



Happy Father's Day

**A Dad's Day favorite in Stanwood B1**

# The Sunday Herald

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## Old rape kits are yielding results

As the state crime lab tackles the backlog of untested DNA evidence, police caution the kits can ID suspects, but won't always result in arrests or convictions.

By DIANA HEFLEY  
Herald Writer

EVERETT — The 20-year-old woman spent Christmas 2010 in a hospital exam room as a forensic nurse carefully collected swabs from her body.

The woman told Everett police someone had raped her hours earlier at a family holiday party while her husband slept nearby. The man she suspected, the only other man sleeping in the living room, denied assaulting her.

Evidence was collected from the woman, but Everett police didn't submit the sexual assault exam kit to the Washington State Patrol crime lab for analysis.

Detectives closed the investigation "for lack of evidence."

Everett police Capt. Greg Lineberry recently said that the kit likely wasn't tested because of the totality of the circumstances. The officers had a named suspect at the time, and he had provided a credible statement that he wasn't involved, Lineberry said.

"It didn't appear that it was a case that could be prosecuted so

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Sunny-ish  
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PHOTOS BY DAN BATES / THE HERALD

A snail travels at a self-described pace along the driveway at Barb O'Brien's house in Everett. It appears to be carrying a tiny item in its mouth.

## The slowest invasion

Non-native snails are sliming their way through Northwest gardens in increasing numbers

By CHRIS WINTERS  
Herald Writer

EVERETT — Whether you think snails are good looking or good for nothing (or good eating), one fact seems undeniable: the little critters are everywhere this year.

And they're hungry. "I have dahlias and several things that they just eat up," said Barb O'Brien, president of the Everett Garden Club.

O'Brien, who also is a Snohomish County Master Gardener, raises hens and she's sprinkled crushed eggshells around the plants in her back yard to keep the gastropods at bay.

"I think it is because they don't like the sharp edges," she said. "That seems to be working real well for me this year."

The snails are feasting on her hostas, and she recently discovered them in her boxwood shrubs.

"I didn't even realize they ate boxwood," O'Brien said.

The bane of many a Northwest garden, it's hard to say definitively where the snails came from in such numbers, and even how many different kinds there are.

### Origin of the species

Most of the land snails, and their shell-less cousins the slugs, aren't native to the Pacific Northwest.

David George Gordon, the Seattle author of "The Secret World of Slugs and Snails: Life in the Slow Lane," told one common origin story for foreign



Some snails live in striped houses. There could be 15 or more invasive species in Western Washington, and many are difficult to identify, even by experts.

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### POLITICAL POPS



The differences between red dads and blue dads. **Viewpoints, B7**

### YEAR OF MIKAYLA



Our Girl Athlete of the Year should be no surprise. **Sports, C1**

### RHODIE TRIP



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A small, but voracious snail makes its way along a driveway bordered by a hedge apparently popular among gastropods, at the home of Everett Garden Club president Barb O'Brien. PHOTOS BY DAN BATES / THE HERALD

# Snails

From Page A1

snails: a French immigrant wanting a little taste of the homeland. "In the 1890s in San Jose, which back then was a farming community in California, there was a French vineyard owner who introduced escargot snails in California," Gordon said. "He was like the Johnny Appleseed of snails." One species of escargot snail brought over was the grove snail (*Cepaea nemoralis*), one of the most common species in Europe, which is now widespread in the United States.

Gordon said he recently found a bunch of escargot snails in McCollum Park outside Everett. Another problem species is the common or brown garden snail (*Cornu aspersa*), which originated in the Mediterranean but is now everywhere worldwide. The Port Townsend area has a particular problem, Gordon said.

Homegrown species, Gordon said, mostly are confined to the wilder parts of the region. "Native species are living in forests where they grew up, they don't really have use for a garden," Gordon said.

## Million dollar problems

The garden snail is a particular problem in California, where they infest citrus groves, said David G. Robinson, who for 21 years has worked for the U.S. Department of Agriculture as the National Malacologist, the term for scientists who study mollusks.

