EFFECTS OF COMPETITION ON FITNESS IN ADVANCED-GENERATION, CROP-WILD HYBRIDS (*RAPHANISTRUM* SPP.). Lesley. G. Campbell and Allison A. Snow, Ph. D candidate and Faculty, Department of Evolution, Ecology, and Organismal Biology, Ohio State University, Columbus, Ohio 43210-1293.

Gene flow from crops to related species may lead to mixed populations of crop-wild hybrids and wild plants. The evolutionary impact of hybrids may depend on their ability to compete with neighboring wild relatives. We compared the effect of competition on the fitness of F_3 and F_8 hybrids (*Raphanus raphanistrum* x *R. sativus*) relative to their wild parent. First, we created 3 wild and 3 F_1 hybrid radish populations in Pellston, Michigan, USA, and allowed them to evolve under semi-natural agricultural conditions for two generations. We also measured the fitness of back-crossed hybrid plants that had evolved under similar conditions for eight generations and compared them to plants from another wild population. Pure and mixed pots of wild and F_3 or F_8 hybrids were established outdoors under four density treatments. Fitness components were measured as individual seed production, pollen and ovule fertility, flower production, and biomass. All measures of fitness were sensitive to density and neighbor identity. Mean F_3 hybrid seed production was significantly lower than wild seed production at all densities, while F_3 hybrid flower production and F_3 hybrid biomass were significantly higher than those of wild plants under competitive conditions. F_8 hybrid seed production was not significantly different from wild seed production at any density and these F_8 hybrids had significantly higher flower production than the wild plants. F_3 hybrid fitness may be limited by pollen and ovule fertility: ~50% of the F_3 hybrids had reduced pollen fertility, presumably due to a heterozygous reciprocal translocation, while less than 5% of the F_8 hybrids had reduced pollen fertility. Over time, we expect that natural selection would favor plants with high pollen and ovule fertility. This study suggests that the fitness of advanced-generation hybrid radishes can exceed that of *R. raphanistrum*, but only under specific genetic and competitive conditions.