Journal of Shellfish Research, Vol. 21, No. 2, 441–444, 2002.

IN MEMORIUM
HAROLD HALEY HASKIN
1915–2002

Hal Haskin died on June 23, 2002 at the place he loved best—his Cape Shore cottage on Delaware Bay. Most of his 87 years–since he spent the summer after his junior year at Rutgers working on oyster drills—had been devoted to teaching and research on the marine environment, and Delaware Bay was its focus. Hal's "Honored Life Member Biography" appeared in 1999 in Volume 18(2) of the Journal of Shellfish Research. Here we reflect more on his character and recount memories of the man.

Hal was born in 1915 at Niagara Fall, NY to George and Laura Haley, the second of three children. Three years later, the children were orphaned when both parents and a grandmother died within a week of each other in the 1918 flu pandemic. A family friend, Frederick Haskin, adopted Hal—an unusual arrangement, particularly for the time, because Fred Haskin was a bachelor. Haskin was a pipefitter, a job that forced him to travel around the country, so he lodged young Hal with a retired farm family living in southern New Jersey, near the DuPont chemical plant where he sometimes worked. The daughter of the family, whom Hal knew as Aunt Jenny, supervised the home and became his *de facto* mother. Later, Aunt Jenny and Fred Haskin married so that Jenny officially became the mother that she had unofficially been throughout most of his childhood. It wasn't until many years later that Hal became reacquainted with his many Haley relatives still living around Niagara Falls and for the first time was called "Uncle Hal".

Always a good student and with an unusually strong work ethic, Hal graduated from Rutgers College in 1936, the first student to do so with a perfect grade score. It was at Rutgers that he came under the tutelage of Thurlow Nelson and began his life-long fascination with oysters. During summers spent investigating the predatory oyster drills, Hal observed that the snails preferred young oysters to older ones. Curious about mechanisms of chemoattraction, he entered Harvard to work with John Welsh on this phenomenon, but he spent his first summer as a graduate student at the Bermuda Biological Station studying lobster neurohormones. He grew a beard, which came in red, was introduced to sailing, and acquired a taste for his research subjects.

Hal switched to algal physiology for his PhD dissertation, which he carried out under the supervision of the oceanographer Alfred Redfield. His work included the development of a method for estimating chlorophyll concentrations using spectrophotometry—a precursor to the present-day Strickland and Parson's method. At Harvard, Hal supported himself as a dorm proctor and a teaching assistant. He was a natural teacher who excelled at hands-on instruction in both the laboratory and the field.

Upon receiving his PhD in 1941, Hal entered the US Army and spent the next 5 years training troops and supervising units guarding the coast from Long Island to the Virginia Capes. He returned to Rutgers as an assistant professor in the Department of Zoology in 1946 and began developing a research program devoted to marine bivalves. His early work involved culturing and rearing of hard clams on a grant from Campbell's Soup Company. In 1950, however, he succeeded his mentor Thurlow Nelson as head of the Oyster Investigation Laboratory in the New Jersey Agricultural Experiment Station, and for many years thereafter devoted most of his research efforts to protecting and enhancing the oyster resource of Delaware Bay. Although he later became deeply involved in acquiring data on, and developing a management plan for, offshore surf clams, his heart and mind never strayed far from oysters and Delaware Bay. From his early efforts to institute harvest limits on the depleted natural seed oyster beds, through the devastation brought by the MSX parasite, to providing management data when populations later rebounded, Hal considered the Bay's oysters to be his personal responsibility. He brought to this and other tasks a unique combination of intelligence, scientific integrity, and the ability to work with people from all sides of a problem. He never shirked from controversy, but he was always armed with reams of data, which he carried in whiskey boxes in the back of his car, to backup his point of view. Hal took pains to make the data understandable to both the regulators and the fishermen. He spoke his mind, albeit diplomatically, and he rarely lost a battle.

One ongoing stuggle, which he inherited from Thurlow Nelson, was maintaining freshwater flow into the Delaware estuary. In this battle against diversions and dams, he had the enthusiastic participation of his wife, Peg, whom he had met when she was a recent graduate of Smith College and he was a graduate student at Harvard. The two of them eventually became a formidable team fighting for rational water management in New Jersey, particularly concerning those policies affecting Delaware Bay and its oyster populations.

