



**Manila Clam Evaluation Tool**

To be used in conjunction with the Food Alliance Whole Shellfish Farm Evaluation Tool. Can be used for other clam species such as littleneck clams, cockles or butter clams.

|                             |  |
|-----------------------------|--|
| <b>Operation Name:</b>      |  |
| <b>Address:</b>             |  |
| <b>Evaluation Date:</b>     |  |
| <b>Evaluator/Inspector:</b> |  |

**Scored Evaluation Criteria:** To have manila clam production certified by Food Alliance, an operation must score an average of 3.0 out of 4 overall in the 3 areas listed below:

**Healthy and Humane Care for Shellstock**

Cultural Conditions (growout)

Holding and Handling Operations and Facilities (nursery and growout)

**Production and Culture System Management**

Habitat Protection of Growout and Buffer Areas

Harvest Management

**Pest Management**

Predator Management (growout)

Noxious Weed Management (growout)

IPM Planning (aquatic -- where chemicals are needed for control of *Spartina*)

Pesticide Selection and Justification (aquatic - where chemicals are needed for control of *Spartina*)

Lowest Effective Application Rates / Reducing Application Rates (aquatic - where chemicals are needed for control of *Spartina*)

Weather Monitoring (aquatic - where chemicals are needed for control of *Spartina*)

Application Equipment Calibration and Pesticide Drift Management (aquatic - where chemicals are needed for control of *Spartina*)

Pesticide Recordkeeping (aquatic - where chemicals are needed for control of *Spartina*)

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## Instructions for Use

1. Production practices are evaluated according to Food Alliance criteria (listed on the following pages of this document) and then ranked in a 4-step process from Level 1 to Level 4: Points are only earned for the highest Level achieved.
2. Scoring partial points is allowed. Example: Half of a farm employs predator protection devices that increase benthic access for other species. You may score 2.5 points or half the increase between Level 2 and Level 3 as a result.
3. No points are earned for a criterion that is not applicable (N/A) to the operation or region.
4. For producers reviewing this evaluation tool: The scorecard at the end of this document identifies the minimum number of points required to be considered for certification. This is only a guideline for your use and does not guarantee acceptance of your application.
5. Inspectors should make notes on each criterion describing how they arrived at decisions, including means used to verify all specific producer claims. These notes will provide important background which will be carefully considered in the final certification decision. A section for notes is also included at the end of this document. Please make note of any sections that were not applicable and the reason. Also include any Best Management Practices (BMPs) implemented by the producer that are not listed in this inspection tool.

## Healthy and Humane Care for Shellstock

### Culture Conditions (growout)

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**Level 1:** All legal requirements and industry association standards (if any) are met for space/ stocking rate. All the following apply:

- Manager is aware of legal requirements/industry standards.
- Manager can explain how operation meets those requirements.

**Level 2:** As per Level 1, animals are planted in suitable habitats. All the following apply:

- Substrate is assessed prior to planting for suitability.
- Water quality, water currents, and wind wave conditions are assessed prior to planting.
- Other (please specify):

**Level 3:** As per Level 2, trampling and heavy equipment beaching/driving is avoided. If bags are used proper planting densities and depth are maintained. All the following apply:

- Producer/manager takes care to avoid the crushing of shellstock from repeated footfalls.
- Heavy equipment (vessels, barges, tractors) is not repeatedly beached/driven on top of shellstock.
- Proper growout densities are maintained to reduce food-related stress.
- If growout bags are used, depths are maintained to provide refuge from stressors such as extreme temperatures.
- Other (please specify):

**Level 4:** Animals spend most of their growout phase uninterrupted by footfalls, beaching, and driving. Growth and survival of the clams indicate adequate food levels for the entire population during growth seasons. A written plan is available to describe these operations.

### Score:

### Verification methods and notes:

### Holding and Handling Operations and Facilities (nursery and growout)

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**Level 1:** Animals are handled carelessly. There is no regard to reducing time to temperature (cooling) after harvest beyond what is required or preventing body damage during planting and harvest.

**Level 2:** Animals are handled with care. There is little sign of shell breakage during times of harvest and at handling facilities.

