

A REVIEW OF THE SUMBA AVIFAUNA.

by

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Summary

There were 41 additions to the Sumba avifauna between the publication of the White & Bruce (1986) check list of the birds of Wallacea. and Coates & Bishop (1997). Each of these is detailed, in addition to species that are scarcely recorded or not recorded at all in the current phase of field activity (1984 to 1997). The status of rare and little known breeding species (including some of the endemic taxa) is also described. A systematic list of all species recorded on Sumba provides information on habitat, status, recent breeding records and new migration dates. Comment is made on Sumba's ecology and current bird conservation activity. Appendices give details of recent ornithological visits, the range of regional endemics found on Sumba, and species regarded as threatened.

Introduction

The island of Sumba (10°00'S, 120°00'E), located in the Lesser Sundas, is the most southerly large island of the Indonesian archipelago. At its closest, it is 45 km south of Flores which is part of the main Lesser Sunda chain. Sumba lies in the province of Nusa Tenggara Timur and is divided into the two administrative regions (kabupatens) of West and East Sumba. The island is 215 km long (north west/south east axis) and up to 85 km wide (north to south) with a surface area of *c.* 10,9001 km² (RePPProT 1989). The highest point is the summit of Gunung Wanggameti (1225m) located in the south east. The climate is monsoonal with the long dry and short wet seasons typical of the region. Annual rainfall is between 500 mm (east coast) and 2000 mm (inland hills and west) with most rain between November/December and March/April (RePPProT 1989). The wetter west is also more fertile and supports two thirds of the population at a population density of 73/km², although the region only occupies one third of the island. East Sumba has a population of *c.* 145,000 at only 21 inhabitants/km² (BirdLife Indonesia Programme, *in litt*).

Sumba originates from a continental crustal fragment and is, therefore, quite different from the other, younger volcanic Lesser Sunda islands (Oosterzee 1997 and references therein). Most of the bedrock is limestone with areas, particularly in the west and south, of slate, marble, mudstone and basalt (Buhler and Sutter 1951). The non volcanic origin results in Sumba not only lacking soil fertility but also lacking the altitude of the other main Lesser Sunda islands which all have elevations of over 2000 m.

Sumba has a narrow coastal plain, behind which the land rises, often quite steeply, through a series of terraces that rise to plateaux with surrounding low hills. Most of the terrain lies between 150 and 500 m asl. The plateaux are in places deeply incised by river valleys and gorges, with most rivers only carrying water in the wet season unless associated with a resurgence.

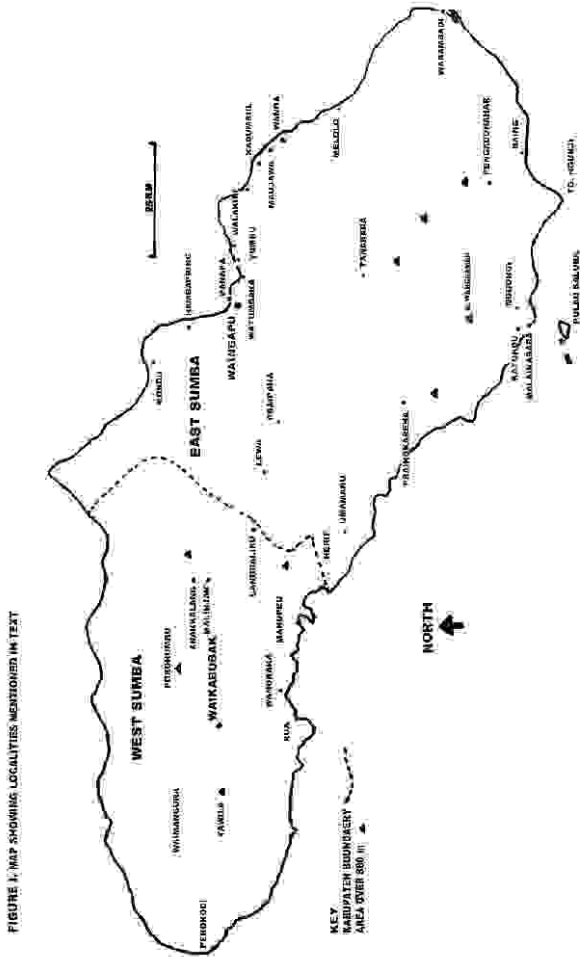


FIGURE 1. MAP SHOWING LOCALITIES MENTIONED IN TEXT

Habitats

By far the most important bird habitat on Sumba is forest with nearly all the island endemics and restricted range species (see Systematic List & Appendix 2) being dependent upon closed canopy forest or other forest habitats (Jones *et al.* 1995). The only exception to this is *Turnix everetti*, which has only been recorded in grassland.

The forests of Sumba are predominantly evergreen with a variable deciduous element. River valleys and depressions favour evergreen forest, with more deciduous trees in hilly areas (Banilodu and Saka 1993). Rain and elfin forest exist above 800m (Banilodu and Saka 1993), although there is little land above this elevation to support it. Whilst larger forested areas have all the endemic and restricted range forest species (Jones *et al.* 1994), many can also be seen in smaller forest fragments *e.g.* at least two thirds of Sumba's endemic taxa have been recorded in an isolated forest patch 14 km from Waingapu (on the Lewa/Waikabubak road).

Other forest on Sumba includes 1500 ha of mangrove, nearly all in East Sumba (Zeiran *et al.* 1990). This and other coastal forest are depauperate in parrot and restricted range species. Birds inhabiting such coastal areas are *Ardea*, *Egretta*, *Butorides*, *Pandion*, *Haliastur*, *Haliaeetus*, *Accipiter*, *Treron*, *Streptopelia*, *Geopelia*, *Halcyon spp.*, *Lalage*, *Myiagra*, *Parus*, *Zosterops* and *Lichmera*.

Almost 20% of Sumba's resident breeding species are waterbirds. Consequently wetland habitats on Sumba are often rich in birds. During passage, reef flats may hold high numbers of many species of waders, terns, egrets and herons. For example, of the 31 species of wader recorded on Sumba, 26 have been seen on the reef flats at Pantai Panapa, Waingapu. Ephemeral freshwater marshes and lakes attract many waterbird species, which are only infrequently recorded in the Lesser Sunda islands. Perhaps the best example on Sumba is the small wetland at Kadumbul (35 km east of Waingapu). Twenty four species of waterbird have been seen here (Silvius *et al.* 1987; M.D.Linsley, *pers. Obs.*, Jun 1994), including eight species of *Ardeidae*, large numbers of duck (Bishop 1992; M.D.Linsley, *pers. obs.*, Jun 1994) and at least 22 other bird species, making this the single most species rich area known on Sumba. Most bird records from this small wetland are from the month of June.

Most of Sumba lacks forest and is covered with grassland of variable character where there is no cultivation. Grassland on the terraces and hills is mostly denuded of trees, although there are areas (mainly coastal) with trees and scrub. The grassland/savanna habitats hold a distinctive bird fauna including *Circaetus*, *Coturnix*, *Turnix*, *Caprimulgus*, *Centropus*, *Mirafra*, *Cisticola*, *Anthus*, *Taeniopygia* and *Lonchura*.

Cultivated areas (including rice, maize, coconut, lontar palm (*Borassus*), orchards and gardens) hold a similar suite of birds to the grasslands but in addition *Ardeola*, *Streptopelia*, *Geopelia*, *Nectarinia*, *Zosterops*, *Philemon*, *Dicrurus* and *Corvus*.

Ecology and Conservation

Visual interpretation of a 1992 LANDSAT TM satellite image indicated that *c.*22% of the island is forested with *c.* 10% classed as closed canopy forest (Jepson *et al.* 1996). RePPProT (1989) indicates that 13% is cultivated with the remaining surface area covered by grassland (33%) and secondary bush (32%). The forest estate, therefore is the least abundant component of the vegetation community and is, apparently, in urgent need of reservation in order to safeguard the "forest values" (Jepson *et al.* 1996). To effect this, seven forest areas (covering 11.2% of Sumba) with 12 supplementary areas (mainly gallery forest and mangrove, covering 3%) have been proposed by PHPA/BirdLife International as a "minimum protected area set" (Jepson *et al.* 1996). At present Sumba's forests are classified as 'protection forests', a category prohibiting commercial logging, human settlement and the growing of food crops (UNDP/FAO 1982). The need for increasing the number of protected areas and raising their status is that there has purportedly been a massive, modern loss of forest cover (see Jepson *et al.* 1996). Forest is considered important by conservationists as it is home to a high number of endemic bird species (Jones *et al.* 1995, Collar *et al.* 1994) and rich biodiversity. This loss of forest cover is understood to be a result of a combination of grassland burning, fuel wood collection and shifting cultivation (Jepson *et al.* 1996). Although Sumba's forests are today being disturbed by these factors, much (if not all) local use appears to be for subsistence. It is possible that forest disturbance is having a deleterious effect on Sumba bird populations, however, there are insufficient data to confirm this.