Although he ran a large research laboratory, Hal devoted much of his time to teaching. As a young assistant professor, he taught mainly undergraduate courses in general biology, limnology, animal physiology, and invertebrate zoology. Somewhat later, he developed graduate courses in coastal oceanography, estuarine ecology, and malacology. Most of the graduate students in the Rutgers Zoology Department took at least one of these courses at some point in their academic careers—and never forgot them. Hal did not confine his teaching to the classroom, nor did he limit it to official students. He delighted in showing anyone the anatomy of a shucked oyster or talking about the intricacies of an oyster community. His audience might be a businessman or an oyster grower—it didn't matter—his enthusiasm captivated them all. Anyone who was associated with Hal in any capacity always wound up considering himself or herself a student. And Hal, himself, never stopped being a student.

Hal retired in 1984 but he remained active long thereafter. During his nearly 50-year career, he touched many people—students, colleagues, university and government officials, and shellfish producers. More than 200 of them gathered at the Haskin Shellfish Laboratory on September 28, 2002 to remember him. People came from all along the eastern seaboard and from as far west as Colorado to tell stories, share memories, renew acquaintances, look at old photographs, and eat good food—including freshly shucked oysters farmed at the Cape Shore near the Haskin cottage.

His first and last graduate students were there, as were a host of students in between. They recalled how taking one of his courses had been the stimulus to go into marine science or shellfish biology. Several remarked on how tough a questioner he was during thesis defenses and how his criticisms were right on the mark, sometimes requiring a return to the bench to do a critical experiment. Although Hal was remembered most for applied research that directly benefited the shellfish industry, his intellectual curiosity was profound. He insisted that applied research conform to the standards of basic research. Further, how could one provide sound scientific advice for management without understanding fundamental biological and ecological principals? Woe to any student or colleague who failed to convince Hal that he or she knew the basic scientific principles underlying a concept.

Students remembered his Saturday courses and that he worked well into the night on Friday, and often into the early morning hours of Saturday, preparing. The classes officially ran from 8 in the morning to 5 in the evening, but leaving at 5 was viewed with a highly disapproving eye. Several students remarked on his indifference to physical discomfort on the field trips—and that he was equally indifferent to discomfort of the students. The discomfort usually took the form of "cold and wet" or "seasick", but on one occasion it was much more serious. On an oceanography class field trip, Hal lacerated his hand severely on the pulley wheel of an outboard motor that he was attempting to start. The deep cut ran along the base of his fingers and down the outside of his palm. Flapping fingers indicated severe damage to his hand, but he merely wrapped it in a handkerchief and was fully prepared to continue the trip. At the overwhelming insistence of his students, however, he reluctantly canceled the excursion in favor of a trip to the hospital and several hours of microsurgery to rejoin the tendons leading into two fingers.

Neighbors, who grew up with the Haskin children at the Cape Shore, and whose fathers were businessmen and auto mechanics, couldn't figure out what Hal did for a living. He was like a kid in an adult body who actually got paid for mucking about on the tide flats playing with oysters. But he could answer all the questions they had about the organisms they found in the bay and along the shore.

Hal was an advocate of simplicity. He was not interested in "building an empire" because he felt that he would then have to spend all his time supporting and defending it—certainly much less stimulating to him than the hands-on field and lab activities that he relished. Colleagues and students remembered him as a quiet, low-keyed person who was a good listener. He was thoughtful and one knew that he had truly reflected upon a question or an issue before he gave advice.

