

2019

Aquaculture

Resource Guide



UNIVERSITY OF
MARYLAND
EXTENSION



CHESAPEAKE BAY FOUNDATION
Saving a National Treasure

Compiled by
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and
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Rebuilding Our Shellfish Industry

We are pleased to bring you the 2019 Aquaculture Resource Guide, which provides information to help you build a profitable business. This industry has grown steadily since Maryland lease laws were revised and applications began to be accepted in September 2010. Continued progress has been seen in the number of farms and acreage, as well as the introduction of new gear and technology. This has led to increased production annually and expanded markets for high quality shellfish products.

University of Maryland Extension and the Chesapeake Bay Foundation are working together in a project funded by NOAA through the Atlantic States Marine Fisheries Commission entitled the “Maryland Shellfish Growers Network”. It provides funds for mentoring new growers, cataloging references for financial assistance sources, creating innovative programs to mitigate costly lease protests and support for a statewide educational conference.

During the year, we offer outreach programs to provide you with the skills needed to become a successful grower. These include production topics such as setting and nursery procedures for both single seed and spat on shell, identifying and managing pests and predators, understanding oyster diseases and business topics to help you operate a profitable business.

These support programs and publications are helping to rebuild our once great shellfish industry and providing working waterfront communities with ways to stay productive. We hope you find the information in this guide useful and ask that you let us know if you have additional sources to add in future years.

*Don Webster and Matt Parker, University of Maryland Extension
Allison Colden, Chesapeake Bay Foundation*



Contents

HATCHERIES AND NURSERIES3

EQUIPMENT AND SUPPLIES.....8

AGENCIES, INSTITUTIONS AND ORGANIZATIONS 12

 Advisory Groups 13

 Business Assistance..... 14

 Federal Agencies 17

 Financing..... 18

 Grants, Research and Development 21

 Industry Associations..... 22

 Non-Governmental Organizations..... 24

 Leasing and Permitting 25

 Protection and Enforcement..... 27

 Regulatory 25



Aquaculture Resource Guide

*Don Webster & Matt Parker, University of Maryland
Allison Colden, Chesapeake Bay Foundation*

This guide provides Maryland shellfish growers with sources of seed, supplies, equipment, technical assistance, financing and other items needed to develop an aquaculture business. It provides a quick reference to access a range of products and services to aid business formation and profitability.

NOTE: Neither the University of Maryland nor the Chesapeake Bay Foundation endorse or recommend any particular business listed in this publication and urge that prudent business practice is used in all commercial dealings.

HATCHERIES AND NURSERIES

Building a commercial shellfish industry has become possible with development of hatchery technology, selected lines of animals and techniques such as *remote setting*. This lets hatcheries concentrate on the production of larvae which can be shipped to setting sites. Breeding oysters has created enhanced resistance to disease and superior meat quality. *Triploidy* results in oysters that do not spawn and provide quality meats in summer when native animals become poor after reproducing.

Nurseries provide spat on shell and *cultchless* seed. Some growers operate their own nursery systems while others purchase seed for immediate deployment. Spat on shell can be planted shortly after setting, which can occur at the hatchery or another site, where it is known as *remote setting*. This type of production has been used in Maryland since 1982. Whichever type is chosen, growers should understand that hatcheries can provide larvae or seed to keep leases productive. This has increased the quality shellfish found in our region and nationally.

Doing business with hatcheries or nurseries

If you purchase larvae or seed from a hatchery, we suggest you visit the facility. Tour the business, meet the owner, operator and staff and establish a relationship. Ask for names of past customers and check their experiences with the products. Most hatcheries and nurseries **require a non-refundable deposit** when you place an order to ensure you pick it up on time. This keeps their business and yours operating smoothly. Understand that, while a hatchery will try to deliver on schedule, this is not always possible due to production problems that can occur from the animals they are working with or the water used for hatchery operations. If you decide to deal with more than one hatchery or nursery, or want to try different genetic lines, we recommend keeping samples separated and compare growth to see which perform best at your location.

The list of hatcheries and nurseries is part of an annual report from Rutgers Cooperative Extension (NJ) and from personal communication with them. These are provided for **information purposes only**. Neither the University of Maryland nor the Chesapeake Bay Foundation endorse or recommend any individual or company. Be prudent in your business practices and exercise diligence before committing funds for purchases.

Maryland state law requires that you obtain a Shellfish Import Permit to transport oyster or clam larvae, seed, spat and/or shell across state lines. Larvae and seed shipped within the Chesapeake Bay region usually have no problem getting these since similar diseases occur in both states. Applications are available from the Department of Natural Resources at: <http://www.dnr.maryland.gov/fisheries/Pages/aquaculture/shelfish.aspx> or by calling the DNR Aquaculture Division, Rebecca Thur at 410-260-8252. **Applications must be submitted at least 30 days prior to when you wish to import these items.**

CODES USED FOR HATCHERY AND NURSERY LISTINGS

HC = Hard Clam
OY = Eastern Oyster
N = Nursery
BS = Bay Scallop
PH = Private Hatchery

