RECENT TIMELINE OF AQUACULTURE IN MAINE

1870s | 1880s | 1890s | 1900s | 1910s | 1920s | 1930s | 1940s | 1950s | 1960s

1970s

Biophysical/social/economic context

Major Production Impact

1871
Craig Brook Fish Hatchery founded
Craig Brook National Fish Hatchery has a long history, beginning in 1871 when Charles Grandison Atkins began fish culturing operations in an old mill at the mouth of Craig Brook, on the shore of Alamoosook Lake.

1903
McKown's Point Hatchery founded
Initially created as a marine fish and lobster hatchery, this facility later became office space and the laboratory for the Bureau of Commercial Fisheries and DMR.

1949
Stocking of European Oysters in Maine
European oysters from the Netherlands are stocked in Maine

1964
First spawning of soft shell clams
First soft-shell clams spawned in lab for research purposes in Boothbay Harbor by the Bureau of Commercial Fisheries Biological Laboratory.

1970
First state finish grow-out efforts
First state finfish grow-out efforts by Maine Salmon Farms, Wiscasset.

1975
First aquaculture lease granted in Maine
First aquaculture lease granted in Maine to Abandoned Farm, Inc., Clark's Cove, South Bristol.

1979
First mussel bottom culture lease
Maine's first mussel bottom culture lease.

Major Production Facilities

Commercialization of Aquaculutre Research

Major Research and Investigations

1971
University of Maine receives its first Sea Grant award
This first grant was to the Darling center(Dr. David Dean for projects related to the culture of research in the cold water marine environment (marine aquaculture).

1972
Construction of aquaculture hatchery at the Darling Marine Science Center
Aquaculture hatchery built at the University of Maine's by C. Darling Center in Walpole as the foundation for the first Sea Grant-funded project on the Culture of Bonnetsea in Cold Water Marine Environment. First facility to raise soft-shell clams on a large scale and to produce triploid shellfish of four species (Eastern oysters, 1979, soft-shell clams and bay scallops, 1981, hard-shell clams, 1986).

1976
The Maine-New Hampshire Sea Grant Program is created
This is the first bi-state Sea Grant program to be created in the country.

1983
Jonesboro 4-H marine project
Jonesboro 4-H marine project — the stepping-stone that spawned Cutler and Beals Island hatcheries.

1984 - 1985
Founding of the Oyster Broodstock
The oyster broodstock program stocks were initially founded and imported. The program went into a multifaceted state for most of the 1990's.

1987
MAIC separates from Umaine
Maine Aquaculture Innovation Center becomes independent of the University of Maine.

Institutions and organizations involved in Aquaculture in Maine

1889
Craig Brook becomes a National Fish Hatchery
The hatchery became a federal facility in 1889.

1970
New England Aquaculture Conference
Conference on aquaculture in New England held by the Research Institute of the Gulf of Maine (TRIGOM) in Durham, New Hampshire.

1973 - 1978
Fox Island Fisheries
Founded by Spencer Fuller on Vinalhaven.

1974
Maine Aquaculture Association (MAA) formed
MAA is the first trade association to represent water farmers in the Nation

1982 - 1985
Ocean Products founded
Ocean Products was the first salmon company to start farming in Cobscook Bay, which is now thought of as the heart of the salmon industry.

1985
Establishment of Fisheries & Aquaculture Research Group (FARG)
Establishment of Fisheries & Aquaculture Research Group (FARG) within UM Agricultural Experiment Station.

1986
Founding of Cutler Marine Hatchery
Founding of Cutler Marine Hatchery, first privately operated, Ashamron-sponsored lobster rearing facility in the U.S.

1987
Founding of Beals Island Regional Shellfish Hatchery
Founding of Beals Island Regional Shellfish Hatchery, the first shellfish management program that uses hatchery-reared soft-shell clams.

1988
Formation of Maine Aquaculture Innovation Center (MAIC)
Formation of Maine Aquaculture Innovation Center at the University of Maine.

1989
Cobscook Bay Finfish Growers Association
The Cobscook Bay Finfish Growers Association was created and existed briefly before being dissolved and the members joined MAA

1992 - 1993
Coastal Plantations starts research on Nori in Maine
First algae culture business in the state. They focused on growing Porphyra sp. for Nori.