**Level 3:** As per Level 2, and growers/operators/harvesters are well trained and understand the factors that cause stress or injury to the clams in culture. Facility maintenance and design are effective in reducing stress and injury. All the following apply:

- Grower/operator can discuss stress factors to watch out for such as shell gape.
- Grower/operator can discuss facility maintenance and design such as cleanliness, etc. that may result in injury/disease to animals.
- Animals are not showing stress (e.g., a low percentage of shell gape).
- Clams are processed and moved to storage facility (sink float, upland tank storage, refrigeration) within 24 hours after they are removed from the sediment.

**Level 4:** As per Level 3 and holding and transport facilities match the natural conditions (e.g., temperature, salinities, etc.) of the animals and grower/operator can discuss/document the features. All the following apply:

- Holding and transport facilities are kept at cool temperatures and records are available to document this action.
- Holding facilities are either sink floats or incorporate cool and properly maintained recirculating or flow through saline salt-water holding tanks.
- Producer has a written operations plan and identified handling procedures manual.
- Shell gape frequency is recorded and ways to decrease shell gape and increase shelf life are explored.
- Other (please specify):

**Score:**

**Verification methods and notes:**

## Production and Culture System Management

### Habitat Protection of Grow-out and Buffer Areas (growout)

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**Level 1:** Manager has no plan for protecting Endangered Species Act (ESA) listed species and Essential Fish Habitat (EFH) such as submerged aquatic vegetation (SAV), and to document spawning grounds beyond what is required by law.

**Level 2:** EFH buffers exist, are maintained and can be documented. Buffer is appropriate to site and environmental conditions. Management plan is minimal or nonexistent. Check all that apply:

- SAV does not appear to be trampled/destroyed/removed.
- Presence of documented forage fish (pacific herring, sand lance, surf smelt) spawning ground is researched.

As per Level 2, manager can describe how the farm management plan specifically protects EFH areas. All the following apply:

- SAV areas are visually monitored annually.
- Documented forage fish spawning areas are known and protected during spawning periods.
- Production is managed to protect or enhance EFH.
- Nets/bags are not placed over areas containing native eelgrass.
- Buffers between farm operations and native eelgrass are set at 10 feet or more and are based on surveys conducted prior to planting.
- Staging areas or paths are avoided in areas containing native eelgrass.
- Other (please specify):

**Level 4:** As per Level 3, and a written production management plan specifically considers EFH areas and their enhancement or maintenance in good condition, which include (at least 2 apply):

- SAV is annually systematically monitored and mapped. This knowledge is spread to farm employees. This information is also used to make management decisions to better protect the SAV resource.
- Farm manager participates in forage fish spawning surveys (state, federal, or provincial).
- Other (please specify):

**Score:**

**Verification methods and notes:**

**Harvest Management**

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**Level 1:** All laws and regulations are followed but manager does not have harvest guidelines/ plans.

**Level 2:** All laws and regulations are followed, and at least 2 of the following apply:

- Trainings are conducted to increase efficiency and to reduce shell breakage during harvest.
- Harvesting is restricted to the first 8 inches of the substrate to reduce possible benthic impacts.
- Engines for compressors, pumps and/or mechanized harvesters are selected or muffled to reduce noise levels, especially during nighttime harvests.
- Harvest activities are conducted to avoid conflicts (e.g., sedimentation when using water jets to free up bags) with documented forage fish spawning grounds and native eelgrass.

**Level 3:** As per level 2, and all from Level 2 apply. Pre-harvest site evaluations are conducted where harvest sites are marked to assure an effective/targeted harvest.

**Level 4:** As per level 3, and a written harvest plan is available and periodically updated to reflect current science, regulations, and recommendations.

**Score:**

**Verification methods and notes:**

**Pest Management**

**Predator management (growout)**

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**Level 1:** Predators (Scoter ducks, crab, starfish, moon snails, etc.) are routinely destroyed when found on the farm site. No anti-predation devices are employed.

**Level 2:** Anti-predator devices such as netting, or bags are employed to reduce predation. Devices are selected with no regard to benthic access and tanglement issues for other species. Benthic predators are not routinely destroyed. When anti-predator devices are ineffective, predators are relocated or destroyed. If predators are destroyed, producer/manager can explain why removal from the farm and relocation to other areas in the water body is ineffective for controlling predators.

