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Agenda Item 24.1.1

PROPOSAL FOR THE INCLUSION OF THE SEMIPALMATED SANDPIPER (*Calidris pusilla*) ON CMS APPENDIX I

Summary:

Ecuador and Paraguay have submitted a proposal for the inclusion of the Semipalmated Sandpiper (*Calidris pusilla*) on CMS Appendix I for the consideration of the 11th Meeting of the Conference of the Parties (COP11), 4-9 November 2014, Quito, Ecuador.

A revised proposal was subsequently submitted by Ecuador and Paraguay including additional information, pursuant to Rule 11 of the Rules of Procedure.

The revised proposal is reproduced under this cover note for a decision on its approval or rejection by the Conference of the Parties.

**PROPOSAL FOR INCLUSION IN THE APPENDICES OF THE CONVENTION ON THE
CONSERVATION OF MIGRATORY SPECIES OF WILD ANIMALS (CMS)**

A. PROPOSAL: Inclusion of the Semipalmated Sandpiper, *Calidris pusilla*, on Appendix I of the Convention on the Conservation of Migratory Species of Wild Animals

B. PROPONENT: Government of Ecuador and Government of Paraguay

C. SUPPORTING STATEMENT

1. Taxon

- 1.1 Class:** Aves
1.2 Order: Charadriiformes
1.3 Family: Scolopacidae
1.4 Genus/species: *Calidris pusilla*
1.5 Common name: English: Semipalmated Sandpiper
 Spanish: Correlimos Semipalmeado, Playerito Escudado, Playerito Semipalmeado
 French: Bécasseau semipalmé

2. Biological data

2.1 Distribution

Semipalmated Sandpipers (*Calidris pusilla*) are small long-distance migratory shorebirds limited mainly to the Western Hemisphere that breed in the low and middle Arctic and Sub-Arctic of the Nearctic, and winter primarily along the northern and central coasts of South America (Hicklin and Gratto-Trevor 2010). They are one of the most common shorebirds in North America during migration particularly in the east (Hicklin and Gratto-Trevor 2010). It breeds from the extreme northeast of Siberia on the Chukchi Peninsula (Russian Federation), along the northern coast of Alaska (United States) and eastwards to the north of Quebec, the centre of Baffin Island and north Labrador (Canada) (Chandler 2009). Birds originating from west to east across the breeding range, stage in the Bay of Fundy prior to undertake a non-stop flight to overwintering areas in the northern coasts of South America (Hicklin and Chardine 2012).

In the non-breeding grounds the species uses coastal estuarine habitats on the Pacific coast from Mexico to Peru, and on the Atlantic coast from the Yucatan and the West Indies south to central Argentina, with large non-breeding concentrations occurring along the coast of Guyana, French Guiana, Suriname and northern Brazil (BirdLife International 2014, Hicklin and Gratto-Trevor 2010).

Semipalmated Sandpipers arrive on the Arctic breeding grounds in late May to early June (Gratto-Trevor et al. 2012a), birds pair monogamously, and both parents share in incubation for 19-21 days (Hicklin and Gratto-Trevor 2010). Breeding attempts of females occur mostly until two years old,

while males varied from yearlings to four years old, no sex biased was recorded in natal philopatry (Gratto-Trevor 1988).

2.2 Population

There are no recognized subspecies, but differentiated population genetic structure based on mitochondrial DNA was found across seven North American locations (Miller et al. 2013). A geographic cline in bill lengths from east to west has been recognized whereas eastern breeders average longer than those in the west, and there is evidence of separation of breeding populations during migration (Gratto-Trevor et al. 2012a). Consequently most authors distinguish between eastern (eastern Canadian Arctic), central (western Canadian Arctic) and western (Alaska) breeding subpopulations. Birds wintering in northern South America, where the species is found in greatest abundance in the non-breeding season, appear to be primarily a combination of central and eastern breeding individuals (Andres *et al.* 2012a).

