



Observations of the Owl (24)

## Why Size Matters?

Remember King Kong, the XXXL gorilla that fell tragically in love with a blonde beauty in a handful of cinema movies? Or those ants in the 1954 movie 'Them!' that, after an atomic test, mutated into giant man-eating monsters?

Yeah, the fifties of the last century were particularly rich in 'horror' movies, featuring all kinds of

giant creatures: a mega spider in 'Tarantula', gargantuan grasshoppers in 'Beginning of the End' and there are no prizes for guessing what probably played the main part in 'The Black Scorpion'. Well, very few of those movies that many today call 'eco-horror films' were any good; however, most of them were ... hrrm ... somehow ... yes... wonderfully awful.

There is one thing, however, I have always wondered. As far as I know, giant flying birds never really made it into such movies. Of course, there is that legendary Hitchcock opus 'The Birds' but no *giant* birds ride the attacks, rather *crazed* gulls and crows. (The movie, by the way, doesn't give any answer as to why all those feathery fellows go that mad. Although, I could tell you a story or two about gulls and crows, believe me.)

Okay, so there are no giant birds in any movie. This is particularly strange since there are plenty of legends, which would certainly yield some *reeeeee*ally good scary stuff. Think of the Egyptian Phoenix. Or the Thunderbird, which according to many Native American myths, causes thunder by lifting a whale out of the ocean, carrying it high into the air and dropping it back into the sea. And we shouldn't forget the fearsome roc in several Arabian fairy tales – one of which, for example, destroyed Sinbad the Sailor's ships. Surprised? Well, let me tell you, there are plenty more myths about such super-birds, of which you humans have no inkling.

Anyway, no doubt all of us, birds and humans alike, apparently find it scintillating to experience such goose-pimple inducing or feather-shaking scenarios based around scary mega-animals.

But, as scientists, let's come back down to earth, to real life, and take up the issue from another angle. Let's talk about body size limits. Have you humans ever asked why you don't grow to fictional King Kong size? Well, I have certainly never given it much thought. Neither has it ever occurred to me to question why we owls never grow to be as large as a thunderbird... until a couple of weeks ago.

Indeed, it came as a real surprise to me that a team of *human* scientists recently addressed exactly this question. Yes, it is hard to admit but since Sievert Rohwer *et al.* from Washington University published their latest results in *PLoS Biology* (vol. 7(6): e1000132), I have somehow obtained a clearer view of myself.

It's not down to weight, it's my feathers! I cannot grow larger than I am; not because I would otherwise get too fat to fly, but rather because our feather growth limits the size of us flying birds.

Firstly, there are a couple of elementary facts you should know about our oh-so-precious feathers. They have a lot to withstand, you know. They can be damaged by the physical rigours of flight, by parasitic and bacterial infections and – last not least – through exposure to ultraviolet light. Therefore, it's crucial for us to periodically replace damaged feathers but this requires quite some time and energy.

Rohwer and co. have now studied 43 of my fellow flying species to assess the relationship between our respective sizes, the length of our flight feathers and the time we take to grow new ones. Their conclusion: our size is limited by the demands of keeping our feathers in good condition and not simply by the effort needed to keep us up in the air. "So, as birds get bigger, the rate of feather growth fails to keep up with the increase in flight-feather length, forcing larger birds to spend disproportionately more time growing their flight feathers," as Rohwer explained in *Nature News*.

My smaller fellows sequentially re-grow all of their 9 or 10 primary flight feathers per wing at least once a year. Rohwer *et al.* now suggest that the trade-offs involved in re-growing feathers place an upper limit of about three kilogrammes on birds that moult in this way.

Well, that might be true. I admit, for example, that I am heavier than three kilogrammes and, therefore, my flight feathers are so long that the time required to grow new ones makes this process far too time-consuming. After all, I also need some time to eat, breed and feed. Thus, I stretch my moult over almost three years, which isn't a huge problem at all because as a nocturnal bird, my flight feathers suffer only minor degradation from ultraviolet light. Some of my 'heavier fellows' replace a few feathers at a time, whereas others, such as geese and swans, replace them all simultaneously and temporarily forgo flight.

By the way, 15 kilogramme swans hold the current record for the heaviest flying birds.

Well, as I said, so far I've never really dreamed about becoming 'Thunder-Owl'. However, I still find myself intrigued as to why you humans were so desperately seeking reassurance that this would probably never transpire to be more than an unreachable dream. Could it be that deep inside your minds, slumbering fears are stirred by the slim chance that one day you might actually find yourselves eye-to-eye with a 15-metre, real-life 'Thunder-Owl'? Yes, in reality, not a movie!

Now that's definitely what I'd call a scintillating scenario. Maybe we should really think about it. Rohwer's study has at least given us a starting point (*hah, hah, hah...*).

Comments: [owl@lab-times.org](mailto:owl@lab-times.org)

*"One day you might actually find yourselves eye-to-eye with a 15-metre, real-life 'Thunder-Owl'."*

