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Received: from playpen.internex.net (playpen.internex.net [199.2.13.17]) by
cap1.CapAccess.org (8.6.12/8.6.10) with SMTP id LAA17569 for
<mfbowman@capaccess.org>; Fri, 28 Mar 1997 11:16:48 -0500
Received: (qmail 2341 invoked from network); 28 Mar 1997 15:12:13 -0000
Received: from freke.hoplite.org (205.158.197.130)
  by playpen.internex.net with SMTP; 28 Mar 1997 15:12:13 -0000
Received: (from daemon@localhost) by freke.hoplite.org (8.7.5/8.7.5) id GAA21920 for
jambo97-outgoing; Fri, 28 Mar 1997 06:55:47 -0800 (PST)
Message-ID: <333BDBC4.4A1D@offpro.net>
Date: Fri, 28 Mar 1997 09:55:01 -0500
From: "R.F.Locke" <rfl@offpro.net>
Organization: Office/PRO Technologies
X-Mailer: Mozilla 3.01 (Win95; I)
MIME-Version: 1.0
To: jambo97@hoplite.org
Subject: JAMBO97 Virginia Critters
Content-Type: text/plain; charset=us-ascii
Content-Transfer-Encoding: 7bit
Errors-To: owner-jambo97@hoplite.org
Precedence: bulk
Reply-To: jambo97@hoplite.org
Status: RO
X-Status:

Apologies in advance for the length of this message
The following is the most recent Lyme disease risk assessment for Fort
A.P.Hill I could find. The precautionary information in Appendix D is
very useful.
You can view the original at:
http://www.utech.net/users/10766/lyme.htm

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DEPARTMENT OF THE ARMY
U.S. Army Environmental Hygiene Activity - North
Fort George G. Meade, Maryland 20755-5225

[Seal of Department of Defense, United States of America]

REPLY TO ATTENTION OF: HSHB-AN-P (40-5f) 05 AUG 1993

LYME DISEASE RISK ASSESSMENT NO. 16-61-AW50-93
FORT A.P. HILL, VIRGINIA
15-17 NOVEMBER 1992

1. REFERENCES. See Appendix A.

2. AUTHORITY. AEHA Form 250-R, HSC, 8 June 1992.

3. PURPOSE. To assess the risk of Lyme disease to Fort A.P. Hill personnel by examining deer for the tick vector, Ixodes scapularis (formerly named Ixodes dammini), and to assay ticks for the Lyme disease etiologic agent, Borrelia burgdorferi, in accordance with AR 40-5, paragraph 10-7.f.

4. GENERAL.

a. Risk Definition. The term "risk," as used in this report, is a non-statistical evaluation of qualitative and quantitative information available to determine the potential to acquire Lyme disease. To the extent available, information evaluated includes the following elements: history of Lyme disease in the area, the presence or absence of the tick vector, (I. scapularis) and the mammalian host population needed to sustain
a viable population of the vector, the presence of the Lyme disease-causing
spirochete (B. burgdorferi) in the tick population, and the presence of antibodies to B. burgdorferi in the mammalian host population. Criteria for risk categorization follow:

Low - Some elements of the Lyme disease cycle identified in nearby areas but not on the installation

Moderate - Some elements of Lyme disease cycle identified from the installation, or human cases of Lyme disease reported from the
local area

High - All elements of the Lyme disease cycle present on the installation

b. Personnel Contacted. The purpose and methodology of this assessment were discussed in briefings with the following personnel at Fort A.P. Hill: Ms. Terry Banks, Environmental Coordinator, Directorate of Engineering and Housing (DEH); Mr. John Phillips, Biologist, DEH; Mr. David Buzard, Pest Controller, DEH; and Mr. Tim Southard, Chief, Operations and Maintenance Branch, DEH.

c. Survey Conduct. Mr. Benedict Pagac, Entomologist, this Activity, conducted this assessement. Assistance was provided in the field by Mr. Buzard and Mr. Phillips. Serum samples were assayed via Indirect Fluorescent Antibody (IFA) tests by personnel of the U.S. Army Regional Veterinary Laboratory, Fort George G. Meade, Maryland for the presence of Lyme disease antibody. Ticks were identified and assayed via Direct Fluorescent Antibody (DFA) tests by personnel of this Activity.

d. Technical Assistance. Technical assistance or further informal advice may be obtained by contacting Chief, Entomological Sciences Division, this Activity, commercial (301) 677-5281/6502 or DSN 923-5281/6502.