The worldwide population was formerly estimated at 3,5 million individuals, but this was revised downwards to 2,2 million individuals in 2006 (BirdLife International 2014). This adjustment was based on an annual rate of decline of 5% in 75% of the North American population, calculated from mark – recapture rates in the Bay of Fundy (Morrison et al. 2006, Hicklin and Chardine 2012). Recently, Arctic Program for Regional and International Shorebird Monitoring (PRISM) surveys generated an estimate of 2,26 million individuals, with 405,000 making up the eastern subpopulation, 405,000 within the central subpopulation and 1,45 million in the western subpopulation (Bart and Smith 2012). However most of the range in Canada was not surveyed, so these estimates could increase with additional coverage (Bart and Smith 2012).

Population trends of Semipalmated Sandpipers have been analysed by various methods. Analysis data from Maritime Shorebird Survey (MSS), Atlantic Canada Shorebird Survey (ACSS) and International Shorebird Survey (ICSS) showed a negative population trend from 1974 to 2009 that ranged from an annual reduction of 1,6% to 11,9 % in the eastern populations until 1999, and a positive trend of 15,5% between 2000 to 2009 (Gratto-Trevor et al. 2012b). In the same study average annual abundances during fall migration from MSS/ACSS/ISS programs in the North Atlantic, show a slight increment around 1985 but a clear decrease of the population until 1999; although population started to increase slowly afterwards, it never reached the average abundances observed before 1990 (Gratto-Trevor et al. 2012b). Analysis of annual indices of abundance from International Shorebird Surveys (ISS) in continental United States, west of Great Lakes and east of the Rocky Mountains, for the same period, show a negative population trend of 10,1% annual reduction and a sharp decline after 1987 with no change or clear recovery afterwards (Gratto-Trevor et al. 2012b).

Finally, relative abundances from Ontario Shorebird Survey (OSS) along critical staging sites in southern Ontario for the same period (1974-2009), show a negative trend ranging from 1,9% to 8,9% annual change (Gratto-Trevor et al. 2012b) and, similar results yielded Quebec Checklists analysis (Aubrey and Cotter 2007, Gratto-Trevor et al. 2012b). Ross et al. (2012) population trend analysis of southern Ontario counts yielded significant declines for the study period split into the last 20 (1989-2009) and the earliest (1974-1989). Earliest period estimates of annual change were significantly negative at 13 sites (41,3 %, $P=0,07$), and negative but not significant at 18 sites within the second or latest period (17,6%; $P=0,49$). In conclusion count data from migration monitoring programs in eastern and central North American show that Semipalmated Sandpiper populations have declined, at least with certainty in the eastern part of the distribution of the species.

Distinctive morphometrics of bill and wing length have also been used as a signal to monitor migrating Semipalmated Sandpipers in the Bay of Fundy, a critical staging site during southbound migration. Average bill and wing lengths of adults individuals captured between 1981 and 2006 (25-year period) staging in the Bay of Fundy declined, while mean body mass remained stable or increased, these results suggest that population declines may have been more severe in the eastern region of the breeding range (Hickline and Chardine 2012). Based on this mark-recapture study, Morrison et al. (2006) estimated an annual rate of decline of 5% in 75% of the North American population. Increment in mean adjusted size-mass of birds at the Bay of Fundy was related to later staging period over the time and ability of birds to adapt or shift to different preys despite lower densities of favourite *Corophium* amphipod crustaceans.

Negative population trends observed in monitoring programs of eastern subpopulations were consistent with trend data from breeding areas collected between the 1980s to the 1990s at sites like Churchill Manitoba, La Pérouse Bay, Cape Henrietta, Ontario (Jehl 2007, Smith et al. 2012). Nest densities at 13 breeding locations across arctic Canada and Alaska were reviewed from published and unpublished data, evidencing the Alaska and central populations to have been stable in the last two decades (Smith et al. 2012). In this study, declines were observed at two out of three sites in the eastern arctic region of Canada (Churchill and La Pérouse Bay) and trends at these sites have not reversed over time (Smith et al. 2012, Gratto-Trevor et al. 2012b).