Maryland

38° North Oysters OY, N, PH

Contact: J.D. Blackwell

Post Office Box 2, Scotland MD 20687

Phone: 301-872-5051

JD@38northoysters.com

<http://www.38northoysters.com/>

Gordon's Shellfish LLC HC, OY, N

Contact: Steve Gordon

4248 Bayside Road, Snow Hill MD 21863

Phone: 410-726-1202

steve@seaclam.com

Hooper's Island Oyster Company OY, N, PH

Contact: Natalie Ruark

2500 Old House Point Road, Fishing Creek MD 21634

Phone: 410-397-3664

nruark@hoopersisland.com

<http://www.HoopersIsland.com>

Johnny Oyster Seed Co. OY, N

Contact: Jon Farrington

5223 Williams Wharf Road, St. Leonard MD 20685

Phone: 410-610-1508

johnnyoysterseed@gmail.com

<http://johnnyoysterseed.com>

Marinetics Inc./The Choptank Oyster Co. OY, PH, N

Contact: Kevin McClarren

6035 Castle Haven Road, Cambridge MD 21613

Phone: 443-521-6425

kevin@choptanksweets.com

Moonstruck Oyster Co. OY, N

Contact: Bob Parkinson

43765 Little Cliffs Road, Hollywood MD 20636

Phone: 301-751-2114

bobparkinson@hughes.net

oysterbob11@gmail.com

www.moonstruckoysters.com

Piney Point Aquaculture Center OY

Contact: James Dumhart

17996 Piney Point Road, PO Box 150, Piney Point MD 20674

Phone: 301-994-0241; Cell: 443-458-7594

james.dumhart@maryland.gov

Shore Thing Shellfish, LLC. OY, N

Contact Kevin Boyle

P.O. Box 74, Tall Timbers, MD 20690

Phone: 240-338-3841

shorethingshellfish@gmail.com

www.shorethingshellfish.com

University of Maryland Horn Point Hatchery OY, N

Contact: Stephanie Alexander

UMCES Horn Point Lab, PO Box 775, Cambridge MD 21613

Phone: 410-221-8310

tobash@umces.edu

<http://www.hatchery.hpl.umces.edu/>

Virginia

Bagwell Enterprises HC

Contact: Yvonne Bagwell

Smith Beach Road, P.O. Box 508, Eastville, VA 23347

Phone: 757-678-5806

clammom@gmail.com

Bay Watch Oyster Seeds, LLC OY, N

Contact: Keith Rodgers

P.O. Box 535, 271 Bay Watch Lane, Reedville, VA 22539

Phone: 804-453-4367

baywatchoysterseeds@nnwifi.com

www.baywatchoysterseeds.com

Cherrystone Aquafarms HC, OY, PH

Contact: Tim Rapine

P.O. Box 347, Cheriton, VA 23316

Phone: 757-331-1208

timr@clamandoyster.com

<http://www.ballardfish.com>

JC Walker Brothers HC, OY, BS, PH
Contact: Tom & Wade Walker/Ann Gallivan
P.O. Box 10, Willis Wharf, VA 23486
Phone: 757-442-6000; Fax: 757- 442-7059
seasideclams@gmail.com
www.jcwalkerbroscams.com

KCB Oyster Holdings, LLC OY, PH
Contact: A.J. Erskine/Liz Walker
755 Lake Landing Drive, Lottsburg, VA 22511
Phone: 804-529-6654; Fax: 804-529-7374
ajerskine@bevansoyster.com

Oyster Seed Holdings, Inc. OY, PH
Contact: Michael Congrove
PO Box 397, Grimstead, VA 23064
Phone: 804-725-3046; Fax: 804-725-3047
info@oysterseedholdings.com
www.oshoyster.com

Ward Oyster Company OY, PH
Contact: John Vigliotta
6578 Jarvis Road, Gloucester, VA 23061
Phone: 804-693-7597; Fax: 804-693-0581
Clamman47@hotmail.com



Bobby Leonard discusses his seed setting operations with Karl Roscher of Maryland DNR Aquaculture and Industry Enhancement Division

EQUIPMENT AND SUPPLIES

Traditional Maryland oyster production used bottom culture techniques but new gear has been imported from other areas or developed locally to enhance shellfish growth and quality. Aquaculture producers use commercial fishing supplies as well as unique gear for raising shellfish. Downwellers and upwellers are setting and nursery equipment while bottom cages, midwater containers and surface floats contain and protect small oysters during their growth.

Maryland

Atlantic Pressure Washers

Contact: Jeff Paulding

1708 Whitehead Road, Baltimore, MD 21207

Phone: 410-944-5566

admin@atlanticpressurewashers.com

<http://www.atlanticpressurewashers.com>

Products: pressure washers; cleaning fluids

Captain Bruce's Crabbing Supplies

Contact: Captain Bruce

785 Howery Kane, North East, MD 21901

Phone: 410-287-6315

Captainbruce53@aol.com

<http://www.stackablecrabtraps.com/>

Products: commercial fishing supplies

D.O. Baker

Contact: D.O. Baker

Broomes Island, MD 20615

Phone: 410-591-0361

Products: oyster cages, long line spat cages

Eddie Heath's Crab Pots & Supply Co., Inc.