Furthermore, it is probable that Sumba has had a sparse and fragmented forest cover for a long time. There are several possible arguments to support this: 1. Considering Sumba's climate (*i.e.* long dry and short wet seasons) it would seem likely that the landscape is largely pyrogenic, fire (induced by lightning strike) always having been an integral part of Sumba's ecology. Substantial non forest areas may always exist in such a landscape. This may be particularly true for Sumba's limestone plateaux. Here, in addition to fire, thin soils and low rainfall may have never allowed a forest cover; 2. There has always been ample habitat for the colonisation and evolution of grassland taxa. Four (possibly five) of the endemic taxa (the two *Turnix*, *Saxicola*, *Megalurus*, *Lonchura* and, possibly, *Tyto*) are grassland dependant. In addition, at least seven of the Lesser Sunda/Wallacean endemics found on Sumba are also grassland/savanna inhabitants. Of the 85 terrestrial breeding species only 29% are confined to forested habitats with about half of the remainder not using forest at all; 3. Much of Sumba's forest is located in sites topographically protected from fire and/or in with high year round moisture availability also offering protection; 4. Some forests show an abrupt gradient into adjoining vegetation types suggesting a steep resource gradient (*cf.* Kikawa *et al.* 1981) rather than a pyrogenic cause for the boundary; 5. The fragmentation and patchiness of the forest, particularly the monsoon forest, may be inherent and natural as in the climatically similar (and largely intact landscape of the) Northern Territory of Australia (Price *et al.* 1995) and not as a result of recent changes to land management as has been suggested (see Jepson *et al.* 1996); 6. Many of the forest dependant taxa (*e.g.* *Treron*, *Ptilonopus*, *Eclectus*, *Tanygnathus*, and *Rhyticeros*) are vagile and, thus, naturally adapted to an environment with patchy or widely dispersed resources (*cf.* Woinarski *et al.* 1992); 7. Diminution of

the forest area (especially monsoon forest) may have been brought about by declining annual rainfall or lengthening dry season, diminishing recharge of aquifers (Stocker 1971, Braithwaite *et al.* 1984); 8. Extensive grasslands may have encouraged early Sumbanese into pastoralism, much evident now. Sumbanese horses appear to have been an important part of the culture for a long time (for examples the Pasola is an annual contest of horsemen in West Sumba).

Obviously the natural fire patterning that helped create Sumba's landscape has been superseded by that caused by human ignition. There does not seem to be, however, any data on modern (or even traditional) anthropogenic fire patterning and it is the timing and frequency that is important (Russell Smith and Bowman 1992) rather than its occurrence. Even so, an increased fire frequency decreases intensity and stops the accumulation of flammable material, diminishing its destructive potential (Lonsdale & Braithwaite 1991). It may well be that such modification of Sumba's habitats is quite ancient, much of the landscape being cultural.

Another important impact on Sumba's forest is that of introduced large mammals. The herbivory of naturalised Timor Deer (*Cervus timorensis*), domestic buffalo and cattle will have undoubtedly affected forest ecology, as would have naturalised wild boar (*Sus scrofa*) populations. The deleterious effects of such domesticated animals on forest have been well documented in northern Australia (Russell Smith and Bowman 1992, Braithwaite *et al.* 1984). In addition, horses (*Equus caballus*), as well as the other herbivores, are obviously causing impacts on non forest' habitats. The population sizes and dates of introduction for these species appear to be unknown, and for some, introductions may have been ancient. Another problem associated with forest degradation has been the apparent recent appearance (since the 1970's) of the invasive plant *Eupatorium odoratum* (*pers. obs.*, Alex. B. Ora, Chief of Sumba PPA). It has been shown that the impact of fires, introduced animals and weeds are highly correlated, implying significant interaction between these factors (Russell Smith and Bowman 1992).

The rate of forest loss is of consequence to conservation action. Such action should include a representative reserve network of all habitats (comprising some grassland/savanna areas). Focus, however, could be on wider countryside conservation planning, integrating the whole landscape and aiding the development of rural communities. Perhaps an effective approach would be integrating conservation objectives into landscape management and decision making with the aim of establishing an ecologically functioning landscape (Green and Hyde 1998). If Sumba's forests are being diminished by fire, National Park or similar protected area status will not necessarily guarantee effective management and protection (even if adequate resources are available), particularly in such a fragmented situation. The conservation of significant, isolated patches of forest is realistically only achieved with the co operation of land holders/pastoralists (Russell Smith and Bowman 1992) allowing sympathetic management outside forest areas/reserves. Protected area management and administration need huge resources. For Sumba, though, effective conservation action might involve the burning of firebreaks early in the dry season to protect forest patches. Scarce conservation resources could then be directed to helping to provide a sustainable fuel source for the Sumbanese and monitoring rare (parrot) species.

None of the ephemeral freshwater marshes and lakes on Sumba has yet been given any conservation status. They would be excluded from any designation based on bird endemism and, due to their nature and size, are unlikely to hold sufficient numbers of birds to be considered as Important Bird Areas (IBAs). However, some may satisfy conservation criteria for consideration as important wetlands as they must represent one of the rarest and most unique habitat types in the Lesser Sunda region. Due to their high importance as a source of water for humans and livestock, their proper management is necessary, at least to protect them from conversion and pollution (Zeiran *et al.* 1990).

Recent Ornithological Visits

Following E.R. Sutter's expedition to Sumba in 1949 (Buhler & Sutter 1951, White & Bruce 1986 and references therein) there were no documented ornithological visits to this island until John MacKinnon's surveys on behalf of UNDP/FAO during 1979–81. Since the mid 1980's there have been numerous visits by conservationists, ecologists and ornithologists, with those documented being listed in Appendix 1. Some of these have been short, bird watching visits with observers trying to see the endemics in easily accessible forest, usually that close to Lewa. Others have been longer with a conservation or ecological purpose *e.g.* the Manchester Metropolitan University and Asian Wetland Bureau visits. Sumba's seasonal climate has affected the timing of most ornithological visits and resulted in concentration of effort during the dry season. There have been no recent records from March, April or May.

The Sumba Avifauna

The avifauna of Sumba includes seven species treated as endemic by Coates & Bishop (1997) with a further 22 being represented by endemic subspecies (see Systematic List). In addition, Sibley and Monroe (1990) treat resident populations of *Muscicapa dauurica* and *Myzomela erythrocephala* as full endemic species, naming them *M. segregata* (Sumba Brown Flycatcher) and *M. dammermani* (Sumba Red headed Honeyeater). These are treated as endemic subspecies by Coates & Bishop (1997). A further 25 Sumba taxa are endemic at the regional level (Appendix 2); 6 species and 13 subspecies are endemic to the Lesser Sundas and 5 species and one subspecies are endemic to Wallacea. Four of the regional endemic species are represented by races endemic to Sumba.

White & Bruce (1986) listed 138 species for Sumba, omitting one, *Sterna bergii*, from Mayr (1944) and two, *Himantopus himantopus (leucocephalus)* and *Gracula religiosa* (almost certainly an escapee), from UNDP/FAO (1982). Since December 1993 (the cut off date for the White & Bruce checklist), the increase in the number of observers visiting Sumba has resulted in many additions; to the list, as given in Coates & Bishop (1997). The number of species recorded for Sumba is at present 182 (see Systematic List), most of the additions (see below) being migrants (*e.g.* 17 are waders) presumably previously overlooked due to the dearth of coverage. Of the 41 recent additions, four (*Circaetus gallicus*, *Esacus magnirostris*, *Lonchura pallida* and *Acridotheres javanicus*) represent resident breeding populations, although the last named appears to be an introduction. Another nine recently added species are probably resident (or at least casual breeders) but their status needs confirmation (see

Systematic List). In total, 103 species are assumed to breed on Sumba with an additional 20 species which are either casual breeders or whose status is unclear (see Systematic List).

The following descriptions provide information on some rare or little known breeding species, as well as species that have been scarcely recorded, or not recorded at all, since 1984. They substantiate and provide details of all additions made in the current phase of field activity.

Abbreviations used in the text:

AWB = Asian Wetland Bureau. See Zeiren *et al.* (1990).

BL IP = BirdLife International Indonesia Programme.

C&B = B.J. Coates and K.D. Bishop (1997).

DAH = D.A. Holmes (1993).

DG = D. Gibbs (1990).

FAO = Food and Agricultural Organisation. See UNDP/FAO 1982.

FV 1 = F. Verbelen (1996).

MMU = Manchester Metropolitan University. See Jones *et al.* 1994.

MDL & DEL = M.D. Linsley and D.E. Lakey.

MR& DBS = M. Riffel and Dwi Bekti S (1991).

RA = Recent addition.

NMB = Naturhistorische Museum, Basel, Switzerland.

NSA, BM = National Sound Archive, British Museum.

PHPA = Indonesian Directorate General of Forest Protection and Nature Conservation.

W&B C.M.N. White and M.D. Bruce (1986).

Localities mentioned in the text are shown in Figure 1.

Notes on Significant Species

Nomenclature and sequence follow Andrew (1992). Trinomials are used to indicate endemic subspecies.

Little Black Cormorant *Phalacrocorax sulcirostris* RA

The first records were two on 11 Jun 1986 flying over Kadumbal marsh (Bishop 1992). Also recorded on the east coast, Sep 1989 and Aug 1992 (MMU).

Brown Booby *Sula leucogaster* RA

First recorded 26 Oct 1992 when one or more birds were observed in the strait between Sumba and Pulau Salura. Three birds were observed the following day at the same site (MDL in MMU).

Australian Pelican *Pelecanus conspicillatus*

The first and only confirmed observation is of two at Kadumbal marsh, 11 Jun 1986 (Bishop 1992). Documented by FAO and AWB from reports by residents.

Grey Heron *Ardea cinerea*

The only records appear to be sight records from 1925 by Dammerman (in W&B), and recently, an immature in Feb 1990 (AWB) and a singleton near Desa Malinjak, Jun 1994 (MDL & DEL). With such few records perhaps its status as a resident breeder (see C&B) should be revised.

Great billed Heron *Ardea sumatrana* RA

Only known from a single record of one bird at Yumbu, Feb 1990 (AWB).