5. BACKGROUND.

a. Lyme disease is a multi-symptomatic infectious disease caused by the bacterial spirochete, B. burgdorferi, which is transmitted to humans by the bite of an infected tick. The disease is most often referred to as Lyme disease or Lyme arthritis in the United States. Lyme disease has become the most prevalent arthropod-borne illness in North America. Its geographic range is expanding and the number of reported cases continues to rise each year. The Office of the Army Surgeon General reported 379 cases of Lyme disease contracted on Department of Defense (DOD) installations from 1987 through 1991. During 1991, there were 81 cases of Lyme disease treated in military hospitals, of which 31 involved either dependents or retired members. Theneed to protect soldiers and other personnel working on DOD installations has increased with the spread of this disease.

b. Epidemiological data for 1992 from the Virginia State Department of Health (VSDH) reveal one confirmed human case of Lyme disease in Caroline County, where A.P. Hill is located, and one reported case in each of nearby Stafford, King George, and Westmoreland Counties. A statewide total of 123 human cases was reported for 1992.

6. METHODS.

a. Deer Examinations. The heads, ears, and necks of shot white-tailed deer (Odocoileus virginianus) were examined for the presence of ticks. The hair was stroked against the natural lay, using the hand edge. If ticks (or other arthropods) were detected, they were removed using fine-point (No. 5) jeweler's forceps and the specimens were returned to this Activity for identification and testing. Total examination time per carcass was approximately 5-10 minutes.

b. Tick Testing. Collected ticks were tested via a two-phase DFA assay. Ticks were first tested using a purified antibody (Kirkegaard & Perry Laboratories, Inc., Gaithersburg, Maryland), for the presence of spirochetes of the genus Borrelia. One of the Borrelia, B. burgdorferi, is the causative agent for Lyme disease. Those ticks found to be positive in the Borrelia spp. test, were further tested using a B. burgdorferi, species-specific purified antibody (Kirkegaard & Perry Laboratories, Inc.). Infection rates were then determined specifically for the Lyme disease-causing spirochetes. Tick assays were performed by personnel of this Activity.

c. Blood Samples. Blood pooled in the deer body cavities was collected using clean 4mL disposable plastic pipettes. Samples were placed in 7mL labeled tubes and spun for at least five minutes. The sera were separated and frozen (-9 degrees C) until IFA testing could be performed by

personnel
of the Regional Veterinary Laboratory, Fort Meade, MD.

7. RESULTS. (See also Appendices B and C)

a. Two hundred fifty-nine I. scapularis ticks were collected from 39 of
the 52 deer examined. Of the 259 I. scapularis, 242 were tested and 13 (5%) were found positive for Borrelia spp.. Followup species-specific antibody tests confirmed that 10 of the 13 Borrelia-positive ticks (77%) were positive for B. burgdorferi, resulting in a 4% B. burgdorferi infection rate.

b. None of the eight Amblyomma americanum (the Lone star tick) collected and tested was found to be positive for Borrelia spp.

c. Two hundred fifty-two Dermacentor albipictus, (the Winter deer tick)
were collected and tested from 42 of the 43 deer examined. Of the 252 D.
albipictus, 219 were tested and 2 found to be positive for Borrelia spp..
Followup species-specific antibody tests revealed that the spirochetes from
these two ticks were not B. burgdorferi.

d. One of the 50 deer serum samples tested was positive (greater than
1:128 titer level) for B. burgdorferi antibodies.

8. DISCUSSION.

a. The significance of the presence of non-burgdorferi, Borrelia spp.
in tested ticks is yet to be determined. Research institutions and the Centers for Disease Control and Prevention (CDC) are currently investigating differences in Borrelia species and strains relative to their
geographic occurrence, host tick species, and the pathogenic implications.
It cannot be assumed that spirochetes detected and identified as B. burgdorferi, using currently available methods, are the only Borrelia that

may cause Lyme disease type symptoms.

b. Deer check station surveillance at Fort A.P. Hill for ticks began in 1986. In excess of 50 deer were sampled each year. No I. scapularis was collected in January of 1986 and 1987. The first I. scapularis was collected from one of the 64 deer examined in January 1988. No I. scapularis was collected via dragging, flagging, and small mammal trapping during the period 13-17 June 1988. Deer were again sampled in November of 1988 and 73 I. scapularis were collected from 14 of the 65 deer sampled.
In January 1989, one I. scapularis was collected from each of three deer among the 68 examined. Subsequent deer checks were conducted in November when I. scapularis are more prevalent on deer. It should be noted that the first ticks found positive for B. burgdorferi from Fort A.P. Hill were collected in November 1989. The following table summarizes November deer checks conducted from 1989 through 1992:

