

Population for Cape Breton Island, Nova Scotia.

ANDREAS GRÄF¹, JOHN GILHEN² AND JILL D. ADAMS³

¹ Zollstockweg 1e, 64823 Gross-Umstadt, Germany

² Nova Scotia Museum of Natural History, 1747 Summer Street, Halifax, Nova Scotia B3H 3A6 Canada

³ Cape Breton Highlands National Park, Ingonish Beach, Nova Scotia B0C 1L0 Canada

Gräf, Andreas, John Gilhen, and Jill D. Adams. 2003. The Wood Turtle, *Glyptemys insculpta*, at River Denys: A second population for Cape Breton Island, Nova Scotia. *Canadian Field-Naturalist*. 117(3): 415-418.

The Wood Turtle, *Glyptemys insculpta*, population at River Denys, Inverness County, Cape Breton Island, Nova Scotia, was unknown except locally until listed in a provincial survey in 1995. Subsequently a hatchling was photographed at McLennan Brook on 17 September 1999, and three adult males were photographed between 14 and 19 September 2000. Two adult females were photographed at South Side River Denys on 18 June 2001. An excavated nest and empty egg shells were located at the same time on a stony-gravel bank at the outflow of McLennan Brook, and one sub-adult male was found at the edge of a hay field on 19 August 2001. Additional observations made of a nesting site and five basking sites, mostly along the main branch of River Denys, provide further evidence that a breeding population of Wood Turtles exists in River Denys watershed.

Key Words: Wood Turtle, *Glyptemys insculpta*, River Denys, Inverness County, Bras D'or Lake Drainage, second breeding population, Cape Breton Island, Nova Scotia.

The Wood Turtle, *Glyptemys insculpta*, is easily distinguished from the Snapping Turtle, *Chelydra serpentina serpentina*, Blanding's Turtle, *Emydoidea blandingii*, and Eastern Painted Turtle, *Chrysemys picta picta*, which are also native to Nova Scotia, by its distinctive carapace shape and colour. The raised pyramid-like scutes, prominent central keel, and slight upward flare of the pointed posterior marginals give the Wood Turtle its unique shape. Its sculptured appearance earned it the specific name *insculpta*. The carapace is brown with black and yellow radiating streaks. The undersides of the neck and legs are typically orange but some individuals are red-orange. The Wood Turtle belongs to the largest family of turtles which includes the semiaquatic, pond and marsh turtles (Emydidae) [Conant and Conant 1991]. It is related to the Spotted (*Clemmys*), Western Pond (*Actinemys*) and Bog Turtle (*Glyptemys*) (Holman and Fritz 2001). Of these, only the Wood Turtle is native to the Canadian Maritimes where it is found in both Nova Scotia and New Brunswick. In Canada, it also occurs in southern Quebec and Ontario (Cook 1984); in the United States its distribution extends south to the Virginias and west to eastern Minnesota (Ernst et al. 1994).

The Wood Turtle probably colonized Cape Breton Island in early post-Wisconsin glaciation times, about 10000 YBP (years before present), before submergence of the land bridge which connected Cape Breton Island to mainland Nova Scotia (Bleakney 1958; Bousfield and Thomas 1975; Gilhen 1984. However, it was not recorded by Bleakney (1958) or Powell (1965) on Cape Breton Island. A breeding population was discovered in 1973 at River Inhabitants, Richmond County, 45°40'N, 61°14'W [=Cleveland] Atlantic Ocean Drainage (Gilhen

and Grantmyre 1973). Here we report an additional breeding population at River Denys, Inverness County, 45°50'N, 61°10'W, Bras D'or Lake Drainage, the second population for Cape Breton Island (Figure 1).

