

Bucking the trend:

Increasing numbers of Black-necked Stilts in Canada

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ABSTRACT

Since the late 1970s, sightings of Black-necked Stilts (*Himantopus mexicanus*) in Canada have increased greatly in Alberta, Saskatchewan, and British Columbia. While drought in areas farther south initially may have led to prospecting breeders in Canada, stilts now breed consistently in southern Alberta, and records of breeding in Saskatchewan are few but increasing. As yet, there are no breeding records elsewhere in Canada. Black-necked Stilts in Alberta initiate nests several weeks later than stilts farther south but terminate egg-laying at similar times. A relatively large percentage of nests in southern Alberta (17%) had clutches of more than four eggs compared with areas farther south (1%), and these large clutches were usually deserted. Reasons for this are not known, but may have been due to a large percentage of inexperienced breeders and/or a female-biased sex ratio. Nevertheless, fledged young were produced in southern Alberta each year, and the population is apparently still growing.

INTRODUCTION

Recent studies suggest that numerous species of North American shorebirds are decreasing in numbers (e.g. Howe et al. 1989, Morrison et al. 1994, Duncan 1997, Gratto-Trevor et al. 1998, Morrison et al. 2001a). A notable exception is the Black-necked Stilt (*Himantopus mexicanus*). The estimated world population of this species is 850,000, with about 150,000 in North America (Rose and Scott 1997, Morrison et al. 2001b). Black-necked Stilts breed primarily in the southwestern United States, Mexico, and into South America. Their breeding range has expanded northward in the past 20 years, and they are now established as local breeders in Washington, Oregon, and Montana (Rohwer et al. 1979, Berkey 1987, Paulson 1993, Robinson et al. 1999). Sightings have also increased in North and South Dakota (Berkey 1989, Martin 2000a). Until the mid-1970s, there had been very few records of Black-necked Stilts in Canada (Godfrey 1986). The purpose of this paper is to describe increases and breeding records for western Canada since the 1970s, examine whether the increases represent permanent breeding populations in Canada or are solely due to droughts farther south, and describe breeding phenology, clutch size, nest success, and return rates for Black-necked Stilts nesting in southern Alberta.

METHODS

Breeding records and sight records were obtained from various published and unpublished reports, especially the journals *American Birds*, *Field Notes*, and *North American Birds*. Because this is a large and distinctive shorebird, questions of identification to species rarely arose.

My assistants and I searched for Black-necked Stilt nests from 1995 to 2000 in southern Alberta, primarily at Kitsim, a series of wetlands owned by the Eastern Irrigation District (E.I.D.) and managed for waterfowl and cattle production by Ducks Unlimited (D.U.) Canada. Kitsim is about 12 km southwest of Brooks, Alberta. A few nests were located at Kininvie South, also an area with wetlands owned by the E.I.D. and managed by D.U. Canada, located about 40 km southeast of Brooks, Alberta. Searches were carried out by walking around wetlands and observing the behavior of the stilts. Searches were carried out annually, but time spent searching varied greatly among years. When nests were located, they were marked with a small flag 10 m north of the nest and normally checked every 7-14 days during the nesting period. In 1999 and 2000, nine adults in total were captured on nest at Kitsim and given individual color-band combinations.

Surveys for Black-necked Stilts were carried out during the breeding season from 1995 to 2001 at both Kitsim and Kininvie South but more often and more completely at Kitsim. The number of surveys was not consistent among years, although Kitsim was searched each year at least once, usually numerous times, before incubation (late April to mid-May), less often during the main incubation period (mid-May to mid-June), and multiple times after hatching (mid-June to mid-July). The central priority of my research in this area was a breeding study of Willets (*Catoptrophorus semipalmatus*) and Marbled Godwits (*Limosa fedoa*), but information on stilts was collected because they breed at so few locations in Canada. Streamflow data were obtained from the United States Geological Survey website <<http://water.usgs.gov/nwis/annual>> Only sites in the U.S. Great Basin with complete data records from 1955 to 2000 were included in the analysis.

RECENT AND HISTORICAL OBSERVATIONS

Before 1970, reports of Black-necked Stilts in Canada were rare: several old specimens (no date given) from New Brunswick, a potential nest in Saskatchewan in 1894, a specimen from Newfoundland in 1947, three birds seen in Saskatchewan and one in Ontario in 1955, and two separate sightings in Manitoba in 1969 (Godfrey 1986). In the 1800s the birds bred as far north as New Jersey (now normally only to Delaware; Robinson et al. 1999), so those seen in eastern Canada may have been stragglers from the small eastern population. The increase in Canadian records since the 1970s has occurred primarily in western Canada, especially west of Manitoba. Most records of breeding birds have been in Alberta (e.g., Dekker et al. 1979, Chapman et al. 1985, Semenchuk 1992), with the remaining few in Saskatchewan (e.g., Smith 1996).

