Oviposition Site Selection of Frog Breeding in Coastal Environment

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Because eggs are generally quite vulnerable to the biotic and abiotic factors, oviparous females should select appropriate oviposition sites to maximize egg survival so as to increase maternal fitness. Buergeria japonica (Anura: Rhacophoridae) is one of the unique frogs breeding in coastal environment, and it has been known that eggs are sometimes laid in the stream mouth. Because eggs of anurans are vulnerable in high salinity, egg period is the most challenging stage for amphibians living in coastal environment. In the present study, I investigated egg-laying behavior of B. japonica inhabiting the coastal area to clarify how females select oviposition sites to avoid egg mortality from high salinity and other risky physical factors. Field studies showed that females selected the oviposition sites based on two phases. In one phase females select the area upper than the high tide line at spring tide for oviposition sites although females disturbed throughout the coastal area to the vicinity of the sea. In this upper area, eggs are not disturbed by backward flowing of seawater when the tide risen up at spring tide. In the other phase females in the upstream area (upper than the high tide line at spring tide) select appropriate oviposition sites based on the several physical factors such as water depth, current velocity, and water temperature. These egg-laying behaviors obviously reduce egg mortality by risky physical factors (especially high salinity) of coastal environments. Egg-laying behavior of B. japonica inhabiting coastal area may have been evolved as a result of local adaptation because mortality factors such as tidal fluctuation and high salinity that are unique to coastal environment.

Buergeria japonica

Breeding area of B. japonica