"In California it costs the state anywhere between \$8 million to \$10 million per year just to control and suppress it," Robinson said.

The snails will eat anything, Robinson said. He also said it's a myth that most invasive gastropod species are displacing natives.

"Most invasive species are those that we call synanthropic, which means they're associated with human activities, human agriculture," he said. "We've brought these species from elsewhere ourselves, and we have driven out the native species."

Nurseries are major contributors to the spread of invasive snails. The eggs invisibly hitch a ride on plants brought in from out of the area and get planted in gardens and flower boxes everywhere.

But they also arrive on vegetables or on the exteriors of containers.

Robinson's office is responsible for identifying any snail or slug that comes through an international port on or in millions of containers.

He used to do it all by himself, with samples sent by overnight express to his office at the Academy of Natural Sciences of Drexel University in Philadelphia.

He's since trained a number of mollusk observers at several key points of entry into the country, but it's still hard to keep up. "We are deluged," he said.

## Change in the weather

There's another explanation for the sudden proliferation of snails, especially in recent years: changing weather patterns with more frequent dry spells.

"Snails can endure droughts better than slugs because they can pull back into their shells," Gordon said.

The general warming of the climate, with milder winters, also means there are fewer mass killings during cold snaps.

Sharon Collman, an instructor at Washington State University Extension in Horticulture and Integrated Pest Management, said snails seem to generally outnumber slugs now.

Collman said identifying newly introduced species is important if you want to catch them before they multiply out of control.

A new species can lie in wait for 20 years, and suddenly people will see the population explode, she said.

"I've toyed with the idea of having a mini slug-fest to have people bring what they can find and see if we can pick up introduced species early," she said.

The Pacific sideband (*Monadenia fidelis*) is a native snail, and is also the largest found in Washington, with shells up to an inch wide. It is one of many species known for shooting "love darts" into another snail during the mating process.

To the untrained eye, the native sideband and the invasive garden snail might be visually indistinguishable. "Sometimes it can be a subtle difference," Collman said, such as the width of the bands on the shells.

There could be 10 to 15 or more invasive species in Western Washington, along with a similar number of slugs.

The exact number of different species is unknown because snails and slugs in the Northwest are not well studied.

"There's really no one in this state studying snails," said Clarissa Dirks, a molecular biologist at the Evergreen State College.

Dirks said there's a lack of real science being done, including identification, genetic profiling and publication in peer-reviewed journals.

It's hard even to tell some species of snail apart, Dirks said, because it requires catching and dissecting them to remove their teeth and scan them with electron microscopes.

Dirks recently studied snails under some of the top researchers in the field of malacology at the University of Hawai'i at Manoa.

"The reason I went and learned how to do all this stuff is it's completely understudied in this state," she said. "Until we have good

genetics work, for example, we can't easily identify them, so we won't even know when we have new species around you."

The most up-to-date guides to snails and slugs that would apply to the Pacific Northwest are Canadian, Robinson said.

That includes Robert G. Forsyth's "Land Snails of British Columbia," which covers a biome similar to Washington's, and the Canadian government's free publication, "Identifying Land Snails and Slugs in Canada."

Aside from an occasional publication by a museum or university researcher identifying a new species, the last comprehensive U.S.-based publication was the 2,107-page, two-volume monograph by Henry A. Pilsbry, "Land Mollusca of North America (North of Mexico)," published in four installments from 1939-1948.

"Since then, there's been very little published, which is why I'm working on a paper right now to list all the known invasive snails and slugs in the U.S.," Robinson said. "It's looking more like a book than a paper," he added.

It's fertile territory for exploration, and Dirks has conducted some small surveys with her students in and around Olympia. Her field work has turned up examples of what may be previously unknown species.

"There's an orange slug out there that I've looked around for, that I haven't seen anywhere else," she said.

## Emerging problems

Snails and slugs bring more problems than just chomping on your garden vegetables.

Non-native leopard slugs (*Limax maximus*), in particular, are quite aggressive, Gordon said.

