

# Pacific oyster

*Crassostrea gigas*

## BIOLOGY FACT SHEET



Photo: <http://trialx.org>

## San Diego seafood profiles

### Taxonomic description

- Elongated, sculpted shell with rounded radial folds (wavy) [3].
- Shell is rounded with fluting when grown on hard substrate; oval, smooth on soft substrate
- Shell color is usually white with purple streaks & spots, inside of shell is white with a purple hue over muscle scar [1,2]
- Shell length is normally 10-15 cm (4-6'), but as long as 38 cm (15') [1]

### Distribution

- Occurs naturally in estuarine & coastal waters of Japan and Southeast Asia [1,2]
- Introduced around the world as a way to revive exploited oyster stocks [2]
- In No. America, it occurs from southeastern Alaska to Baja California

### Life history

- Can live up to 30 years, but fully mature and able to reproduce after 1 year [2]
- Grows 2.5 cm (1") per year. [3]
- Begins life as a male, but after a year functions as a female [3]
- Spawning is temperature dependent, usually occurring when warm (i.e., often summer breeders)
- Minimum reproduction temperature is 15° C (59° F), maximum temperature is 34° C (93.2° F) [3]
- Fertilization occurs externally, free-swimming larvae group together to find suitable habitats on which to settle. [3]

### Habitat

- Found in sheltered waters, from slightly above sea level to subtidal depths of 3 meters (9.8 ft) [3]

- Settles on hard surfaces, such as rocks, pier pilings, shells of adult oysters or other shellfish species [3]
- Filter feeder, feeds on phytoplankton & detritus in the water
- Predators include seastars, crabs, benthic feeding fish, and wading birds [3]

### References

- [1] Moore, T.O., J.D. Moore. 2008. Culture of oysters. Status of the fisheries report. California Dept. of Fish and Wildlife.
- [2] Nehring, S. 2011. NOBANIS – Invasive Alien Species Fact Sheet – *Crassostrea gigas*. – From: Online Database of the European Network on Invasive Alien Species - NOBANIS [www.nobanis.org](http://www.nobanis.org).
- [3] NIMPIS 2013, *Crassostrea gigas* reproduction and habitat, National Introduced Marine Pest Information System. [www.marinepests.gov.au/nimpis](http://www.marinepests.gov.au/nimpis)
- [4] <http://animals.nationalgeographic.com/>

### Did you know?

It is possible for members of the food oyster family, like this one, to produce pearls but they are in a different family than the pearl oysters [4].

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## FISHERY FACT SHEET



A bag of locally grown Pacific oysters

Photo: www.tastespotting.com

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### Seasonal availability

- Available year-round when farm-raised

### Managing authority

- Growing methods & product are regulated by federal, state & local agencies (e.g., Army Corps of Engineers (lead), NOAA, U.S. Fish & Wildlife Service, US. Dept of Agriculture, Food & Drug Administration, County Dept of Public Health) [i].
- Pacific Coast Shellfish Growers Association is an industry-based organization that includes & represents growers along the U.S. Pacific coast in establishing science-based farming practices, & ensuring environmental protection, shellfish safety, & support with regulatory, technology & marketing updates.

### Gear type

- Grown in trays submerged in a local embayment. Removed every 3 weeks, rinsed, and put in tumbler, which mimics wave action & breaks off the leading edge where shell

grows. When put back in trays, oyster repairs shell, resulting in a deeper, cupped shape shell & fatter oyster [ii]

- No fertilizers, chemicals or antibiotics added- food is naturally occurring phytoplankton.

### Status of the fishery

- Most U.S. farms produce their own juvenile oysters (called "seed") from selected broodstock [i].

### Potential ecosystem impacts

- Aquaculture reduces the pressure on local natural populations and limits the need for imported seafood.
- Shells are recycled for uses in the environment (e.g., nest material for endangered least terns or used in construction by humans) [ii]
- This oyster is potentially invasive in local ecosystems due to culinary preference of this Japanese species over the native (i.e., it is prevalent), fast growth and reproductive rates, and tolerance to a wide range of environmental conditions [ii, iii, iv]

- Potentially contributes to spread of other introduced species (e.g., Atlantic oyster drill)
- Improves water quality through its feeding activity which removes algae and particulates.

### References

- [i] FishWatch. 2013. Pacific oyster. NOAA FishWatch U.S. Seafood Facts. [www.fishwatch.gov/seafood\\_profiles/species/oyster/species\\_pages/pacific\\_oyster\\_farmed.htm](http://www.fishwatch.gov/seafood_profiles/species/oyster/species_pages/pacific_oyster_farmed.htm)
- [ii] Carlsbad Aquafarm. Prod. Brian Robles and Cindy Kendrick. Green-Scene, 2013. YouTube.
- [iii] University of California Davis. 1996. California Oyster Culture. California Aquaculture. University of California, Davis Department of Animal Science.
- [iv] Johnson, C.S. "A new oyster invades" <http://caseagrannews.org/2013/07/02/a-new-oyster-invades/> July 2013.
- [v] Washington Dept of Fish and Wildlife. 2013. <http://wdfw.wa.gov/fishing/shellfish/oysters/facts.html>

### Did you know?

It is a myth that oysters are poisonous during months without the letter "R" in them (summer months); a lot of energy is put into reproduction in these months leaving the meat too thin and watery for marketing [v].