The Semipalmated Sandpiper was listed as Least Concern by IUCN criteria until 2010 when the conservation status of the species was revised. The species did not approach the thresholds for Vulnerable under the range size criterion; it has a large distributional range that englobes the Western Hemisphere, and despite negative population trends, the decline is not sufficiently rapid and does not approach the 30% population reduction over 10 years or three generations. Finally, an estimate population size reduction of 10% in ten years is expected to approach vulnerable status. A more current revision of the conservation status of the species should be performing to evaluate if the population approaches the population size criterion based on recently published information on population trend (see Gratto-Trevor et al. 2011, Gratto-Trevor et al. 2012a,b, Mizrahi et al. 2012, Morrison et al. 2012, Ross et al. 2012).

2.3 Habitat

Breeding grounds: it breeds on wet sedge and dry heath tundra, often near pools, rivers and lakes (del Hoyo et al. 1996). It feeds primarily upon chironomid larvae, seeds and other small invertebrates (BirdLife International 2014).

Non-breeding grounds: restricted to coastal habitats, primarily found along beaches, favouring sandy beaches, mangroves, though mud banks and intertidal mudflats, sometimes also shallow lagoons and salt marshes (del Hoyo et al. 1996, Morrison et al. 2012).

Stopover sites: During migration the species visits intertidal mudflats, estuaries, sandy beaches and inland wetlands (Hicklin and Gratto-Trevor 2010). On migration can feed upon small aquatic, marine and terrestrial invertebrates, among them American horseshoe crab eggs (*Limulus polyphemus*) (del Hoyo et al. 1996).

2.4 Migration

During the spring migration, individuals from the eastern Canadian Arctic subpopulation migrate north from South America along the Atlantic coast, while those that breed in Alaska and centre Canadian Arctic migrate north through inland North America. Most of those that breed in Alaska

migrate south in the autumn over grasslands through the interior of North America, while those that breed in the east and centre Canadian Arctic migrate to South America mainly down the Atlantic coast of North America (often flying above the ocean). Although different populations segregate on the wintering grounds there is considerable mixing of populations along the northern coast of South America (Gratto-Trevor et al. 2012a). However, the individuals of the western subpopulation, i.e. Alaska, seem to winter farther west in South America than those that breed in the east (Naranjo *et al.* 2012).

The adults migrate before the young in fall and females migrate slightly earlier than males in fall, presumably because males stay longer with the brood at the breeding grounds. The adults begin to migrate south in mid-July (with the largest numbers travelling in late July and mid-August), while the juveniles reach their migration peak in late August and early September. Additionally to differences in timing, juveniles appear to use different migration routes than adults, for example a greater number of juveniles tend to migrate southwards along the Atlantic coast and are recovered in the Caribbean suggesting decreased flight capabilities or antipredatory migration strategy (Morrison 1984, Lank et al. 2003); Gratto-Trevor and Dickson (1994) also found that western adults migrate farther west and east on the South American wintering areas as compared to juveniles.

Studies at major staging sites using banding and bill morphometrics evidenced the presence of thousands of Semipalmated Sandpipers in James Bay, Ontario, during fall migration (southbound) moving towards the eastern coast of North America to the Bay of Fundy (Gratto-Trevor et al. 2012a). Central and eastern Canadian Arctic birds migrate to wintering areas in north-central and eastern South America via the Bay of Fundy, they stage to deposit fat reserves in order to accomplish a non-stop flight over the Atlantic Ocean to north central South-America (Gratto-Trevor et al. 2012a, Hickline and Chardine 2012) (Figure 1).

In 1980s the Canadian Wildlife Service carried out aerial surveys to study the distribution of Nearctic shorebirds on the coast of South America, identifying north central coast of South America (Guianas), to hold the most important wintering areas for 2,08 million shorebirds.