Great Egret *Casmerodius albus* RA

The first record was of two at Kadumbal marsh 10 Jun 1986 (Bishop 1992). Subsequently at coastal and inland sites in East and West Sumba in Sep and Oct 1992 (MMU). At law 13 (9 at Kadumbal), Jun 1994 (MDL & DEL).

Intermediate Egret *Egretta intermedia*

Prior to 1990, only known from one 19th century record (Meyer 1882). Recent records include one at Anakalang, Feb 1990 (AWB) and six at Kadumbal, Jun 1994 (MDL & DEL).

Little Egret *Egretta garzeta*

Few records of small numbers from Panapa in Jul, Sep Nov (MMU, Balen, *in litt*). A high count of at least 25 at Kadumbal, Jun 1994 (MDL & DEL).

Yellow Bittern *Ixobrychus sinensis*

The only recent record was one seen near Lewa in Feb 1990 (AWB).

Cinnamon Bittern *Ixobrychus cinnamomeus* RA

The first record was an adult at Kadumbal, 11 Jun 1986 (Bishop 1992). The only subsequent sighting is of one at Panapa, Waingapu 4 Oct 1989 (MMU).

Glossy Ibis *Plegadis falcinellus* RA

The only Sumba record is of a group of six at Kadumbal, 11 Jun 1986 (Bishop 1992). This represents only the third record for Nusa Tenggara.

Royal Spoonbill *Platalea regia* RA

The only Sumba record is of a single bird at Kadumbal, 15 & 16 Jun 1994 (MDL & DEL).

Black Kite *Milvus migrans*

The spread of recent records (Feb, Jun, Aug, Sep, Dec) suggests a local breeding population rather than Australian visitors.

Short toed Engle *Circaetus gallicus* RA

The first Sumba record was of one at Watumbaka, 12 Sep 1989 (MMU). Subsequently it has been observed quite widely, singly or in pairs, with dated records from Jun and Aug to Dec. Only one record (MMU) from West Sumba possibly indicates lower observer effort. It could be expected to occur at a higher density in the drier East, however, as the terrain may be more suitable and prey (mainly snakes) more abundant.

As Lesser Sunda birds are now considered to be resident (C&B), this becomes probably the rarest breeding bird on Sumba (and, presumably, one of the rarest breeding species in South east Asia). C&B suggest this species may also occur as a rare northern migrant.

Spotted Harrier *Circus assimilis*

Sumba records may represent a local breeding population in addition to Australian visitors. The only months without observations are Jan, Mar and Nov.

[Harrier sp.] [*Circus sp.*]

An unidentified female or immature harrier (although clearly not Spotted Harrier *C. assimilis*) was seen at Kadumbal, 30 Jun 1989 (Bishop 1992). The most likely vagrant harrier on Sumba would be Swamp Harrier *C. approximans* (to which the jizz of the above bird was likened) as the species breeds in the Northern Territory and occurs in Western Australia but Eastern Marsh harrier *C. spilonotus* has also occurred in northern Australia (Simpson & Day 1994).

Australian Hobby *Falco longipennis* RA

A single adult on the coast 9 km south of Mondu, 13 & 14 Jun 1994 are the only records (MDL DEL), although the same observers saw an unidentified Hobby species at Kadumbal, 15 & 16 Jun 1994. The paucity and timing of records suggest this bird(s) was an Austral winter visitor.

Peregrine Falcon *Falco peregrinus*

The only records of the Wallacean resident *F. p. ernesti* are of one near Pengaduhahar, Oct 1989 and a pair on territory at the Matayangu waterfall, Aug 1992 (MMU). Other records (not subspecifically identified) have been made in Nov (Balén, *in litt*) and Feb (AWB).

Red backed Button quail *Turnix maculosa sumbana*

Few records exist, probably due to the nature of this secretive and elusive genus but also, perhaps, as most visitors concentrate on forest habitats where *Turnix* species are not likely to be observed. The only

recent records come from Praingkareha, Yumbu and Nerip (both MMU visit), Yumbu (R & DBS) and Lewa (DG).

Sumba Buttn quail *Turnix everetti*

This endemic is one of the most rarely recorded resident species on Sumba with no field observations until 4 Oct 1999 when two were seen at Yumbu (MMU). A group of six (with a probable male captured) was man here the following day wigh another three on 23 Oct 1989 (MMU). Good views (and the capture) were possible as birds allowed close approach and more often ran (seeking cover in grass clumps) than flushed. In Aug 1992, two were seen at Yumbu with 10 15 birds observed (one mist netted) nearby (MMU). All these records were from grassland on corraline hardpan. One other record was from grassland near Manupeu fomot (MMU). The 1992 MMU visit also obtained several widely distributed records of unidentified *Turnix*.

There is no information on the voice of the Sumba *Turnix* and identification is difficult, more so when the only views are of flushed birds. On present knowledge perhaps the best field mark is bill shape. This is heavy (deep) in *T. everetti* and slender (thin) in *T. m. sumbana*. Bill colour may also be useful being blue grey or horn grey in *T. everetti* and more yellow in *T. m. sumbana*, IPA this character varies with sex, age and possibly bowding, condition. Field identification therefore needs further study (few specimens of either form exist). Leg colour can also be a distinguishing feature being generally flesh pink in *T. everetti* and yellow in *T. m. sumbana*. Age differences also affect this character with immatures having yellowish flesh tarsi in *T. everetti* and grey in *T. m. sumbana* (Johnsgard 1991). However, the *Turnix* immatures stage is very short lived. C&B note that in flight distinguishing characters are the ochraceous flanks, vent and under tail coverts of *T. everetti*. However, MDL examined the series of *T. m. sumbana* collected by Sutter in 1949 (NMB) and all (one adult female, 3 immature female and four non breeding or immature males) show definite ochraceous flanks, vents and under tail coverts, although paler than in *T. everetti*.

The Sumba *Turnix* are the least well known of the endemic forms and due to insufficient data their population and conservation status is uncertain (Jones *et al.* 1995). Collar *et al.* (1994), however, class *T. everetti* as vulnerable and, therefore, facing a high risk of extinction in the medium term future. Threats to the Sumba *Turnix* are likely to take the form of changes to the fire and grazing regimes *e.g.* fire or intensive grazing during the nesting season is likely to be deleterious. Jepson *et al.* (1996) have proposed changes in grassland management (mainly fire) as the major threat (through forest destruction) to forest birds. If this is the case, perhaps, non forest species are also threatened by these changes. Present records suggest, however, that *T. everetti* may be at long locally common.

Buff banded Rail *Galirallus philippensis*

Only two records this century. A specimen collected by Sutter in 1949 (W&B) and a sight record from Panapa on 4 Oct 1989 (SJM in MMU).

Ruddy breasted Crane *Porzana fusca*

No recent records. The only record is an adult male collected by Stein, May 1932 at Langaliru (Mayr 1944).

White browed Crane *Poliolimnas cinerea*

The only recent record is of one observed by K.D.Bishop at Kadumbal, 12 July 1986 (K.D.Bishop, *pers. comm.*). Previously, FAO listed this species (perhaps erroneously) for Wanggameti.

Dusky Moorhen *Gallinula tenebrosa*

No definitive records since 1949 when one was collected by Sutter (W & B). An unconfirmed observation of one bird by FAO (who did not record *G. chloropus*). Identification of moorhens on Sumba requires close attention as the value of flank colouration is uncertain (Eskell & Garnett 1979) and tarsus and foot colour can be difficult to ascertain.

Purple Swamphen *Porphyrio porphyrio*

At least eight seen at Kadurnbal, 11–12 July 1986 (K.D.Bishop, *pers. obs.*), one at Wanga, Feb 1990 (AWB), a captive bird in Melolo, Oct 1992 (MMU) and eight at Kadumbal, Jun 1994 (MDL & DEL) are the only recent records.

Comb crested Jacana *Irediparra gallinacea*

No recent records.

Grey Plover *Pluvialis squatarola* RA

The first record was of two at Panapa, Waingapu, 11 Sep 1989 (MMU). Subsequently frequently reported. Dated records from July–Nov and Jan–Feb.

Little Ringed Plover *Charadrius dubius*

The only recent records are of >30 near Watu Limbong, 7 Nov 1992 (Balén 1996).

***Charadrius* sp.**

Two records of *C. dubius* size plovers without white hind neck collars probably refer to Red capped Plover *C. ruficapillus*. An observation of one on the beach at Melolo on 8 Nov 1992 (Balén *in litt*) is, perhaps, unseasonable although there is a record in late October from Timor (C&B). The other record is of four birds at Kadumbal, 16 Jun 1994 (MDL & DEL).

Lesser Sand plover *Charadrius mongolus* RA

First recorded at Panapa, Sep & Oct 1989 and in the same months and location in 1992 (MMU).

Oriental Plover *Charadrius veredus* RA

The first Sumba record was a first winter bird near Perokodi, 1 Sep 1992 (14W. The only other record was a flock of >50 near Watu Limbong, 7 Nov 1992 (Balén 1996).

Little Curlew *Numenius minutus* RA

The only Sumba record is of a group of time near Watu Limbong, 7 Nov 1992 (Balén 1996). This constitutes only the fourth record of this species for the Lesser Sundas.

Whimbrel *Numenius phaeopus*

At least 125 birds at Pampa at the end of Oct 1992 (MMU) represents over 8% of the northern West Australian wintering population (see Minton & Chandler 1996). At least 30 birds at Panapa throughout Jun 1994 (MDL & DEL) were presumably over summering.

