Threatened Birds of Asia:
The BirdLife International Red Data Book

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CEBU FLOWERPECKER

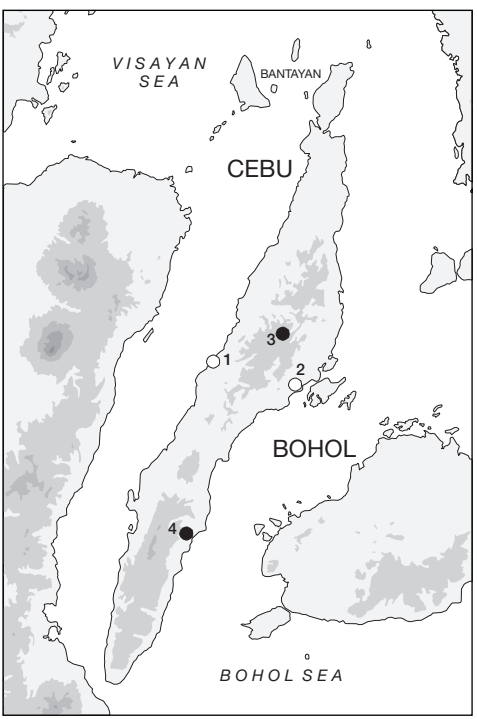
Dicaeum quadricolor

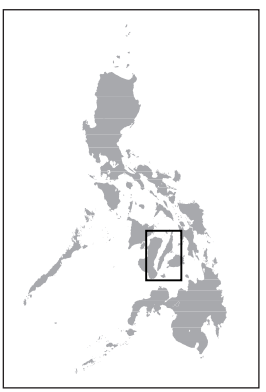
Critical ■ A2c; B1+2a,b,c,e; C1; C2a; D1
Endangered □ A1c
Vulnerable □ D2

This species has a tiny, severely fragmented population and range owing to catastrophic deforestation. These factors, combined with serious concerns that the few remnant habitat fragments (which potentially support just a few individuals) could continue to disappear extremely rapidly, qualify it as Critical.

DISTRIBUTION The Cebu Flowerpecker (see Remarks 1) is endemic to Cebu in the Philippines, where it was rediscovered in 1992 after a long period of being considered extinct (because all forest was long since thought to have been cleared from the island).

■ ***PHILIPPINES*** *Cebu* The only specific locality ever given for this bird appears to be **Toledo**, whence at least 16 specimens were obtained in the period 20 June–8 July 1892, with a singleton there in October 1906 (specimens in AMNH, CM, DMNH, USNM). However, the type specimen was apparently collected at or near **Cebu City**, since it is dated April 1877 and the describer reported that the collector's specimens from that month "were, I presume, obtained in the vicinity of the port of Zebu itself" (Tweeddale 1877a). In February 1992 the species was rediscovered in a remnant patch of forest at **Tabunan**, Central Cebu National Park, precipitating a wave of conservation interest in the site owing not only to the flowerpecker





The distribution of Cebu Flowerpecker *Dicaeum quadricolor*: (1) Toledo; (2) Cebu City; (3) Tabunan; (4) Nug-As/Mt Lantoy.
○ Historical (pre-1950) ● Recent (1980–present)

but also to the other biological diversity it has been found to harbour (Timmins 1992, Dutson 1993b, Dutson *et al.* 1993, Magsalay 1993, 1995, Evans *et al.* 1993a, Magsalay *et al.* 1995). In June 1998, when Collar *et al.* (1999) was in press, the species was found at **Nug-As** (B. M. Beehler *in litt.* 1998), and in early 1999 it was also found at nearby Mt Lantoy (J. C. T. Gonzalez and A. T. L. Dans *in litt.* 1999).

