

SCIENTIFIC NOTE

OF BREEDING

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ABSTRACT. Believing that science is about precision in defining its terms, we propose the use of breeding as an all-encompassing term for mosquito activity does not always represent the reality of what is happening at a site where mosquitoes, in whatever stage, are present. We explore the breadth of the term breeding and propose alternative, more accurate uses for those who write about mosquitoes. We offer samples of what we see as a misuse of the word and provide what we feel is more scientifically acceptable terminology.

KEY WORDS Breeding, habitat, oviposition, copulation

Although scientific writing is not supposed to be humorous, misused terminology can result in language that is as risible as it is imprecise. However, before we discuss such writing, we should define the words "breed" and "breeding" so that our arguments are properly framed.

Breed, transitive verb:

1. to produce (offspring) by hatching or gestation
2. beget; b. produce, engender
3. to propagate (plants or animals) sexually and usually under controlled conditions
4. bring up, nurture; b. inculcate by training
5. mate; b. to mate with, inseminate; c. impregnate
6. to produce (a fissionable element)

Breed, intransitive verb:

1. to produce offspring by sexual union; b. copulate, mate
2. to propagate animals or plants

Breeding, noun:

1. the action or process of bearing or generating
2. ancestry
3. education (archaic); b. training in or observation of the proprieties
4. the sexual propagation of plants or animals

Source: *Webster's Collegiate Dictionary*, 11th ed. 2003.

Let us propose an IF/THEN scenario to lay out a foundation for our concerns:

IF

Parking areas are places where there is parking,

Dining areas are places where there is dining,
Working areas are places where there is working,

Sleeping areas are places where there is sleeping;

THEN (as currently used)

Breeding areas are places where there is

Copulating,
Ovipositing,
Hatching,
Larval development,
Pupating,
Emerging.

It seems to us that this is too much meaning for one word to carry, and we take the position that breeding for mosquitoes means copulation, and we further feel that it is manifest that, although mosquitoes can breed, habitats cannot. We hear of cryptic mosquito breeding sites and ask does this mean that mosquitoes copulate in dark, hidden places? Similarly, we hear of tire breeding sites and have to ask whether this means that mosquitoes copulate in tires, and the same question could be raised for container breeding sites or tree hole breeding sites.

Literally, a tire breeding site is one where the number of tires multiplies almost exponentially (a frequent sight in today's throwaway world), and we wonder whether a salt-marsh breeding site means that the acres of salt marsh lost to development are regenerated through a natural breeding process. Although we may bemoan the need for such excruciating humor, we feel the outrageous nature of these definitions is no more outrageous than the indiscriminate use of the word breeding. In Table 1, we offer a limited listing of breeding site terms and provide what we feel are more precisely defined alternatives.

It seems clear to us that much of the misuse of breeding could be avoided by simply eliminating

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Table 1. Breeding terms and recommended substitutions.

Container breeding site	Container larval habitat, container oviposition site
Salt-marsh breeding site	Salt-marsh larval habitat
Mosquito breeding site	Mosquito larval habitat, mosquito oviposition site, mosquito site
Prime mosquito breeding areas	Prime mosquito larval habitat
A tree hole breeding species	A tree hole species or species whose larvae are found in tree holes
Affinity for breeding in tires	Affinity for ovipositing in tires
Mosquitoes have gone from tree hole breeding to container breeding	Mosquitoes have gone from ovipositing in tree holes to ovipositing in containers
Few have studied breeding habitat components that induce oviposition	Few have studied habitat components that induce oviposition
Quantitative information on breeding-habitat-related larval food types	Quantitative information on habitat-related larval food types
Whereas <i>Anopheles culifacies</i> is primarily a pool breeder	Whereas <i>An. culifacies</i> is primarily found in pools or Whereas <i>An. culifacies</i> larvae are primarily found in pools

the word. When we speak of a breeding habitat, we are talking about an oviposition site or a larval habitat, and eggs and larvae do not breed, i.e., copulate. Indeed, a habitat site can be universally defined by the presence of eggs, larvae, pupae, or emerging adults, but not by the breeding (copulation) of adult mosquitoes. Has anyone ever defined a mating swarm of mosquitoes as a breeding site? We doubt it, even though that is where breeding truly takes place.

Like many other words in common use in our language—the amorphous “issues” for concerns,

questions, difficulties, differences of opinion or “share” for tell—breeding has become a catch-all term for anything indicating the presence of mosquito activity in an aquatic environment. Science is not about catch-all terms; it is about precision in language, about clearly defining what activities are taking place. There is already too much loose language in the world today; it is incumbent on us to resist such use, even though it seems to have the blessing of more than 100 years.

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