The first verified sightings from Manitoba were in 1969 and the next not until 1978 (McNicholl et al. 1972, Godfrey 1986). The species has been seen occasionally since 1978: in 1980, 1981, 1994, 1998, and 2000, although nesting has not been verified there (Chapman et al. 1985, Koes and Taylor 1994, 1998, 2000).

Since the first verified sighting of Black-necked Stilts in British Columbia in 1971 (Campbell and Anderson 1972), birds have been observed in 16 of the subsequent 30 years, with a maximum of 60 reported in 1987 (Bowling 1992, 1994, Campbell et al. 1990, Mattocks 1988, Shepard 1999, Siddle 1990, 1991, 1994). The birds have been observed

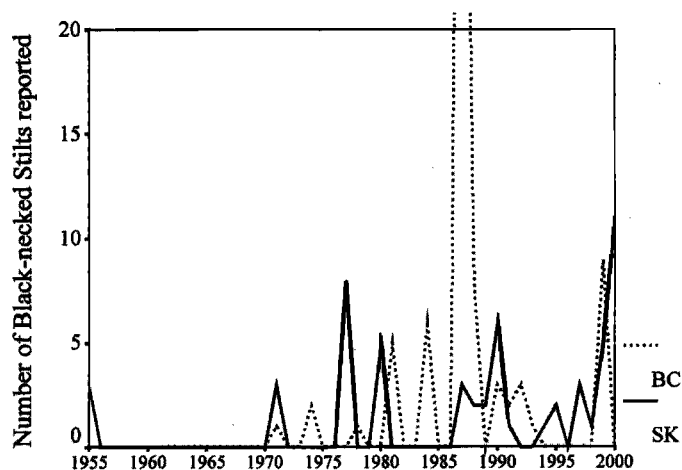


Figure 1. Sightings of Black-necked Stilts reported from Saskatchewan (SK) and British Columbia (BC) from 1955 to 2000. See text for references. The maximum seen in British Columbia was 60 in 1987.

much more frequently since 1978 than previously (Fig. 1), but no breeding records exist for British Columbia. This increase in sightings in British Columbia is probably related to the establishment of local breeding populations in Washington State and Oregon (Rohwer et al. 1979, Paulson 1993, Robinson et al. 1999).

A possible Black-necked Stilt nest was collected in Saskatchewan in 1894 (Godfrey 1986), but the first verified record there was not until 1955 (McLellan 1955), and the second in 1971 (Renaud and Renaud 1975). Since then, birds have been seen more frequently (Fig. 1), virtually annually since 1994 (Gollop 1987, 1988, 1989, 1990, Harris 1981, Koes and Taylor 1990, 1991, 1995, 1997, 1998, 1999, 2000, Roy 1996, Smith 1996; B. Hepworth, pers. comm.; A. R. Smith, pers. comm.). Breeding in Saskatchewan has been reported eight times: at Blackstrap in 1987 (Wedgewood and Taylor 1988), Bradwell in 1989 (Salisbury et al. 1989), Unity in 1995 (Koes and Taylor 1996), Chaplin Heritage Marsh in 1997 (Koes and Taylor 1997), Chaplin Lake in 1999 (J. Bilyk, pers. comm.), near Mossbank in 2000 (Koes and Taylor 2000), the D.U. marsh at the south end of Chaplin Lake in 2001 (nest; G. Beyersbergen, pers. comm.), and southwest of Ogema in 2001 (young; S. Skinner, pers. comm.). This pattern of sighting increases and scattered breeding records appears similar to the situation in North Dakota, which has had increased sightings since the late 1980s, a first verified nesting in 1993, and three breeding records by 2000 (Berkey 1989, 1993, Martin 1999, 2000b).