Contact: Eddie Heath

724 West Main Street, Crisfield MD 21817

Phone: 410-968-1292

Products: commercial fishing and crabbing supplies and equipment; wire mesh, tools and equipment; fabrication of products made from wire mesh; consultation for special needs

First State Packaging

Contact: Tim Campbell

P.O. Box 3037, 511 Naylor Mill Road, Salisbury, MD 21801

Phone: 410-546-1008

Products: boxes; packaging products; trucking; warehousing

Harrington Graphics and Screen

116 Broad Street, Berlin, MD 21811

Phone: 410-641-1986

chris@hgands.com

<http://www.hgands.com/>

Products: promotional materials; screen printed shirts

Hooper's Island Oyster Company

Contact: Chris Wyer

2500 Old House Point Road, Fishing Creek, MD 21634

Phone: 410-397-3664

cwyer@hoopersisland.com

<http://HoopersIsland.com>

Products: oyster cages; tools; cage materials; fabrication of upwellers and downwellers, oyster grader & sorters; custom building/modification of fiberglass boats for shellfish farming. Growing systems and consulting services are available.

Johnny Oyster Seed Co.

Contact: Jon Farrington

5223 Williams Wharf Road, St. Leonard, MD 20685;

Phone: 410-610-1508

johnnyoysterseed@gmail.com

<http://johnnyoysterseed.com>

Products: Self-maintaining Buoyant Oyster Cultivation System (BOCS); oyster cages; barge service; consulting

Tenax Corporation

4800 East Monument Street, Baltimore, Maryland 21205

Phone: 410-522-7000; 800-356-8495; Fax: 410-522-3190

www.tenaxus.com

Products: plastic netting products; packaging; tubular nets; geotextiles; filtration material

Victory Packaging

Contact: Cheryl Schwabline

7605 B Dorsey Run Road, Jessup, MD 20794

Phone: 800-790-8457

<http://www.victorypackaging.com>

Products: packaging and shipping supplies

Other States

Chesapeake Bay Oyster Company

Contact: Jon Quigley

P.O. Box 96, Wake, VA 23176

Phone: 804-338-6530 Fax: 804-776-0703

sales@bayoyster.com

<http://www.bayoyster.com/>

Products: wire, oyster cages, oyster bags, floats; tools; grader/sorter; conveyors, upwellers

Pentair Aquatic Eco-systems Inc.

2395 Apopka Blvd., Apopka, FL 32703

Phone: 877-347-4788

<http://www.pentaires.com>

Products: company offers a wide range of aquaculture supplies and equipment

Coastal Aquaculture Supply

Contact: Brian Bowes

100 Glen Road, PO Box 8066, Cranston, RI 02920

Phone: 401-467-9370

bbowes@plasticpipesupply.com

Products: aquaculture growout equipment and supplies; pipe & accessories

Flexabar Corporation

Contact: Andy Guglielmo

1969 Rutgers University Boulevard, Lakewood, NJ 08701

Phone: 732-901-6500; Fax: 732-901-6504

Andy@flexabar.com

<http://www.flexabar.com>

Products: specialty marine coatings; water based antifouling

Hamilton Marine

155 East Main Street, Searsport ME 04974

Phone: 207-548-6302; 800-639-2715; Fax: 207-548-0481

<http://www.hamiltonmarine.com/>

Products: commercial fishing supplies; personal protective equipment

Ketcham Traps

Contact: Myron Horzesky

111 Myrtle Street, New Bedford, MA 02740

Phone: (508) 997-4787

<https://ketchamsupply.com>

Products: trap fabrication; construction materials

Memphis Net and Twine

P.O. Box 80331, 2481 Matthews Avenue, Memphis, TN 38108

Phone: 888-674-7638

fishinfo@memphisnet.net

[http://www.memphisnet.net/](http://www.memphisnet.net)

Products: commercial fishing and aquaculture supplies; tools; knives; personal protection gear

New Bedford Ship Supply Co., Inc.

108 Front Street, New Bedford MA 02740

Phone: 508-994-2961

Products: commercial fishing supplies; personal protection gear

New River Nets

140 Charles Creek Road, Sneads Ferry, NC 28460

Phone: 910-327-1231; Fax: 910-327-3136

sales@newrivernets.com

<http://www.newrivernets.com/>

Products: commercial fishing supplies; personal protection gear

Netminder Aquatic Coatings

Contact: Steven Fisher, President and CEO

2002 Renaissance Blvd, Suite 230, King of Prussia, PA 19406

Phone: 267-709-1397; Fax: 484-412-8322

sfisher@netminder.us

Products: non-toxic antifouling coatings for aquaculture and commercial fishing

Sea Gear Marine Supply

Contact: Charles Barto

1144 Route 109, Cape May, NJ 08204

Phone: 609-884-2711; Fax: 609-884-8467

info@seagearmarine.com

<http://www.seagearmarine.com>

Products: commercial fishing supplies; personal protection gear

Southern Aquaculture Supplies

931 St. Mary's Street, Lake Village AR 71653

Phone: 870-265-3584; Fax: 870-265-1206

sales@southernaquaculturesupply.com

<http://southernaquaculturesupply.com>

Products: water test equipment; aeration & diffusers; scales

The Rope Locker

Contact: Jim Torbert

PO Box 1, Felton, DE 19943

Phone: 302-284-4587

jamestorbert@hotmail.com

<http://theropelocker.com>

Products: rope and cordage; Gripmoor® fasteners; splicing



**Question: How old are these oysters? Answer: They are all the SAME age!!
Showing the difference in growth rates that oysters exhibit naturally.**

AGENCIES, INSTITUTIONS AND ORGANIZATIONS

State and federal agencies and organizations to help your aquaculture business. Some handle permits and others provide development assistance.

