

Raptor Update to all RVI's from Ron Skleney July 6, 2007

For your convenience and to ensure that we are communicating accurate information, please print the following information and put this with your raptor notes or raptor educators manual:

1) Feathers and waterproofing - (from March 2005):

A number of questions have come up regarding feathers, waterproofing and the preen (uropygial) gland. In reviewing my notes, these questions date back to May 2004. We have looked into this issue and conducted a literature review as well as consulted professional rehabilitators specializing in oil spill responses. Here are the important points of this research:

1) Waterproofing of feathers is a byproduct of the feather's structure and its proper alignment.

2) "The preen gland secretes a rich oil of waxes, fatty acids, fat, and water which, when applied externally with the bill, cleans feathers and preserves feather moistness and flexibility (Jacob 1978; Jacob and Ziswiler 1982). [excerpted directly from Gills, *Ornithology*, 2nd edition, pg. 77]. The salient point here is that the preen gland functions as a feather conditioner.

We will revise page 7, discussion point D of the "Raptor Educator Training Manual" as follows:

D. Feathers and waterproofing - Birds keep waterproof through the feather's structure and its proper alignment with surrounding feathers. Birds may spend significant portions of their resting time in preening (grooming and combing) feathers in order to maintain this proper alignment and to restore the original interlocking feather structure. Feather alignment is what ensures the bird's waterproofing. The preen (uropygial) gland secretes a waxy oil which when applied with the beak serves to condition feathers. This oil helps clean and moisturize the feathers, as well as extends the life of the feather. The preen gland can enhance feather condition but is not required for feather waterproofing.

I will provide revised pages to be inserted in your existing Raptor Educator Training Manuals. Please modify your raptor presentations to reflect this latest information. (If you are interested in the citations from our literature review, let me know. In the interests of brevity, I have not included them here.)

2) **Bird digestion** - (from April 2005/ Wendy Tresouthick literature review - also see attached Word document):

Let me first just say raptors do have gizzards.

I've again attached a copy of "Raptor Digestion Facts" that I compiled previously, and do admit, that after reading it, it can be misleading. Though it is titled "Raptor Digestion Facts", perhaps I should have titled it "Bird Digestion Facts". In other words, the way I wrote it, most bullet points refer to digestion of birds in general" and other bullet points refer to "owls" or "carnivorous species" as indicated. When I refer to grit in the bullet points, I am referring to birds in general. To clarify, the thick-walled, highly muscular gizzard is found in birds that have a primary diet of plant parts (especially seed-eaters, which of course birds of prey are not). Birds of prey have a thin-walled gizzard and do not usually ingest grit. If there is any confusion on the attached document, just ask me and I'll clarify, and if necessary, I'll rewrite.

The main resource I used in compiling the info was the The Audubon Society Encyclopedia of North American Birds by John K. Terres. On page 443

"In carnivorous, or meat-eating, birds, the gizzard is thin-walled and baglike and is a storage place for indigestible teeth, claws, bones, scales, feathers, and other matter which is later coughed up in a pellet and spat out by hawks, owls, goatsuckers, gulls, terns, herons, swifts, grouse, and by songbirds that feed much on insects, many of which have hard, chitinous shells, or exoskeletons."

On page 684:

"Smith and Richmond (1972), in experimental studies of a captive barn owl, suggested that pellets are formed in the gizzard, within 6 hours after a meal, by muscular action in the gizzard during digestion. At some stage after digestion is completed, the freshly formed pellet passes out of the gizzard (the muscular stomach) into the proventriculus (glandular stomach), where it remains until the bird receives the proper stimulus for its egestion."

In the book Captive Birds in Health and Disease by John E. Cooper, page 7, table 1.4 titled "Some biological characteristics of five different orders of birds":

"Raptors in order Falconiformes and Strigiformes (which includes all diurnal and nocturnal birds of prey) have a gizzard, but generally have no grit in the gizzard and the gizzard is a thin-walled ventriculus"