

Although still numerous at a few localities in its native north-east Brazil, this forest-associated small frugivore has suffered the twin threats of habitat loss and exploitation for trade, and now requires considerable management to be secured.

DISTRIBUTION The Seven-coloured Tanager, first mentioned and illustrated by Marcgrave (1648), is endemic to north-eastern Brazil in the states of Paraíba, Pernambuco and Alagoas in lowland forests to at least 980 m. Its presence in Rio Grande do Norte remains a possibility (Hellmayr 1936).

Paraíba Its occurrence in this state was long ago anticipated (Hellmayr 1936), but the only records are from the vicinities of Serrotopo (untraced) in the municipality of Alagoa Grande (Zenaide 1953), and João Pessoa, where birds were seen in small patches of forest in the campus of the Universidade Federal da Paraíba (M. T. Rodrigues *per* C. Torres *in litt.* 1985).

Pernambuco At least 15 nineteenth-century skins, in AMNH, BMNH and MCZ, are merely labelled "Pernambuco". Forbes (1881) recorded what he believed to be this species once at Quipapá and collected a specimen near Macuca (untraced; between Quipapá and Garanhuns); he considered a bird freshly shot at Cabo as evidence of the species's occurrence nearer the coast. In this century records (north to south) are from: Usina São José, Goiana; Charles Darwin Ecological Refuge, near Goiana; Tapacurá Ecological Station, São Lourenço da Mata; Várzea, 8°04'S 34°57'W; Horto Florestal de Dois Irmãos, Recife; Engenho Pirajá, c.8°19'S 35°06'W, Mercês; UFPE Ecological Station at Serra (or Brejo) dos Cavalos, Caruaru; Saltinho Biological Reserve, Rio Formoso; Garanhuns; Brejão (Berla 1946, A. G. M. Coelho *in litt.* 1986, de Azevedo Junior 1990, specimens in AMNH, NHMW; coordinates from Paynter and Traylor 1991).

Alagoas Its occurrence in this state was again long since anticipated (Hellmayr 1936), but the only recorded localities are: Engenho Riachão (now included in the Pedra Talhada Biological Reserve: see Measures Taken), Quebrangulo, April 1957 (Pinto and de Camargo 1961) and currently (Studer 1985, M. Pearman *in litt.* 1990, B. M. Whitney *in litt.* 1991); Pedra ("Serra") Branca, Murici, November 1983, May 1984 and January 1986 (specimens in MNRJ) and October 1990 (B. M. Whitney *in litt.* 1991); junction of BR101 and BR104, April 1992 (M. Pearman *in litt.* 1992); and São Miguel dos Campos, 1979 (Sick and Teixeira 1979).

POPULATION The Seven-coloured Tanager did not appear to be common in Pernambuco over a century ago (Forbes 1881), and in the first half of this century it was considered to be both "not very common" near Recife (Lamm 1948) and "very common" in the region of Mercês (Berla 1946). Although discrepancies recur in modern assessments, it seems widely accepted that a serious decline in numbers and a fragmentation of populations have taken place owing to habitat destruction and cagebird exploitation, so that the species has become restricted to a few patches of forest where it may be still common but remains vulnerable (King 1978-1979, Coelho 1986, Ridgely and Tudor 1989; also J. Vielliard *in litt.* 1986, D. M. Teixeira *in litt.* 1987; see Threats). In the late 1980s the species persisted in good numbers at Pedra Branca in Alagoas (Ridgely and Tudor 1989) and was common at the Charles Darwin and UFPE reserves in Pernambuco, but not at the others (A. G. M. Coelho *in litt.* 1986).

ECOLOGY The species is found primarily in the canopy and edges of lowland and montane forests, but also occurs in second growth, often associating with other birds in mixed flocks (Forbes 1881, Lamm 1948, Zenaide 1953, Coelho 1986, A. Studer *in litt.* 1987, specimens in MNRJ). It may be commonest in well developed second growth rather than tall forest (B. M. Whitney *in litt.* 1991). Birds at Pedra Talhada were in open agricultural land with scattered trees (B. C. Forrester *in litt.* 1992).

Stomach contents of specimens in LSUMZ and MNHN are given as vegetable matter, seeds and fruit remains. Food seen taken includes fruits of bromeliads, *Cecropia* fruit, mandacaru *Cereus* sp., small berries of low melastome shrubs, cultivated red pepper and guava; in drier times birds drink water accumulated in mulungu *Erythrina* flowers (Coelho 1986, A. Studer *in litt.* 1987, Azevedo Junior 1990, B. M. Whitney *in litt.* 1991).

