

STATUS AND ORIGINS OF CURLEW SANDPIPERS IN NEW YORK STATE

Angus Wilson

4 Washington Square Village, Apartment 2I, New York, NY 10012
Wilsoa02@med.nyu.edu

ABSTRACT

The Curlew Sandpiper (*Calidris ferruginea*) is an elegant and much sought after Old World shorebird that occurs almost annually in New York State. Most records are from Long Island during spring and fall migration, with only a handful of documented sightings from upstate New York. Remarkably, juveniles are extremely rare in the state, a puzzling phenomenon observed throughout North America except for the Pacific Coast. This article reviews the status of Curlew Sandpiper in New York State, discussing the identification and probable origins of these birds, and ends with a few tips on finding this very appealing shorebird in our region.

IDENTIFICATION

The Curlew Sandpiper is an attractive long-winged sandpiper about the size of a Dunlin (*C. alpina*) but with a longer, more decurved bill and long dark legs. As with most shorebirds, the plumage varies with time of year and with age (reviewed in Paulson 1993). Adults molt into alternate (breeding) plumage during March to April, developing a distinctive dark chestnut-red head and underparts that contrast with a richly patterned dark back, pale gray wing coverts and a variable white to brick-red vent area. Breeding adults can be mistaken for Red Knot (*C. canutus*), although the latter is noticeably larger, with a stockier build and shorter, stouter bill. Alternate-plumaged Red Knots are also paler orange-red. During fall migration (July to September), adults begin to molt into basic (winter) plumage producing a blotchy mixture of red and gray or white feathering. In some individuals, molt is suspended during migration producing a curious mixture of alternate and basic features.

Juveniles and basic-plumaged adult Curlew Sandpipers are also similar to Dunlin of comparable age and can again pose a serious identification challenge. Many observers fail to appreciate that Dunlin occurring in our area are predominantly of the subspecies *C. a. hudsonia*, which is much closer in size and bill length to Curlew Sandpiper than the three subspecies *alpina*, *schinzii* and *arctica* illustrated in European field guides. Adult Curlew Sandpipers in basic

plumage have uniformly gray upperparts, a bold white supercilium and silky white underparts, whereas juveniles have obvious buff edges to the scapulars and mantle feathers, producing a neatly scalloped appearance, and a beautiful but transient peachy-orange tint to the breast and neck. A very useful feature of juvenile Curlew Sandpipers are the dark anchor-shaped centers to the wing coverts and scapulars, a pattern shared only with Red Knot and the much smaller Temminck's Stint (*C. temminckii*). Although uncommon in North America, the first basic-plumaged Curlew Sandpiper is similar to adult basic, except for the inner median coverts which retain rich buff fringes (Prater et al. 1977).

At all ages, Curlew Sandpipers show a more distinct white supercilium that extends farther behind the eye than Dunlin and have whiter underparts. In flight, Curlew Sandpipers of all ages show a prominent white wing bar and broad white rump patch. Although Dunlin also show a prominent wing bar, there is a dark stripe down the center of the rump patch. Keep in mind, however, that the dark stripe can be difficult to see, especially if the bird has just been preening and has fluffed up the uppertail coverts creating the impression of an extensive white patch. When seen together, Curlew Sandpipers generally appear longer-necked and more upright than Dunlin, especially when feeding.

During the fall and winter, juvenile Stilt Sandpipers (*C. himantopus*) are regularly mistaken for Curlew Sandpipers, and in many respects pose more of a problem than Dunlin. Both Curlew and Stilt sandpipers have a relatively long, decurved bill, a white rump and preference for feeding by wading in deeper water. Stilt Sandpipers are slightly larger than Curlew Sandpipers with greenish rather than black legs. Although diagnostic, leg color should be used with care because of variation between individuals and the simple fact that the color is often obscured by mud. Stilt Sandpipers are longer-legged, especially below the 'knee' and have a subtly different bill shape that droops more noticeably towards the tip. Familiarity with the shape and proportions comes with experience and it is always a good idea to look carefully at any Stilt Sandpiper that you come across.

Finally, care must always be taken to eliminate other white-rumped species such as White-rumped Sandpiper (*C. fuscicollis*) and Wilson's Phalarope (*Phalaropus tricolor*). Although sharing the long-winged appearance and of course the white rump, the White-rumped Sandpiper is smaller with shorter legs and a less decurved bill. Wilson's Phalarope is larger than Curlew Sandpiper with greenish-yellow legs but again the color can be obscured by mud. Roberson (1980) cites a reported Curlew Sandpiper that turned out to be a Wilson's Phalarope with an abnormal bill. As with any shorebird, a full suite of characters should be noted before a safe identification can be made. For further details on identification see Hayman et al., (1986), Kaufman (1990) and Paulson (1993).

Curlew Sandpipers are sexually dimorphic, and some birds can be tentatively sexed in the field, especially if multiple individuals are present for direct comparison. Alternate-plumaged females are less deeply rufous than males and in all plumages have a longer bill and legs (Thomas and Dartnall 1980, Engelmoer and Roselaar 1998). The longer bill of females is most apparent for birds from the western part of the breeding range, averaging 12.1% longer than males compared to 9.3% for birds from the east (Engelmoer and Roselaar 1998). Observers lucky enough to come upon multiple individuals should try to document any individual differences.