The first verified record of the species in Alberta was not made until 1970 (Weseloh 1972) and the second in 1972 (Sadler and Myres 1976), although parts of a specimen were reportedly picked up in the Brooks area in the mid-1950s (Salt and Salt 1976). Subsequent sight records came in 1972, 1974, 1977, 1980, 1982, 1983, and every year since 1988 (Sadler and Myers 1976, Chapman et al. 1985; C. Wallis, pers. comm.). Nesting was first verified in the province at Beaverhill Lake in 1977 (Dekker et al. 1979), and since then in numerous locations in southern Alberta, including New Dayton, Calgary, Stirling Lake, Tyrell Lake, Leduc, Taber, Pakowki Lake, Kininvie Marsh, and Kitsim (Chapman et al. 1985, Dickson 1989; L. Bennett, R. Dickson, D. & T. Dolman, T. Korolyk, W. Smith, C. Wallis, pers. comm., pers. obs.)—all in the prairie ecozone.

Reports of the species in *American Birds* from 1955 to 1995 (Fig. 2a) show an increase both in frequency of sightings and in numbers observed.

After about 1995, the birds were considered sufficiently common so as not to be enumerated carefully in regional reports. Black-necked Stilt records in Alberta (W. Harris and C. Wallis, pers. comm.), in addition to those observed at Kininvie, indicate that at least 70 adults were reported in 1996 and about 100 in 1997. As noted below, at a single location in 2001 (Kitsim), 117 stilts were seen in one day. These are all incomplete censuses of the province. The total number currently breeding annually in Alberta is unknown, but appears to be at least 50 pairs, and probably considerably more, with numbers increasing almost annually. This pattern of increased sightings and regular nesting records since the 1977 “invasion” is similar to the situation in Montana (Serr 1977, Faanes 1984, Berkey 1987, 1992, Martin 1992, 1998).

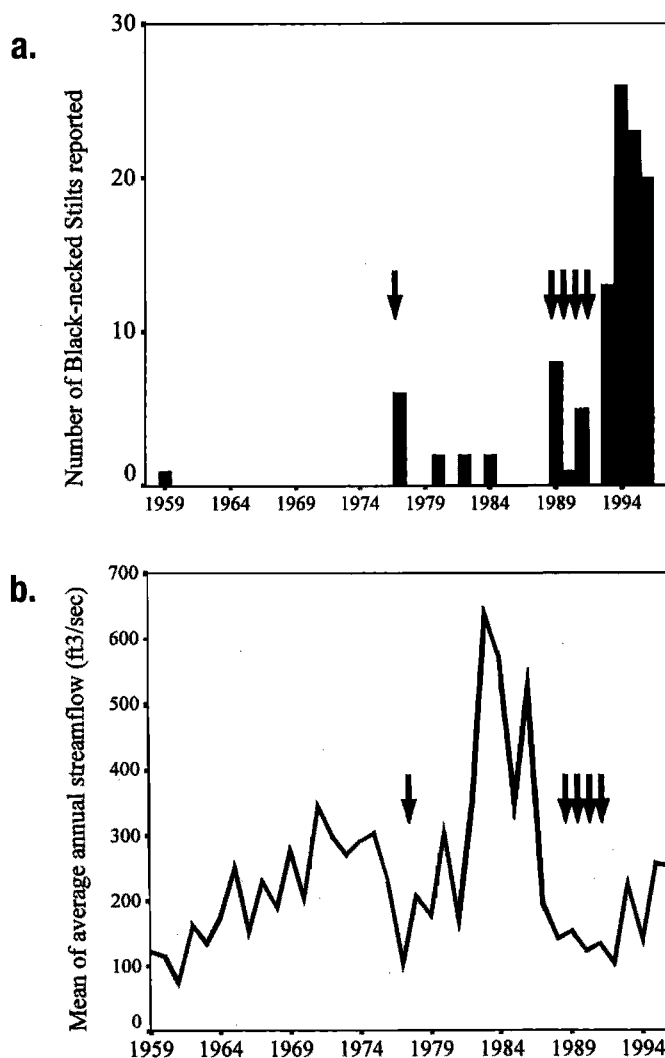


Figure 2. a. Sightings of Black-necked Stilts reported from Alberta in *American Birds*, 1959 to 1996 (Gammell 1960, 1979, 1980, 1982, 1984, 1989, 1990, Koes and Taylor 1990, 1991, 1993, 1994, 1995, 1996, Serr 1977). Arrows represent drought years (between 1975 and 1996) in stilt breeding areas farther south;

Figure 2. b. Mean average annual streamflow rates from the Great Basin, USA, 1959 to 1996. Data obtained from United States Geological Survey website: <<http://water.usgs.gov/nwis/annual>>.