Eurasian Curlew *Numenius arquata* RA

The first Sumba record was of one at Panapa, 14 Sep 1992, with two birds there in Oct (MMU). There are only four Lesser Sunda records (C&B).

Common Redshank *Tringa totanus* RA

First recorded on Sumba on 12 Sep 1999 (MMU) with many subsequent records during Jun–Nov and Jan–Feb. Early Jun to July records (MDI~ & DEL, MMU) suggest over summering.

Marsh Sandpiper *Tringa stagnatilis* RA

First recorded on Sumba at Pampa, Waingapu, 4 Oct 1989 (MMU), where subsequently recorded by AWB and MMU.

Terek Sandpiper *Xenus cinereus* RA

The first Sumba record was of five at PwAM 13 Sep 1989 with additional records in Oct and in the same months of 1992 (MMU). The only other record is of one at Panapa, Feb 1990 (AWB) These records suggest this species is more abundant on passage than as a winter visitor.

Grey tailed Tattler *Heteroscellus brevipes* RA

The first Sumba record was of 5 at Panapa on 11 Sep 1989 (MMU) with subsequent records suggesting it is common on (post breeding) passage with some over wintering. Dated records are during Jul–Nov and Jan–Feb.

(Common) Snipe *Gallinago (gallinago)*

The only record for Sumba (and the Lesser Sunda) is the listing (without comment) of a single *G. gallinago* by FAO. However, in view of the difficulty in identifying *Gallinago* species (e.g. three subsequent records are of unidentified snipe), the rarity of *G. gallinago* in the region (see C&B) and the

more regular occurrence of *G. megala* and *G. stenura*, this record is best also considered as an unidentified *Gallinago* species.

Great Knot *Calidris tenuirostris* RA

The first Sumba record was of two at Panapa, 3 & 4 Oct 1989 (MMU). The few records of small numbers on Sumba suggest that passage is normally further east and/or that most carry on to northern West Australia where 180,000 are known to winter (Minton & Chandler 1996). Record dates range from mid Sep to early Nov.

Curlew Sandpiper *Callidris ferruginea* RA

The first Sumba record was of one at Kadumbal, 11 Jun 1986 (Bishop 1992). The only other observations are from Panapa, Oct 1989 (MMU).

Broad billed Sandpiper *Limicola falcinellus* RA

The first Sumba record was one at Panapa, 4 Oct 1989 (MMU) and a second from the same locality, 30 Oct 1992 (MDL in MMU).

White headed Stilt *Himantopus leucocephalus*

Not listed in W&B but a record of two *H. himantopus* by FAO presumably refer to this species considering the contemporary treatment of *H. himantopus* (e.g. Cramp & Simmons 1983). Otherwise McKean (in Bruce 1987) and Bishop (1992) were the first to record this species both in Jun 1986. Subsequently commonly reported with record dates in Feb, Jun Oct and Dec.

Red necked Phalarope *Phalaropus lobatus* RA

The first Sumba record was of a flock of c.200 off the coast at Watumbaka, 12 Sep 1989 (MMU). One other record of >30 off the coast at Malaikababa (MDL in MMU), 27 Oct 1992.

Beach Thick knee *Esacus magnirostris* RA

The first Sumba record was of three at Warambadi, Feb 1990 (AWB). There are four subsequent records (MR & DBS, MMU, MDL & DEL) of 1 3 birds, all from the south coast. Perhaps overlooked because few observers visit remote coastal sites.

Australian Pratincole *Stiltia isabella* RA

The first Sumba record was in Jun 1986 (McKean in Bruce 1987). Subsequently one was seen at Kadumbal, 30 Jun 1989 (Bishop 1992). More than 100 were observed at this site on 15, 16 & 20 Jun 1994 (MDL & DEL). In addition, a flock of 15 was seen at Perokodi, 1 Sep 1992 (MMU). These records appear to confirm the status of this species as an austral winter visitor.

Oriental Pratincole *Glareola maldivarum* RA

The first Sumba record was of ten in flight at Lewa, 8 Dec 1991 (DAH). One other record of a single bird at Panapa, 22 & 24 Oct 1992 (MDL in MMU).

Jaeger sp. *Stercorarius* sp.

MMU saw 1 2 individuals, probably Pomarine Jaeger *S. pomarinus*, in Sep 1992.

Whiskered Tern *Chlidonias hybridus* RA

The first published Sumba record refers to Jan 196 (McKean in Bruce 1987). Bishop (1992) also observed a 25 at Kadurnbal, 11 Jun 1986. Subsequently at least 10 unidentified marsh terns seen at Kadumbal, Jun 1994 (MDL & DEL) were probably this species. Dates indicate these records refer to wintering *C.h. javanicus* from Australia.

Whiskered winged Tern *Chlidonias leucopterus* RA

The only Sumba records are from Panapa with 31 on 22 & 23 Oct and 15 on 30 Oct 1992 (MDL in MMU).

Gull billed Tern *Gelochelidon nilotica* RA

The first Sumba records were of 4 at Panape Oct 1989 (MMU). The only other records are *c* 8 at the same locality at the end of Oct 1992 (MDL in MMU) and one seen at Watu Lindung, 6 Nov 1992 (Balen *in litt.*). Dates indicate these birds are more likely to be *G.n. affinis* (from Asia) rather than *G. n. macrotarsa* (from Australia).

Common Tern *Sterna hirundo* RA

The first record for Sumba and the Lesser Sundas was of six birds at Pantai Panapa, 22 & 23 Oct 1989 (MMU). Then: were 29 at the same locality on 23 Oct 1992 (MDL in MMU). Not listed in Andrew (1992) for the Lesser Sundas.

Black naped Tern *Sterna sumatrana* RA

The first Sumba record was a single bird at Baing, 17 Sep 1989 (MMU). Also reported by AWB and MMU (in 1992). Possible breeding indicated by two pairs mobbing *Falco moluccensis* and fishermen near Mondu, 10, 13 & 14 Jun 1994 (MDL & DEL).

Little Tern *Sterna albifrons* RA

The first Sumba record was of a pair, courtship feeding, at Watumbaka, 12 Sep 1989 (MMU). The same observers also made subsequent widespread observations, including a pair mobbing crows at Baing, 17 Sep 1989. A count of 15 at Panapa at the end of Oct 1992 suggests birds on passage (NDL in MW).

Great Crested Tern *Sterna bergii*

The first Sumba record was a female collected by Stein at Melolo, 17 Jun 1932 (Mayr 1944) but omitted by W&B. Subsequently records were made by MMU who found it to be the commonest tern around Sumba. Since then it has been reported by most visiting ornithologists.

Brown Noddy *Anous stolidus* RA

The first and only Sumba record was of two inshore at Perokodi, 1 Sep 1992 (MMU).

Red naped Fruit dove *Ptilonopus dohertyi*

Encountered in 1989 only at Tabundung but in 1992 there were records from all forest sites (MMU). Often an elusive species, it has been recorded by most visitors. Although often recorded at or close to sea level (*e.g.* AWB, Balen *in litt*, MDL & DEL *pers. obs.*), analysis of census data shows an apparent preference for higher altitude forest (MMU).

Sumba Green Pigeon *Treron teysmanni*

Commonly observed by MMU and recorded frequently by most other observers. More gregarious and vocal than *P. dohertyi* and easier to see as census data show a preference for more open forest and a greater liking for forest edge (MMU). No records from above 800m.

Metallic Pigeon *Columba vitiensis*

The most rarely recorded pigeon on Sumba, although perhaps under recorded as birds seem to be rather silent and/or elusive. MMU observed this species twice at one site only in 1989 with two or three birds seen at the 1992 sites. There are only two other records of single birds (AWB, MR & DBS). Records are from most forest types and altitudes.

Nicobar Pigeon *Caloenas nicobarica* RA

The first Sumba record was a flock of three birds in semi deciduous forest, *c.* 120m and *c.* 41an from the south coast, near Nerip, 17 Aug 1992 (MMU). The same observers also saw a flock (with a maximum of 13 birds) daily from 28 31 Aug 1992 at *c.* 200m in evergreen forest near Matayangu. These appear to be the only records to date for Sumba.

Yellow crested Cockatoo *Cacatua sulphurea citrinocristata*

Seen by nearly all observers and frequently recorded by MMU. Census data analysis shows an apparent association with lowland forest and a population of just over 3000 (Jones *et al.* 1995). Although it is illegal to capture this species for export, MMU found the trade still active in 1992. Considered endangered (*i.e.* with a high risk of extinction in the near future) by Jones *et al.* (1995) and Collar *et al.* (1994).

Eclectus Parrot *Eclectus roratus cornelia*

Commonly recorded by MMU and recorded by all other visitors. This species shows a preference for low altitude (secondary) forest according to MMU census analysis and is much less abundant than *C. sulphurea*, even though this species is not traded as heavily. Twenty one birds (mostly females) were observed in captivity in Waingapu and Melolo (MMU) and this represents over 1% of the MMU island population estimate.

Great billed Parrot *Tanygnathus megalorhynchos sumbensis*

The least commonly recorded parrot by visitors, though MMU had small numbers at all sites, often observing groups of 10-15 birds. MMU census analysis showed this to be the rarest species (1700 individuals) for which data were available (Jones *et al.* 1995). Not often caught for trade, though a few birds (perhaps caught by default) are kept as pets.

Oriental Cuckoo *Cuculus saturatus*

One recent Sumba record of a single bird (race unknown) at Pengadudahar, 21 Sep 1989 (MMU).

Shining Bronze Cuckoo *Chrysococcyx lucidus*

The only recent Sumba records are of at least two birds near Nerip, mid Aug 1992 (MMU).