POPULATION In the 1890s the Cebu Flowerpecker was "not uncommon" but in danger of extinction owing to habitat loss (Bourns and Worcester 1894). Already considered rare at the start of the century when, of over 50 specimens of *Dicaeum* collected, only five were *quadricolor* (McGregor 1907c), it was thought to have become extinct soon afterwards (Rabor 1959; hence Salomonsen 1960, Gonzales and Alcala 1969). In fact, it must actually have retained a moderately substantial population in undocumented remnant forest on Cebu over many decades—see Threats and Measures Taken—until it became confined to Tabunan and Nug-As/Mt Lantoy by the start of the 1990s. Its population now must be extremely low, since only four birds have ever been seen at once at Tabunan, and the habitat available covers a tiny area (300 ha, i.e. 3 km^2), of which only 30 ha (inside a continuous tract of 185 ha) may be optimal (Dutson *et al.* 1993, Brooks *et al.* 1995a, Magsalay *et al.* 1995, S. Pendry *in litt.* 1998). Single males were seen at Nug-As in 1998 and 1999, and at Mt Lantoy in 1999 (J. C. T. Gonzalez *in litt.* 1999).

ECOLOGY ***Habitat*** Bourns and Worcester (1894) judged, and McGregor (1907c) confirmed, that this species is "strictly confined to forest", and recent observations indicate that it is associated with tall closed-canopy conditions (Dutson *et al.* 1993). However, the forest at Tabunan, which lies in a thin segmented strip on a steep and very uneven, west-facing limestone hillside, barely possesses any closed-canopy areas, partly because much of it has been selectively (but heavily) logged, partly because of the effects of a landslide, and partly because of the angle of the slope on which it stands (Dutson *et al.* 1993, NJC, NADM). Nug-As holds secondary lowland forest and scrub at 200–500 m, and transitional mid-montane forest above 500 m, but contains very few large trees; Mt Lantoy retains some low secondary forest and dense scrub, with some old-growth trees at the peak (500 m) and some tall dipterocarps at 300 m (J. C. T. Gonzalez *in litt.* 1999).

Food The male observed in December 1992 fed on small fruit in the canopy of a forest tree (Dutson *et al.* 1993), confirming (inevitably) the assertion that food is fruit (in McGregor 1909–1910) and suggesting, along with the stoutness of the bill, that the species is probably a canopy frugivore (Dutson *et al.* 1993).

Breeding Breeding was reported in June by F. S. Bourns and D. C. Worcester (in McGregor 1909–1910), possibly on the basis of four young birds (three males, one female) they collected in June and July 1892 (in CM, USNM) and described in their notes. The presence of a juvenile in December 1992 (Dutson 1993b, Dutson *et al.* 1993, Evans *et al.* 1993a) perhaps indicates an extended season. Observations of four birds, apparently with bright pink legs (possibly a seasonal character), chasing each other very actively, and at least one of them a singing male, in March 1993 (Dutson *et al.* 1993), suggest breeding-season ebullience.

Migration This species is evidently sedentary.

THREATS The island of Cebu was one of the first to be settled by Europeans, so it has long been reputed to be totally denuded of original vegetation (Rabor 1959). A century ago fears for the safety of the flowerpecker were expressed, "as the small amount of forest remaining on the island is rapidly being cleared away" (Bourns and Worcester 1894). The validity of such concern emerged in late 1906 when McGregor (1907c) visited Bourns and Worcester's main collecting site, Toledo, and "found that a large part of what was level forest land sixteen

years ago is now sugar-cane field", and that "the little forest remaining along streams and on steep hillsides is rapidly disappearing".

