

A REVIEW OF THE STATUS AND DISTRIBUTION OF THE BORNEAN BRISTLEHEAD

By

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Summary

We compiled all documented records of Bornean Bristlehead *Pityriasis gymnocephala* to determine what is known about the life-history and distribution of this enigmatic species. *Pityriasis* is a relict cracticid, related to the Australian magpies and butcherbirds. It is a highly social species and widespread throughout Borneo in forests below 1000m elevation, but rarely encountered.

Introduction

Pityriasis gymnocephala, the Bornean Bristlehead (formerly the Bald-headed Woodshrike), is an enigmatic Bornean endemic, whose rarity and peculiarities make it one of the most sought after species on the island. To provide a foundation for further research into the life-history of *Pityriasis*, we have compiled historical, ecological, and distributional information on this interesting bird.

The word '*Pityriasis*' comes from Greek, and means 'suffering from dandruff'. The species name '*gymnocephala*' means "bald-headed" (Gove 1986). The most distinctive characteristic of *Pityriasis*, and the reason for its name, is the featherless patch on top of its head, which is covered with orange bristle-like protrusions. There are, in feet, no true bristles anywhere on the head of *Pityriasis* (Stettenheim, 1973). "The top of the head is covered with a dense carpet of finger-like outgrowths of skin. These are not bristles although they resemble them in a dry study skin. Examination of a spirit specimen shows that they are outgrowths of the skin itself' (Raikow *et al.* 1980:133). Stettenheim describes them as "a thatch of filamentous warts 3 to 4mm long" (1973:226). *Pityriasis* also has dark grey bristle-like modified contour feathers on its ear coverts and upper breast. The remainder of the face, neck, and thighs is bright red. Most of the rest of the body is black, except the breast feathers and scapulars, which are charcoal gray with black edges. These latter feathers give the bird a scaled appearance. The wings are long and powerful, with a white patch visible only in flight. The bill, which resembles that of a shrike, is massive and strong with a hooked tip to the upper mandible.

Taxonomic History

The taxonomic history of *Pityriasis* was reviewed by Ahlquist *et al.* 1984. Here we supplement and update their account.

For almost 150 years, the relationships of the Bornean Bristlehead remained obscure. Temminck described the type specimen in 1835. He believed that *Pityriasis* was related to the genera *Cracticus* and *Gymnorhina*, the Australian butcherbirds and magpies of the family Cracidae. In 1877, Sharpe created a new family called Prionopidae which was a catchall for a variety of problematic genera from the Ethiopian, Oriental, and Australian regions. In 1903, Sharpe placed *Pityriasis* with the shrikes in the family Laniidae, immediately adjacent to Prionopidae on his linear list. Count Salvador (1874) was the first to suggest that *Pityriasis* was a starling, related to the mynas (*Gracula*). In Gadow's (1883) catalogue, *Pityriasis* was placed in the family Laniidae, subfamily Gymnorhinae, with *Gymnorhina* and *Cracticus*.

In 1896, Edward Harriett wrote about an egg of *Pityriasis* that had been found in the oviduct of a collected specimen at the Sarawak Museum. The egg, which measured 1.25 x 1 inch (31 x 25mm), had a pure white base dotted with large round and oval bright brown and slate grey spots of various sizes, which formed an irregular ring on the larger end. Bartlett believed that the egg indicated a close relationship between *Pityriasis* and *Gymnorhina* of Australia, as suggested earlier by Temminck and Gadow.

Shelford (1899) disagreed strongly with Bartlett. He argued that the egg resembled the eggs of the Laniidae, but he also believed that oology alone could not be used to determine relationships. His examination of the internal anatomy revealed similarities between *Pityriasis* and *Gracula*.

Mayr (1943) reconsidered Sharpe's placement of 18 genera included in or associated with the family Prionopidae, including *Pityriasis*. He believed that *Pityriasis* has no close relatives, and did not accept its placement in the subfamily Gymnorhinae of the family Laniidae. "It is certainly not a shrike, but either an aberrant starling or babbler," said Mayr. On the basis of the colour pattern and the bare areas of skin around the eyes, Mayr tentatively placed it in Sturnidae. He admitted, however, that the structure of the feathers contradicted this placement. After Mayr's revision, he left only three genera in the family Prionopidae and consigned all the others to different families. Delacour (1947) and Amadon (1943) concurred with Mayr and placed *Pityriasis* in Sturnidae.

