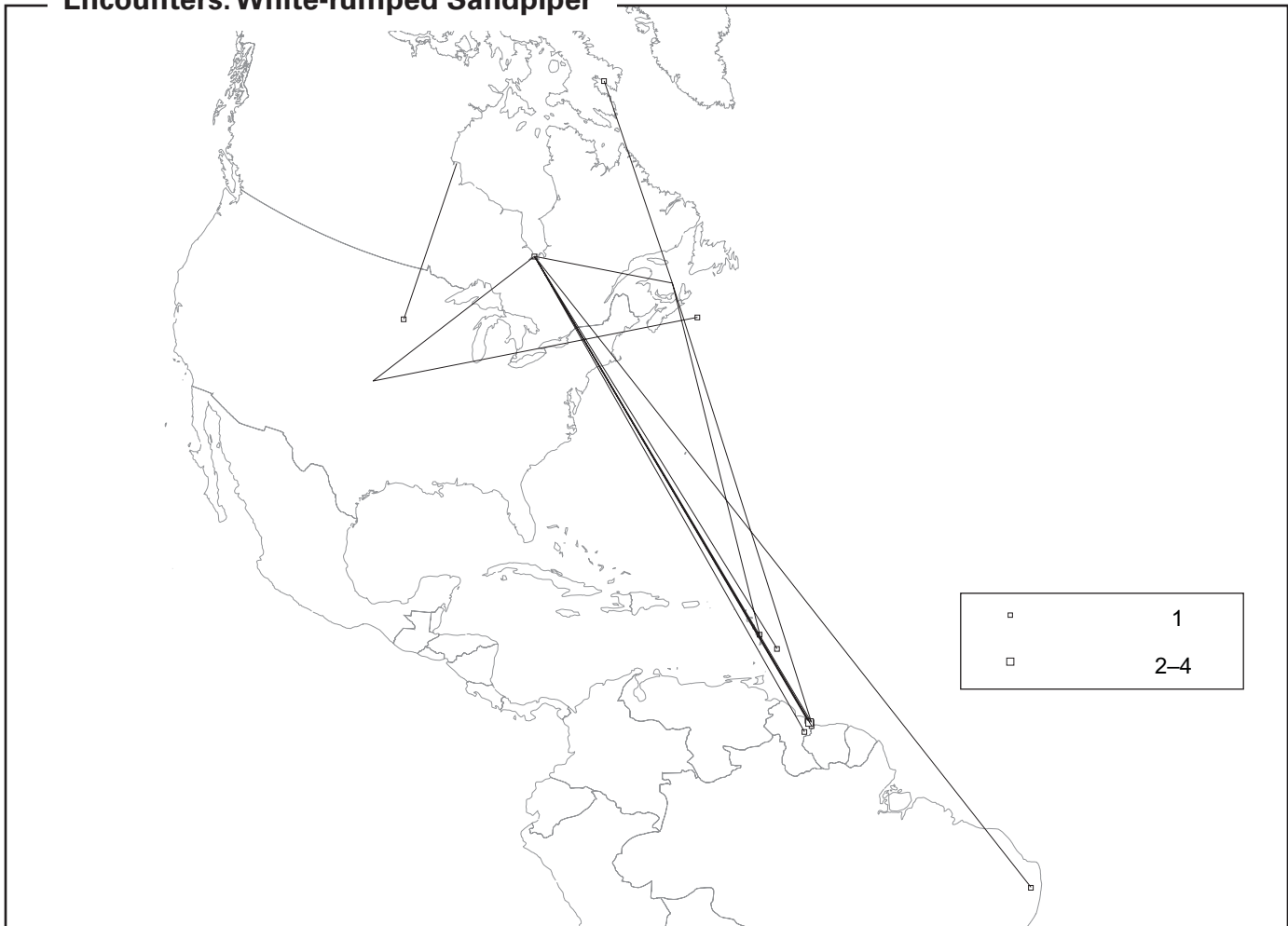
Banding effort: Least Sandpiper



Top banders: RIGM, CWS-BC, RM, LPBO, CWS-QC

White-rumped Sandpiper (*Calidris fuscicollis*) 240.0

Encounters: White-rumped Sandpiper



The White-rumped Sandpiper breeds on the northern edge of mainland Northwest Territories and Nunavut and in the southern and central Arctic islands; also in northern Alaska. The winter range is mainly south of the equator in eastern South America south to Tierra del Fuego, including the Falkland Islands.

The pattern of migration in White-rumped Sandpipers has been summarized by Parmelee (1992). In fall, the birds make long-distance flights southward over the Atlantic from northeastern North America, then move more gradually southeast along the coast of South America before making a trans-Amazonian trip of about a month. On northward migration in spring, the birds retrace their routes to northern South America,

but then cross the Caribbean and move to breeding grounds through interior North America. Cheyenne Bottoms, in Kansas, is an important spring staging area.

Band encounters can be found that illustrate many portions of this journey. Record 1 is for a bird captured at two different major staging areas in different autumns. From fall staging areas, the birds then move rapidly on to northeastern South America (records 2–4). The encounters show a predominance of records from Guyana, where birds are hunted for food in winter. The bird in record 5 had reached Brazil by late September. There is only one mid-winter record (December-February; record 6), and this is from Guyana rather than from the main wintering areas south of Brazil. Record 7 illustrates the presence of birds

in northeastern South America in early spring, while records 8–10 show the more westerly routes taken by northbound birds within North America. The bird in record 8 was encountered at two interior locations in different springs (both likely part of a single migration route), while records 9 and 10 are of two individuals captured inland during spring migration and on

northeastern staging areas in fall. Both these birds were found in Kansas in mid-late May, while the bird in record 11 had reached Baffin Island by mid-June, suggesting rapid movement north from spring staging areas. This bird also holds the age record for the species (Clapp et al. 1982, Klimkiewicz 2008).

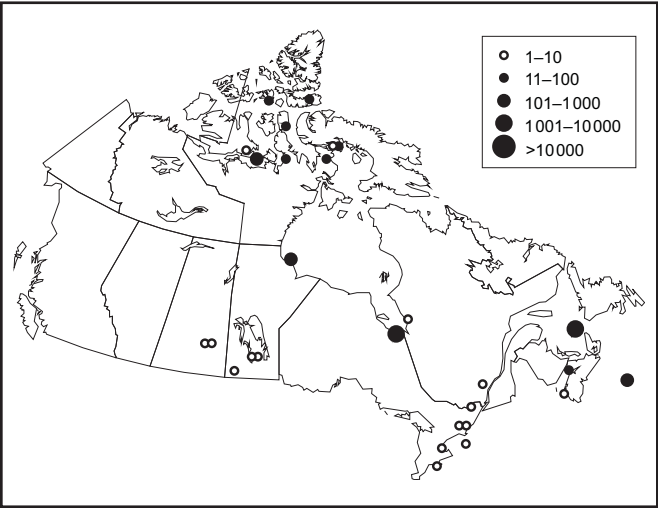
Encounter records: White-rumped Sandpiper

1	1041-84737	SY	U	02/09/71	Îles de la Madeleine, QC	47°20'N	61°50'W	3 yr. 11 mo.
	RM	8	89	11/08/75	17 km northeast of Moosonee, ON	51°20'N	80°20'W	1 409 km N65°W
2	0801-36777	AHY	U	13/08/75	17 km northeast of Moosonee, ON	51°20'N	80°20'W	1 mo.
	RIGM	8	4	21/09/75	New Amsterdam, Guyana	6°10'N	57°10'W	5 464 km S31°E
3	0811-25431	AHY	U	20/08/78	17 km northeast of Moosonee, ON	51°20'N	80°20'W	1 mo.
	RIGM	5	4	27/09/78	Georgetown, Guyana	5°20'N	57°50'W	5 528 km S30°E
4	0801-37339	AHY	U	29/07/76	17 km northeast of Moosonee, ON	51°20'N	80°20'W	2 mo.
	RIGM	3	1	28/09/76	Harrison Point, Barbados	13°10'N	59°30'W	4 644 km S31°E
5	0811-25609	AHY	U	20/08/78	17 km northeast of Moosonee, ON	51°20'N	80°20'W	3 yr. 1 mo.
	RIGM	3	1	25/09/81	Campina Grande, Brazil	7°00'S	36°00'W	7 749 km S48°E
6	0811-25803	AHY	U	06/08/78	17 km northeast of Moosonee, ON	51°20'N	80°20'W	1 yr. 4 mo.
	RIGM	5	57	02/12/79	southeast of New Amsterdam, Guyana	6°20'N	57°30'W	5 434 km S31°E
7	0801-36773	AHY	U	13/08/75	17 km northeast of Moosonee, ON	51°20'N	80°20'W	2 yr. 8 mo.
	RIGM	3	1	20/04/78	southeast of New Amsterdam, Guyana	6°10'N	57°20'W	5 458 km S31°E
8	0811-26744	AHY	U	04/06/80	10 km east of Churchill, MB	58°40'N	93°50'W	11 mo.
	RIGM	7	89	30/05/81	Bruce, SD	44°20'N	96°50'W	1 609 km S 9°W
9	0761-29060	AHY	U	16/05/70	Cheyenne Bottoms, KS	38°20'N	98°40'W	3 mo.
	EFM	7	89	29/08/70	Sable Island, NS	43°50'N	59°50'W	3 284 km N67°E
10	0761-29214	AHY	U	26/05/70	Cheyenne Bottoms, KS	38°20'N	98°40'W	5 yr. 3 mo.
	EFM	7	89	13/08/75	17 km northeast of Moosonee, ON	51°20'N	80°20'W	2 036 km N39°E
11	1091-28318	SY	U	20/08/72	Îles de la Madeleine, QC	47°20'N	61°50'W	5 yr. 10 mo.
	RM	5	0	19/06/78	Pangnirtung, NU	66°00'N	65°40'W	2 090 km N 5°W

Summary of banding statistics:
White-rumped Sandpiper

	Age at banding		
	Hatch Year	After Hatch Year	All ages
No. of Canadian bandings (1955–1995)	326	4818	5176
No. encountered per 1000 banded (1955–1995)			24
Total no. encountered (1921–1995)	11	117	128
No. encountered from foreign bandings	0	2	2
Maximum period from banding to encounter (mo.)	23	70	70
No. of Canadian-banded birds moving >0 km	10	17	27
Mean movement >0 km of Canadian-banded birds (km)	20	3456	2183
Maximum movement from all encounters (km)	20	7749	7749
% recovered (encountered dead)	100	8	16
% direct recoveries	90	4	11
% encountered during banding operations	0	90	82

Banding effort: White-rumped Sandpiper



Top banders: RIGM, RM, CWS-QC, AJG, DFP

Pectoral Sandpiper (*Calidris melanotos*) 239.0

Encounters: Pectoral Sandpiper



The Pectoral Sandpiper breeds in the Arctic regions of both the Old and New Worlds; in North America, from Alaska east to Hudson Bay, with small numbers in northern Ontario. It winters both coastally and inland in South America, primarily south of the Equator.

Fall movement is primarily through central regions of North America (Holmes and Pitelka 1998), without over-ocean flights despite the visual suggestion provided by the encounter map (records 1 and 2). Breeders from northern Siberia also cross to North

America, and thence to South American wintering areas (record 3). This pattern is supported by two other encounters of Siberian birds in the north-central United States (Holmes and Pitelka 1998), and by radar studies showing shorebird movement between northern Siberia and Alaska (Alerstam et al. 2007).

Unlike many other sandpipers, the Pectoral Sandpiper appears to be somewhat nomadic, and has quite low breeding site fidelity (Holmes and Pitelka 1998).

