Suggested ring (band) internal diameters suitable for South Asian vultures

Rhys Green, 6 March 2023

Introduction

Leg rings (bands) are sometimes used to mark vultures as individuals. Telescope-readable engraved plastic and metal rings are available. Rings have an important advantage over patagial wing tags in that they can be designed to be difficult for the birds to remove and can also have low breakage rates. Patagial wing tags are often lost within a few years of fitting and are therefore problematic to use for long-term studies of survival by mark-resighting analysis. The most reliable rings for long-term marking are probably rivetted alloy rings, which have been used to mark large eagles in Europe for a long period and appear to have low loss rates. Engraved plastic rings can also be used, but the ring overlap should be glued with an appropriate cement to reduce the risk of loss or of the ring opening in hot conditions and trapping the foot. Glued plastic rings may still be lost if the ring fractures. This may occur when the ring strikes an object, especially under cold conditions. The purpose of this note is to suggest appropriate internal diameters for leg rings for South Asian vultures, based on a review of several sources of usual practice and recommendations for similar species.

Method

I extracted ring internal diameters from lists obtained from six sources (see source list). Where more than one size was given in a list, I took the largest value. I wished to relate listed ring diameter to body weight to allow ring sizes to be interpolated for South Asian species with no listed ring size. I therefore extracted the upper bound of the range of body weights for each species given in the Handbook of the Birds of the World. The rationale for using maxima of ring diameter and body weight is that injury caused by using the wrong ring size occurs most frequently when the ring is too small and constricts the leg. Rings can also cause injury if they are too large and slip over the foot. However, I judge that error in this direction is unlikely to be frequent for vultures, especially because their sexual dimorphism in size is small.

Results

Data from ring size lists and maximum body weights are shown in Table 1. Ring diameter is plotted against maximum body weight in Figure 1.

Conclusion

Based upon Table 1 and Figure 1, I have suggested ring diameters suitable for South Asian vultures in Table 2. It is important to understand that the data used in this review are from sources which give recommendations for good practice. My suggestions are not based upon studies which compare injury rates caused by rings for birds marked with rings of different diameters. I do not think that such studies have been done for these species. However, the ringing schemes from which data were obtained have been operating for considerable periods, so it seems likely that there will be low injury rates if these suggestions are followed. The use of leg rings is not recommended for New World vultures and condors, but rings have been widely used for Old World vultures and problems have been reported rarely.

Sources

S1. Australian Government (2022) Australian Bird and Bat Banding Scheme https://www.dcceew.gov.au/science-research/bird-bat-banding

S2. de Beer, S.J., Lockwood, G.M., Raijmakers, J.H.F.A., Raijmakers, J.M.H., Scott, W.A., Oschadleus, H.D. & Underhill, L.G. (2001) SAFRING Bird Ringing Manual. ADU: Cape Town http://safring.adu.org.za/downloads/ring-manual-04.pdf

S3. Faber, M. (2010) Mostly used colour rings sizes for Western Palearctic bird species. https://cr-birding.org/sites/default/files/size%20c-ring.pdf

S4. Redfern, C.P.F. & Clark, J.A. (2001) Ringer's Manual. British Trust for Ornithology: Thetford.

S5. USGS (2022) Species Table and Recommended Band Sizes. https://www.pwrc.usgs.gov/bbl/manual/speclist.cfm

S6. Margalida, A. (2023) Ring sizes used for vultures in Spain. Personal communication.

Figure 1. Ring (band) internal diameters (mm) listed by six sources for species of vultures and large eagles are shown by the coloured circles. Colours denote the sources given in the source list (S1=yellow, S2=orange, S3=blue, S4=brown, S5=green, S6=red). Diameters are plotted against the upper bound of the ranges of body weights given in the Handbook of the Birds of the World (see Table 1). Vertical dashed lines show maximum body weights for six species of South Asian vultures.

