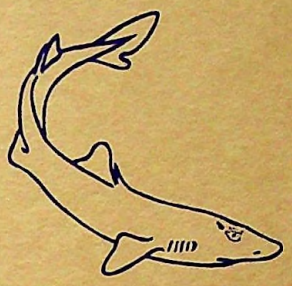
THE BULLETIN

Volume 8

MOUNT DESERT ISLAND
BIOLOGICAL LABORATORY
Salisbury Cove, Maine



1968

THE BULLETIN OF THE MOUNT DESERT ISLAND BIOLOGICAL LABORATORY SALISBURY COVE, MAINE

1968

Volume 8 **Issued 1969**

CONTENTS

DESCRIPTION OF FACILITIES

The Mount Desert Island Biological Laboratory is an independent marine biological station on the coast of Maine near the mouth of the Bay of Fundy which provides a seasonal research facility for investigations on local flora and fauna. Basic laboratory space for 27 research programs, simple glassware, common chemicals and certain specialized equipment are available for investigators.

The summer of 1968 represented the 70th season of the laboratory (the 47th year at Salisbury Cove). Thirty-one academic institutions were represented including the Universities of Munich, Nice, and Oxford, and the Zoological station of Villefranche. One third of the research programs were new this season. A list of principal investigators and their programs is given on page xi.

No formal courses are offered, but some advanced undergraduate, graduate, and medical students spend the summer as assistants to senior investigators, thereby gaining research training. Most of these students are selected by the investigators from their home institutions.

History and Organization

The Laboratory was founded in 1898 by J. S. Kingsley, of Tufts College, and its original location was at South Harpswell, Maine. The site at Salisbury Cove was donated to the Laboratory by the Wild Gardens of Acadia, a group instrumental in the establishment of Acadia National Park, and removal to this location was completed in 1921. The first laboratory buildings, the original salt water system and some of the residential cottages were constructed or obtained by the gifts of local summer residents.

The Mount Desert Island Biological Laboratory was incorporated in 1914 under the laws of the State of Maine as a nonprofit scientific and educational institution, and it is owned and operated by the Trustees and members of the Corporation. At present there are 262 members of the Corporation. It functions without full time professional administrative personnel and in most ways it is a cooperative enterprise. Income is derived from membership dues, laboratory fees, cottage rentals, investments, private and corporate donations, and grants. The business and scientific management of the Laboratory is in the hands of the Director and the Board of Trustees.

The Directors have been: Ulrich Dahlgren, Princeton University (1920-26); H. V. Neal, Tufts College (1926-31); William H. Cole, Rutgers University (1931-40); Roy P. Forster, Dartmouth College (1940-47); J. Wendell Burger, Trinity College (1947-50); Warner F. Sheldon, University of Pennsylvania (1950-56); Raymond Rappaport, Jr., Union College (1956-59); Alvin F. Rieck, Marquette University (1959-64); William L. Doyle, University of Chicago (1964-67); Charles E. Wilde, Jr. (1967-).

Location

Mount Desert Island lies in the Gulf of Maine about 150 miles northeast of Portland, Maine, and is connected to the mainland by a short bridge. Year round air service is available to Bangor, Maine with seasonal service to Bar Harbor Airport. The Island has an area of more than 100

square miles and is traversed east to west by a range of glaciated mountains and north to south by a narrow fiord six miles long that partially divides the east and west halves. Among the mountains lie several deep fresh water lakes and shallow ponds. Much of the mountainous area is a part of Acadia National Park. The Island is separated from the mainland and adjacent islands by narrow deep bays. Spring tides average 13.2 feet and neap tides 8.7 feet.

The many varied biological resources of the Acadian area are readily available. In summer, the cold waters of the Gulf of Maine are rich in marine life. The rocky shores, mud flats and strong tidal currents provide a variety of habitats. Fresh water lakes and ponds and the mixed terrain give further diversity to the forms available. Certain forms are abundant, others are scarce. The research abstracts in past Bulletins will give a good indication of the common forms. (See especially Vol. 5, No. 1.) The director will be glad to furnish an estimate of the availability of any special forms.

Physical Plant

The Laboratory is situated on a tract of about 150 acres fronting on Frenchman Bay at Salisbury Cove in the Township of Bar Harbor. In addition to shore frontage, the Laboratory owns part of a fresh water pond and brook, and its land varies from meadow and forest to sphagnum bog. Investigation is carried on in single story buildings of frame construction located along the shore. These buildings are as follows:

(1) The Neal Laboratory. This, the oldest and largest of the laboratory buildings, was remodeled in 1955 and now contains eight laboratories: four large rooms that will each accommodate 3 to 4 persons, and four small rooms suitable for single investigators. All rooms are provided with gas, and fresh and salt water. Water troughs, aquaria, and larger tanks are located along the north wall outside.