STATUS IN NORTH AMERICA AND NEW YORK

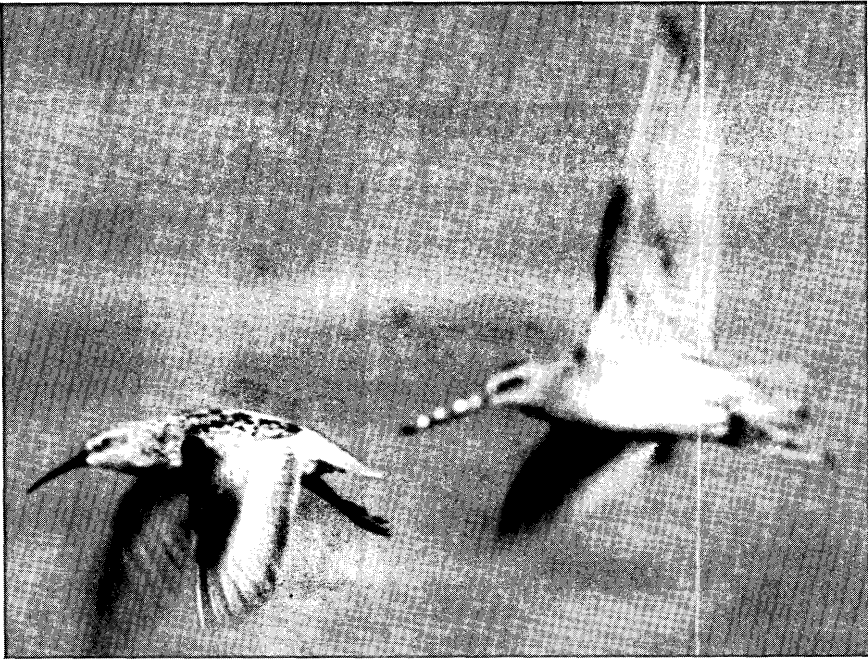
There are records of Curlew Sandpipers from almost every state and province in North America, but most are from the Atlantic Coast (Nova Scotia to Florida), especially at coastal sites in North Carolina, Delaware, New Jersey, New York and Massachusetts. Smaller numbers occur along the Pacific Coast (Alaska to California) and on the Gulf Coasts of Louisiana and Texas. Curlew Sandpipers are casual inland and in the West Indies (Raffaele 1998). There are also records from Central America and South America including Costa Rica, Ecuador, Peru and Argentina (Graves and Pleuge 1978, AOU 1998).

Curlew Sandpipers breed along the northern coasts of Siberia, from the Taimyr Peninsula in central Siberia to the Kolyma River delta in northeastern Siberia and winter close to or below the equator in a broad arc from West Africa to Australia and New Zealand. Very occasionally a few individuals make the short hop across the Bering Straits and breed on the north slope of Alaska, notably the Point Barrow area (Kessel and Gibson 1978). Given the eastern breeding distribution, it is striking that Atlantic Coast records outnumber those from the Pacific Coast by seventeen to one (Mlodinow and O'Brien 1996).

The species has a long history in New York State which has been reviewed by Eaton (1910), Griscom (1923), Cruickshank (1942), Bull (1964, 1974) and most recently by Cooper (1998). In his *"Birds of North America"* (1840), Audubon mentions collecting three examples of the "Cape Sandpiper or Pigmy Curlew", two of which were shot at Great Egg Harbour in New Jersey, in the spring of 1829, the other on Long Island ("near Sandy Hook" - perhaps meaning Breezy Point or Far Rockaway?). He writes: "No other birds were near them, and I approached them without much difficulty. They were wading along the shores up to the knees, picking up floating garbage and sand-worms. In their stomachs I found fragments of minute shells, slender red worms, and bits of marine plants. The one killed on Long Island was a fine male in full plumage, and from it I made the figure that has been engraved in the plate." Giraud (1844) refers to nine or ten specimens discovered for sale in the New York City's Fulton Market and presumably procured on Long Island or neighboring New Jersey.

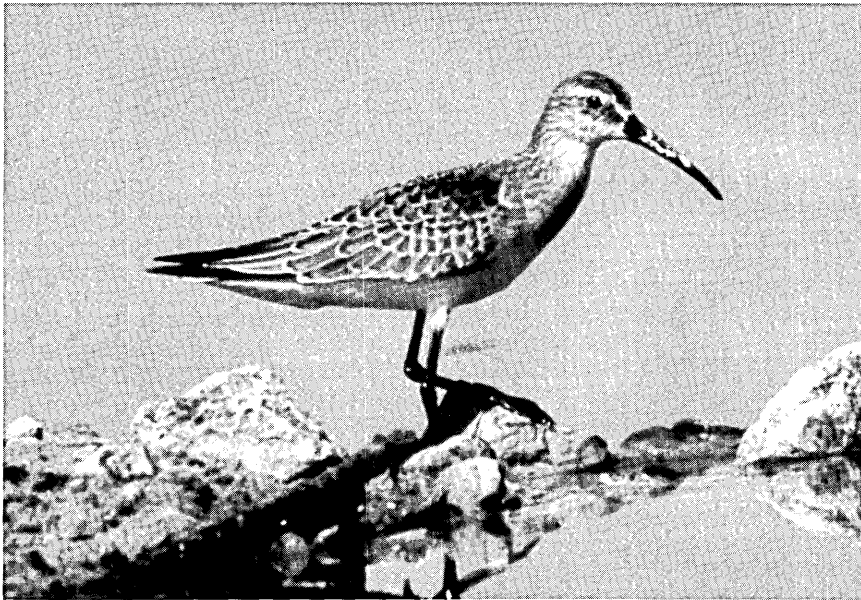
from time to time. For example, between 1937 and 1941, the salt marshes and ephemeral pools of the Jones Beach strip (West End to Cedar Beach) on Long Island proved particularly reliable, but from 1947 onwards this preference switched to the extensive intertidal mudflats and brackish pools of Jamaica Bay (Bull 1964). Since then, Jamaica Bay, especially the artificial ponds of the Jamaica Bay Wildlife Refuge, has dominated the record books accounting for almost 45% of sightings in the state.

