

SUSAN PINSKY AND MARC ROSEN
220 EAST 73RD STREET
NEW YORK, NY 10021-4319

1W27

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November 17, 2010

Linda Roberts, Executive Director
State of Connecticut, Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: DOCKET NO. 409

To Whom It May Concern:

We own the residence at 6 Barnes Road, which abuts the access road to the hunting camp above us, the proposed cell tower site. We have reviewed the application and would like to state our primary concerns.

The first is the potential for ecological degradation resulting from the construction and use of both the access road and the facility itself.

Our second concern is reduced property values, both for those with adjacent properties and for those whose enjoyment of their properties is marred by the view of the tower.

Finally, since the access road would run along the edge of our property for a considerable distance, we have some individual concerns:

The plans incorporated in the application indicate the access road following the existing right of way to the hunting camp, directly up from (and on a right angle to) Barnes Road. In the past, the owner of the hunting cabin at the top of the ridge has made his drive easier by cutting in from Barnes Road, across the lawn in front of our stone wall, before turning up the hill. Since his visits were rare, we decided not to make a fuss. However, it is certainly not the accepted norm for people to use the road frontage of their neighbors as part of their own driveway.

We want to make it clear that we would strenuously object to any use of our Barnes Road frontage for work on or access to the cell tower site, and we want to be sure that the plans for the proposed improvement of the access road explicitly indicate a straight line up from Barnes Road. In addition, we want to receive assurances that any debris falling into our property from improvement of the roadway or transport of materials to the tower site would be cleaned up by the applicant or his agents.

It is appropriate for these points to be formally addressed, and we look forward to a response.

Sincerely,



Marc Rosen and Susan Pinsky
6 Barnes Road
Falls Village, CT 06031-1213

cc: Cuddy & Feder, LLP; Michele Briggs, AT&T; Board of Selectman, Town of Canaan; Planning and Zoning Commission, Town of Canaan; Wetland Commission, Town of Canaan

1W28

DESCRIPTION (Continued)

17. OTHER NOTABLE FEATURES OF BUILDING OR SITE (Interior and/or exterior)

5
Barnes Road is an attractive 1-1/2-story vernacular cottage with a gable roof, oriented with the gable end to the street. The structure rests on a fieldstone foundation and is sheathed with clapboards. The building incorporates a central entry with broad pilaster-and-lintel surround. Window sash is of 6/6 configuration. Architectural and decorative features include a wide frieze band, Doric corner pilasters, molded cornice returns, small central chimney, and one-story gable-roofed ell on the right with end chimney.

18. ARCHITECT

BUILDER

19. HISTORICAL OR ARCHITECTURAL IMPORTANCE

SIGNIFICANCE

At the beginning of the nineteenth century two events combined to help create the small rural village of South Canaan. Construction of a new meeting house (1804) at this site, astride the recently opened (c. 1799) Canaan-Litchfield turnpike, caused a cluster of buildings to appear at the crossroads, including the church, school, parsonage, smithy, wagon shop, and several homes. This attractive vernacular frame dwelling was likely erected circa 1805, about the time the meetinghouse was completed. For much of the nineteenth century it was the home of J. B. Reed.

SOURCES

Canaan Land Records 39-440
Canaan Assessor's Records
F.W. Beers, County Atlas of Litchfield
Clark's Map of Litchfield County (1853)
History of Litchfield County (1881)

PHOTO

PHOTOGRAPHER

Geoffrey Rossano 4-15-2000

VIEW

E On file: CHC

COMPILED BY

NAME

Geoffrey Rossano 5-15-2000

ORGANIZATION

Connecticut
Historical Commission

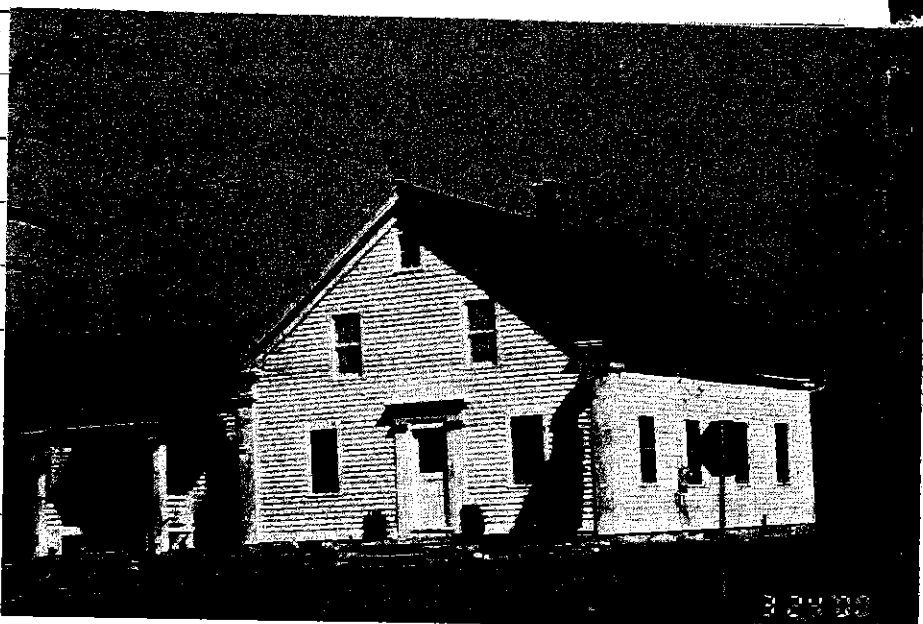
ADDRESS

59-South Prospect St.
Hartford, CT

20. SUBSEQUENT FIELD EVALUATIONS

21. THREATS TO BUILDING OR SITE

- None known
- Highways
- Vandalism
- Developers
- [unclear]
- [unclear]
- [unclear]
- [unclear]



3 24 20

HISTORIC RESOURCES INVENTORY BUILDINGS AND STRUCTURES

HIST-6 REV. 6/83

STATE OF CONNECTICUT
CONNECTICUT HISTORICAL
59 SOUTH PROSPECT STREET, HARTFORD, CONNECTICUT 06106
(203) 566-3005

FOR OFFICE USE ONLY

Town No.:	Site No.:
UTM	
QUAD:	
DISTRICT	IF NR, SPECIFY
<input type="checkbox"/> S <input type="checkbox"/> NR	<input type="checkbox"/> Actual <input type="checkbox"/> Potential

IDENTIFICATION

1. BUILDING NAME (Common) _____ (Historic) _____

2. TOWN / CITY: **Canaan** VILLAGE: _____ COUNTY: **Litchfield**

3. STREET AND NUMBER (and / or location): **28 Barnes Road**

4. OWNER(S): **Anthony Forino ?** Public Private

5. USE (Present): **Residence** (Historic) **Residence**

6. ACCESSIBILITY TO PUBLIC: EXTERIOR VISIBLE FROM PUBLIC ROAD: Yes No INTERIOR ACCESSIBLE: Yes No IF YES, EXPLAIN _____

DESCRIPTION

7. STYLE OF BUILDING: **Vernacular** DATE OF CONSTRUCTION: **c.1805**

8. MATERIAL(S) (Indicate use or location when appropriate):
 Clapboard Asbestos siding Brick Other (Specify) _____
 Wood shingle Asphalt siding Fieldstone
 Board & batten Stucco Cobblestone
 Aluminum siding Concrete Type: _____ Cut stone Type: _____

9. STRUCTURAL SYSTEM:
 Wood frame Post and beam Balloon
 Load-bearing masonry Structural iron or steel
 Other (Specify) _____

10. ROOF (Type):
 Gable Flat Mansard Monitor Sawtooth
 Gambrel Shed Hip Round Other (Specify) _____
 (Material)
 Wood shingle Roll asphalt Tin Slate
 Asphalt shingle Built up Tile Other (Specify) _____

11. NUMBER OF STORIES: **1-1/2** APPROXIMATE DIMENSIONS: **24 x 28 plus additions**

12. CONDITION (Structural): Excellent Good Fair Deteriorated (Exterior) Excellent Good Fair Deteriorated

13. INTEGRITY (Location): On original site Moved WHEN? _____ ALTERATIONS: Yes No IF YES, EXPLAIN _____

14. RELATED OUTBUILDINGS OR LANDSCAPE FEATURES:
 Barn Shed Garage Other landscape features or buildings (Specify) _____
 Carriage house Shop Garden

15. SURROUNDING ENVIRONMENT:
 Open land Woodland Residential Scattered buildings visible from site
 Commercial Industrial Rural High building density

16. INTERRELATIONSHIP OF BUILDING AND SURROUNDINGS: **This building is situated in a rural hamlet of South Canaan amidst houses of similar age, across from the South Canaan Congregational Church.**

(OVER)

17. OTHER NOTABLE FEATURES OF BUILDING OR SITE (Interior and/or exterior)

DESCRIPTION (Continued)

9 Barnes Road is an attractive two-story Federal-style residence with a gable roof, oriented with the gable end to the street. The structure rests on a stone slab foundation and is sheathed with clapboards. The building incorporates an offset (right) entry with delicate Federal-style pilaster-and-lintel surround with sidelights. Window sash is of 12/12 configuration arranged in a three-bay facade. Architectural and decorative features include a pedimented gable in the street elevation with semicircular window and flushboard siding, large central chimney, another central entry on the north elevation with small-pane horizontal transom, and balanced five-bay facade, single-story gable-roofed wing on the right and single-story shed-roofed ell in the rear.

18. ARCHITECT

BUILDER

19. HISTORICAL OR ARCHITECTURAL IMPORTANCE

SIGNIFICANCE

At the beginning of the nineteenth century two events combined to help create the small rural village of South Canaan. Construction of a new meeting house (1804) at this site, astride the recently opened (c.1799) Canaan-Litchfield turnpike, caused a cluster of buildings to appear at the crossroads, including the church, school, parsonage, smithy, wagon shop, and several homes. This attractive Federal-style England Farmhouse-type residence, as it exhibits a central-entry, five-bay facade on the north elevation. The gable-end western elevation, which faces the South Canaan Congregational Church, may have been modified to its present configuration a generation later. For many years this was the home of Judge William P. Burrall, a prominent local jurist. He was also an active real estate investor. Over the years he served as counsel to the New Haven Railroad, was the local agent for the Salisbury and Canaan Turnpike, and conducted a small "law school" in an adjacent building. A vignette of Belden's home was included on Clark's 1853 wall map of Canaan.