Channel billed Cuckoo *Scythrops novaehollandiae* RA

The first Sumba record was of one near Lewa, 27 Jan 1990 (DG). Two other records, dated Dec (DAH) and Oct (MMU), also near Lewa, suggest these are not austral winter visitors but, perhaps, wet season (i.e. austral summer) breeding birds.

Eastern Grass owl *Tyto longimembris* RA

The only Sumba record is of a bird disturbed during the day from grassland near the coast at Walakiri, 24 Aug 1992 (MMU). A single specimen from Flores (W&B) is the only other Lesser Sunda record.

Barn Owl *Tyto alba sumbaensis*

There are few Sumba records most probably due to this species nocturnal behaviour. MMU (1992) saw three along roads near Lewa and one hunting at dusk over grassland and scrub at Poronumbu. DAH observed another bird he disturbed from forest edge during the day at Praipaha.

Sumba Boobook *Ninox rudolfi*

The first recent observation was of a live, freshly caught bird (in a farmer's, Cockatoo snare) at Tabundung, Oct 1989 (MMU). In 1992 the same observers saw this species on several occasions during the day; one in semi deciduous forest near Nerip, Aug; one in similar form type at Waimangura, 3 Sep; four together in disturbed forest at Poronumbu, 8 Sep and two in evergreen forest at Wanggameti, 20

Sept. The other records are one seen hunting at a grassland fire at night south of Lewa (MR & DBS) and a bird seen (and tape recorded) near Lewa (N. Bostock & A. Lewis, *pers. comm.*, & NSA, BM).

Although there appears to be an obvious association with forest, as the records cover most forest types (and altitudes), this species nevertheless would seem to use non forest habitat as well (*e.g.* MMU 1989, MR & DBS).

Owl sp. *Otus/Ninox* sp.

Owl vocalisations were recorded near Lewa by S. Smith in Aug 1991, which he identified as an unknown Scopsowl, *Otus* sp. (NSA, BM). Owl vocalisations, assumed to be *N. rudoffi*, were heard by DG at the same location in Jan 1990. Similar vocalisations to those recorded by Smith were heard at Nerip (near Umamanu) in Aug 1992 by MMU, although the birds were not seen well enough to establish their identity. The monosyllabic calls were a subdued whistle or hoot '*duu*' or '*Puu*', repeated at 3-5 second intervals. The calls of one bird (sex) were different to the other, being of a lower pitch. This difference was noticeable when the birds duetted antiphonally. Calling and duetting occurred almost nightly during the 12 night stay at the Nerip location, usually starting within ten minutes of nightfall. Birds were seen calling from branches (at heights from 7-17m) emerging from the canopy and appeared to spend most of their vocal period at about that height (even when responding to tape playback). This behaviour is, perhaps, atypical of *Otus* species. Calling also occurred during the night and just prior to dawn. This species was heard at the site near Lewa, Oct 1992 (N. Bostock & A. Lewis, *pers. comm.*), Jun. 1994 (MDL & DEL) and Sep 1995 (Verbelen 1996).

None of the observers who have claimed this to be a Scopsowl have published a substantiating description *i.e.* indicating the bird was an *Otus* and not a *Ninox*. However, it is interesting to note that Sumba and Timor are the only large islands in Indonesia where no member of the *Otus* genus has been recorded (W&B, C&B), while in contrast three species of *Otus* reside on Flores. C&B tentatively list this taxon as an unidentified scopsowl on the basis of various observers notes and sound recordings.

Edible nest Swiftlet *Aerodramus fuciphagus*

There are few records of this species from Sumba, mainly of small groups. MR & DBS found a breeding colony in a cave 3km from Waikabubak, 31 Jul 1991. In addition, two residents at Malaikababa reported harvesting nests of this species from nearby caves (MMU).

Fork tailed Swift *Apus pacificus* RA

The first record was of 3 to 4 at Praipaha, 14 Sep 1989, followed by seven other records all in Sep/Oct 1989/92 (MMU). Other dated records are from near Waingapu, Nov (Balén, *in litt*) and near Tabundung, 10 Dec (DAH).

Little Swift *Apus affinis* RA

The first Sumba record was of one (with Striated Swallow *Hirundo striolata*) flying around cliffs between Malaikababa and Katundu, 27 Oct 1992 (MDL). Subsequently >50 birds were observed at dusk collecting in front of cliffs on the coast, c. 9 km south of Mondu, 10, 13 & 14 Jun 1994 (MDL & DEL). It was not determined whether the cliffs were an active breeding site but groups of birds circled above the area calling. No birds were seen at the site between 0900 & 1730 hours on the visited. This and recent records from Timor and Flores (Holmes 1994) suggest that a lack of buildings may not interfere with this species ability to colonise.

Cinnamon banded Kingfisher *Halcyon australis*

Probably overlooked, with only one seen during the 1989 MMU visit, but small numbers (1-4) were observed at all sites visited in 1992. There are no other recent records. MMU census data analysis showed an apparent association with dense forest and a population size of <5,000, which would place this as the fourth rarest of the restricted range species on Sumba. Typical of the genus, calling birds are noisy, but they call infrequently and are easy to overlook when silent, in or above the canopy (K.D.Bishop, pers. Comm.).

Rainbow Bee eater *Merops ornatus*

MMU noted pairs in courtship feeding at Luku Melolo at the beginning of August 1992. Such behaviour, however, may indicate formation and maintenance of pair bonds in winter quarters, as in *M. apiaster* in Africa (Fry *et al.* 1992) and not necessarily possible breeding. Recorded Jun-Feb.

Scasha Hornbill *Rhyticeros everetti*

Recorded by most visitors and commonly recorded by MMU in 1989 and 1992. Records are from most forest types and altitudes but birds are attracted to isolated fruiting trees even when some distance from forest and near habitation. Analysis of census data shows, this to be the rarest endemic species on Sumba with a population size of 6,500 and that it is associated with old growth evergreen forest (Jones *et al.* 1995). Trapping and hunting occurs on a small (local) scale, for food and pets.

Tree Martin *Cecropis nigricans* RA

The only record is of > 10 birds at Malinjak wetland (c. 1 ha), 18 Jun 1994 (MDL & DEL).

Fairy Martin *Cecropis ariel* RA

The only record is of 4 at Malinjak wetland, 18 Jun 1994 (MDL & DEL).

Petchora Pipit *Anthus gustavi*

The only recent Sumba records were made during Feb 1990 when it was reported to be "common in grassland" (AWB). Such a record appears to be inconsistent with the lack of records from other

observers to this island, and this species' reputed preference for woodland and forest on its winter grounds.

Brown Shrike *Lanius cristatus*

Only two recent Sumba records, both of single birds near Waingapu, in Feb 1990 (AWB) and Nov 1992 (Balén *in litt*).

Tawny Grassbird *Megalurus timoriensis inquirendus*

The most rarely recorded resident species and endemic taxon on Sumba. The only records are one (heard only) at Tabundung, Oct 1989; one near Nerip in Aug and two at Poronumbu, Sep 1992 (all MMU). C&B, however, report this as locally common on Sumba. The species could be under recorded but it is also possible that current land management (e.g. fire and grazing) has effected its populations more than any forest species.

[Warbler sp.] [*Locustella* sp.]

An unidentified *Locustella* at Waingapu/Watu Limbung, 5 Nov 1992 (Balén *in litt*). Of the four *Locustella* species so far recorded in Wallacea only *L. ochotensis* has been recorded (once) in the Lesser Sundas (C&B).

Clamorous Reed warbler *Acrocephalus stentoreus*

The only recent Sumba record is from AWB who found it "common" on the landward side of mangroves during Feb 1990. DAH heard "Great Reed warbler" type songs at Danau Rinding and near Umamanu, Dec 1991, and assumed them to be this species. The AWB record appears inconsistent with the lack of observations from other observers.

Sumba Flycatcher *Ficedula harterti*

Commonly recorded and widespread (MMU) but records from only three other visitors (DG, FV, KDB). Birds are often seen in the under storey and it was one of the most commonly mist netted species by MMU. Census analysis did not show a habitat preference within forest (Jones *et al.*, 1995). Measurements and a description of immatures are given in MMU.

[Olive backed Sunbird *Nectarinia jugularis*]

Not known to occur on Sumba (W&B, C&B). Unconfirmed sightings of single birds are listed by FAO and AWB, the latter noting their record as female. Both teams also recorded the two other sunbird species resident on Sumba, but the sympatry of *N. jugularis* with *N. buettikofferi* would seem unlikely. In addition, new island records cannot be accepted without full documentation.

Apricot breasted Sunbird *Nectarinia buettikofferi*

Commonly recorded by MMU and observed by all other visitors. Analysis of census data gave a very high population estimate (>750,000) and showed a preference for areas of forest regeneration at lower altitudes (Jones *et al.*, 1995). Measurements are given in MMU.

Pale headed Munia *Lonchura pallida* RA

The first Sumba record was of eight birds with a flock of Five coloured Munias *L. quincticolor* at Panapa, Sep 1989 (MMU). Subsequently single birds were seen at Melolo and Maujawa in Jan and Feb 1990 (DG, AWB), with several parties at Waimanu 1 Aug 1991 (MR & DBS), a party with *L. molucca* at Lewa in Dec 1991 (DAH) and a flock of >18 at Panapa in Jun 1994 (MDL & DEL).

[Starling sp.] [*Sturnus* sp.]