As shown in Figure 1, most Curlew Sandpiper records occur during the peaks of spring and fall migration. As is typical for most arctic-nesting shorebirds, spring passage (phase I, first week of May to first week of June) is relatively compressed compared to fall migration, as birds hurry northwards to secure breeding territories on the newly thawed tundra. Records from midsummer (late June to mid-July) represent early fall migrants or possibly nonbreeding individuals that spend the summer in our area, as is the case with Short-billed Dowitcher (*Limnodromus griseus*). Fall migration (phase II and III) begins in early July with a prominent push of southbound adults (phase II), but shows an interesting bimodal distribution with a second wave of adults arriving in late



An adult Curlew Sandpiper (leading bird) in flight with a dowitcher. Although the diagnostic white rump is difficult to see from this angle, the slender, decurved bill, dark-centered mantle feathers, prominent supercilium, reddish breast, and obvious wing bar indicate a Curlew Sandpiper in molt from alternate to basic plumage. Photographed in New York by Tom H. Davis/VIREO

August through to the second week of October (phase III). The first wave parallels migration through southern Europe (similar latitude to New York) in which the adults arrive in mid to late July building to a peak in August (Wilson et al. 1980). Although one might assume that phase III reflects the arrival of juveniles, as observed for example with Semipalmated Sandpipers, this is not the case. There are only two records of juveniles for New York State, both from Jamaica Bay NWR, one on 11 Sep 1979 and the other from 25 Sep-1 Oct 1985 (*American Birds* 40: 89, *Kingbird* 30:62, 36: 62). A similar phenomenon is observed in New Jersey, Massachusetts and Delaware, with only one or two documented records of juveniles in each state (Hanson 1999, Veit and Petersen 1993, B. Peterjohn and C. Campbell pers. comm.). In sharp contrast, juveniles account for about 45% of all California records. It seems unlikely that identification difficulties alone are responsible for this remarkable bias and there is no evidence that juveniles exploit a different habitat from adults. As described above, juveniles are relatively distinctive and are less likely to be mistaken for Dunlin than are basic-plumaged adults, which are recorded with greater regularity. The significance of the second wave of adults is unclear and will be discussed below in reference to the possible Asiatic origins of some birds.



Juvenile Curlew Sandpipers closely resemble Dunlin but have longer legs and a more elongated appearance. At close range, the anchor-like markings of the scapulars eliminates Juvenile Dunlin, which have solid centers. Photographed by H. & J. Eriksen/VIREO

Lastly, there are a handful of records from late fall and midwinter, including a specimen collected by Fuyentes on Fisher's Island, Suffolk Co., 19 Dec 1923 (AMNH 752387, Bull, 1974) and sight records from Jones Beach-Oak Island, 28 Jan 1940 (Cruickshank, 1942) and Jamaica Bay, 23-27 Jan 1955 (Bull, 1974). Winter records become more common in the southern United States, especially in Florida, and again mimic the pattern of occurrence in Europe.

As illustrated by Figure 1B, annual occurrence is subject to variation, with alternating periods of regularity and scarcity. The 'boom' periods 1979-85 (31 records) and 1990-92 (12 records) are notable in this respect. This periodicity is reminiscent of the three to four year cycles observed for migrants passing through northwestern Europe and for wintering birds in Africa, regular fluctuations that are attributed to the rise and fall of lemming populations on the breeding grounds. In poor lemming years, Arctic Foxes and other predators such as jaegers and Snowy Owls turn to the eggs and young of shorebirds as a food source resulting in fewer fledglings (Underhill 1987, 1989). How the cycles in New York correlate with those in Africa and Asia remains to be determined. The low numbers recorded in New York during the 1990's are mirrored in neighboring states (Hanson 1999, P. Lehman and S. Finnegan, pers. comm.), and it is unclear whether this reflects a general decline or the low point of a particular cycle. Only time will tell!

There are only three, or possibly four, accepted records for Curlew Sandpiper away from coastal New York (defined as Long Island, Staten Island and Fisher's Island). The first was an adult studied for five to seven minutes by Daniel R. Gray III, Robert Rybsynski and John Confer on a partly drained fish pond at the Morehouse Fish Hatchery in Seneca Falls, Seneca Co., 15 May 1982 (NYSARC 17A/B-82). Curiously, given the date, the bird was identified as a basic-plumaged adult, based on its light gray neck and gray wash to the faintly streaked breast. As mentioned above, adults molt into alternate plumage in March and April prior to northward migration from the wintering grounds. The appearance of a basic-plumaged adult in mid-May is unprecedented in North America. Three days later, Walter E. Benning located another adult at the same location. This bird was more confiding, allowing Benning to examine the plumage carefully. His description is consistent with an adult in pre-alternate molt with a light reddish brown color to the neck and breast (KB 32: 195, NYSARC 18A-82). Unfortunately, no photographs were taken of either sighting. Given the strange date for a basic-plumaged adult and the limited probability that two individuals should occur at this small site, it seems possible that in fact only one bird was involved. Perhaps the broad white edges to the newly acquired head and breast feathers gave the first set of observers the slightly misleading impression of a gray wash, an effect that can be seen in video footage of Curlew Sandpipers photographed in Asia during April (Butler 1995). Another alternative is that the first individual was in first alternate plumage, which

resembles adult basic. This plumage has been observed in North America, although relatively rarely. There is a well-documented record of this age from Mountain View, California, 1-5 May 1996 (CBRC 1996-081; *Western Birds* 30: 63) and basic-plumaged birds presumed to be in their second calendar year have been observed in Delaware, at Bombay Hook NWR, 11 May 1991 and Little Creek WMA during June, 1992 (B. Peterjohn pers. comm.) and Chicago, Illinois, 22 May 1978 (S. Mlodinow pers. comm.) Studies in Mauritania and South Africa indicate that the majority of first year birds remain on the winter grounds and do not attain full alternate plumage. Although such birds generally remain south of the equator, substantial numbers of first years (16,000 in 1988) can be found on the Banc d'Arguin (at 19°20'-20° 30'N) in June (Van Dijk et al. 1990), suggesting that a few subadults might summer at similar latitudes in the US.