River Denys occupies Theme Region 560 [Submerged Lowlands] (Davis and Browne 1997). In the north, headwaters streams drain Blues Mountain and the northern section of The Big Ridge, Theme Region 313a [Creignish Hills]. In the south, headwater streams drain North Mountain and MacIntosh Mountain, Theme Region 313b [North Mountain]. The origins of northern tributaries of River Inhabitants run very close to, and in some cases interdigitate, southern tributaries of River Denys. For example, a branch of McLennan Brook, River Denys watershed, is about 1 km west of MacCalls Brook, River Inhabitants watershed, and Wood Turtles likely travel from one watershed to the other. In recent years, the Trans Canada Highway (Route 105) to the north and Canadian National Railway to the south pass through both watersheds. Wood Turtles are very active along these man-created rights-of-way, because they provide foraging and nesting sites.

Cape Breton Island is the least studied area in Nova Scotia for amphibian and reptile faunas. The Wood Turtle population at River Denys, Inverness County, was unknown to science until Adams (1995) listed 33 localities from Ohio River area, Shelburne County, to North Aspy River, Victoria County as a result of public surveys she conducted. Evidence that a breeding population of Wood Turtle actually existed at River Denys, however, was not discovered until 17 September 1999, at 1535 hours. A. G. photographed one hatchling beside the bridge at highway west of River Denys Centre. On 14 September 2000, at 1005 hours, he photographed an

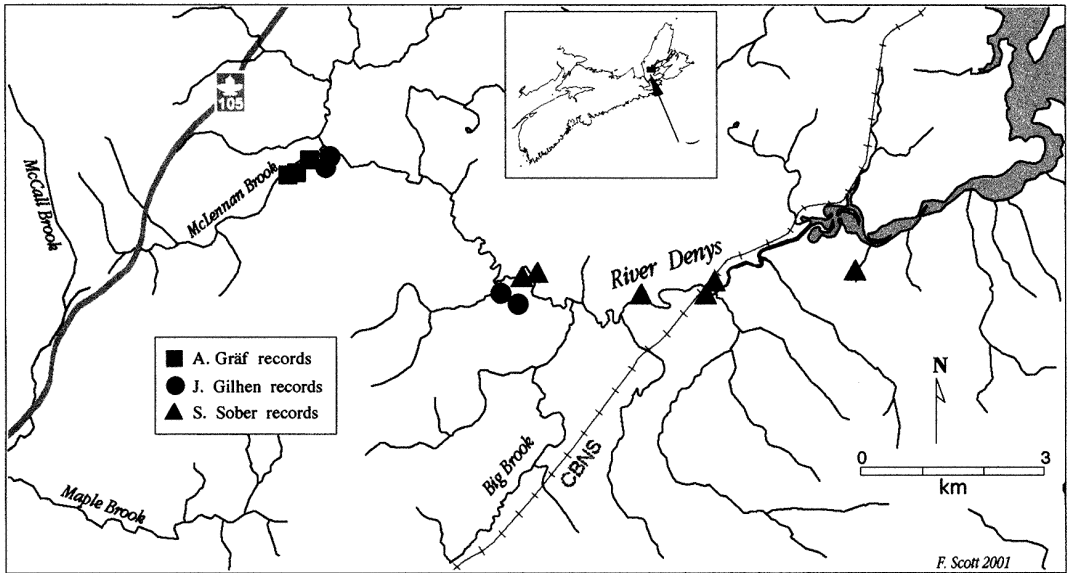


FIGURE 1. Localities where Wood Turtles, *Glyptemys insculpta*, have been observed at River Denys, Inverness County, Cape Breton Island, Nova Scotia. Squares are localities recorded by Andreas Gräf; circles by John Gilhen; and triangles by Stephen W. Sober.

adult male basking in the sun on the shore of McLennan Brook adjacent to a hay field, immediately downstream from the bridge at South Side River Denys Road (Figure 2). On 19 September 2000, at 1115 hours, a second adult male was found basking in the sun on the stony gravel shore, between overhanging sedges, just upstream from the bridge. At 1205 hours, just 10 m upstream from the second adult male, a third adult male was found basking in the sun on the shore.