(2) The Halsey Laboratory was remodeled in 1961 and consists of four rooms each capable of accommodating 3 to 4 persons. The rooms all have gas, fresh and salt water. Refrigerators, ovens and aquaria are located on a common terrace at the entrance to the building.

(3) The Lewis Laboratory consists of two adjacent rooms for 3 to 4 persons.

(4) The Kidney Shed is a single large laboratory.

(5) The Hegner Laboratory contains 10 laboratory rooms provided with salt and fresh water each accommodating 1 to 2 persons.

(6) The Darkroom-Laboratory erected in 1962 contains one laboratory suitable for 2 to 3 persons and is equipped with salt and fresh water, and a photographic darkroom for general use.

(7) The Instrument Room was renovated in 1955 for the purpose of housing equipment used in common by members of the Laboratory. It contains a refrigerated centrifuge (International PR2), Warburg apparatus (circular), Baird flame photometer, pH meters, Coleman spectrophotometer (Junior), muffle furnace, clinical centrifuges, small autoclave, deep freeze, ice makers, refrigerators and water still.

(8) Biophysics Building. This air conditioned building was erected in 1965. It houses isotope counting systems, ultracentrifuges, spectrophotometers, and space for chromatography.

(9) Shop and Stockroom. The shop contains power and hand tools for woodworking; the stockroom has chemical, glassware, analytical balances, a fume hood, an area for glassworking, and an isotope vault.

(10) Office and Library. A separate building was constructed in 1955 to contain the Direc-

tor's Office and to house the business records and library. The library is small, comprising reference texts for biology and medicine, a few complete journals (Biological Abstracts, Biological Bulletin and the Journal of the Marine Biological Association), as well as monographs and a sizable reprint collection.

(11) Dahlgren Hall, the former village schoolhouse, was purchased and converted to use as a meeting hall; it houses a reprint collection. The single large room can seat about 120 persons. It is equipped with projectors for regular lantern slides, 35 mm slides, and 16 mm silent motion pictures.

(12) The Dining Hall. This dining hall and living room for about 20 junior investigators and students was built in 1963. It is operated by a cook-manager. A small general library of books and records, and a record player have been furnished by private donation.

(13) Bowen Hall is one of the finest remaining examples of early 19th century Island architecture. It now serves as a dormitory and common room for young women.

(14) Dock. The dock consists of two floats with livewells and attached live cars for storage of specimens. It is attached to the shore by an inclined ramp and a bridge and abutment.

(15) Collecting Boats. A 32' gasoline powered collecting boat, the Squalus, was purchased in 1958. It is provided with a circulating water tank for the transportation of specimens. Some simple dredging gear is available for collecting purposes and arrangements can be made with local fishermen for offshore specimens. A Nova Scotia skiff with an outboard motor is also used for collecting and a few hand powered skiffs are available to investigators.

Housing

Sixteen cottages suitable for families with children stand on land owned by the Laboratory and are within easy walking distance of it. The cottages are rented by the season, or occasionally for shorter periods. Occupants must supply their own blankets, linen, and silver, pay for utilities (electricity and gas), and pay the Laboratory for the use of the cottage (including water rent and garbage disposal). Rent is $350 to $550 per season, depending upon the size of the cottage. A few privately owned cottages are also available for rental near the Laboratory, and in other communities on the Island. An automobile is essential for family mobility in the area.

Single investigators, student assistants, and couples without children rent rooms in the village and take their meals in the Laboratory Dining Hall. The weekly charge for meals is based on self-sustaining nonprofit operation.

In order to encourage private construction and ownership of cottages by workers, the Laboratory has a policy of issuing leases on certain plots of laboratory land. Provision is made for sale or rental of the cottages to other workers in case the owner finds it impossible to continue to work at the Laboratory. In this way, the Laboratory is able to encourage capital investment by individuals and at the same time ensure that the land will remain under its own jurisdiction. At present eight cottages are privately owned in this way.