In March 1957 an aircraft carrying the then Philippine President Ramon Magsaysay crashed on Mt Manung-gal—which directly overlooks Tabunan across a small valley—and it took rescuers over a day to reach the site, partly because of the dense forest in the area (E. Arregadas, P. M. Magsalay, A. Mapalo verbally 1996). Apparently this incident was the spur to some settlers who helped in the rescue to clear land more intensively, in the genuine or self-excusing belief that this was the wish of the government authorities (E. Arregadas, A. Mapalo verbally 1996). Ironically, it was shortly after this accident that D. S. Rabor, the country's foremost contemporary biological explorer, himself a Cebu native who had undertaken fieldwork on the island since 1947, reported that, even with the help of aerial survey, he was "unable to find any patches of original forest, and the best place we found was the newly developed forest near Buhisan Dam", giving the clear impression that Cebu was entirely cleared, which cannot—as any newspaper reader would know who had followed the story of President Magsaysay's demise—have been true. Indeed, two substantial areas of forest remained in north-central and south-central Cebu respectively during the 1950s (Manila Observatory forest cover maps: P. Walpole verbally 1997). How seriously Rabor's comments affected the survival prospects of the Cebu Flowerpecker—and indeed the other avian taxa that were then pronounced extinct, some of which still survive (see Remarks 2) and some of which *do* now appear to be gone—cannot be gauged. However, no attempts were made to verify the situation independently (the area of forest at Tabunan was twice its current area in 1979 and its existence was known to DENR officials at that time: E. Arregadas verbally 1996), and it was only with the broadening awareness of the persistence of the Black Shama *Copsychus cebuensis* (see relevant account) that it began to be realised that even remnant patches of forest could and still did hold several of Rabor's "extinct" taxa (Magsalay 1993).

Today, however, Cebu is believed to retain (but see Measures Proposed 9) a mere 0.03%, i.e. only at most 15 km^2, of its original dipterocarp forest (SSC 1988), and even the most degraded secondary habitats are now scarce (Brooks *et al.* 1995a), yet clearance for timber and *kaingin* continues and is clearly therefore still the most serious threat to the remaining habitat (Evans *et al.* 1993a, Collar *et al.* 1994). In 1992 a small patch of closed-canopy forest, with large trees over 25 m in height and occupying an area of at least 10 ha (now known to be c.30 ha, ranging from 350–850 m wide at any one point), was located close to the village of Tabunan on the low hillside opposite (i.e. south of) the main Mt Manung-gal peak; this was surveyed and found to have been encroached by *kaingineros*, and several large trees in the process of being cut into planks were observed (Dutson *et al.* 1993, Evans *et al.* 1993a). Despite the fact that forest at Tabunan technically has protected-area status (see Measures Taken), the area has been encroached by at least four families who have laid claim to it, planted crops inside it, and even sought to sell lots within it; moreover, another 20 families living around the forest patch are currently encroaching upon it, so that there is a major logistical and financial challenge to be met in resolving this situation (P. M. Magsalay verbally 1996, S. Pendry *in litt*. 1998). Indeed, even though the site has now been found to contain 300 ha of wooded cover in variable (mostly highly degraded) condition (see Population), the area is so small that removal of a relatively few of the larger trees could have disastrous consequences; certainly, if the trends observed in 1992 were to continue unchecked, then the forest could easily disappear within a five-year period (Evans *et al.* 1993a). In January 1997 big trees were witnessed still being cut (F. Verbelen *in litt.* 1997), and in the first half of 1998 ten large trees were felled in one area and another of indeterminate size was cleared for mining by the Cebu City Agricultural Department (S. Pendry *in litt*. 1998).

Both Nug-As and Mt Lantoy have evident long histories of human disturbance, and are currently targeted for domestic timber and fuelwood; a new road through Nug-As will provide

landless farmers with ready access to the forest, although the terrain is difficult and drinking-water lacking (J. C. T. Gonzalez *in litt*. 1999).

It has been suggested that interspecific competition with the Red-keeled Flowerpecker *D. australe*, which is highly aggressive, may also have contributed to the decline of the species (Dickinson *et al.* 1991, C. R. Robson *in litt.* 1994), although this must presumably be a significant problem only in contexts where habitat modification has begun to favour the latter species.

