

DIFFERENCE OF FISH PREFERENCE VELOCITY
BETWEEN UPSTREAM AND DOWNSTREAM OF FISHWAY/DIVERSION WEIR
IN A TROPICAL STREAM, PADANG, INDONESIA

Andalas University, Padang-Indonesia ○Ahmad JUNAIDI
Toyohashi University of Technology Noriyuki KOIZUMI
and Shunroku NAKAMURA

Introduction

We have carried out fish surveys in a mid-stream reach (C.A.=25 square km) in the Parak Buruk river, West Sumatera, Indonesia (Figure 1) in March – August, 2000 (Table 1). During the surveys, we installed a temporary fishway (modified Larinier Pass, 25cm width, 1/10 slope and 27m length; Photo 1) on a divergent weir which is located between our upstream-site and downstream-site (Figure 1). We would like to report some results of the study.

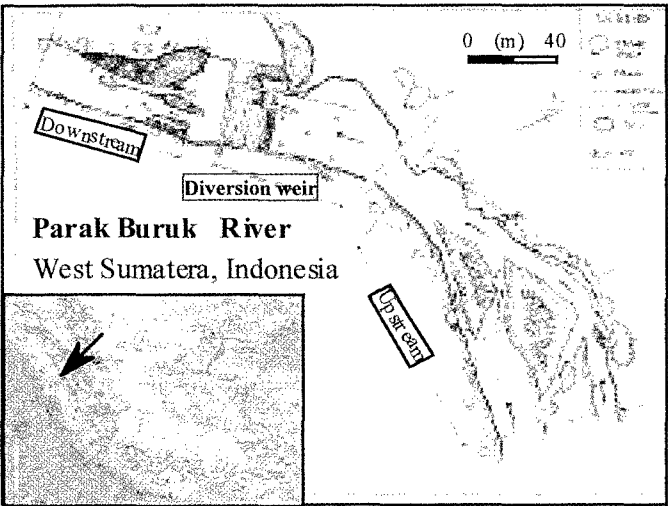


Fig. 1 Location of study site

Table 1 Date of Fish Survey

	Downstream	Upstream
Before Fishway Installing	March 25 th March 26 th	April 16 th
Fishway Installing	May 12 th – June 18 th	
After Fishway Installing	August 6 th	August 7 th

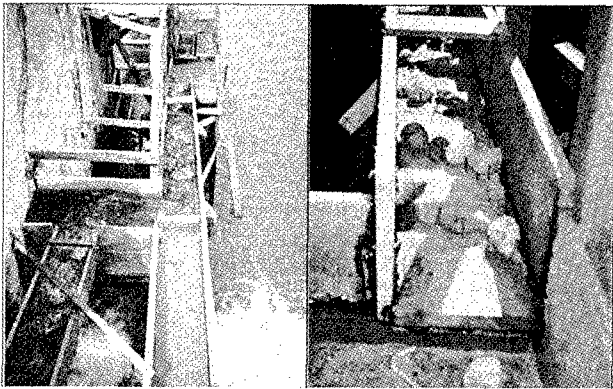
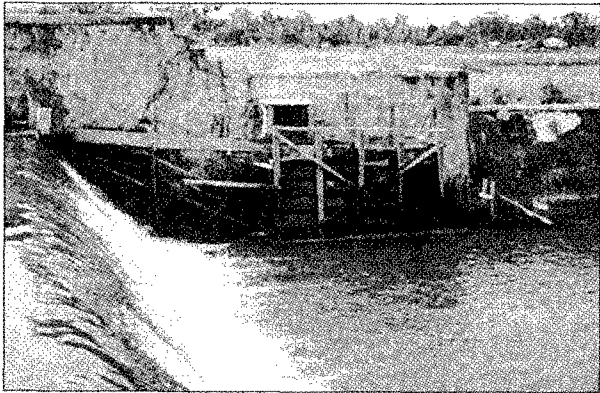


