representation and abundance of Auchenorrhyncha and their phenology were particularly marked.

WING-DIMORPHISM IN PLANTHOPPERS: AN ADAPTIVE STRATEGY IN HARLEQUIN ENVIRONMENTS

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Populations of the mutivoltine planthopper, Prokelisia marginata (Delphacidae), contain two wing-forms: flightless brachypters and macropters with fully developed wings capable of flight. P.marginata feeds selectively on the grass, Spartina alterniflora, which dominates the vegetation of Atlantic and Gulf Coast tidal salt marshes. I demonstrate that along most of the Atlantic seaboard S.alterniflora occurs as a harlequin environment composed of stable patches that provide life history requisites year-round and unstable ones that disappear altogether during winter. The proportion of macropters in planthopper populations is significantly correlated with the proportion of unstable patches in the local environment. A dimorphism is maintained along most of the Atlantic Coast because brachypters remain and effectively exploit stable patches and macropters colonize and subsequently escape unstable habitats. Along the Gulf Coast S.alterniflora occurs as one rather stable habitat and here planthopper populations are composed mostly of brachypters.

The percentage of macropters in populations is positively correlated with levels of crowding incurred during the nymphal stage suggesting that wing-form is determined by a developmental switching mechanism triggered by various environmental cues that predict habitat deterioration. The relationship between crowding and macroptery is linear at Atlantic and Gulf Coast localities, but greater proportions of macropters are produced on Atlantic marshes under similar crowded conditions. As a mechanism to explain differences in the wing-morph composition of populations, we propose that selection has altered the threshold at which a developmental switch responds to environmental cues such as crowding.