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Interdisciplinary research in the ecology of vector-borne diseases: Opportunities and needs

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ABSTRACT: In addition to their importance to human and animal health, vector-borne diseases are fascinating systems to study. The involvement of multiple species whose biologies and life cycles cover differing space and time scales makes it extremely difficult

Interdisciplinary collaboration is essential for many of the projects we carry out, but this requires awareness of the differences between disciplines and the ability to effectively communicate with each other. It is only by forming multi-disciplinary groups to focus on specific vector-host-pathogen systems that we will be able to answer the most interesting (and pressing) problems in our field.

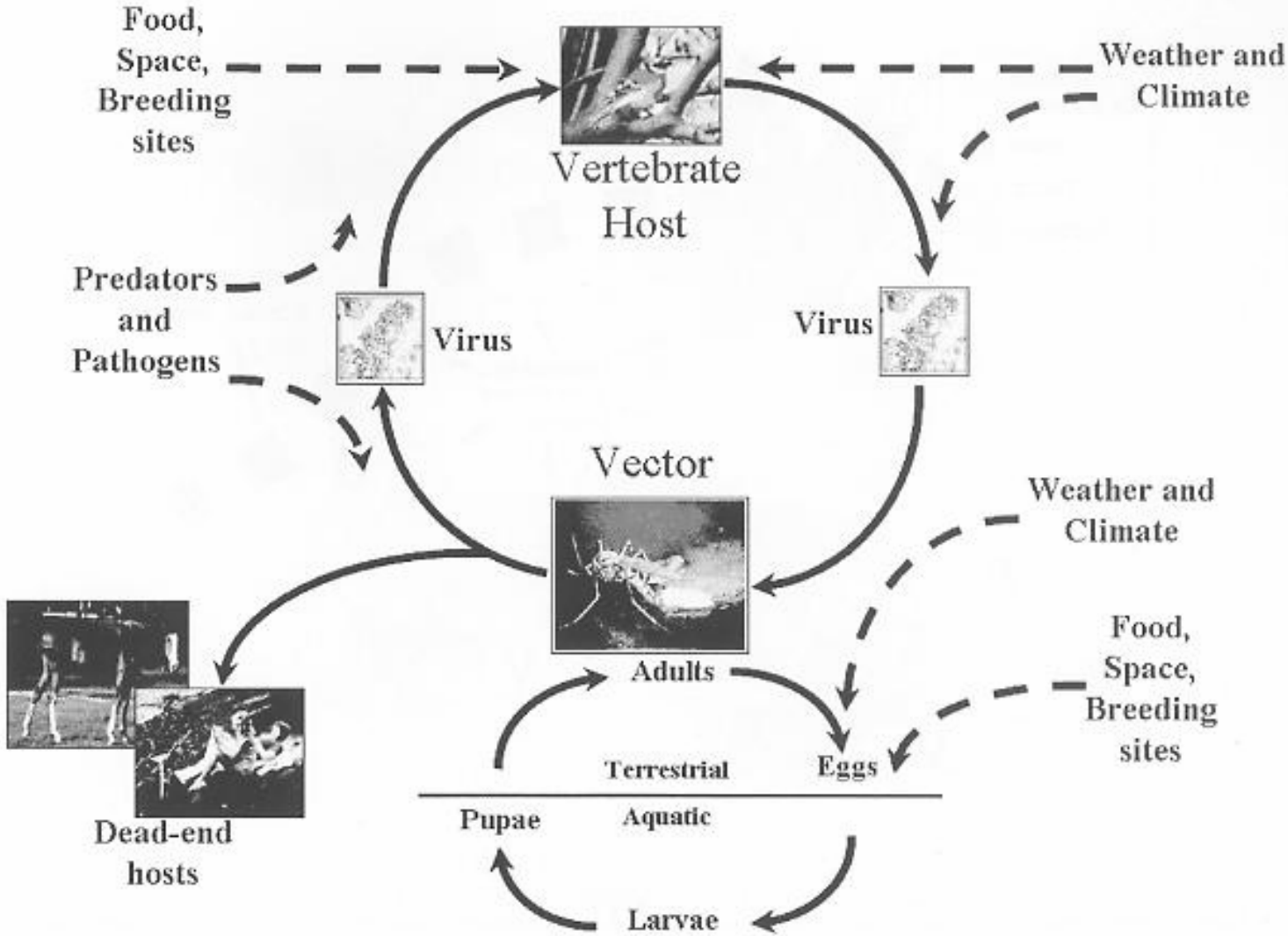

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Figure 1. Typical transmission cycle of a vector-borne agent, in this case a mosquito-transmitted arbovirus such as West Nile virus (Adapted from Moore et al. 1993).