In 1951, Mayr and Amadon changed their minds and included the subfamily Pityriasidinae in the family Prionopidae, while recognizing the geographic problems this presented. Prionopidae without *Pityriasis* contained only three genera, all of which were restricted to Africa. For *Pityriasis* to be included in this family would be extraordinary, except that the taxa share several features, including overall proportions, wing pattern, and the specialization of head feathers (Mayr and Amadon 1951).

Beecher (1953), in his phylogeny of the oscines, placed *Pityriasis* in the subfamily Pityriasidinae of the Cracidae based on internal similarities. Hachisuka (1953) was also unhappy with the allocation of *Pityriasis* in the Sturnidae; he felt that its closest relative was *Cracticus* of the family Cracticidae, based on commonality in behaviour and external morphology.

Smythies (1981) noted that "the resemblance to starlings is purely superficial" It is interesting, however, that Sarawak Malays, who may have been more familiar with the field aspects of *Pityriasis* than most ornithologists of the day, associated Bristleheads with mynahs. They call it "Tiong Batu," which means Stone Mynah (Roth 1896, Banks 1935). The reason for the name "Stone Mynah" is unknown, but it suggests similarity to the Hill Myna *Gracula religiosa*, which is simply called "Tiong," on the basis of its call.

Rand (1960), in his checklist of the birds of the world, included Pityriasinae and Prionopinae as subfamilies of Laniidae. Thompson (1966) asserted that *Pityriasis* is a member of the Cracticidae based on a comparison of skeletons. More recently, Raikow *et al.* (1980:150) provided support for Rand's placement: "The limb musculature strongly supports its inclusion in the Laniidae and indicates that it is the primitive sister taxon of the Prionopinae." Rand and Raikow felt that the bare area of rough skin around the eye supported this conclusion.

Until 1984, the question of the Bornean Bristlehead's affinities was still uncertain. All of the taxonomic allocations had been suggested tentatively, and each could easily be refuted. *Pityriasis* had a unique combination of characteristics which prevented its placement in any particular family. Ahlquist *et al.* (1984) believed that they solved the mystery, however, through the use of DNA-DNA hybridization. Their comparisons indicated that *Pityriasis* is most similar genetically to the cracticids, including another isolated relict, *Peltops* of New Guinea (Sibley and Ahlquist 1984).

Habitat and Distribution

To understand the habitat requirements and gain a better picture of the distribution of *Pityriasis*, we have compiled a list of records (Table 1). This list contains records from about 60 sites in Kalimantan, Sarawak, Brunei, and Sabah, many of which are plotted in Figure 1.

Pityriasis is rare or uncommon in most of Borneo. It is absent from many checklists, and several experienced observers have never seen it. Smythies saw it only 5 times. His sighting in the Andalau Forest (Fig. 1, #1) on 24 December 1952, was his first record of this species in seven years (Smythies 1955). E. Banks (former curator of the Sarawak Museum) told Smythies that he had seen the bird only once in twenty years (Smythies 1957).

Despite its rarity, *Pityriasis* seems to be widespread on Borneo, as records come from all parts of the island. Table 1 and Figure 1 show the greatest concentration of records in Sabah. While Sabah may possibly be a stronghold for this species, its apparent abundance there is also likely to be an artifact of the extensive coverage given to Sabah by collecting expeditions and surveys.

Figure 1 also shows a concentration of records around the coast of Borneo. This pattern is almost certainly the result of extensive coverage due to the accessibility of coastal areas.