SOURCES

Canaan Land Records 44-581
 Canaan Assessor's Records
 F.W. Beers, County Atlas of Litchfield
 Clark's Map of Litchfield County (1853)
 History of Litchfield County (1881)

PHOTO

PHOTOGRAPHER

Geoffrey Rossano 4-15-2000

VIEW

E On file: CHC

COMPILED BY

NAME

Geoffrey Rossano 5-15-2000

ORGANIZATION

Connecticut
 Historical Commission

ADDRESS

59 South Prospect St.
 Hartford, CT

20. SUBSEQUENT FIELD EVALUATIONS

21. THREATS TO BUILDING OR SITE

- None known Highways Vandalism Developers
 Renewal Private Deterioration Zoning



HISTORIC RESOURCES INVENTORY

BUILDINGS AND STRUCTURES

HIST-6 REV. 6/83

IF#2

STATE OF CONNECTICUT
CONNECTICUT HISTORICAL COMMISSION
59 SOUTH PROSPECT STREET, HARTFORD, CONNECTICUT 06106
(203) 566-3005

FOR OFFICE USE ONLY

Town No.:

Site No.:

UTM

QUAD:

DISTRICT

IF NR, SPECIFY

S

NR

Actual

Potential

IDENTIFICATION

1. BUILDING NAME (Common) (Historic)
Judge William Burrall House

2. TOWN / CITY: Canaan VILLAGE: COUNTY: Litchfield

3. STREET AND NUMBER (and / or location)
~~9 Barnes Road~~ 15 Route 63

4. OWNER(S)
~~Charles Staats~~ Marc Rosen / Susan Pinsky Public Private

5. USE (Present) (Historic)
Residence Residence

6. ACCESSIBILITY TO PUBLIC: EXTERIOR VISIBLE FROM PUBLIC ROAD Yes No INTERIOR ACCESSIBLE Yes No IF YES, EXPLAIN

DESCRIPTION

7. STYLE OF BUILDING: Federal DATE OF CONSTRUCTION: c.1790 and after

8. MATERIAL(S) (Indicate use or location when appropriate)

<input checked="" type="checkbox"/> Clapboard	<input type="checkbox"/> Asbestos siding	<input type="checkbox"/> Brick	<input type="checkbox"/> Other (Specify)
<input type="checkbox"/> Wood shingle	<input type="checkbox"/> Asphalt siding	<input type="checkbox"/> Fieldstone	
<input type="checkbox"/> Board & batten	<input type="checkbox"/> Stucco	<input type="checkbox"/> Cobblestone	
<input type="checkbox"/> Aluminum siding	<input type="checkbox"/> Concrete Type:	<input checked="" type="checkbox"/> Cut stone Type:	

9. STRUCTURAL SYSTEM

<input type="checkbox"/> Wood frame	<input checked="" type="checkbox"/> Post and beam	<input type="checkbox"/> Balloon
<input type="checkbox"/> Load-bearing masonry		<input type="checkbox"/> Structural iron or steel
<input type="checkbox"/> Other (Specify)		

10. ROOF (Type)

<input checked="" type="checkbox"/> Gable	<input type="checkbox"/> Flat	<input type="checkbox"/> Mansard	<input type="checkbox"/> Monitor	<input type="checkbox"/> Sawtooth
<input type="checkbox"/> Gambrel	<input type="checkbox"/> Shed	<input type="checkbox"/> Hip	<input type="checkbox"/> Round	<input type="checkbox"/> Other (Specify)

(Material)

<input type="checkbox"/> Wood shingle	<input type="checkbox"/> Roll asphalt	<input type="checkbox"/> Tin	<input type="checkbox"/> Slate
<input checked="" type="checkbox"/> Asphalt shingle	<input type="checkbox"/> Built up	<input type="checkbox"/> Tile	<input type="checkbox"/> Other (Specify)

11. NUMBER OF STORIES: 2 APPROXIMATE DIMENSIONS: 33 x 28

12. CONDITION (Structural) (Exterior)

<input type="checkbox"/> Excellent	<input checked="" type="checkbox"/> Good	<input type="checkbox"/> Fair	<input type="checkbox"/> Deteriorated	<input type="checkbox"/> Excellent	<input checked="" type="checkbox"/> Good	<input type="checkbox"/> Fair	<input type="checkbox"/> Deteriorated
------------------------------------	--	-------------------------------	---------------------------------------	------------------------------------	--	-------------------------------	---------------------------------------

13. INTEGRITY (Location) WHEN? ALTERATIONS IF YES, EXPLAIN

<input checked="" type="checkbox"/> On original site	<input type="checkbox"/> Moved		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
--	--------------------------------	--	------------------------------	--	--

14. RELATED OUTBUILDINGS OR LANDSCAPE FEATURES

<input type="checkbox"/> Barn	<input type="checkbox"/> Shed	<input checked="" type="checkbox"/> Garage	<input type="checkbox"/> Other landscape features or buildings (Specify)
<input type="checkbox"/> Carriage house	<input type="checkbox"/> Shop	<input type="checkbox"/> Garden	

15. SURROUNDING ENVIRONMENT

<input type="checkbox"/> Open land	<input type="checkbox"/> Woodland	<input checked="" type="checkbox"/> Residential	<input type="checkbox"/> Scattered buildings visible from site
<input type="checkbox"/> Commercial	<input type="checkbox"/> Industrial	<input checked="" type="checkbox"/> Rural	<input type="checkbox"/> High building density

16. INTERRELATIONSHIP OF BUILDING AND SURROUNDINGS: This building is situated in the small rural hamlet of South Canaan, astride heavily traveled Route 63, across from the South Canaan Congregational Church.

(OVER)

17. OTHER NOTABLE FEATURES OF BUILDING OR SITE (Interior and/or exterior)

16B Huntsville Road is an attractive 1-1/2-story vernacular Greek Revival-style residence with a gable roof, oriented with the gable end to the street. The structure rests on a fieldstone foundation and is sheathed with clapboards. The building incorporates an offset entry (front-left) with a substantial pilaster-and-lintel surround. Window sash is of 2/2 configuration arranged in a two-bay facade. Architectural and decorative features include a wide frieze, molded cornice returns, small central chimney, and single-story gable-roofed wing on the left.

18. ARCHITECT _____ BUILDER _____

19. HISTORICAL OR ARCHITECTURAL IMPORTANCE

At the beginning of the nineteenth century two events combined to help create the small rural village of South Canaan. Construction of a new town meeting house (1804) at this site, astride the recently opened (c.1799) Canaan-Litchfield turnpike caused a cluster of buildings to appear at the crossroads, including the church, school, parsonage, smithy, wagon shop, and several homes. In 1840 John W. Janes purchased land and buildings in South Canaan village from Joel Keep, and four years later mortgaged a house and land next to the meetinghouse. It is not clear whether this house is the one he purchased from Keep, or one he erected shortly thereafter. In either case, it is a good example of a modest period vernacular residence enhanced with simple Greek Revival-style detailing.

SOURCES

Canaan Land Records 42-846
 Canaan Assessor's Records
 F.W. Beers, County Atlas of Litchfield
 Clark's Map of Litchfield County (1853)
 History of Litchfield County (1881)

PHOTO

PHOTOGRAPHER
 Geoffrey Rossano 4-15-2000

VIEW
 NW On file: CHC

COMPILED BY

NAME
 Geoffrey Rossano 5-15-2000

ORGANIZATION
 Connecticut
 Historical Commission

ADDRESS
 59 South Prospect St.
 Hartford, CT

20. SUBSEQUENT FIELD EVALUATIONS

21. THREATS TO BUILDING OR SITE

None known Highways Vandalism Developers
 Renewal Private Deterioration Zoning



HISTORIC RESOURCES INVENTORY
BUILDINGS AND STRUCTURES

HIST-6 REV. 6/83

IF#16

STATE OF CONNECTICUT
CONNECTICUT HISTORICAL COMMISSION
 59 SOUTH PROSPECT STREET, HARTFORD, CONNECTICUT 06106
 (203) 566-3005

FOR OFFICE USE ONLY

Town No.:	Site No.:
UTM	
QUAD:	
DISTRICT	IF NR, SPECIFY
<input type="checkbox"/> S <input type="checkbox"/> NR	<input type="checkbox"/> Actual <input type="checkbox"/> Potential

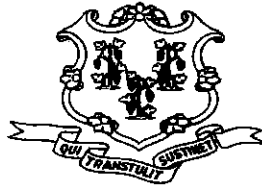
IDENTIFICATION

1. BUILDING NAME (Common) <i>(Historic)</i>		John Janes House	
2. TOWN / CITY	VILLAGE	COUNTY	
Canaan		Litchfield	
3. STREET AND NUMBER (and / or location) 16B huntsville Road			
4. OWNER(S) Peter Lawson <input type="checkbox"/> Public <input checked="" type="checkbox"/> Private			
5. USE (Present)		<i>(Historic)</i>	
Residence		Residence	
6. ACCESSIBILITY TO PUBLIC:	EXTERIOR VISIBLE FROM PUBLIC ROAD	INTERIOR ACCESSIBLE	IF YES, EXPLAIN
	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

DESCRIPTION

7. STYLE OF BUILDING		DATE OF CONSTRUCTION	
Vernacular Greek Revival		c.1840	
8. MATERIAL(S) (Indicate use or location when appropriate)			
<input checked="" type="checkbox"/> Clapboard	<input type="checkbox"/> Asbestos siding	<input type="checkbox"/> Brick	<input type="checkbox"/> Other (Specify)
<input type="checkbox"/> Wood shingle	<input type="checkbox"/> Asphalt siding	<input type="checkbox"/> Fieldstone	
<input type="checkbox"/> Board & batten	<input type="checkbox"/> Stucco	<input type="checkbox"/> Cobblestone	
<input type="checkbox"/> Aluminum siding	<input type="checkbox"/> Concrete Type:	<input checked="" type="checkbox"/> Cut stone Type:	
9. STRUCTURAL SYSTEM			
<input type="checkbox"/> Wood frame	<input checked="" type="checkbox"/> Post and beam	<input type="checkbox"/> Balloon	
<input type="checkbox"/> Load-bearing masonry		<input type="checkbox"/> Structural iron or steel	
<input type="checkbox"/> Other (Specify)			
10. ROOF (Type)			
<input checked="" type="checkbox"/> Gable	<input type="checkbox"/> Flat	<input type="checkbox"/> Mansard	<input type="checkbox"/> Monitor
<input type="checkbox"/> Gambrel	<input type="checkbox"/> Shed	<input type="checkbox"/> Hip	<input type="checkbox"/> Round
<input type="checkbox"/> Other (Specify)			
(Material)			
<input type="checkbox"/> Wood shingle	<input type="checkbox"/> Roll asphalt	<input type="checkbox"/> Tin	<input type="checkbox"/> Slate
<input checked="" type="checkbox"/> Asphalt shingle	<input type="checkbox"/> Built up	<input type="checkbox"/> Tile	<input type="checkbox"/> Other (Specify)
11. NUMBER OF STORIES	APPROXIMATE DIMENSIONS		
1-1/2	21 x 37 + 25 x 16		
12. CONDITION (Structural)		<i>(Exterior)</i>	
<input type="checkbox"/> Excellent	<input checked="" type="checkbox"/> Good	<input type="checkbox"/> Fair	<input type="checkbox"/> Deteriorated
		<input type="checkbox"/> Excellent	<input checked="" type="checkbox"/> Good
		<input type="checkbox"/> Fair	<input type="checkbox"/> Deteriorated
13. INTEGRITY (Location)		WHEN?	ALTERATIONS
<input checked="" type="checkbox"/> On original site	<input type="checkbox"/> Moved		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
14. RELATED OUTBUILDINGS OR LANDSCAPE FEATURES			
<input type="checkbox"/> Barn	<input type="checkbox"/> Shed	<input checked="" type="checkbox"/> Garage	<input type="checkbox"/> Other landscape features or buildings (Specify)
<input type="checkbox"/> Carriage house	<input type="checkbox"/> Shop	<input type="checkbox"/> Garden	
15. SURROUNDING ENVIRONMENT			
<input type="checkbox"/> Open land	<input type="checkbox"/> Woodland	<input checked="" type="checkbox"/> Residential	<input type="checkbox"/> Scattered buildings visible from site
<input type="checkbox"/> Commercial	<input type="checkbox"/> Industrial	<input checked="" type="checkbox"/> Rural	<input type="checkbox"/> High building density

16. INTERRELATIONSHIP OF BUILDING AND SURROUNDINGS
 This building is situated in the historic hamlet of South Canaan, close to the South Canaan Meetinghouse.



