FISH STRESS AND HEALTH IN AQUACULTURE

Edited by

G.K. Iwama

Department of Animal Science, University of British Columbia

A.D. Pickering

Institute of Freshwater Ecology, Cumbria, United Kingdom

J.P. Sumpter

Department of Biology and Biochemistry, Brunel University

C.B. Schreck

Oregon Cooperative Fishery Research Unit, Oregon State University



Contents

List of contributors Preface	vii ix
Stress in finfish: past, present and future – a historical perspective B.A. BARTON	1
Effects of rearing conditions on the health and physiological quality of fish in intensive culture G.A. WEDEMEYER	35
Effects of stress on reproduction and growth of fish N.W. PANKHURST and G. VAN DER KRAAK	73
The endocrinology of stress J.P. SUMPTER	95
Ionic, osmotic and acid-base regulation in stress G. McDONALD and L. MILLIGAN	119
Behavioral responses to stress C.B. SCHRECK, B.L. OLLA and M.W. DAVIS	145
Genetic basis to the stress response: selective breeding for stress-tolerant fish T.G. POTTINGER and A.D. PICKERING	171
Immune-endocrine interactions P.H.M. BALM	195
Dietary effects on stress and health T.C. FLETCHER	223

VI	Contents	
	surements of stressed states in the field MORGAN and G.K. IWAMA	247
Fish	species list	269
Inde	ex	271