Current aerial surveys of shorebirds wintering on the coast of Suriname, French Guiana and Guyana fell by 79% between 1982 and 2008-2011, and major declines were recorded in Suriname and French Guyana, while increments were found in Guyana (9,755 vs. 21,320 individuals) (Morrison et al. 2012). The decrease in the winter populations is consistent with the studies conducted in the states in the north of Brazil (Amapá, Pará and Maranhão) (Rodrigues 2007). Wintering population reductions are consistent with preliminary surveys in north central Brazil (Morrison et al. unpub.). Declines on main wintering areas along the north-central coast of South America suggest previous populations were larger than current estimates (Andres *et al.* 2012b).

Northbound migration of the largest part of the population occurs on the Atlantic coasts *en route* to eastern Canadian breeding areas, being their major staging area the Delaware Bay in the western Atlantic (Mizrahi et al. 2012). Delaware Bay is a critical site for sandpiper species (*Calidris pusilla*, *C. canutus*, *C. alba*, *Arenaria interpres*) that feed upon American horseshoe crab eggs (*Limulus polyphemus*) to replenish spent energy stores (Tsipoura and Burger 1998, Baker et al. 2004, McGowan et al. 2011, Mizrahi et al. 2012). Long-term changes in the body masses of Semipalmated and Least Sandpipers (*Calidris minutilla*) during staging in Delaware Bay were investigated and related to horseshoe crab egg availability. Size adjusted body masses were correlated across different banding periods and habitats and showed a significant reduction in the 2000s than in the 1990s in Semipalmated Sandpipers and did not vary significantly in Least Sandpipers (Mizrahi et al. 2012). Semipalmated Sandpipers feed primarily on horseshoe crab eggs and decline in the amount of rate of energy accumulation observed in this species during this study

was related to decreases in Delaware Bay horseshoe crab populations occurred in the 1990s. Least Sandpipers were less dependent on horseshoe crab, arrive in Delaware Bay before horseshoe crab spawning in late May and occupy habitats with lower densities of horseshoe crab, consequently changes in body masses during staging period varied less than in Semipalmated Sandpipers. Reduction of body mass in long distance migratory shorebirds might result on lower survival rates, lower return rates to staging areas and lower breeding success as has been evidenced already for Red Knots (Baker et al. 2004, McGowan et al. 2011, Hicklin and Chardine 2012).

3. Threat data

Calidris pusilla is considered a Near Threatened species worldwide (BirdLife International 2014).

3.1 Direct threats to the population

3.1.1 *Hunting*

Direct threats include hunting, particularly in the north central coast of South America (Suriname, French Guiana, Guyana and Brazil) (Morrison *et al.* 2012). In Guyana a traditional method called “chocking wire” to kill shorebirds was developed using a metal wire attached to a post perpendicular to flight lines and as flock pass, the wire is whipped up and down, passing through the flocks and killing or injuring birds (Trull 1983; Ottema and Spaans 2008 in Morrison et al. 2012). The method spread to Suriname and French Guiana (Ottema and Spaans 2008 in Morrison et al. 2012). Other methods involved dazzling birds with a bright light at nights and trapping them with cast nets, and also netting or shooting has been recorded (Morrison et al. 2012). In early 1980s, up to 75 birds were taken daily during migration (August to September) around Georgetown in Guyana (Trull 1983). In Suriname the Nature Conservation Division of the Government estimated the number of shorebirds taken of all species poached in the coastal area in several tens of thousands per year (Ottema and Spaans 2008, Ottema and Ramcharan 2009). Considering an annual poaching rate of 20,000 Semipalmated Sandpipers being removed from a population of 2 million individuals (1% of the total estimated population), the decline would amount to some 26% over 30 years, independent of other mortality, which represents a significant effect in the observed population reduction (Morrison et al. 2012).