Advisory Groups

Aquaculture Review Board

The Aquaculture Review Board (ARB) includes state and federal agency representatives who deal with permits and compliance. The ARB reviews and tracks applications to assure progress and that applicants are informed during the process (*Code Natural Resources Article, sec. 4-11A-03.1*).

The ARB can include a **pre-application meeting** for applicants to present ideas for proposed projects. This can identify conflicts prior to the actual application and create easier permitting.

The ARB is chaired by the Department of Natural Resources Aquaculture Division Director and includes representatives of the Departments of Agriculture, Environment and Health. The National Marine Fisheries Service, US Army Corps of Engineers and US Coast Guard are also represented.

Information: Karl Roscher, DNR; phone: 410-260-8313; Email: karl.roscher@maryland.gov

Aquaculture Coordinating Council

The Aquaculture Coordinating Council (ACC) was created by the General Assembly to provide guidance and leadership to advance Maryland aquaculture. These include fee structures, policy initiatives, pilot projects and Best Management Practices. The Council reviews and recommends changes to laws and regulations affecting aquaculture and uses workgroups to apply the expertise of members and outside experts. The ACC issues an annual report to the Governor and legislature.

The Council meets on the second Thursday of January, March, May, July, September and November at 6:30 pm at the

Department of Natural Resources in Annapolis. Guests are encouraged to attend and time is allotted for public input.

Composition of the 19 person Council is designated by law and includes three aquaculture industry members and three Tidal Fish License holders, as well as representatives of the Maryland Senate, Maryland House of Delegates, Departments of Natural Resources, Agriculture, Environment, Health, and Commerce, Natural Resources Police, University of Maryland College Park, University of Maryland Extension, University of Maryland Center for Environmental Science, Maryland Farm Bureau, and Oyster Recovery Partnership.

Information: Karl Roscher, DNR; Phone: 410-260-8313

Email: karl.roscher@maryland.gov

Website: <http://dnr.maryland.gov/fisheries/Pages/mgmt-committees/acc-index.aspx>

Business Assistance

Maryland Department of Commerce (MDC)

The Department stimulates private investment and job creation by attracting new businesses, encouraging expansion and retention of existing companies, and financial assistance programs. They promote economic advantages and market local products and services to spur development and international investment in trade and tourism.

MDC provides support services for businesses and staff are available for consultation while the MDC website includes modules for writing business plans, obtaining assistance from Small Business Development Centers, developing legal structures, selecting names and accessing capital. Recruitment and training programs are provided with links to agencies including those with agricultural loans and guarantees.

Maryland has proximity to major high income population centers and access to highways, airports and shipping. Seafood consumption provides markets for products and the variety of shellfish grown in Maryland has led to branding and other innovations to enhance business opportunities.

Key Programs & Services

Site location assistance; finance; tax credits; training grants; business advocacy and consulting; technology transfer; foreign investment promotion; export consulting and marketing; tradeshow and conference partnerships.

Maryland Department of Commerce

401 East Pratt Street, Baltimore, MD 21202

Phone: 1-888-ChooseMD (246-6736) or 410-767-6300

Website: commerce.maryland.gov.

Education

University of Maryland Extension (UME)

Extension provides technical training and outreach services to growers through off-campus, non-credit, continuing education programs. UME provides over twenty classes annually through the Oyster Aquaculture Education & Training Program funded by the Philip E. and Carole R. Radcliffe Foundation and the Oyster Recovery Partnership. These include regional workshops, gear demonstrations, individual assistance and short courses to build the aquaculture industry. Print and electronic information supporting programs is available on the UME website and Facebook page. Program contacts:

Faculty:

Don Webster, Wye Research and Education Center, Queenstown; general aquaculture; Phone: 410-827-8056; Cell: 410-310-7191; Email: dwebster@umd.edu

Don Meritt, UMCES Horn Point Oyster Lab, Cambridge; hatchery operations, shellfish biology

Matt Parker, Prince George's County Extension Office, Clinton MD; business management; finance; marketing; Phone: 301-868-8780 ext. 428 Email: mparke11@umd.edu

Shannon Dill, Talbot County Extension Office, Easton; business management; finance; marketing; Phone: 410-822-1244; Email: sdill@umd.edu

Cathy Liu, University of Maryland, College Park, MD; seafood technology, safe handling and processing; Hazard Analysis Critical Control Point (HACCP) training; Phone: (443) 477-3974; Email: cathyliu@umd.edu