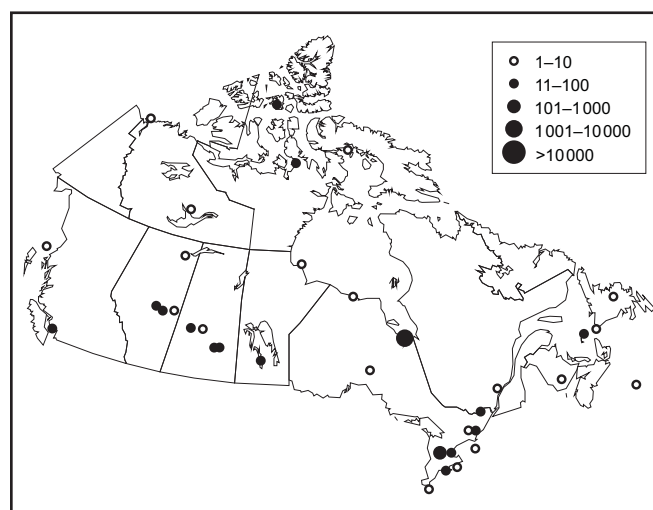
Encounter records: Pectoral Sandpiper

1	0802-50759	HY	U	13/08/81	17 km northeast of Moosonee, ON	51°20'N	80°20'W	
	RIGM	5	1	??/WI/82	Les Anses d'Arlets, Martinique	14°30'N	61°00'W	4 451 km S30°E
2	0802-02704	HY	U	06/09/76	17 km northeast of Moosonee, ON	51°20'N	80°20'W	1 mo.
	RIGM	5	1	18/10/76	Harrison Point, Barbados	13°10'N	59°30'W	4 644 km S31°E
3	0502-86246	U	U	20/09/61	near Cheviot, SK	52°10'N	106°10'W	1 yr. 8 mo.
	CSH	0	1	28/05/63	near Verkhoyansk, Russia	68°30'N	134°40'E	5 710 km N24°E

Summary of banding statistics: Pectoral Sandpiper

	Age at banding		
	Hatch Year	After Hatch Year	All ages
No. of Canadian bandings (1955–1995)	415	1 558	2 334
No. encountered per 1 000 banded (1955–1995)			1
Total no. encountered (1921–1995)	2	1	4
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	1	0	20
No. of Canadian-banded birds moving >0 km	2	0	3
Mean movement >0 km of Canadian-banded birds (km)	4 547	–	4 934
Maximum movement from all encounters (km)	4 644	0	5 710
% recovered (encountered dead)	100	100	100
% direct recoveries	50	100	50
% encountered during banding operations	0	0	0

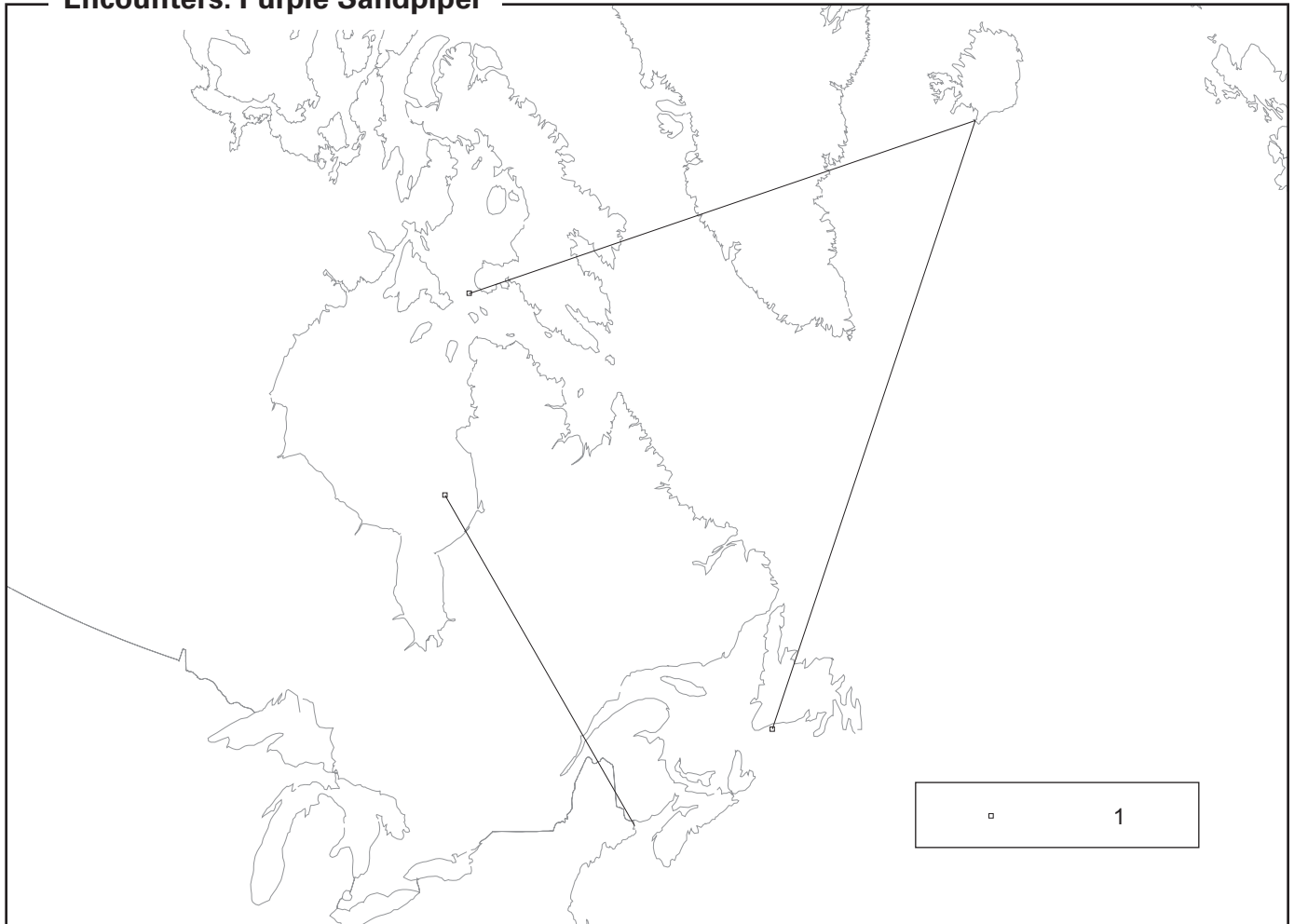
Banding effort: Pectoral Sandpiper



Top banders: RIGM, DRL, LMT, HLD, PEPO

Purple Sandpiper (*Calidris maritima*) 235.0

Encounters: Purple Sandpiper



This circumpolar species breeds in Canada primarily in the High Arctic islands, Baffin Island and islands of Hudson Bay. Most populations are less migratory than most small shorebird species, moving only as far as ice-free Atlantic coasts from Newfoundland to South Carolina, and on the Great Lakes and St. Lawrence River. However, a portion of the Canadian population, particularly from the most northeasterly regions, winters in Europe.

Most Purple Sandpipers banded in Canada were After Hatch Year birds (see summary of banding statistics). The seven encounters of birds banded in Canada were all birds banded at St. Andrew's Harbour, New Brunswick, in February. Six returned to the same location the following year, indicating fidelity

to wintering area (record 1), and illustrate how far north this species may spend the winter. The seventh Canadian-banded bird (record 2) was later shot within the breeding range. This is also the oldest bird in the data set. No North American banding records come close to the age of a Purple Sandpiper banded in Finland and resighted in the British Isles 20 years later (Payne and Pierce 2002).

Evidence from biometric studies indicates that many of the birds wintering in Britain and Ireland come from the New World. Banding data suggest a pause in Iceland during migration (record 3), and several birds banded in Europe have been encountered on passage in Iceland or Greenland (Wernham et al. 2002). These birds are presumed not to belong to breeding populations from Iceland or south and west Greenland,

as those populations are thought to be entirely non-migratory (Payne and Pierce 2002). Record 4, a bird encountered in winter in Canada, was originally banded in spring in Iceland — indicative of its having spent the

previous winter in Europe. While the evidence is not conclusive, it is an intriguing possibility that this bird may have spent different winters on opposite sides of the Atlantic (Morrison 1984).

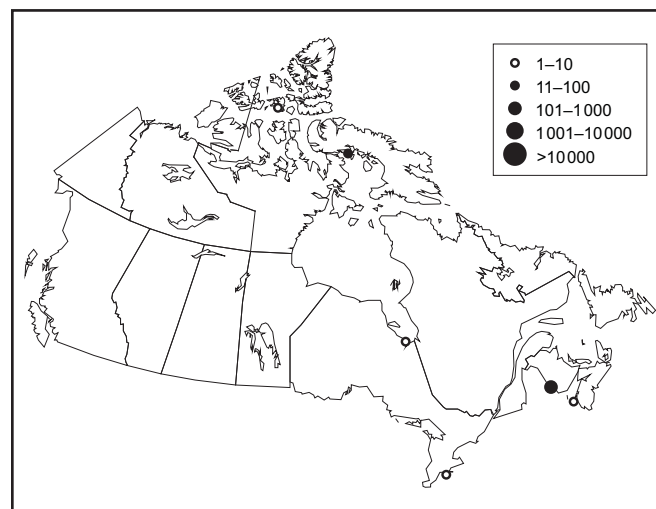
Encounter records: Purple Sandpiper

1	0761-51073	AHY	U	15/02/75	St. Andrews, NB	45°00'N	67°00'W	9 mo.
	RIGM	8	99	21/11/75	St. Andrews, NB	45°00'N	67°00'W	0 km
2	0761-51128	AHY	U	15/02/75	St. Andrews, NB	45°00'N	67°00'W	1 yr. 4 mo.
	RIGM	5	1	04/06/76	Belcher Islands, NU	56°40'N	79°20'W	1 556 km N29°W
3	63731	AHY	U	20/05/42	Hafurbjarnarstabir, Iceland	64°00'N	22°40'W	11 mo.
	Iceland	0	97	25/04/43	Baffin Island, NU	64°10'N	78°40'W	2 636 km N64°N
4	86062	AHY	U	17/05/54	Hafurbjarnarstabir, Iceland	64°00'N	22°40'W	7 mo.
	Iceland	0	97	25/12/54	Grand Bruit, NL	47°30'N	58°10'W	2 821 km S66°W

Summary of banding statistics: Purple Sandpiper

	Age at banding		
	Hatch Year	After Hatch Year	All ages
No. of Canadian bandings (1955–1995)	20	232	253
No. encountered per 1 000 banded (1955–1995)			27
Total no. encountered (1921–1995)	0	7	9
No. encountered from foreign bandings	0	0	2
Maximum period from banding to encounter (mo.)	–	16	16
No. of Canadian-banded birds moving >0 km	0	1	1
Mean movement >0 km of Canadian-banded birds (km)	–	1 556	1 556
Maximum movement from all encounters (km)	–	1 556	2 821
% recovered (encountered dead)	–	14	33
% direct recoveries	–	0	11
% encountered during banding operations	–	85	66

Banding effort: Purple Sandpiper



Top banders: RIGM, NMC, CWS-ER, LPBO, BC

Dunlin (*Calidris alpina*) 243.0

Encounters: Dunlin



The Dunlin is a holarctic species whose Canadian breeding range encompasses the northern coast of the Northwest Territories, western Nunavut as far east as southeastern Baffin Island, and the west coast of Hudson Bay to Cape Henrietta Maria, Ontario. Dunlin breeding in coastal Alaska (*C. a. pacifica*), are a separate subspecies from Canadian breeders (*C. a. hudsonia*). The Dunlin winters farther north than many other sandpiper species, and is regularly and commonly found on the Pacific coast of North America from Alaska to Nayarit, Mexico, and on the Atlantic and Gulf coasts from New Jersey to the Yucatán Peninsula.

