

# Status and Conservation of the Bobolink (*Dolichonyx oryzivorus*) in Argentina<sup>1</sup>

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## Abstract

The nearctic breeding Bobolink (*Dolichonyx oryzivorus*) is experiencing a decline in North America. Some authors suspect winter survivorship in South America could be responsible for the decline. We analyzed historical and current records of this species in Argentina, and found: 1) the Bobolink's winter range has decreased by at least 25 percent; 2) they are more regularly found in the provinces of Formosa and Corrientes; 3) at present Bobolinks primarily use natural wet grassland habitats associated with main rivers and huge marshes (Paraguay, Paraná, Pilcomayo and Esteros de Iberá); and 4) of 45 records compiled in the past 96 years, 60 percent have occurred during events of El Niño Southern Oscillation (ENSO) and 85 percent during events of flooding of Paraguay-Paraná basin. Natural grasslands are the main threatened habitat in Argentina (only 0.3 percent of area is protected). The decrease of natural grasslands appears to be affecting Bobolinks as well as local residents. The status of the Bobolink in Argentina should be assessed to determine if areas of major concentration exist in agricultural crops and grasslands in the north of the country, and to identify measures for its conservation. We recommend cooperation between North American and Argentine ornithologists to increase the research on migrant grassland birds such as Bobolink, Upland Sandpiper (*Bartramia longicauda*), Swainson's Hawk (*Buteo swainsoni*), and other species. This is an excellent opportunity to link the conservation needs of nearctic migrants and globally threatened resident species that have declined precipitously, such as Strange-tailed Tyrant (*Alectrurus risora*), Black-and-White Monjita (*Heteroxolmis dominicana*), Saffron-cowled Blackbird (*Xanthopsar flavus*) and seedeaters (*Sporophila* spp.).

*Key words:* Argentina, Bobolink, conservation, *Dolichonyx oryzivorus*, grasslands, winter ecology.

## Introduction

The Bobolink (*Dolichonyx oryzivorus*) is a migratory icterid that breeds in the grasslands of North America and then migrates to South America in the non-breeding season (Jaramillo and Burke 1999).

It is evident that there have been recent declines of Bobolink populations in many states, as has occurred with other North American grassland birds (Askins 1993, Knopf 1994, Peterjohn and Sauer 1999). According to BBS data, Bobolinks have been declining significantly since 1966 throughout their breeding range; the annual rate of decline has been 3.8 percent between 1980 and 1996 (Peterjohn and Sauer 1999). Various land use changes such as the amount of cropland, and the timing and frequency of cutting hay fields, have been identified as the main causes of decline for Bobolinks in North America, both at regional and continental scales (Herkert 1997). Currently, Bobolinks are protected in the United States and Canada under the "Migratory Bird Treaty Act," are listed in some states as a "Species of Special Concern" (Martin and Gavin 1995), and are listed as a species of concern in three Bird Conservation Regions (BCRs 12, 13 and 23) by the U. S. Fish and Wildlife Service (USFWS 2002).

The breeding biology of Bobolinks has been carefully studied, but very little is known about this species' basic biology and current threats on the non-breeding grounds (Martin and Gavin 1995). For example, the non-breeding range is not known in detail (Ridgely and Tudor 1989, Martín and Gavin 1995, Paynter 1995). Essentially nothing is known about their abundance on the winter range, or if it occurs in densities similar to other nearctic passerines that winter in South American grasslands, such as the Dickcissel (*Spiza americana*; Basili and Temple 1999). Minimal habitat requirements, feeding ecology, and social behavior are not known for the non-breeding grounds. The scarce information about wintering Bobolinks is dispersed, often a repetition of old data, and sometimes inaccurate.

