



# Influence of $p\text{CO}_2$ on coral larvae and the monitoring of carbonate system in a Thai reef

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# Ocean acidification in Thailand

- So far, only few studies have been done related to ocean acidification monitoring and the impact of OA on coral reefs in Thailand
- In the upper Gulf of Thailand, Chonburi Province, the monitoring of total alkalinity and dissolved inorganic carbon has been started since December 2013
- In addition, the influence of  $p\text{CO}_2$  on the larval development and settlement of the corals, *Pocillopora damicornis* and *Acropora millepora*, was investigated



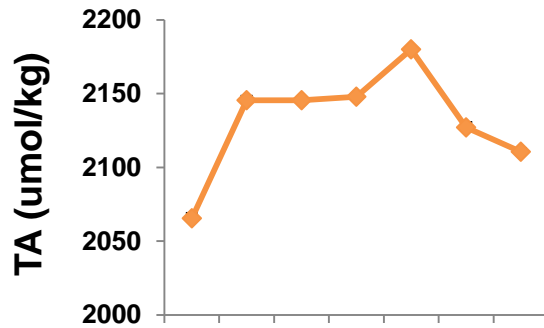
# Monitoring

- Seawater samples have been collected every 2 months
- Parameters: TA, temperature, nutrient

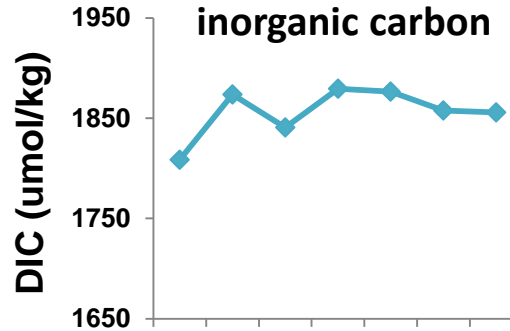




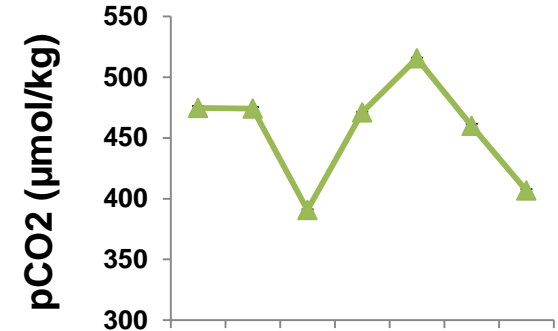
### Total alkalinity



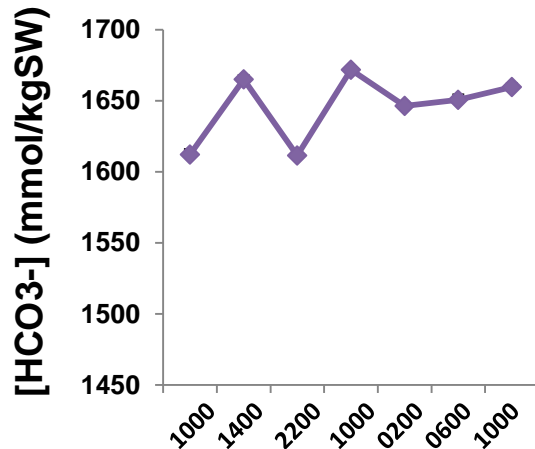
### Dissolved inorganic carbon



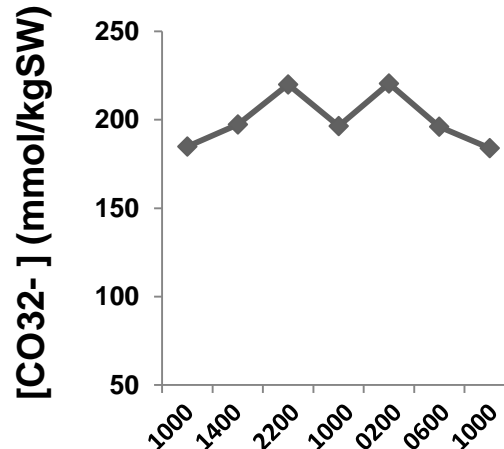
### Partial of CO<sub>2</sub>



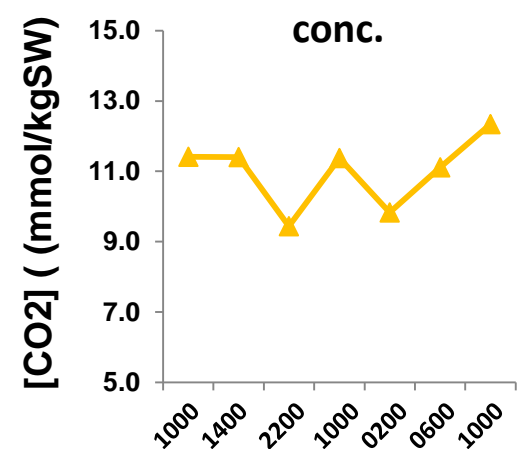
### Bicarbonate conc.



