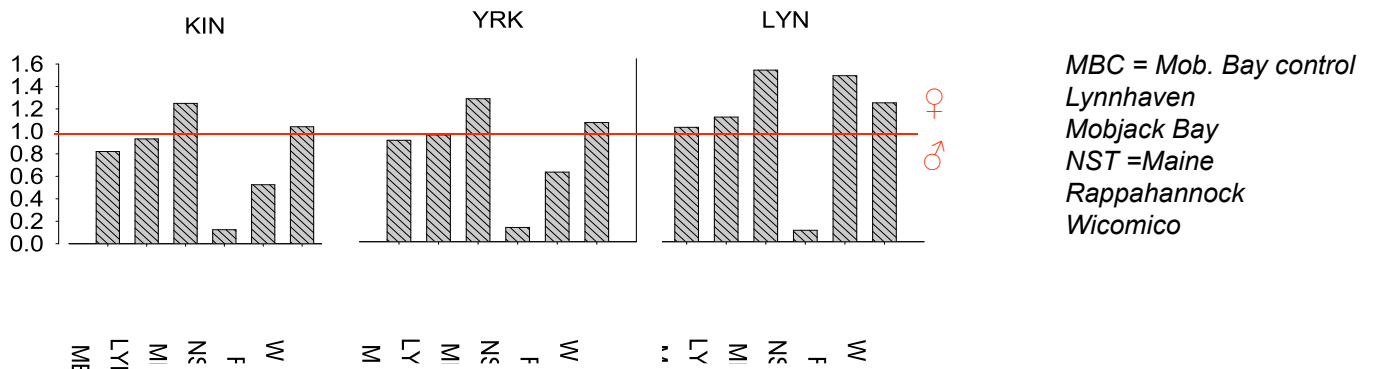
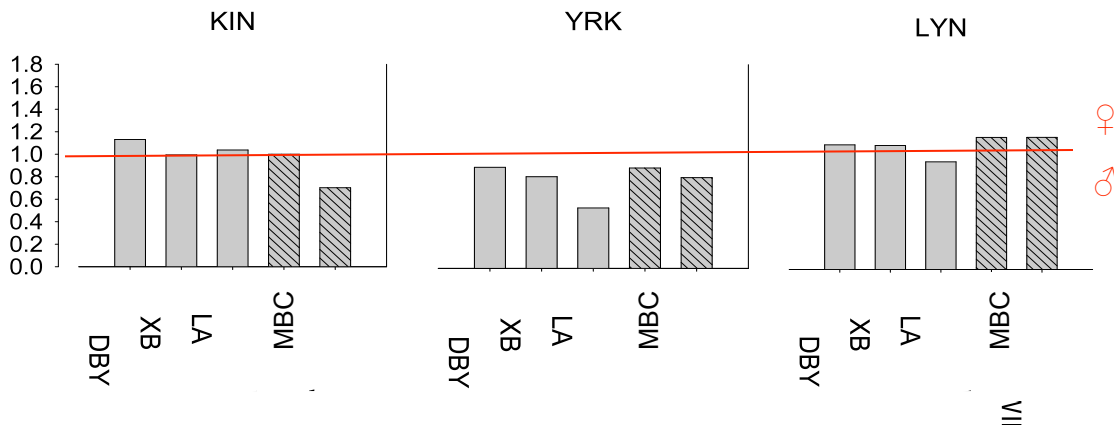


Data reported here are a result of the 2009 spawning season in which we collapsed multiple lines from our 2006 cohort selected for disease tolerance into new lines meant for intense selection for other traits. The data are then subject to a number of caveats, including the fact that they were spawned for research purposes at specific times of the year, had grown in different environments prior to spawning, and had, in some cases spent three years in a disease endemic environment. We try to separate these variables out as best we can by reporting results from each of the rearing environments – Kinsale, York, and Lynnhaven.

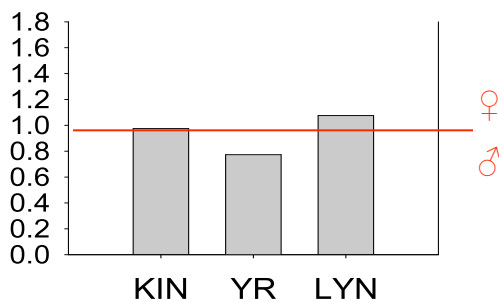
SEX RATIO



Sex ratios of wild stocks are remarkably similar across environments.