1W29

State of Connecticut
CONNECTICUT GENERAL ASSEMBLY
STATE CAPITOL
HARTFORD, CT 06106-1591

January 28, 2011

Honorable Daniel F. Caruso, Chairman
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051-2655

Re: AT&T Application for Certificate of Environment Compatibility and Public Need
8 Barnes Road, Canaan

Dear Chairman Caruso:

We write to you today to express our concerns regarding the telecommunications tower proposed by AT&T for 8 Barnes Road in Canaan. We believe this site is not well suited for a telecommunications tower.

Of particular concern is the significant grade of the proposed unpaved access road. The extreme steepness of this road could negatively impact local wetlands. The environmental impact to this area must be considered. The risk of runoff, and its impact, on the Housatonic River and local wetlands must be considered in your decision-making on this application.

The State of Connecticut has dedicated this particular section of route 7 as a scenic highway. This proposed site would mean that the tower would be visible from extensive lengths of the highway. The scenic quality of this highway should be recognized by the Siting Council as a having value as significant feature of our state.

We respectfully request that you deny this AT&T application. Your thoughtful consideration of this particular location is appreciated.

Sincerely,

Andrew W. Roraback
State Senator 30th District

Roberta B. Willis
State Representative 64th District

1W 30



imagination | innovation | energy Creating results for our clients and benefits for our communities

Vanasse Hangen Brustlin, Inc.

August 6, 2010

Patricia Allyn Mechare
First Selectman
Town Hall
P.O. Box 47
Falls Village, CT 06031-0047

To comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, SAI Communications representing New Cingular Wireless PCS, d/b/a AT&T, has retained Vanasse Hangen Brustlin, Inc. (VHB) to evaluate proposed carrier facilities for any adverse effect it may have on historic properties. As part of this evaluation, and in conformance with the Nationwide Programmatic Agreement (NPA) for review of effects on historic properties for proposed undertakings, VHB is submitting this tower construction notification to the Town of Falls Village First Selectman and The Falls Village - Canaan Historical Society.

AT&T is proposing to install a new wireless telecommunications facility consisting of a 150±-foot tall monopole tower, antennas, and associated ground equipment located on portions of property at 8 Barnes Road in Falls Village, Connecticut. This facility will provide improved wireless coverage to select areas of Falls Village/Canaan.

The purpose of this letter is to notify the Town of Falls Village/Canaan that public notice of this proposed facility will be published in *The Lakeville Journal* on August 12, 2010 and to invite comments regarding any potential effects that the proposed facility may have upon historic properties from relevant individuals or groups that you may be aware of.

Parties interested in submitting comments regarding any potential effects of the proposed facility on historic properties may do so by sending them to Vanasse Hangen Brustlin, Inc., 54 Tuttle Place, Middletown, CT, 06457, to the attention of Coreen Kelsey. Questions about this proposed project or to request additional information may be submitted via mail to the above address, emailed to ckelsey@vhb.com, or by calling (860) 632-1500 ext. 2306.

VHB will be accepting comments and/or questions within 30 days of the date of this publication. Therefore, all comments or questions regarding this matter should be postmarked/submitted by no later than September 12, 2010.

cc: The Falls Village - Canaan Historical Society
The Falls Village Depot
44 Railroad Street
Falls Village, CT 06031

54 Tuttle Place
Middletown, Connecticut 06457-1847
860.632.1500 • FAX 860.632.7879
email: info@vhb.com
www.vhb.com

Town of Canaan
108 Main Street
P.O. Box 47
Falls Village, CT 06031-0047



AN EQUAL OPPORTUNITY EMPLOYER,
PROVIDER AND HOUSING ADVOCATE

Telephone: 860 824-0707
Fax: 860 824-4506
E-mail: canaan021@comcast.net

September 1, 2010

Vanasse Hangen Brustlin, Inc.
54 Tuttle Place
Middletown, CT 06457

Re: August 6th, 2010 letter
Att: Coreen Kelsey

Regarding the proposed telecommunication facility on Cobble Hill at 8 Barnes Road, there will be adverse effects on historic properties. Consequently, this Commission takes strong exception to the intrusion of this facility upon our historic area and landscape.

From Route 7 driving either north or south, the tower would stand prominently in our landscape, especially over the circa 1800 historic Meeting House and Congregational Church in South Canaan. In addition, we have viewed (mostly from ground level, not from second stories of homes) the balloon test from every viewpoint, which includes sightings not only from Route 7 but also along Route 63, Route 126, Music Mountain Road, Johnson Road, Page Road, Point of Rocks Road, Under Mountain Road and Barnes Road.

The incompleteness and inaccurate perspectives of the Technical Report's "Photosims" notwithstanding, the proposed facility will become a dominant feature in much of our community's historic view shed—heretofore a classic rural New England landscape. Clearly this not only mars the landscape for both visitors and residents alike but will also have an adverse impact on property and home values where this facility intrudes upon coveted views of forested mountain and open meadows.

This, we submit, is a distinctly adverse effect upon historic properties.

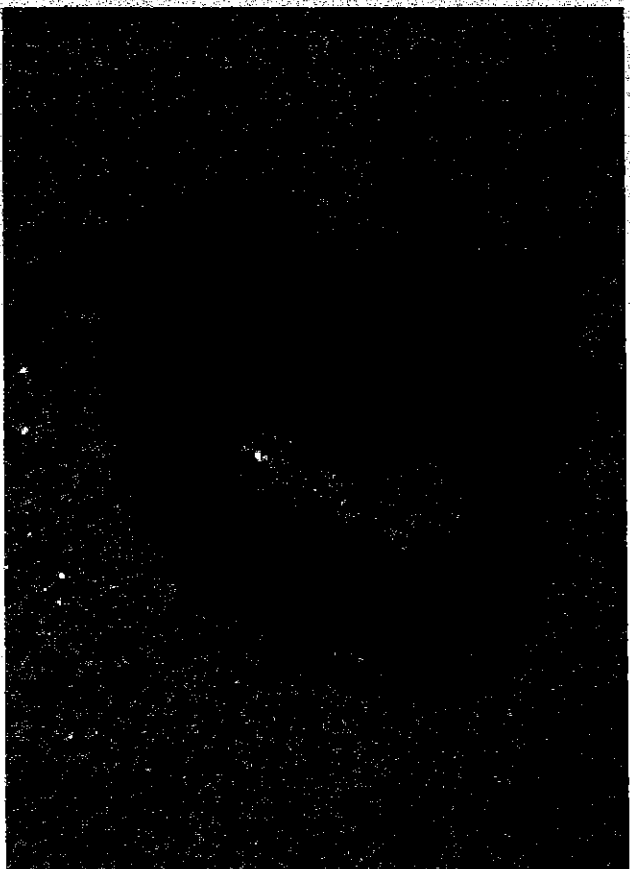
Sincerely,

A handwritten signature in black ink, appearing to read "Ellery W. Sinclair".

Ellery W. Sinclair, Chairman
Conservation Commission

Connecticut's Venomous Snakes
Timber Rattlesnake and Northern Copperhead

Richard C. Petersen



STATE GEOLOGICAL AND NATURAL HISTORY SURVEY
OF CONNECTICUT

A DIVISION OF THE DEPARTMENT OF AGRICULTURE
AND NATURAL RESOURCES

1970

BULLETIN 103

1W31

STATE GEOLOGICAL AND NATURAL HISTORY SURVEY
OF CONNECTICUT

A DIVISION OF THE DEPARTMENT OF AGRICULTURE
AND NATURAL RESOURCES

Connecticut's Venomous Snakes
Timber Rattlesnake and Northern Copperhead

RICHARD C. PETERSEN



BULLETIN 103
1970

STATE GEOLOGICAL AND NATURAL HISTORY SURVEY
OF CONNECTICUT

A DIVISION OF THE DEPARTMENT OF AGRICULTURE
AND NATURAL RESOURCES

HONORABLE JOHN N. DEMPSEY, *Governor of Connecticut*
JOSEPH N. GILL, *Commissioner of the Department of Agriculture and Natural Resources*

COMMISSIONERS

HON. JOHN N. DEMPSEY, *Governor of Connecticut*
DR. J. WENDELL BURGER, *Department of Biology, Trinity College*
DR. RICHARD H. GOODWIN, *Department of Botany, Wesleyan University*
DR. JOE WEBB PEOPLES, *Department of Geology, Wesleyan University*
DR. JOHN RODGERS, *Department of Geology, Yale University*
DR. JAMES A. SLATER, *Department of Zoology and Entomology, University of Connecticut*

DIRECTOR

JOE WEBB PEOPLES, Ph.D.
Wesleyan University, Middletown, Connecticut

EDITOR

LOU WILLIAMS PAGE, Ph.D.

DISTRIBUTION AND EXCHANGE AGENT

WALTER BRAHM, *State Librarian*
State Library, Hartford

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Connecticut's Venomous Snakes

Timber Rattlesnake and Northern Copperhead

by
Richard C. Petersen

INTRODUCTION AND ACKNOWLEDGMENTS

Fourteen species of snakes are found in Connecticut. Contrary to popular belief, only two are venomous, the Timber Rattlesnake and the Northern Copperhead.

