

DISTRIBUTION AND SEASONALITY OF MAGNIFICENT FRIGATEBIRD *FREGATA MAGNIFICENS* ON THE COAST OF PARAÍBA, NORTHEASTERN BRAZIL

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Magnificent Frigatebirds *Fregata magnificens* occur along the tropical and subtropical coasts of the Americas (Harrison 1983). In Brazil, the species occurs along the coast adjacent to nesting islands off the states of Rio de Janeiro (Cabo Frio, Macaé and Ilha Redonda), São Paulo (Ilha dos Alcatrazes), Bahia (Abrolhos), Paraná (Ilhas Currais), Santa Catarina (Ilhas Moleques) and Pernambuco (Fernando de Noronha) (Sick 2001). Based on its low abundance and frequency of occurrence, the species has been classified as rare and occasional along the coast of Paraíba, northeastern Brazil (Schulz-Neto 1995, IBAMA 2000). However, little in the way of quantitative information heretofore has been available to support that assessment. Therefore, we provide information on abundance, distribution and seasonal fluctuations of frigatebirds on the coast of Paraíba from May 2010 to April 2011.

STUDY AREA AND METHODS

The coast of Paraíba (6°29'S–34°59'W to 7°32'S–34°49'W) is 147 km long and is composed of flat beaches, vegetated sand dunes,

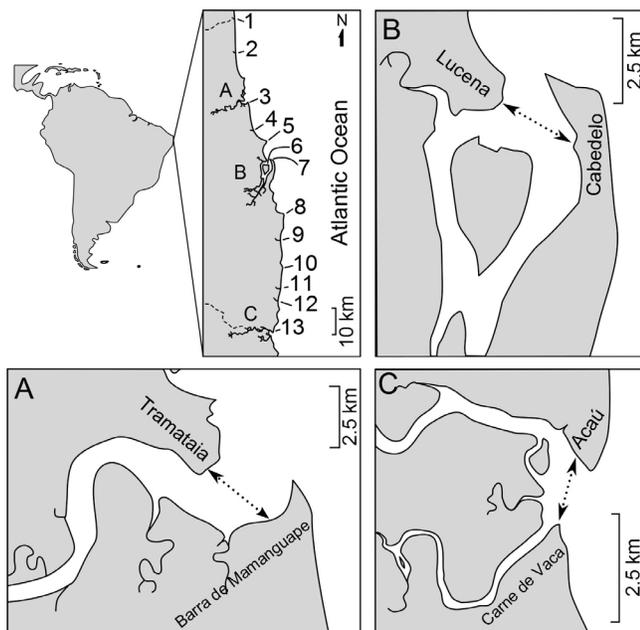


Fig. 1. The coast of Paraíba, northeastern Brazil. Numbers are sites where counts were conducted: (1) Guájú, (2) Camaratuba, (3) Barra de Mamanguape, (4) Miriri, (5) Lucena, (6) Restinga Island, (7) Cabedelo, (8) Cabo Branco, (9) Gramame, (10) Bucatú, (11) Mucatú, (12) Abiaí, (13) Acaú. Capital letters are the line transects, shown in detail in inset maps.