### Carbonate conc.



### CO<sub>2</sub> & carbonic acid conc.

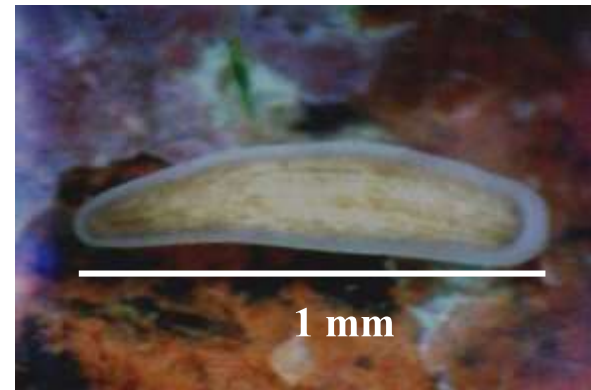


Time



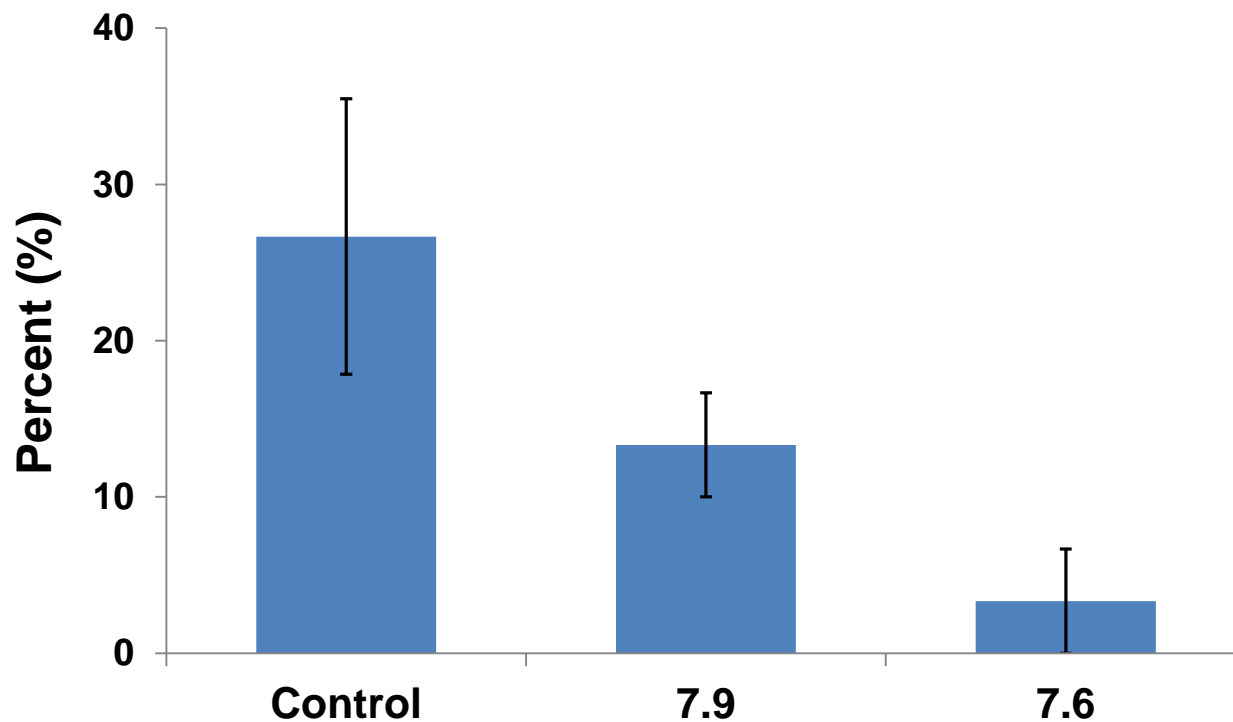
## Effect of pH on coral larvae

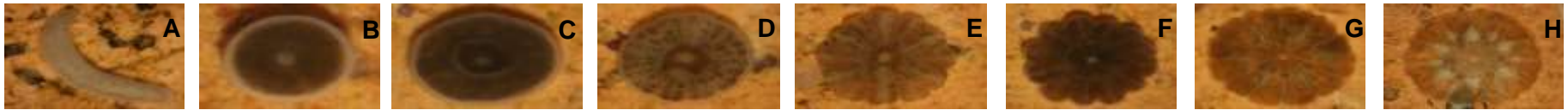
- Larvae of *Pocillopora damicornis* were collected
- Treatments with different pH levels were conducted :  
8.1 (Control), 7.9 & 7.6