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For example, Martin and Gavin (1995) indicated that during the non-breeding season Bobolinks are found in "pampas" (southern temperate grasslands) of South America. But they also have been found in wetlands and field crops. Pettingill (1983) considered Bobolinks to be a pest because they damaged rice crops, but recent Argentinean observations have not confirmed this assertion. In addition, shooting and trapping on wintering grounds could be another possible factor affecting current declines (Pettingill 1983, Martin and Gavin 1995), but others threats such as changes in wintering habitat need careful study (Vickery et al. 1999, Vickery and Herkert 2001).

In this review we have gathered all published data, and much unpublished information, concerning Bobolinks in Argentina, the most austral area of its non-breeding grounds. The objectives are: 1) to compare the historical and recent records of Bobolinks in Argentina in order to detect any change in their distribution or range; 2) to compile basic ecological information available for Argentina regarding habitat requirements, feeding ecology, and social behavior.

## Methods

We determined the historical range of the Bobolink by compiling records before 1990. These records were obtained from labels on specimens in Argentine museums, from a thorough literature search, and from personal communications. Records between 1990 and early 2002 were obtained during field trips in the provinces where previous historical records existed. We have worked extensively in northeastern Argentina since 1980, and have carried out systematic grassland censuses in El Bagual Ecological Reserve (Formosa province) since 1995. These records in El Bagual include habitat, behavior and size of flock. In addition, we have contacted resident ornithologists in all the provinces where we think that Bobolinks might occur.

We constructed two maps, one with historical records (before 1990) and another with recent records (after 1990). We then looked for distribution changes between these two time periods. Data concerning the non-breeding ecology of Bobolinks were compiled and analyzed considering the geographical location, the habitat, the number of individuals, and feeding or social behavior.

In addition, we looked for possible correlations between the Bobolink records in northeastern Argentina and both the "El Niño Southern Oscillation" (ENSO) as well as the flooding dynamics of the Paraguay-Paraná river system. Both phenomena are known to produce severe changes in the climatic and environmental conditions in the breeding area (England 2000), during

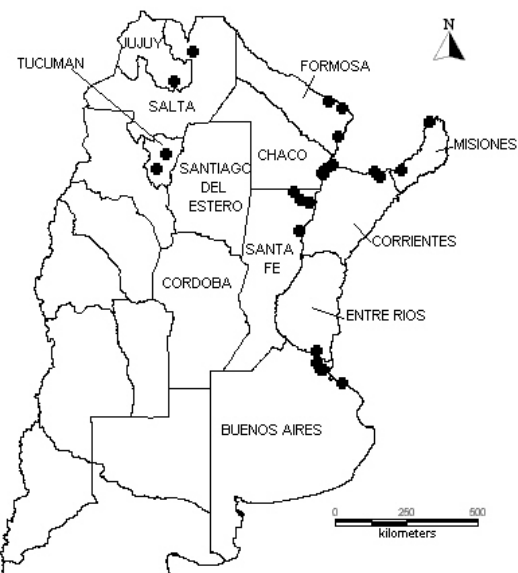
migration (Lack 1960), and in northeastern Argentina (Contreras and Contreras in press). Climatic data for our comparisons were obtained from databases and tables (Quarleri 1975, Quinn and Neal 1987, Andersen et al. 1993, National Climatic Data Center 2001, Contreras in press).

## Results

### *Distribution and Phenology*

We compiled a total of 52 Bobolink records in Argentina between 1903 and 2002. Eleven records came from museum specimens and there were 41 records provided by experienced ornithologists.

Bobolinks in Argentina were distributed in two separate regions (*figs. 1, 2*). They were reported in northwestern Argentina, in the provinces of Salta, Jujuy and Tucumán. This area is a transition between Yungas Forest and Chaco Woodland on the Andean foothills. It is a region with few records (N = 5) from areas where the forest has been largely replaced by agricultural fields. The greatest number of records in Argentina came from the northeastern lowlands in the provinces of Misiones, Corrientes, Formosa, Chaco, Santa Fé, Entre Ríos and Buenos Aires (N = 47). All these records were located in, or near, the Río de la Plata Basin.