In this report, these two species are described and discussed for laymen by a layman. After many months of considering the problems and frustrations in writing about creatures as misunderstood and feared as rattlesnakes and copperheads, I concluded that it must be done. Every year the demand for a better understanding of them has increased. Connecticut is now first in the northeastern states in rate of population increase and fourth in the nation in population density. More leisure and better education have brought about a greater interest in nature on the part of increasing numbers of citizens whose backgrounds are quite diverse. It is my hope that the reader will gain from this booklet an increased awareness and perception of Connecticut's venomous snakes and that he will begin to think them worthy of understanding and consideration.

Unfortunately, the public knows little about the habits and characteristics of the rattlesnake and copperhead. People in general know as little about fishes, mammals, and birds, so one may ask why two kinds of snakes deserve special consideration. The key word, of course, is *venomous*, which, indeed, rattlesnakes and copperheads are. In addition, they resemble other snakes that are harmless. In Connecticut, as in other states, the Board of Fisheries and Game, along with nature centers, museums, and universities, each year receives many reports or questions related to rattlesnakes and copperheads. Often the inquirer is panic stricken. Most families do not have a ready source of information about the snakes of Connecticut. This booklet seeks to fill that need.

It is not the author's intent either to exaggerate or to underestimate the importance of Connecticut's two venomous snakes. Most herpetologists agree that these snakes represent a certain hazard to humans. It is hoped, however, that this report will allay unreasonable fears by showing how to recognize the two poisonous snakes and telling what to do if bitten by one of them. In addition, it is hoped that the reader will come to appreciate these remarkable and beautiful animals as natural objects deserving of survival and understanding.

In Connecticut we are fortunate to have many serious amateur herpetologists, as well as several professionals, who will assist or advise groups or individuals who have questions about the snakes found in our state. The Connecticut Herpetological Society has recently been formed, with goals similar to those of

many educational and conservation organizations. Made up largely of amateur herpetologists, it receives advice from both the Systematic and Environmental Biology unit at the University of Connecticut and the Department of Herpetology at the Peabody Museum of Natural History, Yale University. Persons interested in this society should write for information to Robert Dubos, Curator of Vertebrate Zoology, Biological Sciences Group, University of Connecticut, Storrs, Connecticut 06268.

Numerous books and pamphlets have been examined in the preparation of this report, and I have drawn freely from most of them. In addition, throughout are accounts of my own field experiences. Technical terms have, for the most part, been omitted to make the text more easily understandable. I have included all the information on Connecticut's two venomous snakes that seems necessary for the lay reader. Those interested in more detailed information should consult some of the publications in the reference list at the end.

In preparing this booklet, I am indebted to many people for their cooperation and generous assistance; without their interest and guidance, it could not have been written. My wife, Joy Andersen Petersen, assisted me in observing and recording the habits of the Timber Rattlesnake and Northern Copperhead while in captivity, continually encouraged me in the study, and criticized the entire manuscript. Herbert Nichols of Dutchess County, New York, a friend and field companion for many years, provided much of the data on the ecology and distribution of rattlesnakes and copperheads in extreme western Connecticut and southeastern New York State. Atroll Lamson of the Connecticut Board of Fisheries and Game has encouraged me in the preparation and provided an enormous amount of data on copperhead and rattlesnake distribution throughout Connecticut. His knowledge of the state's biological environment has aided the search for copperhead and rattlesnake dens, and he has shared in my field work. Ralph M. Wetzel of the University of Connecticut first recognized the need for this booklet and encouraged me to write it. Una S. Riddle of Canton allowed me to keep specimens at the Roaring Brook Nature Center, and to observe and write about these venomous snakes in necessary privacy. Carl Kauffeld, Director of the Staten Island Zoo and Curator of Reptiles, has encouraged and guided me in the field of herpetology, and answered many questions. Thomas Uzzell of the Peabody Museum of Natural History, Yale University, and Ron Rommel of Trumbull supplied data for both snake species. Arthur Blank of the Poison Information Center in Hartford provided information on the incidence of snakebite in Connecticut. James Slater, Norman Scott, Robert Dubos, and Darleen B. Wilcox of the Biological Sciences Group at the University of Connecticut proofread the manuscript and suggested many improvements; the University of Connecticut Research Foundation gave secretarial aid in its preparation. To all these people goes my sincere appreciation.

IDENTIFICATION AND RECOGNITION

As with poisonous plants and insects, it is highly advantageous to recognize a venomous snake quickly. These hazards can interrupt enjoyment of the outdoor world, but if one is aware of them, he is better able to avoid them. Accurate

descriptions of the copperhead and rattlesnake and of the habitats they occupy serve this end. The ability to recognize these poisonous snakes eliminates a prevalent and unreasoning fear of all snakes and thus enhances enjoyment of the outdoors. (Knowledge of what to do should they injure, further establishes one's peace of mind—this matter is taken up in a later section.)

Color and pattern

TIMBER RATTLESNAKE (*Crotalus horridus horridus*)

Unlike most rattlesnakes, this species has two color phases (table 1), a light or yellow phase (plate 1) and a dark or black phase (plate 2). It was formerly a common belief that dark-phase individuals are males and light-phase are females. Herpetologists now believe that color is unrelated to sex. I have examined many rattlesnakes in Connecticut during the last ten years and found a fairly equal representation of sexes in both color phases.

Table 1.—Phases of the Timber Rattlesnake

	Light or yellow phase (pl. 1)	Dark or black phase (pl. 2)
Head	Light or dark yellow; very broad and unmarked. Iris of eye yellow; pupil black and vertically elliptical.	Black or dark brown; very broad and unmarked. Iris of eye dark gray; pupil black and vertically elliptical.
Body	Ground color light or bright yellow with dark-brown or black chevron-shaped cross bands. A thin, striking, yellow border surrounds each chevron. Ground color varied. Many individuals have a mid-dorsal rust stripe extending from neck to tail.	Ground color dark brown or grayish black. Chevrons bordered with thin yellow margin. Color likely to vary in individuals. Mid-dorsal rust stripe evident in most individuals.
Tail	Dark brown or black; unmarked; segmented rattle on tip.	

Melanism and albinism. Very dark Timber Rattlesnakes with no trace of markings can be found, but they are quite uncommon. I have seen only four, two in New York State, one in southern New Hampshire, and one in Glastonbury, Connecticut. As with most species of snakes, albinism occurs in Timber Rattlesnakes, although I have not yet seen an albino specimen. However, about 1940, Herbert Nichols of Windale, New York, saw one in that state, in Dutchess County.

Newborn rattlesnakes. Newborn snakes of this species are replicas of adults except that the adult colors do not become evident until the snaking reaches its juvenile stage. Some newborn have the rust-colored mid-dorsal stripe extending from head to tail. Ground color is generally dark or light gray. The chevron-shaped cross bands are dark brown or black. The head is unmarked. There is a pre-burton on the tip of the tail.

Criteria for identification. For live Timber Rattlesnakes in the field, these are (1) the yellow or black, blunt- and broad-shaped head, which is unmarked; (2) the dark-brown or black chevron-shaped cross bands with striking thin yellow borders; (3) the dark tail, which is unmarked; (4) the rattle(s) on the tip of the tail.

NORTHERN COPPERHEAD (*Ancistrodon contortrix mokasen*)

This species is illustrated on plate 3. The *head* is coppery, similar in color to an old copper coin. There is a very thin line on the sides of the face that separates the richer copper color of the top of the head from the lighter color of the lips. The iris of the eye is pale gold, and the pupil is dark and vertically elliptical. On the *body* is a series of dark-brown to reddish hour-glass-shaped cross bands. These are narrow in the middle of the body and broad laterally. The ground color ranges from beige to tan, and shades of color are variable. Body markings are continuous over the entire length of the body, including the *tail*. Baby copperheads are replicas of adults.

In Connecticut, as in some other northeastern states, the copperhead shares its range with a number of harmless snakes, somewhat similar in color and design. This fact, coupled with the copperhead's unfavorable reputation, causes many of these very useful nonvenomous snakes to be killed each year.

BIOLOGY

Classification and general characteristics

Rattlesnakes and copperheads belong to the family of snakes known as pit vipers. Like other reptiles, they are ectothermic vertebrates: they have backbones and cannot control their body heat by physiological means, as do warm-blooded animals. In order to control its body temperature, a reptile must move to a warmer or cooler environment.

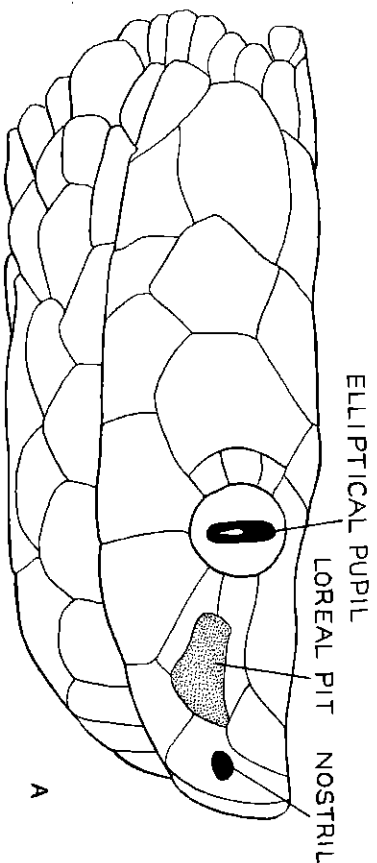
The term "pit viper" is derived from the characteristic loreal pits, one situated on each side of the head (fig. 1), lying midway between the nostril and eye, but below their level. Each pit contains sensitive nerve ends that react to radiant heat. The primary function of these remarkable sensory units is to assist the snake in detecting warm-blooded prey in darkness.

The head of a pit viper is broad and triangular. The neck is comparatively thin relative to the body. The eyes have vertically elliptical (catlike) pupils, adaptations characteristic of chiefly nocturnal animals. There are no movable eyelids or external ear openings. Sight is fairly keen within a limited range; moving objects are more readily perceived than are stationary ones.

The loreal pit and the elliptical, catlike eye pupil, characteristic of Connecticut's rattlesnake and copperhead, are not readily discernable during a field encounter, but are, rather, key criteria in identifying dead rattlesnakes or copperheads.

Snakes are extremely sensitive to ground vibrations and are able to detect very

VENOMOUS



NON-VENOMOUS

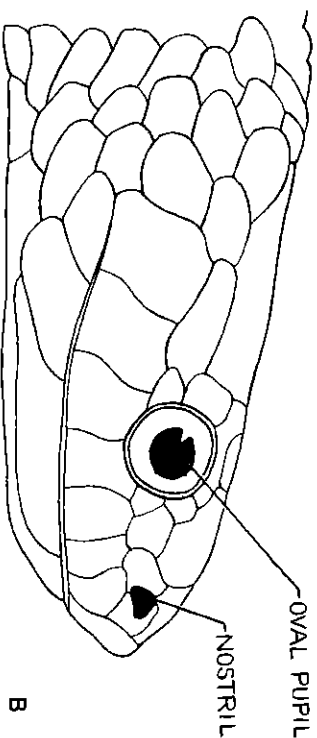


Fig. 1. A. Head of a venomous snake; B. head of a nonvenomous snake.

slight ground disturbances. Scientific studies confirm that these vibrations are transmitted to the auditory nerve through the bones of the lower jaw.