One of the fondest memories, shared by nearly all the students, was of the biannual "tray moves". These events took place each spring when trays of selectively bred oysters had to be moved from winter quarters, where they were protected from ice damage, onto the tidal flats in front of the Cape Shore Laboratory where they were exposed to disease pressure and could be easily tended. Each fall, the reverse move took place. All able hands—students, faculty, technicians, friends—were marshaled for the event because the oysters in each tray—and there were often more than 100 trays—had to be counted, samples removed, and the oysters had to be placed in freshly prepared trays. The weather was usually cold and miserable, and ones fingers quickly became numb. Tying lines on the trays so that they could be hung in the marina that served as winter quarters was especially challenging under these conditions. Hal would check every single knot (four per tray, half-hitches, not bowlines) and retie most, while being silently cursed by the small group of students standing around on the dock—cold, wet, tired, and anticipating the reward that awaited them at the Haskin cottage where Peg was preparing the traditional turkey dinner and a fire was blazing in the wood stove. Fifteen, twenty, occasionally up to thirty famished people would arrive. The first order of business was the preparation and distribution of gin and tonics, and if Hal made them, they contained plenty of gin. People pitched in to set the table, make the salad, and cook the peas, but certain tasks were Hal's own province: making the gravy, mashing the potatoes, and carving the turkey. These jobs had to be performed in a very specific fashion, with Hal describing to anyone within earshot his way to successful gravy or mashed potatoes. The evening ended with homemade (by Peg) pie—cherry, pumpkin, blueberry, and pecan—along with ice cream, coffee and tea, and very muted memories of the earlier discomforts. The tray moves were planned to end on Saturday night when the turkey dinner was held. Sunday morning one could sleep late, but not so late as to miss the "flapper" breakfast—again at the Haskin cottage with Hal busy making blueberry pancakes. The tray moves eventually became very popular events that attracted ex-students and often, their friends, back to the Cape Shore for a weekend of work and good fun.

Hal's publication record was modest and belies his research accomplishments. He was totally disinterested in maintaining a CV. In fact, it was difficult to locate citations, among his own files, to list in this remembrance. His exacting standards applied to writing—both style and content—and to his own as well as that of others. He had difficulty with the concept of publishing a paper that didn't tell a

complete story, and he usually felt that he needed more data than he had. This was particularly true for field studies, even though his data sets extended for years, and, in some cases, for decades. Although Hal always analyzed the results and used them in meetings or to advise management agencies, formal reporting was less interesting than starting a new project or going on a field expedition. Students recalled late night sessions in which everyone pitched in to help copy and assemble reports at the very last minute—typically well after the deadline. Nevertheless, Hal had little difficulty obtaining funds to run his laboratory because grant managers knew the quality of the data would be high—when they eventually received it.

When he wasn't working, which often seemed like never, Hal had three great recreational passions: woodcutting, sailing, and growing lilacs. For years, Hal and Peg heated their house in southern New Jersey and their Cape Shore cottage with wood stoves. Their house in Piscataway had multiple fireplaces. Hal always carried a chain saw and splitting wedges in the trunk of his car in case he had an hour or two free to cut wood. Friends recalled that he cut down only dead or dying trees and knew exactly when they should be cut to maximize dryness and minimize decay.

The principal Haskin sailboat was a 17 ft Thistle that was anchored on the tidal flats in front of the summer cottage, and sailed as often as possible at high tide with Hal at the helm and a boat full of family, friends, and students from the Cape Shore Laboratory, just down the beach. Annual beach parties were a chance for sailboat races between the Thistle and any other sailboat that could be pressed into service.

More than 100 lilac bushes representing 70 different varieties, formed a fragrant hedge around the Piscataway house. Hal knew all the varietal names and delighted in escorting visitors around the hedge, "introducing" them to each plant and pointing out its unique characteristics. Each May when the lilacs bloomed, he would bring buckets full of blossoms into the lab to distribute among the staff and faculty. He stored them in the cold room, which temporarily at least, smelled delightfully of lilacs rather than aged oysters.

The memorial service included tributes from representatives of numerous agencies, organizations, and institutions that Hal served, including the National Shellfisheries Association. He joined NSA in the late 1940s and rarely missed a meeting for almost 50 years. He was Vice President in 1966–67, and President during 1967–69. He became an Honored Life Member in 1979 and, most precious to him, was given the David Wallace Award in 1984.

In addition to Peg, Hal is survived by five children, Kathleen Haskin of New York City, Jean Haley of North Kingstown, RI, Elizabeth Haskin of Cape May Court House, NJ, Frederick James Haskin of Piscataway, NJ, and Mary D. Haskin of Washington, DC; and four grandchildren, Harold Haskin II, a student at Rowan University, Allegra and Elijah Penny, of Washington, DC, and William Schroer of Cape May Court House, NJ.

Hal, alone and with Peg, received numerous awards over the years (see Kraeuter and Ford, 1999. J. Shellfish Res. 18: 337–339), but one of the finest was presented at the memorial service: The New Jersey Nature Conservancy named a portion of its Delaware Bayshores Tract near the Cape Shore cottage "The Harold and Margaret Haskin Nature Preserve." It was an entirely fitting honor for a lifetime of dedicated service to environmental teaching and preservation.

