

THE TURTLES OF MOUNT DESERT ISLAND, MAINE:
FIELD RESEARCH UPDATE,
1991 SEASON

ANDERS G.J. RHODIN

Chelonian Research Foundation, Lunenburg, Massachusetts

and

Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts

MAY, 1992

OBJECTIVE

This study was initiated in June 1991 to investigate the status of the turtles of Acadia National Park and Mount Desert Island, Hancock County, Maine. The purpose of the study is to ascertain the distributional pattern of turtles in southern Hancock County, including Acadia National Park territory, to determine the systematic and demographic characteristics of the hybrid swarm of painted turtles *Chrysemys picta picta* X *marginata* that occur on Mount Desert Island, and to attempt to determine their systematic affinities and the cause of their marked populational increase on the island over the last half century.

BACKGROUND

There are no significant studies dealing with the turtles of Mount Desert Island. Manville (1939), while working as a Park Ranger-Naturalist in Acadia National Park in 1938 provided an inventory of the herpetofauna of the island, listing the presence of snapping turtles (*Chelydra serpentina*) and musk turtles (*Sternotherus odoratus*), but not recording any painted turtles (*Chrysemys picta*). In view of how conspicuous basking painted turtles are, one can assume that painted turtles were probably not present on the island during the late 1930's. Work by Coman (1972, 1981, 1987) has documented the lack of evidence of painted turtles on the island during the late 1940's, and their obvious presence first noted in the early 1970's. Since that time, painted turtles have spread to cover nearly the entire island, existing in relatively large numbers in many appropriate habitats. The previous lack of painted turtles on the island appears also to be supported by the lack of turtle material from prehistoric midden sites on the island such as Fernald Point Site, where a large faunal assemblage has no associated turtle bone remains (Sanger 1989).

Preliminary studies by the investigator have demonstrated that the painted turtles on Mount Desert Island represent part of the hybrid swarm of intergrades between *Chrysemys picta picta* and *Chrysemys picta marginata* that occupies most of New England (Hartman, 1958; Pough and Pough, 1968). It is hypothesized that the painted turtles on Mount Desert Island may have been introduced to the island within historic times, possibly within the last half century. The source of any such introduction could represent transfer of turtles from adjacent mainland populations or distant New England sites. A possible source of introduced specimens is the Mount Desert Island Biological Laboratory in Salisbury Cove, where physiological research on marine and freshwater vertebrates has been carried out since the 1920's. Several investigators at the Laboratory have worked with turtles over the years, though primarily the southern US red-eared slider *Pseudemys*

scripta elegans. During the late 1960's one study at the Laboratory utilized specimens of painted turtles purchased through a biological supply house in west central Massachusetts (Lund and Goldstein, 1969a, 1969b). It is possible that the release of those animals into Hamilton Pond in Salisbury Cove at the end of the study has resulted in a founder population of Massachusetts-type painted turtles being introduced to Mount Desert Island.

Also possible is that the painted turtles of Mount Desert Island represent a natural population historically present in small numbers, but with a recent populational increase giving them heightened visibility and easier detection. If this is true, then the systematic affinities of the population can have significant implications regarding the post-glacial dispersal patterns of painted turtles into the Maritimes region. Midland painted turtles (*Chrysemys picta marginata*) migrated into the area from the northwest and the St. Lawrence seaway, whereas Eastern painted turtles (*Chrysemys picta picta*) migrated in from the south and the emergent coastal plain. The geological history of Mount Desert Island regarding seashore levels and the ability of freshwater turtles to invade the island at various times in the post-glacial period will play a role in the taxonomic affinities of the island's painted turtles. For example, if *marginata*-type animals first invaded the area when Mount Desert Island was still a mainland peninsula (early post-glacial era) and established a population, they would have become isolated and relict when the island separated from the mainland during later post-glacial periods of rising sea-levels. If *picta*-type animals then subsequently invaded from the south during later post-glacial eras while Mount Desert was an isolated island, one would expect to find more genetic swamping of *marginata*-populations by the invading *picta*-types on the mainland than on the isolated island. One should therefore be able to find more *picta*-influence in mainland populations, and more *marginata*-influence in island populations.

METHODS AND RESULTS

Collections of turtles has been accomplished by live-trapping with baited turtle hoop-traps specifically designed for turtles, as well as incidental hand capture. All captured individuals have been measured, weighed, marked (carapacial rim notching using a modified Cagle numbering system; no attached tags), and then released at the capture site. A few dead animals encountered will be deposited in the herpetological collections of the Museum of Comparative Zoology, Harvard University. Collections were accomplished sporadically between early July and late August, 1991.

