

## ORAL PRESENTATION

### SEXUAL REPRODUCTION IN *CYMBELLA AFFINIS* AND *GOMPHONEIS OLIVACEUM*

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*Cymbella affinis* and *Gomphoneis olivaceum* were observed undergoing sexual reproduction in West Lake Okoboji, Iowa, in May 2017. Both species were undergoing Geitler's Type Ia1 reproduction, where two gametangial cells are paired in a copulation jelly, each gametangium producing two gametes, one motile and one passive, and following gamete exchange and karyogamy, two paired auxospores expand in parallel each bounded by their perizonium to form two initial cells. The goal of this study was to assess the size relationship between paired gametangia, between pairs of initial cells, and between gametangia and initial cells in both species. The lengths of the two gametangial cells and the two initial cells were measured under 400x in randomly encountered living mating pairs. The results show a weak relationship between gametangial pairs in *Cymbella affinis* whereas there was a stronger relationship between gametangial pairs in *Gomphoneis olivaceum*. Within both species, the two initial cells produced after mating were of similar length, and the combined size of the initial cells was also significantly related to the combined size of gametangial cells. Both species appeared to utilize a strategy of synchronous sexuality under good growth conditions for their reproductive ecology, as sexuality was no longer occurring in the population when sampled two weeks later. Future work remains to fully understand sexual reproduction in diatoms, including the biological and environmental conditions that trigger sexuality, and how variation in gametangial and initial cell lengths may affect species ecology.

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