1993 - MAR 27 2007
Northeast Farmed Fish Health Management Workshop
NEFHDMW was founded by Dr. Optiz and Dr. Mitchell to educate farmers, veterinarians and management personnel about current and potential fish health risks.

Education and Outreach

Laws and Policies

1969
President Johnson signs the Pell-Rodgers Sea Grant Colleges and Program Act
This legislation created the Sea Grant program

1973
Enactment of State Leasing Laws
Enactment of the Maine Aquaculture Law that governs the leasing of public marine waters by private interests.

1980
Development of Maine Aquaculture Plan by State Planning Office.
Development of Maine Aquaculture Plan by State Planning Office.

1986
Mook and Johnson publication on use of upwelling systems
This publication marks the beginning of the use of upwellers in shellfish aquaculture. Tidal powered upwellers predominated through the late 1990's and early 2000's at which point they were replaced with powered upweller designs.

1989
Construction of the Franklin Facility
Originally built as a land based hatchery and growout facility for Pennsbroscott Salmon, this facility is currently owned by the University of Maine and is known as the Center for Cooperative Aquaculture Research (CCAR)

1987
Construction of Gardner Lake Hatchery
Gardner Lake is one of the remaining commercial hatcheries still in use in Maine

1990
Release of "The Aquaculture Strategy for Maine"
State of Maine issues "The Aquaculture Strategy for Maine."

1990
Anti-dumping duty imposed on Norwegian Atlantic salmon imports
The U.S. International Trade Commission imposes an anti-dumping duty on imported Norwegian Atlantic salmon.

1990
First use of vaccines in Maine's salmon farming industry
First use of vaccination in Maine to help reduce the risk of disease in Maine farmed salmon.

1993
ICES approves introduction of Japanese algae in Maine
The International Commission for the Exploration of the Seas (ICES) approves the State of Maine's request to introduce nori (Porphyra yezoensis) into Gulf of Maine waters.

1993
First outbreak of Hitra disease in Maine
First use of vaccination in Maine to help reduce the risk of disease in Maine farmed salmon.

1994
First outbreak of sea lice in Maine
First reported issue of sea lice in Maine. Sea lice have continued to be an issue in Maine since their appearance

1994 - 1998
Adoption of underwater video cameras for use in feeding.
Use of underwater water video camera's become ubiquitous during this period. Their use improved feeding and helped to maintain minimal environmental impacts.

1995 - 1997
Development of "Maine's Aquaculture Strategy"
DMR commissioner begins the processes of updating the "The Aquaculture Strategy for Maine". In 1997, Robin Alden, Commissioner of Marine Resources, releases "Maine's Aquaculture Strategy" a planning document that was crafted by industry, government and university volunteers over an 18 month period.

1995 - 2003
First use of automated feeding systems in salmon farming
The switch from wooden and steel cages to polar circles marks a major shift in farming practices. This change also helped to reduce escape events due to catastrophic cage failure.

1995 - 2005
Switch from steel cages to Polar Circles
The switch from wooden and steel cages to polar circles marks a major shift in farming practices. This change also helped to reduce escape events due to catastrophic cage failure.

1997
MAA releases its Code of Containment
Maine fish farmers develop a world's first Code of Containment to reduce farm escapes. The code focuses on equipment standards. The standards were developed after analyzing actual escape events in New Brunswick and Maine between 1987 & 1994.

1998
Lawsuit brought against salmon farmers under the Clean-water Act
Non-governmental groups sued the salmon farming industry and Regulators for operating without discharge permits under the Clean Water Act. Regulatory agencies had failed to issue the permits despite industry requesting the permits.

1999
First experimental Lease
The Department of Marine Resources grants the first experimental lease.

NOV 17 1999
Proposed listing of Atlantic Salmon as endangered
The Federal Government's National Marine Fisheries Service (NMFS) and Fish and Wildlife Service (USFWS) announce their intent to list wild Atlantic salmon as a Federal Endangered Species. The Maine farmed salmon industry opposes listing, citing the lack of scientific basis for the proposed action. Governor Angus King also opposes the Federal action, emphasizing that the Maine Atlantic salmon Conservation Plan must be given an opportunity to yield results.

