

Semi-Conductor Strain Gauge Sensing and Telemetry of
Gastric Motility in Great-Horned Owls. M. R. Fuller*,
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Previous studies have shown 3-7 phases in the gastric digestion of a meal of mice by great-horned owls. Phase lengths varied directly with meal weights. The objectives of this study were to devise a method of detecting and recording gastric motility patterns characteristic of ingestion, digestion, oral egestion of the pellet of undigestible material, and the interdigestive period from an unrestrained owl. Semi-conductor strain gauges were implanted on the muscular stomach. Four gauges were stacked and wired to form a full wheatstone bridge with output through a voltage controlled oscillator to a 53 MHz UHF transmitter which emitted a pulse-modulated signal. Increased strain on the gauge due to gastric contraction resulted in an increased pulse rate. Motility data obtained from this system compared favorably with data obtained by more standard procedures in which implanted foil strain gauges were connected directly from the subject to the recorder. Records of contractile activity permitted identification of ingestion, digestion phases, pellet egestion and interdigestive motility. Detection of these parameters via telemetry will provide a better understanding of bioenergetics as well as the effects of ecological and behavioral variables on gastric motility in free-living owls. (Partially supported by NSF Grant No. GB 37254.)