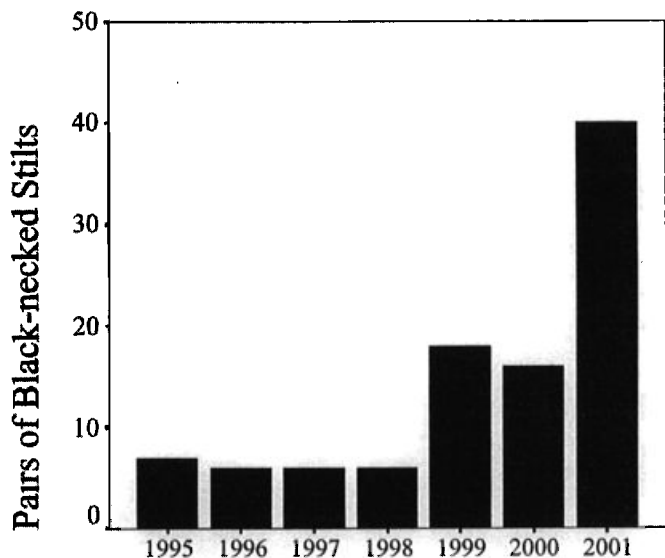


Figure 3. Pairs of Black-necked Stilts observed during the breeding season at Kitsim, Alberta, from 1995 to 2001.

RELATIONSHIP WITH GREAT BASIN DROUGHT

Some authors have suggested that increased sightings and breeding attempts north of the species's normal range occur when drought conditions exist in the United States (e.g., Dekker et al. 1979, Rohwer et al. 1979, Smith 1996). Droughts occurred in the southern Great Basin in 1977-1978 and 1989-1992 (Rohwer et al. 1979; L. W. Oring, pers. comm.). Droughts in this area appear to correlate well with averages of average annual streamflow rates from this region (Fig. 2b; original data from United States Geological Survey website: <<http://water.usgs.gov/nwis/annual>>). While droughts earlier than 1977 (Fig. 2b) did not result in Black-necked Stilt "invasions" of Prairie Canada, that in 1977 apparently did. However, while drought conditions farther south may have originally led to prospecting Black-necked Stilts, the birds now seem to be established local breeders in parts of southern Alberta, and populations remain in years when there are no droughts to the south (Fig. 2).

KITSIM, ALBERTA NUMBERS

At Kitsim, Alberta from 1995 to 2001, six to approximately 40 pairs of Black-necked Stilts have been seen each year (Fig. 3), with numbers

increasing over time. Nests—up to 11 in any one year, with incomplete searches—have been found in all years, and fledged chicks (up to 40 in a year) have been observed there in each of those years. Nest searches were not carried out in 2001, but surveys indicated a large jump in numbers of stilts using the area, with a maximum count of 117 on one day (Table 1). Since southern Alberta was extremely dry in the spring and summer of 2001, it is probable that the birds were concentrated in the few sites with suitable habitat and shallow water conditions, such as at the managed Kitsim wetlands. Kininvie, which in the past has had numerous stilts, had very few in 2001: much of the area was dry, and vegetation around much of Kininvie South was very low due to intensive grazing in 2000 and 2001. A hail storm hit the area in June 2000, and at least three Black-necked Stilts died as a result. The higher-than-usual numbers here and in Saskatchewan (34 adults observed 13 May 2001 in a D.U. Canada marsh at the south end of Chaplin Lake; G. Beyersbergen, pers. comm.), also may have been influenced by drought conditions in at least parts of the Great Basin in 2001 (S. Haig, pers. comm.).

Return rates

Of the six adults (four males and two females) banded at Kitsim in 1999, three were seen back at Kitsim in 2000. All were males. Of the three adults banded there in 2000 (one male and two females), only the male was seen at Kitsim in 2001. Therefore, overall site fidelity (returns in the following year) was 44% overall: 0% of females and 80% of males. There is little information on Black-necked Stilt return rates, except that site fidelity is apparently often low (Robinson and Oring 1999). In northern Utah, 22% of marked adults were seen in the area in the following year: 20% (1/5) of males and 25% (1/4) of females (Sordahl 1984). The high return rate of males in Alberta may be an artifact of small sample size, or may be a result of small populations in Canada and relatively limited suitable breeding habitat in southern Alberta in most years. Stilts are often semi-colonial breeders, so others may be attracted to the few sites already occupied by stilts in Alberta. In any case, the fidelity of specific individuals to breeding sites in Canada in subsequent years lends credence to the existence of permanent breeding populations in Alberta.