1990s

1994
Investigations into Halibut farming
MAIC sponsors a project to collect halibut to build broodstock and research the potential of halibut farming.

1995
Investigations into Cod Farming
National Marine Fisheries Service and MAIC provide grants for the establishment of experimental cod hatcheries at Swans Island and in Franklin.

1995
NE Regional Grant Nori culture project
A large research project to develop Nori culture techniques in the region funded by NE Regional Sea Grant Programs. The project involved Coastal Plantations, Umaine, UNH, Northeastern University, and Ocean.

1996
Shift in MAIC's Strategic Mission
The Maine Aquaculture Innovation Center embarks on new strategy to generate greater support for aquaculture research, technology transfer and business development.

1996 - 2001
First Aquaculture EPSCORE Award
The University of Maine wins National Science Foundation support to expand its aquaculture research and teaching roles.

1997
Marshall Point Sea Farms founded
An oyster aquaculture company located in Port Clyde, ME. Marshall Point Sea Farms begins working with at-risk youth.

1998
DMR hires a "Senior Aquaculture Policy Specialist"
The Department of Marine Resources adds a "Senior Aquaculture Policy Specialist " to its staff. The new employee functions as the State Aquaculture Coordinator for Maine.

1999
UMaine purchases the Franklin facility
The University of Maine purchases the Franklin facility, which becomes the Center for Cooperative Aquaculture Research (CCAR). The facility now provides commercial scale marine, brackish and freshwater research space and business incubation space.

1999 - 2000
Marshall Point Education Foundation is created
Marshall Point Education Foundation receives 501(c)(3) non-profit status, establishes operations in classroom/cultivator lab facility adjacent to Marshall Point Sea Farm.

1999
General Shellfish Industry meetings
These meeting were started by Dana Morse and Maine Sea Grant to help provide networking and professional development opportunities to the shellfish industry. They eventually became what is now known and the Shellfish Working Group.

1999 - 2002
Experimental leases are created
The state legislature creates legislation allowing the Department of Marine Resources to grant marine lease sites to companies, individuals, and scientists who wish to conduct experiments.

1999
Limited Purpose Aquaculture Licenses (LPA) are created
LPAs are a renewable license for up to 400 square feet of gear for rearing specific organisms. They were established as a means of trying new potential shellfish growing areas.

1997
Creation of the Finfish Aquaculture Monitoring Program (FAMP)
The state legislature created the FAMP in order to provide for uniform and consistent environmental monitoring of finfish operations. The program was funded by a fee of $0.01 per pound of aquacultured fish harvested.

2000s

2000
Marshall Point Education Foundation changes name to Herring Gut Learning Center
Marshall Point Education Foundation changes name to Herring Gut Learning Center

2001
Maine and New Hampshire become independent Sea Grant Programs

2001
Beal's Island Regional Shellfish Hatchery becomes the Downeast Institute
In 2000, the Board changed its name from BIRSH to the Downeast Institute for Applied Marine Research and Education (DEI) to more accurately reflect its mission.

JUL 2002
Scale Reading Workshop
MAA sponsored workshop on scale reading

2002 - 2012
Darling Marine Science Center has a full lease site in Lowe's Cove
DMC possess a full aquaculture lease site in Lowe's Cove.

2002
Shellfish Working Group
These meeting were started by Dana Morse and Maine Sea Grant to help provide networking and professional development opportunities to the shellfish industry. They evolved out of the General Shellfish Industry meetings.

2002
Discharge Permits issued to fish farmers
Permits issued to salmon producers under the Endangered Species Act and Clean Water Act

2003
3rd party verified Containment Management System put into practice
the Containment Management System (CMS) collaboratively developed by industry, government and NGOS was put into effect as part of the the discharge permits issued under the clean water act.

2003
Containment Management System
MAA in conjunction with industry, federal and state management agencies, and eNGO partners produces the World's first third party audited Containment Management System (CMS) based on reducing human error. The CMS is now required of all salmon facilities needing a discharge permit in Maine.

