

# Dietary flexibility and intestinal plasticity in birds: A field and laboratory study

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The adaptive modulation hypothesis posits that the expression of digestive proteins should be modulated in response to intake of their respective substrates. A corollary of this hypothesis suggests that dietary flexibility and digestive plasticity should be correlated. We examined these two hypotheses in two granivorous Chilean birds (*Zonotrichia capensis* and *Diuca diuca*) that differ in dietary breadth. *D. diuca* is a strict granivore, whereas *Z. capensis* also eats insects. In field-caught birds, the activity of the intestinal dipeptidase aminopeptidase-N was positively correlated with intake of insects in *Z. capensis* but not in *D. diuca*. This is the first field documentation of modulation of intestinal enzymes by diet in birds. Intestinal maltase and sucrase activities were not correlated with seed (vs. insect) intake in either species. In the laboratory, captive birds of both species exhibited similar modulation of membrane-bound intestinal hydrolases when fed on synthetic diets of co