Of the five specimens (in AMNH) collected in early February whose gonad condition was recorded, two were "fairly enlarged", one "half enlarged" and two "not enlarged". The breeding season is stated to correspond to the southern spring and summer, approximately from October to March (Teixeira and Pinto 1988). The statement that nests are built inside dense clumps of bromeliads or other plants high

in the middle storey of forest (Coelho 1986) corresponds to the record of two nests that were semi-hidden in the bases of arboreal bromeliads, 7-9 m from the ground (Teixeira and Pinto 1988), while a nest with two eggs found on 1 March 1987 at Quebrangulo was only 2 m from the ground, fixed where a banana leaf brushed against a banana trunk, near a stream in a clearing inside forest; two young fledged and left this nest on 31 March (A. Studer *in litt.* 1987).

THREATS Heavy trade in this species has been regarded as the main cause of its decline, and forest clearance throughout its limited range has also clearly contributed to its current status (King 1978-1979, Sick and Teixeira 1979, Sick 1985, Coelho 1986, Charity 1988, Ridgely and Tudor 1989); the continued clearance of even secondary habitats for sugarcane production in north-east Brazil must still itself greatly threaten the species (B. M. Whitney *in litt.* 1991).

Trade The Seven-coloured Tanager commands high prices in the pet trade, since its bright colours make it a very attractive cagebird. Importations into Europe and North America began in the nineteenth century, when skins were occasionally received from Pernambuco by dealers in Paris and elsewhere, and live specimens were often seen in the larger zoological gardens and other aviaries (Forbes 1881; also specimens in FMNH, LACM, LSUMZ, MNHN). Birds are sold "in large numbers" all over the north-east of Brazil, and especially in Recife, from where they have been sent to buyers in the south (W. C. A. Bokermann *per* C. Torres *in litt.* 1984). The species was common in the bird market in Rio de Janeiro in the 1950s and 1960s, but declined to the point of being considered a rarity in the late 1970s (Sick 1969, Sick and Teixeira 1979), but in the north-east numbers in trade have evidently not decreased, unless perhaps as a mere consequence of the species's own growing scarcity: in December 1983 50 birds were seen being offered for sale at the roadside between Maceió and Recife, and more than 30 others were in a "birdshop" at Agrestina, in the interior of Pernambuco (A. Studer *in litt.* 1987). The traffic remains intensive in both the interior (e.g. Caruaru) and the capitals of the north-eastern states, as demonstrated by the 22 birds at least that were being offered for sale in the famous "Mercado de Madalena" at Recife, in October 1987, the price of a single bird reaching approximately US\$30; these birds had been trapped "in the woods of Alagoas" according to dealers (Charity 1988); but see the next section. It has been reported that a single trapper may obtain 50-100 birds in the appropriate season (summer) in Alagoas (L. C. Marigo verbally 1986). Even in a reserve like the UFPE's at Caruaru this species is not safe, for its forests have been destroyed, there is no adequate vigilance and trapping of the species was continuing in the mid-1980s: it is undoubtedly from this site that birds that have been taken to be sold at Recife, and even at Fortaleza, Ceará (Coelho 1986, A. G. M. Coelho *in litt.* 1986).

MEASURES TAKEN The species is protected under Brazilian law (Bernardes *et al.* 1990). The creation of the Pedra Talhada Biological Reserve is described in the equivalent section under Scalloped Antbird *Myrmeciza ruficauda*. The species's occurrence in the 450 ha UFPE reserve, in the 500 ha Saltinho Biological Reserve, the 350 ha Tapacurá Ecological Station and the privately owned Charles Darwin Ecological Refuge might give it some additional protection, but vigilance is minimal in almost all. Seizing captive birds and releasing them into forest reserves, as has been done under the auspices of the Fundação Pró-Natureza (Funatura) at Caruaru, Pernambuco (Coelho 1986, also Charity 1988), can only succeed if the protection of such areas is improved (see, however, Measures Proposed); but apparently owing to increased policing of markets the number of birds being offered for sale has diminished, while the population at Caruaru has increased (S. Charity *per* M. G. Kelsey *in litt.* 1992). Research on this and other threatened species has been carried out at the UFPE Ecological Station at Caruaru (Charity 1988), and releases of confiscated birds have started at a second site, the Saltinho reserve (S. Charity *per* M. G. Kelsey *in litt.* 1992).

MEASURES PROPOSED The species urgently needs a special recovery programme (J. Vielliard *in litt.* 1986). The conservation of the Pedra Branca forests at Murici is a self-evident imperative, this apparently being the largest remaining continuous forest area in extreme north-eastern Brazil (Teixeira 1987) and holding several other threatened birds (see Remarks under Alagoas Foliage-gleaner *Philydor novaesi*), but the effective protection of existing reserves is clearly an equally urgent need. A call for a complete ban on the capture of wild birds for the pet trade, as any partial controls would be so open to abuse as to be ineffective (Scott and Brooke 1985), obviously applies in this case. Meanwhile, the species's full protection under Brazilian law needs validation by the enforcers.