3.1.2 *Predation*

Particularly Peregrine Falcons (*Falco peregrinus*), have increased in abundance since 1970s and their role in influencing length of stay at migratory stopover locations may be critical but has not been studied on the species (Lank et al. 2003, Andres et al. 2012a, b). Further, Peregrine Falcons appear to have increased in Guyana, Suriname and French Guiana (Morrison et al. 2012). Diet preferences of Peregrine Falcons studied at Ecuasal Salt lakes in Ecuador, a wintering site on the Pacific coast for Semipalmated Sandpipers, were gulls, terns and egrets (Ágreda unpub.), similar preys were recorded in Suriname (Morrison et al. 2012), however Peregrine Falcons might influence length of stay and foraging exposure in shorebirds and consequently affect body condition during migration and ultimately survival.

3.2 Habitat destruction

Habitat loss and degradation throughout its area of distribution were identified as the main causes of the decrease in the population of this species. The change in habitat throughout its migration routes prevents it from feeding enough to complete the migration (resulting in reduced survival rates among adults).

3.2.1 *Decline in Horseshoe crab population and egg availability to shorebirds*

A potential threat is the harvesting of horseshoe crabs *Limulus polyphemus* in Delaware Bay, an area which reportedly sees the passage of c.60% of the total population of *C. pusilla* during spring migration (BirdLife International 2014). Semipalmated Sandpipers require staging at Delaware Bay to restore energy to fly 4,000 miles to breed in Alaska and the Canadian Arctic (Tsipoura and Burger 1998, Hicklin and Chardine, 2012). In Delaware Bay, Semipalmated Sandpipers are found foraging on open sandy beaches where they feed primarily on horseshoe crab eggs (Mizrahi et al. 2012). Average mass increase during staging period (2-3 weeks) prior to departure was calculated in 78% for Semipalmated Sandpipers, horseshoe crab egg membrane constituted the bulk of gut content in birds capture foraging in beaches, polychaete worms, oligochaete and ribbon worms were found primarily in birds foraging in marshes at Delaware (Tsipoura and Burger 1998). Harvest pressure of horseshoe crabs reduced egg availability to shorebirds and is related to emergent patterns of decline in amount of fat accumulation (Mizrahi et al. 2012). The dramatic increase in commercial fishing of horseshoe crab to provide bait for conch and eel fisheries began in the early 1990s and peaked in 1995/1996, thus reflecting a six-fold decline in overall numbers caught in trawls by US Fish and Wildlife Service (Andres 2003 in Baker et al. 2004). Consequently, overharvesting of horseshoe crab and erosion of beaches in Delaware Bay have jointly reduced the habitat available to shorebirds and its quality, which finally was reflected into the overall population reduction of Semipalmated Sandpiper population along the western Atlantic.

3.2.2 *Habitat changes in wintering grounds*

Significant changes in the intertidal profile, for unknown reasons, have taken place along the coast of the Guianas, although numbers of birds were also lower in areas with no obvious changes in mudflat area (Morrison *et al.* 2012).

3.2.3 *Contamination of wintering grounds*

Use of pesticides in agricultural areas such as rice fields may affect shorebirds using those habitats directly, and drainage of pesticides into coastal areas and onto mudflats also has the potential to affect shorebirds (Morrison *et al.* 2012). Small-scale gold mining has increased considerably in the northern South American wintering range, and mercury, which is used in the extraction process and can reach the coast via the rivers, has the potential to affect shorebirds in coastal areas (Morrison *et al.* 2012). Oil exploration has also begun in Suriname and Guyana, with spills representing a further potential threat. Increasing frequency and severity of hurricanes during southbound migration may be causing increased mortality during this period (Morrison *et al.* 2012).

3.3 Indirect threat

Climate change: temperature changes in the breeding grounds are altering the availability of food resources. For instance, peaks in the number of insects available may occur before the eggs are laid (leaving the chicks without adequate food). Climate change may have other indirect impacts on the population (such as higher levels of parasites and disease, altered migration patterns and so on).

