The Induction of Asexual Reproduction on *Holothuria scabra* and *Bohadschia marmorata*: The Consevation Effort in Tanimbar Archipelago, Maluku

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Introduction

Maluku is the main producer of Indonesian trepang, but lately the resources have dropped significantly (Natan et al., 2016). Naturally, some trepang species have the ability to to breed asexually by fission, that is triggered by physical stress (Conand, 1995; Dolmatov *et al*., 2012; Ahmed *et al*., 2018). This potential can be used for individual multiplication through simple techniques such as using rubber bands to induce asexual reproduction on trepang.

The objective of this study are to asses the success rate of fission on two trepang that highly valued in Tanimbar: *Holothuria scabra* and *Bohadschia marmorarta* and the survival rate of body part that result of the fission. This would be a benefit for the population enhancement efforts in Tanimbar Achipelago, Maluku.

Methods

Two trepang species, *H. scabra* and *B. marmorata*, collected at Matakus Island, Tanimbar Archipelago, Maluku. This research using experimental methods in the field and analyzed descriptively. Fission induction conducted by binding at 1/3 of the body length (Purwati, 2002) to each individual of trepang.

Figure 1. Research location

Figure 2. Trepang after induced fission (A*: H. scabra*; B: *B. marmorata*)

Result and Discussion

The results showed that *H. scabra* (98%) and *B. marmorata* (100%) can induced fission and divide into two part (Table 1.). Naturally, both species have not been detected as having the ability to being fission (Dolmatov *et al*., 2012), but that species can still divide into two parts after being induced by rubber bands. As stated in (Ruppert & Barnes, 1994), the success of fission is influenced by the presence of mutable connective tissue in the body of trepang that is responsible for the curvature and rigidity of the body. Both species have a higher succes of fission rate compared to *Stichopus vastus* and *S. horens* (Hermawan et al., 2012)

B. marmorata can divides faster than *H. scabra*. *B. Marmorata* only takes 24 hours to become two individuals through division. *H. scabra* have a thicker body wall that *B. marmorata*. According to Karim *et al*. (2013), The time of trepang being fission can be influenced by the thickness of trepang body wall.

Table 1. Time required for fission and the succes rate of fission

Species	The number of individuals that being fission at time						Success rate of fission
	12 hours	24 hours	36 hours	48 hours	50 hours	72 hours	
H. scabra (n=50)	0	0	3	13	5	28	98%
B. marmorata (n=25)	0	13	4	8	0	0	100%

The posterior parts of both species have a better survival rate than the anterior parts. Both parts of the body of *B. marmorata* from fission have a total survival 88% (Table 2.). As stated in Darsono (1999) and Conand *et al*. (1997), fission location at 1/3 part of the body resulted posterior portion have a large part of the body and have much internal organs that anterior portion.

Table 2. The survival rate of body part that result of the fission

Species	Survival rate		
	Anterior	Posterior	Total
H. scabra	0%	92 %	46 %
B. marmorata	80 %	96 %	88 %

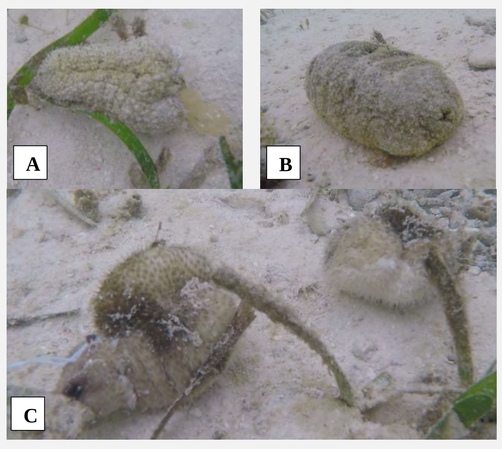

Figure 3. Body part of trepang after fission (A: Anterior body part of *H. scabra*; B: Posterior body part of *H. scabra;* C: Anterior and Posterior body parts of *B. Marmorata*)

Conclusion

The binding location at 1/3 of the body length is effective in the process of induced fission for *B. marmorata,* but not for *H. scabra,* especially on anterior parts. This method can be used by the coastal communities of Tanimbar as an added-value for the trepang conservation based on local wisdom called “sasi”.

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