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Habitat manipulation and landscape patterns in national parks and wildlife sanctuaries as areas insect conservation

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Insects are declining mainly due to the overuse of pesticides in intensive agriculture, rapid growth of urbanization and of course, changes in climate. As we all know many scientists are warning that the loss of insects may lead to the loss of the human population. So, if our future generations have to survive on this earth, we must act at this very moment and conserve the insect population.

Conservation mainly depends on the protection of natural habitats and the creation of habitats through modifying landscapes, which helps every species to survive and find suitable places for survival (living).

National parks and wildlife sanctuaries are the only protected places where human interference is very meagre or nil. However, in recent days national parks have been used for public recreation activities. Suitable strategies can be adopted to change the entire landscape in such a way that the flora and fauna attract insects which can provide for a habitat for different insect species. A plan must be made in such a way that these national parks should be a learning place for children that also creates awareness among people for the

conservation of insects and thereby the survival of mankind.

The best example is the Butterfly Park at the Bannerghatta National Park, where they developed the host plant garden for different butterflies, which is the permanent natural habitat for many species of butterflies. It also creates awareness about insect (butterfly) conservation among the visitors. Here they also mass multiply the different (including endangered/extinct) species of butterflies and release them in nature (their natural habitat).

Wildlife sanctuaries are large areas compared to national parks and are legally protected from human interference. These can be best utilized to conserve endangered species. We can develop host plant gardens however, it requires knowing/studying the habits and habitat of the species to develop the same. Due to their large size/area, a plan for conserving aquatic insects, aerial insects, forest insects, soil-borne invertebrates can be made in a phased manner or in separate blocks. These types of adoptions/modifications in landscapes of wildlife sanctuaries will serve the purpose of conservation and benefit mankind across the globe. However, the major

problem to adopt these changes in national parks and wildlife sanctuaries across the country/globe is the lack of awareness among the policy makers and political support.

As Samwaysa *et al.*, (2020) explained, we must communicate the importance of insect conservation much better, especially using the tools of insect conservation psychology, which includes the important and interrelated components of education and citizen science.

For effective conservation of insects, citizens could play a major role where they can develop small gardens in their surroundings that can provide a natural habitat for any type of insect that can live/survive. Citizens can create amateur clubs and they can coordinate/contribute to setting up of habitats, educating young children about the importance of insect conservation and their benefit to future generations.

Insect conservation philosophy and psychology can be applied for improved education, civil society engagement, and science-based implementation of conservation strategies may be used as a solution for preventing further extinction of the insect population as given in Fig. 1.

Insect conservation by adopting habitat management is most crucial and effective as once the habitat is developed there are good chances of it turning into a natural habitat. These may not require much care for further stabilization in the ecosystem as well. However, to take up the initiative for the development of a habitat or landscape, a cordial liaison is required among the policymakers, stakeholders, and landowners. Together we can leave a sound legacy to future generations.

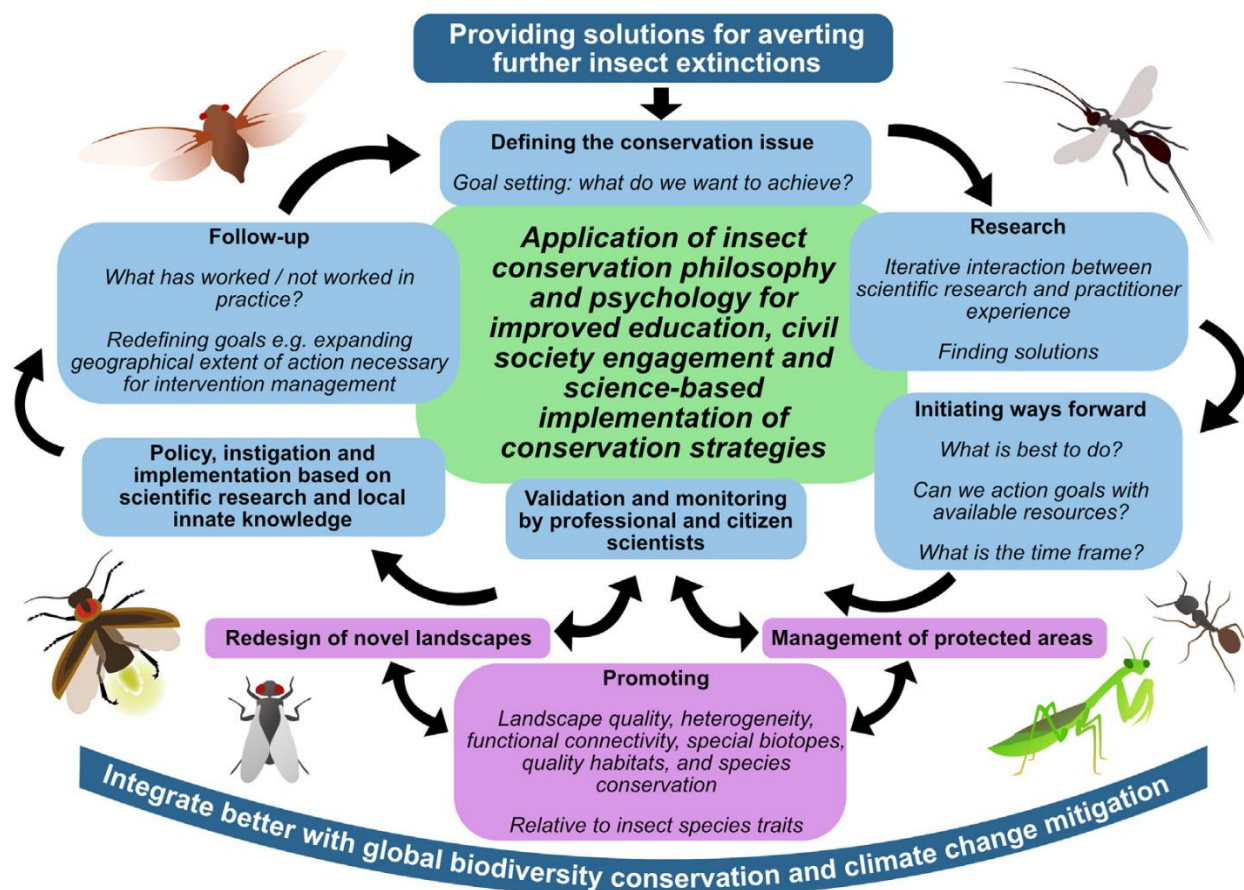


Fig. 1 Solutions for insect conservation (Adopted from M. J. Samways, *et al.*, 2020)

Reference:

M. J. Samwaysa, P. S. Bartonb, K. Birkhoferc, F. Chichorro, C. Deacon, et al., 2020. Solutions for humanity on how to

conserve insects. *Biological Conservation* (242):108427. (<https://doi.org/10.1016/j.biocon.2020.108427>).

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