Photo 1 Kasang Diversion weir and installed temporary fishway

Fish Survey and Some Results

In each survey, we collected the fish data (observed fish location, species name, number of individuals, size, etc.) by snorkeling and measured the distribution of water depth, velocity, substrate, and cover. Then we summed up the data into the HSC (Habitat Suitability Criteria; Tamai *et al.* 2000). Ten species were observed in both upstream-site and downstream-site, including Kulari, *Tylognathus kajanensis* (Photo 2), Mungkus, *Sthipodon elegans*, Kaperas, *Puntius binotatus*, Pantau, *Rasbora* spp., etc. (body length of every fish is several centimeters). According to an inhabitant near the diversion weir, upstream migration of a lot of fish, especially Kulari was observed at the fishway after its installation. Figure 2 shows the observed total number of Kulari and Pantau individuals in each site and survey. From the figure we can understand the number of Kulari in upstream-site was remarkably increased after fishway installed. Even though the number of Pantau was decreased in upstream, it does not mean Pantau was not ascended the fishway; ascending Pantaus were sometimes observed.

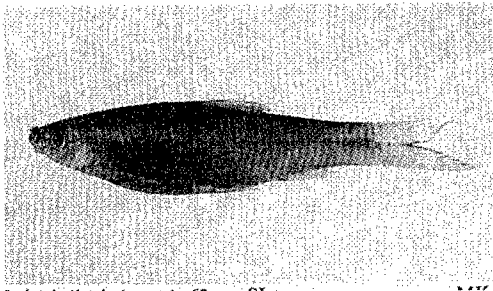


Photo 2 Kulari, *Tylognathus kajanensis*

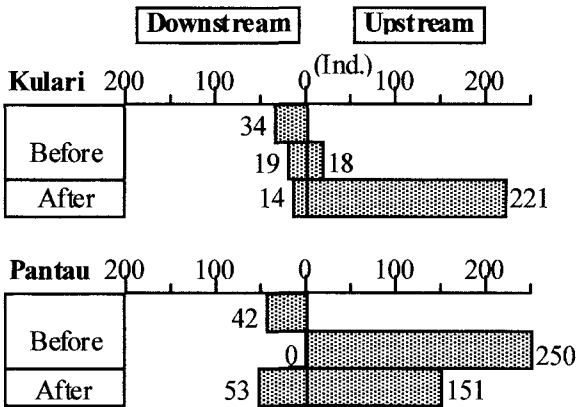


Fig. 2 Number of Kulari and Pantau individuals

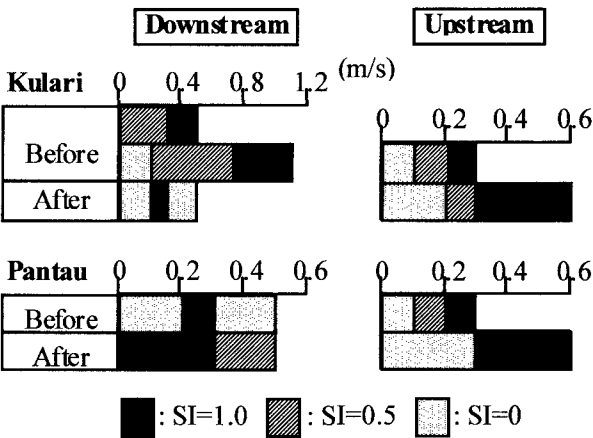


Fig. 3 HSC of Kulari and Pantau for velocity

Figure 3 shows the HSC of these fish for velocity. In the figure, SI (Suitability Index) =1 means the fish prefer the velocity range and SI=0 means the fish does not prefer. The figure seems to show that (1) both fish prefer higher velocity in upstream-site, though they show somewhat different preference in downstream-site and or (2) their preference was changed after ascended fishway.

Acknowledgement

This study was carried out with the help of many colleagues, such as Mr. Masrizal, Azhar, Izmiarti and Prof. Siti Salmah. Also Mr. Y.Ota of JICA gave us a great support.

Reference

Tamai, N., S.Okuda, and S.Nakamura (2000): 河川生態環境評価法、東京大学出版会、pp.89-102.