Dunlins migrate along two major routes, one along the Pacific coast, the other between Hudson Bay, the Great Lakes and the Atlantic coast. Smaller numbers use a third, interior route, through the Prairie provinces (Warnock and Gill 1996), but there are no band encounters in our data set to illustrate that movement.

Alaskan breeders migrate through southern British Columbia, where many are captured at stopover sites near Vancouver (records 1–2). There are no Vancouver area encounters during fall migration, although the birds arrive in good numbers by mid-October, but there

are numerous records from winter months (December–February; record 2). The bird in record 3 may have been wintering in California, although the only date available was the postmark on the recovery report. There are many British Columbia encounters in spring, and once birds leave that province, they evidently move quickly to breeding areas; the bird in record 4 travelled nearly 2000 km in 12 days.

Canadian breeders are most represented in the Hudson Bay–Great Lakes–eastern seaboard migration route (records 5–7). The bird in record 8 and many

other examples show that the same seasonal stopover sites may be used from year to year. There is also evidence of fidelity to wintering areas (Warnock and Gill 1996). Records 9 and 10 are, respectively, examples of fidelity of adults to breeding site, and of natal philopatry (the latter far less common). The individual in record 8 is also the oldest in the data set, although far younger than the oldest on record with the Bird Banding Office, 12 years and 5 months (Klimkiewicz and Futcher 1989, Klimkiewicz 2008).

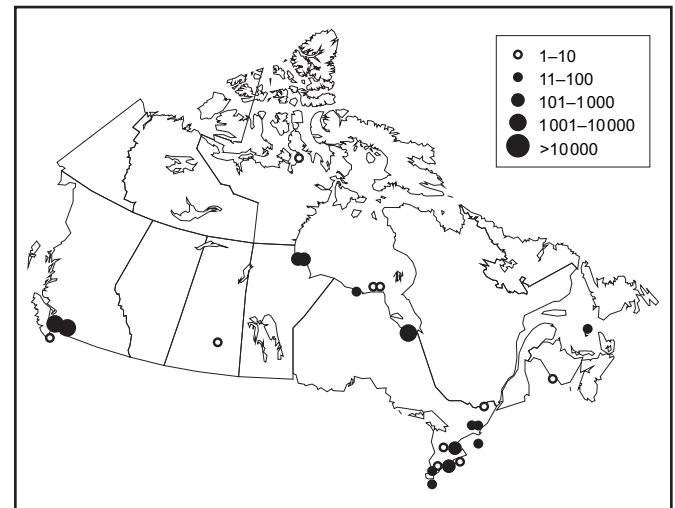
Encounter records: Dunlin

1	0871-63488	HY	U	18/08/78	20 km south of Chevak, AK	61°10'N	165°30'W	3 mo.
	ASC	7	89	13/11/78	Ladner, BC	49°00'N	123°00'W	2957 km S82°E
2	1231-13786	AHY	M	30/01/80	4 km west of Ladner, BC	49°10'N	123°10'W	7 mo.
	CWSPYR	7	89	30/08/80	20 km south of Chevak, AK	61°10'N	165°30'W	2936 km N47°W
3	1231-12850	AHY	U	21/04/79	Crescent Beach, BC	49°00'N	122°50'W	8 mo.
	CWSPYR	3	1	??/12/79	Sheridan, CA	38°50'N	121°20'W	1 138 km S 7°E
4	1231-00592	AHY	M	26/04/78	Crescent Beach, BC	49°00'N	122°50'W	12 dy.
	CWSPYR	5	16	08/05/78	Cordova, AK	60°30'N	145°50'W	1937 km N40°W
5	0521-86360	AHY	U	27/05/58	Hamilton, ON	43°10'N	79°50'W	1 yr. 4 mo.
	LAG	00 01		11/09/59	near Lake Burton, QC	55°10'N	77°40'W	1 345 km N6°E
6	0521-63425	HY	U	10/08/63	Winisk, ON	55°10'N	85°10'W	2 mo.
	LMT	0	0	26/10/63	Long Point, ON	42°30'N	80°20'W	1 453 km S16°E
7	0631-61232	U	U	31/10/65	Avalon, NJ	39°00'N	74°40'W	10 mo.
	RDB	5	1	??/08/66	mouth of Albany River, ON	52°10'N	81°20'W	1 553 km N17°W
8	0801-36662	AHY	U	13/08/75	17 km northeast of Moosonee, ON	51°20'N	80°20'W	4 yr. 0 mo.
	RIGM	8	99	13/08/79	17 km northeast of Moosonee, ON	51°20'N	80°20'W	0 km
9	0571-06050	AHY	U	02/07/65	10 km east of Churchill, MB	58°40'N	93°50'W	1 yr. 11 mo.
	DJTH	7	89	27/06/67	Churchill, MB	58°40'N	94°10'W	19 km W
10	0571-06068	L	U	13/07/65	10 km east of Churchill, MB	58°40'N	93°50'W	1 yr.
	DJTH	3	0	11/07/66	Churchill, MB	58°50'N	94°10'W	27 km N46°W

Summary of banding statistics: Dunlin

	Age at banding		
	Hatch Year	After Hatch Year	All ages
<i>No. of Canadian bandings (1955-1995)</i>	1264	4031	5531
<i>No. encountered per 1 000 banded (1955-1995)</i>			6
Total no. encountered (1921-1995)	7	31	39
No. encountered from foreign bandings	2	1	4
Maximum period from banding to encounter (mo.)	12	48	48
No. of Canadian-banded birds moving >0 km	4	13	17
Mean movement >0 km of Canadian-banded birds (km)	376	577	530
Maximum movement from all encounters (km)	2957	2966	2966
% recovered (encountered dead)	71	29	38
% direct recoveries	71	25	33
% encountered during banding operations	28	70	61

Banding effort: Dunlin



Top banders: CWS-BC, RIGM, JRJ, LPBO, CLGT

Stilt Sandpiper (*Calidris himantopus*) 233.0

Encounters: Stilt Sandpiper



The Stilt Sandpiper has a very narrow breeding range, confined to subarctic and Low Arctic tundra in non-contiguous areas scattered from James Bay to northern Alaska. The wintering area is much broader, including inland portions of northern and central South America, southern Mexico and the west coast of Central America, as well as coastal Texas and additional small areas scattered throughout the south coastal United States, and the Caribbean.

Fall migrants have major staging areas in the Prairies from Saskatchewan to Kansas, and may moult in northern South America before continuing

towards interior wintering areas (Klima and Jehl 1998). The sole long-distance movement of a banded bird (record 1) appears typical, given sight records of other birds colour-marked in Saskatchewan during fall migration (C. Gratto-Trevor, pers. comm.). Spring passage follows similar routes.

The bird in record 2 is the oldest in the data set (but far short of the record for the species of 11 years 1 month; Klimkiewicz 2008). It illustrates breeding site fidelity, as do numerous other cases, while record 3 and a few others indicate that at least some birds return to the natal area to breed.

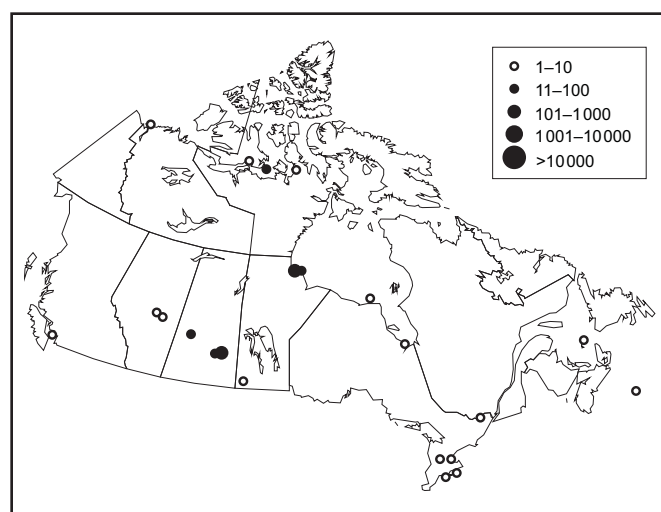
Encounter records: Stilt Sandpiper

1	0811-05443	AHY	U	08/08/91	7 km west of Wadena, SK	51°50'N	103°50'W	
	HLD	5	1	??/FA/91	Acarigua, Venezuela	9°20'N	69°00'W	5 688 km S46°E
2	0502-98726	AHY	M	25/06/65	Churchill, MB	58°40'N	94°10'W	2 yr. 1 mo.
	JRJ	3	16	09/07/67	Churchill, MB	58°50'N	94°10'W	19 km N 5°W
3	0552-94106	L	U	18/07/64	Churchill, MB	58°50'N	94°10'W	2 yr. 0 mo.
	JRJ	3	0	21/07/66	Churchill, MB	58°50'N	94°10'W	0 km

Summary of banding statistics: Stilt Sandpiper

	Age at banding		
	Hatch Year	After Hatch Year	All ages
No. of Canadian bandings (1955–1995)	405	565	1 020
No. encountered per 1 000 banded (1955–1995)			13
Total no. encountered (1921–1995)	3	11	14
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	24	25	25
No. of Canadian-banded birds moving >0 km	2	6	8
Mean movement >0 km of Canadian-banded birds (km)	20	963	727
Maximum movement from all encounters (km)	20	5 688	5 688
% recovered (encountered dead)	100	54	64
% direct recoveries	66	18	28
% encountered during banding operations	0	45	35

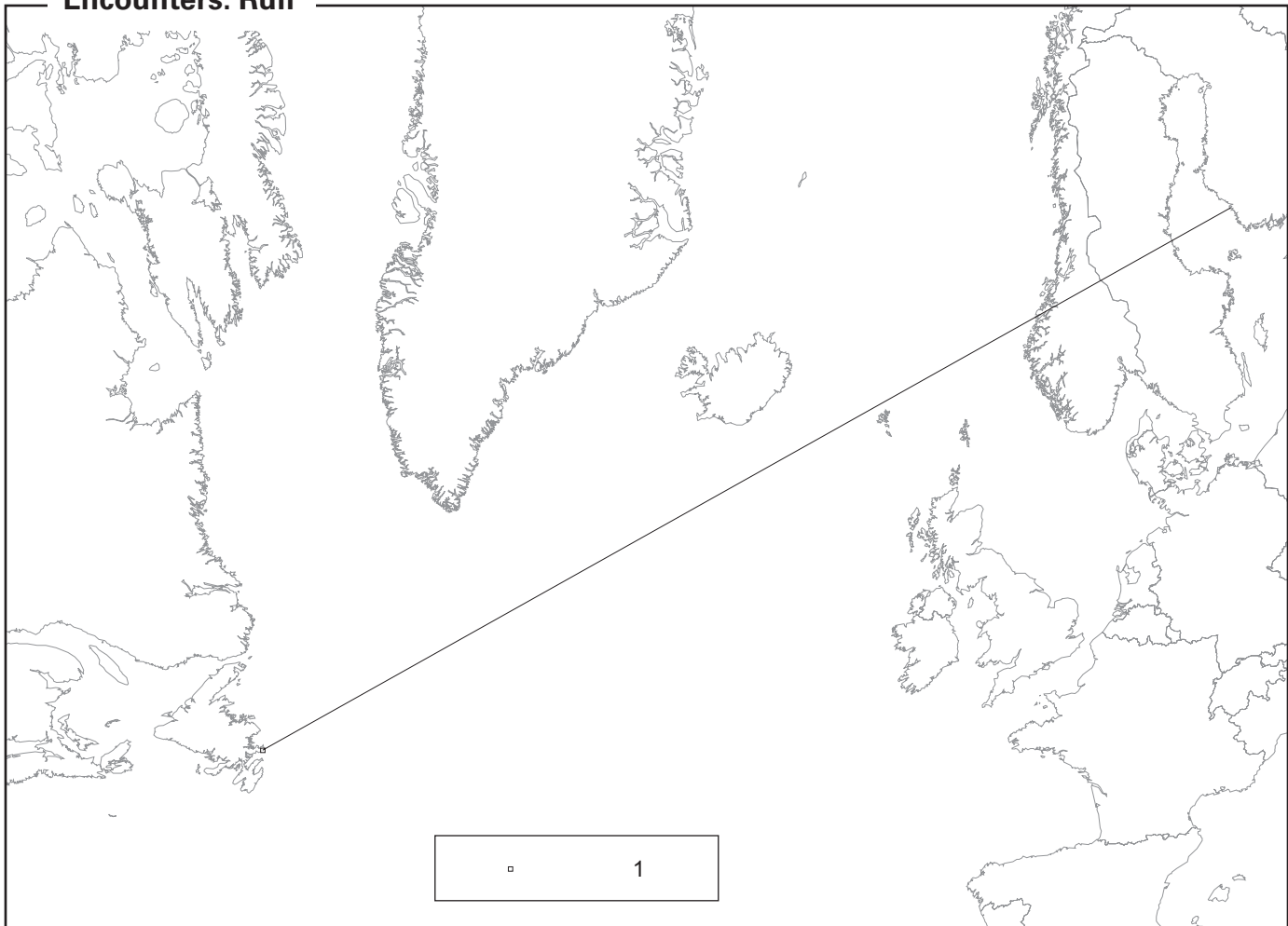
Banding effort: Stilt Sandpiper



Top banders: HLD, JRJ, CLGT, DWW, DFP

Ruff (*Philomachus pugnax*) 260.0

Encounters: Ruff



The Ruff is a bird of northern Eurasia that winters in Africa and locally throughout southern Europe, Arabia, India and Australia.