**Level 3:** Devices are selected so other species have access to the benthic environment (via bag spacing, mesh size, etc.) while still providing protection to the farmed clams. When anti-predator devices are ineffective, predators are relocated or destroyed. If predators are destroyed, producer/manager can explain why removal from the farm and relocation to other areas in the water body is ineffective for controlling predators. All the following apply:

- Anti-predator devices are laid out in an orderly fashion.
- Anti-predator devices are maintained to prevent loss of material and to improve efficacy.
- Anti-predator devices are removed when no longer useful.

**Level 4:** As per Level 3, and manager cooperates in research of alternative anti-predator devices and allows testing of alternative anti-predator devices on grower-supplied areas in an effort to increase benthic access and farm production.

**Score:**

**Verification methods and notes:**

- N/A: The following 7 criteria are not applicable because no chemicals are applied to the aquatic environment.

**Noxious Weed Management (growout)**

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**Level 1:** Herbicides are applied every year to the same noxious weeds or all conspicuous weed species at the same place.

**Level 2:** Every 2 or more years an inventory is taken or monitoring activity is performed to determine location of new noxious weed infestations and effectiveness of previous year's treatment methods. Herbicides are used only after areas are scouted.

**Level 3:** As per Level 2, and every year an inventory is taken or monitoring activity is performed to determine location of new noxious weed infestations and effectiveness of previous year's treatment methods. Herbicide use is limited to targeted/spot applications.

**Level 4:** As per Level 3, and yearly evaluation of noxious weed infestations is performed consistent with a written noxious weed control plan that includes 3 or more of the following items. Herbicides are only used when conditions are assessed and only with carefully timed and targeted applications. All the following apply:

- Regular inventory and monitoring done to determine location of new noxious weed infestations and effectiveness of last year's treatment methods.
- Monitoring information used to plan current year's noxious weed control and at least two or more years into the future, specifically target small new infestations where treatment takes least resources, is most effective and very low costs.
- Control methods applied based on plant phenology, so they have the most impact on target weed.
- Other (please specify):

**Note:** If area is relatively free of noxious weeds, manager must be aware of potential problems, and monitor the area regularly. They must also have a plan to control calling for some of the elements in Level 4 in order to score at Level 4:

**Score:**

**Verification methods and notes:**

## **IPM Planning (aquatic - where chemicals are needed for control of *Spartina*)**

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**Level 1:** New plantings are established without plans to prevent pests. For ongoing pest control, corrective measures are emphasized rather than preventive.

**Level 2:** Crop losses to pests are reduced by the planned use of preventive measures. Managers have a written farm plan detailing the following provisions or can communicate the methods they use for monitoring pests and their phenology, weather, and can identify pest management decisions based on this monitoring. Field scouting is practiced by farm staff and/or required crop-specific consultants. Evidence of the following practices are discussed or observed. All the following apply:

- At least twice yearly monitoring activities are performed to determine location of new pest infestations and effectiveness of previous year's treatment methods (see monitoring below).
- More frequent monitoring for problems, areas of concern.
- Other (please specify):

**Level 3:** As per Level 2, and farm managers prepare yearly written farm plans where farms are mapped using available GPS coordinates, parcel maps, and/or farmer drawn maps detailing all the following:

- Specific location
- Cultivation activity
- Crop type
- Cultural method
- Pest densities
- Treatment tactics

**Level 4:** As per Level 3, and the farm plan must detail all pest management-related procedures (experiments, monitoring, and treatment) employed in the last 3 years, and planned procedures for 3 years into the future.

### **Score:**

**Verification methods and notes:**

## **Pesticide Selection and Justification (aquatic - where chemicals are needed for control of *Spartina*)**

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**Level 1:** All the following must apply:

- Manager can show that only pesticides registered in the state/province as approved for target pests and crop are used.
- Pesticide mixtures prohibited by the label are not used.

**Level 2:** For applications made using equipment covering larger areas, i.e., aerial applications, pesticide selections and recommendations are made by licensed applicators and/or licensed consultants.

**Level 3:** As per Level 2, and the timing of applications and selection of pesticide materials correspond with scouting records or monitoring.

**Level 4:** When a control measure is deemed necessary, every effort is made to use reduced toxicity pesticides (labeled "Caution"), beneficial organisms, and/or cultural controls.



**Score:**

**Verification methods and notes:**

**Lowest Effective Application Rates / Reducing Application Rates (aquatic - where chemicals are needed for control of *Spartina*)**

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**Level 1:** Pesticide application rates are selected according to manufacturer's label.