Table 1. Deer examinations, four-year summary

Year	# I. scapularis collected	Deer infested(a)/examined (%)	I. scapularis #+/# tested(b) (%)
1989	117	28/74 (38)	2/78mc (3)
1990	96	36/70 (51)	14/96pc (15)
1991	85	20/51 (39)	3/61pc (5)
1992	259	39/52 (75)	10/242mc (4)

(a) infested with I. scapularis
(b) mc = monoclonal antibody used; pc = polyclonal antibody used

c. In July 1989, the National Scouting Jamboree was held at Fort A.P. Hill. Six hundred thrity-five ticks were removed from scouts. Only one I.

scapularis was among those removed. After the conclusion of the Jamboree, two cases of Lyme disease among scouts attending the Jamboree, were reported to the CDC, but were later determined to be non-confirmed.

d. Historical data and this survey provide evidence that the tick vector and causative agent for Lyme disease have become well established at Fort A.P. Hill. The potential at-risk human population (e.g., military trainees, outdoor workers, Boy scout jamboree attendees, and natural resources activity participants), availability of suitable vectors and animal hosts, environmental conditions necessary for the occurrence of Lyme disease, and past history of human Lyme disease in the nearby area, all make Fort A.P. Hill an area warranting continued vigilance.

9. CONCLUSIONS. The presence of specimens of I. scapularis on examined deer, the presence of the Lyme disease spirochete, and information from the VSDH on the epidemiology of Lyme disease in the surrounding areas, indicate that the present risk of contracting human Lyme disease at Fort A.P. Hill is HIGH.

10. RECOMMENDATIONS.

a. Implement risk reduction measures in Appendix D.

b. Emphasize, to all residents and visitors at Fort A.P. Hill the importance of applying risk reduction measures, as detailed in Appendices D and E.

c. Conduct annual follow-up surveillance using the methods described in reference 2 and paragraph 6, above.

11. ADDITIONAL DIRECT SUPPORT ASSISTANCE. Additional direct support in the fields of pest management, pesticide risk management, water supply management, wastewater management, hazardous waste management, worksite hazards management, health care hazards management, sanitation and hygiene, and installation industrial hygiene management is available, and may be

requested from U.S. Army Environmental Hygiene Activity-North at commercial
(301)677-6502/5281/6205 or DSN 923-6502/5281/6205.

[signature of Jamie A. Blow]
for
BENEDICT B. PAGAC, JR.
Entomologist
Entomological Sciences Division

APPROVED BY:

[signature]

GEORGE J. MAGNON
MAJ, MS
Chief, Entomological Sciences Division

APPENDIX A

REFERENCES CITED

1. AR 40-5, Preventive Medicine, 15 October 1990.

2. Armed Forces Pest Management Board Technical Information Memorandum No.
26, Lyme Disease: Vector Surveillance and Control, March 1990.

3. Lyme Disease Surveillance Summary, Vol. 4, No. 3, Centers for Disease
Control and Prevention, June 1993.

4. Oliver, J.H. Jr., et al. 1993. Conspecificity of Ticks Ixodes scapularis and Ixodes dammini (Acari: Ixodidae). J. Med Ent., 30(1)54-63.

5. Memorandum, USAEHA-North, Lyme Disease Risk Assessment No. 16-61-A856-92, Fort A.P. Hill, Virginia, 18 November 1991.

APPENDIX B

DATA SUMMARY SHEET
DOD LYME DISEASE SURVEY
U.S. ARMY ENVIRONMENTAL HYGIENE ACTIVITY-NORTH
FORT A.P. HILL, VIRGINIA
16 NOVEMBER 1992

# DEER EXAMINED	52
# DEER WITH Ixodes scapularis [1]	39
# DEER WITH TICKS	52
# DEER SERUM SAMPLES TESTED	50
# DEER SERUM SAMPLES POSITIVE [2]	1
# HUMAN LYME DISEASE CASES, 1992 - CAROLINE CO.	1
# HUMAN LYME DISEASE CASES, 1992 - VIRGINIA	123

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[1] Ixodes dammini and Ixodes scapularis have been synonymized by Oliver et al. (1993).
[2] Screening titer levels greater than 1:128.

