Using Ecology in Developing Strategies for Targeting Species - Joe Andrews (Bruce Harrison)

A. Why is this important
    1. Useful for proactive control
    2. Use all the tools in your toolbox
B. Definitions
    1. Environment
        a) Physical
        b) Chemical
        c) Biological
    2. Ecology (Bionomics)
        a) Environment
        b) Individual organism characteristics -
            (1) physiology
            (2) genetics
C. Each species is unique
    1. DNA
    2. Morphology
    3. Behavior
        a) Flight distance
        b) Blood host
    4. Developmental times
    5. Oviposition sites
    6. Vector capacity
    7. Activity and abundance
D. Why is ID important
    1. Provides an ability to target your control
    2. Leads to a multitude of additional information about behavior and physiology
E. Life cycle
    1. Holometabolous
    2. Live in two biospheres
        a) Air
        b) Water
    3. Requires two different set of techniques for surveillance and control
    4. The most effective control strategies combine methodologies to control in both biospheres
F. Oviposition behavior
    1. Egg rafts on water surface
    2. Eggs attached together under aquatic plant leaves
    3. Eggs laid singly
        a) On water
        b) On soil
        c) Above water line in containers
    4. Female oviposition habitats
        a) Water
        b) Supports development of mosquito larvae to adult stage
G. Larvae and pupae
    1. Culicine type
    2. Anopheline type
H. Rough risk projections
    1. Pupae are the most accurate measure of future abundance

        a) Assume half are female
        b) Less predation
        c) Most species stay in this stage for 3-4 days
        d) Egg counts and larval counts are not as accurate and can be more time consuming
    2. Look for breeding sites based on species ID
        a) All artificial containers
        b) Natural containers
    3. When are mosquito species most active - phenology
    4. What do species feed on -
        a) Do they need to be controlled
        b) Are they a vector risk

I. Prioritizing control
    1. Timing
        a) Routine or post disaster
        b) Urgent or non urgent
    2. Vector status
    3. Diurnal or nocturnal
    4. Breeding sites
    5. Parity rates
    6. Length of life
    7. Flight distance
    8. Time from egg to adult

J. Equipment - needs to fit the problem