Publications available for download from our website:

- *Production Systems*: gear and systems to grow oysters
- *Remote Setting Systems*: producing spat on shell seed
- *Remote Setting Cost Analysis*: determining seed cost
- *Bottom Culture Cost Analysis*: determining profit and loss for bottom leases
- *Contained Culture Cost Analysis*: determining profit and loss for water column systems
- *Spreadsheets for remote setting, bottom and contained culture operations*
- *Planning for Success in your Aquaculture Business*: developing profitable aquatic farms

Website: <http://extension.umd.edu/aquaculture>

Facebook: [Maryland Aquaculture](#)

UMCES Horn Point Lab (HPL)

The Horn Point Lab near Cambridge on the Eastern Shore, is the largest oyster hatchery on the East Coast. The staff works on large-scale restoration projects and support to develop shellfish aquaculture. Educational programs seek to rebuild the resource and industry and are conducted jointly by HPL, UME and others including the Oyster Recovery Partnership (ORP) and Department of Natural Resources. Recently the hatchery has provided training for short courses, workshops on remote setting and lease management. A demonstration farm provides hands-on training using a range of culture equipment, conducts applied research and develops accurate data on farm operations for use in business management courses. Cultchless seed production training is provided for setting on microcultch and nursery operations. The hatchery offers products for commercial aquaculture including larvae, cultchless seed and spat on shell.

The Remote Setting Training (RST) program is a project with ORP and UM Extension. Setting tanks in nine locations around the bay are available to leaseholders in two-week periods from June through August. Growers provide clean, aged and containerized shell and labor to move it and clean the system at the end of the setting period. Larvae and technical assistance are provided free, with follow-up visits by staff to calculate setting success.

Contacts: Stephanie Alexander, 410-221-8310;
tobash@hpl.umces.edu
Remote Setting scheduling: Steven Weschler, 410-221-8357;
sweschler@umces.edu
Cultchless Seed Operations: Stacey Willey, 410-221-8330;
swilley@umces.edu
Demonstration Oyster Farm: Shannon Hood 410-221-8225;
shood@umces.edu

Website: <http://hatchery.hpl.umces.edu/>

Facebook: <https://www.facebook.com/Horn-Point-Laboratory-Oyster-Hatchery-105211906226392>

Federal Agencies

National Oceanic and Atmospheric Administration (NOAA)

A federal agency providing services including weather, fisheries management, coastal management and marine commerce. Two NOAA offices provide services to support development of aquaculture in the Chesapeake and coastal bays.

NOAA Aquaculture Office

The office assists in developing marine aquaculture to create jobs and spur business development in coastal communities leading to safe and sustainable seafood. The agency recognizes that aquaculture is one of the technologies needed to meet our increasing demand for seafood, support commercial and recreational fisheries, restore depleted species and protect and enhance marine habitat.

The Aquaculture Office assists with permitting, especially through complicated layers of federal regulations and the complex application, review and approval processes. The Office oversees aquaculture grant programs that are announced periodically.

The NOAA Aquaculture Office is located at the Silver Spring, MD headquarters while the Regional Coordinator for Maryland is at the Greater Atlantic Regional Fisheries Office (GARFO) in Gloucester, MA. His contact information is:

Contact: Kevin Madley, Stakeholder Management Division;
Phone: 978-282-8494; Email: kevin.madley@noaa.gov
Website: <http://www.greateratlantic.fisheries.noaa.gov/sed/aquaculture/index.html>

NOAA Chesapeake Bay Office

The NOAA Chesapeake Bay Office (NCBO) is located in Annapolis. It has funded projects to expand shellfish aquaculture including partnering with state agencies and institutions to restore tributaries with self-sustaining oysters and to rebuild the industry in Maryland and Virginia. The Office developed an Oyster Data Tool to aid growers in identifying suitable locations for leases to produce shellfish. Data sets include information from the National Ocean Survey and related marine sources.

The CBO is organized into three programs: *Ecosystem Science*, *Coastal and Living Marine Resources*, and *Environmental Literacy*.

Contact: Bruce Vogt; Phone 410-267-5655;
Email: Bruce.Vogt@noaa.gov
Website: <http://chesapeakebay.noaa.gov/>

Financing

Maryland Agriculture and Resource Based Industries Development Corporation

MARBIDCO is an agricultural lending agency administering funds to develop shellfish aquaculture. These include general funds from the legislature and from the Department of Natural Resources to provide affordable financing to watermen and others to start or expand shellfish aquaculture. University of Maryland Extension (UME) contributes by providing training and individual assistance to develop applications. MARBIDCO funds are available to growers, although some require the applicant to hold a Tidal Fish License (TFL).

The Shellfish Aquaculture Financing Fund can provide up to \$300,000 for growers to obtain larvae, seed, shell, capital equipment, cages and/or floats for culturing oysters. Quarterly interest payments are required but, if kept current, is rewarded with forgiveness of a certain percentage of principal.

The Remote Setting Shellfish Aquaculture Financing Fund provides affordable financing to commercial watermen to start or expand setting operations. UME participates by providing training and business planning to growers. Eligible expenses for loans include tanks, pumps, blowers, valves, heaters, larvae and shell for carrying out spat on shell seed production.

