The Black-legged Tick (*Ixodes scapularis*)

Habitat: Occupy forests, savannas, shrubland and grasslands found along the eastern 2/3 of the US.

Diet: Feed on the blood of vertebrate hosts by inserting piercing mouthparts into the skin, using anti-inflammatory, anticoagulants, antihistamines and analgesic chemicals to avoid detection.

Life Cycle/Reproduction: Black-legged ticks live for two years and have three stages: larvae, nymphs, and adults. In the spring, ticks lay eggs in the leaf litter. Once the eggs hatch in the summer, the tick larvae search for a food resource. Because they are in the leaf litter, these larvae frequently come into contact with ground-dwelling rodents, other mammals, and birds. If a tick larva feeds on an animal that is infected with the bacteria, *Borrelia burgdorferi*, the tick might also become infected. After feeding, the larvae molt into nymphs. They overwinter as nymphs and in the spring, the nymphs search again for a feeding host, which can be another rodent or even a human. After feeding, the nymph grows into an adult tick, which typically feed on larger animals. The adults usually mate white on this host. The adult ticks overwinter and females lay eggs in the early spring, after which they die.

Dispersal: As larvae and nymphs, ticks disperse within the leaf litter and on small vertebrate hosts. As adults, deer help to move the tick around. For example, when the deer come to eat acorns in autumn, ticks can "hitchhike" on them, and after they are done feeding, they drop off into the leaf litter where they can overwinter. Ticks aid in the dispersal of the bacteria *Borrelia burgdorferi*. If a larva picks up the disease from a vertebrate host, that tick will stay infected for the rest of its life. During its next feeding, the tick has the potential to transmit the bacteria to the next vertebrate host if it is able to remain attached for 24 hours.

Biotic interactions: Major predators and parasites include birds, wasps, nematodes, bacteria, and fungi. Other "predators" include the hosts that groom themselves, disrupting the tick's feeding and often killing them.

References

http://www.aldf.com/deerTickEcology.shtml

http://www.cdc.gov/ncidod/dvbid/lyme/ld_transmission.htm

http://entnemdept.ufl.edu/creatures/urban/medical/deer_tick.htm

Ostfeld et al. 2006. Controlling ticks and tick-borne zoonoses with biological and chemical agents. Bioscience 56(5): 383-394.

Based on the fact sheet, what resources and conditions would favor the growth of a population of ticks? What resources and conditions would benefit an individual tick?

Organism	Resources	Conditions
Ixodes scapularis (Tick)	*Nutrients and energy obtained from feeding while attached to the host*	**Biotic Conditions**
	-while larvae, depend on the availability of hosts that are close to the ground	*Competition*
	-as nymphs, depend on host availability for feeding	-larvae and nymphs must be able to successfully attach to and feed from host
	-as adults, depend on the availability of hosts for feeding, dispersal and reproduction	-adults must be able to successfully reproduce on host
		Predation/Death
		-larvae, nymphs, and adults are all susceptible
		Dispersal
		-migratory birds add in the dispersal of larvae
		-as adults, depend on the availability of hosts for feeding, dispersal and reproduction
		Abiotic Conditions
		-require favorable environmental conditions in which to lay eggs and overwinter