Experience has shown that there are *few* (or perhaps no) locations where *Pityriasis* can be found with certainty, indicating that this species is truly an unpredictable wanderer of the forest. One site where *Pityriasis* has been recorded many times is the Kabili-Sepilok Orangutan Reserve near Sandakan, Sabah (Fig. 1, #28). Nevertheless, finding the bird there on a given day is difficult (B. King pers. comm.). Curran (ms.) observed *Pityriasis* on 15 occasions during 1985 at Gunung Palling (Fig. 1, #13), but she reported 3-4 month gaps between sightings. During a stay of six weeks at Bole River in Sabah (Fig. 1, #20), the WFVZ recorded *Pityriasis* only twice (on two consecutive days). The usual patchiness and unpredictability of this bird suggests that Bristleheads probably travel over relatively large areas to find abundant food. When breeding, however, the birds appear to stay in one area. For example, during an apparent breeding period in May, 1982 at Brumas, Sabah (see Behavior and Social Systems), *Pityriasis* was observed daily by the WFVZ over a period of two to three weeks.

Bristleheads occur over a wide range of altitudes and forest types. Although Smythies (1981) suggested that *Pityriasis* may occur particularly in peat swamp forest (i.e., areas that were rarely visited by ornithologists), subsequent work in peat swamp indicates that the bird has no such preference. Instead, it seems to be mostly a bird of tall, good-soil forests.

In eastern Sabah, *Pityriasis* has been recorded fairly regularly at low altitudes, e.g., in Sepilok Orangutan Reserve (Fig. 1, #28) and Sapagaya Forest Reserve (Fig. 1, #27). It has also commonly been recorded in upland areas in eastern Sabah at ca. 200m, e.g., Bole River (Fig. 1, #20), Brumas Timber Camp, Danum Valley (Fig. 1, #22), and hnbak River (Fig. 1, #23). Fogden (1976) recorded *Pityriasis* in primary mixed dipterocarp forest at 500m altitude at Tutoh, Sarawak. Curran found the bird in two distinctly different habitats: rich alluvial bench of only 15m altitude, and upper montane granite forests of nearly 1000m altitude at Gunung Palling (Fig. 1 #13). One unusually high sighting was in coniferous forest at 1000-1200m in the Maliau Basin of south-central Sabah (Fig. 1, #26; Yong *et al.* 1989).

While most records of *Pityriasis* are from tall forests growing on good-soil, there are records from a variety of other forest types. *Pityriasis* occurs (uncommonly) in Tanjung Puting National Park (Fig. 1, #8) in Central Kalimantan (Nash and Nash 1988), where poor-quality soils of the coastal plain predominate (bin Jalan and Galdikas 1987). A particularly unusual sighting was reported by Nash and Nash (1988) from Tanjung Puting, where a lone individual was observed in low scrub habitat. In Sabah,

Pityriasis has been found in upland kerangas forest at Labau River (Fig. 1, #24) and also in 20-year old lowland logged forest near Gomantong (fig. 1, #25). This latter sighting may have been the result of extreme conditions posed by the 1983 El Nino drought. *Pityriasis* has also been found in recently logged forest (Holmes and Burton 1987, Lambert 1990). These areas may actually attract *Pityriasis* by offering abundant insect prey. Conversely, they may simply permit easier access and viewing of birds.

The wide variety of forest types in which *Pityriasis* has occurred indicate that this species could be found in almost any primary, or adjacent logged, forest in the Bornean interior. The only types of forests for which there is no evidence of *Pityriasis* are those at extremely high altitude (1200m or higher), and those which are very wet and swampy.

Behaviour and Social Systems

Much of the life-history of *Pityriasis* remains a mystery. What we know about it has been pieced together from old specimen records and a few more recent observations. Most of the modern records on *Pityriasis* behaviour and ecology come from the Gunung Pahmg project in eastern Kalimantan (e.g., L. Curran, ms; M. Leighton pers. comm) and from the Western Foundation of Vertebrate (WFVZ) Expedition to Sabah (1981-1983), in which Sheldon participated.

Flocking. - *Pityriasis* is a social species; almost all the sight records are of more than one bird. Usually Bristleheads are seen in flocks of up to eight individuals. They often join with other forest species in mixed flocks. Species with which they congregate include malcohas, trogons, hornbills, woodpeckers, babblers, magpies, and drongos.

Hose (1893) reported that when one bird is shot the others all fly down to it, a habit that makes *Pityriasis* easy to collect (once it has been found). Thompson (1966:409) observed the same type of behavior and said that the birds are "exceedingly tame."