APPENDIX C

TICK TESTING [1] AND SERUM TESTING RESULTS [2]
FORT A.P. HILL, VIRGINIA
16 NOVEMBER 1992

Table C-1. Ixodes scapularis collected from 39 of 52 deer and tested via DFA for Borrelia species and Borrelia burgdorferi

		Borrelia spp.			B. burgdorferi		
	#COLLECTED	#TESTED	# +	% +	#TESTED	# +	% +
LARVAE	0	0	0	0	0	0	0
NYMPHS	0	0	0	0	0	0	0
ADULTS	259	242	13	5	13	10	77

TOTAL	259	242	13	5	13	10	77

Table C-2. Amblyomma americanum collected from 5 of 52 deer and tested via
DFA for Borrelia species and Borrelia burgdorferi

		Borrelia spp.			B. burgdorferi		
	#COLLECTED	#TESTED	# +	% +	#TESTED	# +	% +
LARVAE	3	3	0	0	0	0	0
NYMPHS	1	1	0	0	0	0	0
ADULTS	4	4	0	0	0	0	0
TOTAL	8	8	0	0	0	0	0

[1] Direct Fluorescent Antibody (DFA) testing method
[2] Indirect Fluorescent Antibody (IFA) testing method

APPENDIX C - CONTINUED

TICK TESTING AND SERUM TESTING RESULTS
FORT A.P. HILL, VIRGINIA
16 NOVEMBER 1992

Table C-3. Dermacentor albipictus collected from 45 of 52 deer and tested
via DFA for Borrelia species and Borrelia burgdorferi

		Borrelia spp.			B. burgdorferi		
	#COLLECTED	#TESTED	# +	% +	#TESTED	# +	% +
LARVAE	0	0	0	0	0	0	0
NYMPHS	43	42	0	0	0	0	0
ADULTS	209	177	2	1	2	0	0
TOTAL	252	219	2	1	2	0	0

Table C-4. TOTAL TICKS collected from 52 of 52 deer and tested via DFA for
Borrelia species and Borrelia burgdorferi

	Borrelia spp.				B. burgdorferi		
	#COLLECTED	#TESTED	# +	% +	#TESTED	# +	% +
TOTAL	519	469	15	3	15	10	67

Table C-5. SERUM SAMPLES taken from 50 of 52 deer and tested via IFA for
Borrelia burgdorferi

	Borrelia burgdorferi			
	#COLLECTED	#TESTED	# +	% +
TOTAL	50	50	1	2

APPENDIX D

Lyme Disease Risk Reduction Measures

1. Emphasize public awareness programs to educate troops, family members,
civilian employees and visitors on personal protective measures and Lyme disease. Methods should include, but not be limited to:

a. Distribution of printed Lyme disease handouts, such as tick identification cards (USAMD-7/89), pamphlets, and fact sheets.

b. Notifications in the installation newsletter and post electronic media (e.g., closed-circuit TV), especially prior to the high-risk months
(May-September).

c. Making available, for viewing, video "Lyme Disease: A growing threat" (FAUPIN No. 504494DA). A 35mm slide format presentation on Lyme disease is also available from this Activity.

2. Submit any collected tick specimens (both field-collected or ticks that have been removed from individuals) alive for identification and DFA testing to USAEHA-N, Fort Meade, Maryland, 20755-5225.

3. Stock Permethrin Arthropod Repellent (NSN 6940-01-278-1336, box of 12 cans for $36.99), and 3M [Trademark] Insect Repellent (NSN 6840-01-284-3982, box of 12 tubes, $29.30) for distribution. Emphasize tick habitat avoidance, proper wearing of clothing, and use of repellents.

4. Report all confirmed and suspected cases of Lyme disease [e.g., suspicious febrile illnesses, arthralgias, rashes, (Erythema Migrans)] by special telegraphic report [MED-16(R4)] for all soldiers and civilian medical care beneficiaries.

5. Identify high risk foci in cantonment areas via tick dragging/flagging, small mammal trapping, deer checks and the assaying of collected ticks for B. burgdorferi. Sampling should be performed in early summer when I. scapularis nymphs (the life stage responsible for most human Lyme disease infections) are active. Post DA Poster 40-5, to identify high risk areas.

6. Avoid high tick population areas for troop training or recreation. Such areas can be identified by tick dragging or flagging prior to use. Case by case surveillance is necessary due to the patchy distribution of I. scapularis.

7. Eliminate tick habitat in heavily used, infested areas (e.g., wooded recreation areas) by removing low brush and leaf litter. Tick infestations should be verified via tick flagging or dragging prior to habitat modification. Clearing should be done in low risk months (i.e., January and February).