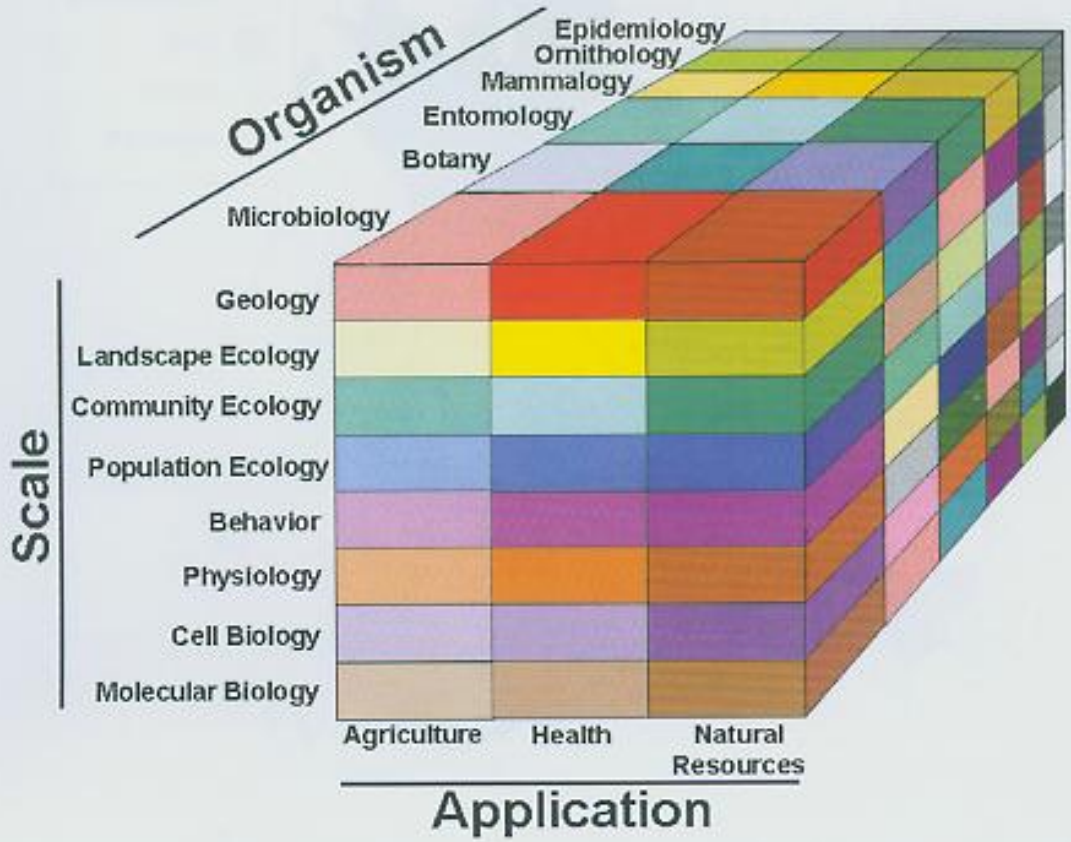

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Figure 6. The compartmentalization of science has contributed to the inability of different disciplines to effectively interact and collaborate on critical research issues.