Vocalizations. - Flocks of *Pityriasis* constantly call with a variety of snorts and whistles (e.g., Thompson 1966, Smythies 1981). An unobtrusive nasal contact call is distinctive of a flock that may be otherwise quiet. Curran (ms.) described some calls as follows: "Their most distinctive vocalization consists of a high long tone followed by a low even tone of similar length with a quick 5 note staccato then a short trailing note. I have watched three individuals 'chorus' at irregularly spaced intervals for up to 15 minutes."

Food. - *Pityriasis* is most often seen foraging in flocks for large insects, which are gleaned from the foliage in the mid-upper part of the forest canopy (Hose 1893, Mayr 1938, Thompson 1966, Curran ms). They have been noted to eat: orthopterans, including walking sticks (phasimids), grasshoppers, beetles, lepidopteran larvae, cockroaches, and spiders and termites (Smythies 1981, Curran ms, Sarawak Museum catalog, WFVZ specimen data). M. Leighton (in Curran ms) observed a flock feeding on fruit in the mid-high canopy of tall lowland forest.

Breeding and Nesting. - Charles Hose (1893) felled a tree which contained a cavity nest of what he believed was *Pityriasis*. Hose's only reason for believing this was that he found a number of individuals in the immediate area. Unfortunately, all of the eggs were crushed in the fall of the tree. Other than this unconfirmed record, the only *Pityriasis* egg so far described came from the oviduct of a collected specimen (Bartlett 1896, see above). As this egg and subsequent genetic data indicate an affinity between *Pityriasis* and cracticids (Bartlett 1896, Sibley & Ahlquist 1984),

it seems unlikely that *Pityriasis* would nest in cavities; all the Australian cracticids nest in cups constructed of sticks and grasses (Pizzey 1980).

The WFVZ expedition observed flocks of Bristleheads carrying nesting materials in May, 1982 at Brumas in southeastern Sabah (Fig. 1, #21). Cuiran (ms.) observed two different (apparent) females feeding one juvenile. These observations suggest that non-breeding adults assist in nesting and rearing young, thus implying that Bristleheads may be communal nesters.

Based on specimen data, *Pityriasis* appears to breed during a period of several months in eastern Sabah (possibly depending upon rainfall or other local conditions). A female specimen collected on 18 May 1982 at Brumas, Sabah, had enlarged ova and ruptured ovarian follicles (indicating recent egg laying). A specimen collected at Sapagaya Forest Reserve near Gomantong, Sabah, on 5 August 1983 had a 14x14mm oviduct egg. A specimen collected at Quoin Hill, Sabah, on 4 October 1962 had a 15mm ovum, an enlarged oviduct, and a well-developed brood patch (Thompson 1966);

Age and sexual characteristics. - Few records of juvenile Bristleheads exist. In cases where juveniles have been observed or collected, there is a consistently high adult to juvenile ratio within flocks (Hose 1893, Mayr 1938, Curran ms). Hose (1893) was the first to discover plumage differences in juveniles of the species: thighs of the juveniles are black rather than red; ear coverts are red; the hindneck is spotted with black; on their bald heads are just a few red feathers; and they show a red eye ring.

Females of *Pityriasis* are thought to differ from males by the red edges on some of the flank feathers (Smythies 1981). From an examination of museum specimens, we have found that while females always show at least some red on the flanks, some males can also show this characteristic. Thus, the red edging is not a reliable indicator of sex.

