

BRIDGING THE GAP BETWEEN
HYDRAULICS AND BIOLOGY



International Symposium on Ecohydraulics

18 – 23 February 2007
Christchurch Convention Centre
New Zealand

First Announcement 6th International Symposium on Ecohydraulics

Key dates:

Call for abstracts: December 2005

Abstracts accepted from: 1 January 2006

Symposium: 18-23 February 2007

The 6th International Symposium on Ecohydraulics will be held in Christchurch, New Zealand. More than 350 professionals working in hydraulic and environmental research and applications are expected to attend this symposium.

The technical program will comprise plenary sessions, technical papers presented in the traditional format, a poster display session, and discussion forums of selected technical papers.

Visit the website <http://www.conference.co.nz/ecohydraulics2007/> to obtain details and registration.

International Symposia on Ecohydraulics have been promoted and coordinated by the Eco-Hydraulics section of the International Association of Hydraulic Engineering and Research (IAHR) since 1994. The Symposia have emerged from the need for a more interdisciplinary approach to the study of water movement and its ecological implications.

The fifth Symposium in Madrid, Spain addressed aquatic habitat analysis and human impact evaluation and mitigation with aquatic systems restoration as the central issue. The symposium was attended by more than 400 delegates from all over the world representing a wide range of scientific disciplines, covering both basic and applied scientific fields.

The sixth Symposium will focus on bridging the knowledge gap between hydraulics and biology. Specifically, papers are encouraged which address latest understandings on the performance of biota as a function of hydraulic habitats and flow regimes, and how these dependencies can be better modelled. The world is passing through a period of considerable change - whether social, economic, scientific or technological. The Symposium will incorporate these new ideas and encourage the continued development of interdisciplinary methods, including water management planning/policy tools, that will help resolve the conflicts arising from increasing water use and environmental demands.

Symposium Themes

1. Hydraulic habitat suitability

- Flow related performance of biota (e.g., fish swimming, turbulence effects)
- Flow moderation of behaviour and habitat use
- Habitat suitability – methods, validation, case studies

2. Solute and Nutrient Transport and Exchange

- Transport of solutes across the organism – water interface
- Nutrient uptake regimes: from kinetic control to mass-transfer control
- Transport across the sediment – water interface, dead zone modelling, intra-gravel flow effects

3. Sediment –flow interactions and effects on habitat

- Sediment as flow refugia for biota
- Biological effects of silt deposition/removal
- Sediment hydraulics, particularly as related to biotic impact

4. Hydraulic habitat and biological modelling

- Hydraulic habitat modelling: would better hydraulic models improve biological prediction?
- Biological models incorporating hydraulic concepts – bioenergetics, individual-based models, drag-mass transfer trade-off, turbulence
- Modelling nearshore - offshore exchange process (lakes, reservoirs, estuaries, coastal)

5. Flow regime assessment

- Scale: linking scales of flow variation to ecosystem structure and function
- Biological responses to and needs for flow variability
- Minimum flow requirements: biological bottlenecks?
- Case studies

6. Fish passage/screening

- Screen/structure design in relation to swimming performance and behaviour
- New/novel designs and effectiveness
- Reviews

7. Restoration - hydraulic/water quality/biotic

- Hydraulic design, case studies, effectiveness, novel approaches
- Biotic effects of water temperature, dissolved oxygen, water chemistry, pollution in relation to the hydraulic setting of habitats

8. Water management

- Water planning frameworks, policies, standards of environmental protection
- Management tools – how can we do better? 'flow regimes', minimum flows, minimum flow duration, flushing flows, flow variability - the 'Natural Flow Paradigm': is it a useful tool for managing water allocation?
- Resolving conflicting flow requirements of multiple instream values