MEASURES TAKEN The remnant patch of forest at Tabunan (a "key site"; see Appendix) is, remarkably, located within a protected area, the Central Cebu National Park, and all land, including that around Tabunan, is officially protected as a national park under the jurisdiction of DENR; DENR has devolved responsibility for the area, under the NIPAS Act of 1992, to the Central Cebu National Park PAMB (PAMB-CCNP), which meets monthly and reports its decisions to DENR for implementation (S. Pendry *in litt*. 1997). The park was created in 1937 and was originally intended to protect an area of forest 15,394 ha in extent, although in 1971 this was reduced to 11,894 ha (technically this area is still under public ownership) (E. Arregadas, A. Mapalo verbally 1996). It is not known what condition this forest was in at the time of the park's creation or indeed by its 1971 downsizing, and, given the remarks at the end of the last century about Cebu being almost deforested, it is surprising that so large an area survived in the 1930s at all. Nevertheless, the park appears only ever to have been made on paper, and never to have had a budget or management plan. Consequently it was steadily encroached by settlers, who have remained there and now view the land as theirs, although legally this is not the case.

Credit for the rediscovery of the Cebu Flowerpecker and the effective discovery of Tabunan itself belongs to Timmins (1992), whose persistence in seeking out and checking patches of trees in central Cebu deserves recognition. The discovery triggered work by P. M. Magsalay of PWCF, resulting in further surveys of the site, an island-wide campaign to obtain protection of the forest, liaison with competent authorities such as PAMB-CCNP, the erection of noticeboards around the forest declaring its status and importance, and close cooperation with and education for the local settlers in the area, undertaken with the support of ZGAP and OBC (P. M. Magsalay verbally 1996; see Magsalay 1995). In addition, PWCF organised the Barangay Security Force or Tanod of Tabunan to protect and manage the site, work originally supported by Artists for Nature and OBC, and more recently by Bristol Zoo, UK; when in late 1995 DENR declared Tabunan forest a Multiple Land-Use Zone, PWCF led the intervention to rescind this decision and declare it instead a Strict Protection Zone, which prohibits any felling of trees at the site (there remains, however, the very significant problem of enforcement) (P. M. Magsalay verbally 1996). Four farmers adjacent to the forest have agreed to replant open areas with native trees to cover 3 ha within the next 10 years (Perron 1997).

FFI has received funding from the UK government's Darwin Initiative for the Survival of Species for a three-year programme with four main objectives: (1) to carry out scientific research, trials and demonstrations to determine the best means of restoring and enlarging Tabunan, (2) to support the establishment of a range of new livelihood opportunities and incentives linked to the forest, (3) to increase public awareness of the intrinsic value of the forest and its local, national and global significance, and (4) to mobilise local stakeholders and future project investigators to participate in the long-term protection and regeneration of the site (S. Pendry *in litt*. 1998). Much of this programme is related to the activities outlined in the following section.

Part of Nug-As lies in the Watershed Reserve for Alcoy and Boljo-on municipalities, and Mt Lantoy is within the Argao-Dalaguete Watershed Forest Reserve (J. C. T. Gonzalez *in litt*. 1999).

MEASURES PROPOSED In 1997, on the initiative of W. L. R. Oliver and P. M. Magsalay, FFI drew up a draft management plan for the Tabunan area, written in consultation with the government of Cebu City, municipal government of Balamban, DENR, PAMB-CCNP and PWCF. The overall aim is to prevent the imminent extinction of Cebu's surviving endemic avian species and subspecies through the development of an integrated land management project linking biodiversity conservation with a wide range of tangible benefits for local communities. This will involve the restoration of Tabunan Forest and associated patches whilst offering incentives to the inhabitants to conserve the area and develop alternative sources of income. To facilitate the implementation of this management plan, the Manung-gal/Tabunan Conservation Foundation has recently been established in Cebu City.

The following management plan activities reflect ideas and proposals generated through consultation with P. M. Magsalay, E. Arregadas and A. Mapalo (the latter two of DENR), with reference to Evans *et al.* (1993a), and with particular input from FFI (M. Appleton, W. L. R. Oliver, S. Pendry). Item 9 is independent of these sources. It is clear that, although technically the conservation of the site is squarely the responsibility of DENR, in practice progress will be most rapid through a combination of forces, involving PWCF and possibly some international NGOs (although DENR should provide a substantial part of the finance involved in implementing the measures below).