A record of 11 starlings believed to be either Chesnut cheeked *S. philippensis* or Purple backed *S. sturninus* flying fast in closed formation at Panapa, 2 Nov 1992 (Balen *in litt*). *S. philippensis* has not previously been recorded in the Lesser Sunda and *S. sturninus* has not been recorded in Wallacea (C&B).

White vented Myna *Acridotheres javanicus* RA

First recorded in Waingapu in Jul/Aug 1987 (Buck *et al.* in C&B) and subsequently by KDB at Kadumbal, 30 Jun 1989 (K.D. Bishop, *pers. comm.*). MMU found it moderately common with roost counts of >50 birds at Panapa where a nestiag pair was found on 11 Sep 1989. Several records subsequently were all close to Waingapu. Presumably this population results from recent introduction.

Hill Myna *Gracula religiosa*

Omted by W&B but one recorded by FAO and mother by AWB at Hambapraing (near Waingapu). Such records are most likely to be of escaped cage birds.

TABLE 1. SYSTEMATIC LIST

The status for each species is taken from C&B. Thee habitat information, breeding records and record dates are derived from the source material upon which this paper is based.

** = Recent addition. **Bold type** indicates island endemics (trinomials indicating subspecies).

Status: RB = Resident breeder, CB = Casual breeder (few records; may be resident or migrant breeder); PV = Passage visitor; NV = Northern winter visitor; SV = Southern winter visitor; AV Accidental (or casual) visitor (or vagrant); NBV = Non breeding visitor.

Habitat: F = Forest (including edge); S = Savanna (areas of bushes and trees at low density); G = Grassland; W = Inland wetlands (lakes/ ponds/ marshes/ rivers); P = Reef flats, beaches and coastal waters; M = Mangroves; C = Cultivation (paddies, coconut, lontar, etc); T = Towns/villages. Secondary habitats in parenthesis.

Breeding records: V = Breeding vocalisations; D = Courtship/ breeding display; M = Carrying nest material; C = Copulation observed; N = Active nest; F = Carrying food; Y = Recently fledged (dependant) young; T = pair on territory. Numbers indicate month recorded.

Dates: Numbers indicate month recorded (resident species excluded).

Specie	Status	Habitat	Breedin	Dates
Red-throated Little Grebe <i>Tachybaptus rufollis</i>	RB	W		2,6,8-10
Lesser Frigatebird <i>Fregata ariel</i>	NBV	P		2,6,8-10
**Little Black Cormorant	NBV	W'P'M		6,8,9
<i>Phalacrocorax sulcirostris</i>				
Little Pied Cormorant	RB?SV?	W'P'M		2,8-11
<i>Phalacrocorax melanoleucus</i>				
**Brown Booby <i>Sida leucogaster</i>	NBV	P		10
Australian Pelican <i>Pelecanus conspicillatus</i>	AV	W'P		6
Grey Heron <i>Ardea cinerea</i>	RB? CB?	W'P'M		2,6
**Great-billed Heron <i>Ardea sumatrana</i>	RB? Cb?	P'M'(W)		2
Purple Heron <i>Ardea purpurea</i>	RB	W'P'M	M, D	
**Great Egret <i>Casmerodius albus</i>	NBV	W'P'M		6,9,10
Intermediate Egret <i>Egretta intermedia</i>	NBV	W		2,6
White-faced Heron <i>Ardea novaehollandiae</i>	RB SV	W'M'C	N	1
Little Egret <i>Egretta garzetta</i>	NBV	W'P'M		6,7,8-11
Reef Egr'et <i>Egretta sacra</i>	RB	P'M		
Cattle Egret <i>Bubulcus ibis</i>	NBV RB?	G,W,C		2,6-11
Javan Pond-heron <i>Ardeola speciosa</i>	RB	W'C(P)		
Striated Heron <i>Butorides s triatus</i>	RB NV	P'M'(W)		
Yellow Bittern <i>Ixobrychus sinensis</i>	NV	W,M,C		2
**Cinnamon Bittern <i>Ixobrychus cinnamomeus</i>	RB? NV	W		6,10
**Glossy Ibis <i>Plegadis falcinellus</i>	AV	W		6
** Royal Spoonbill <i>Platalea regia</i>	AV	W		6
Osprey <i>Pandion haliaetus</i>	NBV RB?	P'M'(W)		2,6,8-11
Pacific Baza <i>Aviceda subcristata</i>	RB	F,S,C		
Black-winged Kite <i>Elanus caeruleus</i>	RB	S,G,C		
Black Kite <i>Milvus migrans</i>	SV CB/RB?	S,G,T		2,8,9,12
Brahminy Kite <i>Haliastur indus</i>	RB	ALL	M, N	
White-bellied Sea-eagle <i>Haliaeetus leucogaster</i>	RB	P'M'(W)		

<u>Species</u>	<u>Status</u>	<u>Habitat</u>	<u>Breeding</u>	<u>Dates</u>
** Short-toed Eagle <i>Circaetus gallicus</i>	RB	S,G,(F)		
Spotted Harrier <i>Circus assimilis</i>	SV CB/RB?	S,G,C		2,6-10,12
Brmu Gosbawk <i>Accipiterfiscianis tjendanae</i>	RB	F,S,C	N (6)	
Spotted Kestrel <i>Falco moluccensis</i>	RB	S,G,C,(F)		
** Australian Hobby <i>Falco longipennis</i>	SV	S,G		6
Peregrine Falcon <i>Falco peregrinus</i>	RB MV	F,S,G,W,P	T (8)	
Wandering Whistling-duck <i>Dendrocygna arcuata</i>	RD? NBV	W,M		2,6
Sunda Teal <i>Anas gibberifrons</i>	RB? NBV	W,P,M		2.6-11
Pacific Black Duck <i>Anas supercilliosa</i>	RB	W,P,M		
Orange-footed Scrubfowl <i>Megapodius reinwardtii</i>	RD	F	Y (8,9)	
Brown Quail <i>Coturnix australis</i>	RB	S,G,C		
Blue-breasted Quail <i>Coturnix chinensis</i>	RB	SAC		
Green Junglefowl <i>Gallus varius</i>	RB	FC		
Red-backed Button-quail	RD	S,G,C		
<i>Turnix maculosa sumbana</i>				
Sumba Button-quail <i>Turnix everetti</i>	RB	S,G,C		
Baff-banded Rail <i>Gallirallus philippensis</i>	RD NV?	G,W,C		
Ruddy-breasted Crake <i>Porzana fusca</i>	RD? NV?	W,M		
White-browed Crake <i>Poliolimnas cinerea</i>	RB	W		
Whitish-breasted Waterhen <i>Amaurornis phoenicurus</i>	RB	W		
Dusky Moorhen <i>Gallinula tenebrosa</i>	RB	W		
Common Moorhen <i>Gallinula chloropus</i>	RB	W	Y (6)	
Purple Swanphen <i>Porphyrio porphyrio</i>	RB	W		
Comb-crested Jacana <i>Irediparra gallinacea</i>	RB	W		
** Grey Plover <i>Pluvialis squatarola</i>	PV NV	P		1,2,7-11
Pacific Golden Plover <i>Pluvialis fulva</i>	PV NV	G,P		1,2,6,9-12
Little Ringed Plover <i>Charadrius dubius</i>	PV NV	W,P		11
[Red-capped Plover <i>Charadrius ruficappillus</i>	AV	WIP		C11
Malaysian Plover <i>Charadrius peronii</i>	RD	P	Chick (6)	
** Lester Sand-plover <i>Charadrius mongolus</i>	PV	P		9,10
Gremer Sand-plover <i>Charadrius leschenaultii</i>	PV NV	P		1,2,6-11
Oriental Plover <i>Charadrius veredus</i>	PV	G,W,P		9,11
Little Curlew <i>Numenius minutus</i>	PV	G,W,P		11
Whimbrel <i>Numenius phaeopus</i>	PV NV	P		1,2,6-11
** Eurasian Curlew <i>Numenius arquata</i>	AV	P		11-Sep
Far Eastern Curlew <i>Numenius madagascariensis</i>	PV NV	P		2,7-11
Bar-tailed Godwit <i>Limosa lapponica</i>	PV NV	P		6,9-11
Common Redbank <i>Tringa totanus</i>	PV NV	P		1,2,6-11
Marsh Sandpiper <i>Tringa stagnatilis</i>	PV NV	W,P		2,10,11
Common Greensbank <i>Tringa nebularia</i>	PV NV	W,P		1,2,6,8-12