Eight years after the sightings at Seneca Falls, an alternate-plumaged adult was discovered by Willie D'Anna and Betsy Potter at Iroquois NWR, Genesee Co., 30-31 July 1990 (KB 48(4): 333, NYSARC 1990-16-A/D). After yet another eight year hiatus, a molting adult was found by Gerard Phillips at Montezuma NWR on 12 Aug 1998 (KB 48(4): 333, NYSARC review in progress). These records, though few, clearly indicate that this species could occur in suitable habitat anywhere in the state, especially during fall migration.

WHERE DO THESE BIRDS COME FROM ?

The pattern of North American records and the normal migration routes across Eurasia and Africa suggest that Curlew Sandpipers reach New York via two main routes as illustrated in Figure 2. Most Curlew Sandpipers probably cross the Atlantic Ocean from southern Europe or western Africa reaching South America, rather than North America as might be imagined, and then migrate northwards into North America the following spring (Path 1-3). Others may originate in the Russian far east, crossing the Bering Sea to Alaska during the fall and then crossing the North American interior to the eastern seaboard (Path 4). Lastly, it has been suggested that Curlew Sandpipers follow a polar route leaving the breeding grounds in central Siberia and traveling 'over the top' to north-eastern North America via Greenland (Path 5). There seems little evidence to support this latter possibility

(Path 1-3) **Trans-Atlantic route:** Curlew Sandpipers are powerful migrants that undertake long continuous flights as part of their normal migration strategies. Banding studies have shown that southbound adults and juveniles from the western part of the breeding range follow a long arc through southern Scandinavia and western Europe and then pass down the Atlantic Coast to West Africa, where large numbers spend the winter (Elliott et al. 1976; Wilson et al. 1980; Wymenga et al. 1990). Some 436,000 Curlew Sandpipers use the eastern

Atlantic flyway, with as many as 170,000 birds staging on the Banc d'Arguin in Mauritania before moving farther south along the West African coast (Van Dijk et al. 1990; Wymenga et al. 1990). Occasionally, easterly winds force southbound migrants to deviate from the normal migration routes resulting in periodic influxes into northwestern Europe. In 1969, for example a persistent low pressure system over northern Europe coincided with the main departure of juveniles from the breeding grounds, forcing several thousand juveniles into the British Isles, the Netherlands and northern Germany (Stanley and Minton 1972). As suggested by Eisenmann (1960), southbound migrants may be caught in cyclonic storms - or perhaps the northeast trade winds, a continuous band of winds originating off the coast of northwest Africa near the Canary Islands - and rapidly transported across the Atlantic. The distance between Africa and South America is on the order of 1500-2800 miles depending on launch point. Calculations based on body fat measurements suggest that fully refueled birds might be capable of continuous flights of 1800-3000 miles (Stanley and Minton 1972). Consistent with this proposal, a bird banded in Belgium was recovered fourteen days later in Barbados (Raffaele et al. 1998). These immense journeys are probably part of the normal migration capability of the species. For example in the spring, a significant fraction of the birds wintering in West Africa are thought to return to the Siberian breeding grounds by directly crossing the Sahara Desert and Mediterranean Sea, possibly in a single flight that takes them from coastal Africa to the Black Sea (Wymenga et al. 1990).

The paucity of juveniles in the fall anywhere along the East Coast supports the notion that most birds do not make landfall here but instead cross the Atlantic farther south at its narrowest point (a crossing of less than 1800 miles), reaching the coasts of Guyana, Suriname, French Guiana and Brazil in northeastern South America. Birds probably winter in the tropics or continue south to richer feeding grounds in southern Brazil and Argentina. During the following spring, displaced adults (or juveniles that have spent 18 months or so in South America before reaching adulthood) may move northwards into North America in the company of Nearctic species such as Semipalmated Sandpiper (*C. pusilla*) and Lesser Yellowlegs (*Tringa flavipes*). This would account for the relatively strong showing of Curlew Sandpipers in New York during the spring (approximately 30% of records are from May). Presumably the majority of first year birds remain on the wintering grounds, as is the case in Africa and Australasia. A similar mechanism may also explain the frequent occurrence of Ruff (*Philomachus pugnax*) in eastern North America during the spring. Extensive banding studies have shown that Ruffs from central and eastern Siberia follow a similar great circle route across the entire Eurasian landmass to staging grounds in western Europe before proceeding to Sub-Saharan Africa. Again, simple extension of this route would place fall migrants in South America. Ruff and Curlew Sandpiper differ, however, in that the former species also occurs regu-

larly at inland localities within the state and continent as a whole (Robben 1965).

(Path 4) **Trans-Bering route:** An impressive variety of Asiatic shorebirds have been recorded in eastern North America. In New York, for example, there are two records for Sharp-tailed Sandpiper (*C. acuminata*)¹ and four records of Red-necked Stint (*C. ruficollis*), both of which are extremely rare in Europe and do not routinely winter in western and southern Africa. It seems most likely that these and other Eurasian shorebirds such as Broad-billed Sandpiper (*Limicola falcinellus*) and Spotted Redshank (*Tringa erythropus*) originate in eastern Siberia, having migrated eastwards across the Bering Straits and then across the North American continent (Mlodinow 1999, 2000). In California, Oregon and Washington, the predominance of fall records for Curlew Sandpiper is consistent with an eastern movement out of Siberia, although it is possible some may have bred in northern Alaska. Birds seen in New York from July onwards may therefore have come directly from Siberia via Alaska.

