

# Fossil Gizzard Stones of Passenger Pigeon

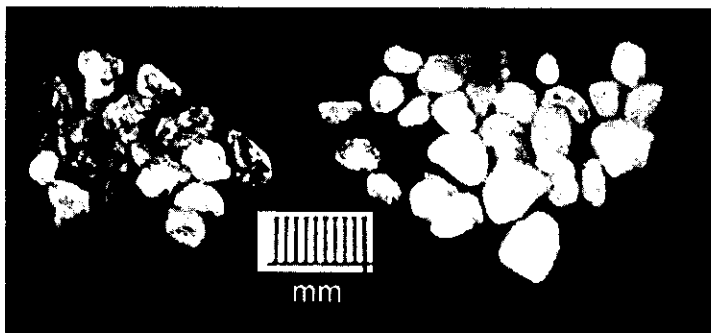
John H. McAndrews and Janet Y. Chau

The now extinct Passenger Pigeon was the most common bird in eastern North America from before colonial time to about 1870; the last bird died in 1914 (Mitchell 1935, Schorger 1973). Most of what remain of these birds apart from paintings and written accounts are museum mounts and stuffed skins; less well known are their fossil bones and gizzard stones. Like other seed-eating birds, they ingested hard stones and held them in their gizzard, the muscular stomach, where they ground seeds into small digestible pieces. Sometimes they ingested limestone pebbles that dissolved to supply calcium for eggshell production. These gizzard stones (a.k.a. grit, gastroliths, stomach stones, crop stones) range from sand to marble-size, which correlate with the size of the bird species, sand for sparrows and marbles for the ostrich (Gionfriddo and Best 1999). We became aware of gizzard stones when, as volunteers, we helped excavate post-glacial peat at the Hiscock paleontology site.

The Hiscock site, a wetland near Buffalo, New York, has long attracted animals because of its saltwater (McAndrews 2003). A lower layer of mastodon dung has yielded ice age bones of condor, caribou, mastodon, peccary, stag-moose, giant beaver, etc. (Laub 2003). In the overlying younger postglacial peat of the last 12,000 years are the bones of deer, elk and Passenger Pigeon together with pebbles presumably gizzard stones from Passenger Pigeon. Bird delivery of these stones to a stagnant-water swamp peat is reasonable because wind, water and people were unlikely to have moved them from the upland. Sure identification was a problem because Passenger Pigeon stones are rarely found.

In southern Ontario, fossil Passenger Pigeon bones are common on archaeological sites that range in age from 4,000 years ago to the 18th century (Sadler and Savage 2003). Of special interest is the Grimsby Neutral Iroquois cemetery dating to the 1640s (Kenyon 1982). Accompanying a burial was a clay pot containing the bones of three Passenger Pigeons and 48 gizzard stones. Here was an opportunity to describe these pigeon stones, their size, weight, color and mineralogy but locating them was a problem.

The artifacts had been divided between the Royal Ontario Museum and the Woodland Cultural Centre on the Six Nations Reserve in Brantford, Ontario. The ROM had the reconstructed soccer ball-sized pot and the rather fragmentary pigeon bones. The stones, curated in the Woodland Cultural Centre, ranged widely in color—white to grey and often with a pinkish cast; most stones were opaque but six were translucent and one was almost transparent. They were 3 to 7 mm in diameter, and weighed an average of 70 milligrams (20 to 200 mg). They were rounded with a smooth but dull surface. All of them were quartz, a common hard mineral that is often colored by mineral impurities. The likely source of these quartz stones was from weathered crystalline rock of the Pre-



Passenger Pigeon gizzard stones from the Grimsby Neutral Indian cemetery dating to the 1640s. Photo by Janet Chau.

Cambrian Shield. Pleistocene glaciers transported them southward where they became concentrated on gravel bars of rivers.

The most accessible modern bird for comparison is the Rock Pigeon. It turns out that their gizzard stones are similar but much smaller, perhaps reflecting their crop contents of wheat seeds and corn kernels. The larger stones of the Passenger Pigeon correspond to their diet of the larger acorns, chestnuts and beechnuts.

How did Passenger Pigeon stones come to the elm, ash and maple swamp forest of the Hiscock site; the swamp tree seeds were not edible? Perhaps flocks came to drink the salty water (Mitchell 1935) or maybe they used the swamp forest for colonial nesting (Schorger 1973). Natural mortality would supply bones and release gizzard stones to the accumulating peat. Next year when we again volunteer at the Hiscock site, we will collect these gizzard stones from the peat. If we find not only quartz but also limestone pebbles, then we would conclude that the swamp forest was a nesting site of Passenger Pigeon.

## Literature Cited

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## Art Auction

### Wood Ducks by Robert Bateman

The Burlington Art Center (BAC)

18 February 2006

[www.burlingtonartcentre.on.ca](http://www.burlingtonartcentre.on.ca)

Phone 905-632-7796

In September 2006, Bob Curry and the Hamilton Naturalists' Club (HNC) will publish a 600 page authoritative book about the *Birds of Hamilton and surrounding areas*.

