

4-POSTER DEER STATION PROJECT



Cape Cod, Martha's Vineyard, Nantucket Island

Self - APPLICATION by WILDLIFE

A host animal is attracted to a device containing a needed resource such as food or nesting fiber.

While obtaining this resource, the animal is treated with an acaricide (pesticide) to kill attached ticks.

With little human intervention, the animals are self-treated.

TRIALS with African ungulates



70-90% control of ticks on these large wild animals (but very little job security!)



Constant filling with flumethrin necessary; also used on domestic cattle, now commercial

Story Line

- There may be 2 million deer from NJ to Maine.
- It is estimated that over 90% of adult deer ticks feed on white-tailed deer.
- Deer tend to inhabit defined, territorial areas.
- Pesticide treatment kills ticks in an area.

Treatment of white-tailed deer in a defined area could reduce populations of free living ticks and lower the risk of humans contracting tick-borne diseases.

4P DESIGN

1990's-Pound and Miller (ARS)

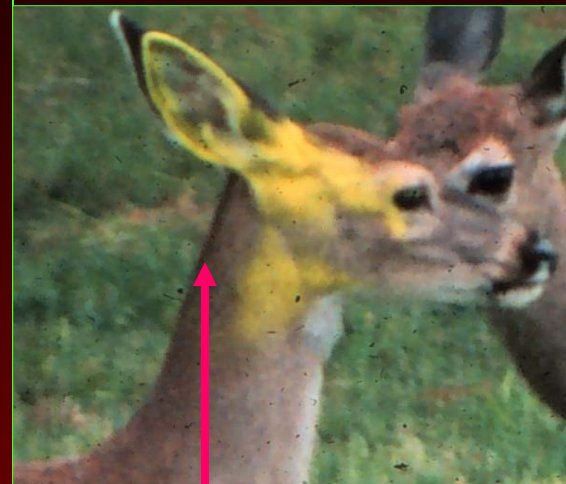
Various features of earlier attempts were modified and thus improved