A lot of slug species will — if you imagine this in slow motion — chase down native species and bite them and try to kill them," Gordon said.

Their victims include the two most common slugs native to the Pacific Northwest: the Pacific banana slug (*Ariolimax columbianus*) and the self-amputating taildropper slug (*Prophysaon andersoni*).

The robust lancetooth (*Haplotrema vancouverense*) snail is also destructive: Its tongue has raspy teeth on it. "They use them to pull other snails out of their shells and eat them," Gordon said.

The threat of invasives is acute in Hawaii, which has a large and isolated population of gastropods that researchers want to protect from outsiders.

For example, Hawaii imports most of its Christmas trees from Washington, Dirks said.

"There were years when they had to reject huge loads of trees because they were covered in slugs and snails," she said.

Another species of concern is the vineyard snail (*Cermea virgata*). It recently was spotted in the Tacoma area.

"It could invade wheat fields of Eastern Washington," said Ed Johannes, who runs a business, Deids Consultants, which does surveys to identify mollusks for governments and businesses.

The vineyard snail already has become a problem for farmers in Australia, he said.

"It gums up the machinery," Johannes said.

Like snails, most of the slugs you'd find in your garden have been introduced from elsewhere.

"The native slugs prefer to eat dead plant matter as opposed to green. The introduced ones from Europe love green," Johannes said.

## Disease vector

Another recent concern is snail-borne disease, such as a 2006 outbreak in China of *Angiostrongylus cantonensis*, or rat lungworm, that sickened 160 people.

The pathogen reproduces in rats, but some species of snails are carriers. If people get infected, the parasite causes a form of meningitis, a potentially life-threatening disease characterized by inflammation of the membranes around the brain and spinal cord.

A handful of human cases have been detected in Hawaii, Dirks said. "It's always two guys drinking in the woods and one of them dares another to eat a snail," she said. "I always have my students have bottles of Pirell."

In Hawaii, the pathogen is carried by a species of semi-slugs, *Parmaelon martensi*, which have shells too small to retreat into.

The rat lungworm nematode has also been shown to infect the giant African snail (*Achatina achatina*), the largest snail on earth which can grow up to 7 inches long and are often smuggled into the United States as exotic (and illegal) pets.

Florida has been working to eliminate the giant African snail, which has escaped into the wild. So far there have been no cases of rat lungworm there, Robinson said, but another tropical species of snail in the state also is suspected to carry the disease.

The fortunate thing is that the disease so far has been confined

to tropical and subtropical areas. The concern is that the semi-slug could be exported to the mainland with Hawaiian agricultural products, such as cilantro.

"We're keeping a very close eye on *angiostrongylus* because there have been a few cases of humans," Robinson said.

## The last line of defense

Once invasive snails get into the country and spread, gardeners find themselves on the last line of defense. They've developed a range of practices and techniques to control snail and slug populations.

Barb O'Brien's scattered eggshells worked this year, but she also uses other natural techniques. Snails are drawn to a pie plate with a little beer in it. "They kind of drown and dissolve," she said.

"I've been known to step on them. That's also grisly," she said.

Seattle author Gordon suggested changing watering practices. Watering at night gives gastropods a welcoming environment when they come out to eat, akin to running a Zamboni before a hockey game, he said.

Instead, watering in the morning gives the soil a chance to dry out and be less snail-friendly come nightfall.

Gordon also recommended raking gardens early in the season to expose the eggs to birds and the elements.

WSU Extension's Sharon Collman said gardeners should be smart about using bait, putting it near the nests, not the food source, and coming back later to pick up the victims.

Some commercial snail bait only paralyzes the snail, and after they recover, they'll never be felled by the bait again, Collman said.

There is also the original, if brutal, chemical warfare agent against gastropods: salt.

"It's a really painful death for them," Collman said.

"I tend to favor a quick jab with the edge of a trowel, or the edge of my boot," she said.

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A snail comes part way out of its shell to chow down on boxwood.