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Nota di contenuto	Contents; 1 Introduction; 1.1 Physiological variation; 1.2 How much variation?; 1.3 Diversity at large scales: macrophysiology; 1.4 Growing integration; 1.5 This book; 2 Nutritional physiology and ecology; 2.1 Method and measurement; 2.1.1 Artificial diets; 2.1.2 Indices of food conversion efficiency; 2.1.3 Use of a geometric framework; 2.2 Physiological aspects of feeding behaviour; 2.2.1 Optimal feeding in caterpillars; 2.2.2 Regulation of meal size: volumetric or nutritional feedback; 2.2.3 Regulation of protein and carbohydrate intake; 2.3 Digestion and absorption of nutrients 2.3.1 Digestive enzymes and the organization of digestion2.3.2 Gut physicochemistry of caterpillars; 2.3.3 Absorption of nutrients; 2.4 Overcoming problems with plant feeding; 2.4.1 Cellulose digestion: endogenous or microbial?; 2.4.2 Nitrogen as a limiting nutrient; 2.4.3 Secondary plant compounds; 2.5 Growth, development, and life history; 2.5.1 Development time versus body size; 2.5.2 Developmental trade-offs between body parts; 2.6 Temperature and growth; 2.6.1 Thermal effects on feeding and growth; 2.6.2 Interactions with food quality; 3 Metabolism and gas exchange

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4.5 The evidence for adaptation: Drosophila as a model5 Lethal temperature limits; 5.1 Method and measurement; 5.1.1 Rates of change; 5.1.2 Measures of thermal stress; 5.1.3 Exposure and recovery time; 5.2 Heat shock, cold shock, and rapid hardening; 5.2.1 Acclimation; 5.2.2 Heat shock; 5.2.3 Cold shock; 5.2.4 Relationships between heat and cold shock responses; 5.3 Programmed responses to cold; 5.3.1 Cold hardiness classifications; 5.3.2 Freeze intolerance; 5.3.3 Cryoprotective dehydration; 5.3.4 Freezing tolerance; 5.4 Large-scale patterns
5.4.1 Cold tolerance strategies: phylogeny, geography, benefits

Sommario/riassunto

Insects exhibit incredible physiological diversity, making them ideal model organisms for the purpose of this book. The authors draw together the central issues in physiology (nutrition, water balance, temperature, etc.) treating each in sufficient detail to give researchers a broad update in summary form.