

inducer of mfo activity (*Mol. Pharmacol.*, 6, 178-183, 1970). However DBA apparently is relatively toxic to fish. Four out of seven skates which received 10 mg DBA/kg i.p. on days one and three, were dead by day 8, although four skates which received a single 10 mg DBA/kg i.p. dose survived to day 13 in a subsequent experiment. As shown in Table 3, both AHH and 7-EC activities were elevated in response to DBA pretreatment although cytochrome P-450 content was not increased and no shift in wavelength of the absorbance peak maximum of the reduced P-450-CO complex was observed.

These studies confirm that certain marine hepatic microsomal mixed-function oxidase activities can be increased by exposure to polycyclic hydrocarbons and TCDD without a corresponding change in the reduced cytochrome P-450-CO complex spectra or P-450 content. 1,2,3,4-Dibenzanthracene was identified as a relatively non-toxic (to mammalian species) inducer suitable for use in characterizing the induced AHH of little skates.

38 • 1975

Length-Tension Relationships in *Echinarachnius parma* Cleavage Furrows

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The division mechanism of echinoderm eggs consists of an equatorial surface ring underlain by microfilaments. The ring actively contracts, constricting the spherical egg into two blastomeres. The cross sectional area of the contractile ring remains relatively constant during cytokinesis so that it literally disappears as it functions and vanishes as cleavage is completed. Simple periodic measurements of equatorial diameter reveal that the circumference decreases at 45 per minute during the first cleavage and at 30 per minute during the second.

The force exerted by the furrow can be measured directly by placing a calibrated, flexible needle through and at right angles to the equatorial plane so that the cleavage process remains incomplete, because the furrow cannot overcome the resistance to deformation of the needle. When the furrow contracts isometrically, it consists of 2 parallel contractile strips of a length determined by the distance between the calibrated needle and a second, rigid needle which is also inserted across the division plane (Rappaport, *Science* 156, 1241, 1967). As the contraction approaches the isometric point, the shortening rate of the circumference appears somewhat erratic, because it is characterized by frequent pauses and small reversals of progress. The force exerted by the fi. cleavage furrow averaged 1.25×10^{-3} dyne and that o. the second averaged 1.48×10^{-3} d. At second cleavage the two blastomeres normally divide synchronously. Measurements made on one of a pair reveal that the contractile mechanism of the measured cell can continue to exert maximum tension up to 9 minutes after the control cell completed division. This observation suggests that the disappearance of the contractile ring may be intimately related to its function. Paired measurements of tensions exerted by the same furrow in isometric contraction at 2 different lengths, the shorter of which was about 30% less than the longer, were not

significantly different. The forces measured averaged 1.2×10^{-3} d. for the shorter, and 1.30×10^{-3} d. for the longer (Supported by NSF Grant BMS 74-18380)

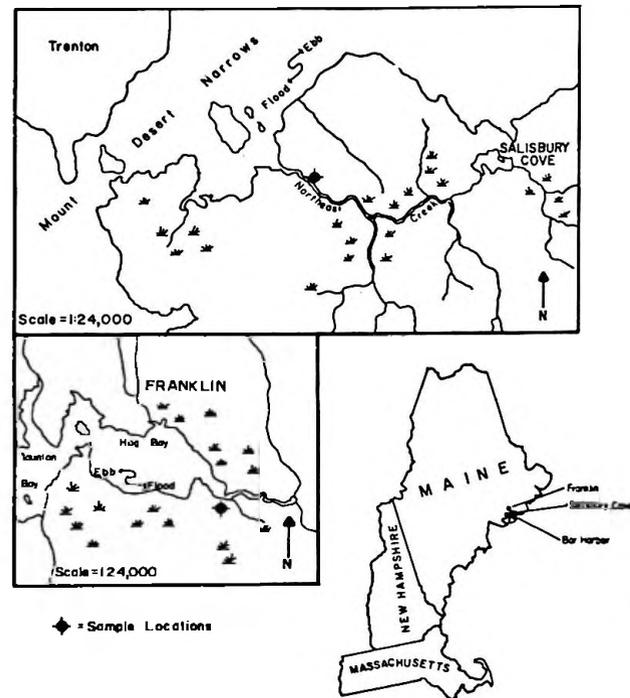
39 • 1975

Primary Production and Substrate Selective Properties of Maine Salt Marsh Plants

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Coastal marshes are among the most productive natural or cultivated ecosystems. Since there is increasing pressure to manage the economically important coastal zone, a knowledge of the component ecosystems is essential. The second year's study of the aerial primary productivity and underground biomass dynamics in Maine salt marshes was conducted simultaneously with studies

66



in Delaware and Georgia. Substrate plant interactions were evaluated through the use of nutrient enrichment and soil analysis experiments.

Primary production was measured using paired plot harvest techniques (Wiegert and Evans, *Ecology* 45: 49-63, 1964); and underground plant parts and soil were collected by coring (Gallagher, *Soil Sci. Soc. Proc.* 36: 154-155). Stands of plants in Northeast Creek and Hog Bay marshes (Fig. 1) were sampled at 8 week intervals from April to October. Plant analysis procedures are explained in detail by Reimold *et al.* (*Recent Advances in Estuarine Research*, in press). Nutrient enrichment and soil analysis procedures were similar to those used by Gallagher (*Am. J. Bot.*, 62: 644-648, 1975).