(1) The Strict Protection Zone status of the forest must be maintained indefinitely, and it must be wardened accordingly (although the possibility of recruiting local people as guards needs consideration). Two further tanods (forest guards) are to be deployed with funding from Bristol Zoo, one at Tag-bao, the other at Cantipla. To date, a detailed and precise map of the forested areas has been completed at the GIS Office of Cebu City, and potential restoration areas have been identified, but there is a need for existing land claims to be evaluated.

(2) Urgent negotiations are needed for the satisfactory resolution of all issues relating to the problems of land claims within and around the Tabunan forest patch.

(3) The area of forest needs to be increased and links between isolated or near-isolated segments along the hillside are required, so key tracts of land must be identified and replanted with native species, ideally in the short term (by the year 2000) so as to double the area of (potential) forest.

(4) A conservation-based education and development programme for the people of Tabunan, the barrio which almost certainly controls the future of the forest (access from other areas is much more difficult), should promote local pride in the forest, help inhabitants generate revenue from low-level tourism, identify methods for improved yields on land to remain in cultivation, explore options for new land products, and encourage interest in the long-term establishment of multiple-use, commercially valuable but ecologically appropriate woodland areas to act as buffer zones adjacent to the forest.

(5) Detailed ecological monitoring of forest regeneration and the response of various forms of wildlife should be set in motion (this is a long-term—i.e. 60-year—project whose results will be applicable to many different contexts within the Philippines). Species-specific studies of the population, habitat preferences and general life-history of all the threatened species and subspecies of bird should ideally be undertaken, with of course first priority being given to the Cebu Flowerpecker (and to the question of competition from the Red-keeled Flowerpecker).

(6) Ideally, the proposed wardening, education programme, tourist development and baseline research require a centre adjacent to the forest, so the construction of a small but expandable rest-house and offices would greatly facilitate these elements.

(7) The involvement of foreign institutions under a clear memorandum of understanding could help achieve some of the recommendations set out above.

(8) The collection of any specimens of the Cebu Flowerpecker for museums or any other purpose or institution must be prohibited indefinitely. This also applies to any other known rare life-form, species or subspecies, within the Tabunan Forest area.

(9) Surveys of Cebu are needed to establish whether other forest areas exist which might harbour the flowerpecker and other threatened avian endemics of the island. Recent work by J. C. T. Gonzalez and A. T. L. Dans (*in litt*. 1998 to W. L. R. Oliver) has established that Mt Kangbulagsing (Malabuyoc in the Black Shama species account) in southern Cebu retains a very small area of second-growth forest in which several species, apart from the Black Shama, have been found to persist, including the presumed extinct Cebu Amethyst Brown-dove *Phapitreron amethystina frontalis*, previously known only from a record in June 1892 (see Dickinson *et al*. 1991). A comprehensive aerial survey of Cebu to identify any other such pockets of habitat would help clarify whether there are any other forested sites on the island.

At Nug-As, Counterpart International is working with an agricultural cooperative to manage the forest and replant the buffer areas with native trees as well as mixed fruit-tree gardens, and its designation as a protected area is being urged (B. M. Beehler *in litt*. 1999). At Mt Lantoy, the Argao municipal government is planning ecotourism and conservation initiatives, and again the designation of protected-area status is being proposed (J. C. T. Gonzalez *in litt*. 1999).

REMARKS (1) This species is so clearly a close relative of Bicoloured Flowerpecker *Dicaeum bicolor* that Delacour and Mayr (1945b) stated "if it were not for the fact that the male of *bicolor* has the back of a solid blue-black color, while it is scarlet and olive in *quadricolor*, one would not hesitate to unite the two forms in a single species." (2) Cebu is a remarkable biogeographical conundrum, lacking several genera and even families—e.g. hornbill, babbler, *Chrysocolaptes*, *Orthotomus*—present on surrounding islands (McGregor 1907c). There are 14 avian taxa endemic to the island, two—Cebu Flowerpecker and Black Shama—at species level, 12 at subspecies level, with seven of the latter believed extinct. All seven extant endemic taxa are present at Tabunan (Brooks *et al*. 1995a).