A snake's tongue is not a stinger, as many people believe. It is a very delicate organ associated with a pair of cavities, known as Jacobson's organ, located in the roof of the mouth. The function of the tongue is to reach out and bring in particles from the air, which are then transferred to the Jacobson's organ, which receives the "message" contained in these particles and delivers it to the brain. Jacobson's organ appears to be directly related to the nasal system and aids in smelling; however, each system can be used independently as well as together.

HEAD OF PIT VIPER

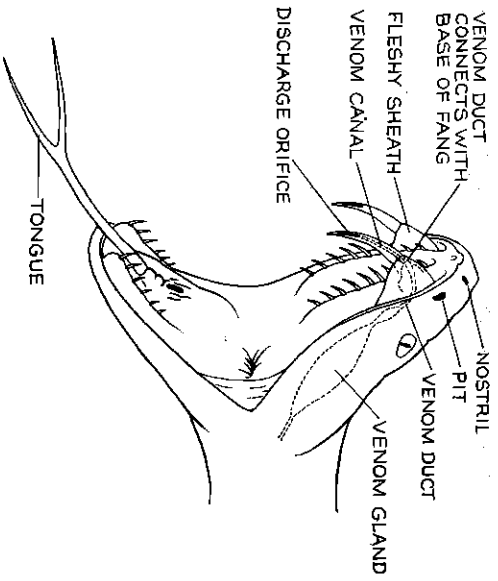


Fig. 2. Head of a pit viper with mouth open, showing venom apparatus.

The two well developed and enlarged venom-conducting fangs of pit vipers are located in front of the mouth and are fastened solidly to the upper jawbone (fig. 2). They are movable and are folded against the roof of the mouth when not in use. A fleshy sheath covers each fang when the mouth is closed. The fangs are not permanent; they are shed periodically. Each fang socket has several

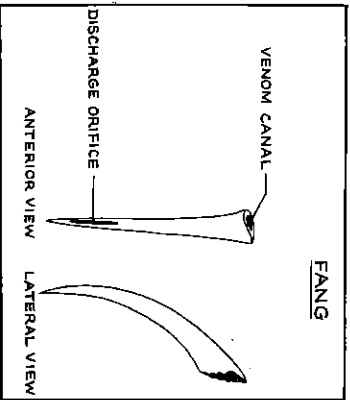
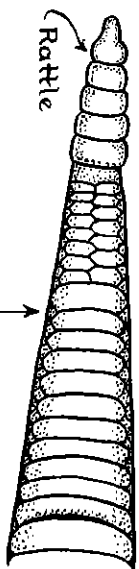


Fig. 3. Fang of a pit viper, showing venom canal and discharge orifice.

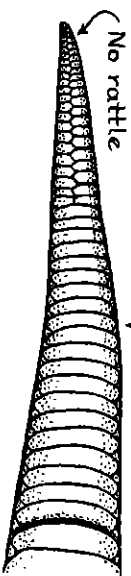
POISONOUS

RATTLESNAKE



Single row of subcaudal plates

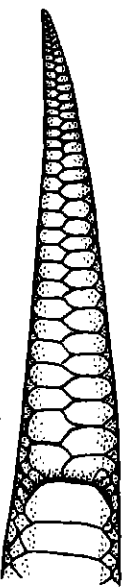
A



COPPERHEAD

B

NON-POISONOUS



Double row of subcaudal plates entire length of tail

C

Fig. 4. Subcaudal (underside) scale arrangement on tail of A, rattlesnake; B, copperhead; C, a nonpoisonous snake.

replacement fangs in various stages of development, located in the gum behind the functional fang. Before a fang is shed, a new one has already positioned itself. Along with these enlarged fangs, pit vipers also have many smaller recurved teeth on the palate and lower jaw.

Each fang is connected to a venom gland on either side of the face. Through muscular action, the venom is pumped from the gland through the fang channel (fig. 3) into the victim, an action best compared to that of a hypodermic-syringe injection. Young rattlesnakes and copperheads are born fully equipped with venom apparatus and are capable of killing their own prey.

The scales of the Timber Rattlesnake and Northern Copperhead are keeled; the scales are not flat and smooth; instead, a ridge protrudes from the middle of each scale. The subcaudal scales—those under the tail—of a rattlesnake or copperhead are arranged in a single row, except near the tip (fig. 4A,B). In contrast, the subcaudal scales of all of Connecticut's nonvenomous snakes are divided into a double row (fig. 4C).

Structure and size

Few characteristics of snakes stimulate public interest as much as their size. Of course, size is important to students of herpetology; in addition, the size of a venomous snake has a direct bearing on the gravity of its bite and the subsequent treatment of that wound.

The Timber Rattlesnake attains a greater length and larger girth than does the copperhead. Its average length is 3 to 3½ ft and the maximum is about 6 ft, although specimens of this latter size are rare. The longest specimen taken by the author was 3 ft, 11 in.; it was captured in Hartford County. Edwin Fusaro of Hopewell Junction, New York, captured a specimen in Sullivan County (New York) in May 1968 that measured 4 ft, 6 in. The late Raymond L. Ditmars of the New York Zoological Society collected one in Sheffield, Massachusetts, that was 6 ft, 2 in. in length. It seems unlikely that a 6-ft rattlesnake will be encountered in Connecticut, although a 5-ft specimen was reported in 1969 from Litchfield County.

The average length of the Northern Copperhead is 2 to 3 ft; the record of 4 ft, 5 in. is held by a snake from White Plains, New York. The author's largest specimen came from Hartford County, and measured 3 ft, 3 in. Over a ten-year period, rarely have I found copperheads over 3 ft long.

Foods and feeding habits

Both the Timber Rattlesnake and Northern Copperhead feed on varied prey. The rattlesnake has the more limited diet, feeding almost entirely on warm-blooded rodents and birds. The copperhead will, in addition, take certain insects, reptiles, and amphibians. Like all snakes, these two species swallow their food whole. Both need drinking water.

They secure their prey by lying in a suitable spot and waiting for a small animal to pass by. Typical food-hunting activity consists of lying motionless for

long periods with intervals of careful and intensive prowling. The prey is detected by sight, scent, and the sensory pit. Thus guided, the snake lashes out and sinks its venom-conducting fangs into the prey. Usually it then recoils and waits for the venom to overcome the victim. (This method of securing food is much more advanced than seizing the victim and constricting it. Prey and snake are then in contact and there is a possibility that the snake will be injured during the struggle.) The author has noted that when birds are introduced to a captive copperhead or rattlesnake, however, these snakes will usually strike and hang on, instead of releasing the bird. It appears that these snakes realize instinctively that if the bird is released, it may fly out of reach of the captive snake before the venom becomes effective. After a strike, the length of time before the prey dies depends largely on the size and kind of prey and the amount of venom injected.

Copperheads are born with yellow tail tips. Captive baby copperheads can be seen to wiggle and twist their tails in a manner suggestive of a grub or worm. Many herpetologists believe that this bright-yellow tail is an adaptation which aids the babies in obtaining their prey, and that the infant snake is attempting to attract unsuspecting frogs and toads.

The venom serves two important functions. In addition to being the killing agent, it contains enzymes that break down the victim's body tissue, thus aiding in digestion.

Reproduction

Both the Timber Rattlesnake and the Northern Copperhead are viviparous—their young are born alive. They are born in a membranous fetal sac that is ruptured by the young snake, using a tiny, sharp egg tooth situated just inside of the mouth in front of the upper jaw. It is now believed that in the north the young are produced biennially, rather than annually. Mating may occur throughout a snake's entire season of activity, with births taking place from August to late September. No maternal care of the young is given by the mother. They are born with fangs and venom and are left to fend for themselves.

A female Timber Rattlesnake gives birth to 6 to 14 snakelings. The young measure from 8 to 10 in. They are born with a pre-button, the beginning of the rattle on the tip of the tail (see fig. 5A). The snakelings are replicas of their parents with one exception: there is rarely a trace of the dull- or bright-yellow coloration characteristic of many adults. Most baby rattlers are quite dark with black heads.

During the preparation of this bulletin, three gravid female Timber Rattlesnakes were kept. Two were the dark phase and one was a bright-yellow phase. On August 20, 1968, the smallest female gave birth to 6 live baby snakes. On August 24, 1968, the medium-size female gave birth to 10 snakelings. On August 26, 1968, the largest female, which was 4 ft long, gave birth to 14 young. In two of these broods there were a number of stillborn or underdeveloped snakes. These dates of birth and these numbers of young are fairly typical of Connecticut rattlesnakes.

A female Northern Copperhead gives birth to 3 to 10 infants at one time; according to my records, broods of 4 to 6 are the most common. The average size of newborn copperheads is 7 to 9 in. They are replicas of their parents, the only noteworthy difference being that the tails of the young have a bright-yellow tip that darkens as the snake grows.

Copperheads and rattlesnakes are born with a supply of egg yolk in their abdominal cavities. During their first few weeks the infants grow rapidly in length, nourished by this egg yolk; however, they lose a significant amount of weight. It is important that each snake find sufficient food between birth and the time it enters hibernation in the late autumn. Snakes which have been incapable of obtaining food during this critical period have a poorer chance of surviving hibernation.

Shedding

Rattlesnakes and copperheads, like other species of snakes, shed their entire outer skin three or four times during the regular season of activity (the warmer months). Shedding of the skin is directly related to the healthy growth of the snake; a snake that is unable to rupture the old worn skin and peel it off, does not show normal growth. Young snakes shed more frequently than adults because they grow at a faster rate.

Prior to shedding, the eyes become filmy and take on an opaque bluish color, brought about by milky fluid which has formed between the old skin and the new. During this period the snake's sight is impaired; it becomes inactive until the condition clears up. Then it is ready to begin the process of stripping the old epidermis.

To initiate shedding, the reptile rubs its nose on rough objects until the skin is ruptured. By hooking the lower or upper flap on some sharp or protruding object the snake literally crawls out of the old skin. It is peeled off inside out, similar to the act of peeling a banana. Just after successfully shedding, the snake is extremely iridescent and brightly colored. It becomes active and is usually eager to feed.