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## NUTRITION FACT SHEET

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Oysters with chili and coriander

Recipe by Riaboo, OpenSourceFood.com

## San Diego seafood profiles

### Edible portions

- Entire contents of the shell

### Culinary uses

- Local oysters are available fresh; imported can be found canned, or frozen [3]
- Shucking, or opening, the oyster requires a special shucking knife inserted into the shell to pry it open, and to cut the hinge and adductor muscle in order to remove meat [e.g. 4].
- Many people prefer raw oyster, but they can also be roasted, steamed, fried, scalloped, stewed, baked, stuffed, boiled, marinated, poached and sautéed
- Used in various recipes, such as oyster stew, pan fried oysters, scalloped oysters with fennel, glazed oysters on crab and leeks, and chicken with oysters and straw mushrooms [e.g. 5]

### Description of meat

- The sweet and mild flavor is highly valued
- Has a salty kick with a delicious buttery texture

### Nutritional information

Raw (50g or 1.8oz) [1]

Nutrition Facts	
Serving Size 50 g	
Amount Per Serving	
Calories 41	Calories from Fat 10
% Daily Value*	
Total Fat 1g	2%
Saturated Fat 0g	1%
Trans Fat	
Cholesterol 25mg	8%
Sodium 53mg	2%
Total Carbohydrate 2g	1%
Dietary Fiber 0g	0%
Sugars	
Protein 5g	
Vitamin A 3%	Vitamin C 7%
Calcium 0%	Iron 14%
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.	
NutritionData.com	

### Seasonal availability

- Available farm fresh in San Diego year-round

### Toxicity report

- There are no reported contaminants from local farm raised oyster [6]; wild caught oyster from San Diego are not recommended for consumption without bay water quality and oyster toxicity analyses.

### References

- [1] Seafood Health Facts. Pacific Oyster, 2013. <[http://seafoodhealthfacts.org/seafood\\_choices/oysters.php](http://seafoodhealthfacts.org/seafood_choices/oysters.php)>.
- [2] Moore, T. 2008. Pacific Oyster, *Crassostrea gigas*. Status of the Fisheries Report 2008. California Dept of Fish & Wildlife. <http://dfg.ca.gov/serp.html?q=pacific+oyster&cx=001779225245372747843%3A3y4mp6j9ny&col=FORID%3A10&ie=UTF-8>
- [3] EDF Seafood Selector. 2013. Monterey Bay Aquarium Foundation. <http://seafood.edf.org/oysters>.
- [4] SeafoodTheAuthority, 2013. How to prepare Pacific Oysters. [www.youtube.com/watch?v=qchv\\_HrSHc](http://www.youtube.com/watch?v=qchv_HrSHc).
- [5] Pacific Coast Shellfish Growers Association, 2013. <http://pcsga.org/previewdns.com/recipes-nutrition/>.
- [6] The Super Green List. 2013. Monterey Bay Aquarium Seafood Watch. [www.montereybayaquarium.org/cr/cr\\_seafoodwatch/sfw\\_health.aspx](http://www.montereybayaquarium.org/cr/cr_seafoodwatch/sfw_health.aspx)
- [7] Main, E. 2013. 6 Surprising Facts about oysters. Rodale News. [www.rodale.com/benefits-eating-oysters-0?page=1](http://www.rodale.com/benefits-eating-oysters-0?page=1)

### Did you know?

Oysters are an aphrodisiac... maybe. Oysters contain more zinc than other foods, and zinc is a key mineral for sexual health in men (severe deficiency can lead to impotence). It is more likely, however, that the power of suggestion is stronger than any direct effect [7]!