3.4 Threats related to migration

Habitat loss and hunting are threats during the migration period. The flocks are easy targets for hunters, while habitat loss results in a lack of food and shelter for the species. Other threats include human disturbance, infrastructure development, water pollution and coastal development.

3.5 National and international utilization

Although there are no data on utilization, the species is hunted (probably for food).

4. Protection status and needs

4.1 National protection status

- In the United States, the species is included on the list of species of conservation concern at the national level (USFWS 2008), and is considered a “yellow watch list species” (Butcher *et al.* 2007).
- Hunting of shorebirds is illegal in Suriname, but this is poorly enforced.

4.2 International protection status

- *Calidris pusilla* is included in Appendix II of the CMS in the Scolopacidae family.
- Delaware Bay and Bay of Fundy two critical staging sites are part of the Western Hemisphere of Shorebird Reserve Network of international importance.
- An adaptive management plan for Delaware Bay was formally adopted by the Atlantic States Marine Fisheries Commission in 2012. The plan links harvest decisions to information on the welfare of both horseshoe crab and Red Knot *Calidris canutus* population levels as well as the use of crabs for bait and by the medical industry, and calls for crab harvest levels to be regularly adjusted in response to data on Red Knot and horseshoe crab populations.

4.3 Additional protection needs

- Mitigate or reduce that impact of hunting. Campaign for better enforcement of hunting, application of regulation in countries that have already ban killing of shorebirds and introduce regulations to prohibit killing of shorebirds in countries that need it.
- Conservation and effective management of the natural habitat in their stopping points and wintering grounds
- Support adaptive management plan for horseshoe crab harvest in Delaware Bay.
- Carry out systematic monitoring in breeding areas, especially in the eastern section of the distribution of the species from where less information exists and greatest reduction to complete disappearance of nesting individuals have been reported, and identify priority actions to secure the reestablishment of breeding populations in these areas.
- Assessment of the impact of pollutants in their stopping points and wintering grounds.

5. Range States¹

ANTIGUA AND BARBUDA; ARGENTINA; BOLIVIA; Bahamas; Barbados; Brazil; Canada; CHILE; COSTA RICA; Colombia; CUBA; Dominica; ECUADOR; El Salvador; United States of America (incl. Puerto Rico); FRANCE (Guadeloupe, Martinique, French Guiana); Grenada; Guatemala; Guyana; Haiti; Jamaica; NETHERLANDS (Netherlands Antilles); HONDURAS; Mexico; Nicaragua; PANAMA; PARAGUAY; PERU; Dominican Republic; Russian Federation; Saint Kitts and Nevis; Saint Lucia; Saint Vincent and the Grenadines; Suriname; Trinidad and Tobago; URUGUAY, Venezuela (Bolivarian Republic of); United Kingdom (overseas Caribbean territories). Parts of the CMS are in capital letters.

¹ CMS Parties in capitals.