2003 - JAN 2007
Containment and Marking Studies
MAA in conjunction with industry, federal and state management agencies, and eNGO partners study marking and containment hurdles.

DEC 2003
USDA APHIS ISAV surveillance program
USDA APHIS established a field office in Eastport to oversee ISAV prevention and monitoring programs.

2003 - 2006
Integrated mariculture with Porphyra ("nori") to achieve sustainable aquaculture and new food products
A pair of projects funded by Maine Sea Grant to develop techniques for growing Nori in an integrated system with marine fish farms.

2004
Demonstration of Cod culture on Salmon Farms
Nick Brown and Staff at CCAR established Cod broodstock and produced juveniles for stocking out in commercial salmon cages

2005
Formation of the Working Waterfront Coalition
Organized by the Coalition, including the Maine Aquaculture Association, the Island Institute, the Maine Lobstermen's Association and CEI the coalition lobbies for policies and actions to help keep Maine's existing working waterfront, including aquaculture operations.

2005
USDA ARS initiates the National Cold Water Marine Aquaculture Center project
The National Cold Water Marine Aquaculture Center is being overseen by Dr. William Fairley. The center is a cooperative collaboration with the University of Maine Center for Cooperative Aquaculture Research. One of the

APR 2004 - 2006
Cooke Aquaculture purchases all of the commercial salmon operations in Maine
Cooke Aquaculture purchases Atlantic Salmon of Maine on 4/1/2004, the salmon aquaculture operations of Connor's Brothers in 2005 and the East coast NA operations of Stolt Sea Farms in 2006. These purchases leave Cooke Aquaculture as the sole commercial salmon grower in Maine.

2004
University of Maine received full National Sea Grant College status

2004
First Oyster Gardening program in Maine
Dana Morse and Chla Davis collaborate to start the first Oyster Gardening program in Maine. The program is hosted for several cycles at the Darling Marine Science Center

2006 - Present
Hatchery Roundtable
Annual Professional Development event co-hosted by MAA, MAIC and ARI to educate both public and private hatchery owners, operators and staff on topics of interest.

2006
Rewrite of the MEPA Discharge Permits

NOV 2005
Passage of the Working Waterfront Access Pilot Program
Working Waterfront Access Pilot Program (WWAPP), a $2 million state-bond fund that provided grants to fishing families, municipalities, cooperatives and businesses to help them purchase working waterfront property.

2005
Passage of the Working Waterfront current use taxation
Program develop to allow for waterfront property that meets certain criteria and is used for commercial fishing access or aquaculture to be taxed at a current use value rather than standard tax valuation.

2010s

2010
Oyster Gardening program migrates to the Damnariscotta River Association (DRA)
In order to try and spread the oyster gardening program around the state, its operation is turned over to the DRA a local conservation group to pilot the concept.

2011
Modifications to the the 2008 version of the discharge permits

2013
Special license to collect and sell scallop spat for aquaculture

2010
Scallops added as a legal species on LPAs

2010
Organic standards recommended
National Organic Standards Board recommends technical standards for organic aquaculture to the USDA. Standards have yet to be adopted.

JUL 20 2009
The Gulf of Maine Distinct Population Segment (GOM DPS) for endangered Atlantic salmon is expanded.
The Gulf of Maine Distinct Population Segmentent (GOM DPS) for endangered Atlantic salmon is expanded. Notably it now covers, the Kennebec, Penobscot and Androscoggin Rivers.

MAY 22 2009
GBA Maine gets first all Cod lease
GBA Maine get lease in Frenchman's bay for the first all Cod marine growout farm in the US.

MAY 28 2008
USDA ARS officially opens their facilities in Franklin Maine
he Agricultural Research Service (ARS) dedicated its new National Cold Water Marine Aquaculture Center (NCWMAC) here today. Research at the new center is focused on developing technologies to enhance the sustainability and profitability of cold water marine aquaculture and ensure safe, abundant seafood for U.S. consumers. ARS is the chief intramural scientific research agency of the U.S. Department of Agriculture (USDA).