J. G. photographed two adult females on a road bank



FIGURE 2. Adult male Wood Turtle, *Glyptemys insculpta*, observed at McLennan Brook, River Denys Watershed, Inverness County, Cape Breton Island, Nova Scotia, on 14 September 2000 by Andreas Gräf.

at South Side River Denys Road on 18 June 2001. One female was observed digging a nest near a dry stream bed at 0830 hours. She deposited six eggs and had completely covered them by 1000 hours (Cover). The second individual, a spent female, was found near Morleys Brook at 1030 hours. On 19 August 2001, at 1055 hours, a disfigured, probably by farm machinery, sub-adult male (Figure 3) was observed eating dandelion greens at the edge of a hay field adjacent to River Denys. This remarkably healed individual passed nine Choke-cherry pits while being photographed. At 1220 hours, a excavated nest by a predator and empty egg shells was discovered on the crown of a stony-gravel bank at the outflow of McLennan Brook into River Denys.

Stephen M. Sober, a resident of River Denys area, provided us with localities for one Wood Turtle nesting site and five basking sites, which he observed while canoeing mostly along the main branch of River Denys. Our observations along with Stephen M. Sober's confirm a breeding population of Wood Turtles exists at River Denys Watershed. Copies of all colour transparencies as well as colour and black-and-white photographs have been deposited in the Nova Scotia Museum of Natural History.

Glyptemys insculpta is a stream turtle in Nova Scotia. Although individuals may be found throughout certain watersheds, the main population is centered in slow moving meandering sections through fertile valleys. Here, along extensive intervals, meadows and oxbow ponds, streams are typically banked mostly by alders and widely-spaced dead Elm Trees. At River Denys,



FIGURE 3. Disfigured sub-adult male Wood Turtle, *Glyptemys insculpta*, discovered at edge of a hayfield near McLennan Brook, River Denys Watershed, Inverness County, Cape Breton Island, Nova Scotia, on 19 August 2001 by John Gilhen.

Speckled Alder, *Alnus incana*, and Choke-cherry, *Prunus virginiana*, are the dominant trees along the river bank. Also at River Denys extensive meadows have been developed into hay fields. The meandering river has deep sections where the Wood Turtles hibernate. Stony-gravel and sandy-gravel deposits usually on bends in the river are natural nesting sites. Nurseries for hatchlings have not been described in Nova Scotia and juveniles are rarely observed. Wet meadows provide excellent foraging habitat. Meadows which have been developed into hay fields usually have residual meadow and old field vegetation along the edge which Wood Turtles frequent to feed on vegetation, berries and invertebrates.

Unlike the Blandings Turtle, which is protected within Kejimikujik National Park, there is not one Nova Scotia Wood Turtle population or critical habitat which is completely protected in a national or provincial park. (Gilhen et al. 1994). The Wood Turtle under the "General Status Ranks of Wildlife in Nova Scotia" by Nova Scotia Department of Natural Resources is listed as "Yellow, sensitive to human activities or natural events".

Wood Turtle populations in Nova Scotia are thought to have been declining for a number of years due mainly to the removal of adults from their native stream by campers and fishermen. As well, females crossing roads to nesting sites are either killed or intercepted by the traveling public, who desire to keep them for pets (Gilhen et al. 1994). Most of these collected turtles either escape captivity or are released, sometimes far removed from their native stream. In the United States, from 1970 to 1974 Carroll and Ehrenfeld (1978) documented 189 sub-adult and adult Wood Turtles moved from 52 home sites near Accord, New York, to a common release point. Displacement ranged from 0.35 to 50 km. The turtles were subsequently tagged and released. Homing was frequent back to the exact site of first capture but success fell off sharply when displacement distance exceeded 2.0 km. The Nova Scotia Museum of Natural History, Halifax, and Turtle Watch, along with the Herp Atlas, Acadia University, Wolfville, continue to receive verbal reports of Wood Turtles from all regions of Nova Scotia. We believe many of these are escaped or released captives (Gilhen et al. 1994).