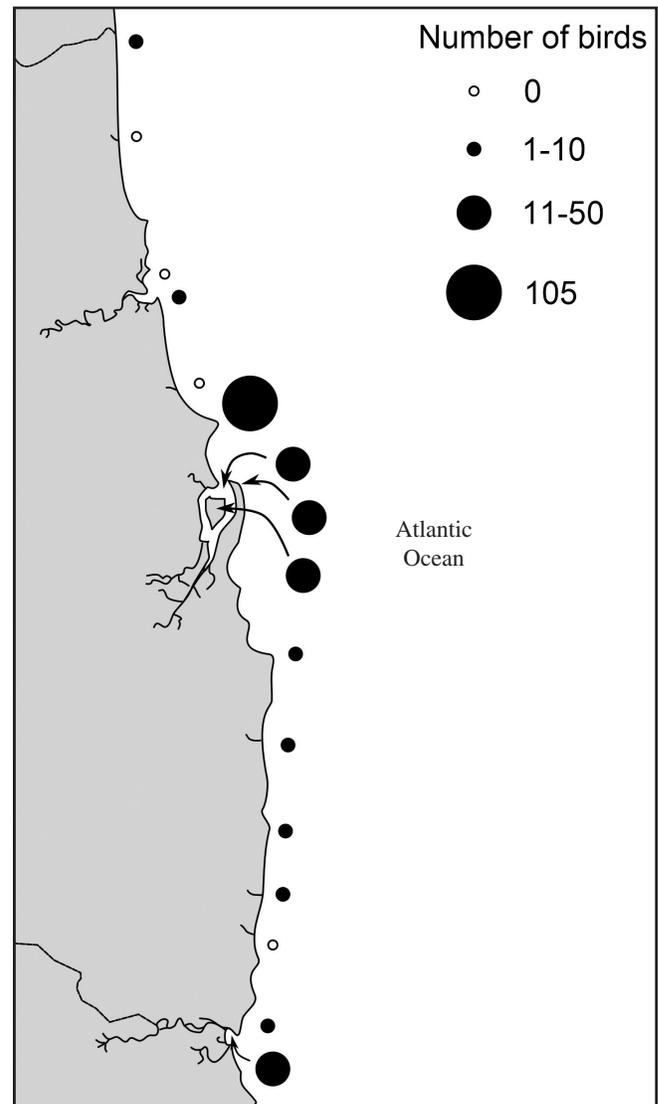


Fig. 2. Distribution of Magnificent Frigatebirds on the coast of Paraíba, northeastern Brazil, from May 2010 to April 2011. The number of birds represents the cumulative counts throughout the study period.

cliffs and estuaries (Fig. 1). It has a semidiurnal tidal regime, with amplitudes ranging from 0.0 m to 2.8 m during the study period.

Frigatebirds were visually counted with the aid of binoculars (Bibby *et al.* 1992), using two methods: ground surveys from 13 vantage points (Fig. 1), and linear transects conducted from boats across the three widest estuaries (Fig. 1A–C). Counts were done once a month and lasted one hour. When possible, sex and age group (adult, subadult) were identified according Harrison (1983).

RESULTS AND DISCUSSION

We accomplished 144 counts, during which 219 frigatebirds were recorded. Among these, we identified 54 adult females, 16 adult males and 47 subadults, but were unable to identify sex and age of the remainder (102 birds). Considering totals, Lucena had the highest abundance (105 individuals), followed by Paraíba do Norte estuary (43), Restinga Island (20), and Cabedelo (17) (Fig. 2). The number of birds varied strongly during the study period, with