Species	Status	Habitat	Breedin	Dates
Wood Sandpiper <i>Tringa glareola</i>	PV NV	W,P,C		82
Terek Sandpiper <i>Xenus cinereus</i>		PV NV	P	29
Common Sandpiper <i>Actitis hypoleucos</i>	PV NV	W,P,M		12,7
** Grey-tailed Tattler <i>Heteroscellus brevipes</i>	PV NV	W,P,M		12,7
Ruddy Turnstone <i>Arenaria interpres</i>	PV NV	W,P		26,9
[Snipe sp. <i>Gallinago sp.</i>]	PV NV	W		1,2,12
Great Knot <i>Cahdrij tenuirostris</i>	PV	P		91
Sanderling <i>Calidris alba</i>	PV NV	P		12,6,9
Rufous Stint <i>Calidris ruficollis</i>	PV NV	P		12,6
Curlew Sandpiper <i>Calidris ferreginea</i>	PV	W,P		6,10
Belted Sandpiper <i>Limicolafalcinellus</i>	PV	P		10
Whiskered Stilt <i>Himantopus leucocephalus</i>	CB? RB? SV?	W, P		26,7
Red Phalarope <i>Phalaropus lobatus</i>	NV	P		9,10
Black Stint <i>magnirostris</i>	RB	P		
Australian Pratincole, <i>Stiltia isabella</i>	Sv	W,P		6,9
Oriental Pratincole <i>Glareola maldivarum</i>	PV NV	W,P		10,12
[Jaeger sp. <i>Stercorarius sp.</i>]	PV	P		9
Whiskered Tern <i>Chlidonias hybridus</i>	SV NV	W,P		6
Winged Tern <i>Chlidonias leucoplerus</i>	PV	W,P		10
Black Tern <i>Gelochelidon nilotica</i>	PV NV (SV?)	P		10,11
Common Tern <i>Sterna hirundo</i>	PV	P		10,11
Black Tern <i>Sterna sumatrana</i>	NBV RB/CB? P		D (6)	2,6,8,9
Little Tern <i>Sterna albifrons</i>	PV CB/RB?	P	D (9)	69
Great Crested Tern <i>Sterna bergii</i>	NBV	P		12,6
Brown Noddy <i>Anous stolidus</i>	NBV	P		9
Sumba Green Pigeon <i>Treron teysmanii</i>	RB	F		
Black Fruit <i>Ptilonopus doherlyi</i>	RB	F	D, V (8)	
Black Fruit <i>Ptilonopus melanospila</i>	RB	F,S		
Green Imperial Pigeon <i>Ducula aenea</i>	RB	F,M		
Metallic Pigeon <i>Columba vitiensis</i>	R,B	F		
Little Cuckoo <i>Macropygia ruficeps</i>	RB	F		
Spotted Dove <i>Streptapelia chinensis</i>	RB	F,S,G,C,T		
Barred Dove <i>Geopelia maugei</i>	RB	S,G,M,C	D (9)	
Emerald Dove <i>Chalcophaps indica</i>	RB,	F	V (8,9)	
** Nicobar Pigeon <i>Caloenas nicobarica</i>	NBV CB?	F		8
Rainbow Lorikeet	RB	F,S,M,C		
<i>Trichoglossus haematodusfortis</i>				
Yellow				

Specie	Status	Habitat	Breed	Dates
Ecketus Parrot <i>Ecketus roratus co-Ita</i>	KB	F	N (9,10)	
Red-checked Parrot <i>Geoffroyus geoffroyi</i>	KB	F,M		
Great-bifed Parrot	RB	F	DN	
<i>Ton-thus megalorynchos sumbensis</i>				
Oriental Cuckoo <i>Cuculus saturatus</i>	RB PY NV	F		
Rusty-breasted Cuckoo <i>Cuculus sepulchralis</i>	RB	F,SC		
Shining Bronze Cuckoo <i>Chrysococcyx lucidus</i>	8V	F,C		
Australian Koel <i>Eudynamis cyanocephala</i>	BY CBIRB?	F,S,C	V (9)	8,9
** Channel-billed Cuckoo	CB? or RB?	F,S	V (12)	1,10,12
<i>Si:ylhrops novaehollandiae</i>				
Lesser Coucal <i>Cewmpus bengalensis</i>	RB	S,13,C		
Barn Owl <i>Tylo alba sumbaensis</i>	RB	S,G		
** Eastern Gras&-owl <i>Tyto longimembris</i>	KB? AV?	S,G		8
Sumba Boobook <i>Ninox rudolfi</i>	RB	F,(C)		
Large-tailed Nightjar <i>Caprimulgus macrurus</i>	RB	S,G		
Savanna Nightjar <i>Caprimulgus affinis</i>	RB	S,13,C		
Edible-nest Swiftlet <i>Collocalia fuciphagus</i>	RB	ALL	N (7)	
Glossy Swiftlet <i>Collocalia esculenta</i>	RB	ALL		
Fork-tailed Swift <i>Apus pacipicus</i>	PV NV	ALL		92
Little Swift <i>Apus affinis</i>	RB?	S,QP		6,10
Common Kingfisher <i>Alcedo atthis</i>	RB NV?	W,P,M	N (9)	
Oriental Dwarf Kingfisher <i>Ceyx erithacus</i>	RB	F,W		
Cinnamon-banded Kingfisher <i>Halcyon australasia</i>	lkW	F,S		
Sacred Kingfisher <i>Halcyon sancta</i>	SY	S,05,P,MC		12,7
Collared Kingfisher <i>Halcyon chloris</i>	RB	ALL		
Blue-taited Bee-cater <i>Merops superciliosa</i>	NY	S,1G,Wc		12,6,3
Rainbow Bee-eater <i>Merops Ornatus</i>	5V	F,S,13,WC		1,2,642
Common Dollarbird <i>Eurystomus orientalis</i>	R-. V?	S,G,C		10,12
Sumba Hornbill <i>Rhyticeros everetti</i>	RB	F	C, N (9)	
Elegans Pitta <i>Pitta elegans maria</i>	RB	F		
Singing Bush-lark <i>Mirafra javanica</i>	RB	S'IG,c		
Barn Swallow <i>Hirundo rustica</i>	PV NY	S,Q,CJ		12,7
Pacific Swallow <i>Hirundo tahitica</i>	RB	S,03,CJ		
Striated Swallow <i>Hirundo striolata</i>	RB	S'15,p		
Tree Martin <i>Cecropis nigricans</i>	SV	W		6
Fairy Martin <i>Cecropis ariel</i>	SV	W		6
Yellow Wagtail <i>Motacilia flava</i>	NV	G^C		10
Grey Wagtail <i>Moracilla cinerea</i>	NY	G^C		2,9,10
Richard's Pipit <i>Anthus novaeseelandiae</i>	RB	QS,C	D (9)	
Petchora Pipit <i>Anthus gustavi</i>	NV	S,G		2

Species	Status]	Habitat	Breeding	Dates
Wallacean Cuckoo-shrike	RB	F,(S,C)		
<i>Coracina personata sumbensis</i>				
Black-faced Cuckoo-shrike	SV	S,C,(F)		2,8,9
<i>Coracina novahollandiae</i>				
Sumba Cicadabird <i>Coracina dohertyi</i>	RB	F		
White-shouldered Triller <i>Lalage sueurii</i>	RB	S'M'C		
Brown Shrike <i>Lanius cristatus</i>	NV or AV	S,G,C		2,11
Pied Bushchat <i>Saxicola capratafranki</i>	RB	S,G,C,T		
Chestnut-backed Thrush <i>Zoothera dohertyi</i>	RB	F	Y (7)	
Tawny Grassbird	RB	S,G		
<i>Megalurus timoriensis inquirendus</i>				
[Warbler sp. <i>Locustella</i> sp.)	AV			
Clamorous Reed-warbler <i>Acrocephalus stentoreus</i>	RB	W		
Zitting Cisticola <i>Cisticolajuncidis</i>	RB;	S,G,C		
Arctic Warbler <i>Phylloscopus borealis</i>	NV	F	12,11	
Russet-backed Rhinomyias	RB			
<i>Rhinomyias oscillans stresemanni</i>				
Asian Brown Flycatcher	RB	F	N, F	
<i>Muscicapa dauurica segregata</i>	(9,10)			
Sumba Flycatcher <i>Ficedula harterti</i>	RB	F	N, Y (10)	
Grey-headed Flycatcher	RB	F		
<i>Culicicapa ceylonensis connectens</i>				
Asian Paradise Flycatcher	RB	F	N (10)	
<i>Terpsiphone paradisi sumbaensis</i>				
Spectacled Monarch <i>Monarcha trivirgam</i>	RB	F,M	Y (7,8)	
Broad-billed Flycatcher <i>Afyiagra ruficollis</i>	RB	F,M	N (8)	
Rufous Fantail	RB	F	N, Y (10)	
<i>Rhipidura rufifrons sumbensis</i>				
Common Golden Whistler	RB	F	N (8)	
<i>Pachycephalapectoralisfulviventris</i>				
Great Tit <i>Parus major</i>	RB	F,S,M,C	Y (8)	
Thick-billed Flowerpecker <i>Dicaeum agile</i>	RB	F,S,C		
Blood-breasted Flowerpecker	RB	F,S,C,T		
<i>Dicaeum saguinentum wilhelminae</i>				
Brown-throated Suabird	RB	F,S,C		
<i>Anthreptes malacensis rubrigena</i>				
[Olive-backed Sunbird <i>Nectariniajugtdaris</i>]	?			
Apricot-breasted Sunbird <i>Nectarinia buettikoferi</i>	RB	F,S,C		
Yellow-spectacled White-eye <i>Zosterops wallacei</i>	RB	F,S,M,C		
Ashy-bellied White-eye <i>Zosterops citrinellus</i>	RB	F,S,M,C		

Species	Status	Habitat	Breeding	Dates
Brown Honeyeater <i>Lkhmera indistincta</i>	RB	F,S,M,CJ		
Red-headed Myzomela	RB	F		
<i>Myzomela erythrocephala dammermani</i>				
Helmented Friarbird <i>Philemeon buceroides</i>	RB	F,SC	M N (8,9)	
Red Avadavat <i>Amandava amandava</i>	RB	S,QQT		
Zebra Finch <i>Taeniopygia guttata</i>	P.B	S,QCJ		
Black-faced Mustia <i>Lonchura molucca</i>	RB	S,QQT		
Scaly-breasted Munia	KB	S,G,C		
<i>Lonchura punctulata sumbae</i>				
Five-coloured Munia <i>Lonchura quincolor</i>	KB	S,QQT		
** Pale-headed Munia <i>Lonchura pallida</i>	RB	QQT		
Tree Sparrow <i>Passer montamus</i>	RB	QT		
Short-tailed Starling <i>Aplonis minor</i>	KB	F,5,C	N (9)	
[Starling sp. <i>Sturnus</i> sp.]	AV			11
** White-vented Myna <i>Acridoteres javanicus</i>	KB	G,MQT	N (9)	
Hill Myna <i>Gracula religiosa</i>	Escape	F		
Black-naped Oriole <i>Oriolus chinensis</i>	KB	F,8,C		
Wallacean Drongo <i>Dicrurus densus sumbae</i>	RB.	F,S,C		
White-breasted Wood-swallow	RB	S,G,C		
<i>Artamus leucorhynchus</i>				
Large-billed Crow <i>Corvus macrorhynchos</i>	RB	F,S,CJ		

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Appendix 1. Table showing recent (1984-1997) ornithological visits to Sumba.

