

# Effect of hitting shock on the hatching of drifting fish egg

Wei Yang<sup>1</sup>, Xian-bing zhang<sup>1</sup>, Dongmei Qin<sup>1</sup>, Ya-ping Hu<sup>1</sup>, Sheng-fa Yang<sup>1</sup>, Jiang Hu<sup>1</sup>,  
and Wen-jie Li<sup>1</sup>

<sup>1</sup>Chongqing Jiaotong University

January 29, 2023

## Abstract

The drifting fish eggs are more likely to collide with ships, rocks etc. as they hatch while migrating through the river. For fish resources protection and waterway management, it's important to clarify the upper threshold of hitting velocity and the effect of the hitting shock on their hatching. Thus, natural spawned and domesticated fish eggs were studied and compared. The effects of hitting objects, hitting velocity and the developmental level of the fish eggs on their hatching was also studied. The developmental stage was the most sensitive factor to hitting shock. Almost 70% of natural spawned semi-buoyant fish eggs can't hatch successfully when the hitting velocity was 4.4 m s<sup>-1</sup> and collided with rock, and this hatching rate was about 10%-30% higher than that of farmed ones at the same conditions. The results are of great significance for the protection of fish resources in the high-velocity rivers.

## Hosted file

hitting shock on drifting fish eggs.doc available at <https://authorea.com/users/525402/articles/621664-effect-of-hitting-shock-on-the-hatching-of-drifting-fish-egg>

## Hosted file

figure 1.docx available at <https://authorea.com/users/525402/articles/621664-effect-of-hitting-shock-on-the-hatching-of-drifting-fish-egg>

## Hosted file

figure 2.docx available at <https://authorea.com/users/525402/articles/621664-effect-of-hitting-shock-on-the-hatching-of-drifting-fish-egg>

## Hosted file

Figure 3.docx available at <https://authorea.com/users/525402/articles/621664-effect-of-hitting-shock-on-the-hatching-of-drifting-fish-egg>

## Hosted file

Figure 4.docx available at <https://authorea.com/users/525402/articles/621664-effect-of-hitting-shock-on-the-hatching-of-drifting-fish-egg>

## Hosted file

Figure 5.docx available at <https://authorea.com/users/525402/articles/621664-effect-of-hitting-shock-on-the-hatching-of-drifting-fish-egg>

## Hosted file

Figure 6.docx available at <https://authorea.com/users/525402/articles/621664-effect-of-hitting-shock-on-the-hatching-of-drifting-fish-egg>

#### Hosted file

Figure 7.docx available at <https://authorea.com/users/525402/articles/621664-effect-of-hitting-shock-on-the-hatching-of-drifting-fish-egg>

#### Hosted file

Table 1.docx available at <https://authorea.com/users/525402/articles/621664-effect-of-hitting-shock-on-the-hatching-of-drifting-fish-egg>

#### Hosted file

Table 2.docx available at <https://authorea.com/users/525402/articles/621664-effect-of-hitting-shock-on-the-hatching-of-drifting-fish-egg>

#### Hosted file

Table 3.docx available at <https://authorea.com/users/525402/articles/621664-effect-of-hitting-shock-on-the-hatching-of-drifting-fish-egg>