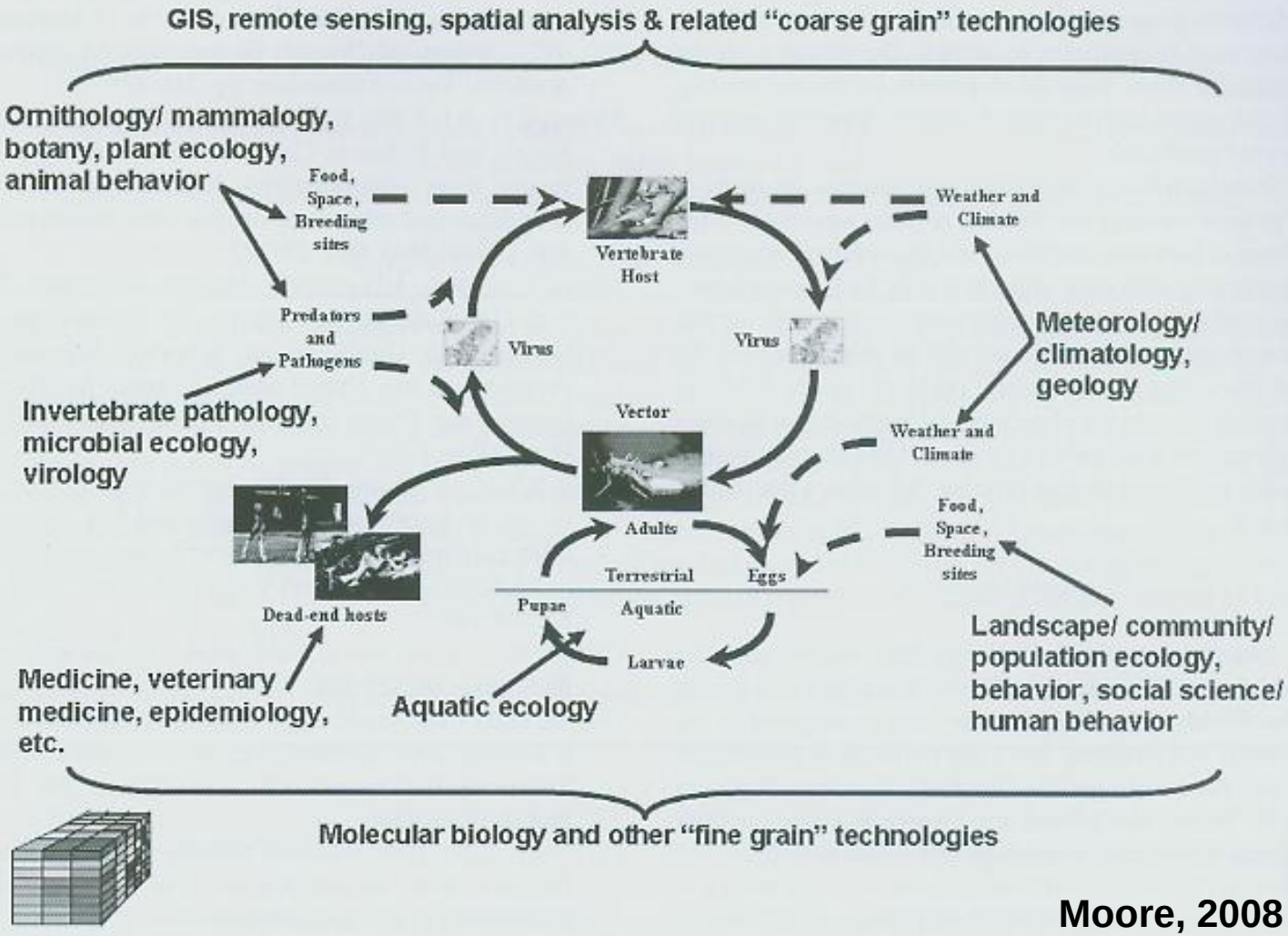

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Figure 7. Merging cube and cycle; the methods and perspectives of many disciplines can be brought to focus on vector-borne disease systems.

Theme 2: Food, Agriculture and Fisheries, and Biotechnology

CONTENT OF CALLS

Activity 2.1: Sustainable production and management of biological resources from land, forest and aquatic environment

Area 2.1.1 Enabling research

Area 2.1.2 Increased sustainability of all production systems (agriculture, forestry, fisheries and aquaculture); plant health and crop protection

Area 2.1.3 Optimised animal health, production and welfare across agriculture, fisheries and aquaculture

Area 2.1.4 Socio-economic research and support to policies

Activity 2.2 Fork to farm: Food (including seafood), health and well being

Area 2.2.1 Consumers

Area 2.2.2 Nutrition

Renewable energy production in the agricultural sector and biodiversity conservation

Area 2.2.3 Food processing

Area 2.2.4 Food quality and safety

Area 2.2.5 Environmental impacts and total food chain

Area 2.2.6 European Research Area

Area 2.2.7 Coordinated Call with India (Department of Biotechnology – DBT)

Activity 2.3 Life sciences, biotechnology and biochemistry for sustainable non-food products and processes

Area 2.3.1 Novel sources of biomass and bioproducts

Area 2.3.2 Marine and fresh-water biotechnology (blue biotechnology)

Area 2.3.3 Industrial biotechnology: novel high added-value bio-products and bio-processes

Area 2.3.4 Biorefinery

Area 2.3.5 Environmental biotechnology

Area 2.3.6 Emerging trends in biotechnology

Theme 6 Environment including climate change - Biodiversity

Area 2.3.7 Biorefinery joint call

Bridging the “genes and gels and ecosystems”

- **Interdisciplinary (joint) calls:**

  - inter thematic (Health/Food…/Environment/…)

  - inter activity (Activity 2.1 / Activity 2.3)

  - inter area (Area 2.1.2 / Area 2.1.4)

- **How to open the call?**

  - combining or fitting to already defined areas

  - proposing the new interdisciplinary areas e.g. “Renewable energy production in the agricultural sector and biodiversity conservation”