JUN 2005
Implementation of the 3 year production cycle in Cobscook Bay
106/2005 Commercial growers voluntarily implemented a 3 year production and fallowing cycle in Cobscook Bay. This is enforced through DMR stocking permits. This is the first such production cycle of its kind in the world.

DEC 2001 - APR 2002
Depopulation of Cobscook Bay due to ISAV
The USDA APHIS oversaw the depopulation of all fish from Cobscook Bay. They also disinfected all equipment in the bay.

2000
First outbreak if ISA in Maine

2003 - 2010
DEI relocates and starts a program of renovation and construction to complete their current facilities
During the summer of 2003, DEI moved from its home at Pirate Point (Beals Island) to Black Duck Cove (Great Wass Island) with the goal of renovating a 9,000 square-foot building used primarily for temporary storage of lobsters into a shellfish production facility. In addition, the DEI board had its sights on creating the downeastmost marine research laboratory and education center in the US.

2006
Great Bay Aquaculture of Maine (GBA Maine) formed
GBA Maine partners with CCAR to rear cod in Maine.

1973
MariCal Founded
Commercial company founded in Maine to commercialize research discoveries

September 19th 2013 -
Ocean Approved releases Kelp Farming Manual
A PDF copy is made available of Ocean Approved's manual for culturing kelp in the north Atlantic.

MAY 1986
Deployment of mussel rafts in Maine
The Island Institute, Pemaquid Oyster Co., and Great Eastern Mussel Co. deployed mussel rafts at several sites along Maine's coast.

1990
Shift in MAIC's Strategic Mission
The Maine Aquaculture Innovation Center embarks on new strategy to generate greater support for aquaculture research, technology transfer and business development.

1990 - Present
Halibut Broodstock and Spawning
Wild-caught broodstock are brought into CCAR and conditioned for spawning. First spawning occurs in 2004 and CCAR continues to produce juvenile halibut and develop halibut culture techniques for Maine.

SEP 1998
Island Institute publishes "The Maine Guide to Mussel Raft Culture"
This publication for the general public discussed suspended mussel culture techniques and how to get started in your own mussel culture business.

2001
Polycheate Culture begins
Sea Bait partners with UMaine at CCAR adapting polycheate culture to recirculation systems. Sea Bait becomes the first business incubator tenant at CCAR.

2002
Rejuvenation of the Oyster Broodstock program
Grower interest helps researchers to rejuvenate the Oyster Broodstock program from surviving animals of the original stock. The program now provides improved genetic material to the commercial industry.

FEB 2010 - JUN 30 2010
Examination of finfish pathogen physiology and predictive ecology in a bivalve/finfish integrated multi-trophic aquaculture system
NRAC funded project examining the the interactions between mussels, EPOC Francisella and fish.

JAN 2008 - DEC 22 2010
Investigations into the Potential Health and Economic Benefits of bivalve/finfish co-culture
NRAC funded project examining the the interactions between mussel, ISAV, Vibrio angullarum and fish.

2008 - AUG 2013
Kevin Neves' PhD Dissertation on Cataracts in Cod
Work starts at CCAR looking into Cataracts in Cod. This forms the dissertations work for Kevin Neves, the second ARI PhD student to Graduate.

JAN 2008 - MAY 2012
Michael Pietrak's PhD Dissertation on Ecology of disease on IMTA farms
Work starts with Ian Bricknell on the Ecology of Diseases on an IMTA Finfish-mussel farm that forms the dissertation work for Michael Pietrak, the first ARI PhD Student to Graduate.

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NRAC funded project examining the the interactions between mussel, ISAV, Vibrio angullarum and fish.

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SEP 2012
The role of wild and farmed fish in modulating the infectious pressure of the sea louse (Lepeophtheirus salmonis Kroyer 1837).
National Sea Grant funded project

AUG 2015 - AUG 2016
DMC granted an experimental lease in Lowe's Cove
Efforts to replace the old full commercial lease site in Lowe's Cove with a smaller and a new experimental lease site are granted. The lease includes the culture of a variety of shellfish and algae species.

Aug 29 2013
Seaweed Scene 2013
Seaweed networking and informational meeting organized by Sarah Redmond, Dana Morse and in collaboration with Maine Sea Grant, UM Cooperative Extension and ARI.

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