Breeding phenology and clutch size

Not surprisingly, stilts in Alberta began breeding an average of several weeks after those farther south (Table 2), although the termination of breeding in a season was similar. As with most North American shorebirds, clutch size is normally four (Robinson et al. 1999). The incidence of supernormal size clutches (more than four eggs), however, is considerably greater in Alberta than in the main part of the breeding range (Table 3). A large proportion of large clutches has been noted elsewhere in the northern extent of their range as well (Rohwer et al. 1979). Most of the large clutches, based on egg color, apparently represented two females laying eggs in the same nest (Rohwer et al. 1979, Robinson et al. 1999; pers. obs.).

Few eggs of supernormal clutches hatched successfully in Alberta (Table 4): even in the one successful clutch, only two of the seven eggs

Table 1. Number of Black-necked Stilt adults observed at Kitsim, Alberta in 2001.

Date	Number seen
26 April	50
1 May	39
3 May	86
4 May	96
8 May	107
10 May	117
12 June	76
14 June	74
20 June	86
26 June	69
3 July	66

Table 2. Timing of egg-laying: Alberta versus areas farther south.

	Alberta	Utah ¹	California ²	Venezuela ³
Date of earliest egg	4 May	23 April	18 April	April
Date of latest hatch	18 July	10 July	19 July	end July

¹Sordahl 1981 ²Robinson et al. 1999 ³McNeil 1971



Black-necked Stilts, like most shorebirds, lay four eggs on average. The incidence of supernormal clutches, such as this clutch of seven, was found to be unusually high in Alberta, much higher than in core breeding range farther south. Most of these eggs in large clutches did not hatch successfully. The reason for this finding is not known. *Photograph by the author.*

Table 3. Proportion of abnormally large clutches (>4 eggs) in Alberta versus California.

Percentage of nests with more than 4 eggs

Kitsim/Kininvie, Alberta ¹	Tulane Basin, California ²	Lassen County, California ³
17.6 (6/34)	0.7 (15/2195)	1.1 (3/278)

¹ The present study (1995-2000)

² Robinson et al. 1999 (1987-1989)

³ Robinson et al. 1999 (1992-1994)

Table 4. Success of normal (3-4 egg) and supernormal (5-7 egg) size clutches at Kitsim, Alberta, 1995-2000.

Nest Fate	Normal clutch Percentage (n)	Supernormal clutch Percentage (n)
Hatched	66.7 (16/24)	20.0 (1/5)
Depredated	29.2 (7/24)	0.0 (0/5)
Deserted	4.1 (1/24)	60.0 (3/5)
Flooded	0 (0/24)	20.0 (1/5)

eventually hatched. Desertion of these clutches was common. In contrast, many of the normal-sized clutches hatched, and only one was deserted. It is not known why abnormally large clutches appear to be more common in areas north of normal range, but this may be a result of a larger proportion of inexperienced breeders in these areas, and/or a female-biased sex ratio in these areas. Perhaps females are more likely to range farther from historic breeding areas than are males.

CONCLUSIONS

Increasing numbers of Black-necked Stilts are being noted in western Canada. While most nests have been in southern Alberta, nests in Saskatchewan are becoming more common. If the greater proportion of large clutches (more than four eggs) in Alberta is the result of inexperienced breeders, or an unbalanced sex ratio, it would be useful to determine whether the sex ratio is indeed female-biased in this population and in other newly "colonized" areas such as Saskatchewan, and whether the sex ratio and percentage of large clutches in these areas will decrease over time.

Acknowledgements

I would like to acknowledge especially the help of Dana Pearson, as well as Al Smith, in locating reports of Black-necked Stilts in the Canadian Prairies. I appreciated reports of unpublished sightings, other information, and/or comments on the manuscript from a large number of people, including L. Bennett, G. Beyersbergen, J. Bilyk, R. Dickson, D. and T. Dolman, A. Farmer, S. Haig, T. Korolyk, L. W. Oring, S. Skagan, S. Skinner, A. R. Smith, W. Smith, C. Wallis, and N. Warnock.

In the field, this project received financial or logistical support from the Canadian Wildlife Service Prairie and Northern Region (Environment Canada), the Alberta North American Waterfowl Management Plan Centre, Ducks Unlimited Canada in Alberta (especially via T. Sadler). Field assistants included D. Pearson, H. Johnston, A. Neudorf, G. Perrin, A. Keeley, G. Thibault, and S. VanWilgenburg. I appreciated permission to carry out fieldwork on lands belonging to the Eastern Irrigation District (through R. Martin).

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—Received 13 December 2001; accepted 12 February 2002.