**Level 2:** Reduced dosage strategies are employed when the target pest does not require complete coverage.

**Level 3:** Applications are chosen with a goal of reducing pesticide usage. At least 4 of the following apply:

- Application rates match the density and severity of the pest problem.
- Application rates consider the preservation of beneficial organisms.
- Application rates consider the age of the crop.
- Applications are made using border spraying.
- Producer/manager/crop consultant tracks the number/frequency of applications made.
- Applications are made using novel spray technology.
- Applications are made using spot applications.
- Applications are made using GPS-based and/or surveyed and detailed maps of beds and associated pest population.
- Other (please specify):

**Level 4:** At least 5 of the above apply and synthetic pesticides are not used. All pesticide (synthetic and organic) toxicity rankings are maintained with pesticide records and tabulated annually to indicate progress in reducing overall use of high toxicity pesticides.

**Score:**

**Verification methods and notes:**

**Weather Monitoring (aquatic - where chemicals are needed for control of *Spartina*)**

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**Level 1:** Weather is not monitored.

**Level 2:** Important weather parameters are monitored on site or a site-specific weather service is employed. Pesticides are not applied when weather conditions are not appropriate (e.g., wind or precipitation episodes are expected.).

**Level 3:** As per Level 2, and weather data is used to schedule pesticide applications for weather-dependent pests (phenology or degree day models).

**Level 4:** As per Level 3, efficacy and weather data are collected and available to outside entities (e.g., researchers, extension agents).

**Score:**

**Verification methods and notes:**

**Application Equipment Calibration and Pesticide Drift Management (aquatic - where chemicals are needed for control of *Spartina*)**

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**Level 1:** Application equipment that can be calibrated (pesticide application equipment) is calibrated less than once per year. Applications are made only with equipment designed for that use. Nozzles are checked and replaced when necessary.

**Level 2:** As per Level 1, and all the following apply:

- Products are mixed according to label directions.
- Application equipment is calibrated at the start of each season, if designed to be calibrated.
- Surfactants are used to minimize drift when recommended by the label.
- Applications are made only under weather conditions that minimize off-site movement (e.g., low wind speed, not raining).

**Level 3:** As per Level 2, and spot applications are used exclusively, or all the following:

- The method of calibration is communicated to the inspector via written calibration records or verbal description. **Note:** Inspectors must feel confident that the method of calibration is adequate. Provide notation as to calibration methods used.
- If a party other than the farmer/manager applies aquatic pesticides on the operation, farmer/manager obtains and keeps copies of application.

**Level 4:** As per Level 3, and at least one of the following:

- Application equipment is calibrated more than once per season or uses technology that continuously calibrates.
- Technology is employed to keep particle size above 150 microns, depending on the type of equipment and pesticide used.
- Pesticide application equipment is selected and maintained for site-specific conditions.

**Score:**

**Verification methods and notes:**

**Pesticide Recordkeeping (aquatic - where chemicals are needed for control of *Spartina*)**

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**Level 1:** Manager can show that all legal requirements for pesticide record keeping are met. USDA requires, and states enforce, the following records for all applications of restricted use pesticides: name of applicator, date, field location or area, area treated including GPS-based maps of bed location, pesticide name, and EPA registration number, total amount applied, and crop.

**Level 2:** As per Level 1, and pesticide application records taken by a commercial company or the owner-manager are maintained on site and include all the following:

- Crop growth stage.

- Pest growth stage including densities.
- Purpose of the pesticide treatment (i.e., target pest).
- Threshold used to guide pesticide treatment.
- Current weather data, e.g. weather conditions on day of application.
- Effectiveness of pesticide treatment.
- Current weather data during treatment.
- Calibration records are maintained for upland applications and are available from the commercial applicator.
- If commercial companies apply pesticides on this operation, those records are requested and maintained on site.

**Level 3:** As per Level 2, and pesticide records are kept for longer than 3 years. Grower can relate how records are used year-to-year to examine trends and aid management decisions.

**Level 4:** As per Level 3, and pesticide records include detailed GPS-based maps of all beds in cultivation, as described under crop monitoring. Producer/manager can relate any changes or trials in pesticide use, such as reduction, elimination, alternative pesticide or alternative application techniques.