Individuals of this species turn up as vagrants in Iceland, Bermuda, and both coastally and inland in the United States and Canada, where it may also breed occasionally (Hayman et al. 1986). The only

band encounter in Canada (record 1) was a bird banded within the breeding range in Finland and found in Newfoundland the next spring.

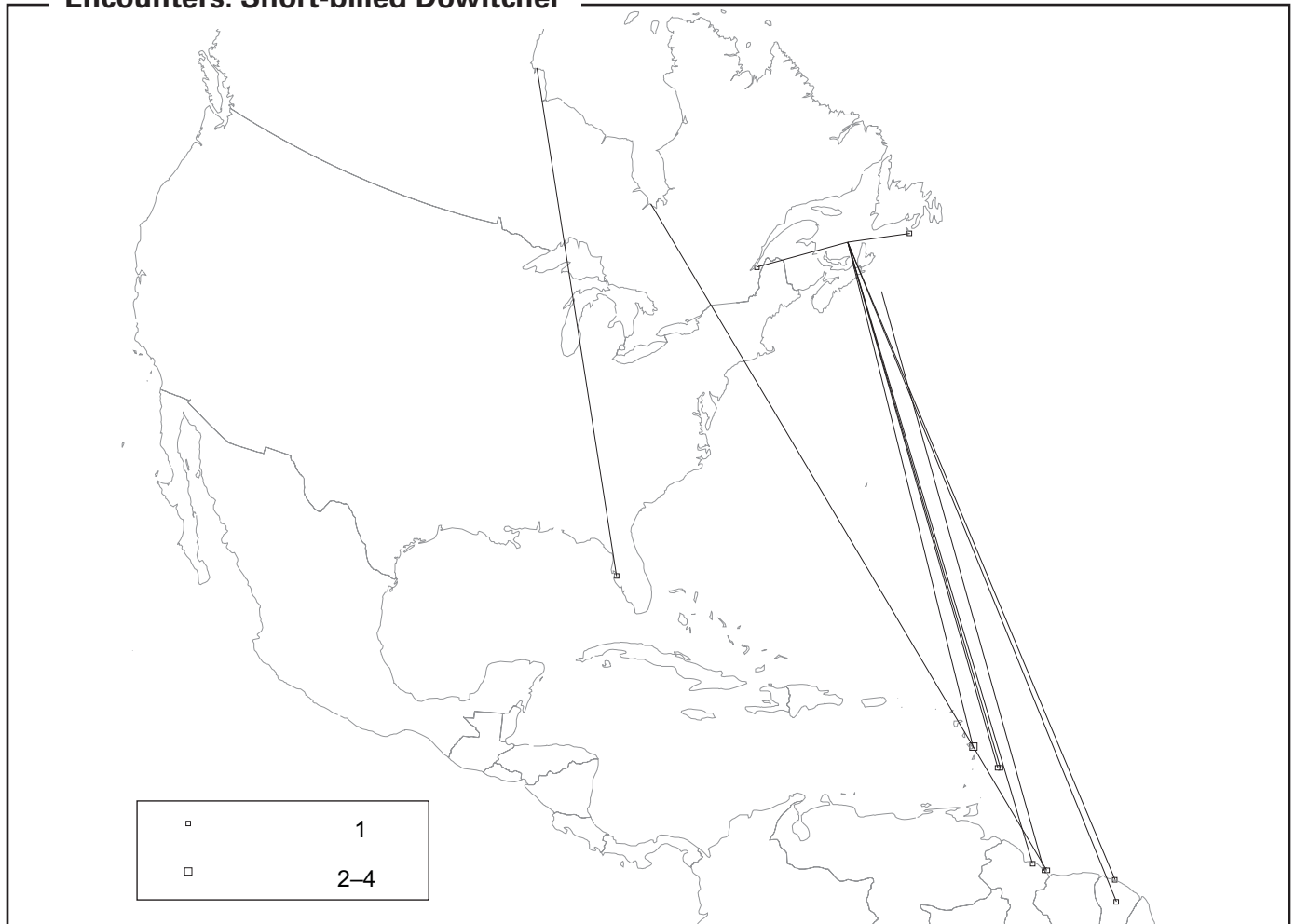
Because no Ruffs have been banded in Canada and there is only one encounter, no effort map or banding statistics are shown.

Encounter records: Ruff

1	0000-36454	U	U	19/08/75	Pori, Finland	61°30'N	21°30'E	9 mo.
		0	97	07/05/76	North Bird Island, NL	48°30'N	53°00'W	4680 km N72°W

Short-billed Dowitcher (*Limnodromus griseus*) 231.0

Encounters: Short-billed Dowitcher



The Short-billed Dowitcher has three races, each breeding in a different area: one surrounding James Bay and extending into central Quebec, a second covering northern Manitoba and Saskatchewan, and the third in northwestern British Columbia, southwestern Yukon, and southeastern coastal Alaska.

The species winters along Atlantic and Pacific coastlines from the central United States south to Peru and central Brazil. Birds from the western breeding area make up the Pacific coast migrants and wintering birds, but there has been little banding of this population (see effort map) and no encounters. The bird in record 1, from the central race, may have wintered in the Caribbean area. Birds from the eastern population

are presumed to make up most of the birds wintering from Guyana and further east and south (Jehl et al. 2001).

McNeil and Burton (1977) suggested that eastern breeders make a direct flight from the vicinity of the breeding area to the Atlantic provinces and New England states, and then make another direct flight southward over the Atlantic to the Lesser Antilles and South America. Several autumn encounters support this rapid movement (records 2–5). The birds in records 6 and 7, plus one other, are the only mid-winter (December-February) encounters. These birds were all relatively far north in the wintering range, but this may represent bias in encounter rates related to density

of people rather than of dowitchers. Records 8 and 9, birds banded and encountered during fall migration of different years, appeared not to follow exactly the same route each year. The spring return route is probably more westerly, crossing the Caribbean (McNeil and

Burton 1977), but there are no spring encounters in this data set to illustrate that.

The dowitcher in record 9 is older than the oldest currently listed by the Bird Banding Office (Klimkiewicz 2008).

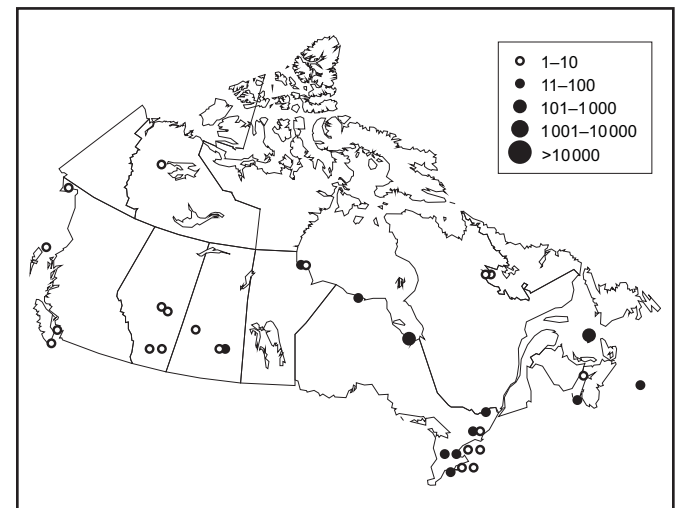
Encounter records: Short-billed Dowitcher

1	0623-23341	L	U	22/07/64	Churchill, MB	58°50'N	94°10'W	3 yr. 0 mo.
	JRJ	5	45	17/07/67	Lake Maggiore, FL	27°40'N	82°30'W	3 584 km S20°E
2	0542-09868	AHY	U	14/08/72	Îles de la Madeleine, QC	47°20'N	61°50'W	2 mo.
	RM	5	4	14/10/72	unknown location, French Guiana	4°00'N	53°00'W	c. 4 898 km S13°E
3	0542-09884	HY	U	20/08/72	Îles de la Madeleine, QC	47°20'N	61°50'W	1 mo.
	RM	5	1	15/09/72	near St. Andrew, Barbados	13°00'N	59°20'W	3 828 km S4°E
4	0692-98131	AHY	U	06/08/71	Îles de la Madeleine, QC	47°20'N	61°50'W	25 d.
	RM	5	1	31/08/71	Habitation Cocotte, St. Lucia	14°30'N	60°50'W	3 656 km S 2°E
5	0692-98387	AHY	U	29/07/71	Îles de la Madeleine, QC	47°20'N	61°50'W	1 mo.
	RM	5	1	31/08/71	Habitation Cocotte, St. Lucia	14°30'N	60°50'W	3 656 km S2°E
6	0802-08244	HY	U	30/07/79	17 km northeast of Moosonee, ON	51°20'N	80°20'W	6 mo.
	RIGM	5	1	19/01/80	New Amsterdam, Guyana	6°10'N	57°10'W	5 464 km S31°E
7	0542-09601	SY	U	02/08/71	Sable Island, NS	43°50'N	60°00'W	1 yr. 6 mo.
	RM	5	54	03/02/73	southeast of New Amsterdam, Guyana	6°10'N	57°20'W	4 201 km S4°E
8	0872-18252	HY	U	19/08/83	Îles de la Madeleine, QC	47°20'N	61°50'W	2 yr. 1 mo.
	CWSQR	5	1	??/09/85	Cape Race, NL	46°40'N	56°10'W	436 km S82°E
9	0542-09843	SY	U	11/08/72	Îles de la Madeleine, QC	47°20'N	61°50'W	10 yr. 11 mo.
	RM	7	89	14/07/83	Île des Grues, QC	47°00'N	70°30'W	657 km S90°W

Summary of banding statistics: Short-billed Dowitcher

	Age at banding		
	Hatch Year	After Hatch Year	All ages
<i>No. of Canadian bandings (1955–1995)</i>	388	557	1 042
<i>No. encountered per 1 000 banded (1955–1995)</i>			11
Total no. encountered (1921–1995)	5	7	12
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	36	131	131
No. of Canadian-banded birds moving >0 km	5	7	12
Mean movement >0 km of Canadian-banded birds (km)	3 612	3 634	3 625
Maximum movement from all encounters (km)	5 464	c. 4 898	5 464
% recovered (encountered dead)	100	85	91
% direct recoveries	60	57	58
% encountered during banding operations	0	14	8