Contact: Steve McHenry; Phone 410-267-6807 (office);

Email: smchenry@marbidco.org

Website: <http://www.marbidco.org>

Southern Maryland Agricultural Development Commission (SMADC)

SMADC provides a number of programs for developing agriculture from Anne Arundel through St. Mary's counties. Among these are a Revolving Loan Fund for Agricultural and Shellfish Aquaculture Producers. Loans range from \$10-20,000 for the foundation and expansion of shellfish aquaculture. The program partners with MARBIDCO and borrowers can obtain a partial loan forgiveness with on-time payment during its term. See the contact information for MARBIDCO to obtain additional information on the program.

Farm Service Agency

The US Department of Agriculture's Farm Service Agency (FSA) provides a range of support programs that can be applied to shellfish aquaculture. Special ones are targeted at new farmers, with ten years or less of production experience, minority and women and youth. Low interest loans can be obtained for the purchase of a range of equipment including freezers, ice machines, vehicles, storage buildings and related items that support farming operations.

FSA provides low or no cost crop insurance for catastrophic losses due to area-wide environmental conditions. These are principally for contained gear growout operations where accurate data can be kept on inventory.

Contact: FSA State Office is located at 339 Busch's Frontage Rd, Suite 104, Annapolis MD. Phone 443-482-2760; Website:

<https://www.fsa.usda.gov/state-offices/Maryland/index>

Local offices are in each county; consult your directory.

USDA Natural Resources Conservation Service

NRCS operates the **Oyster Bed Restoration and Management** program through their Environmental Quality Incentives Program (EQIP). This provide financial and technical assistance to applicants to restore oyster beds in lease sites in Maryland's Chesapeake Bay. The program supports conservation practices to develop oyster habitat. NRCS will work with you to determine which suits your objectives. NRCS requires farmers to establish a base at least 2 inches thick using oyster or clam shell but does not pay for deposition of seed oysters on grounds.

Oyster shell was used to establish submerged land leases but is now in short supply due to decline in processing that provided shucked product and increased demand for shell to build sanctuaries, public reefs and leases. Ocean clam shell can satisfy the requirement for an EQIP project however the grower must calculate the delivered cost accurately for profitability.

Participants can perform their own dredging or select a dredge operator from the Oyster Recovery Partnership list of approved contractors. The program seeks to rebuild habitat to benefit coastal waters. **For information contact your county NRCS office.**

US Small Business Administration (SBA)

SBA is an independent agency of the federal government to provide a range of services to build small businesses in the US. These include information to start, build and manage successful operations. They also provide guarantees for loans from local banks to make them more secure for the lending unit. They offer a wide range of assistance that can be obtained at the local level. Offices offer accessible service locally and regionally.

One SBA program is the Service Corps of Retired Executives (SCORE) which provides experienced business professionals who offer service to those seeking to manage their business better. SCORE has local offices that can be accessed through the SBA website.

Contact: Stephen D. Umberger, District Director, Baltimore District Office, 100 S Charles Street #1201, Baltimore MD 21201; Phone: 410-962-6195

Website: <http://www.sba.gov/>

USDA Rural Development

US Department of Agriculture Rural Development improves the economy and quality of life in rural America through programs supporting loans through banks, credit unions and community-managed lending pools. They offer technical assistance and information to agricultural producers and cooperatives to start and improve operational effectiveness.

USDA Rural Development administers loans, loan guarantees and grants through their programs by helping rural individuals, communities and businesses get the financial and technical assistance needed to address their needs. Shellfish aquaculture businesses are often located in areas considered to be rural so this agency may provide means of getting assistance to build processing plants and other capacity to provide economic growth and expand employment in these areas.

Contact: Denise Lovelady, State Director (Delaware/Maryland),
1221 College Park Drive, Suite 200, Dover, DE 19904;
Phone: 302-857-3580

Website: <http://www.rd.usda.gov/md>

Grants, Research and Development

Maryland Industrial Partnerships (MIPS)

MIPS is operated by the University of Maryland to accelerate the commercialization of technology by funding Research and Development projects jointly between companies and UMD faculty. MIPS funds are matched by participating companies for high quality university-based research projects. MIPS projects help companies find solutions to technical challenges by developing products, processes and training. MIPS projects are carried out by university faculty and graduate students in conjunction with company researchers.

MIPS staff suggests you contact them to meet before developing a proposal so they become familiar with your company and its needs. They will advise you on how to plan and write your proposal and assist in submitting the application while identifying quality researchers to carry it out to conclusion. MIPS proposals are accepted for reviews twice annually, during May and October. See their website for application procedures.