**Figure 1**— Sites where Bobolinks were recorded between 1903 and 1989 (historical records, N= 28) in Argentina.

Bobolinks were found in Argentina from early November to March, with extreme dates from November 6 to March 25, though there are two additional records of possible vagrant birds in Tucumán (1 individual in

April 1994, Blendinger 1998) and Punta Rasa, Buenos Aires (1 individual in May 1980, Jaramillo 2000). The majority of records (56 percent) were in December and January (fig. 3).

In recent years Bobolinks were found in only six of ten provinces, which represented a 25-30 percent decrease from the historical distribution.

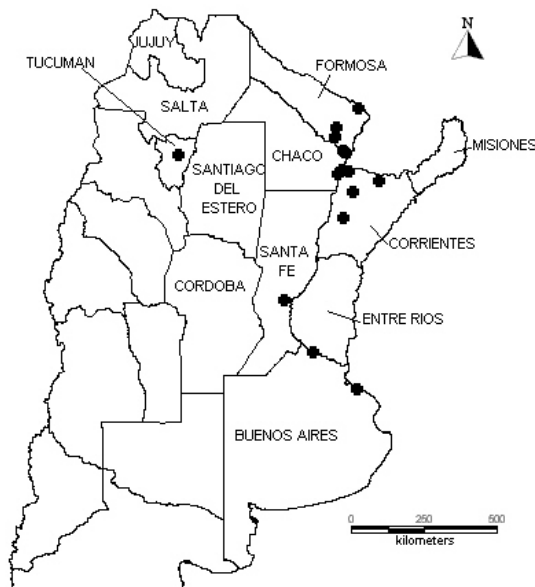


Figure 2— Sites where Bobolinks were recorded between 1990 and 2002 (recent records, N= 23) in Argentina.

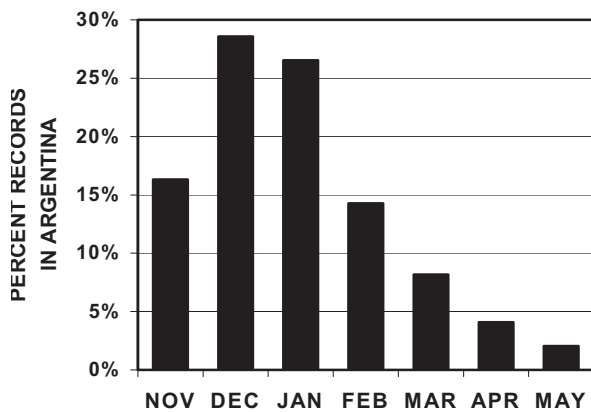


Figure 3— Seasonal occurrence of Bobolinks recorded in Argentina between 1903 and 2002 (N= 49).

Bobolinks did not appear regularly at every site. They were found only in some years. An analysis of 45 records between 1906 and 2002 showed that 60 percent occurred during events of the El Niño Southern Oscillation (ENSO) and 85 percent during events of flooding of the Paraguay-Paraná basin.

### Habitats

In Argentina, Bobolinks were primarily found in natural grassland habitats (55 percent) associated with the main rivers (Paraguay, Paraná, Pilcomayo, Río de la Plata) or streams (Pilagá, Mbiguá). The remaining records were recorded in marshes (41 percent; Esteros de Iberá) and crop fields (4 percent).

Observations in El Bagual Ecological Reserve were carried out in tall (0.80 – 1.20 m height) grasslands of two main types associated with the Mbiguá stream. *Imperata brasiliensis*, a community typical located in terraces of streams, dominated the more xeric grassland. The other grassland is wetter and is dominated by *Paspalum intermedium* grasses located in lowland depressions or near the marshes (Götz and Di Giacomo 2001).