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LOCALITY	ALT.	MAP No.	SEX	DATE	REFERENCES AND NOTES
BRUNEI					
Andalau Foresi Reserve	60m	1	8	24 Dec 1952 1957	Smythies (1955) Smythies (1958), 4 flocks
30km SW of Bandar Sen Begawan		2		11 Apr 1976	Kidd & Beales (1977)
Anduki Forest			9	Jun 1972	Smith (1977); seen twice
Badas				1986-87	EI kin & Mann (1988)
Sungai Belalong				Jan 1992	D.R. Wells (in litt. 1994)
KALIMANTAN					
Tiong Bai, W. Kalimantan			M	16 Aug 1909	UMMZ #100351 (W.F.H. Rosenberg)
Parit, Cempaga R. C. Kalimantan		3	13	Jun-Jul 1935	coll. by J.J. Menden (Mayr 1938)
"				4 M&F 16 Jun 1935	AMNH #447849-447852 (J.J. Menden)
East Kalimantan				C. 1879	NNM-Leiden (C. Bock)
Sukamandang, C. Kalimantan		4		10 Apr 1984	Holmes & Button (1987)
near Palangkaraya, C. Kalimantan			5 4 or 5	Sep 1985	Holmes & Burton (1987)
near Muara Joloi, C. Kalimantan			6 4 or 5	Sep 1986	Holmes & Burton (1987)
Kutai, E. Kalimantan			7		Leighton in Curran (ms.)
"					Bogor Museum
"				Jul-Sep 1974	Pearson (1975); "common in canopy"
Tanjung Puling National Park			8		bin Jalan & Galdikas (1987)
Bengin River				Mar-Sep 1986	Nash & Nash (1988)
"				2 M&F 25 Sep 1956	Bogor Museum
Sambera, E. Kalimantan			F	8 Feb 1940	Bogor Museum
Riam, Kolawaringin C. Kalimantan		9	F	9 Nov 1935	Bogor Museum; Mayr (1938) (J.J. Menden)
"			F	15 Nov 1935	Bogor Museum; Mayr (1938) (J.J. Menden)
Jumbian, E. Kalimantan			F	14 Mar 1939	Bogor Museum
Muara Teweh		10		pre-1889	Fischer (in Everett 1889, Smythies 1957)
Kapuas drainage		11		pre-1889	Schwarter (in Everett 1889, Smythies 1957)
"					NNM-Leiden (Schwaner)
Pontianak		12		pre-1889	Diard (in Everett 1889, Smythies 1957)
Gunung Palung Nature Reserve		13		Apr-Dec 1985	L. Curran; 15 sightings
Lihong, Bahaja			M		Biasius & Nehrkorn (1881) (Grabowski) (Smythies 1957)
Lake Gadong Marong					Bock (1881:121) & Smythies (1957)

LOCALITY	ALT.	MAP No.	SEX	DATE	REFERENCES AND NOTES
Toemb, Macoewei			M	Oct1915	Oslo #18161 Vocus(1961)
Matan		37	M	12 Sep 1866	Salvadori (1874) (Beccari); (4)
SABAH					
Quoin Hill, Tawau	250m	14	3	4 Oct 1962	UMMZ #158362 & 158363 Thompson 1966
Kalabakan area		15	4	8 Nov 1962	USNM #484232 (F); (Thompson 1966)(many records for this area, see also Brumas)
Brumas	200m	21		May 1982	WFVZ (unpub.)
"				April 1977	Yale Univ. (unpub.)
Little Kretam River			F	22 Jun 1950	FMNH #212142 (Davis 1962)
Segaliud River				Jire-1883	Nicholson (1883:88) (Lempriere)
Sandakan		16		pre-1889	Everett (1889) (Pryer)
Mt. Magadelena	950m	17	3 M	21 Jun 1956	B.M.N.B.E. 1956. R. Sims (unpub. ms.)
Apas River		18		? 1964	M.M. Norman (1964)
Batu Punggul	300m	19		May 1984	Francis (pers. comm.) Francis (1987)
Bole River	200m	20		Feb-Mar 1982	WFVZ (unpub.), see also Lambert (1990)
Danum	300m	22			see Lambert (1990); many sightings
Imbak	200m	23		July 1982	WFVZ (unpub.)
Labau River	400m	24		Oct1982	WFVZ (unpub.)
Gomantong		25	F	5 Aug 1983	WFVZ #41795
Maliau Basin conservation area	1000m	26		Apr-May 1988	WWFM expedition (Yong et al. 1989)
Sapagaya	SL	27		Jul-Aug 1951	FMNH catalog (Davis 1962)
Sepilok	150m	28			many sightings (see e.g. Francis 1984)
Sepilok	150m	28		Jan 1992	D.R. Wells (in lit. 1994)
Tabin	150m	29			several sightings (e.g. Goh et al. 1989)
SARAWAK					
Mt. Duit	300m	30		18 Feb 1894	USNM #163128 (C. Hose)
"	300m		M	Jan 1894	ANSP #52846 (C. Hose)
"				Oct1891	NUSM #ZRC.3.5030 (C. Hose)
Bararam district				May 1886	AMNH #655767 (A.H. Everett)
"				May 1887	AMNH #655769 (A.H. Everett)
"			JUV.		AMNH #655765 (C. Hose)
"					AMNH #655766 (C. Hose)