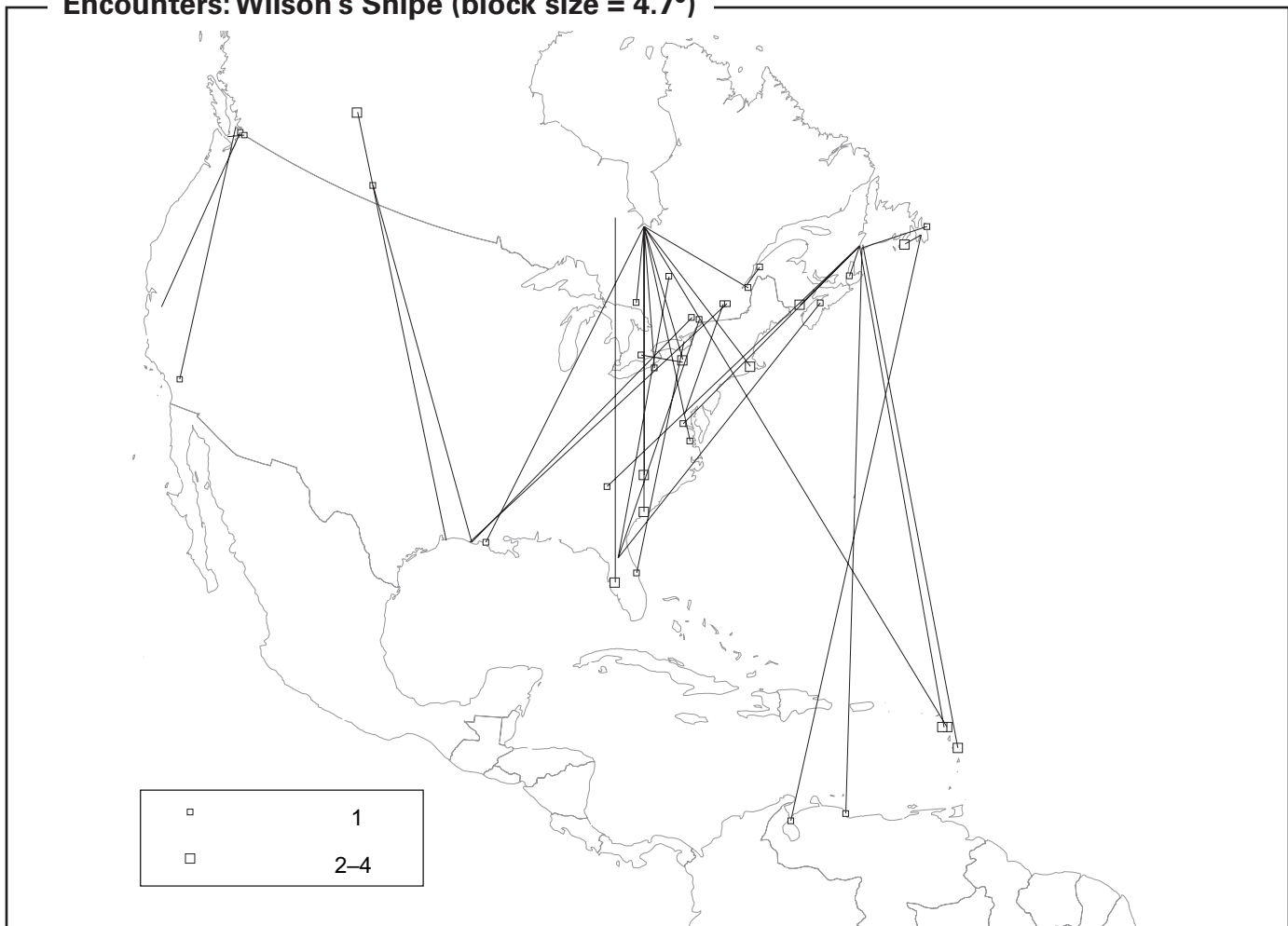
Banding effort: Short-billed Dowitcher



Top banders: RM, CWS-QC, RIGM, LPBO, LMT

Wilson's Snipe (*Gallinago delicata*) 230.0

Encounters: Wilson's Snipe (block size = 4.7°)



Wilson's Snipes breed throughout Canada south of the tree line; also in Alaska, much of the northwestern United States and across the northern tier of U.S. states. It winters regularly in western British Columbia and casually in southern areas of eastern Canada, throughout the central and southern United States and southward to the West Indies, Colombia, Venezuela and the Guianas.

There are few encounters of birds from western Canada. Two British Columbia birds were found in mid-winter (December–February): one in British Columbia, and the other in California (record 1). The bird in record 2 may also have wintered in California, but could have moved further south. One bird shot in Alberta was banded in Texas in December, and two

others (records 3 and 4) were banded in the southern United States in spring.

From 1963 through 1965, more than 1 300 Wilson's Snipe were banded during fall migration at Moosonee, Ontario (Mueller 1999), accounting for most of the encounters involving Ontario. Birds from this province were found during fall (September–November), primarily in Ontario and eastern U.S. states (Massachusetts, New York, Florida), but two reached the Caribbean before mid-November (records 5 and 6). One bird from James Bay was shot in late November in Louisiana (record 7). Ontario birds were encountered in mid-winter (December–February) primarily in Florida (six cases, including record 8), but also in South Carolina (two) and Virginia (one). Spring encounters

were distributed similarly to fall records: one each in Georgia, North Carolina and New York, but also one in Louisiana (record 9). The few records involving Quebec showed similar distribution: mainly east coast, but yet again, one in Louisiana (record 10). The paucity of encounters in Latin America suggests that, despite a bias towards more frequent reporting from North America, most snipe from Ontario (and probably Quebec) winter within the United States.

Concentrated banding effort in Newfoundland (see effort map) has produced band encounters that suggest many snipe migrating from eastern Newfoundland may fly south over the western Atlantic

(Tuck 1972), passing through the West Indies during fall migration to wintering destinations farther south (Mueller 1999). Birds from Newfoundland have been encountered in the West Indies during fall migration (records 11 and 12), and in mid-winter in Venezuela (records 13 and 14). Many snipe banded in western Newfoundland fly overland during migration, but their wintering destination is poorly known (Mueller 1999).

Banding has demonstrated fidelity both to breeding site and wintering sites (Mueller 1999). The bird in record 15 is the longevity record holder for the species (Clapp et al. 1989, Klimkiewicz 2008).

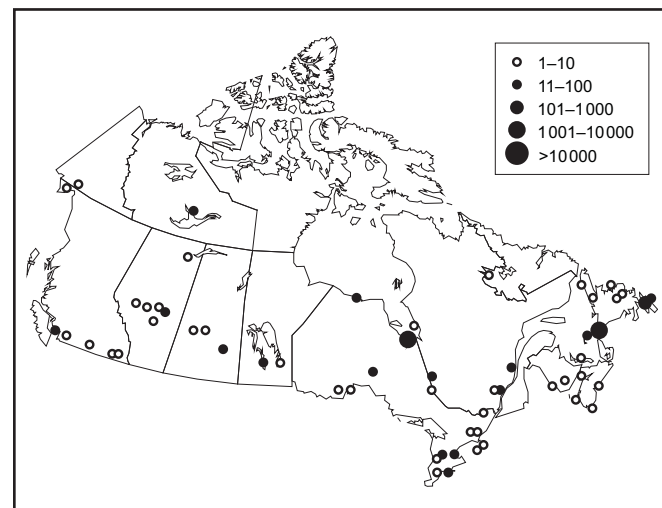
Encounter records: Wilson's Snipe

1	0623-97916	AHY	U	15/09/70	4 km west of Ladner, BC	49°10'W	123°10'W	4 mo.
	RWC	5	1	09/01/71	Cedar Springs, CA	34°10'N	117°10'W	1741 km S19°E
2	0413-59116	U	U	29/11/46	near Volta, CA	37°30'N	121°00'W	11 mo.
	IR	0	0	ST/10/47	Ft Langley, BC	49°00'N	122°30'W	1286 km N5°W
3	0693-80890	AHY	U	16/03/64	Lake Benoit, LA	29°40'N	92°40'W	1 yr. 4 mo.
	LMT	5	3	26/07/65	near Carmichael, SK	50°00'N	108°30'W	2625 km N26°W
4	1083-20477	AHY	U	06/04/68	Anahuac Refuge, TX	29°30'N	94°30'W	1 yr. 5 mo.
	KAA	3	1	27/09/69	Redwater, AB	53°50'N	113°00'W	3094 km N24°W
5	0693-87629	HY	U	23/08/65	near Moose Factory, ON	51°10'N	80°40'W	2 mo.
	LMT	3	1	17/10/65	Marie Galante Island, Guadeloupe	15°50'N	61°10'W	4294 km S31°E
6	0693-86071	HY	U	10/09/63	near Moose Factory, ON	51°10'N	80°30'W	2 mo.
	LMT	0	1	11/11/63	Sainte-Anne, Guadeloupe	16°10'N	61°20'W	4253 km S31°E
7	0693-86310	HY	U	27/09/63	near Moose Factory, ON	51°10'N	80°40'W	2 yrs. 2 mo.
	LMT	5	1	27/11/65	Jeanerette, LA	29°50'N	91°40'W	2549 km S26°W
8	0693-87633	HY	U	23/08/65	near Moose Factory, ON	51°10'N	80°30'W	1 yr. 4 mo.
	LMT	5	1	11/12/66	Indiatown, FL	27°00'N	80°20'W	2690 km S0°E
9	0693-87082	AHY	U	30/03/64	10 km E of Grand Chenier, LA	29°40'N	92°40'W	1 yr. 7 mo.
	LMT	5	1	08/10/65	Dunrobin, ON	45°20'N	76°00'W	2273 km N35°E
10	0763-58345	U	U	09/03/68	Grand Chenier, LA	29°40'N	92°50'W	6 mo.
	LCFWRU	5	1	23/09/68	Saint-Pie-de-Guire, QC	46°00'N	72°40'W	2525 km N38°E
11	0543-23985	HY	U	07/08/62	Codroy, NL	47°50'N	59°20'W	2 mo.
	LMT	0	1	20/10/62	Habitation Cocotte, St. Lucia	14°30'N	60°50'W	3713 km S3°W
12	0543-22497	AHY	U	31/08/58	near Searston, NL	47°50'N	59°00'W	3 mo.
	LMT	0	1	02/11/58	Hyacinthe, Martinique	14°40'N	60°50'W	3696 km S3°W
13	0523-63800	HY	U	15/10/62	Colinet, NL	47°10'N	53°30'W	3 mo.
	LMT	0	1	20/01/63	near Maracaibo, Venezuela	10°30'N	71°30'W	4419 km S28°W
14	0623-19178	L	U	20/06/60	near St. Andrews, NL	47°40'N	59°10'W	5 yr. 7 mo.
	LMT	3	1	23/01/66	near San Juan de los Cayos, Venezuela	10°50'N	68°10'W	4186 km S15°W
15	0693-87165	HY	U	08/02/64	Colinet, NL	47°10'N	53°30'W	9 yr. 1 mo.
	LMT	5	1	29/09/73	Colinet, NL	47°10'N	53°30'W	0 km

Summary of banding statistics: Wilson's Snipe

	Age at banding		
	Hatch Year	After Hatch Year	All ages
<i>No. of Canadian bandings (1955–1995)</i>	3 717	1 039	4 926
<i>No. encountered per 1 000 banded (1955–1995)</i>			23
Total no. encountered (1921–1995)	79	44	133
No. encountered from foreign bandings	0	5	11
Maximum period from banding to encounter (mo.)	109	67	109
No. of Canadian-banded birds moving >0 km	42	12	57
Mean movement >0 km of Canadian-banded birds (km)	1 346	1 340	1 380
Maximum movement from all encounters (km)	4 419	3 696	4 419
% recovered (encountered dead)	75	50	69
% direct recoveries	43	18	33
% encountered during banding operations	22	47	29