A snake's skin is composed of the protein keratin. Each time that a rattlesnake sheds, a new rattle segment is added (fig. 5C). It is not true that the age of a rattlesnake can be determined by counting the number of rattle segments, because the number of molts varies from season to season during the peak of the snake's development. Also, rattle segments frequently break off during a snake's normal activity (fig. 5B), and a perfect set of rattles on adult snakes is uncommon. It is fairly common, however, to find a complete set on juveniles or adolescents (fig. 5D). Age can be approximately determined only if the snake still has the prebutton with which it was born.

Defense

The venom of poisonous snakes is primarily used to obtain food; its use as a defensive weapon is secondary.

When confronted by an adversary, the personality and temperament of both

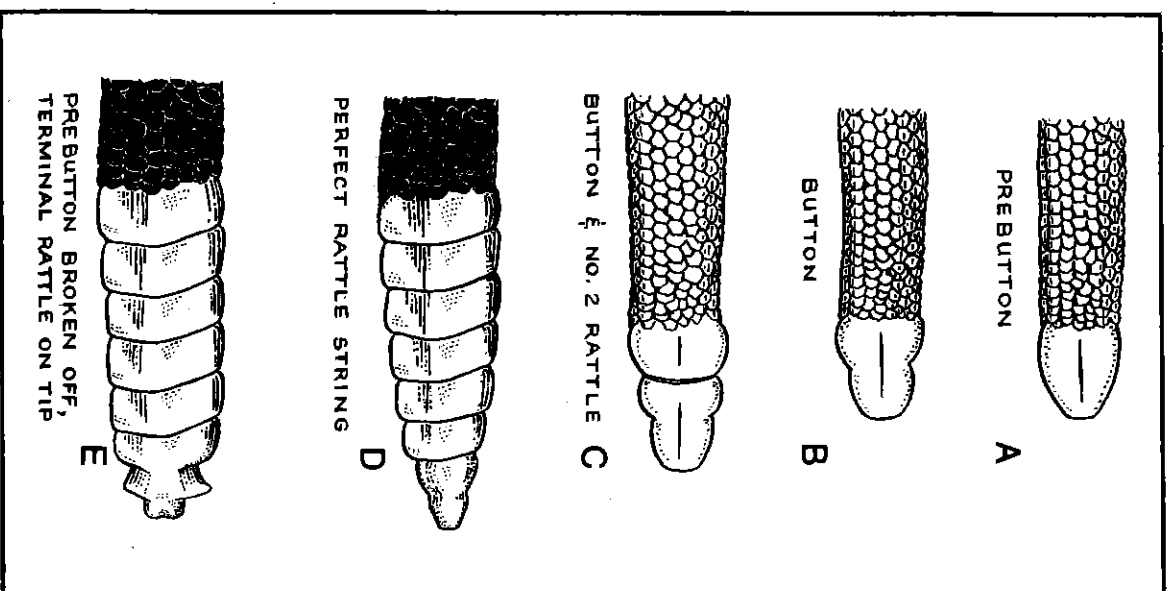


Fig. 5. Rattlesnake tails, showing prebutton, button, rattles, and rattle strings.

Timber Rattlesnakes and Northern Copperheads change markedly. The defensive habits used are largely determined by the degree of intrusion and the accessibility of a refuge. Only as a last resort, and generally not until the snake has been cut off from retreat or actually seized, will these two snakes resort to striking and biting. The defense habits of both species are as follows: (1) The snake lies motionless, hoping to avoid detection through its protective coloring and design. (2) After detection, the snake tries to warn the intruder by coiling and flattening or inflating the body in order to appear larger, vibrating the tail, and then retreating. (3) If actually seized or cornered, the snake sprays musk from a vent in its tail to discourage the enemy, and finally strikes and bites.

The author has encountered many copperheads and rattlesnakes in Connecticut and has never been attacked. Neither species is boldly aggressive. While hunting and photographing the Timber Rattlesnake and Northern Copperhead in their mountain habitats, I have noticed that the copperhead is by far the more difficult to see, and is the more mild mannered of the two. The Timber Rattlesnake is easier to see because of its bold markings, size, and nervousness.

In the field, the Timber Rattlesnake tends to be more nervous and high strung. A close approach usually elicits an immediate defense reaction: the snake quickly dashes for shelter. Usually only after reaching shelter does it rattle. In contrast, when the copperhead is approached, it usually lies motionless and rarely attempts to escape by rapid movement. I have often found myself practically standing on a copperhead before the snake "came into focus." Only occasionally will a rattlesnake allow such a close approach without a positive defense reaction.

There has been much discussion about the striking distance of snakes and needless to say, it is a matter of public concern. Some snakes will make a stand and strike repeatedly; however, the Timber Rattlesnake and Northern Copperhead are not noted for this. I have never known these two "mountain eels" to strike over a distance of more than half the length of the body. Such variable factors as the size of the snake, its position, and its individual temperament cause a degree of variation in this activity.

Seasonal activity cycle

The active season of the copperhead and rattlesnake in Connecticut is from mid-April to October. During this period the snakes are concerned with obtaining food and water, with reproduction, and with insuring survival by avoiding enemies. The normal activity pattern, which remains the same throughout a snake's life cycle is as follows:

Emergence from hibernation. Basking on ledges during the day begins in mid-April. The population is concentrated in and around the hibernaculum (den). Some courtship and mating takes place. The population begins to scatter to the lowlands in May. (This schedule is variable.)

Summer dispersal. In May and June most snakes move to lowland feeding grounds, stone walls, pasture edges, crop fields, and the banks of streams and rivers.

Return to hibernaculum. This probably takes place in late September to October. The population gradually returns to the den site for winter hibernation. Some daytime sun basking continues to take place.

Seasonal extremes of temperature and other climatic changes cause the snakes to make adjustments in this cycle. For instance, a period of inactivity may occur during extended adverse climatic conditions: drought may cause snakes to retreat into a cave or crevice where temperature and moisture conditions are more favorable.

During the early spring, just after the snakes have emerged from hibernation, and again in the autumn, after they have returned to the den from their summer range, copperhead and rattlesnake activity is diurnal. During these two periods of the snake's seasonal-activity cycle, nocturnal temperatures are too low for normal activity.

As the weather warms in the early summer, the copperhead and rattlesnake change their diurnal basking to nocturnal activity. The advantages of this adjustment are that the snakes avoid the intense heat of the day, and, since rodents and amphibians are more active at night, the possibility of capturing prey is considerably better. Also, it is easier to avoid detection by natural enemies at night.

Habitat and distribution

The habitat of the Northern Copperhead and Timber Rattlesnake consists of a home range and hibernating den (hibernaculum). The habitat of each species has certain basic differences related to the ecological requirements of each. Although the habitats have some similarities, it is uncommon to find both species together; this is particularly true of the den site. However, a number of species of nonvenomous snakes share the habitats of both venomous species.

TIMBER RATTLESNAKE HABITAT

This species prefers remote mountainous terrain characterized by steep ledges and rock slides (fig. 6). Large slabs have broken off of the ledges and formed the slide areas below. In the ledges are fissures and crevices that, presumably, lead to subterranean caverns. I believe that it is in these deep caverns that the rattlesnakes hibernate. The entrance to the hibernacula have southern, southeastern, and southwestern exposures; northern exposures are avoided. Scattered concentrations of large and small shelving slabs of rock normally cap the top and surround the sides of such rattlesnake dens (fig. 7). In Connecticut the rock is usually creamy quartz or limestone, or both.

Many different types of deciduous trees, with occasional stands of conifers, are present. Mountain laurel and blueberry are characteristic plants of this snake's den area. A supply of water is always nearby. In the spring and autumn



Fig. 6. High, heavy ledges commonly surround the mountain sides below the shelving rocks shown in figure 7. Fissures and caves at the base and in the middle of these ledges offer retreats below the frost line, in which the snakes can hibernate during the winter.



Fig. 7. Timber Rattlesnake habitat. Large shelving rocks, bordered with low bushes, cap the top of the mountain. These heavy slabs provide the snakes with good basking and shelter conditions during the spring and autumn.

the rattlesnakes are concentrated both on the sides and the top of the mountain. Rattlesnake country tends to be more open and less densely forested than copperhead country.

TIMBER RATTLESNAKE DISTRIBUTION

Figure 8 shows the general area in the eastern two-thirds of the United States where rattlesnakes are found. In Connecticut, the Timber Rattlesnake's range is

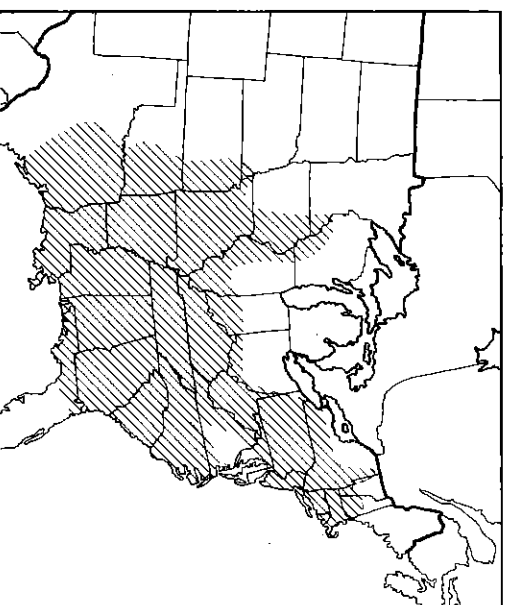


Fig. 8. Shaded area shows generalized rattlesnake distribution over the eastern two thirds of the United States.

very spotty and intermittent (fig. 9). The species is absent from many towns, and there may even be a county or two where it can no longer be found. Hopefully, range-survey programs at the University of Connecticut, with the aid of the Connecticut Herpetological Society, soon will make available additional comprehensive data on the rattlesnake range within the state. The distribution within the home range of the population of any given den is variable. It is thought that the rattlesnake has a larger home range than the copperhead. Many herpetologists believe that the migration from the den in the spring and the return to it in the fall may cover a distance of a mile or two. As long as environmental conditions are uniformly satisfactory and unchanged, a rattlesnake will probably not travel more than two miles from the den area. As is the case with other animals, however, such factors as climatic changes, land development, and the availability of food and water may cause individuals or entire populations to shift or extend established home ranges. Each year in Connecticut there are reports of rattlesnakes and copperheads that have wandered into residential areas where these snakes have never been seen before.



Plate 1. Light or yellow phase of the Timber Rattlesnake, *Crotalus horridus* horridus. (See table 1.) Photo by Dale Lindner.



Plate 2. Dark or black phase of the Timber Rattlesnake, *Crotalus horridus* horridus, Glastonbury, Connecticut, May 1965. (See table 1.) Photo by author.

