



What's the best and most efficient way to quickly clean Purple Olive Snails (*Olivella biplicata*)?

Angel Parker and Ryan Walsh
Makah Fisheries Management



Introduction

Purple olive snails (*Olivella biplicata*) are culturally and traditionally important to the Makah Tribe through their use in necklaces, regalia, and earrings¹. Olive snails are collected alive, and the snail must be removed from the shell to keep it from getting stinky. There are many approaches to cleaning out the shells and each has different costs in terms of time investment, impacts on the shell, and the smell once completed. As a result, we wanted to determine the best method for cleaning olive snails.

We hypothesized that of all the methods evaluated, boiling followed by mechanical removal of the snails would be the best.

Methods

Olive snails were collected at Hobuck Beach. The snails were frozen until each cleaning procedure was conducted.

Cleaning Techniques Evaluated

- Vinegar + Water Pick + Forceps
 - Shells soaked in 50/50 ratio of distilled white vinegar and water for 25 minutes
- Bio Enzyme Detergent (Dirty Labs) + Water Pick + Forceps
 - Shells soaked in concentration of 18 ml of bio detergent and two gallons of water for 36 hours
- Boiling Water + Water Pick
 - Water brought to boil. Snails boiled for 10 minutes
- Water Pick
 - Sanded the tip of the shell down to shoot out the snail using water pick only



Figure 1. Cleaning process of the olive snail shells post-treatment using forceps to remove the shells.

Shell Color Analysis

I took clear, standardized photos of the shells before and after each treatment type. I used a program called ImageJ to trace the shells and determine the average color intensity of the pixels within the traced area using the “Histogram” analysis.

Methods Continued

Figure 2. Olive snail shell in ImageJ with tracings to extract the color intensity data.



Luster, Odor, and Effort Analysis

After cleaning the shells, luster and cleaning effort were evaluated on a scale of 0–5 by a single evaluator (AP), with 0 being the least and 5 being the best while the odor was evaluated from 0–5 by three evaluators with 5 being the smelliest.

Results

Color

Color intensity was evaluated on a scale of 0-255. The greater the color intensity value, the lighter the color of the shell. Smaller color intensities were associated with darker shell colors. Throughout the techniques I tested, I found the boiling method to best preserve the shell color and the vinegar method to cause the most discoloration.

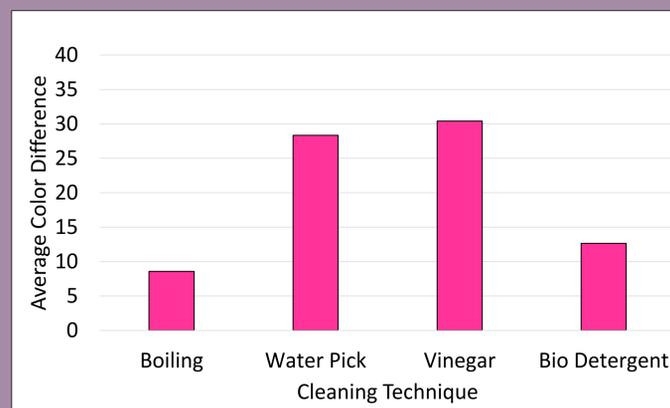


Figure 3. Graph displaying the average color difference before and after each of the four cleaning techniques.

Luster, Odor, and Effort

Table 1. Olive snail luster, odor, and cleaning effort for each cleaning technique, evaluated on a scale of 0–5. Luster and effort were evaluated by a single evaluator (AP) while odor was averaged from three independent evaluators.

	Boiling	Vinegar	Bio detergent	Water Pick
Luster	5	0	4	5
Odor	3.7	1.3	1.7	1.7
Effort	4	2	4	4

Conclusions

In this study, we used a dental water pick, which was very helpful for cleaning out the shell. We recommend using water picks for cleaning out the shells in combination with chemical or temperature treatments.

Interestingly, the shells cleaned with bio detergent bleached from the sun very soon after being analyzed. There are other techniques used in the local community that we couldn't evaluate in the timeframe of this study like burying snails (up to one year) or doing a freshwater soak. The techniques we tested were all short duration.

There was variability in color preservation between the cleaning methods evaluated; however, a one-way ANOVA showed there were no significant differences between treatments ($F(3,120) = 0.92$ $p = 0.44$). This could be due to lighting in the room affecting color intensity of standardized photos, human error in manually tracing the shells in Image J, and other factors such as minerals in the tap water coating the shells. Based on the results of this study, we would **recommend the boiling method** as a fast and effective way to clean purple olive snail shells. The boiling method preserves the luster and the coloration of the shells the best as compared to the other three cleaning methods.

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References

1. Charles, B., et al. 2004. "When the Tide is Out" An Ethnographic Study of Nearshore Use on the Northern Olympic Peninsula. *Coastal Watershed Institute, Port Angeles, WA.*