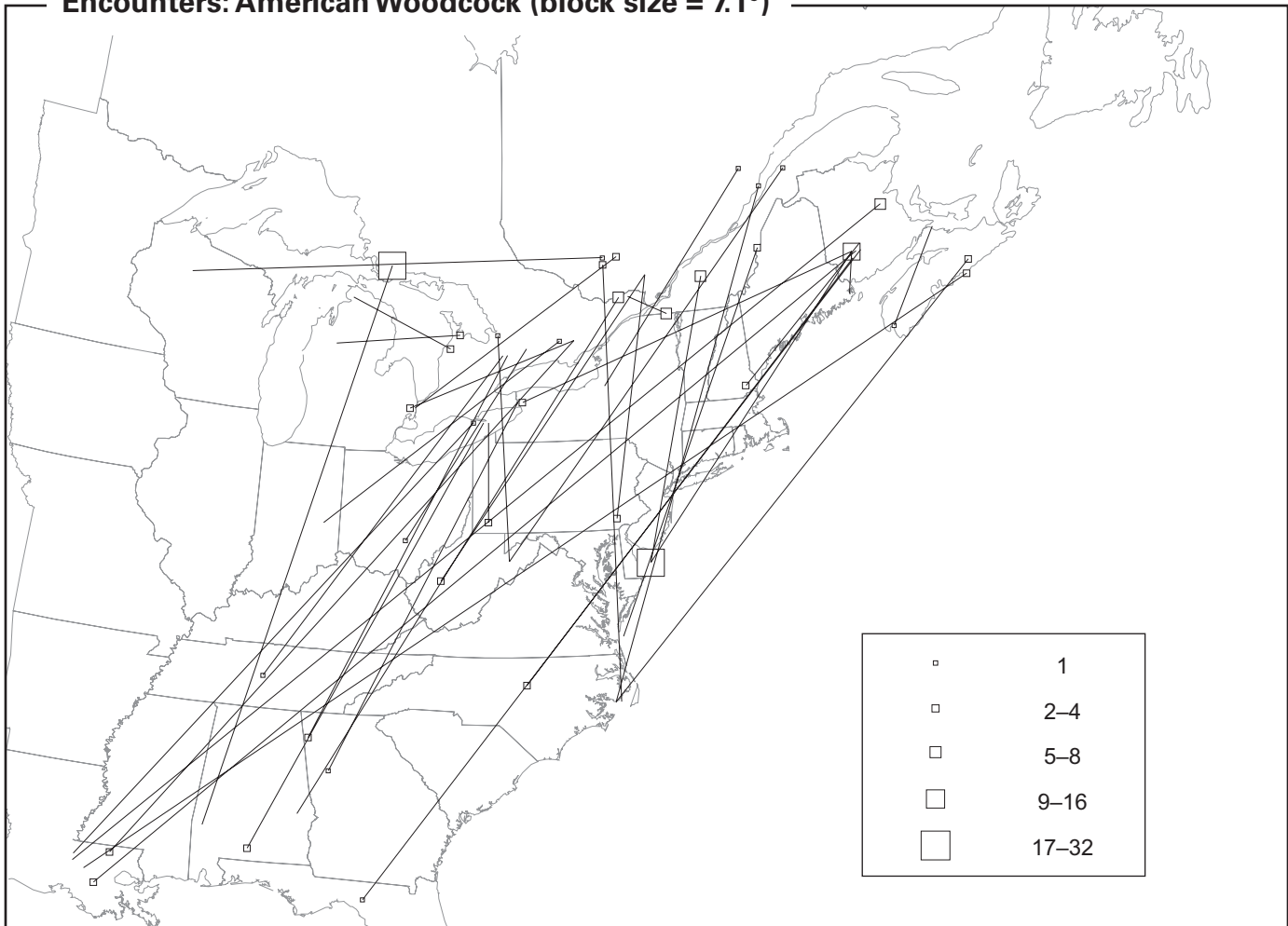
Banding effort: Wilson's Snipe



Top banders: LMT, RIGM, RM, JBMi, ETJ

American Woodcock (*Scolopax minor*) 228.0

Encounters: American Woodcock (block size = 7.1°)



American Woodcock breed in Canada from southeastern Manitoba across south and south-central Ontario, southern Quebec, the Maritimes and southwestern Newfoundland; also, throughout the eastern United States. Woodcock winter in southern parts of the breeding range in the southeastern United States, and in small numbers somewhat farther north.

Most band recoveries were of birds that were shot. This species is a favoured hunting target both in the United States and Canada, with up to 2 million shot annually (Keppie and Whiting 1994). During the winter (December–February), woodcock that probably bred in Canada were found scattered through the southern tier of states in the eastern United States

(Missouri, Tennessee and North Carolina southward, including records 1–3 for Ontario birds, 4–5 for birds from Quebec and 6–7 for Maritimes birds). Most woodcock from the Maritimes are thought to migrate along the Atlantic coast (Keppie and Whiting 1994); note the large symbol on the encounter map near New Jersey, indicating a large number of encounters in that region of Maritimes birds (see introduction on map thinning). Birds from Ontario are more commonly found west of the Appalachians. However, the concentration of wintering records in Louisiana (33 of 61 cases), resulting from a winter banding program there that produced a large pool of banded birds later shot broadly across Canada (e.g., records 3, 5 and 7), indicates much mixing of breeding populations during the non-breeding season.

Seven records in the data set involve woodcock banded as chicks and shot prior to fall migration, all in the fourth month after banding. Four of these were at the same location, while the other three moved 13, 19 and 114 km northward. Together these records suggest only a small degree of pre-migratory dispersal. Records 8 and 9 (only the former discernible on the encounter map, due to large block size), document birds that

evidently came from natal areas (Wisconsin and Maine) far west of the regions where they were later captured during fall migration, suggesting low natal philopatry.

The bird in record 3 is the oldest in this data set, but falls far short of the longevity record for American Woodcock of nearly 21 years (Klimkiewicz 2008)

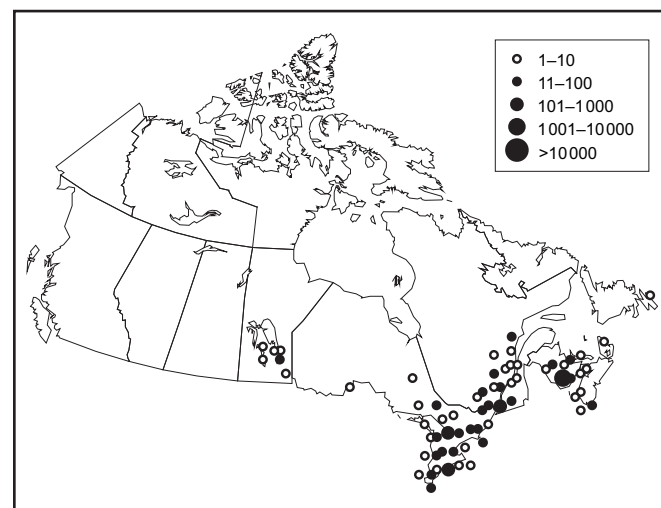
Encounter records: American Woodcock

1	0543-05175	AHY	M	22/04/59	west of Utterson, ON	44°10'N	79°20'W	8 mo.
	WNC	0	1	LT/12/59	near Summerville, GA	34°20'N	85°20'W	1 210 km S27°W
2	0623-93904	AHY	M	17/04/71	Glenville, ON	44°00'N	79°30'W	9 mo.
	OMNR	5	1	01/01/72	Marion, AL	32°30'N	87°10'W	1 443 km S30°W
3	0583-97717	AHY	F	29/01/57	Krotz Springs, LA	30°30'N	91°40'W	5 yr. 9 mo.
	LLG	0	1	30/10/62	Jarvis, ON	42°50'N	79°50'W	1 729 km N34°E
4	1053-79244	SY	F	19/02/92	Kiptopeke, VA	37°00'N	75°50'W	8 mo.
	ESNWR	3	1	06/10/92	Sainte-Véronique, QC	46°30'N	74°50'W	1 061 km N 4°E
5	0583-02020	AHY	F	18/01/56	Krotz Springs, LA	30°30'N	91°40'W	7 yr. 9 mo.
	LLG	0	1	??/10/63	Dunham, QC	45°00'N	72°40'W	2 313 km N40°E
6	0503-14207	L	U	19/05/50	Fredericton, NB	45°50'N	66°30'W	
	BSW	0	0	??/12/52	near Foley, FL	30°10'N	83°30'W	2 285 km S46°W
7	0583-02933	U	U	19/12/56	Krotz Springs, LA	30°30'N	91°40'W	10 mo.
	LLG	0	1	03/10/57	Edwardville, NS	46°00'N	60°10'W	3 218 km N49°E
8	0993-56623	HY	M	11/07/77	11 km N of Hawkins, WI	45°40'N	90°40'W	2 yr. 3 mo.
	WDNR	5	1	20/10/79	Grand-Remous, QC	46°30'N	75°50'W	1 147 km N80°E
9	1003-03751	HY	M	10/07/72	NW of Eastport, ME	45°00'N	67°10'W	1 yr. 3 mo.
	WRNWR	3	1	08/10/73	Kemble, ON	44°40'N	80°50'W	1 078 km S87°W

Summary of banding statistics: American Woodcock

	Age at banding		
	Hatch Year	After Hatch Year	All ages
<i>No. of Canadian bandings (1955–1995)</i>	1 561	1 074	2 856
<i>No. encountered per 1 000 banded (1955–1995)</i>			61
Total no. encountered (1921–1995)	158	114	290
No. encountered from foreign bandings	51	41	99
Maximum period from banding to encounter (mo.)	62	93	93
No. of Canadian-banded birds moving >0 km	80	52	143
Mean movement >0 km of Canadian-banded birds (km)	467	364	433
Maximum movement from all encounters (km)	2 750	2 944	3 218
% recovered (encountered dead)	98	92	96
% direct recoveries	50	42	46
% encountered during banding operations	1	7	3

Banding effort: American Woodcock



Top banders: BSW, CWS-QC, JCB, CBQ, JTM

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Appendix 1

Chronological summary of Canadian banding statistics

AOU no.	Species	No. banded					No. banded in Canada, encountered anywhere		No. banded elsewhere, encountered in Canada	
		1955–1965	1966–1975	1976–1985	1986–1995	1955–1995 total	1921–1954	1955–1995	1921–1954	1955–1995
269.0	Northern Lapwing	0	0	0	0	0	0	0	1	0
270.0	Black-bellied Plover	76	266	136	9	487	0	5	0	0
272.0	American Golden-Plover	62	30	118	54	264	1	3	0	0
278.0	Snowy Plover	0	0	0	1	1	0	0	0	0
275.0	Common Ringed Plover	0	0	8	0	8	0	0	0	1
274.0	Semipalmated Plover	289	1 104	1 548	1 005	3 946	0	15	0	2
277.0	Piping Plover	45	161	508	363	1 077	0	11	1	1
273.0	Killdeer	252	343	774	583	1 952	7	4	0	0
287.0	Black Oystercatcher	25	64	104	78	271	0	3	0	0
226.0	Black-necked Stilt	0	0	2	4	6	0	0	0	0
225.0	American Avocet	45	89	30	43	207	0	1	0	1
254.0	Greater Yellowlegs	31	86	194	23	334	3	1	1	0
255.0	Lesser Yellowlegs	128	274	944	382	1 728	0	11	0	0
256.0	Solitary Sandpiper	84	55	82	48	269	0	0	0	0
258.0	Willet	59	14	45	118	236	4	4	0	0
259.0	Wandering Tattler	0	1	0	9	10	0	0	0	0
263.0	Spotted Sandpiper	769	621	1 024	360	2 774	13	6	0	1
261.0	Upland Sandpiper	38	60	13	13	124	0	1	0	0
265.0	Whimbrel	23	202	83	61	369	1	28	0	0
264.0	Long-billed Curlew	140	31	3	19	193	1	0	0	0
251.0	Hudsonian Godwit	35	38	97	104	274	0	2	0	0
249.0	Marbled Godwit	37	155	49	60	301	4	2	0	1
283.0	Ruddy Turnstone	101	300	451	433	1 285	0	18	0	13
284.0	Black Turnstone	0	0	0	3	3	0	0	0	0