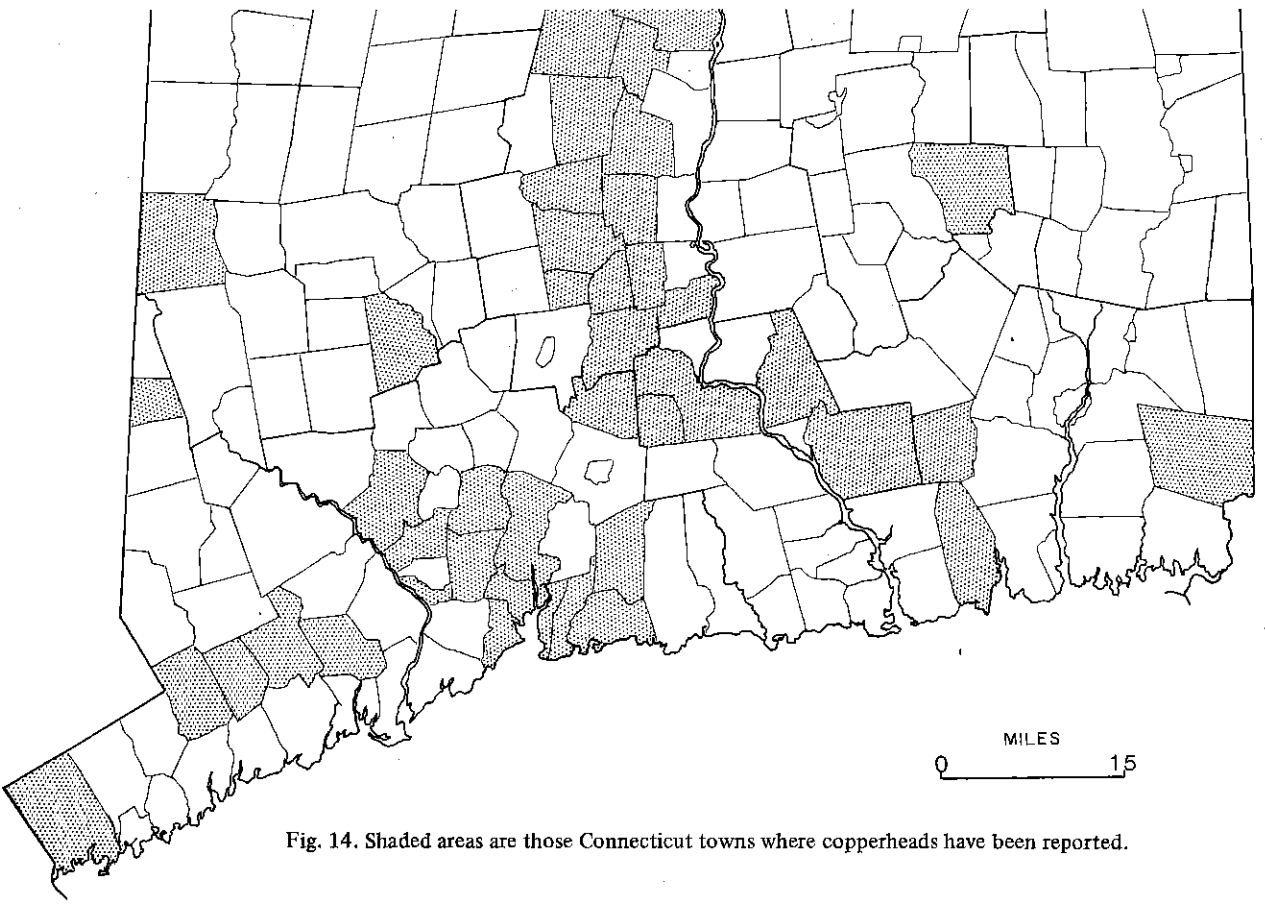


Fig. 14. Shaded areas are those Connecticut towns where copperheads have been reported.

those having rattlesnake dens (Fig. 9). Within the state, copperhead populations occupy a larger area than do rattlesnake populations. Although my survey of range and distribution is not complete, it appears that venomous snakes are absent in many areas within each town and county; however, they may also occur in areas not designated on the map. It is evident that the copperhead is not only more plentiful within its range but is also more widely distributed throughout Connecticut.

POPULAR FALLACIES

Herpetophobia, the unreasonable fear of amphibians and reptiles, is directly related to the many popular misconceptions about these animals. Superstitions, tall tales, or old wives' tales influence people's attitudes. Where these beliefs are concerned, many people have very deep-seated convictions and often no amount of discussion will change their minds. However, that we may see the copperhead and rattlesnake as living ophidians (snakes) that possess no occult powers and that are undeserving of their present hostile reputation, let us discuss several popular beliefs, some of them responsible in part for the ominous aura that surrounds snakes. This discussion may open new windows for those who hesitate to avail themselves of Connecticut's natural outdoor beauty because of fears inspired by such folklore.

Copperhead and rattlesnake "yarns"

It is not true that rattlesnakes always rattle before striking. When a sleeping rattlesnake is stepped on, it will often strike first and then rattle as it retreats. In the field, I have almost stepped on concealed individuals, which did not rattle until prodded.

Many persons believe that rattlesnakes cannot swim. Although rattlesnakes do not spend as much time in or near water as some other snakes do, they will cross streams, rivers, and ponds within their range. Another widespread "yarn" concerning rattlesnakes is that they have the power to charm their prey, a myth that is also associated with other snakes. The belief stems from the fact that a snake's eyes are lidless and seem to stare as though they are putting the prey in a trance.

Another misconception concerning venomous snakes is that once the fangs are removed, the snake is rendered harmless; also that the venom glands can be removed without harm to the specimen. It is true that the fangs can be removed; however, removal is only temporary, since new fangs, which are constantly in a stage of development, will replace the extracted ones. Venomous snakes that have had their venom glands removed soon die. Not only is the venom used to obtain food, it also aids in digestion of the prey once it is captured.

Without question, one of the most persistent common beliefs is that the copperhead and rattlesnake emit an odor which is somewhat like the smell of cucumbers. My own experiences in the field only verify that both species, when first captured, excrete a fine liquid spray from the scent glands at the base of the tail. The copperhead's spray is slightly more pungent than that of the

just as there are venomous snakes in many parts of the world with elongated, slender heads. In this country the venomous Coral Snake of the South and South-west is an example of a venomous ophidian with a slender head.

"Where you find Black Snakes you won't find copperheads and rattlesnakes." During any discussion about the copperhead and rattlesnake in the northeastern states, this statement is invariably brought up. The truth of the matter is that, not only are these reptiles found together in the same habitats, they also share the same hibernaculum. My survey of fifteen copperhead- and rattlesnake-habitats shows that in the majority of cases, both of our black-colored snakes, the Black Rat Snake and the common Northern Black Racer, share these habitats.

RELATIONSHIPS WITH MAN

As a boy in the north end of Hartford, I was fortunate to live next to Keney Park. While most of my friends were playing basketball or baseball on some of the park's fine courts and diamonds, I was usually busy collecting frogs, turtles, and snakes. Needless to say, I didn't have much company while pursuing my interests. I tried many times to convince my friends that the black-and-yellow striped garter snakes which were occasionally found in the park are harmless, but many of their parents were sure that these were "striped adders" and to be feared.

I shall never forget the day when I came upon a gang of my pals who were "beating the tar" out of a fine garter snake which they had encountered near the brook where we often played. The area, which was a very beautiful spot, was put off-limits for most, and some of the children were told not to go near the meadows any more. They were prevented from using a spacious and attractive part of the park because of irrational fear of a completely harmless snake. As time went on, I was able to free some of my friends from their foolish beliefs, but it was not an easy task then nor is it today.

The relationship between man and the copperhead and rattlesnake in Connecticut is much the same as it is in other states where there are venomous snakes. The reputations of our two poisonous snakes differ in relation to human-population concentrations. There seems to be a degree of conformity throughout the entire nation relative to the public image of the snakes. I would classify these public images as follows:

City: Most city people have little knowledge of how to identify snakes or of their habits. Many, for example, do not realize that we have a rattlesnake indigenous to the state. Or if they do, they associate trips to the country with possible frightening encounters with rattlesnakes. Such fears are often fostered by tales, myths, and superstition.

Suburbs: Most suburbanites are somewhat aware of the copperhead's and rattlesnake's presence in Connecticut. On the other hand, it is in the suburbs where the most confusion persists. Many harmless species are abundant here and because the copperhead shares suburban habitats with many of these harmless species, the difficulty of recognizing them is compounded.

One family is seriously considering selling their comfortable suburban house because harmless Milk Snakes have recently been found in the basement! Hoping that the family will stay there, I have explained that these snakes are exceptionally adept at getting into basements and are merely searching for mice.

Rural: Except for a very few areas, the rattlesnake lives in the remote rural regions of Connecticut. However, rattlesnakes and copperheads are not living in all of rural Connecticut (see figs. 9, 14). The rattlesnake is more abundant where the human population density is under 100 per sq. mi. Within the rattlesnake's range in the state, and where it is well known by the town population, the snake is accepted casually. Recently I met a man in Litchfield County into whose backyard 12 rattlesnakes had crawled between May and September 1967. He and his neighbors know the Timber Rattlesnake and treat it with due respect. To my knowledge there have been no snakebites in the area.

Aside from their role in maintaining the natural balance of nature, the rattlesnake and copperhead play a part in medical research. The venoms of many different kinds of snakes have been used to fight cancer, excessive bleeding, asthma, chorea, arthritis, and epilepsy. And, of course, venoms are used in the processing of anti-snakebite serum (Antivenin-Crotalidae Polyvalent). I have recently learned of a new drug, called "Fraction C," made from the venom of the Egyptian Cobra, which may become the key to heart transplants. It is thought to inhibit the body's tendency to reject foreign tissue.

SLAKEBITE IN CONNECTICUT

There are few subjects discussed by the public that are as riddled with misunderstanding and gross exaggeration as that of deadly snakes and snakebite poisoning. There are approximately 110 species of snakes in the United States, of which only 19 are venomous; of these only a very few are a deadly threat to man. The two species of big diamondback rattlesnakes of the southern and southwestern states are capable of inflicting a bite which, if not treated adequately and without delay, can have tragic consequences. In Connecticut the rattlesnake and copperhead cannot be classified as a serious threat to human life. Our Timber Rattlesnake is certainly more dangerous than the copperhead because of its larger size, longer fangs, and a larger venom capacity.