### Food

Pereyra (1938) indicated that Bobolinks fed on seeds of reeds (*Schoenoplectus californicus*) in northeastern Buenos Aires province during December 1930. Pettingill (1983) cited rice and corn seeds as food near the Parana River in the agricultural fields in NE Santa Fé province during January 1978.

In El Bagual Ecological Reserve several flocks of Bobolinks were recorded (November 1995, January and November 1998) feeding on seeds of natural grasses (*Paspalum intermedium* and *P. rufum*). During December 1999 and January 2000 Bobolinks fed on seeds of *P. urvillei*. In December 1998, a small flock ( $\leq 50$ ) was recorded in a road near the Reserve feeding on seeds of an invasive grass *Sorghum halepense*.

### Social Behavior

In Argentina, Bobolinks were often found in monospecific flocks. Combining all records (historical and present), excluding museum specimens, 59 percent were of flocks of  $\leq 50$  individuals and 8 percent were records of single individuals. The records of single birds were mainly in the marginal areas of the species' range in the south (Buenos Aires province) or northwest (Tucumán province).

Historically, the maximum size of the flocks reached 5,000 birds in Santa Fé province (Hartert and Venturi 1909) and a maximum of 1,500 birds has been observed recently in Formosa province. In El Bagual Ecological Reserve during 1995-2001, mean flock size was 160 individuals (N = 39) and the biggest flocks of each season had a mean of 365 (N = 7 seasons).

In Argentina, Bobolinks often were found with other blackbirds that use marsh habitat. In Formosa province, 8 of 39 flocks were associated with marsh icterids.

Seven flocks were associated with Unicolored Blackbird (*Agelaius cyanopus*) and one flock was found with Chestnut-capped Blackbird (*Agelaius ruficapillus*; A. G. Di Giacomo, pers. obs.). In Buenos Aires province Bobolinks were recorded with 25 Brown-and-Yellow Marshbirds (*Pseudoleistes virescens*; Barrios et al. 1992). Only one record at El Bagual Reserve found Bobolinks with Baywing Cowbird (*Molothrus badius*) and White-browed Blackbird (*Leistes supercilialis*)—icterids not typical of marshes.

Bobolinks were observed at a roosting site in dense and tall vegetation on the border of the Mbigua stream in El Bagual Ecological Reserve. This flock, which totaled 200 Bobolinks and 15 Unicolored Blackbirds, was flushed 9 November 2001 at 6:00 AM from a patch of *Cyperus giganteus*.

## Discussion

Historically, Bobolinks bred in native grasslands of North America, but recently most of the populations have shifted to agricultural grassland habitats, such as hay fields and pastures (Bent 1958, Herkert 1997). In Argentina any pattern of change of their primary winter habitats has not yet been identified.

The information we have gathered does not fit the classic view that the Bobolink is "abundant pest bird in rice crops of the Pampas" (Pettingill 1983, Martin and Gavin 1995). We think the Bobolink is a scarce visitor in lowland grasslands and marshes. Though our surveys in Chaco, Formosa, Corrientes and Entre Ríos were more oriented towards natural grasslands and marshes, we often surveyed agricultural lands because natural grasslands were currently fragmented by crops and pastures. Some of our surveys were performed only in agricultural fields in Santa Fé and Buenos Aires provinces, where natural grasslands are rare.

The association of Bobolinks with flocks of marsh birds such as *Agelaius* and *Pseudoleistes*, emphasizes the Bobolink's preference for wet grassland areas in Argentina. This wet habitat is located in the same areas as rice crops in northeastern Argentina. Although rice production has increased 200 percent between 1970 and 2000 (SAGPyA 2002) within the Bobolink's range, the records of Bobolinks in crop fields are still scarce in NE Argentina. However the shift of habitat type in the wintering grounds could occur with a more drastic conversion of remnant lowland grasslands in rice fields as occurred with Dickcissel, another nearctic migrant, that winter in Venezuela (Basili and Temple 1999). As Vickery and Casañas (2001), we think it is necessary and a high priority to conduct systematic censuses in rice plantations, other agricultural fields,

and natural grasslands to better understand this species' habitat preferences.

