

Estimation Methodology: Spending Near Mocrocks and Copalis Beaches from Razor Clam-Related Trips

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We began with estimates of spending by diggers on Mocrocks and Copalis beaches, based on a survey performed during the 2007-2008 season by Dyson and Huppert (2010). The survey collected information on how much clamming parties (including both diggers and non-diggers) spent near the beaches on hotels, camping, restaurants, groceries, gas and oil, ferry tolls, other transportation, and other spending (including gambling and purchasing antiques).

There are multiple ways to approach this estimation, and we focused on two estimates based on the number of days open (to better reflect recent trends of more days open to harvest), and on number of digger days (to better reflect length of time spent at the beach).

Estimate Based on Open Digging Days

In one estimation method, we focused on total expenditures per open razor clam harvest day at each beach. This way, we still included spending by members of the entire party, and could account for better or worse seasons for razor clams, through the number of open days.

In particular, the 2007-2008 season is notable for having significantly fewer open days at Mocrocks and Copalis beaches (11 and 13, respectively) than in subsequent years (averaging 21 and 28 days). The inherent assumption in using expenditures per open day is that if there fewer open days, while parties would ideally readjust their schedules to go to the beaches on the open days available, 100-percent reallocation of their time and resources is not possible. So the more open days there are, the more diggers make the trip to the beach, or they make multiple trips (rather than a set total number of diggers in the state simply moving the dates of their travels). This assumption is supported by the need to manage the razor clam population, to avoid overharvesting that would occur without regulation.

From Dyson and Huppert, an open day for razor clam harvest at Mocrocks reflects nearly \$162 thousand in direct spending to the area. An open day at Copalis reflects over \$356 thousand.

Open razor clam harvest days were reported by communication with the WA Department of Fish and Wildlife, and press releases from that agency, for seasons between 2007-2008 and the currently ending 2013-2014 season. We multiplied spending per open day by the number of open days at each beach in each season, finding a range of total annual spending between approximately \$6 million and nearly \$23 million across both beaches. The average spending in the range of seasons analyzed was approximately \$12.5 million.

An important note about these dollar values is that, while we can support an increase in open days leading to an increase in clamming trips, we cannot necessarily say that a reduction in open days means a 100-percent loss of this spending. In the event of a closure, Dyson and Huppert indicate that 35-45 percent of those surveyed had cancelled a trip in the past in response to a razor clam closure. The rest would still travel to the beaches for other recreation, shopping, camping, or other activities.

This translates to a closure leading to a loss of expenditures of approximately \$57-73 thousand at Mocrocks, and \$125-160 thousand at Copalis, per day. Using this more conservative assumption that razor clamming makes or breaks a trip to the beach, razor clamming is responsible for \$4.4-5.6 million in spending across both beaches in an average year. The remaining \$6.5-8 million is to some degree related to razor clam harvest, but we cannot be certain to what degree, as parties may not cancel their trips because of a closure.

Summary for open-day-based estimates:

- Overall, \$12.5 million in annual expenditures near Mocrocks and Copalis beaches is at least partly related to razor clamming, in an average year.
- Trips specifically for razor clamming (that would be cancelled due to closure) at Mocrocks and Copalis beaches account for \$4.4-5.6 million in an average year.
- These values reflect direct spending in the area, and do not account for the additional economic impacts of money continuing to cycle through the local economy.
- Dollar values are reported in 2014-dollars, based on the Consumer Price Index (US Bureau of Labor Statistics, 2014)

Estimate Based on Total Digger Days

In the other estimation method, we focused on expenditures for a digger per day spent digging. This way, we still included spending by members of the entire party, and could account for the numbers of diggers per open day at Mocrocks and Copalis.