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## CULINARY INFO SHEET

*Crassostrea gigas*

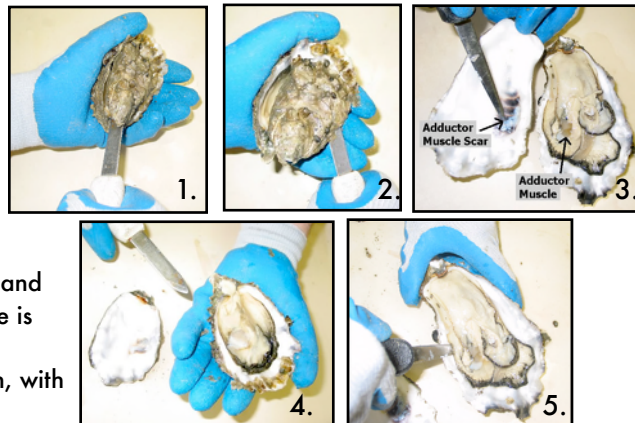
## STEP 1: SHUCK

### Tools:

- Shucking or oyster knife
- Garden gloves

### Method:

1. **TWO TECHNIQUES** are side-entry and hinge-entry shucking, presented here is the hinge-entry shucking method [1]
2. **POSITION** oyster cupped side down, with the hinge facing you (Fig.1).
3. **SEPARATE** Insert the tip of the oyster knife between the two shells where they join at the hinge (Fig. 1). Use a twisting motion to gently pry the shells slightly apart. Move the blade forward along the "roof" of the top shell and sever the adductor muscle where it joins the top shell (approximately the "2 o'clock" position, fig. 2,3). When the muscle has been severed, the top shell will "give" a little.
4. **PRY APART** Gently pry the top shell away from the bottom shell with the knife blade. With the shells just slightly apart, use the knife blade to gently scrape any remaining oyster tissue off the inner top surface of the shell. Remove the top shell (Fig. 4).
5. **FINISH** Move the knife blade underneath the oyster meat and cut the adductor muscle where it is attached to the bottom shell (fig. 5)



Photos: [http://wdfw.wa.gov/fishing/shellfish/oysters/how\\_to\\_schuck.html](http://wdfw.wa.gov/fishing/shellfish/oysters/how_to_schuck.html) [1]

## STEP 2: PREPARE

### San Diego seafood profiles

#### Starter | Chili & Coriander Oysters

Adapted from Riaboo; nibbledish.com [2]

### Ingredients (serves 6):

- 12 Fresh oysters
- 1 Red chili pepper, large
- 1/2 Cucumber, medium-sized
- 2 limes, juiced
- 1/2 cup fresh coriander
- 1 red onion, medium-sized
- 2 tbsp virgin olive oil
- salt & pepper to taste



Photo: [www.nibbledish.com/people/Riaboo/recipes/oysters-with-chilli-and-coriander](http://www.nibbledish.com/people/Riaboo/recipes/oysters-with-chilli-and-coriander) [2]

### Method:

1. De-seed the chili pepper, put it in a blender along with cucumber, onions, coriander, lime juice and olive oil. Blend for a few seconds to roughly chop.
2. Put the mixture in a bowl and add salt & pepper to taste.
3. Clean the oysters under running cold water using a brush to get rid of grit and sand.
4. Open the oysters and arrange on a large plate, then spoon the dressing on top.

Tip: Prepare the dressing ahead of time and refrigerate.

#### Light Entrée | Elegant Oyster Soup

Adapted from DSPROUT, allrecipes.com [3]

### Ingredients (serves 6):

- 2 tablespoons butter
- 1/2 cup carrot, finely chopped
- 1/2 cup onion, finely chopped
- 1/2 cup celery, finely chopped
- 1/2 cup button mushrooms, chopped
- 1/2 cup butter
- 1/4 cup all-purpose flour
- 1 quart chicken broth
- 14 ounces artichoke hearts, drained
- 1 bay leaf
- 3/4 teaspoon salt
- 1/2 teaspoon cayenne pepper
- 1/4 teaspoon dried thyme
- 1/4 teaspoon dried oregano
- 1/4 teaspoon dried sage
- 1 cup heavy cream
- 12 shucked oysters and juice



Photo: RanchersDaughter, allrecipes.com

### Method:

1. In a large pot, saute chopped carrot, onion, celery and fresh mushrooms in 2 tablespoons of butter for 5 minutes or until the onions are transparent.
2. In another large pot, melt 1/2 cup butter and stir in the flour. Cook for 5 minutes.
3. Whisk in the chicken broth to the flour mixture. Add the sauteed vegetables, artichokes hearts, bay leaf, salt, cayenne pepper, thyme, oregano and sage. Simmer for 30 minutes over medium heat.
4. Whisk in cream and add oysters; bring to a simmer, but do not boil.

### SERVING SUGGESTIONS:

Oysters may also be grilled, fried, baked, stuffed, or roasted

### OTHER RECIPE IDEAS:

Oysters casino, scalloped oysters, oysters Rockefeller, or raw with a squeeze of lemon and dash of hot sauce



### References

- [1] [http://wdfw.wa.gov/fishing/shellfish/oysters/how\\_to\\_schuck.html](http://wdfw.wa.gov/fishing/shellfish/oysters/how_to_schuck.html)
- [2] [www.nibbledish.com/people/Riaboo/recipes/oysters-with-chilli-and-coriander](http://www.nibbledish.com/people/Riaboo/recipes/oysters-with-chilli-and-coriander)
- [3] <http://allrecipes.com/Recipe/Elegant-Oyster-Soup/Detail.aspx?evl19=1>