Susan Ford
John Kraeuter
Walter Canzonier
Haskin Shellfish Research Laboratory
Port Norris, New Jersey

PUBLICATIONS

Welsh, J. H. and H. H. Haskin. 1939. Chemical mediation in crustaceans. III. Acetylcholine and autotomy in *Petrolisthes armatus* (Gibbes). *Biol. Bull.* 76:405–415.

Haskin, H. H. 1942. A spectrophotometric method for the analysis of chloroplast pigments. J. Biol. Chem. 144:149–160.

Haskin, H. H. 1949. Growth studies on the quahaug, *Venus mercenaria. Proc. Nat'l. Shellfish. Assoc.* 1949:67–75.

Haskin, H. H. 1950. Selection of food by the common oyster drill *Urosalpinx cinerea* (Say). *Proc. Nat'l. Shellfish. Assoc.* 1950:62–68.

Haskin, H. H. 1952 Further growth studies on the quahaug, *Venus mercenaria. Proc. Nat'l. Shellfish. Assoc.* 1952:181–187.

Haskin, H. H. 1954. Age determination in molluscs. *Trans. N.Y. Acad. Sci.*16: 300–304.

Pomeroy, L. R. and H. H. Haskin. 1954. The uptake and utilization of phosphate ions from sea water by the American oyster, *Crassostrea virginica* (Gmelin). *Biol. Bull.* 107:123–129.

Pomeroy, L. R., H. H. Haskin and R. A. Ragotzkie. 1956. Observations on dinoflagellate blooms. *Limol. Oceanog.* 1:56–60.

Dean, D. and H. H. Haskin. 1964. Benthic repopulation of the Raritan River estuary following pollution abatement. *Limnol. Oceanog.* 9:551–563.

Haskin, H. H. 1964. The distribution of oyster larvae. Proc. Symposium on Exp. Marine Ecology, Occasional Pub. #2, Rhode Island Univ. Grad. School of Oceanography, pp. 76–80.

Haskin, H. H., W. J. Canzonier & J. L. Myhre. 1965. The history of MSX on Delaware Bay oyster grounds, 1957-65. *Amer. Malacol. Union Reports for 1965* 32:20–21.

Haskin, H. H., L. A. Stauber & J. A. Mackin. 1966. *Minchinia nelsoni* n. sp. (Haplosporida, Haplosporidiidae): causative agent of the Delaware Bay oyster epizootic. *Science* 153:1414–1416.

Hamwi, A. and H. H. Haskin. 1969. Oxygen consumption and pumping rates in the hard clam *Mercenaria mercenaria:* a direct method. *Science.* 163:823–824.

Hidu, H. and H. H. Haskin. 1971. Setting of the American oyster related to environmental factors and larval behavior. *Proc. Nat'l. Shellfish. Assoc.* 61:35–50.

Van Winkle, W., S. Y. Feng, and H. H. Haskin. 1976. Effect of temperature and salinity on the extension of siphons by *Mercenaria mercenaria. J. Fish. Res. Brd. Can.* 33:1540–1546.

Douglass, W. R. & H. H. Haskin. 1976. Oyster-MSX interactions: alterations in hemolymph enzyme activities in *Crassostrea virginica* during the course of *Minchinia nelsoni* disease development. *J. Invertebr. Pathol.* 27:317–323.

Hidu, H. and H.H. Haskin. 1978. Swimming speeds of oyster larvae *Crassostrea virginica* in different salinities and temperatures. *Estuaries* 1:252–255.

Haskin, H. H. & S. E. Ford. 1979. Development of resistance to *Minchinia nelsoni* (MSX) mortality in laboratory-reared and native oyster stocks in Delaware Bay. *Mar. Fisheries Rev.* 41:54–63.

Ford, S. E. & H. H. Haskin. 1982. History and epizootiology of *Haplosporidium nelsoni* (MSX), an oyster pathogen, in Delaware Bay, 1957-1980. *J. Invertebr. Pathol.* 40:118–141.

Haskin, H. H. & S. E. Ford. 1982. *Haplosporidium nelsoni* (MSX) on Delaware Bay seed oyster beds: a host-parasite relationship along a salinity gradient. *J. Invertebr. Pathol.* 40:388–405.