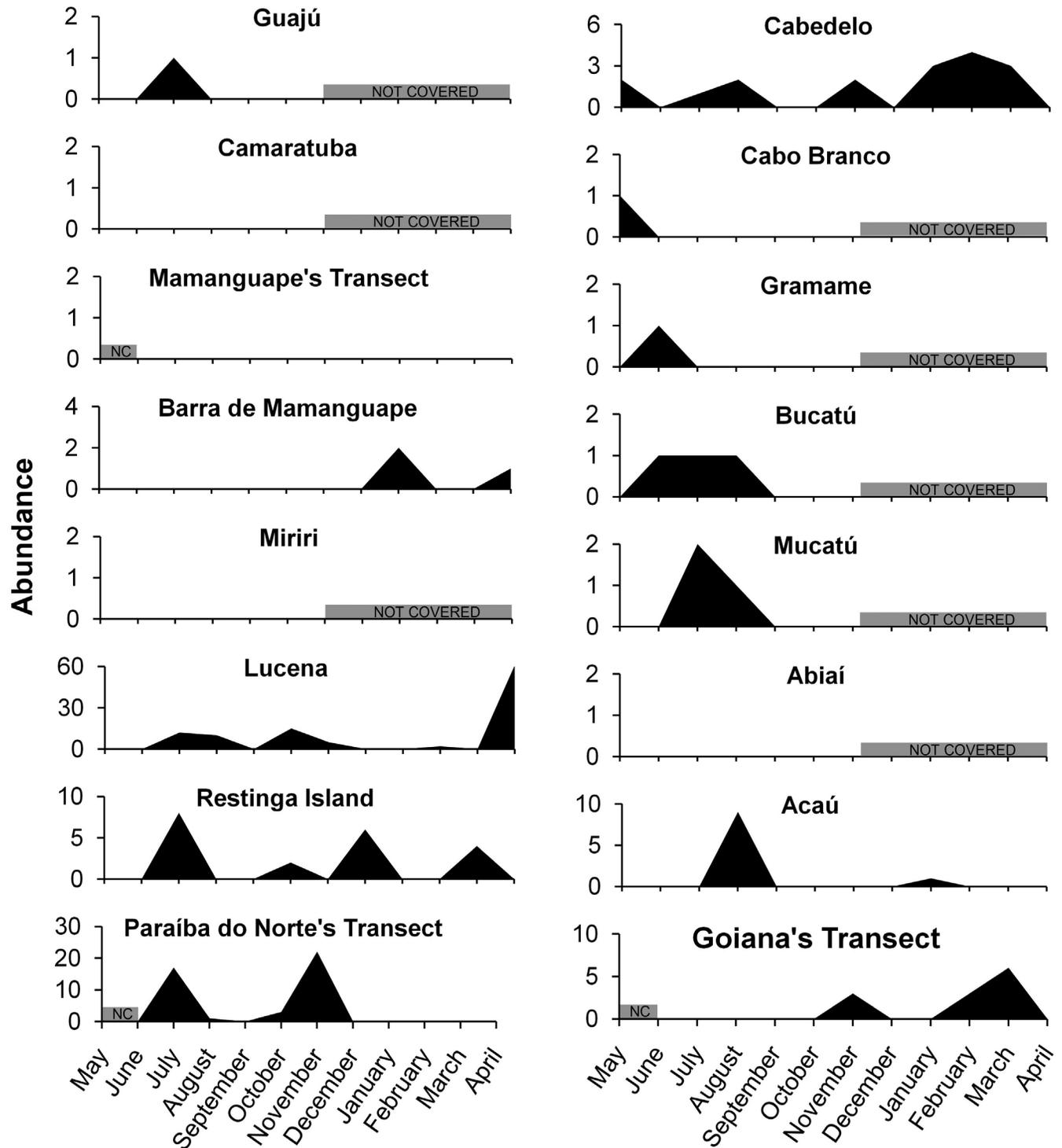


Fig. 3. Seasonality of Magnificent Frigatebird on each site along the coast of Paraíba, northeastern Brazil, from May 2010 to April 2011. Periods not covered are indicated.

peaks occurring in July and November of 2010 and April of 2011 (Figs. 3 and 4).

Although numbers varied widely by month, it was confirmed that Magnificent Frigatebirds occurred all year along the coast of Paraíba. Instead of migrations, we suggest that the variations reflected local foraging movements (Weimerskirch *et al.* 2006); this differs from several sites elsewhere in Brazil where frigatebirds are resident and always present (Sick 2001). Most birds occurred near the estuary of Paraíba do Norte. This estuary harbors intense commercial fishing activity, which may attract frigatebirds that feed on fishery discards (Barbieri 2010).

Our results shows that the number of frigatebirds occurring along the northeastern coast of Brazil is lower than in the southern and southeastern coasts (Branco 2003, Branco 2004, Cabral *et al.* 2006, Barbieri & Paes 2008, Pereira *et al.* 2008, Barbieri 2010). This may reflect the distribution of islands suitable for nesting and their distances to the coast. In southern and southeastern Brazil, island colonies are located <50 km from the coast, with many birds feeding in coastal waters (Sick 2001, Branco 2003, Campos *et al.* 2004, Barbieri 2010). In northeastern Brazil, the two archipelagos that harbor colonies, Fernando de Noronha and Abrolhos (Alves *et al.* 1997, Sick 2001, Alves *et al.* 2004, Schulz-Neto 2004), are far from the continent—about 356 km and 56 km, respectively—and apparently few birds reach the coast.

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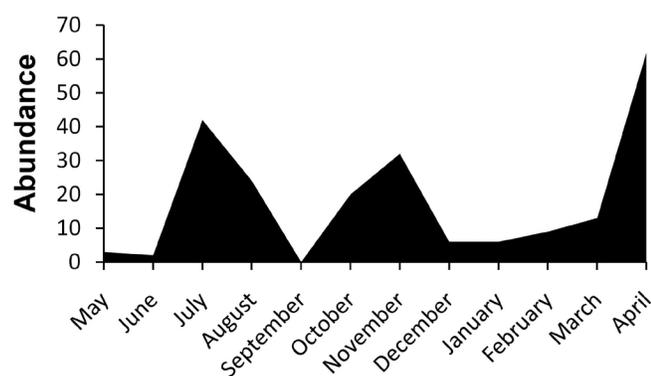


Fig. 4. Seasonality of Magnificent Frigatebird on the coast of Paraíba, northeastern Brazil, from May 2010 to April 2011. Abundance represents the total of counts within each month.

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