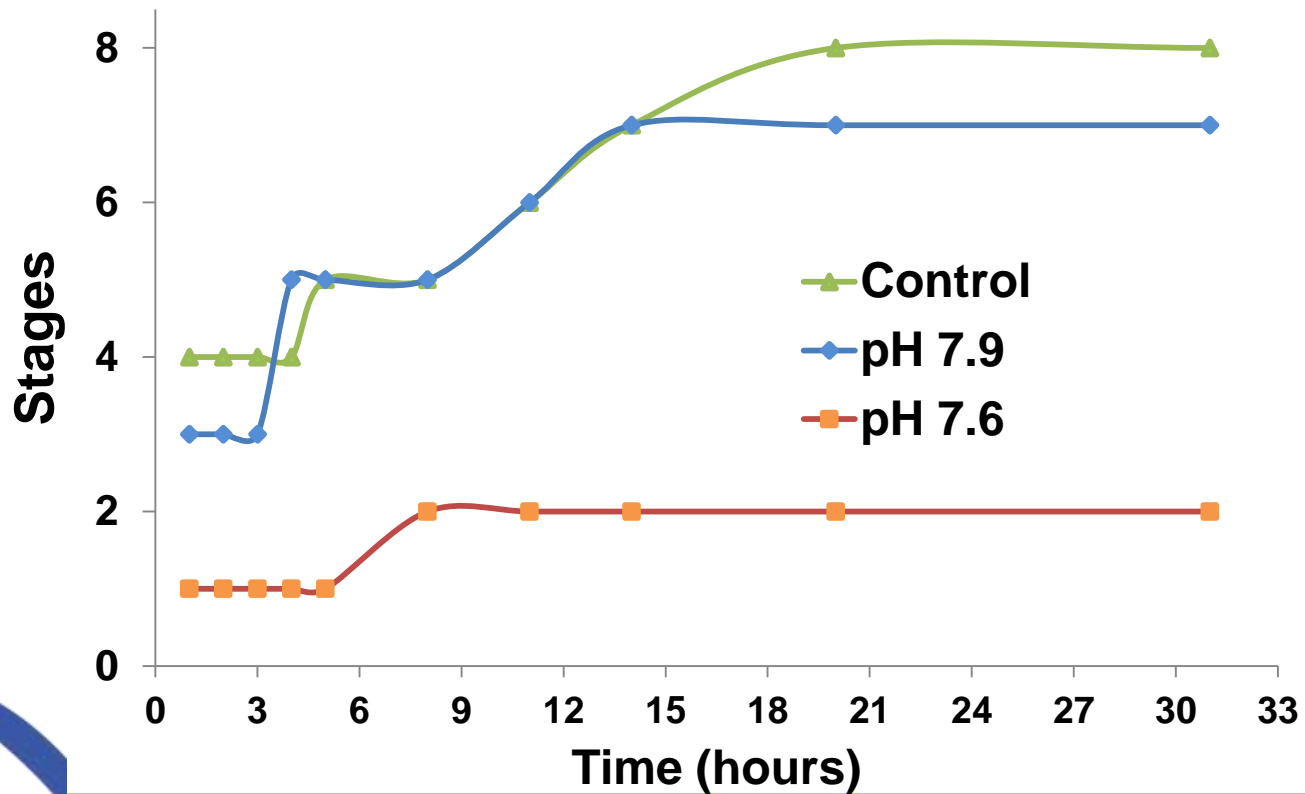


## Settlement rates of *Pocillopora damicornis* larvae

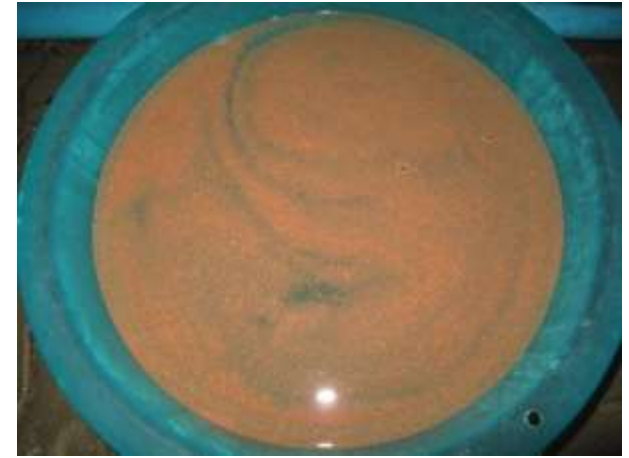




## Larval developmental stages



# Collecting *Acropora millepora* gametes & fertilization

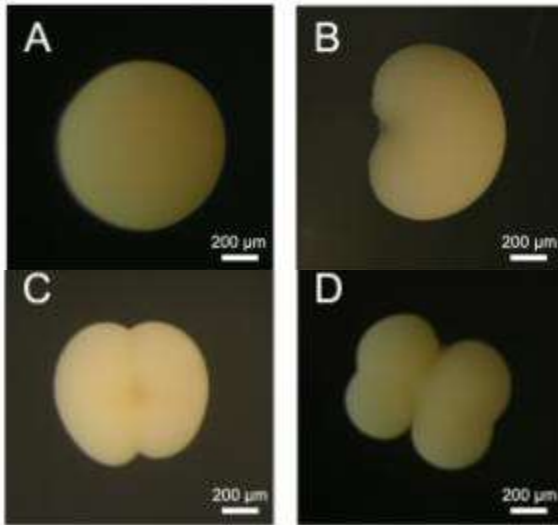




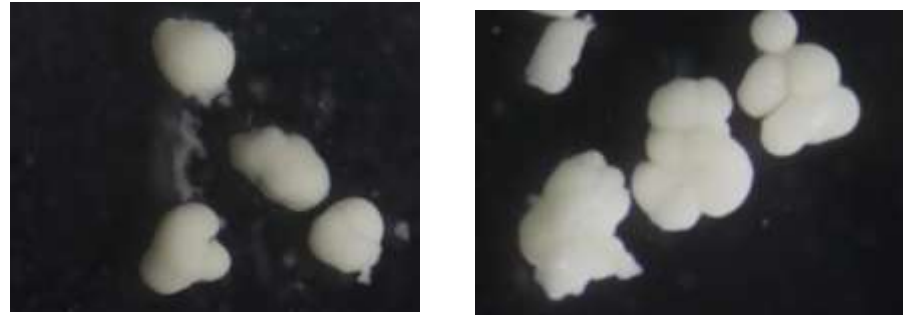




Normal



pH 7.6



pH 7.9





## On-going research





## Conclusions

- pH can have a potential effect on the settlement and development of coral larvae of *Pocillopora damicornis*
  - When pH decreased, the settlement rates decreased
  - Larval development delayed and was not able to complete in pH 7.6
- pH also affected the fertilization and settlement rates of *Acropora millepora*



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