Staff:

Joseph Naft, Director; Phone: 301-405-3892; Email: jnaft@umd.edu

Ronnie Gist, Manager; Phone: 301-405-3890; Email: rgist@umd.edu

General contact: Maryland Industrial Partnerships (MIPS), 2100 Potomac Building, University of Maryland, College Park MD 20742; phone: 301-405-3891; fax: 301-314-2658

Website: <http://mips.umd.edu>

Northeastern Regional Aquaculture Center (NRAC)

The Regional Aquaculture Center (RAC) program was established by Congress and is administered by the US Department of Agriculture. The Northeastern RAC is located within the College of Agriculture and Natural Resources at the University of Maryland. The Center carries out research and extension education to enhance the region's aquaculture industry. The Board of Directors guides the way for multi-state research and extension projects through Center activities to advance the aquaculture industry. Programs must be multi-state to be considered with a call for proposals issued annually.

NRAC has carried out many shellfish projects in the region and provides a range of technical publications on its website.

Contact: **Dr. Reginal Harrell**; Director, Phone: 301-405-6511; Email rharrell@umd.edu

Sharon Adams; Coordinator, Phone: 301-405-6917; Email ssadams@umd.edu

Website: <https://agresearch.umd.edu/nrac>

Industry Associations

East Coast Shellfish Growers Association (ECSGA)

The ECSGA represents shellfish farmers from Maine to Florida and informs policy makers and regulators about the needs of the industry to protect businesses for this environmentally beneficial industry. ECSGA provides input into federal issues affecting shellfish farmers and organizes an annual "Walk on the Hill" to visit congressional offices. They developed a manual on Best Management Practices for East Coast Shellfish Farmers with

NRAC funding that has been adopted as official BMPs for Maryland. Dues for voting members are based on gross annual sales with other member classifications being non-voting. The Board of Directors represents all East Coast states.

Contacts: Bob Rheault, Executive Director,
Phone: 401-783-3360; Email: Bob@ecsga.org
Website: <http://www.ecsga.org>

Southern Maryland Oyster Growers Association

This organization represents growers in the Southern Maryland area, from Anne Arundel through St. Mary's counties, and has been active in supporting growth of the industry in that region. They meet to discuss issues pertaining to shellfish culture including laws and regulations, permitting, protection and marketing. The Association regularly provides recommendations for outreach programs and statewide conferences.

Contact: Brian Russell, President; Phone: 240-538-1336;
Email: btr1286@verizon.net

Maryland Farm Bureau

The Farm Bureau is highly effective in working with legislative bodies from the local to national level and provides members with information on issues that affect them. Members join at the local county level and may bring topics to the organization that are debated and voted on at state and national conventions to adopt policy. The MFB also offers benefits such as discounts on equipment, insurance, product and services to members.

National advisory groups provide the Farm Bureau with informed input from those in industry. Maryland has been represented on Farm Bureau advisory boards by shellfish growers in the past and the organization has supported aquaculture as a component of the state's agriculture industry. Member applications are provided through the state website.

Contact: Valerie Connelly, Executive Director,
Phone: 410-922-3426, Email: vconnelly@mdfarmbureau.com
Website: <http://mdfarmbureau.com>

Non-Governmental Organizations

Oyster Recovery Partnership (ORP)

ORP is a leading nonprofit organization dedicated to restoring oysters in Chesapeake Bay. Public and private sources of funds are directed towards projects aimed at restoration and commercial production. ORP partners with UME and the Horn Point Hatchery in operating the Remote Setting Training (RST) Program and has a field station at HPL that includes cultch storage, aging and processing, manufacturing shell bags and handling hatchery seed for large volume projects including sanctuary development, restoration of public harvest areas and private leases. Funding agencies include NOAA, the US Army Corps of Engineers and MD Department of Natural Resources.

ORP coordinates shell and seed sales for the Horn Point Hatchery. Larvae can be picked up at the hatchery or can be shipped to growers via overnight delivery providers. ORP offers new or prospective leaseholders the opportunity to have their grounds surveyed by sidescan sonar. This provides accurate information that is used for more effective renovation of grounds, as well as accurate planting and management. ORP can also arrange for growers to have oysters analyzed for the presence and intensity of Dermo, a disease that can cause devastating effects to a crop. These services are currently provided at no cost to the leaseholder.

Information can be obtained on prices and approved payment methods for larvae and seed, or information on participating in the Remote Setting Training program is available on their website. ORP retains the right to modify prices and conditions as necessary to reflect market and other considerations.

Current prices on larvae, seed and shell sale is available at:

<https://oysterrecovery.org/aquaculture/>

Contact: Kelley Barnes; Phone 443-990-4970;

Email: kbarnes@oysterrecovery.org

For Remote Setting Training program information Email:

remotesetting@umces.edu

Regulatory Leasing and Permitting

Maryland Department of Natural Resources Aquaculture and Industry Enhancement Division

The Aquaculture and Industry Enhancement Division processes aquaculture lease applications. Responsibilities include: Shellfish Import Permits, Shellfish Aquaculture Harvester Permits and Registration Cards, Shellfish Nursery Permits, Lease Transfers, Monthly harvest reports, annual lease reports, operating the Aquaculture Review Board and administration of the Aquaculture Coordinating Council.