6. **Comments from Range States**

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7. **Additional Remarks**

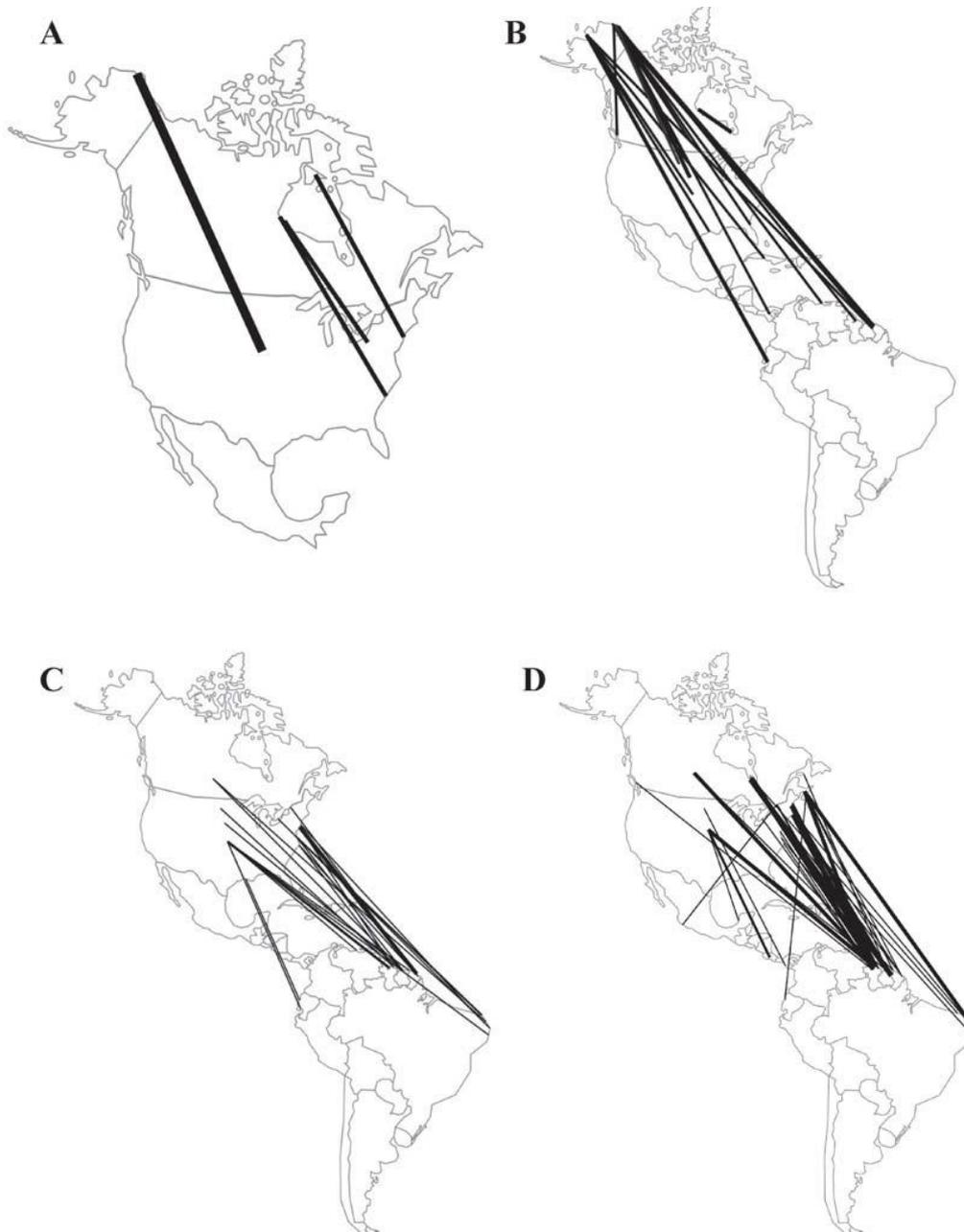


Figure 1. Taken from Gratto-Trevor et al. 2012. (Recoveries of marked Semipalmated Sandpipers. Observations connected by lines were not necessarily from the same year. Data were obtained from North American Bird Banding Recoveries, Martinez 1974, Morrison 1984, Sandercock *et al.* 2000, C. Gratto-Trevor unpublished data, D. Lank unpublished data, D. Troy unpublished data. A: Spring to breeding area recoveries. The thinnest line represents one bird; thicker lines two individuals. B: Breeding area to fall and winter recoveries. The thinnest line represents one bird; thicker lines two to four individuals. C: Winter to spring recoveries. The thinnest line represents one bird; the thicker the line the more individuals (up to a maximum of eleven birds). D: Fall to winter recoveries. The thinnest line represents one bird; the thicker the line the more individuals (up to a maximum of 101 birds).

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