

A POISONOUS BIRD !

Like many other members at the last ASSA General Meeting, I was amazed to hear of a genus of birds living in Papua New Guinea that are poisonous to the touch! Further research revealed the following fantastic facts.....



One day in 1989, a researcher called Jack Dumbacher caught a bird, called a Hooded Pitohui, in a net in New Guinea. The bird bit and scratched at Jack while he was removing it from the net. At some point, Jack put his finger in his mouth and found his tongue and lips went numb instantly. "My fingers started to burn," he recalls. "And if you put your finger in your mouth after handling a *Pitohui*, your mouth begins to tingle. It's a lot like tasting hot chilli peppers or touching a 9-volt battery." After some panic and a little investigation, it turned out that the *Pitohui* (pronounced "pit-oo-eeey," kind of like spitting) was poisonous and

thus the Hooded Pitohui was the first documented poisonous species of bird.

Since then two close relatives, also in the genus *Pitohui*, have also been found to be poisonous, although the toxin concentration varies between the species, with the Hooded Pitohui the most toxic, the Variable Pitohui intermediate, and the Brown Pitohui the least toxic. The poison of the *Pitohui* was identified and had only been seen once before - in poison arrow frogs. Since then a similar toxin has been found in another genus of New Guinea birds *Ifrita*. Together these two avian genera, *Pitohui* and *Ifrita*, which comprise seven endemic New Guinean passerine species, have been found to carry potent steroidal alkaloid neurotoxins known as batrachotoxins.

All three species of *Pitohui* are brightly coloured birds with red and black plumage with both male and female sharing the same showy plumage. The colour scheme of the *Pitohui* shares the same warning colours as the poison arrow frogs and is not surprising that the most toxic Hooded Pitohui is also the most strikingly coloured. The Pitohui's poison is concentrated in its skin

and feathers - distillation from a few milligrams of skin of the Hooded Pitohui will kill a mouse in a few minutes.

The toxin is thought to be a chemical defence against predators like hawks and snakes. The *Pitohui* would certainly cause an unpleasant sensation in the mouth of the snake, as well as birds of prey, which typically pluck the feathers before feeding on a bird carcass. The defense obviously works against the greatest predator of all as the *Pitohui* is known as the "rubbish bird" by New Guinea natives due to the taste of the birds skin and not prized as a food source! (They will occasionally eat the birds, only after it is skinned and prepared very carefully). Aside from tasting bad, humans who have consumed small portions of the skin have not suffered severe effects.

Not much is known about *Pitohui* biology and major aspects of their life histories remain to be discovered. One of the most important unknown things is how they make the toxin and how the birds themselves survive the poison in their bodies. It is known that keeping the birds in captivity gradually reduces their poisonous status. This suggests that the chemical involved may be derived from their diet (insects ?) in the wild but to date no similar alkaloids have been found in items taken by the birds. Certainly there is enough scope for many more years of research.

References: www.calacademy.org/research/bmammals/jdumbacher.html
www.pubs.acs.org/cen/critter/birds.html and www.interaktv.com/articles/pitohui.htm