Recreational Activities

Mount Desert Island has long been known to have one of America's most desirable summer climates. The ocean, rocky shores, and mountains provide scenery of unexcelled beauty. The distance from large metropolitan areas has so far helped to keep it relatively unspoiled. Swimming, hiking, mountain climbing, picnicking, boating and sailing, tennis, golf, and other sports are read-

ily available. Acadia National Park with its excellent naturalists' program contributes to the general interest. There are small museums of Indian and local lore, public gardens, a good public library and cultural exhibits. Proximity to the Jackson Laboratory adds scientific interest and resources. Salisbury Cove is an old fishing and farming community on the northern shore of the Island near the main road from Bar Harbor to Ellsworth. It has one general store. The Laboratory colony comprises about 100 adults and 60 children of assorted ages, and forms a considerable portion of the summer population of the village. Bar Harbor, the largest town on Mount Desert Island, is about six miles from the Laboratory and provides many of the services of a city including excellent shopping facilities and a good hospital. The fire of 1947 did no damage to the Laboratory area, nor are its visible effects on the Island as marked as might be expected. For biologists, the ecological changes produced by this fire are of great interest.

Acknowledgments

The Mount Desert Island Biological Laboratory is endebted to the National Science Foundation for substantial support during the past decade. Funds for renovations of buildings and new construction have permitted the laboratory to expand and upgrade its facilities. Contributions to operating costs and for specialized research equipment have greatly improved the efficiency of research activities. The individual research projects which have been served by this laboratory are variously funded by private and government agencies and by individuals and all of these projects have benefited from the National Science Foundation grants to the laboratory. Current support under grant GB 7581 is gratefully acknowledged. The research reports and index for 1968 were compiled by Dr. H. V. Murdaugh.

Applications

Fees for research space vary according to the demand made on the facilities. They range from $165 to $700 depending on the space assigned and the number of workers. All investigators have the use of the general facilities, but special arrangements are necessary if unusual demands are anticipated. Investigators are urged to bring their own specialized equipment and chemicals. On occasion, the Laboratory may be able to provide apparatus which would have long term usefulness for other workers. Since the Laboratory is closed for nine months of each year, the general policy has been to maintain as little delicate or especially valuable equipment as possible. Isotope counting systems and ultracentrifuges are available on a fee basis. Persons planning to use isotopes must make prior arrangements in conformity with our Radiation Safety Committee requirements.

Limited fellowships are supported by funds from the Ulrich Dahlgren Memorial Fund (a gift from the American Philosophical Society) and by The National Science Foundation.

Application and inquiries should be addressed to the Laboratory Director, Dr. Charles E. Wilde, Jr.

June 1 - September 1	Mount Desert Island Biological Laboratory Salisbury Cove, Maine, 04672
September 1 - June 1	Department of Histology and Embryology School of Dental Medicine University of Pennsylvania Philadelphia, Pennsylvania, 19104

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Salisbury Cove, Maine

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Dr. John G. Torrey	Harvard University
Peter Weller	Harvard Medical School
Dr. Charles E. Wilde	University of Pennsylvania
Dr. Charles Young	Sloan-Kettering Institute

Adamson, Richard H.

1. Functional Significance of the Abdominal Pores in Elasmobranchs
2. Phylogenetic Development of Microsomal Drug Metabolizing Enzymes

Berridge, Michael

Osmoregulation in Terrestrial Crustacea

Boylan, John

Mechanism of Osmoregulation in Squalus acanthias in Hyperosmotic Environment

Buntig, Wolf

Localization of Glucose Transport in the Nephron of Squalus acanthias

Burg, Maurice; Tannen, Richard

Kinetics of Organic Acid Transport by Isolated Perfused Flounder Renal Tubules

Crawford, Richard B.

Control of Protein Synthesis During Embryogenesis of Fundulus

Cserr, Helen F.

Studies Relating to the Function of Cerebrospinal Fluid

Diana, John D.

Transcapillary Fluid Movement and Other Aspects Associated with the Capillary Circulation in the Isolated Perfused Intestine of Squalus acanthias

Doyle, William L.

1. Fine Structure in Relation to Salt and Water Transport in the Intestine of Fundulus and Squalus
2. Fine Structure and Sodium Transport in the Rectal Gland of Squalus

Epstein, Franklin H.

Role of Na-K-ATPase in Gill, Intestine and Kidney of Fresh and Salt Water Fish

Fenstermacher, Joseph

1. Transport of Organic Electrolytes into the Isolated Choroid Plexus of Elasmobranchs
2. Extent and Nature of the Fluid Compartments within the Central Nervous System. A Comparative Study.

Fishman, Alfred P.; Szidon, J. Peter

Behavior of the Pulmonary Circulation During the Dive in the Seal (Phoca vitulina)

Forster, Roy P.; Goldstein, Leon

Renal Osmoregulation in the Skate, Raja

Forster, Roy P.