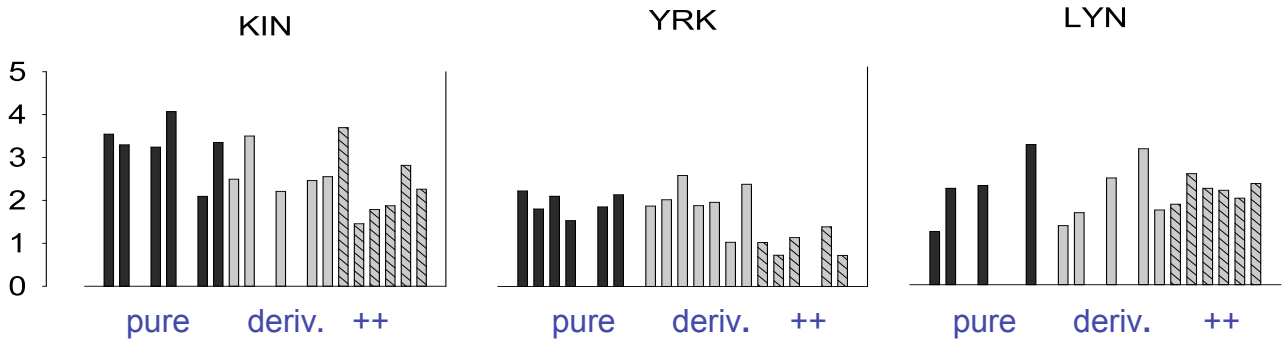
Comparison of sex ratio of lines with DBY, XB (CROSBreed), and Louisiana genotypes, with Mobjack Bay control and wild stocks (above), which are a year younger.



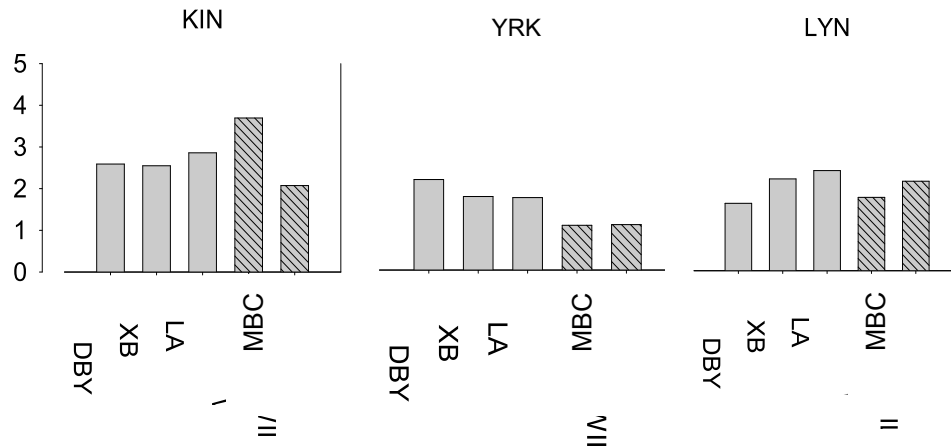
Sex ratio averaged across all brood stock originating from the three growout environments: Kinsale, York, and Lynnhaven. Compared to the other two, York River brood stock favor males, or disfavor females.

FECUNDITY – MALE

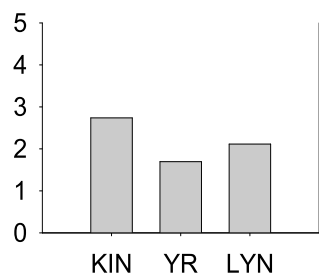
We use two measures of male “fecundity” here: an index we call “utility” and the proportion of males that have no activity. Utility is rated on a 5 point scale, with 5 the highest. It is a combination of the activity of the sperm and its density (overall number) after stripping. Thus, few very active sperm could have the same score as one with many inactive ones. The scale is simply a measure of the overall utility of the males, and has some usefulness as a general indicator of male quality. In general, a “good” score is 3, thus overall the utility of males was poor across all sites.



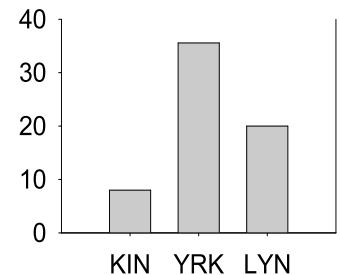
Sperm utility of all lines used in spawns. Pure refers to non-hybrid lines, like DBY, XB or OBOY, for example. Deriv. refers to the other disease tolerant lines that are a combination of two or the above. Striped bars are wild stocks in the following order: Mobjack Bay control, Lynnhaven, Mobjack Bay, Maine, Rappahannock, Wicomico.