The paucity of juvenile Curlew Sandpipers during fall migration presents an interesting paradox. In general, juveniles tend to be over-represented in long-distance vagrants presumably due to migrational inexperience. As with many long-distance migrants, adult Curlew Sandpipers leave the high arctic breeding grounds several weeks ahead of their offspring and perhaps this early departure coincides with weather conditions that are more compatible with vagrants reaching the East Coast of North America? Alternatively, adults may be more likely to perform long-haul flights that transport them rapidly across the continent while juveniles prefer to pause in Alaska or British Columbia where they become caught up with the millions of shorebirds that follow the eastern Pacific flyway. Differences in the migration routes of juvenile and adult shorebirds are not unprecedented. Most juvenile American Golden-Plovers (*Pluvialis dominica*) for example, follow a more central flight path down the Mississippi River flyway, whereas adults gather in the northeast before making a long oceanic flight directly to South America (Byrkjedal and Thompson 1998). Similar age related mechanisms may be at work with vagrant Curlew Sandpipers.

Discovery of banded (or otherwise marked) Curlew Sandpipers on the East Coast could would doubtless shed useful light on this interesting question, and it is always a good idea to check shorebirds for bands or color flags. Unfortunately, the Curlew Sandpiper is monophyletic species and thus has no recognized subspecies that might provide clues to origins (Holmes and Pitelka

¹ To date, NYSARC has accepted only one record of Sharp-tailed Sandpiper, an adult on the East Pond at the Jamaica Bay NWR , 18-24 Jul 1981 (KB 31:198-201). A second adult was found at the same location by Tom Davis and others on 16 Jul 1983, almost exactly two years later (KB 33:298). The congruence of date, place and the age suggested to the observers that these two sightings involved the same returning individual. Perhaps for this reason, insufficient details of the 1983 bird were submitted to NYSARC and the report could not be accepted into the permanent record.

1964; Engelmoer and Roselaar 1998). The lack of multiple subspecies has been attributed to the relatively small and essentially continuous breeding range, as well as to low breeding site fidelity (Underhill et al. 1993; Engelmoer and Roselaar 1998). Presumably, the Curlew Sandpipers seen on the East Coast in spring attempt to breed somewhere in the Canadian Arctic although again the lack of juveniles suggests they are generally unsuccessful. For any vagrant shorebird, finding a mate on the expanses of the tundra must present quite a challenge!

(Path 5) **Trans-polar route:** Both Nisbet (1959) and Hall (1960) suggested that Curlew Sandpipers reach the East Coast following a more northerly (over the pole) route. Evidence for this proposal is limited and this is unlikely to represent a major source of birds occurring on the East Coast. First of all, there are relatively few records from Iceland, an average of approximately two records per year, with twice as many in fall than in spring (G. Pétursson pers. comm.). Secondly, juveniles are much more frequent in Iceland than in eastern North America, a pattern that is also mirrored in western Scotland (A. Hogg *vide* C. Campbell). It is possible that some individuals continue westward from Iceland to North America and move down the Atlantic coast, perhaps contributing to the second wave of New York fall records. There is a single published record for Greenland, an adult in Jørgen Brønlund Fjord, Peary Land, North Greenland on 12 June 1966 (G. Pétursson and K. Thorup pers. comm.). Whether the lack of records reflects true scarcity or a shortage of observers is open to debate.

FINDING CURLEW SANDPIPERS IN NEW YORK

Other than by phoning the rare bird alerts during migration, your best chance of seeing a Curlew Sandpiper is to search carefully through shorebird flocks feeding on intertidal mudflats or in brackish pools. The East and West ponds of Jamaica Bay NWR remain the state's hotspot, although brackish coastal ponds, such as Mecox Bay in the Hamptons, if drained at the appropriate time of year, are worth searching. Alternatively, the extensive mudflats and tidal marshes of Shinnecock Bay (viewed from along Dune Road from Cupsogue County Park eastwards) provide opportunities to scan through good numbers of shorebirds and have produced multiple records of this species in the past two decades. It is unclear why Jamaica Bay dominates the list of recent sightings so dramatically, but this may reflect ease of access by a great number of observers, the abundance of suitable intertidal wet mud habitat surrounding the refuge or a few individuals returning to the same locality in successive years. Curlew Sandpipers roost communally with other calidrids and many Jamaica Bay NWR records come from the 'Raunt', the partly submerged remains of some fishermen's huts near the center of the East Pond, that is used as a high tide roost by a variety of species.

With their relatively long legs, Curlew Sandpipers are adapted for feeding in shallow water, often wading belly deep and probing the mud for small invertebrates (Lifjeld 1984). During migration and on the wintering grounds, Curlew Sandpipers feed extensively on polychaete worms, fly larvae, snails and plant materials, consuming smaller amounts of crustaceans (ostracods and amphipods). Studies in South Africa indicate that Curlew Sandpiper and Black-bellied Plover feed on the same polychaete worms, although the two species use different techniques and prefer different substrates (Kalejta and Hocky 1994). Typically, the prey is captured using a series of closely spaced probes, known as 'stitching', made as the bird walks forward but occasionally while standing still. Often the birds wade belly deep and partially submerge their heads. Because of this tactile feeding method, Curlew Sandpipers prefer soft, wet, mud with few plant roots and a high prey density (Kalejta and Hocky 1994).

Although Semipalmated and Western (*C. mauri*) sandpipers routinely wade in shallow water, special attention should be given to birds feeding in deeper water, although of course this behavior is also typical for Stilt Sandpipers. Some Curlew Sandpipers may go undetected if they associate with large flocks of Dunlins in late September onwards. Few observers have the patience to comb through distant flocks of hundred or sometimes thousands of Dunlins. However, as Colin Campbell points out (pers. comm.) Curlew Sandpipers can be relatively easy to spot because their longer legs makes the 'rear-end' tilt up more showing the white ventral area to advantage even from a distance. It should also be noted that Curlew Sandpipers are not only found with their smaller relatives. The adult that graced Iroquois NWR in 1990, associated with Stilt Sandpipers and Lesser Yellowlegs (W. D'Anna pers. comm.), two longer-legged species with a similar tendency to wade in relatively deep water.