**Score:**

**Verification methods and notes:**

### Scorecard

| CRITERIA  | SCORE/LEVEL |
|---|-------------|
| <b>Healthy and Humane Care for Shellstock</b>   |             |
| Living Conditions (growout)   |             |
| Hazard Reduction and Sanitation (growout)   |             |
| <b>Production and Culture System Management</b>   |             |
| Grow-out and Buffer Areas (growout)   |             |
| Harvest Management  |             |
| <b>Pest management</b>  |             |
| Predator Management (growout)   |             |
| Noxious Weed Management (growout)   |             |
| IPM Planning (aquatic -- where chemicals are needed for control of <i>Spartina</i> )  |             |
| Pesticide Selection and Justification (aquatic - where chemicals are needed for control of <i>Spartina</i> )                            |             |
| Lowest Effective Application Rates / Reducing Application Rates (aquatic - where chemicals are needed for control of <i>Spartina</i> )  |             |
| Weather Monitoring (aquatic - where chemicals are needed for control of <i>Spartina</i> )   |             |
| Application Equipment Calibration and Pesticide Drift Management (aquatic - where chemicals are needed for control of <i>Spartina</i> ) |             |
| Pesticide Recordkeeping (aquatic - where chemicals are needed for control of <i>Spartina</i> )  |             |
|   |             |
| <b>Total points earned</b>  |             |
|   |             |
| <b>Total points available</b>   | <b>48</b>   |
| <b>Total points N/A</b>   |             |
| <b>(Total points available) – (Total points N/A) = Total applicable points</b>  |             |
| <b>(Total points earned) / (Total applicable points) = Average score</b>  |             |

## Acknowledgements

The evaluation criteria included in this inspection tool were developed using information from many sources, including\*:

British Columbia Ministry of Agriculture, Food and Fisheries, “BC Shellfish Aquaculture Code of Practice”, Final Submission, July 03, 2002.

National Organic Standards Board (NOSB), Livestock Committee, “Recommendation on 205.257 Molluscan Shellfish Standards,” September 9, 2009.

Pacific Coast Shellfish Grower’s Association” Environmental Codes of Practice for the Pacific Coast Shellfish Farmers”, January 2009.

Sustainable Shellfish, “Recommendations for responsible aquaculture”, Heather Deal, David Suzuki Foundation, 2005.

Taylor Shellfish, “Environmental Codes of Practice”, December 19, 2008.

United States Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, “Endangered Species Act – Section 7 Programmatic Consultation Biological and Conference Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation, Nationwide Permit 48 Washington” (State), April 28, 2009.

United States Fish and Wildlife Service, “Endangered Species Act -Section 7 Consultation, Biological Opinion, U.S. Fish and Wildlife Service Reference: 13410-2008-F-0461 , Nationwide Permit #48 for Shellfish Aquaculture, State of Washington”, March 2009.

Aquaculture on State Owned Aquatic Lands in Washington State, June 13, 2006.

Washington Department of Ecology’s Shellfish Aquaculture Regulatory Committee, “Guidelines for Geoduck Aquatic Operations”, Developed under the Authority of Section 4 of Second Substitute House Bill 2220 Chapter 216, Laws of 2007, January 2009, Publication no. 09-06-001.

Washington Department of Natural Resources, “Best Management practices (BMP’s) for Geoduck.

World Wildlife Fund’ “Draft Environmental and Social Standards for Bivalve Aquaculture,” February 1, 2010.

\*Not all practices from these sources were incorporated into the final draft of these evaluation criteria, so acknowledgement of their use does not constitute an endorsement of these criteria.

These evaluation criteria were developed in collaboration with Andrew D. Suhrbier, Senior Biologist with the Pacific Shellfish Institute, Olympia, WA., suhrbier@pacshell.org

Brian Kingzett, Blue Revolution Consulting Group, reviewed and provided comment on the evaluation criteria\*\*:

\*\*Not all reviewer comments and suggestions were incorporated in the final draft of these evaluation criteria, so recognition of their contribution does not constitute an endorsement.

Document Review:

|            |  |   |
|------------|--|---|
| 11/9/2018  | Complete document review, removed copyright notion, removed fillable form function, updated footer.                              | Completed by Shaila Cook, Certification Manager |
| 10/18/2022 | Complete document review, updated footer, corrected spacing/white space, converted to pdf fillable, added document review table. | Completed by Shaila Cook, Certification Manager |
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