1. The Relation of Transport Competition to Carrier Saturation in the Active Secretion of Organic Acids by the Aglomerular Kidney of the Goosefish, Lophius
2. A Comparative Study of the Acetylation of Foreign Amines by Fishes

Goldstein, Leon

Regulation of Nitrogen Metabolism in Fishes

Grant, William

Immunologic Studies of Adenohypophyseal Hormones in Elasmobranchs

Hogben, C. Adrian M.

Epithelial Electrolyte Transport

Janicki, Ralph

Mitochondrial Respiration in Teleosts and Elasmobranchs

Kinter, William B.

1. Renal Clearance of Secreted Organic Acids in Intact Unanesthetized Flounder
2. Autoradiographic Localization of Organic Acid Transport in Isolated Flounder Kidney Tubules

Maack, Thomas

1. Renal Clearance of Small Molecular Weight Proteins in the Intact Unanesthetized Flounder
2. Autoradiographic Localization of Lysozyme-^{125}I Transport by the Flounder Renal Tubules

Maren, Thomas H.; Stenger, Vincent

1. The Metabolism of Ethyl m-Aminobenzoate (MS222) in Squalus acanthias
2. Turnover of Labeled Bicarbonate in Plasma and CSF of Squalus acanthias

McKerns, Kenneth

Metabolic Control of Pyrimidine Synthesis in the Ovary of Squalus acanthias

Motais, Rene

Microperfusion of Simple Teleost Gill Filaments in vitro

Murdaugh, H. V.; Robin, Eugene D.; Smith, Jan D.

1. Energetics of Cation Transport in Seal Erythrocytes
2. Mechanisms of Cation Distribution in High Na ion–Low K ion Cells
3. ATP Concentration in Seal Muscle During Diving
4. Bicarbonate Buffering in the Dogfish

Palincsar, Edward

Physiology of Aging in Colonial Hydroids

Peirce, E. Converse

1. In vivo and in vitro Carbon Dioxide Titration Curves in Squalus acanthias
2. Hemodynamic Effects of pH and pCO_2 Changes in Squalus acanthias
3. Gill Excretion of non-Carbonic Acid in Squalus acanthias
4. Baroreceptor Control of Blood Pressure in Squalus acanthias
5. Studies of Cardiac Function in Squalus acanthias

Rall, David

1. Phylogenetic Development of Cerebrospinal Fluid: Production, Flow, and Disposition
2. The Role of the Blood-Brain and Blood-Cerebrospinal Fluid Barriers in maintaining Ionic Hemostasis within the Central Nervous System

Rhodin, Johannes A. G.

The Microcirculation in the Tail Fin of Fundulus Heteroclitus

Rieck, Alvin F.

Photobiological Studies on Early Development E. parma

Robin, E. D. (see Murdaugh)

Schmidt-Nielsen, Bodil; Motais, Rene; Epstein, Franklin H.

Relationship Between ATPase and Sodium Transport in the Renal Cortex, Outer and Inner Medulla, of Psammomys obesus and Rattus norvegicus

Schmidt-Nielsen, Bodil; Pagel, Dieter

Micropuncture Studies of the Function of the Nephridia in the Leech

Torrey, John G.

1. The Development of Apolar Embryos of Fucus vesiculus L. in Sucrose-Sea Water
2. Attempts at in vitro Cultivation of Somatic Tissues of Brown Algae

Wilde, Charles E.

A Comparison of the Effect of the Concentration of Sea Salts on the Rate and Perfection of Embryogenesis of Fundulus

Young, Charles; Karnofsky, David A.

Studies on Protein and Nucleic Metabolism in Sand Dollar Eggs

Evening Seminar Schedule 1968

July 2	Dr. Charles E. Wilde, Jr. University of Pennsylvania "The Organization, Function and Traditions of M.D.I.B.L."
July 9	Dr. Jan Maetz Station Zoologique, Villefranche sur Mer, France "Osmoregulation in Euryhaline Fish"
July 16	Dr. William B. Kinter SUNY Upstate Medical Center "Autoradiographic Visualization of Normal and Genetically Deficient Glucose-Galactose Transport in the Intestinal Epithelium of Hamster and Man"
July 23	Dr. Franklin Epstein Yale University "Sodium-potassium-ATPase and the Transport of Sodium across Epithelial Membranes"
July 30	Dr. John Torrey Harvard University "Embryogenesis in Plants"
August 13	Dr. Richard B. Crawford Trinity College "Informational Control during Embryogenesis"
August 20	Dr. Hans Krebs Oxford University "Control of the Redox State of the Pyridine Nucleotides"
August 27	Dr. Rene Motais University of Nice "The Ionic Exchange Mechanisms in the Gills of Euryhaline Animals"