In conclusion, Curlew Sandpipers present an exciting possibility for shorebird watchers anywhere in New York State. Although records go back for more than 160 years, many fascinating questions remain unanswered. Why are there so few juveniles on the East Coast? Are the cycles of 'boom' and 'bust' years somehow related to the abundance of lemmings in central Siberia? Do the poor numbers reported during 1990's in New York and along the East Coast in general, reflect a true decline or just another low cycle?

Curlew Sandpiper is one of the few Eurasian shorebirds that occurs on the East Coast with any regularity during the spring and provides a true incentive for those who habitually scan shorebird flocks throughout the year.

Sightings of Curlew Sandpiper should be documented in detail, and the record submitted to NYSARC (if away from traditional locations of Long Island) as well as to the Regional editors of "*The Kingbird*" and "*North American Birds*". As with any rare bird, special effort should be made to obtain photographs or videotape. Even a simple 'snap', with a regular camera held to the eyepiece of telescope is valuable and can produce quite respectable results. Information on

the age and molt status is extremely valuable to researchers and should be included in any report. With more detailed information of this sort, we may eventually unravel the mysterious origins of these beautiful and elusive long-distance travelers.

ACKNOWLEDGEMENTS

Willie D'Anna, Colin Campbell, Mike Cooper, Shawneen Finnegan, Andy Guthrie, Jennifer Hanson, Mary Alice Koeneke, Jim Lowe, Alf Tore Mjøs, Bruce Peterjohn, Gunnlaugur Pétursson, Gerard Phillips, and Kasper Thorup provided many insightful discussions or help in tracking down records. The manuscript was greatly improved by the ornithological wisdom and editorial skills of Paul Lehman, Steven Mlodinow and Don Roberson. Sincere thanks to you all.

LITERATURE CITED

American Ornithologists' Union (1998) Check-list of North American Birds. 7th edition. American Ornithologists' Union, Washington D.C.

Bull, J. (1964) Birds of the New York City Area. Dover Press, New York

_____ (1974) Birds of New York State. Comstock/Cornell University Press, Ithaca

Butler, A. (1995) An Identification Guide to the World's Calidris Sandpipers. (video) Nature Vision, Leeds, England.

Byrkjedal, I. and Thompson, D. (1998) Tundra Plovers: The Eurasian, Pacific and American Golden Plovers and Grey Plover. T & AD Poyser, London.

Cooper, M. F. (1998) Bull's Birds of New York State. Ed. E. Levine. Cornell University Press, Ithaca.

Cruickshank, A. D. (1942) Birds around New York City: Where and when to find them. American Museum of Natural History Handbook Series, No. 13, New York.

Eaton, E. H. (1910) Birds of New York State. State University of New York, Albany.

Eisenmann, E. (1960) Palearctic waders in eastern North America. British Birds 53: 136-140.

Elliott, C. C. H., Waltner, M., Underhill, L. G., Pringle, J. S. and Dick, W. J. A. (1976) The migration systems of the Curlew Sandpiper *Calidris ferruginea* in Africa. *Ostrich* 47: 191-213.

Engelmoer, M. and Roselaar, C. S. (1998) Geographical variation in waders. Kluwer Academic Publishers, Dordrecht, The Netherlands.

Giraud, J. P. (1844) *Birds of Long Island*. Wiley and Putnam, New York.

Graves, G. R. and Pleuge, M. A. (1978) First record of Curlew Sandpiper in Peru. *Condor* 80: 455.

Griscom, L. (1923) *Birds of the New York City Region*. American Museum of Natural History Handbook Series, No. 9, New York.

Hall, H. M. (1960) *A Gathering of Shorebirds*. Devin-Adair, New York.

Hanson, J. W. (1999) Curlew Sandpipers (*Calidris ferruginea*) in New Jersey. *Records of New Jersey Birds* 25:26-31

Hayman, P., Marchant, J. and Prater, T. (1986) *Shorebirds*. Houghton Mifflin, Boston.

Holmes, R. T. and Pitelka, F. A. (1964) Breeding behaviour and taxonomic relationships of the Curlew Sandpiper. *Auk* 81: 362-379.

Johnsgard, P. A. (1981) *The Plovers, Sandpipers and Snipes of the World*. University of Nebraska Press, Lincoln.

Kalejta, B and Hockey, P. A. R. (1994) Distribution of shorebirds at the Berg River estuary, South Africa, in relation to foraging mode, food supply and environmental features. *Ibis* 136: 233-239.

Kaufmann, K. (1990) Curlew Sandpiper and its i.d. contenders. *American Birds* 44: 189-192.

Kessel, B. and Gibson, D. D. (1978) Status and distribution of Alaskan birds. *Studies in Avian Biology* 1: 1-100.

Lifjeld, J. T. (1984) Prey selection in relation to body size and bill length of five species of wader feeding in the same habitat. *Ornis Scand* 15: 217-226.

Mlodinow, S. G. (1999) Spotted Redshank and Common Greenshank in North America. *North American Birds* 53: 124-130.

_____ (2000) The Sharp-tailed Sandpiper (*Calidris acuminata*) in North America. *Birding*, in press.

Mlodinow, S. G. and O'Brien, M. (1996) *America's 100 Most Wanted Birds*. Falcon Press, Helena, Montana.

Nisbet, I. C. T. (1959) Wader migration in North America and its relation to trans-atlantic crossings. *British Birds* 52: 205-215.

Paulson, D. (1993) *Shorebirds of the Pacific Northwest*. University of British Columbia Press, Vancouver.

Prater, A. J., Marchant, J., and Vourinen, J. (1977) *A guide to the identification and aging of Holarctic waders*. British Trust for Ornithology, Tring.

Raffaele, H., Wiley, J., Garrido, O., Keith, A. and Raffaele, J. (1998) *A Guide to the Birds of the West Indies*. Princeton University Press, Princeton.

Robben, T. (1965) Unusual numbers of Ruffs in Central New York. *Kingbird* 15: 22-23.

