

Design Of Fishways And Other Fish Facilities

With a focus on environmentally friendly rice farming, this unique book integrates both ecosystem and human dimensions of ecological restoration to provide strategies to promote sustainable agriculture and rural development. Paddy fields have multiple functions beyond their role of producing rice: They serve as refuge habitats for a range of wildlife that once inhabited floodplain wetlands and contain a number of unique and threatened aquatic species. They also provide various ecosystem services for regional communities such as water retention, erosion control, flood control, fish culture, and educational opportunities. However, rice paddies are threatened worldwide due to the modernization of agriculture and abandonment of farmland caused by depopulation and the aging of rural communities. Therefore, multiple ecological and sociological aspects must be considered in the ecological restoration of paddy fields. This book aims to do so by incorporating various disciplines of natural and social sciences. Strategies for sustainable agriculture are reviewed, including financial incentives for farmers and the use of flagship wildlife species such as the crested ibis (toki) to promote ecological restoration. With the increasing popularity of environmentally friendly rice farming in parts of Asia and the western United States, this book offers model cases for sustainable management of paddy-dominated landscapes.

The success of fish migration through culverts is dependent on the swimming ability of the fish and the hydraulic conditions of the culvert. Properly designed and constructed culverts can minimize the impact on fish passage. Because culverts are typically more economical than bridges, it is appropriate to evaluate when to use culverts and to predict the effects of such culvert installations. During the consideration of alternatives for structures for fish passage, culverts should not be automatically eliminated. This publication has tried to examine the aspects of culvert design and operation relative to the existing information that has been published in previous studies. Ideally, a culvert installation should not change the conditions that existed prior to that installation. This means that the cross-sectional area should not be restricted by the culvert, the slope should not change, and the roughness coefficients should remain the same. Any change in these conditions will result in a velocity change which could alter the sediment transportation capacity of the stream. A truly successful culvert design would include matching the velocities of the fish's swimming zone in the culvert to the swimming capacity of the design fish. Unfortunately, not enough research has been completed to make this an acceptable criterion of culvert design. This approach is preferred because it is easier to reduce the velocities in the swimming zone by increasing the boundary roughness than it is to reduce the mean velocity of the entire culvert. This publication contains some relatively simple guidelines which can reduce the installation problems of culverts in streams containing migrating fish when combined with the expertise of an experience fish biologist, engineer, and hydrologist.

The 2014 International Conference on Water Resource and Environmental Protection [WREP2014] aims to bring researchers, engineers, and students to the areas of Water Resource and Environmental Protection. WREP2014 features unique mixed topics of Water Resource and Environmental Protection in the context of building healthier ecology and environment. The conference will provide a forum for sharing experiences and original research contributions on those topics. Researchers and practitioners are invited to submit their contributions to WREP2014. This proceeding tends to collect the up-to-date, comprehensive and worldwide state-of-art knowledge on water resource and environmental protection. All of accepted papers were subjected to strict peer-reviewing by 2–4 expert referees. The papers have been selected for this proceedings based on originality, significance, and clarity for the purpose of the conference. The selected papers and additional late-breaking contributions to be presented will make an exciting technical program on WREP2014 conference. The conference program is extremely rich, featuring high-impact presentation. We hope this conference will not only provide the participants a broad overview of the latest research results on water resource and environmental protection, but also provide the participants a significant platform to build academic connections. Includes section, "Meetings and conferences."

Fisheries in inland waters have long provided an important source of food for mankind. One way to make the use of these resources sustainable and to improve food security and livelihoods is through the development of sustainable fisheries management practices. This book is a compilation of modern knowledge on all aspects concerning the planning and construction of fishpasses as well as their monitoring for effectiveness. Emphasizing the need to take into consideration biological and behavioral characteristics of the species, it describes in detail the engineering options that are available today to make obstacles passable.--Publisher's description.

This new edition of the best-selling book describes the main types of fishways and fish facilities used around the world to assist the passage of fish over dams and other obstructions to their migration. It also focuses on the protection of fish (mainly young fish) from the hazards encountered in their downstream migrations. The book brings together the type of knowledge and research needed to decide on the facility used as well as its design and operation. It emphasizes the need for both biologists and engineers to collaborate in the design and indicates in what fields such collaboration would benefit fisheries conservation in the future. This is the Second Edition of the only book to bring together all of these topics worldwide under one cover.

Many fish species, like salmon and sturgeon, undertake extended migrations as part of their basic behavior, and other fish and invertebrates also undertake short-term or small-scale migrations at certain phases of their life cycles. Activities such as dam construction for water supply and power generation, channelization for navigation and flood control, land drainage and wetland reclamation for agricultural and urban use all have profound impact on the aquatic ecosystem and thus on natural fish populations. Fish passes are often the only way to make it possible for aquatic fauna to pass obstacles that block their up-river journey. Based on knowledge and experience from mainly Europe and North America, this book describes the various types of fish passes,

with special emphasis to "close-to-nature" solutions.

Most of the diadromous fish of the world have decreased in distribution and abundance since the beginning of the twentieth century. They are now threatened, and important conservation issues arise. The causes of these trends vary among species and basins but regional human impact (damming, pollution, fisheries) and global change (climate) are suspected to be responsible for these difficulties. This book contains selected papers from an international symposium organised by the Diadfish network held in Bordeaux (France) in 2005. Readers will find up-to-date information on the ecology, ecotoxicology and physiology of several diadromous species (Atlantic salmon, shads, lampreys, eels) and this whole group in Europe. Main impacts are also documented and analysed in case studies, and solutions or remediation actions are presented. This volume looks at recent scientific knowledge and innovative techniques concerning environmental matters. The proceedings focus on topics such as hydraulic protection of territory and defence, utilization of water resources, architecture and planning of fluvial/coastal landscape and much more.

The importance of free longitudinal passage of river fauna is stressed.

Aquaculture in the United States is a significant agribusiness industry, but it is also a troubled one whose future is clouded by doubt. Many aquaculture practices, such as deliberately introducing exotic species, hatcheries programs, and pen culture in protected waters have come under intense attack from environmentalists. Economic pressures on the industry from the value of coastal land, the unavailability of suitable supplies of water, and the legal costs of regulations have restricted growth. This book looks at the past, present and future of a troubled industry.

"The information presented in this document is intended to support waterway and asset managers, engineers, fishway designers, researchers and consultants, who together collectively manage, design and assess new and existing fish passage structures. This document addresses Action 11.6 of the Victorian Waterway Management Strategy (DEPI 2013), which is to 'Develop best practice guidelines for the appropriate design, approval and construction of fishways and other fish passage works'. This document outlines contemporary fishway designs, and approval and construction processes for promoting consistent procedures, protocols and standards in fishway design in Victoria."--Page 1.

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