Self-Application device

Metal housing with bin / feeder ports

Deer feed on supplied corn and wipe vertical rollers with neck/head

2% amitraz (Point-Guard, a hog treatment) applied on rollers

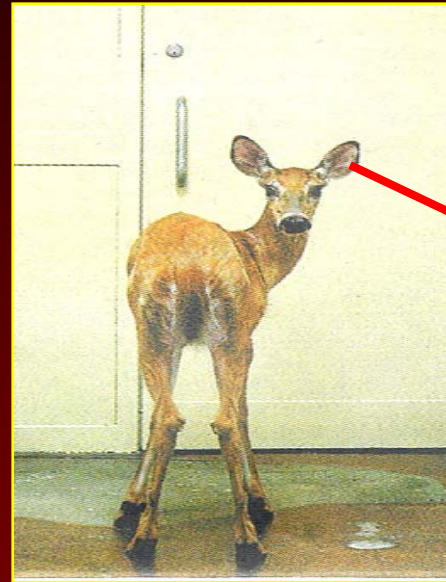


Closer to Home: Deer/Tick Background



**WT deer are major
reproductive host of deer
ticks...**

**...each female tick may
deposit two thousand+ eggs**



**WT deer amplify the
number of ticks**

**500 ticks x 2K eggs =
1,000,000 progeny**



1. Target deer

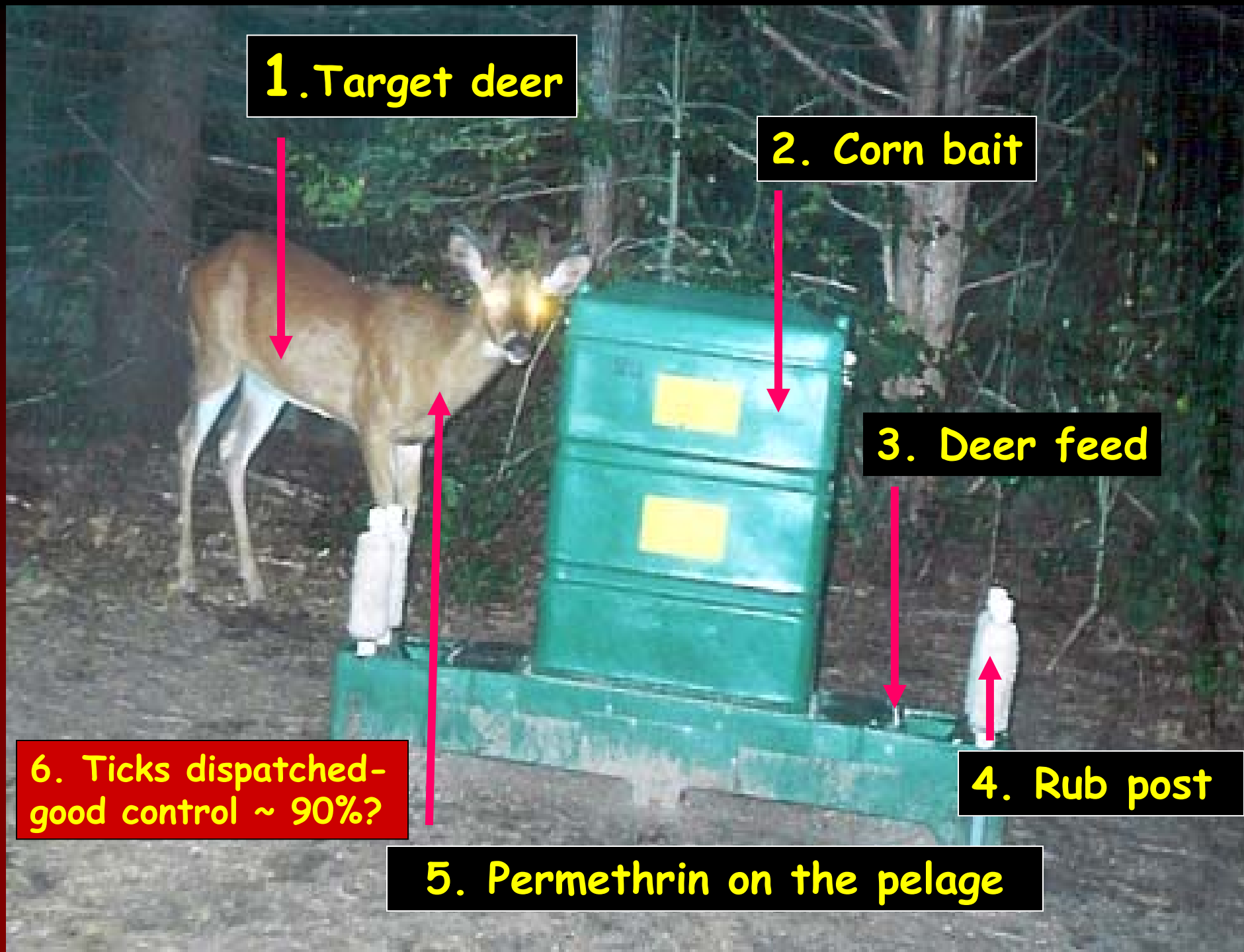
2. Corn bait

3. Deer feed

**6. Ticks dispatched-
good control ~ 90%?**

4. Rub post

5. Permethrin on the pelage



Placement

- Open/edge areas are preferred
 - Cranberry bogs
 - Conservation areas
 - Residential
- 100+ yards from house
- Even terrain
- Close to a road
- Long hike with corn ?
- Located by deer



Station array



Seven treatment sites
At least 600 acres

42 stations total

Seven control sites
Distant from treatment
Divided by highway

Deer as patrons



100# deer \rightarrow 1# corn/day
~ 1 mL permethrin



DEER USE

Indirect estimate based upon deer sign

tracks, pellets, hair, feeding

CC = 30%

MV = 85%

NAN = 100%

Chappy = 100%



To date...

- Pretreatment (2007) = 72 nymphs /h
- Program initiated FALL 2007
- Activation from March 15 - June 15
- Activation from Sept 15 - Nov 15
- Five activation periods 2007-2009

Inputs (2007-2009)

TYPE	<u>Total</u>	<u>Per station</u>		
Corn	61,500 lbs 27,921 kg	1464.3 lbs 664.8 kg		
Permethrin	1,787 ounces 52,841.6 ml	42.5 ounces 1,258.1 ml		
Visits Activation/mainten.	1,443	~35		



Drag survey in
treatment/control
sites:

May-August
Same day
Nymph counts

Odd Year Population

ADULTS	2007	winter	Nymphs
Eggs	↓	spring	Nymphs
Larvae		summer	Nymphs
Nymphs	↓	fall	ADULTS
Nymphs	2008	winter	ADULTS
Nymphs		spring	Eggs
Nymphs	↓	summer	Larvae
ADULTS	↓	fall	Nymphs
ADULTS	2009	winter	Nymphs
Eggs		spring	Nymphs
Larvae	↓	summer	Nymphs
Nymphs	↓	fall	ADULTS
Nymphs	2010	winter	ADULTS
Nymphs		spring	Eggs
Nymphs	↓	summer	Larvae
ADULTS	↓	fall	Nymphs
ADULTS	2011	winter	Nymphs
Eggs		spring	Nymphs
Larvae	↓	summer	Nymphs
Nymphs	↓	fall	ADULTS

Even Year Population

Results (seven sites)

		2007	2009		2008	2010	
Nymphs							
	RX	70.7	38.7		33.9	?	
	Control	77.7	71.1		49.1	?	
Adults							
	RX	145.7	243.4		113.1	?	
	Control	102.3	127.7		206	?	

Bb Infection

		2007	2008		2009	2010	
Nymphs							
	RX	11.0%	14.5%		--	?	
	Control	10.3%	16.1%		--	?	
Adults*							
	RX	58.3%	--		--	?	
	Control	40.5%	--		--	?	

* co-infection study

Permethrin residual

	2007	detected		2008	detected	
Deer						
male	6	0		8	6	
female	11	2		8	5	
		11.8%			68.8%	