Male utility of lines with DBY, XB (CROSBreed), and Louisiana genotypes, with Mobjack Bay control and wild stocks, which are a year younger.

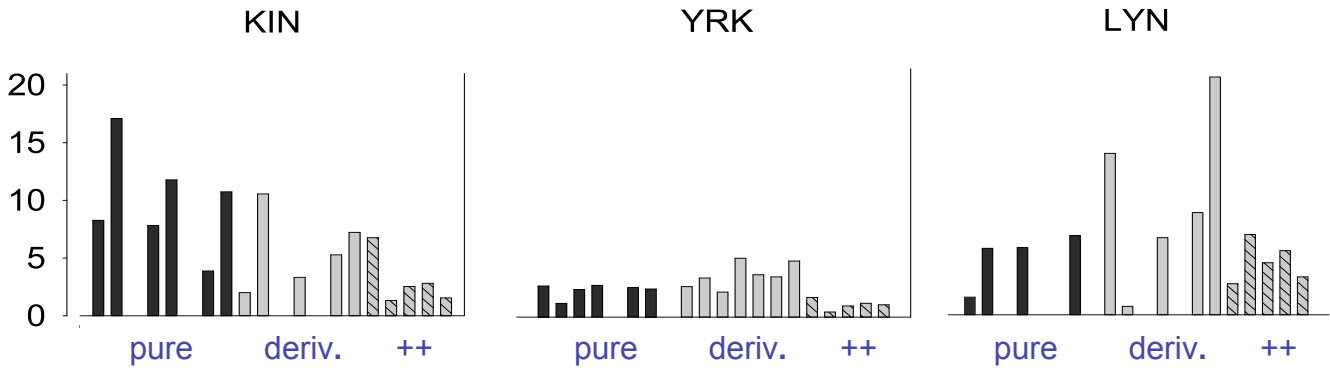


Examining male utility by which environment it came from, it seems clear that males grown in the York are less active and there are more “0” (useless) males – right).

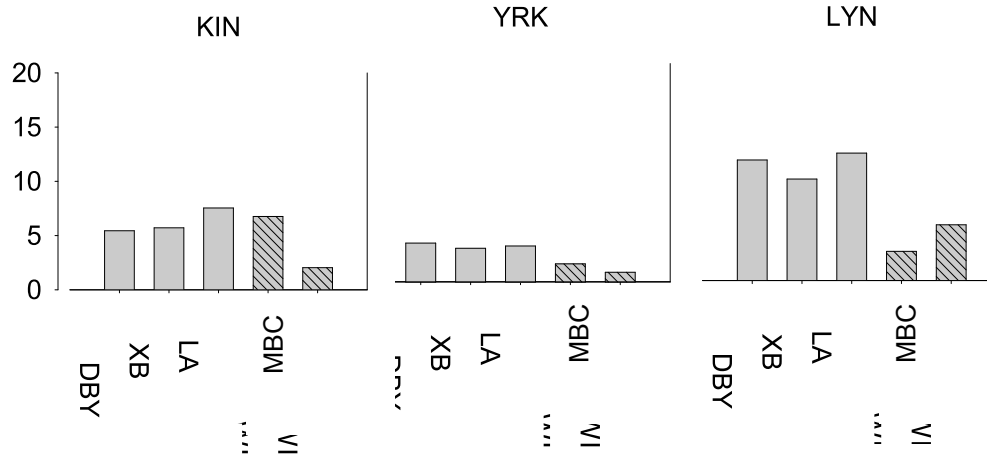


FECUNDITY – FEMALE

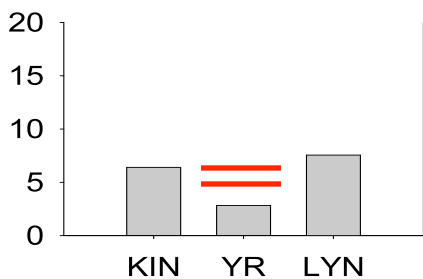
In 2008 and 2009 spawns we counted the numbers of eggs from individual females. In 2009, we counted the number of eggs from 1923 females.