HNC member Robert Bateman is donating an original painting of Wood Ducks for the frontispiece of this book. The Burlington Art Center (BAC) will include this painting in its annual art auction in February 2006 with the proceeds coming back to the HNC. Absentee (proxy) bids can be provided ahead of time to the BAC if you will not be able to attend the auction but have always wanted to own a Bateman original!

For more information call Glenn Barrett 905-525-2142.

## Future 2006 OFO Field Trips

Dave Milsom, Coordinator

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Email: [milsomdave@hotmail.com](mailto:milsomdave@hotmail.com)

Check trip details on the OFO website

[www.ofo.ca](http://www.ofo.ca)

**March 18 (Saturday) Long Point Area**  
**Leaders: George Pond, Barry Jones, Jim Heslop, Bob Stamp.** Meet 9 a.m. at main parking lot of St. Williams Forestry Station on Highway 24 west of intersection with Norfolk County Road 16. Waterfowl, Tundra Swans, Sandhill Cranes, early spring migrants.

**April 8-9 (Saturday-Sunday) Gore Bay, Manitoulin Island.**

**Leader: Steve Hall.** Sharp-tailed Grouse lek. Cost: \$20 per person payable at the site. Trip limited to 18 participants. You must register by March 1st. OFO members receive priority. Accommodation at Gordon's Lodge in Gore Bay arranged through Don Barnett. No ferry service to Manitoulin Island in April, so drive via Sudbury. For information and/or to register, contact Don Barnett: phone 416-588-9724, email: [dwb126@yahoo.ca](mailto:dwb126@yahoo.ca)

**April 22 (Saturday) Algonquin Provincial Park**

**Leader: Ron Tozer.** Meet 9 a.m. at the WEST GATE of the park. Park entrance fee. Spruce Grouse, Black-backed Woodpecker, Gray Jay, Boreal Chickadee.

**April 23 (Sunday) Tiny Marsh Provincial Wildlife Area**

**Leader: Ron Fleming.** Meet 8:00 a.m. at commuter parking lot on southwest side of Highways 9 and 400 interchange, or meet 9:00 a.m. at Tiny Marsh Nature Centre. Take County Road 27 north past Elmvale to Simcoe Road 6 and turn left (west). Proceed to 1st Concession Road, Tiny-Flos Townline. Turn left (west) for about 4 km to the Nature Centre. Waterfowl and early spring migrants.

**May 6 (Saturday) Rondeau Provincial Park**

**Leaders: Blake Mann, Larry Cornelis.** Meet 8:00 a.m. at the park Visitor Centre. Park entrance fee. Spring migrants.

**May 14 (Sunday) Prince Edward Point National Wildlife Area**

**Leader: Terry Sprague.** Meet 7 a.m. at bird sightings board at Ducks Dive Cottages & Charters, just outside entrance to Prince Edward Point National Wildlife Area. From Picton, take County Road 10 (Lake Street at the LCBO) for 8 km to Cherry Valley, turn left at stop sign and follow for 6 km to Milford. At the post

office, turn right and follow County Road 10 to Mariners Park Museum at South Bay. Turn right and follow County Road 13 for 17 km to Prince Edward Point. Spring migrants.

**May 27 (Saturday) Opinicon Road Area North of Kingston and Amherst Island**

**Leader: Bud Rowe, Bruce Ripley.** Meet 6:30 a.m. in Denny's Restaurant parking lot next to Days Inn just south on Division Street, Kingston (exit 617 from Hwy 401). In morning, breeding birds north of Kingston: Golden-winged and Cerulean Warblers, Yellow-throated Vireo, Black-billed and Yellow-billed Cuckoos. Afternoon on Amherst Island (ferry fee) for shorebirds and waterbirds.

**May 28 (Sunday) Leslie Street Spit, Toronto**

**Leader: John Carley.** Meet 8 a.m. at base of the Spit (Tommy Thompson Park) parking lot near intersection of Leslie Street and Unwin Avenue. Late migrants, breeding birds and butterflies.

**June 4 (Sunday) Carden Alvar**

**Leader: Ron Pittaway.** Meet 9 a.m. in Kirkfield in parking lot of Lady Mackenzie School on right side of Kirkfield Road 6 about 1/4 km north of Kawartha Road 48. The trip consists of some driving and comfortable walking. Loggerhead Shrike, Sedge Wren, Upland Sandpiper, Grasshopper and Vesper Sparrows and other grassland specialties.

**June 17 (Saturday) Long Point Area**

**Leader: John Miles.** Meet 6 a.m. at main parking lot of St. Williams Forestry Station on County Road 24 west of intersection with County Road 16. Carolinian specialties and breeding warblers, vireos, sparrows, flycatchers, rails.

**June 24 (Saturday) and June 25 (Sunday) Bruce Peninsula**

**Leader: John Miles.** On Saturday meet 7 a.m. at Tim Hortons in Hepworth about 12.5 km south of Warton on Highway 6. On Sunday meet 7 a.m. in Tobermory Airport parking lot, west of Highway 6 on Warner Bay Road. Brewer's Blackbird, Common Raven, Virginia Rail, Clay-colored Sparrow, Sandhill Crane, Upland Sandpiper, breeding warblers. Also wildflowers and ferns. \*Arrange accommodations early.