LOCALITY	ALT.	MAP No.	SEX	DATE	REFERENCES AND NOTES
Baram district					AMNH #655768 (C. Hose)
"					AMNH #655770 (C. Hose)
"			M	Jun 1896	ANSP #61594 (C. Hose)
"			M	Jun 1896	NUJM #ZRC.3.5031 (C. Hose 1896)
"			M	19 Sep 1920	NUJM #ZRC.3.5032 (E. Andreini 1920)
Baram River				pre-1889	A.H. Everett (1889)
"				Dec 1894	AMNH #655771 (C. Hose)
"			M	Apr 1896	ANSP #61591 (C. Hose)
"			M	May 1896	ANSP #61588 (C. Hose)
"			M	Jun 1896	ANSP #61589 (C. Hose)
"			F	Jun 1895	ANSP #61590 (C. Hose)
"			F	14 Jan 1898	ANSP #61586 (C. Hose)
"			F	Apr 1896	ANSP #61592 (C. Hose)
"				May 1895	ANSP #61587 (C. Hose)
Marudi, Baram		31	6	2 Jan 1898	ANSP ##61580-61585 (5M& 1F)
Balanian			M	2 Jul 1910	MCZ #47588 (R. S. Hardy)
"			F	15 Jul 1910	MCZ #47590 (R. S. Hardy)
"			M	20 Jun 1910	MCZ #47587 (R. S. Hardy)
"			F	15 Jul 1910	MCZ #47589 (R. S. Hardy)
Miri		32		26 Mar 1915	MCZ #69784
Cape Datu, Telok Sarabang		33	2 F	31 Dec 1952	Sarawak Mus. #LWT/TH 5915
"			3 M	31 Dec 1952	Sarawak Mus. #LWTYTH 5918
Similajau			2 F	25 Jan 1953	Sarawak Mus. #LWT/TH 5921
Mt. Matang		38	2 F	6 Apr 1954	Sarawak Mus. #LWT/TH 5923
"			2 M	16 Feb 1954	Sarawak Mus. #LWT/TH 5925
"			4	pre-1883	Beccari (1883); one in three years of collecting
Gunung Pueh	300m		6	20 Aug 1956	Sarawak Mus. #B5262/3.5.6.9 & 10 (4M & 2F)
Long Lama, Baram		34		9 Feb 1956	Sarawak Mus. #B5261
"				Feb 1955	Sarawak Mus. #B5264
"				Feb 1955	Sarawak Mus. #B5287
Sungai Engkalat, Sibul		35	F		Sarawak Mus. #B5268 (Smythies 1958)
Jambusan		36	3 M&F	1880	Blasius & Nehrkomi (1881) (Platen 1880)
Mt. Poi		39		Apr 1871	Sharpe (1877) (A.H. Everett's hunters)
"	300m		7	Aug 1956	Harrison in Smythies (1957)

LOCALITY	ALT.	MAP No.	SEX	DATE	REFERENCES AND NOTES
Kuching 12th mile				1949-55	T. Harrison (unpub.)
Tutoh	600m				Fogden (1976), "uncommon-rare"
Mendaram River					Snythies (1958)
Manup area	hills			12 Apr 1871	Sharpe (1877) (Everett's hunters)
Kuala Sekarong				Apr 1871	Sharpe (1877); sight record by Everett
Sarawak				pre-1889	A. H. Everett (1889) (A.R. Wallace)
Sarawak			M	Oct 1892	ANSP#61579(E. & C. Hose)
UNSPECIFIED LOCALITIES					
Bakong			F	18 Feb 1923	FMNH #304768
Borneo					MCZ #69783
Borneo					AMNH #655772
Borneo					AMNH #168829 (A.H. Everett)
Borneo					AMNH #168828 (A.H. Everett)
Borneo					USNM #148564