As the opening of areas of wilderness in Nova Scotia for recreational purposes continues Wood Turtle populations are increasingly exposed to human interference and habitat degradation. The potential effects of this are indicated by a 20-year (1974 to 1993) study of the effects of human recreation on two Wood Turtle populations in Connecticut, USA (Garber and Burger 1993). During the first nine years (1974 to 1982) of the study people were denied access to the property and Wood Turtle populations remained stable. During the second nine years (1983 to 1991) when the property was opened to human recreation both Wood Turtle populations declined steadily, 87% in nine years and by almost 100% in 10 years.

Acknowledgments

The authors are grateful to Stephen M. Sober for providing us with his Wood Turtle observations at River Denys. Fred Scott made the distribution map of River Denys. Roger Lloyd, Learning Resources and Technology, Nova Scotia Department of Education, selected the best colour negative and colour transparencies and developed these to provide us with the black and white photographs required for figures 2, and 3 and cover. Andrew Hebda, Curator of Zoology, Nova Scotia Museum of Natural History, and two anonymous reviewers made useful comments on the manuscript.

Literature Cited

Adams, J. D. 1995. An evaluation of wood turtle (*Clemmys insculpta* LeConte) distribution in Nova Scotia through public surveys. Honours B. Sc. thesis, Acadia University, Wolfville, Nova Scotia. 48 pages.

- Bleakney, J. S.** 1958. A zoogeographical study of the amphibians and reptiles of eastern Canada. National Museum Canada, Bulletin 155. 199 pages.
- Bousfield, E. L., and M. L. H. Thomas.** 1975. Postglacial change in distribution of littoral marine invertebrates in the Canadian Atlantic region. Proceedings of the Nova Scotian Institute of Science, Supplement 3: 47–60.
- Carroll, T. E., and D. W. Ehrenfeld.** 1978. Intermediate-range homing in the Wood Turtle, *Glyptemys insculpta*. Copeia 1978: 117–126
- Conant, R., and J. T. Collins.** 1991. A field guide to reptiles and amphibians of eastern and central North America – Third edition, Houghton Mifflin Company, Boston.
- Cook, F. R.** 1984. Introduction to the amphibians and reptiles of Canada. National Museum of Natural Sciences, National Museums of Canada. 211 pages.
- Davis, D. S., and S. Browne.** 1997. Natural History of Nova Scotia. Volume 2, Theme Regions, Nova Scotia Museum, Halifax. 304 pages.
- Ernst, C. H., R. W. Barbour, and J. E. Lovich.** 1994. Turtles of the United States and Canada. Smithsonian Institution Press, Washington. 578 pages.
- Garber, S. D., and J. Burger.** 1993. Effects of human recreation on the North American Wood Turtle (*Clemmys insculpta*): A 20 year study (1974–1993). Conservation, restoration, and management of tortoises and turtles – an international conference, July 11–16, 1993. State University of New York. Purchase, New York U.S.A.
- Gilhen, J.** 1984. Amphibians and reptiles of Nova Scotia. Nova Scotia Museum, Halifax. 162 pages.
- Gilhen, J., and B. Grantmyre.** 1973. The Wood Turtle, *Clemmys insculpta* (LeConte): An addition to the herpetofauna of Cape Breton Island, Nova Scotia. Canadian Field-Naturalist 87: 308–310.
- Gilhen, J., T. Herman, and N. Meister.** 1994. Wood Turtles face uncertain future. Conservation 18: 5–7.
- Holman, J. A., and U. Fritz.** 2001. A new emydine species from the Middle Miocene (Barstovian) of Nebraska, USA with a new generic arrangement for the species of *Clemmys* sensu McDowell (1964) (Reptilia: Testudines: Emydidae). Zoologische Abhandlungen, Staatliches Museum für Tierkunde Dresden 51 (20): 331–353.
- Powell, C. B.** 1965. Zoogeography and related problems of turtles in Nova Scotia. B.Sc. thesis, Acadia University, Wolfville, Nova Scotia. 84 pages.

Received 27 October 2001

Accepted 14 January 2004