Aquaculture Division Contacts:

Karl Roscher, *Director*

Phone: 410-260-8313

Email: karl.roscher@maryland.gov

Katie Busch, *Deputy Director*

Phone: 410-260-8342

Email: kathryne.busch@maryland.gov

Rebecca Thur, *Leasing and Permitting Program Coordinator*

Phone: 410-260-8252

Email: rebecca.thur@maryland.gov

Maude Morris, *Leasing and Permitting Reviewer*

Phone: 410-260-2401

Email: maudee.morris@maryland.gov

Alyssa Cranska, *Leasing and Permitting Reviewer*

Phone: 410-260-2405

Email: alyssa.cranska@maryland.gov

Nathaniel Warning, *Field Operations Manager*

Phone: 410-260-8652

Email: nathaniel.warning@maryland.gov

Steve Schneider, *Field Operations Staff*

Phone: 410-260-8329

Email: steven.schneider@maryland.gov

Kari Bradberry, *Administrative Coordinator*

Phone: 410-260-8648

Email: kari.bradberry1@maryland.gov

Information and applications for Division programs:

<http://www.dnr.maryland.gov/fisheries/pages/aquaculture/shellfish.aspx>

DNR Shellfish Aquaculture Lease Siting Tool

The Maryland Aquaculture Siting Tool is an interactive online map viewer designed to assist industry and resource managers in planning and applying for shellfish aquaculture leases or similar projects while minimizing potential conflicts with existing commercial and recreational users and avoid environmentally sensitive areas. It is meant to help users make better informed decisions regarding the siting of shellfish aquaculture leases but does not provide a guarantee that a lease will be issued in the exact location chosen due to a variety of potentially modifying issues. All lease application materials submitted in conjunction with the use of this mapping tool are subject to complete review through the joint State/Federal review process for commercial shellfish aquaculture leasing. The tool is available free of charge but users must register by completing a form before use.

Siting tool website:

<http://dnrweb.dnr.state.md.us/fisheries/aquatool/aquatool.asp>

U.S. Army Corps of Engineers, Baltimore District

The Army Corps is responsible for regulating activities in tidal waters and adjacent land areas. Corps authorization is required for the placement of structures or other work in navigable waters. Leaseholders must obtain a permit from the Corps in addition to holding a valid shellfish lease prior to developing or managing their aquaculture location. While leases are issued for twenty year terms, Corps permits are issued for a five year period and must continue to be renewed to remain in effect.

Aquaculture leases are handled through a joint permit process with the State of Maryland. When submitting a lease application, you should only submit it through the DNR Aquaculture and Industry Enhancement Division (see prior listing). For permits requiring more stringent federal review, the Corps coordinates with other agencies to gather comments to gain final approval.

Contact: Woody Francis; Phone (410) 962-5689;

Email: woody.francis@usace.army.mil

Website:

<http://www.nab.usace.army.mil/Missions/Regulatory/Aquaculture.aspx>

Protection and Enforcement

MD Natural Resources Police (NRP)

Today's modern force patrols the state with missions that range from protecting natural resources and state parks to homeland security. The NRP has vessels stationed in many waterfront locations and can assist you in preventing theft or destruction of your shellfish lease property. As a leaseholder, you are urged to meet and get to know your local NRP officers and inform them of where your lease(s) are located, as well as your contact information if they should need you.

If you find or know of someone illegally harvesting from your lease, damaging markers, tampering with gear or otherwise interfering with your rights as a leaseholder, contact the NRP immediately.

24 Hour Communications and Dispatch 410-260-8888

Report Suspicious Activity 800-628-9944 or VHF Channel 16

General Information: 410-260-8880

Emergencies: 410-268-8888

Catch-A-Poacher: 1-800-635-6124

Website: <http://www.dnr.state.md.us/nrp/>

Shellfish Sanitation

Maryland Department of the Environment (MDE)

MDE field crews monitor shellfish growing waters on a regular basis to certify that they are safe for human use. Potential problems include sewage treatment facility discharges and bypasses from wastewater pumping stations, failing septic systems and runoff from developments. MDE monitors nine hundred stations in state waters for potential contaminants and bacteria and offers information on water quality, approved harvest areas, and the latest closure notices on their website.

Website:

<http://mde.maryland.gov/programs/Marylander/fishandshellfish/pages/index.aspx>

Contact: Kathy Brohawn; phone 410-537-3608; email: kbrohawn@mde.state.md.us

Shellfish Shipper Licensing and Plant Inspection

Maryland Department of Health (MDH)

Shellfish growers interested in selling products directly to consumers, rather than through a broker, must possess a Shellfish Shipper license and undergo training to obtain the skills needed to assure delivery of healthy and quality products. MDH, in cooperation with UMD Extension, holds annual training in developing Hazard Analysis Critical Control Point (HACCP) plans so that shippers understand the regulations and requirements for handling safe seafood.

If you want to process fish or shellfish, the processing facility must be inspected and permitted by the MDH. To operate as a new food processing plant, a written plan is required. When approved, an inspection will be conducted. Upon approval, you will receive and complete a license application. Existing food processing facilities must comply with Maryland health regulations to ensure that only healthy products are being offered for sale to the consuming public.

Contact: Kim Coulbourne, Office of Food Protection

Mobile: 443-690-3106; Email: kim.coulbourne@maryland.gov



Horn Point Oyster Hatchery operations from wild broodstock collection through spawning and single seed production

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