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Nota di contenuto	Migration of Freshwater Fishes; Contents; Preface; Acknowledgements; 1 Migration and Spatial Behaviour; 1.1 Introduction; 1.2 Fish migration - from phenomenology to functional biology; 1.2.1 Environment-related criteria and definitions; 1.2.2 Diadromy and types of diadromous migrations; 1.2.3 Superimposed migratory patterns: added complexity or just simple adaptive responses?; 1.2.4 From adaptation to the migration continuum concept: do scale and salinity matter when defining migration?; 1.2.5 From the restricted movement paradigm towards a general definition of migration 2 The Stimulus and Capacity for Migration2.1 Introduction; 2.2 Stimuli for migration; 2.2.1 Internal factors; 2.2.2 External factors; 2.3 The capacity for migration; 2.3.1 Overview of muscle structure and function; 2.3.2 Swimming performance: how fast can a fish swim?; 2.3.3 Relationships between swimming speed and endurance; 2.3.4 A metabolic approach to swimming costs; 2.3.5 How far can a fish migrate?; 2.3.6 Constraints on early and late migrants; 2.3.7 Implications of migration costs on size at first sexual maturity: when time matters; 2.3.8 A tentative synthesis and conclusion

2.4 Piloting, orientation and navigation
2.4.1 Landmarks and surface topography; 2.4.2 Celestial cues; 2.4.3 Currents; 2.4.4 Electric and magnetic fields; 2.4.5 Olfaction and gustation; 2.4.6 Other cues; 2.4.7 Homing, memory and imprinting; 3 Types of Migration; 3.1 Introduction; 3.2 Migrations at the seasonal and ontogenetic scale; 3.2.1 Feeding migrations; 3.2.2 Refuge-seeking migrations; 3.2.3 Spawning migrations; 3.2.4 Post-displacement movements, recolonisation and exploratory migration; 3.3 Diel horizontal and vertical migrations; 4 Effects of Climate on Patterns of Migratory Behaviour
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4.2 Arctic and subarctic regions; 4.3 Temperate regions; 4.4 Tropical regions; 4.4.1 Introduction; 4.4.2 Setting the scene: what makes tropical freshwater systems similar or different to those of temperate areas ?; 4.4.3 Influences of predation pressure on fish migrations; 4.4.4 Influence of dissolved oxygen on fish migrations; 4.4.5 Other environmental factors shaping habitat use and seasonal migrations; 4.4.6 Life history, breeding systems and migration patterns of tropical fish; 4.4.7 Conclusion; 5 Taxonomic Analysis of Migration in Freshwater Fishes; 5.1 Introduction
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5.6 Gars (Lepisosteidae) and bowfins (Amiidae);
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5.8 Tenpounders and tarpons (Elopiformes);
5.9 Freshwater eels (Anguillidae);
5.10 Anchovies, shads, herrings and menhaden (Clupeiformes);
5.11 Milkfish (Chanidae);
5.12 Carps and minnows (Cyprinidae);
5.13 Suckers (Catostomidae);
5.14 Loaches (Cobitidae) and river loaches (Balitoridae);
5.15 Characins (Characiformes)
5.16 Catfishes (Siluriformes)

Sommario/riassunto

Recent studies have increasingly demonstrated the widespread existence of spatio-temporal variations in the abundance and distribution of species of freshwater fishes, previously assumed not to move between habitats. These movements are often on a seasonal or ontogenetic basis, for spawning, feeding and refuge, and in many cases are fundamental for the successful completion of lifecycles. This important book provides a single source for a range of previously widely dispersed information on these movements of fish in fresh waters, covering potamodromous fishes as well as the more familiar dia