Chronological summary of Canadian banding statistics (*cont'd*)

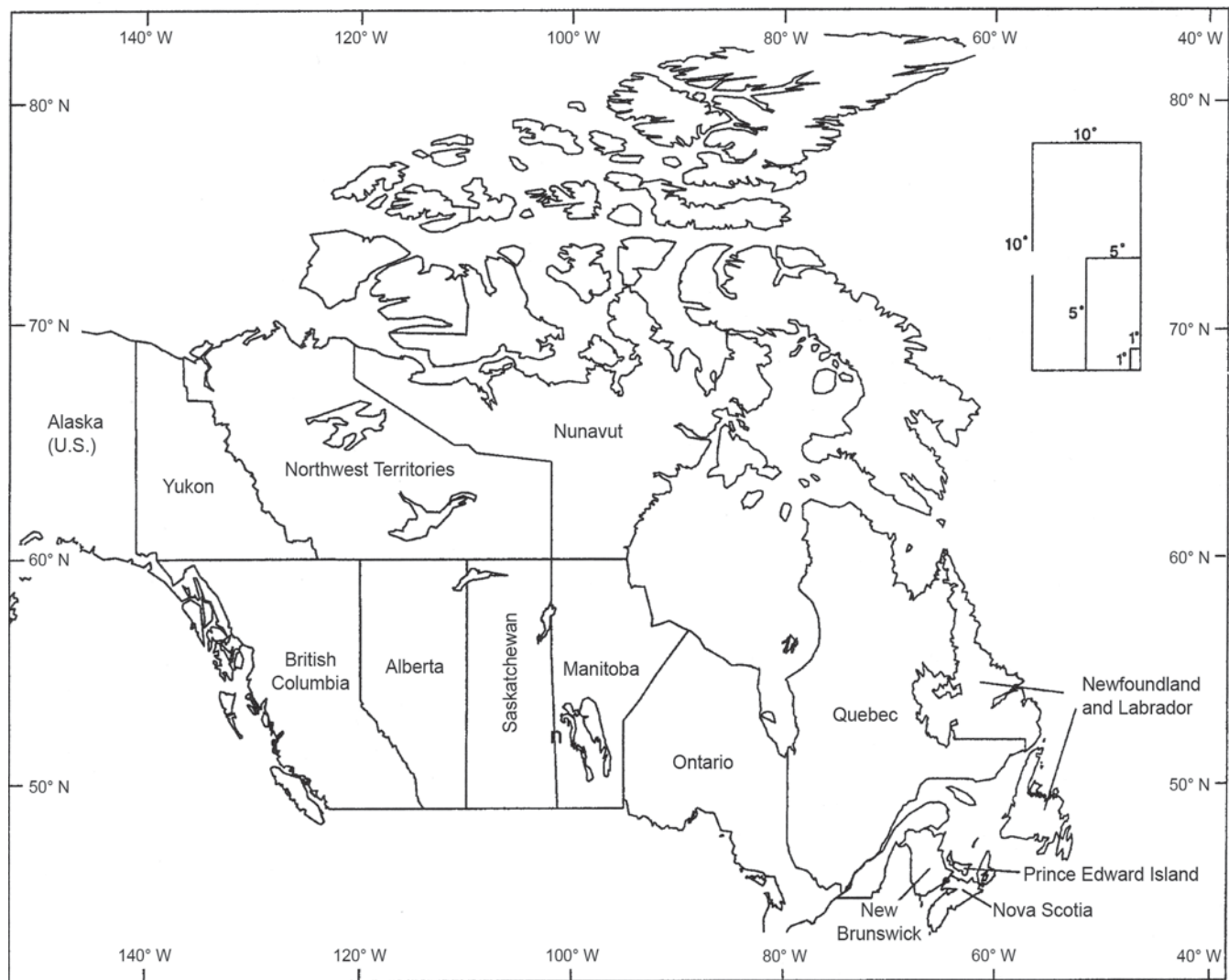
AOU no.	Species	No. banded					No. banded in Canada, encountered anywhere		No. banded elsewhere, encountered in Canada	
		1955–1965	1966–1975	1976–1985	1986–1995	1955–1995 total	1921–1954	1955–1995	1921–1954	1955–1995
282.0	Surfbird	0	0	0	2	2	0	0	0	0
234.0	Red Knot	28	146	474	201	849	0	19	0	17
248.0	Sanderling	95	1 291	354	94	1 834	0	10	0	0
246.0	Semipalmated Sandpiper	1 658	15 419	49 567	23 591	90 235	2	885	1	48
247.0	Western Sandpiper	12	654	12 203	2 081	14 950	0	16	0	2
242.0	Least Sandpiper	624	4 157	7 048	2 261	14 090	0	34	0	2
240.0	White-rumped Sandpiper	18	2 363	2 679	116	5 176	0	126	0	2
241.0	Baird's Sandpiper	30	100	244	101	475	0	2	0	0
239.0	Pectoral Sandpiper	170	308	1 553	303	2 334	1	3	0	0
238.0	Sharp-tailed Sandpiper	0	2	0	0	2	0	0	0	0
235.0	Purple Sandpiper	0	233	7	13	253	0	7	2	0
236.0	Rock Sandpiper	0	0	2	0	2	0	0	0	0
243.0	Dunlin	302	418	4 363	448	5 531	0	35	0	4
233.0	Stilt Sandpiper	96	165	22	737	1 020	0	14	0	0
262.0	Buff-breasted Sandpiper	1	13	13	0	27	0	0	0	0
260.0	Ruff	0	0	0	0	0	0	0	0	1
231.0	Short-billed Dowitcher	121	463	369	89	1 042	0	12	0	0
232.0	Long-billed Dowitcher	0	118	91	49	258	0	1	0	0
230.0	Wilson's Snipe	4 149	447	231	99	4 926	4	118	2	9
228.0	American Woodcock	223	1 480	368	785	2 856	16	174	7	92
224.0	Wilson's Phalarope	1	10	529	630	1 170	0	0	0	0
223.0	Red-necked Phalarope	37	26	1 084	132	1 279	0	2	0	0
222.0	Red Phalarope	23	146	204	52	425	0	6	0	0

Appendix 2

Maps of Western Hemisphere political boundaries

Canadian provinces and territories

(latitude-longitude blocks of various sizes are shown for reference)

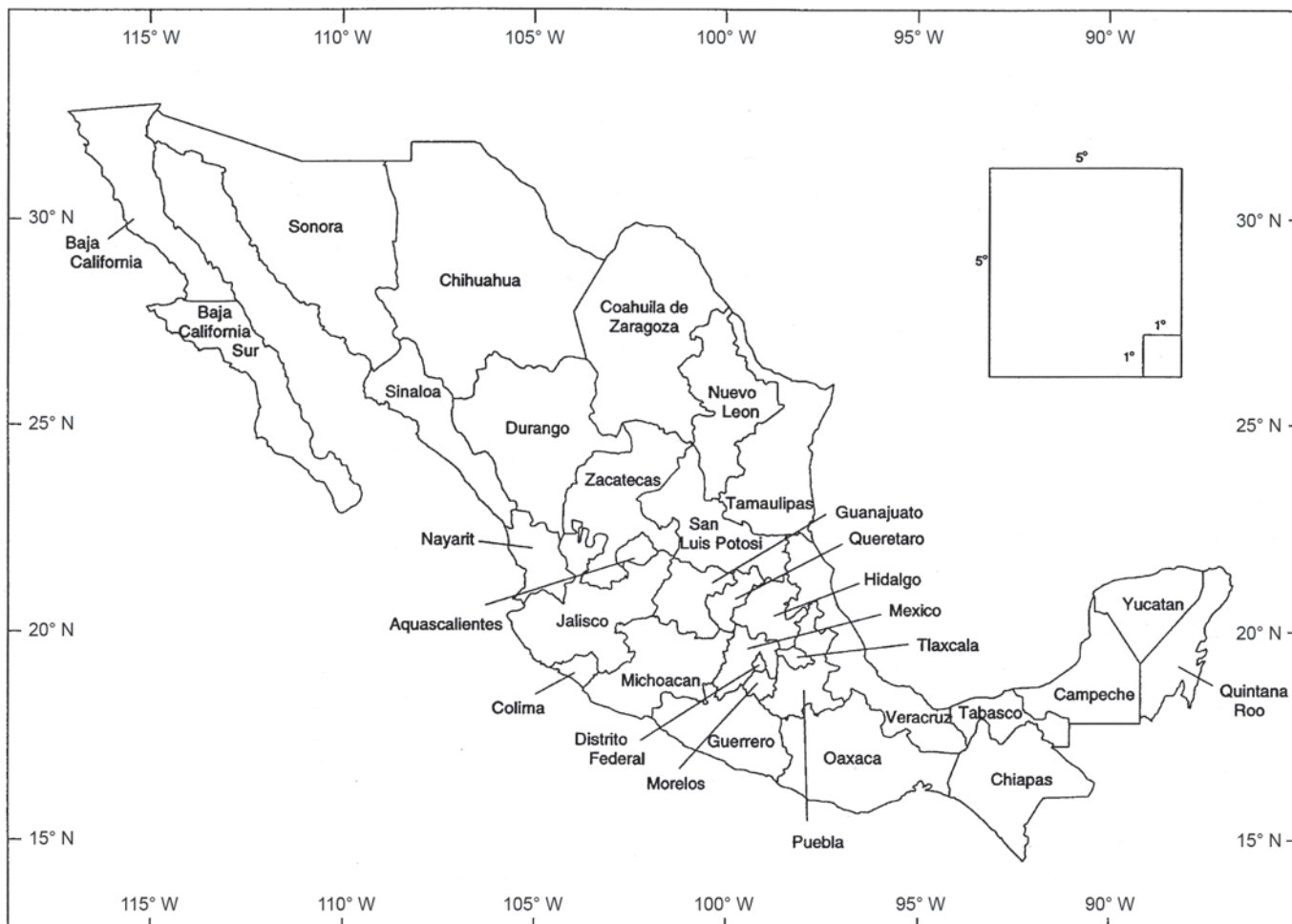


Continental U.S. states
(latitude-longitude blocks of various sizes are shown for reference)



Mexican states

(latitude-longitude blocks of various sizes are shown for reference)



Countries of Central and South America
(latitude-longitude blocks of various sizes are shown for reference)



Appendix 3

Key to codes used in listings of individual encounters

Note: Unless labelled as nonstandard, codes are those used in The North American Bird Banding Manual (Gustafson et al. 1997).

Age

U	Unknown (see note below)
L	Local (young prior to age of sustained flight)
J	Juvenile (obsolete code discontinued in 1962; bird could be either L or HY)
HY	Hatch Year (capable of sustained flight and banded in calendar year of birth)
AHY	After Hatch Year (known to have hatched in an unknown calendar year prior to that of banding)
SY	Second Year (known to have hatched in calendar year previous to banding year)
ASY	After Second Year (at least ASY, but true age unknown)
TY	Third Year (known to have hatched two calendar years prior to that of banding)
ATY	After Third Year (at least ATY, but true age unknown)

Note: The system of aging birds by calendar year (HY, AHY, etc.) came into effect in 1967. For records prior to that date, the definitions of “subadult” and “adult” did not correspond exactly to SY and AHY, because the time at which birds changed from one category to the other was not clearly defined. Using current codes, a bird can only be given the U code for age in the fall, when HY and AHY birds of some species are indistinguishable. Prior to 1967, however, it was possible to use the U code for birds banded in the first five to six months of the year (when “subadults” and “adults” may be indistinguishable).