Roberson, D. (1980) *Rare Birds of the West Coast*. Woodcock Publications, Pacific Grove, CA.

Stanley, P. I. and Minton, C. D. T. (1972) The unprecedented westward migration of Curlew Sandpiper in autumn 1969. *British Birds* 65: 365-380.

Summers, R. W., Copper, J. and Pringle, J. S. (1977) Distribution and numbers of coastal waders (*Charadrii*) in the southwestern Cape, South Africa, summer 1975-6. *Ostrich* 48: 85-97.

Thomas, D. G. and Dartnall, A. J. (1970) Differences in size between the sexes of the Curlew Sandpiper. *Emu* 10: 89.

Underhill, L. G. (1987) Changes in the age structure of Curlew Sandpiper populations at Langebaan Lagoon, South Africa, in relation to lemming cycles in Siberia. *Transactions of the Royal Society of South Africa*. 46: 209-214.

Underhill, L. G., Waltner, M. and Summers, R. W. (1989) Three year cycles in breeding productivity of knots *Calidris canutus*, wintering in southern Africa suggests Taimyr Peninsula provenance. *Bird Study* 36: 83-87.

Underhill, L. G., Prys-jones, R. P., Syroechkovski, E. E. Jr., Groen, N. M., Karpov, V., Lappo, H. G., vanRoomen, M. W. J., Rybkin, A., Schekeman, H., Spiekman, H. and Summers, R. W. (1993) Breeding waders (Charadrii) and Brent Geese *Branta bernicla bernicla* at Pronchisheva Lake, northeastern Taymyr, Russia, in a peak and decreasing lemming year. *Ibis* 135: 277-292.

Van Dijk, A.J., De Roder, F. E., Martejijn, E. C. L., Spiekman, H. (1990) Summering waders on the Banc D'Arguin, Mauritania: A census in June 1988. *Ardea* 78: 145-156.

Veit, R. R. and Petersen, W. R. (1993) *Birds of Massachusetts*. Massachusetts Audubon Society.

Wilson, J. R., Czajkowski, M. A. and Pienkowski, M. W. (1980) The migration through Europe and wintering in West Africa of Curlew Sandpipers. *Wildfowl* 31: 107-122.

Wymenga, E., Engelmoer, M., Smit, C. J. and van Spanje, T. M. (1990) Geographical breeding origin and migration of waders wintering in West Africa. *Ardea* 78: 83-112.



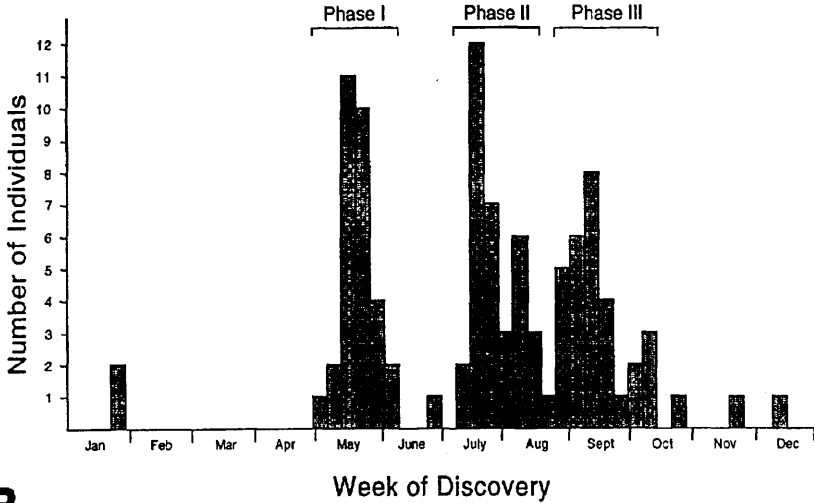
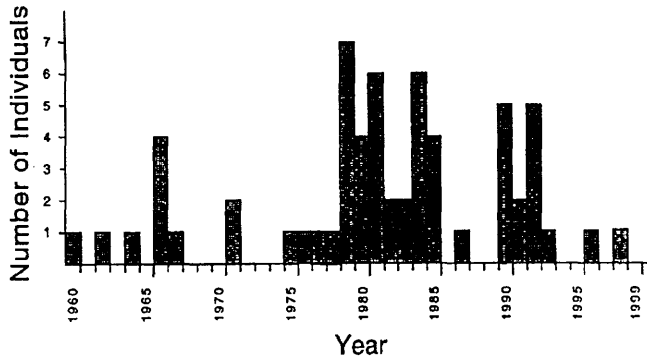
A.**B.**

Figure 1. Occurrence of Curlew Sandpiper in New York. (A) Initial dates of discovery plotted in seven-day periods to eliminate the effects of weekend bias. Data compiled from all available records of known date (period 1883-1999) (B) Number of separate individuals recorded in the state for each year between 1960 and 1999.