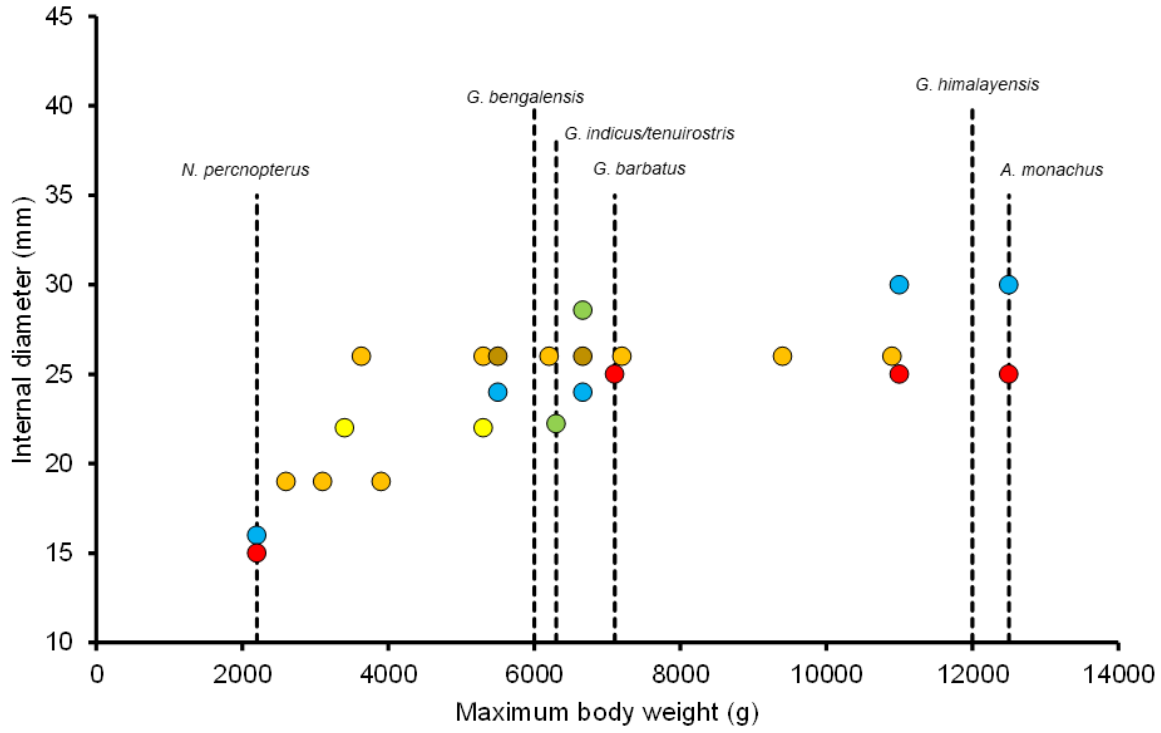

Table 1. Internal diameters (mm) of rings (bands) for vultures and large eagles given in lists available from six sources (S1-S6: see source list). Also shown id the upper limit of the ranges of body weight (g) given in Handbook of the Birds of the World (Volume 2).

			Ring/band internal diameter (mm)					
English name	Species	Body weight	S1	S2	S3	S4	S5	S6
Bearded vulture	*Gypaetus barbatus*	7100						25
Egyptian vulture	*Neophron percnopterus*	2200			16			15
Hooded vulture	*Necrosyrtes monachus*	2600		19				
African white-backed vulture	*Gyps africanus*	7200		26				
White-rumped vulture	*Gyps bengalensis*	6000						
Indian and slender billed vultures	*Gyps indicus &tenuirostris*	6300						
Himalyan griffon vulture	*Gyps himalayensis*	12000						
Eurasian griffon vulture	*Gyps fulvus*	11000			30			25
Cape vulture	*Gyps coprotheres*	10900		26				
Red-headed vulture	*Sarcogyps calvus*	5400						
White-headed vulture	*Trigonoceps occipitalis*	5300		26				
Cinereous vulture	*Aegypius monachus*	12500			30			25
Lappet-faced vulture	*Torgos tracheliotus*	9400		26				
Martial eagle	*Polamaetus bellicosus*	6200		26				
Tawny Eagle	*Aquila rapax*	3100		19				
Steppe eagle	*Aquila nipalensis*	3900		19				
Golden eagle	*Aquila chrysaetos*	6665			24	26	28.58	
Wedge-taied eagle	*Aquila audax*	5300	22					
White-bellied sea eagle	*Haliaeetus leucogaster*	3400	22					
African fish eagle	*Haliaeetus vocifer*	3630		26				
White-tailed eagle	*Haliaeetus albicilla*	5500			24	26		
Bald eagle	*Haliaeetus leucocephalus*	6300					22.23	

Table 2. Ring (band) internal diameters (mm) suggested for South Asian vultures based on Figure 1.

English name	Species	Internal diameter
Bearded Vulture	*Gypaetus barbatus*	26
Egyptian Vulture	*Neophron percnopterus*	16
White-rumped Vulture	*Gyps bengalensis/tenuirostris*	26
Indian & Slender-billed Vultures	*Gyps indicus*	26
Himalayan Vulture	*Gyps himalayensis*	30
Cinereous Vulture	*Aegypius monachus*	30