Sex

M	Male
F	Female
U	Unknown

Inexact coordinates

(nonstandard codes)

??	If shown both for degrees and minutes, no coordinates were reported. If shown only for minutes, location was inexact.
----	---

Present condition

00	Unknown, status of band unknown
01	Unknown, band left on bird
02	Unknown, band removed
03	Dead, status of band unknown
04	Dead, band left on bird
05	Dead, band removed
06	Alive – released, status of band unknown
07	Alive – released, band left on bird
08	Alive – released, band removed
09	Alive – in captivity, status of band unknown
10	Alive – in captivity, band left on bird
11	Alive – in captivity, band removed
12	Alive – captivity/release status unknown, status of band unknown
13	Alive – captivity/release status unknown, band left on bird
14	Alive – captivity/release status unknown, band removed

Data summaries in this atlas series treated birds with “unknown” present condition as “dead.” Present condition codes were not in use prior to 1965, so birds encountered earlier than that were considered “dead” unless the “how obtained” code (see below) was 28, 29, 33, 36, 41, 46, 48, 52, 53, 87-89, or 99.

How obtained

(* indicates discontinued code)

00	Found dead	34	Caught by or found dead due to fish (including bands found in fish)
01	Shot	35*	Caught by or due to clam
02	Caught or found dead due to starvation	36	Caught due to exhaustion
03	Caught due to injury	37*	Caught due to electric shock
04	Caught by or due to traps not meant to catch birds for banding	38*	Caught due to fire
05*	Killed by carnivore not cat	39	Caught or found dead due to striking or being struck by moving aircraft
06	Caught by or due to rodent	40	Caught or found dead due to lead poisoning
07	Caught by or due to miscellaneous birds	41*	Held for propagating
08	Caught by or due to shrike	42	Caught due to striking or being struck by moving farm machinery
09	Caught by or due to hawks, owls or other raptors (including found in pellets)	43	Caught or found dead due to trichomoniasis
10	Banding mortality (due to traps, handling, etc.)	44	Caught or found dead due to avian control operations
11	Caught by or due to dog	45	Found dead or injured on highway (without information on cause)
12	Caught by or due to cat	46	Caught due to joining flock of domestic or captive birds
13	Caught due to striking stationary object not wires or towers	47*	Band removed (no other information)
14	Caught due to striking or being struck by motor vehicle	48*	Held in captivity
15	Caught or found dead due to weather conditions	49	Caught at, on or in nest by predator
16	Collected for scientific study or specimen	50	Band with skeleton or bone only
17	Drowned	51	Banding mortality (killed by predators, weather, etc., while in trapping or holding devices)
18	Caught or found dead due to botulism	52	Sight record: band read on free bird
19	Caught by or due to reptile	53	Captured for scientific purposes (not collected), then released
20	Caught due to disease	54	Caught due to striking communication towers, wires, etc.
21	Caught or found dead in building or enclosure	55	Caught due to pesticides
22*	Died from "fright"	56	No information in letter other than that band or bird obtained
23	Caught or found dead due to oil or tar	57	Caught due to entanglement in other than fishing gear (e.g., string, vines, etc.)
24	Caught or killed due to fall from nest	58	Located by electronic sensors (location is for receiver – not necessarily for bird)
25	Caught or killed due to poisoning (excluding by lead, avicides or pesticides)	87*	Sight record in different 10' block than where banded
26	Caught by or due to entanglement in fishing gear	88*	Found nesting in different 10' block than where banded
27	Caught or found dead due to being struck by moving train	89	Previously banded bird trapped and released in banding operations in a different 10' block than where banded
28	Caught by hand	91	Illegally taken: reported by enforcement agents
29	Sight record: identified by special markers other than metal band		
30	Died in nest		
31	Caught by or due to miscellaneous animal		
32	Caught due to parasite infestation		
33	Caught or observed at or in nest		

96*	Band only
97	Miscellaneous: method not covered by other codes
98	Band or number only obtained; no other information (see 56)
99	Previously banded bird trapped and released during banding operation in same 10' block where banded

Inexact date codes: month

(non-standard codes)

SU	Summer
SP	Spring
WI	Winter
FA	Fall
HS	Hunting season
??	Unknown month

Inexact date codes: day

(non-standard codes)

FT	First 10 days in month
ST	Second 10 days in month
LT	Last 10 or 11 days in month
99	Unknown day of month
??	Date of encounter indicates date of postmark on letter, and there is no information on actual date the bird was encountered.

Banders' initials

Initials	Bander
ADB	A.D. Brewer
AG	Cuban Laboratory of Migratory Birds – A. Gonzalez
AJG	A.J. Gaston
ALS	A.L. Spaans
ARS	A.R. Smith
ASa	A. Salvadori
ASp	A. Sprunt IV
ASC	Alaska Science Center
ASH	A.S. Hawkins
BAP	B.A. Parker
BC	Bowdoin College
BSW	B.S. Wright
BTO	British Trust for Ornithology

CIE	Cambridge Iceland Expedition 1972
CLGT	C.L. Gratto-Trevor
CBQ	Club des Bécassiers du Québec
CSH	C.S. Houston
CSW	C.S. Williams
CWSAR	Canadian Wildlife Service (Environment Canada) – Atlantic Region
CWSER	Canadian Wildlife Service (Environment Canada) – Eastern Region
CWSPNR	Canadian Wildlife Service (Environment Canada) – Prairie and Northern Region
CWSPYR	Canadian Wildlife Service (Environment Canada) – Pacific and Yukon Region
CWSQR	Canadian Wildlife Service (Environment Canada) – Quebec Region
DC	D. Collister
DFP	D.F. Parmelee
DJTH	D.J.T. Hussell
DL	D. Lank
DM	D. Murphy
DNN	D.N. Nettleship
DRH	D.R. Hatch
DRL	D.R. Lambie
DUC	Ducks Unlimited Canada
DWRS	Delta Waterfowl and Wetlands Research
DWW	D.W. Whitfield
EFM	E.F. Martinez
EK	E. Kuyt
EN	E. Nol
ESNWR	Eastern Shore of Virginia National Wildlife Refuge
ETJ	E.T. Jones
FC	F. Cooke
FGB	F.G. Bard
FGS	F.G. Stiles
FSS	F.S. Schaeffer
GB	G. Baldassarre
GCW	G.C. West
GLH	G.L. Holroyd
GPa	G. Page
GPi	G. Pickering
HEM	H.E. McArthur
HLC	H.L. Cogswell
HLD	H.L. Dickson
IB	I. Byrkjedal
INSS	Island Natural Science School

IPBO	Innis Point Bird Observatory	MJL	M.J. Lerch
IR	I. Rogers	MMMN	Manitoba Museum of Man and Nature
JAH	J.A. Hagar	NMC	National Museums of Canada
JBM	J.B. Miles	OLA	O.L. Austin, Jr.
JBS	J.B. Scrafford	OMNR	Ontario Ministry of Natural Resources
JCB	J.C. Baird	PEPO	Prince Edward Point Bird Observatory
JDH	J.D. Haertel	RB	Mrs. R. Brown
JEH	J.E. Horning	RDB	R.D. Benedict
JHB	J.H. Buckalew	RDM	R.D. Montgomery
JOLR	J.O. Roberts	RGCM	R.G.C. Maclaren
JRJ	J.R. Jehl, Jr.	RIGM	R.I.G. Morrison
JT	J. Tingly	RM	R. McNeil
JTM	J.T. Mayer	ROM	Royal Ontario Museum
JVP	J.V. Pogacnik	RW	R. Webb
JWH	J.W. Hopkins	RWC	R.W. Campbell
KAA	K.A. Arnold	RWP	R.W. Priest
LAG	L.A. Gray	SGS	S.G. Sealy
LCFWRU	Louisiana Cooperative Fish and Wildlife Research Unit	UBC-CM	University of British Columbia – Cowan Museum
LLG	L.L. Glasgow	WCH	W.C. Harris
LMT	L.M. Tuck	WDNR	Wisconsin Department of Natural Resources
LP	L. Philippe	WM	W.J. Maher
LPBO	Long Point Bird Observatory	WNC	W.N. Campbell
LS	L. Scott	WRNWR	White River National Wildlife Refuge
MAC	M.A. Colwell	WRS	W.R. Salt

Appendix 4

Additional details on data coding and analyses

1. Distance and bearing

Distance and bearing were calculated using equations in Cowardin (1977), where:

$BLAT$ = banding latitude
 $BLON$ = banding longitude
 $RLAT$ = encounter latitude
 $RLON$ = encounter longitude
 $P = BLON - RLON$

Note: if southern hemisphere set latitude to negative
 if eastern hemisphere set longitude to negative
 if $P > 180$ then set $P = P - 180$

Distance (D) between banding and encounter in degrees was calculated as:

$$D = \text{acos}\{[\sin(BLAT)\sin(RLAT)] + [\cos(BLAT)\cos(RLAT)\cos(P)]\}$$

where acos denotes the inverse cosine function. The distance is then converted to kilometres by multiplying by 6378.15.

The bearing (C) was calculated as:

$$C = \text{ahav}\{\text{sec}(BLAT)\text{csc}(D)[\text{hav}(\pi/2 - RLAT) - \text{hav}|D - \pi/2 + BLAT|]\}$$

where hav and ahav denote the haversine and inverse haversine functions:

$$\text{hav}(A) = 0.5(1 - \cos(A))$$

$$\text{ahav}(A) = \text{acos}(1 - 2A)$$

2. Direct recoveries

Encounters fitting into the categories marked with a D below were considered “direct” recoveries, while all others were considered “indirect.” Note that direct recoveries include birds assumed to be dead (see note under “present condition” in Appendix 3) plus all birds encountered at the site of banding within 90 days.

Year	Recovery month	Banding month											
		J	F	M	A	M	J	J	A	S	O	N	D
Banding yr.	J	D	-	-	-	-	-	-	-	-	-	-	-
	F	D	D	-	-	-	-	-	-	-	-	-	-
	M	D	D	D	-	-	-	-	-	-	-	-	-
	A	D	D	D	D	-	-	-	-	-	-	-	-
	M	D	D	D	D	D	-	-	-	-	-	-	-
	J	D	D	D	D	D	D	-	-	-	-	-	-
	J	D	D	D	D	D	D	D	-	-	-	-	-
	A	D	D	D	D	D	D	D	D	-	-	-	-
	S	-	-	-	D	D	D	D	D	D	-	-	-
	O	-	-	-	D	D	D	D	D	D	D	-	-
	N	-	-	-	D	D	D	D	D	D	D	D	-
	D	-	-	-	D	D	D	D	D	D	D	D	D
Banding yr. + 1	J	-	-	-	D	D	D	D	D	D	D	D	D
	F	-	-	-	D	D	D	D	D	D	D	D	D
	M	-	-	-	D	D	D	D	D	D	D	D	D
	A	-	-	-	-	-	-	-	-	-	-	-	D
	M	-	-	-	-	-	-	-	-	-	-	-	D
	J	-	-	-	-	-	-	-	-	-	-	-	D
	J	-	-	-	-	-	-	-	-	-	-	-	D
	A	-	-	-	-	-	-	-	-	-	-	-	D

www.ec.gc.ca

Additional information can be obtained at:

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Inquiry Centre

351 St. Joseph Boulevard

Place Vincent Massey, 8th Floor

Gatineau, Quebec K1A 0H3

Telephone: 1-800-668-6767 (in Canada only) or 819-997-2800

Fax: 819-994-1412

TTY: 819-994-0736

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