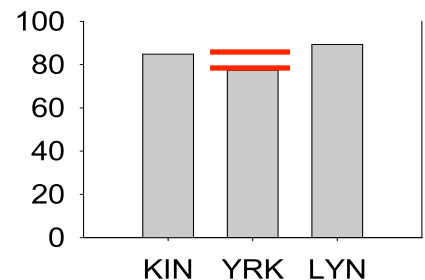
Fecundity of females of all lines used in spawns. Pure refers to non-hybrid lines, like DBY, XB or OBOY, for example. Deriv. refers to the other disease tolerant lines that are a combination of two or the above. Striped bars are wild stocks in the following order: Mobjack Bay control, Lynnhaven, Mobjack Bay, Rappahannock, Wicomico. (Maine stock is not shown – it died.)



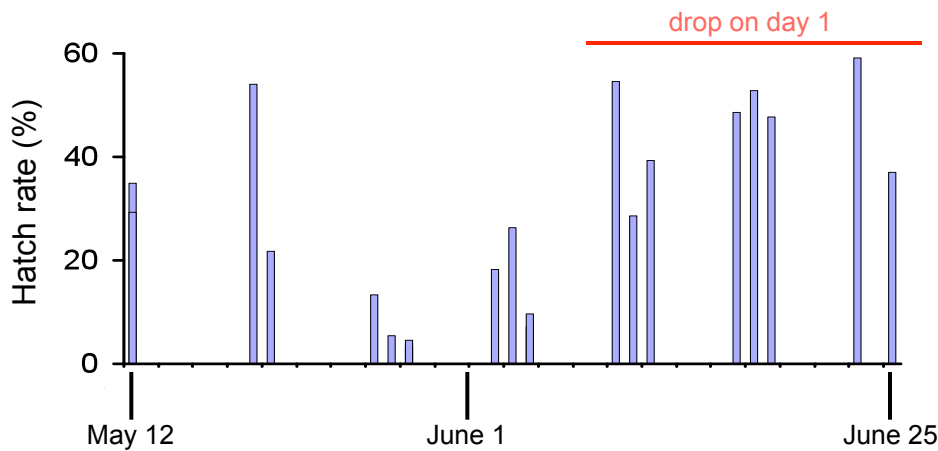
Female fecundity of lines with DBY, XB (CROSBreed), and Louisiana genotypes, with Mobjack Bay control and wild stocks, which are a year younger.



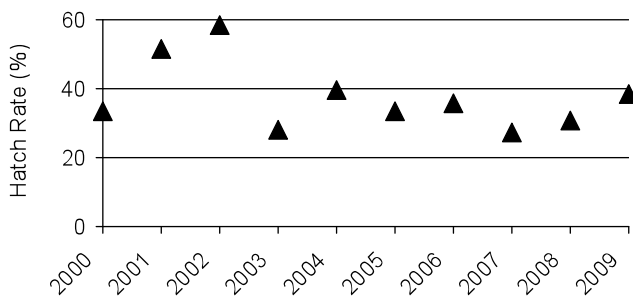
Examining female fertility by which environment it came from shows lower fecundity in York. This fecundity difference may not be related to size as the proportional difference in size is less than the proportional difference in fecundity. Its likely disease pressure.



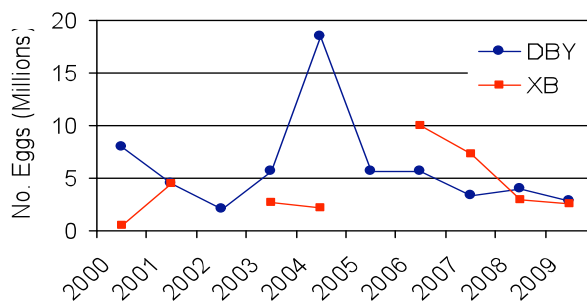
Larvae hatching rate



Our hatching rates for the line spawns over the period we were producing the 2009 year class. Problems in the beginning of June prompted us to try dropping larvae after one, rather than two, days.



Past hatching rates of spawns at Gloucester Point hatchery – non-experimental, meaning spawns to propagate lines or specific groups.

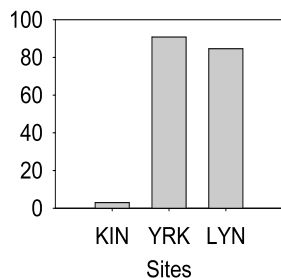


Concern for fecundity of our lines prompted a look at fecundity of the two lines under selection for the longest. We can not rule out an association between DR and lower fecundity, and are initiating a project to examine this relationship.

GENOTYPE

grow-out (survival)

Improvement in survival over wild control



Our grow out practices can be at odds with the one or the other various needs of industry. To obtain the DR results shown left, intense exposure to disease is appropriate. But that same environment disfavors fecundity and high quality gametes (e.g., York River – right).

ENVIRONMENT

hatchery (fecundity)