Prevalence

Snake envenomation is rare in Connecticut and there are no accurate statistics on the numbers of persons bitten annually. Most authorities believe that more persons die each year from bee stings and lightning than from venomous snakebites. In Connecticut, hospitals and doctors are not required to report snakebite cases to the State Health Department, but those reported indicate that the copperhead is responsible for inflicting more bites than is the rattlesnake. This, of course, is largely due to the copperhead's presence in densely populated areas, and its ability to blend in well with its background. (However, in the nation as a whole, rattlesnakes bite more people than does any other venomous snake, with copperheads in second place.) In a recent study, it was estimated

Step 5: ANTIWENIN (ANTISNAKEBITE SERUM). An antiwennin serum for snakebite in the United States is manufactured by Wyeth, Inc., Philadelphia, Pennsylvania. Under certain conditions antiwennin may need to be given. *However, under no circumstances should it be administered by an untrained person.* Because some persons are highly allergic or sensitive to the horse serum with which the antiwennin is made, it is absolutely necessary that the victim receive the sensitivity skin test before the antiwennin is administered. Antiwennin is available at most of Connecticut's major hospitals and at each of the State Police Troops. Arthur S. Blank, technical director of the Poison Information Center, Connecticut State Department of Health, 79 Elm St., Hartford 06115, telephone 566-3456, is available for rapid additional information concerning treatment of snakebite. Copies of a technical booklet on antiwennin may be obtained from Wyeth Laboratories, Marietta, Pennsylvania 17547. The booklet contains much information and is highly recommended to physicians and veterinarians. (Dogs, cats, and other domestic animals are frequently bitten by venomous snakes. Treatment is the same as for comparable poisoning cases in humans.)

LET THEM LIVE

General Considerations

Although men stopped burning witches many years ago, we continue to slay our sinister dragons—snakes. We must put "hoop-snakes," striped and flat-headed "adders," along with many other popular beliefs about snakes into the annals of mythology, where they belong. Ignorance and prejudice arise from lack of knowledge. We do not unreasonably fear what we understand. And, as far as fear of snakes is concerned, it is common knowledge among naturalists that man's fear of snakes is only equaled by the snake's fear of man.

In Connecticut our population of approximately 3,000,000 people live in an area of about 5,000 sq. mi. Among the mammals, fish, insects, and birds that share this environment are many amphibians and reptiles. Included in the clan are numerous populations of Northern Copperheads and a few sparse populations of Timber Rattlesnakes. They, like our other forms of wildlife, were here long before we were and as such are true descendants of Connecticut's heritage. This herpetological heritage needs protection. There is much talk of conservation, but rarely in connection with amphibians and reptiles, which have a history of some 200 million years. These creatures, venomous snakes included, should receive every consideration in the State's future conservation programs. The failure to recognize the need to protect all forms of wildlife indicates negligence of our total environmental picture.

The Northern Copperhead and Timber Rattlesnake have a place in the balance of nature. The fact that they are venomous and capable of delivering a painful bite to man signifies the need for more knowledge and understanding of them, not merely hostility toward them. Compared to the hundreds of automobile accidents each year, and the many domestic accidents, snake-venom poisoning is a minor hazard. Rattlesnakes and copperheads are colorful and elegant creatures, and there is much more to be learned about them.

Of course, if a rattlesnake or copperhead enters a residential area it should be killed because of its danger to small children and pets. However, no effort should be made to destroy concentrations of copperheads and rattlesnakes in their native habitats. This kind of action is unwarranted; also it usually leads to wanton slaughter of nonvenomous species. It would be far better to notify the University of Connecticut (or one of the other groups mentioned in the following section) that such a concentration has been found. They are directly concerned with education and research and are best equipped to analyze the entire environmental situation.

The Timber Rattlesnake

This snake's habitat has been so reduced by human encroachment that it is now extinct in Maine and endangered in Rhode Island. It has a restricted range in Vermont and New Hampshire, and is absent from much of Massachusetts. In Connecticut the rattlesnake's status remains, to a large extent, undetermined. Although my investigations do not show the species to be in immediate danger, it is evident that some measures must be taken to study its autecology within the next five to ten years. Unless such studies begin soon, the possibility of preserving this unique form of American wildlife will disappear. I would remind those who do not care, that extinction of a species is final. Once gone, it is gone forever, and we shall have been responsible for depriving future generations of the opportunity to observe and study an extremely fascinating reptile. As William Beebe wrote:

The beauty and genius of a work of art may be reconceived, though its first material expression be destroyed; a vanished harmony may yet again inspire the composer; but when the last individual of a race of living things breathes no more, another heaven and another earth must pass before such a one can be again.

A word to Connecticut's amateur herpetologists

Many of us have experienced the refreshing drama of getting out into copperhead-and-rattlesnake country. But once there, some amateur herpetologists take as many as two dozen snakes from a den. This type of indiscriminate collecting is detrimental.

SOURCES OF INFORMATION ON SNAKES

Information about snakes may be obtained from any of the following:

University of Connecticut Systematic and Environmental Biology Life Science Building Storrs, Connecticut 06268.	Norman J. Scott Robert E. Dubos 429-3311, Ext. 1421
Peabody Museum of Natural History Department of Herpetology Yale University New Haven, Connecticut 06520	Thomas Uzzell 436-4498
Connecticut Herpetological Society East Hill Road, Box No. 257 Canton, Connecticut 06019	Richard C. Petersen 693-4131
Board of Fisheries and Game Game Division State Office Building Hartford, Connecticut 06115	Arroll L. Lamson 566-4683

In addition, within the range of the copperhead and rattlesnake in Connecticut there are a number of nature centers and museums that are equipped and qualified to answer questions about these two snakes. To find the center nearest you, contact J. Stanley Quickrite, Northeast Field Representative, National Audubon Society, Orchard Hill Road, Harwinton, Connecticut 06790. Copies of the regional Conservation Directory may be purchased at this Audubon Field Office for 25c.

There are a number of speakers available in Connecticut who offer excellent demonstrations and lectures on reptiles and amphibians. Anyone interested may write to the Connecticut Herpetological Society (see address above) for the name and address of the speaker nearest to him.

Both the University of Connecticut and the Peabody Museum of Natural History at Yale University are as pleased to receive information on the state's reptiles and amphibians as they are to furnish it. So is the Connecticut Herpetological Society, founded in October 1968, and concerned with education, conservation, and research on Connecticut's reptiles and amphibians.

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WILDLIFE IN CONNECTICUT

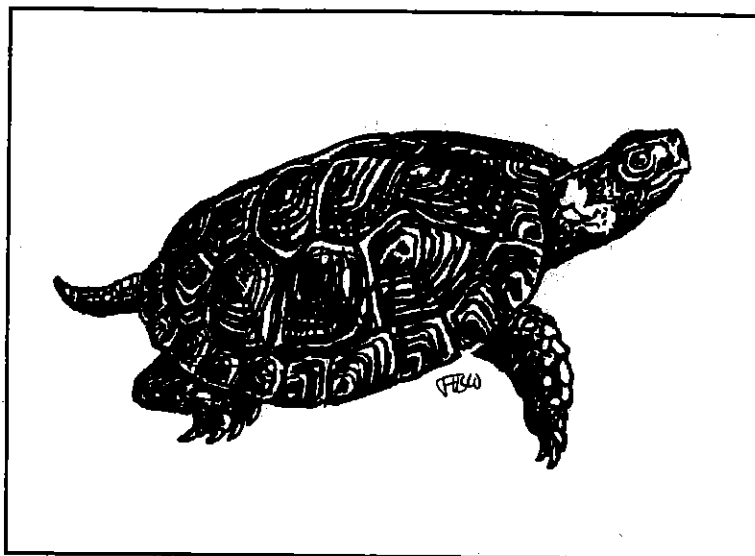
ENDANGERED AND THREATENED SPECIES SERIES

BOG TURTLE

Clemmys muhlenbergii

No. 2

ENDANGERED



Habitat: Calcareous (containing calcium carbonate, calcium or lime) wetlands such as open sphagnum bogs, wet meadows and wet pastures.

Weight: Approximately 4 ounces.

Length: 3-3.5 inches.

Life Expectancy: Although specifically unknown, the maximum age is estimated to be around 40 years.

Food: Seeds, berries, insects, slugs, worms, crayfish, frogs, snakes, snails and carrion.

Status: State endangered.

Identification: The bog turtle is the smallest of the 8 species of turtles found in Connecticut. It has an orange or yellow head patch which is sometimes divided into 2 parts. The large scutes of the dark carapace, or upper shell, have yellow or reddish centers.

Range: Bog turtles currently occur in scattered colonies in western Connecticut, western Massachusetts, and through New York, south to northeast Maryland, southern Virginia, western North Carolina and Georgia.

Reproduction: Bog turtles breed in late April to early June after emerging from hibernation. Nests are usually in tussocks or on sphagnum moss in sunny areas of a bog. The 2 to 5 (usually 2-3) eggs are laid from June to July and are left on their own to develop and hatch. Incubation lasts for 7 to 8 weeks and hatching occurs from July to early September. In Connecticut, eggs may overwinter in the nest and hatch in the spring when there

is an abundant food supply. The nests are often preyed on by skunks and raccoons. The young are only 1 inch long at hatching and are often taken by a variety of birds and mammals. Bog turtles reach sexual maturity at 5 to 8 years of age.

Reason for Decline: Intensive development pressure in all portions of the bog turtle's range have caused the draining and filling of many wetlands. Remaining wetlands have been isolated, resulting in the fragmentation of bog turtle populations. These small populations cannot mix with others and only breed within themselves. The result is a loss of genetic variation, which then reduces the population's ability to adapt to a changing environment. Bog turtles are very sensitive to changes in their environment, such as increased nutrification, altered drainage, vegetation changes or pollution.

History in Connecticut: The bog turtle is the rarest turtle in Connecticut. Only small, isolated populations exist in the state and information on them is scant. Populations of bog turtles have been documented in 5 Connecticut towns. Unconfirmed sightings and single specimens have been reported from several other towns between the Housatonic and Connecticut rivers. Collection for the pet trade has further depleted local populations. In 1973, the bog turtle was given protection by CITES, the Convention on International Trade in Endangered Species, and it is currently a candidate to be put on the federal endangered species list. In Connecticut, it is against the law to remove any bog turtle, including eggs, from the wild.

Interesting Facts: During the winter months, bog turtles hibernate underwater in deep areas of bogs in about 6 to 18 inches of mud. Immature turtles do not hibernate in deep mud until they are 2 to 3 years old. The turtles emerge from hibernation in late March to April and may migrate short distances to feeding and breeding sites.

Bog turtles rely on an abundance of grassy or mossy cover and high humidity. Open, sunny areas where the turtles can bask to raise their body temperature are also important. The turtles feed during the daylight hours; however, they are seldom active during the hottest part of the day and are inactive on chilly mornings. Adult turtles are preyed on by raccoons, skunks, foxes and dogs.

Protective Legislation: *Federal* - Convention on International Trade in Endangered Species. *State* - Connecticut General Statutes Sec. 26-311 and Connecticut Regulation 26-66-14a.

What You Can Do: Do not disturb or damage bog habitats. Bog turtles may not be collected from the wild, and they should not be kept as pets. The pet trade has encouraged illegal capture of bog turtles in many areas of the country and can only effectively be stopped by reducing the demand for bog turtles as pets.

CONNECTICUT RANGE

