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3.2.1 Nature and structure; 3.2.2 Replication, cell division and growth; 3.2.3 Number and ploidy level; 3.3 Genes and genome organisation
3.3.1 Molecular nature and structure 3.3.2 Number and molecular distribution; 3.3.3 Extragenic DNA; 3.4 Genes and development; 3.4.1 Genotypes, alleles and loci; 3.4.2 Genes and traits; 3.4.3 Gene expression; 3.5 Variation among individuals; 3.5.1 Origin; 3.5.2 Scope; 3.5.3 Detection; 3.6 Summary and conclusions; 4 Investigating the Genetics of Populations; 4.1 Overview; 4.2 Population genetics; 4.2.1 Basic concepts; 4.2.2 Models of population structure; 4.2.3 Population differentiation; 4.3 Quantitative genetics; 4.3.1 How it differs from population genetics
4.3.2 Quantitative genetic variation 4.3.3 Genotype by environment interaction; 4.3.4 Integration of molecular and quantitative genetics; 4.4 The genetic characterisation of wild populations; 4.4.1 Allozyme electrophoresis; 4.4.2 Mitochondrial DNA; 4.4.3 Microsatellite DNA; 4.4.4 Other types of molecular marker; 4.5 Studying populations: issues and limitations; 4.5.1 Types of study and their limitations; 4.5.2 Mixed-stock analysis and assignment tests; 4.5.3 Estimating effective population size and detecting population declines; 4.5.4 Parentage assignment; 4.5.5 Relatedness estimation
4.6 Future perspectives: going beyond quantifying genetic differentiation and understanding local adaptation 4.7 Summary and conclusions; Part II Population Genetics; 5 Biodiversity and Population Structure; 5.1 Introduction; 5.2 Evolutionary relatedness to other salmonids; 5.3 Phylogeographic diversity; 5.3.1 Range-wide; 5.3.2 Eastern Atlantic; 5.3.3 Western Atlantic; 5.3.4 Resident (non-anadromous) salmon; 5.3.5 Historical origins; 5.4 Regional and local population structure; 5.4.1 Spatial scale and boundaries; 5.4.2 Metapopulation structure and gene flow; 5.5 Overview
5.6 Summary and conclusions

Sommario/riassunto

Atlantic Salmon is a cultural icon throughout its North Atlantic range; it is the focus of probably the World's highest profile recreational fishery and is the basis for one of the World's largest aquaculture industries. Despite this, many wild stocks of salmon are in decline and underpinning this is a dearth of information on the nature and extent of population structuring and adaptive population differentiation, and its implications for species conservation. This important new book will go a long way to rectify this situation by providing a thorough review of the genetics of Atlantic
