

The evolutionary ecology of information acquisition in plants

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From statistics we can learn how multivariate time series data can be used for prediction of future trends, even in the presence of unrelated meaningless variation or “noise”. From control-system engineering we can learn how self-tuning control systems can be designed for optimal performance for a given control task. General systems theory can serve as a tool for the analysis of system properties arising from interactions. Applying the tools from these disciplines can shed new light onto the biological questions of how can “future perception” and “predictive behaviour” be physiologically achieved in a noisy environment and how these abilities have been acquired through evolution. Furthermore, these same tools can help explain the role of information sharing within populations and communities in improving the reliability of “future perception” and consequently also of pre-emptive acclimation. Even meta-plasticity could be analysed from the perspective of self-tuning control systems borrowing ideas from engineering. I will present some examples of how this borrowing of ideas and approaches could be done in practice.