

It looks like Kansas, sometimes

Twisters have blown through here before and can again

By ANNIKA WALLEHDAHL
Contributing writer

Living in the Puget Sound area requires its fair share of ruggedness. There's a reason

that REI has its headquarters here. Besides the obligatory rainy weather, locals have to contend with bouts of flooding, windstorms and the ever-present specter of the big earthquake. And then there are the tornadoes.

The what?

That's right. Washington, like the other 49 states, experiences tornadoes. And while the Evergreen State averages only two tornadoes per year, in 1997 our state led the nation with a whopping 14 tornadoes. They've occurred in the past in King County and can happen again anywhere in the county.

The most recent was two years ago.

Fortunately, the typical Washington tornado is shorter-lived and less intense than those of the Midwest. To find out why our native tornadoes — like the one that blew into the Eastside area in 1962 — are different than those found east of the Rockies, keep on reading. Just make sure you have your Gore-Tex coat handy — and stay near the basement door.

Tornadoes 101

A tornado, also called a **TWISTERS** — page 20 ▶



File Photo

A tornado touches down in Kent in 1969. Although not widely considered a tornado region, Washington has several tornadoes yearly.



Professional Representation of Eastside Properties.

Residential & Land

Windermere

KSCOTT Associates
Representing Exceptional Properties

Kevin Scott
206.412.1118
www.kscottassociates.com



D37375



8&S`] EžEUŠT[LSI 66E

◆

#&#* ##SfZ 3hWgW@7
Eg[fWS" "
4WVgWI 3 +*" "&

◆

&\$' ž&' %ž&% %
i i i žSefE[VVE_ [VzA_

Frank S. Sciabica, DDS

EASTSIDESMILES

Close to home. Far from ordinary.

BUSINESS DIRECTORY

Quality Services From Your Local Businesses


SENIOR HOUSING

Long-term care options are endless, but how do you know which one is the best choice?


Let **Senior Options** help you find the "best place next to home" for your loved one.

Why Senior Options?

- We offer our personalized placement services at NO COST to seniors and their families.
- **Senior Options** specializes in Adult Family Homes.
- RN assessments, nurse delegations and case management available.
- 15 years+ experience in managing geriatric health care.



Nancy



Daphne

Senior Options, LLC
12030 SE 250th PL
Kent, WA 98030

Daphne Davis,
Nancy Gunderson, RN
Ph: 206-375-4002
206-375-4003
SRoptions@comcast.net

D33289

PAINTING



Euro Painting Co.
Commercial • Residential • Interior • Exterior

Quality European Craftsmanship

15 Years Experience 253-350-6357
253-334-1076

Call today for a FREE estimate

License: EURO9PPC945J4 Email: europaintco@seznam.cz

D38647

Reach your best prospects with the Bellevue Reporter

- Second Wednesday of the month
- Fourth Wednesday of the month

To advertise please call **Cameron McKinley 253-234-3513**
email: cameron.mckinley@kingcountyjournal.com

Bellevue Reporter

Targeted, Effective, Affordable Advertising



D33290

► TWISTERS – page 17

twister, is a funnel-shaped cloud of rotating winds that stretches from the base of a thunderstorm to the ground. If a tornado passes over a lake, river or the ocean, it is called a waterspout.

Tornadoes are a byproduct of severe thunderstorms. The funnel of a tornado creates some of the fastest winds on earth — in excess of 300 miles per hour, according to the Federal Emergency Management Agency (FEMA).

Twisters are often described as having the shape of a dangling rope, an elephant trunk or a wide horn. But the shape of a tornado can be misleading; it's not obvious how much damage a tornado will do just by eyeballing it. A tornado with a wide funnel won't necessarily have wind speeds that are greater than a tornado with a skinnier funnel.

Wide or skinny, weak or intense, tornadoes can move fast. The average ground speed is 30 miles per hour, though tornadoes can remain stationary or lurch forward at a rate of 70 miles per hour, according to FEMA. Because tornadoes are born from severe thunderstorms, the funnel can be obscured by rain, hail or — if they're really close — the debris cloud.

Debris clouds are a violent mix of high winds from a tornado's funnel, armed with dust, wood fragments and other materials plucked from the ground. After an intense tornado has passed, debris thrown by the churning wind is often found impaled in buildings,

trees and roadways.

The amount of tornado damage that a building sustains — either from flying debris or high winds — is one way to measure a tornado's strength. And it's a heck of a lot safer to measure the aftermath of a tornado than to drive into a live one to deploy little flying instruments, as Hollywood fantasized in the movie "Twister."

Meteorologists determine the intensity of a tornado by conducting a damage survey after the tornado has passed. Based on this survey, tornado damage is assigned one of six ratings on the Fujita Tornado Damage Scale, or F-scale. An F-0 tornado creates light damage, with estimated wind speeds of less than 73 miles per hour. A tornado with this intensity is capable of breaking tree branches and damaging signs. An F-5 tornado, the most intense, creates incredible damage with estimated wind speeds of 261-318 miles per hour. An F-5 can send automobile-size missiles through the air to distances of more than 100 yards.

The 1962 Juanita twister

Tornadoes can occur anywhere in King County. In September 1962, a twister downed 70 trees and damaged several houses in Juanita. The tornado touched down at Sand Point then traveled across Lake Washington to Juanita. It then traveled to the top of Finn Hill near Kirkland and pulled itself back up into the clouds and disappeared, according to HistoryLink.org, an online encyclopedia of Washington history (www.historylink.org).

