RACHIDIAL STRUCTURES OF FEATHERS AND THEIR POTENTIAL USE FOR DETERMINATION PURPOSES.

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A first approach in solving the problem of collisions between birds and aircrafts is the identification of the bird species involved.
Birdstrikes of the Belgian Air Force are reported by the pilot and/or maintenance personnel. A "Bird Identification Form" is send to our lab together with the bird remains. The identification of those remains is carried out as following:
1. macroscopical analysis;
2. microscopical analysis;
3. scanning electron microscopical analysis.
This procedure gives a positive identification in 90% of the cases.
Because none of the published methods gave satisfactory results, I developed a new method. I searched the feather from base to tip by means of the S.E.M.. In doing so I discovered microstructures on the rachis.
In an intraspecific study I found that these external rachidial structures are present along the total length of the rachis. I also discovered that neither the site of feather implantation nor the duration of preservation influenced the observed structures. Even the feathers of different individuals of the same species show the same external rachidial structures: they are neither influenced by sex or age.
Since there are no intraspecific differences I progressed to an interspecific study. A lot of different rachidial structures were found on the rachis. Five types of cell boundaries seem to be present, while the dorsal surface of the rachis shows at least six different structures.
All these features, discovered in an interspecific comparison, appear in numerous combinations.
I will focus further research on the Charadriiformes (gulls and waders). I intend to use these data for determination purposes and eventually to elucidate a few classification problems in the class of Aves.