	JUN 1	JUN 2	JUL 1	JUL 2	AUG 1	AUG 2
Lepidonotus squamatus (SS)	R	R	R	R	R	R
Amphitrite brunnea (EB)	-	U	U	U	U	R
Spirobis broealis (SS)	-	-	E	E	E	E
Balanus balanoides (EB)[8]	x	S	S	S	S	S
Mysis stenolepis (BH)	-	U	U	U	U	U
Idothea baltica	U	E	E	E	(E)[6]	
Idothea phosphorea (EB)	-	-	E	E	-	-
Orchestia agilis	E	E	E	E	E	E
Marinogammarus finmarchicus (EB)	U	E	E	E	E	E
Marinogammarus obtusatus (EB)	U	E	E	E	E	E
Hyperia galba (EB & BH)	-	-	-	E	E	E
Crago septemspinosus (EB)	-	E	E	E	E	-
Pagurus acadianus (SS)	-	E	E	S	S	S
Cancer borealis (EB & SS)	-	E	E	S	S	S
Carcinides maenas (BH)	-	E	E	-	-	-

	JUN 1	JUN 2	JUL 1	JUL 2	AUG 1	AUG 2
Henricia sanguinolenta (BH)	R	R	S	S	S	S
Asterias vulgaris (BH)[9]	R	R	R	S	S	S
Asterias forbesi (BH)[1]	U	(R)		R	R	S
Ophiopholis aculeata (EB)[2]	U	(R)	R	R	(S)	S
Strongylocentrotus droebachiensis (R in April-May)			S	S	S	(R)
Echinarachnius parma (EB)[3]	U	U	(R)	R	R	R
Cucumaria frondosa (EB)	U	U	U	U	U	U
Chirodota laevis (EB)	U	U	U	U	(R)	R
Ascidia callosa (SS)	E	E	E	E	(E)	
Halocynthia pyriformis[10]	-	E	E	E	E	E
Boltenia echinata (EB)	-	-	-	R	E	E
Boltenia ovifera (SS)	-	-	-	E	E	-
Molgula retortiformis (EB)	-	E	E	E	E	E
Dendrodoa carnea (EB)	-	E	E	-	S	-
Amaroucium glabrum (SS)	-	-	E	E	E	(E)

1 = ripen approx. 2 weeks earlier in Eastern Bay
2 = ripen approx. 2 weeks later and continue longer on exposed southern shores
3 = seems to show several sexual periods per season
4 = small numbers of capsules with embryos available throughout season on exposed southern shores
5 = from Echo Lake
6 = from warm tidal lakes
7 = from Pretty Marsh Hb.
8 = newly settled young on stones
9 = are spent earlier in Eastern Bay
10 = from Somes Sound

1963 #5

POST-GLACIAL RELICTS IN TIDAL LAKES

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During the Tertiary glaciation the ice scooped out a number of narrow north-southerly valleys through the central granitic formation of the Mount Desert Island, depositing ice-carried debris at their southern ends and so forming the many present long lakes as well as Somes Sound, a fjord. Similarly, many smaller, narrow and shallow tidal lakes, now connected with the sea over tidal sills only during a part of the tidal cycle, were left behind, especially in the diorite and Bartlett I. formations on the western side of the island. In these tidal lakes the water rapidly warms up during the summer, reaching 20 - 25°C during late July and early August, when the temperature in the adjacent sea stays between 13 - 14.5°C. However, daily fluctuations can be considerable—several degrees—and an overcast period may have still greater influence. The tidal sills permit a flood influx sufficient enough to keep the salinity at a level very close to that of the adjacent sea (between 31 - 32 promille); in lakes with very shallow thresholds evaporation may tend to slightly elevate the salinity.

These warm lakes, which are characterized by dense Zostera and Ruppia vegetation, house warm-water forms, such as Venus mercenaria, Haminoea solitaria and Gemma gemma, which are not found in the adjacent sea. At present they are represented again south of the Damiscotta River and in the warm pocket of Northumberland Strait on the south coast of Prince Edward Island. They may be considered as relict forms from the post-glacial warm-period when the marine fauna of Maine and the Maritime Provinces was of virginian type, and the waters of the Bay of Fundy and the Gulf of St. Lawrence were connected through a channel across the Chignecto Isthmus.

Gemma rears its young in the gill pockets, and the planktonic life of Haminoea larvae must be very short. These forms may thus be self-perpetuating in the tidal lakes and presently endemic. For Venus, however, the interesting question arises if the spat is of endemic origin or if current-carried planktonic larvae find their way into the lakes from the outside. (See p. 30 for table.)

1963 #6

FACTORS AFFECTING GILL-PERMEABILITY IN Squalus acanthias

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Using an in vivo gill perfusion technique, we studied urea loss at the dogfish gill: (1) at perfusate temperatures between 1 and 30°C, (2) after urea loading of 33 to 166 mm/kg, and (3) with Na-free and K-free perfusate.

The temperature effect is such that there is no consistent change in gill permeability to urea between 1 and 15°C. Twenty measurements in this temperature range gave a mean and S.D. of 12.2 ± 3.04 mg/hr/kg body weight. Above 15°C gill permeability rises markedly. At 19°C the increase in urea loss from the gill is doubled, at 22°C it is 4X, at 25°C 7X, and at 30°C 10-50X normal. Survival at 30°C was 25 min in two fish studied.

When blood urea level is elevated by intravenous urea loading urea loss at the gill is increased out of proportion to the increased gradient. Doubling the plasma urea resulted in a twentyfold increase in urea excretion at the gill. Interestingly, this was not accompanied by an increase in body weight. Expressed as gill clearance of urea the normal value of 0.4 cc/hr/kg was increased to 0.9, 1.6, and 4.7 cc/hr/kg by loads of 33, 83, and 116 mm urea/kg respectively.

Preliminary experiments were conducted to determine the effect on urea loss of specific ions in the perfusate. No effect was noted on removal of K. However, equimolar replacement of sodium by Choline caused a marked increase in gill permeability to urea. This ion effect will be investigated further.

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