Haskin, H. H., R. A. Lutz & C. E. Epifanio. 1983. Benthos (Shellfish). Chap. 13. In: J. H. Sharp, (ed). The Delaware Estuary: Research as Background for Estuarine Management and Development. University of Delaware College of Marine Studies and New Jersey Marine Sciences Consortium, Lewes, Delaware. pp. 183–207.

Haskin, H. H. & S. E. Ford. 1983. Quantitative effects of MSX disease (*Haplosporidium nelsoni*) on production of the New Jersey oyster beds in Delaware Bay, USA. Proceedings of ICES. CM 1983/Gen:7/Mini-Symp. Goteborg, Sweden. October, 1983. 20 p.

Haskin, H. H. & S. E. Ford. 1986. Breeding for disease resistance in molluscs. Proceedings of EIFAC/FAO Symposium on Selection, Hybridization and Genetic Engineering in Aquaculture. EIFAC/86/Symp. R27. Bordeaux, France. May, 1986. 25 p.

Haskin, H. H. & S. E. Ford. 1987. Breeding for disease resistance in molluscs. In: K. Tiews, (ed). Proceedings World Symposium on Selection, Hybridization, and Genetic Engineering in Aquaculture, Bordeaux 27–30 May, 1986. Vol. II, Heenemann Verlagsgesellschaft, Berlin. pp. 431–441.

Ford, S. E. & H. H. Haskin. 1987. Infection and mortality patterns in strains of oysters *Crassostrea virginica* selected for resistance to the parasite *Haplosporidium nelsoni* (MSX). *J. Parasitol.* 73:368–376.

Ford, S. E. & H. H. Haskin. 1988. Comparison of in vitro salinity tolerance of the oyster parasite *Haplosporidium nelsoni* (MSX) and hemocytes from the host, *Crassostrea virginica*. Comp. Biochem. Physiol. 90A:183–187.

Ford, S. E. & H. H. Haskin. 1988. Management strategies for MSX (*Haplosporidium nelsoni*) disease in eastern oysters. In: W. S. Fisher, (ed). Disease Processes in Marine Bivalve Molluscs. 18, American Fisheries Society, Bethesda, MD. pp. 249–256.

Haskin, H. H. & J. D. Andrews. 1988. Uncertainties and speculations about the life cycle of the eastern oyster pathogen *Haplosporidium nelsoni* (MSX). In: W. S. Fisher, (ed). Disease Processes in Marine Bivalve Molluscs. 18, American Fisheries Society, Bethesda, MD. pp. 5–22.

Barber, B. J., S. E. Ford & H. H. Haskin. 1988. Effects of the parasite MSX (*Haplosporidium nelsoni*) on oyster (*Crassostrea virginica*) energy metabolism. I. Condition index and relative fecundity. *J. Shellfish Res.* 7:25–31.

Barber, B. J., S. E. Ford & H. H. Haskin. 1988. Effects of the parasite MSX (*Haplosporidium nelsoni*) on oyster (*Crassostrea virginica*) energy metabolism. II. Tissue biochemical composition. *Comp. Biochem. Physiol.* 91A:603–608.

Vrijenhoek, R. C., S. E. Ford & H. H. Haskin. 1990. Maintenance of heterozygosity during selective breeding of oysters for resistance to MSX disease. *J. Heredity* 81:418–423.

Ford, S. E., A. J. Figueras & H. H. Haskin. 1990. Influence of selective breeding, geographic origin, and disease on gametogenesis and sex ratios of oysters, *Crassostrea virginica*, exposed to the parasite *Haplosporidium nelsoni* (MSX). *Aquaculture* 87:285301.

Hillman, R. E., S. E. Ford & H. H. Haskin. 1990. *Minchinia teredinis* n. sp. (Balanosporida, Haplosporidiidae), a parasite of teredinid shipworms. *J. Protozool.* 37:364–368.

Kraeuter, J. N., S. R. Fegley, S. E. Ford & H. H. Haskin. 1993. Delaware Bay oyster populations: effects of seed movement, harvesting, and diseases. In: R. F. Dame, (ed). Bivalve Filter Feeders in Estuarine and Coastal Ecosystem Processes. G 33, Springer-Verlag, Berlin. pp. 531533.

Dittman, D. E., S. E. Ford & H. H. Haskin. 1998. Growth patterns in oysters from different estuaries. *Mar. Biol.* 132:461–469.