The first site selected and trapped was Hamilton Pond, Salisbury Cove, in the northern section of the island, where painted turtles were first noted in the early 1970's, possibly representing a founder population, if they were indeed introduced. Turtles collected and marked in

the Pond included 40 *Chrysemys picta* and 11 *Chelydra serpentina*, with a total of 12 recaptures. In addition, 13 other specimens (8 *Chrysemys picta*, 5 *Chelydra serpentina*) were collected at various other sites on the Island, including Somes Pond, Seal Cove Pond, The Tarn, Eagle Lake, and Round Pond. Observations only were also carried out at a few other locations on the Island for a grand total of 86 data points on 74 different individual turtles.

Of note was the discovery of information on the collection of a wood turtle, *Clemmys insculpta*, by a native islander, James Perkins, in his driveway at Indian Point. The animal was collected in May, 1989 and photographed before being released. Personal examination of the photos confirmed the identification and also that the animal was an old male with one front foot missing. Though appropriate habitat for wood turtles occurs in the vicinity of capture and the area is very sparsely populated, it remains unclear whether this represents a native population or a released captive. Only a single wood turtle has previously been recorded from the Island, with Paul Favour identifying what he felt was an escaped pet in the Bar Harbor area in 1958 (Coman, 1972).

Comparative material for the analysis of the characteristics of the Mount Desert Island population of painted turtles will subsequently be obtained through similar trapping collections carried out by the investigator on the mainland adjacent to the island. Preliminary field investigations, however, have yet to discover any populations of painted turtles in the appropriate mainland habitats nearest the Island.

During the latter part of the summer comparative information on central Massachusetts painted turtles was gathered through trapping efforts by Brian Butler during his studies of Blanding's turtles. Measurements performed on 120 *Chrysemys picta* collected by Butler will help serve as a comparison to the Mount Desert Island populational data. All data gathered from these disparate sites will be analyzed statistically for discernible patterns of morphology, growth, and demographic and populational characteristics, paying careful attention to the parameters associated with intergradation between the subspecies *picta* and *marginata*. As knowledge is gained through these non-invasive investigations, it may become desirable to obtain additional information through blood studies on mitochondrial DNA and other genetic relatedness markers to attempt to determine the likely origin of the painted turtles of Mount Desert Island.

EXPENSES

All expenses will continue to be self-supported, with no request for funding. Request is only made for access to and use of Acadia National Park territory for the purposes of performing collection studies, and the accession of any dead specimens encountered into the collections of Harvard University.

LITERATURE CITED

- Coman, Dale R. 1972. The native mammals, reptiles and amphibians of Mount Desert Island, Maine. Priv. Distr., pp.32.
- Coman, Dale R. 1981. The native mammals, reptiles and amphibians of Mount Desert Island, Maine. Second Edition. Bar Harbor: Parkman Press, pp.30.
- Coman, Dale R. 1987. The mammals, reptiles, and amphibians of Mount Desert Island, Maine. Third edition. Bar Harbor: Island Wide Printing, pp. 47.
- Hartman, Wilbur L. 1958. Intergradation between two subspecies of painted turtle, genus *Chrysemys*. Copeia 1958:261-265.
- Lund, Patricia and Leon Goldstein 1969a. Glutamine synthetase in lower vertebrates. Bull. Mt. Des. Isl. Biol. Lab. (1968) 8:38-39.
- Lund, Patricia and Leon Goldstein 1969b. Glutamine synthetase activity in tissues of lower vertebrates. Comp. Biochem. Physiol. 31:205-210.
- Manville, Richard H. 1939. Notes on the herpetology of Mount Desert Island, Maine. Copeia 1939:174.
- Pough, F. Harvey and Margaret B. Pough. 1968. The systematic status of painted turtles (*Chrysemys*) in the northeastern United States. Copeia 1968(3):612-618.
- Sanger, David 1989. Insights into native American life at Fernald Point. In: McMullen, Ann and Diane Kopec (Eds.) An Island in Time: Three Thousand Years of Cultural Exchange on Mount Desert Island. Robert Abbe Mus. Bull. 12:5-19.

THE CHELONIAN RESEARCH FOUNDATION

Judy JHC
R. Breen AB
Linda G.

A non-profit tax-exempt private operating foundation for the production, documentation, publication, and support of worldwide turtle and tortoise research, with an emphasis on systematics, morphology, distribution, and the scientific basis of chelonian biodiversity and conservation.

Anders G.J. Rhodin, M.D., Director

168 Goodrich Street • Lunenburg • Massachusetts 01462 USA • 508-534-9440 • 508-582-9668 • 508-840-8184 (Fax)

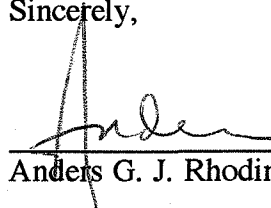
10 May 1992

Dr. Alan O'Connell
Acadia National Park
National Park Service
P.O. Box 17
Bar Harbor, ME 04609

Dear Alan,

Sorry to be so late with this update on my 1991 Field season. I'd appreciate receiving a collections permit for Park lands for this summer as well. Looking forward to getting back up there.

Sincerely,



Anders G. J. Rhodin, M.D.