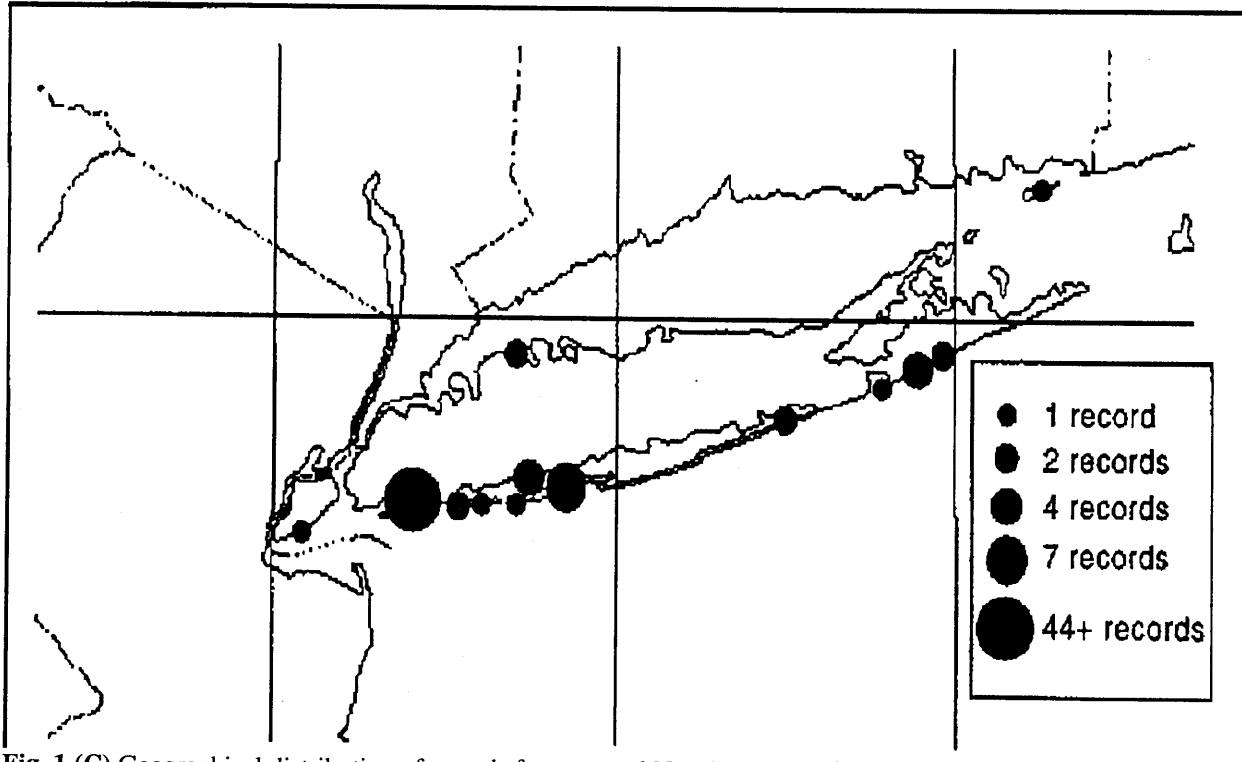


Fig. 1 (C) Geographical distribution of records from coastal New York. The size of the filled circle reflects the number of individuals recorded. In some case, the circle represents a general area (e.g. the Jones Beach to Oak Beach strip).

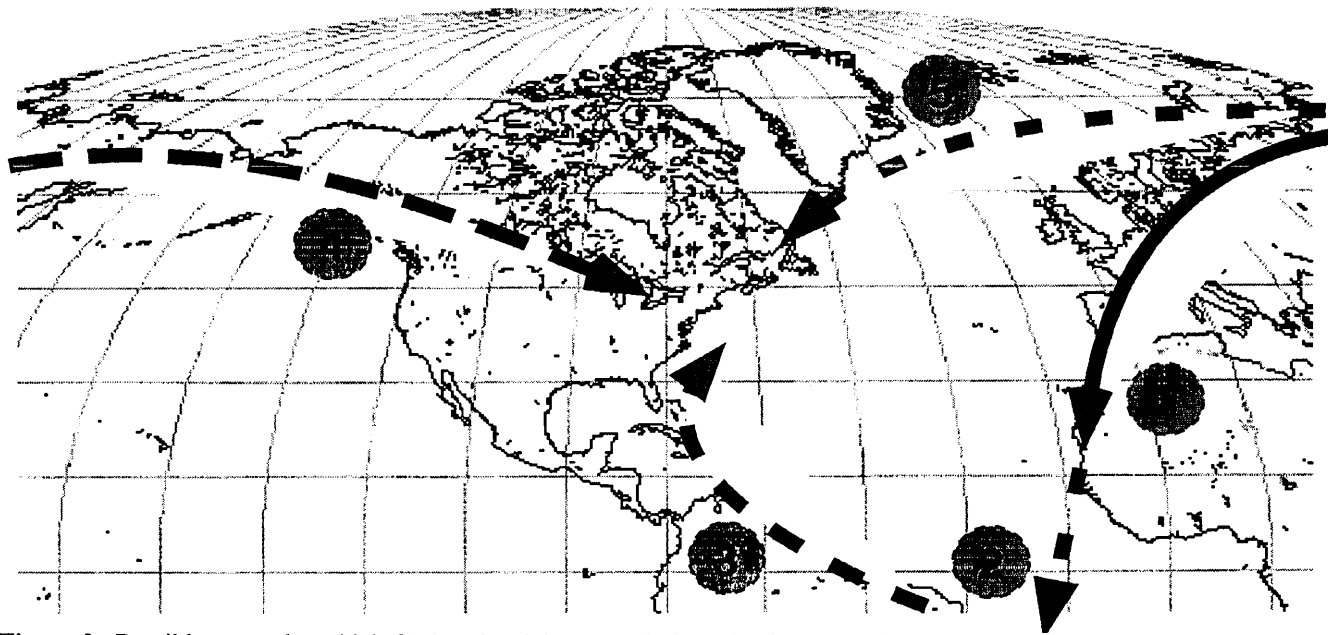


Figure 2. Possible routes by which Curlew Sandpipers reach the Atlantic Coast of North America and New York State. (1) Birds from the western part of the breeding range pass through western Europe to reach wintering grounds in West Africa. (2) Some birds may be carried rapidly across the Atlantic by the relatively constant northeast trade winds reaching the Caribbean or coast of South America, where they may overwinter or resume their southward migration. (3) After wintering in South America, adults would move northwards with other Nearctic shorebirds following traditional shorebird flyways. (4) A 45-90 degree navigational error would cause adults and juveniles to migrate across the Bering Sea to Alaska and eastern North America rather than to the Middle East, Indian subcontinent and southeast Asia. (5) Lastly, some birds may overshoot Europe reaching Greenland and northeastern North America by a more direct route. The paucity of juveniles in the east, however, suggests this route makes a minor contribution to the total.