Bobolinks in Argentina feed primarily on grass seeds (Martin and Gavin 1995). The preferred habitat requirements should be studied, with special attention to the phenology of natural grasses and the summer stages of main crops, as rice, in northeastern Argentina. The milk stage of rice reported by Pettingill (1983) would not occur earlier than mid-January-February (J. Tillous, pers. comm.), and this could explain the presence of Bobolinks feeding in natural grasses in November and December.

Shooting and trapping could be additional possible causes for the Bobolink's current decline (Martin and Gavin 1995). We have frequently found several individuals for sale as cage birds in major cities of Argentina (Córdoba, Buenos Aires, Rosario). The current price of Bobolink in the market is between \$5-10. Wetmore (1926) reported this species in the markets of main cities as Mendoza and Tucumán in 1921. In 1978, Pettingill (1983) also found Bobolinks for sale in a shop of Venado Tuerto city, Santa Fé province, for \$4 for a male. These observations suggest that Bobolinks have been part of the illegal market of birds for many years.

The effect of agrochemical accidents on Bobolinks also needs to be studied in the main area of rice production because this crop is highly dependent on agrochemical products (Iolster and Krapovickas 1999).

The coincidence of Bobolinks in Argentina with ENSO and flooding in the Rio de la Plata Basin suggests that this climatic event provides more optimal conditions in the lowland grasslands for Bobolinks. These events are known to produce great disturbances in the rivers and streams of this basin, altering the main physical and biotic conditions (Contreras and Contreras in press), producing outbreaks of insects and seeds in several habitats that appear to favor migrant birds (England 2000). Another important direct effect of ENSO years that would affect migrant Bobolinks would be the increase of southerly winds (England 2000). Using BBS data, J. Price<sup>1</sup> showed a significant increase in the latitudinal range of breeding Bobolinks during ENSO years. More accurate data are necessary to correlate climatic and biological information for Bobolinks.

In Argentina there are 24 species of globally threatened birds associated with the temperate and subtropical grasslands (Di Giacomo and Krapovickas 2002). Their original ranges have declined substantially and remaining populations are now small and fragmented. Habitat

<sup>1</sup>J. Price, unpublished data on file at American Bird Conservancy, 6525 Gunpark Drive, Boulder, CO 80301

loss, a consequence of the change in land use in the vast region of Argentina's grasslands, is likely to be the main cause of these population declines. It seems likely that the Bobolink could be also experiencing a similar decline in its winter distribution in Argentina. Species such as Strange-tailed Tyrant (*Alectrurus risora*), Black-and-White Monjita (*Heteroxolmis dominicana*), and Saffron-cowled Blackbird (*Xanthopsar flavus*) and several species of seedeaters (*Sporophila* spp.) live in the same habitats as Bobolinks (Vickery et al. 2002). According to our findings, maintaining the current status of Bobolinks and another nearctic migratory grassland birds is highly dependent on the conservation of natural grasslands in South America.

Natural grasslands are critically threatened in Argentina; only 0.3 percent of the original area has been protected (Krapovickas and Di Giacomo 1998). At least 90 percent of the original Argentine grasslands have been converted to agriculture and urbanization.

More recent data on habitat selection and movements is needed for successful species-based conservation projects in South America which would complement the efforts carried out in the breeding grounds in United States and Canada. We recommend urgent cooperation between North American and Argentine ornithologists and institutions to increase research and conservation projects in wintering grounds of the migrant grassland birds such as Bobolink, Upland Sandpiper (*Bartramia longicauda*), Swainson's Hawk (*Buteo swainsoni*), and others. This is an excellent opportunity to link the conservation needs of nearctic breeding migrants and the globally threatened neotropical resident species.

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