8. Prepare, as a contingency, to treat high-use areas with pesticides to decrease tick numbers if surveillance reveals high tick numbers and if nonchemical control techniques (e.g., brush removal, mowing, raking) do not provide adequate control.

Trademark 3M is a registered trademark of Minnesota Mining and Manufacturing Co., St. Paul, MN 55133-3053

APPENDIX E

REPELLENTS

1. Several arthropod repellents are available through the Defense General Supply Center (DGSC) or Self Service Supply System. When used in accordance with directions on the label and in conjunction with the proper wearing of clothing, they provide personal protection against a wide variety of medically important insect/arthropod pests. Availability and current pricing can be obtained by calling the DGSC at DSN 695-4865 or commercial (804) 790-4865. Repellents available for use are described below:

a. Insect/Arthropod Repellent Lotion (cream, 2 fluid ounces) for application to exposed skin. The lotion, NSN 6840-01-284-3982, is not labeled for ticks, but will repel chigger mites and many biting flies.

b. Permethrin Arthropod Repellent, Insect Repellent, Clothing Application (aerosol, 6 ounces) NSN 6840-01-278-1336. Seventy-five percent of the can is used to apply to the field uniform and the remainder is used to treat mosquito netting. The product provides protection from ticks and mosquitoes for a maximum of five weeks or five launderings. Apply more frequently if "buddy checks" reveal attached ticks.

c. Insect Repellent Fabric Treatment (liquid, 5.1 fluid ounces) NSN

6840-01-334-2666. The contents are added to 2 gallons of water and applied with the 2-gallon sprayer from a field sanitation kit at a pressure of 55 pounds per square inch to field uniforms, mosquito netting, and tent fabric to provide protection from ticks, biting flies, and other insects. Since most sprayers are not equipped with the required pressure gauge (NSN 3740-01-332-8746), it will be necessary to obtain a pressure gauge and filter (NSN 4330-01-332-1639), in order to complete the retrofitting. Proper application can provide protection for the normal life of the uniform (180 days in the field), six launderings of mosquito netting, and 6-9 months of treatment for tent fabric, depending on the climate.

2. Detailed directions for the use of these and other repellents can be found in the U.S. Army Environmental Hygiene Agency Technical Guide (TG) 174, Personal Protective Techniques Against Insects and Other Arthropods of Military Significance, June 1991.

3. The U.S. Army Medical Department Tick-Borne Disease Card (7189) is available from the Entomological Sciences Division, USAEHA-North, by calling DSN 923-5281 or commercial (301) 677-5281.

APPENDIX F

FACT SHEET - MOSQUITO AND TICK REPELLENTS

* DEET (N,N-Diethyl-m-tolumide) containing repellents offer good protection against mosquitoes, and are formulated for application to exposed skin.

* Permethrin containing repellents offer excellent protection against ticks, and are formulated for application to clothing.

* DEET will also offer protection against ticks, keeping them from attaching to treated skin. However, ticks generally do not attach in exposed areas, the only areas DEET may be applied to.

* Permethrin, on the other hand, will also offer protection against mosquitoes, but may not be applied to exposed skin where mosquitoes bite.
It is useful for treating bed netting.

* Combined use of DEET on exposed skin for mosquito repellency and Permethrin on clothing for tick repellency offers maximum protection against both pests. Always read and follow the label before using any compound.

* Do not use tick and flea collars. A toxic reaction can result. Humans
have sweat glands in their skin that serve as an avenue for chemical absorption. Dogs on the other hand, respire by panting, lacking sweat glands. In addition, pets have a thicker hair barrier than most humans to
protect them from direct contact with the collars.

* Various lotion products claim protection against mosquitoes. Professional literature both supports and refutes benefits from lotions. However, there is a consensus that mineral oil, a component of many lotions, does substantially reduce mosquito bites on treated skin.

* Tests have shown that DEET products containing a high concentration (greater than 50%) of DEET do not offer greater protection than those products containing 30-50% DEET.

* The following practices enhance the effectiveness of protection against
mosquitoes and ticks when used in conjunction with repellents:

- Cover as much exposed skin as possible. Consider loose fitting long-
  sleeved shirts in summer.
- Tuck pants inside socks or boots to keep ticks out.
- Wear light-colored clothing to make seeing ticks easier.
- Plan ahead and treat clothing with permethrin before your outdoor activity begins. Permethrin binds with fabric and is persistent through several washings.
- Store treated clothing in a plastic bag to help preserve repellent effectiveness and identify treated clothing.

Rich Locke
Advisor Post 486
Williamsburg,VA
Waiting to hear if my application was approved.
I want to be a plumber