This methodology does not require us to make assumptions about how many diggers change the date of their razor clam digs in response to a closure, versus coming to the beach anyway or cancelling a trip altogether. For an estimate of total digger days at the beaches in question, we used WA DFW's summary presentation of season setting (WA DFW, 2013), which indicated that during the 2012-2013 season, nearly 52 thousand digger days were spent on Mocrocks, while nearly 96 thousand digger days were spent on Copalis. This means on average for an open digging day, over 1,800 digger days are spent at Mocrocks, and nearly 3,200 digger days are spent at Copalis.

Digger days represent the number of separate ventures taken to collect razor clams. If a group of people including a razor clam digger takes a trip, and that digger harvests on an open day, that is one digger day. If a group of people including a razor clam digger takes a trip, and that digger goes out to dig razor clams on two separate days, that is two digger days. Similarly, if there are multiple diggers in a group of people going to the beach, each of them spends one digger day per each day out harvesting, so for example two diggers in a group of people staying overnight and digging on two days during their trip, counts as four digger days.

From Dyson and Huppert, a digger's group (including non-diggers like family and friends traveling with them, but not gathering razor clams) spends, on average, \$78 per digger day at Mocrocks, and \$139 per digger day at Copalis. This is consistent with availability of other recreation and amenity availability being higher near Copalis, as well as increased prices in more-heavily touristed areas like Ocean Shores.

To find an average expenditure for a typical year, we scaled the number of digger days by the number of open days in a season, finding an average number of digger days since 2007 of over 36 thousand at

Mocrocks, and over 83 thousand at Copalis. The average associated expenditure is approximately \$14.5 million each year, across both beaches' nearby areas.

An important note about these dollar values is that, while we can support an increase in open days leading to an increase in clamming trips, we cannot necessarily say that reduction in open days means a 100-percent loss of this spending. In the event of a closure, Dyson and Huppert indicate that 35-34 percent of those surveyed had cancelled a trip in the past in response to a razor clam closure. The rest would still travel to the beaches for other recreation, shopping, camping, or other activities.

This translates to a closure leading to a loss of expenditures of \$155-199 thousand at Copalis, and \$50-64 thousand at Mocrocks. Using this more conservative assumption that razor clamming makes or breaks a trip to the beach, razor clamming is responsible for \$5-6.5 million in spending across both beaches in an average year. The remaining \$7.5-8.5 million is to some degree related to razor clam harvest, but we cannot be certain to what degree, as parties may not cancel their trips because of a closure.

Summary of digger-day-based estimates:

- Overall, \$14.5 million in annual expenditures near Mocrocks and Copalis beaches is at least partly related to razor clamming, in an average year.
- Trips specifically for razor clamming (that would be cancelled due to closure) at Mocrocks and Copalis beaches account for \$5-6.5 million in an average year.
- These values reflect direct spending in the area, and do not account for the additional economic impacts of money continuing to cycle through the economy.
- Dollar values are reported in 2014-dollars, based on the Consumer Price Index (US Bureau of Labor Statistics, 2014)

Median Estimate

We calculated the median of these two estimates of expenditures related to razor clam digging at Mocrocks and Copalis beaches, as \$13.5 million. Of this \$4.5-6 million is entirely tied to razor clamming.

Sources:

Dyson and Huppert (2010). Regional economic impacts of razor clam beach closures due to harmful algal blooms (HABs) on the Pacific coast of Washington. *Harmful Algae* 9. pp 264-271.

US Bureau of Labor Statistics (2014). Consumer Price Index for annual average 2008 and June 2014. http://www.bls.gov/data/inflation_calculator.htm

WA Department of Fish and Wildlife (2014). Email communication with Kirt M Hughes, 24 June, 2014.

WA Department of Fish and Wildlife. Press releases related to razor clam harvest open days, 2007-2014. <http://wdfw.wa.gov/news/search.php?query=razor+clam&stype=AND&recent=all>

WA Department of Fish and Wildlife. Washington Razor Clam Management: Setting the 2013-2014 Season. Presentation also used at public meetings in 2013.