Observer(s)	Date/ Month	No. day s	No. day No. spp.	Locations visited	Source
J.L.McKean	6/86	?	?	?	Bruce, M.D. 1987
K.D.Bishop	1),6/86 2),6- 7/89	?	?	Kadumbul, Lewa	Bishop, K.D. 1992
C & H Buck, B.King, J.L. & K McKean, B.Pann, N.Tripp, D.Yong	7-8/87	?	?	?	Buck <i>et al.</i> . 1987 (in C&B)
MMU* (M.D.Linsley, S. Peters, M.J.Jones, S.J. Marsden)	11/9- 25/10/89	43	136	Waingapu sites, Praisipathai, Baing, Tg. Ngunjii (Pengaduhaihar), Laiwangi/ Tabundung (Tagaludon).	MMU 1994
D. Gibbs*	25/1/90	6	76	Lewa, Waingapu (Mauhau), Melolo	Gibbs, D. 1990
PHPA/AWB*	5/2/90	20	112	Coastal areas	PHPA/AWB 1990
M. Riffel & Dwi Bekti S.*	8/91	21	89	Yumbu, KM 14, Manupeu, Tengairi, Wanokaka, Watubolo, Umaamanu, Mondu, Lewa, Wangga.	Riffel, M. & D.Bekti S. 1991
S. Smith	8/91	?	?	Lewa	Tape cassette
A. Lewis & N. Bostock	10/92	?	?	Lewa	Tape cassette (<i>pers comm.</i>)
D.A. Holmes*	6/12/91	10	87	Waingapu-Lewa	Holmes, D.A. 1993
MMU* (M.D.Linsley, M.J.Jones, S.J.Marsden, A.McKnight, H.Lloyd, C.King)	27/7- 23/9/92	57	1571	Panapa, Yumbu, Walakiri, Luku Melolo/ Laundung, Nerip/Umaamanu, Manupeu, Purunumbu, Yawila, Perokodi, Wanokaka, G. Wanggameti.	MMU 1994
M.D. Linsley*	20/10/92	11	87	Panapa, Walakiri, Yumbu, Katundu Malakababa.	MMU 1994
S.V. Balen*	1/11/92	10	108	Panapa, Londa Lima, Watu Lindung, Melolo, Watu Limbong, KM14	Balen, S.V.I 1996 & Balen <i>in litt.</i>
M.D. Linsley & D.E. Laakey*	1/6/94	22	98	Panapa, Mondu, Kadumbal, KM14, Luku Melolo, Malinjak, Wanokaka	This paper
F. Verbelen*	2/9/95	5	64	Lewa	Verbelen, F. 1996

* = list of recorded species available and used in this checklist.

† Total of the 1989 and 1992 surveys

<u>Species or subspecies</u>	<u>Range</u>
Pacific Baza <i>Aviceda substatata timorlaeensis</i>	Lesser Sundas, Sulawesi satellites
Brown Quail <i>Coturnix australis pallidior</i>	LS (Savu)
Little Cuckoo-dove <i>Macropygia ruficeps orientalis</i>	LS (Lombok, Sumbawa, Komodo, Flores, Pantar, Timor)
Barred Dove <i>Geopelia maugei</i>	W (Lesser Sundas, Moluccas, Sulawesi satellites)
Metallic Pigeon <i>Columba vitensis metallica</i>	LS (Lombok, Sumbawa, Timor, Wetar, Moa, Babar, Damar)
Yellow-crested Cockatoo <i>Cacatua sulphurea</i>	LS & Sulawesi**
Savanna Nightjar <i>Caprimulgus affinis kasuidori</i>	LS (Savu)
Glossy Swiftlet <i>Collocalia esculenta sumbawae</i>	LS (Sumbawa, Flores)
Common Kingfisher <i>Alcedo atthis florestana</i>	LS (Lombok, Sumbawa, Flores, Alor, Wetar, Roti, Timor, Romang)
Cinnamon-banded Kingfisher <i>Halcyon australasia</i>	LS (Lombok, Sumba, Wetar, Timor, Romang, Damar, Babar, Leti, Moa, Tanimba
Elegant Pitta <i>Pitta maria</i> *	W**
Singing Bush-lark <i>Mirafra javanica parva</i>	LS (Sumbawa, Komodo, Padar, Rinca, Flores)
Wallacean Cuckoo-shrike <i>Coracina personata</i> *	LS & M (Kai)
Sumba Cicadabird <i>Coracina doherayi</i>	LS (Sumbawa, Flores)
Chestnut-backed Thrush <i>Zosterops doherayi</i>	LS (Lombok, Sumbawa, Flores, Timor)
Russet-backed Rhinomyias <i>Rhinomyias oscillans</i> *	LS (Flores, Sumbawa)
Spectacled Monarch <i>Monarcha trivirgatus trivirgatus</i>	LS (Flores, Lombok, Alor, Wetar, Timor, Kisar, Romang, Damar)
Thick-billed Flowerpucker <i>Dicaeum agile tinctum</i>	LS (Flores, Alor)
Yellow-spectacled White-eye <i>Zosterops wallacei</i>	LS (Sumbawa, Komodo, Rinca, Flores, Lombok)
Ashy-bellied White-eye <i>Zosterops citrinellus citrinellus</i>	LS (Savu, Roti, Timor)
Helmeted Friarbird <i>Philemon buceroides neglectus</i>	LS (Lombok, Sumbawa, Komodo, Rinca, Flores, Lombok, Pantar, Alor)
Zebra Finch <i>Taeniopygia guttata guttata</i>	LS (except Tanimbars)
Five-coloured Munia <i>Lonchura quincolor</i>	LS (Lombok, Sumbawa, Flores, Alor, Roti, Timor, Semata, Babar)
Pale-headed Munia <i>Lonchura pallida</i>	Lesser Sundas, Sulawesi
Black-naped Oriole <i>Oriolus chinensis broderipii</i>	LS (Lombok, Sumbawa, Komodo, Rinca, Flores, Paloe, Lombok, Pantar, Alor)
Wallacean Drongo <i>Dicrurus densus</i> *	LS & M

LS = Lesser Sundas; M = Moluccas; W = Wallacea. Subspecies are indicated by trinomials.

*Subspecies endemic to Sumba. **P. elegans recorded outside of Wallacea, once on Nusa Penida, near Bali (Mackimmon and Phillips 1993). C. sulphurea occurs natively outside of the Lesser Sundas and Sulawesi only on Salembu Besar (Java) and N. Penida (C&B).

Species	Jones <i>et al.</i>	Collar <i>et al.</i>
Sumba Button-quail <i>Turnix everetti</i>	Insufficiently Known	Vulnerable
Sumba Green Pigeon <i>Trogon teysmannii</i>	Susceptible	Near-threatened
Red-naped Fruit-dove <i>Ptilinopus doheryi</i>	Vulnerable	Vulnerable
Yellow (Sulphur)-crested Cockatoo <i>Cacatua sulphurea</i>	Endangered (subspecies)	Endangered (sp)
Eclectus Parrot <i>Eclectus noronae cornelia</i>	Endangered	Subsp not listed
Great-billed Parrot <i>Tamignathus megalorynchos sumbensis</i>	Endangered	Subsp not listed
Cinnamon-banded Kingfisher <i>Halcyon australasia</i>	Vulnerable	Near-threatened
Sumba Boobook <i>Ninox rudolfi</i>	Susceptible/Insufficiently Known	Vulnerable
Sumba Hornbill <i>Rhyticeros everetti</i>	Vulnerable	Vulnerable
Elegant Pitta <i>Pitta elegans maria</i>	Safe/Low Risk	Subsp not listed
Sumba Cicadabird <i>Coracina doheryi</i>	Safe/Low Risk	Near-threatened
Chestnut-backed Thrush <i>Zoothera doheryi</i>	Safe/Low Risk	Not listed
Russet-backed Rhinomyias <i>Rhinomyias oscillans sressemanni</i>	Safe/Low Risk	Near-threatened
Asian Brown Flycatcher <i>Muscicapra dauurica segregata</i>	Insufficiently Known	Data Deficient (l isted as a full sp)
Sumba Flycatcher <i>Ficedula harterti</i>	Safe/Low Risk	Near-threatened
Apricot-breasted Sunbird <i>Nectarinia buetikoferi</i>	Safe/Low Risk	Not listed
Yellow-spectacled White-eye <i>Zosterops wallacei</i>	Safe/Low Risk	Not listed
Red-headed Myzomela <i>Myzomela erythrocephala dammermanni</i>	Safe/Low Risk	Not listed

Collar *et al.* (1994) consider three other species that occur on Sumba as Near-threatened. One of these, *Numenius madagascariensis*, is non-breeding (in southern Asia) and breeding is either not known or unconfirmed in the other two *Ardea sumatrana* and *Caloenas nicobarica*.