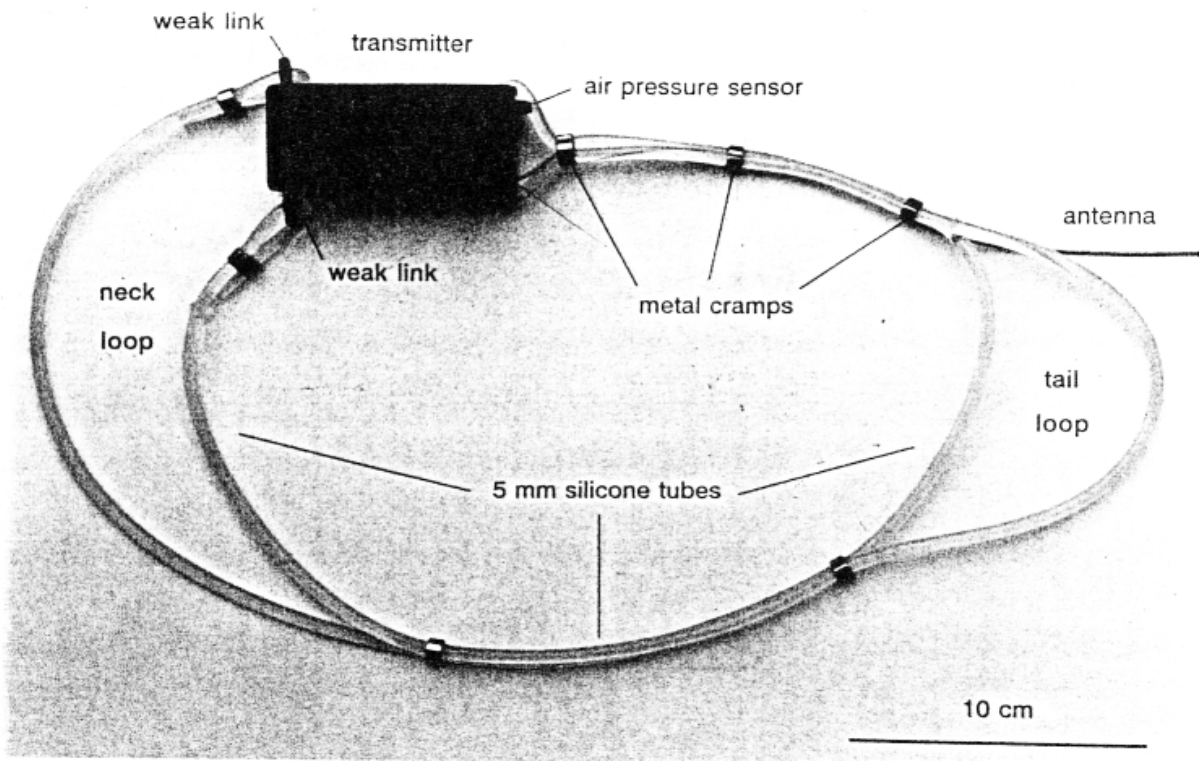
MOUNTING OF THE TRANSMITTER HARNESS



Citation: BÖGEL, R. 1994: Measuring Locations and Flight Altitudes of Griffon Vultures (*Gyps fulvus*) by an Automatic Telemetry System. In: MEYBURG, B.-U. & R.D. CHANCELLOR (eds.): Raptor Conservation Today. WWGBP / The Pica Press, London, pp. 325-333.

ADDITIONAL RECOMMENDATIONS

If you are going to use a harness mounting device, there is one thing which is to my opinion absolutely essential:

There MUST be one structure in the harness which functions as predisposed weak link and which has to guarantee that the harness will break in a way to ensure a safe release of the whole device. Harnesses which break unpredictably impose a big risk of injury to the bird and can be dangerous!

We use a PERBUNAN ring (which normally serve as a seal for stopcocks) which is manufactured in almost any size and diameter. We fold this and insert it into a channel at the front end of the transmitter housing. The mechanic bending stress and the influence of oxygen result in “corrosion process” which finally results in a break of this ring. According to our experience, a diameter of the PERBUNAN ring of 3,5 mm will break after approximately 2-3 years (a sharp bending-radius is critical in this context as the mechanic stress is an important prerequisite for the functioning of the week link). We use a solid silicon string as harness material because of its flexibility. While we used 5 mm diameter in our early designs, we changed later on to 3 mm diameter which we now additionally cover with a teflon tube (this kind of inflexible

material which most raptor researchers use). This serves as a safe and rigid protection for the silicone core without loosing the flexibility of the harness. We always felt "uncomfortable" with an inelastic harness because birds may still grow or may suffer periods of hunger, both resulting in a poor fit of the harness which may cause some harm (skin abrasion if too tight or risk of getting entangled if too loose). In contrast to usual designs, our design also deviates from others by the “ventral bridge" between the neck and tail loop. This results in some extra clearance for the wings.

If we fix a transmitter, we prepare the harness "ready to fix", begin with the tail loop and align the strip on one side of the neck and insert the (already fixed) PERBUNAN-ring through the mentioned channel. Then we fix the strip on the other side of the neck. Thereafter, we carefully adjust all points of the harness by sliding these "double-eared" metal cramps to the desired position and crimp it with a pair of pliers. The points which deserve most attention is the tail loop because this loop basically determines how much the harness can move in radial direction. Furthermore, it has to guarantee enough clearance at the cloak to enable a female bird to lay an egg !!! Concerning the neck loop enough space for the full crop after feeding is important. However, this is not very critical if the metal crimp is positioned directly cranial of the sternum. At last we position and fix the crimps at the weak link at the front side of the transmitter. Actually we had some cases where we felt later on that the harness may be a little too wide but we never felt that it might be too tight. This is probably due to the fact that the transmitter and the harness finds its way through the plumage, thereby gaining some extra clearance. So, don't be to cautious!

We fix the basal part of the antenna with some extra crimps to reduce the risk of a basal antenna breakage (which results in a excessive loss of transmitting range!). The distant part of the antenna is completely free.

A certain problem of our design may be that it actually requires a defined mechanic layout of the transmitter housing because it requires those 2 tubes / channels through the transmitter housing. However, it is also possible to fix such tubes to transmitter housings as supplied by telemetry suppliers later on.

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