The tornado's winds were estimated to be near 100 miles per hour.

While there have been no reported F-4 or F-5 tornadoes in Washington, there have been three F-3s since 1950, according to Ted Buehner, warning coordination meteorologist at the Seattle forecast office of the National Weather Service.

The state's first recorded F-3 tornado occurred in Kent Valley on Dec. 12, 1969.

"It started as a waterspout off Des Moines and moved inland," said Buehner. "It chewed up small outbuildings and knocked down billboards and power lines."

The tornado traveled to the northeast from Puget Sound near Des Moines toward the Green River and the Boeing Center on South 212th Street, according to an article published shortly after in the former Kent News-Journal.

The state's other F-3 tornadoes occurred in 1972 — one in southwest Washington near Vancouver and the other near Spokane.

You may be surprised to learn that 1969 wasn't the last time a twister came calling to King County. In 2005, a waterspout was observed over Puget Sound near Shoreline. That twister was rated as an F-0.

In 2005, there were five tornadoes observed in Washington, and the year prior there were eight, said Buehner.

Most tornadoes in Washington are an F-0 or F-1. They are weak and short-lived, he added.

"Most are down and up in less than two minutes," Buehner said.

On a scale of 0 to 5

Under the Fujita Tornado Damage Scale, tornadoes are rated from F-0 (the weakest) to F-5 (the most dangerous) based on their windspeed and the amount of damage they leave behind.

Category F-0: winds less than 73 mph. Light damage to chimneys, trees (broken branches) and signs.

Category F-1: winds 73 to 112 mph. Moderate damage; mobile homes moved off foundations or overturned, vehicles blown off the road.

Category F-2: winds 113 to 157 mph. Considerable damage; roofs torn off wooden frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.

Category F-3: winds 158 to 206 mph. Roofs and some walls torn off well-constructed houses, trains overturned, most trees uprooted, heavy cars lifted off ground and thrown.

Category F-4: winds 207 to 260 mph. Well-constructed houses leveled, structures with weak foundations are blown considerable distance, cars are thrown and large objects turn into missiles.

Category F-5: winds 261 to 318 mph. Sturdy frame houses lifted off foundations and swept away, automobile-size missiles fly through the air in excess of 109 yards, bark stripped from trees.

How to make an intense tornado

Knowing that our tornadoes are usually on the wimpier side, your curiosity may be starting to crawl out of the basement shelter. Why doesn't the Puget Sound area get intense tornadoes like those in the Midwest? The answer: location, location, location.

The Puget Sound region and

the Midwest have dramatically different landscapes. And when it comes to producing severe storms, the Midwest has the advantages of flat terrain, as well as access to warm, moist air from the south and cold air from the north. Puget Sound's tornado-making method is quite different (more about that later). Either way, to get tornadoes

TWISTERS – page 22 ►

Check out a special local Healthy Living section online now!

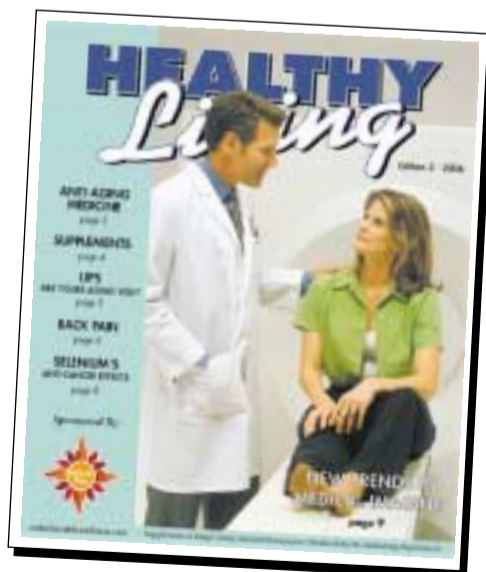
TOPICS INCLUDE:

- Anti-Aging Medicine
- Dietary Supplementation
- Meditation
- Back Pain
- Pediatric Sinusitis
- The Anti-Cancer Effects of Selenium
- New Trends in Medical Imaging
- Vision Testing

Healthy Living is Sponsored By



OmBelievable Wellness



NOW ONLINE! kcjn.com/specialfeatures

King and Bunny's 25th Annual PARKING LOT SALE July 12 - July 16, 2006

See today's insert

Renton Highlands
425 277-0600



McDONALD INSURANCE GROUP, INC.

Does your insurance plan need updating?

Have you made changes such as adding drivers, cars, new home purchases, or remodeling?

Contact us today for an insurance review.

www.mcdonaldins.com

425-827-7400

416 - 6th St South - Kirkland

**Home - Renters - Boats - Motor homes -
Automobile - Motorcycles - Snowmobiles -
Classic Cars - Specialty Items - Business -
Life & Health Insurance**

Representing: Safeco, Unigard, Encompass, Travelers, Unitrin, MetLife, Liberty Northwest, Progressive.

► **TWISTERS** – page 20

you need thunderstorms.

Severe thunderstorms are produced when cold air collides with, and overrides, warm air, creating an unstable layering of the atmosphere. The warm air trapped underneath will “boil up” through the colder air layer to produce a thunderstorm, said Buehner.

The landscape of the Midwest is set up for high-speed collisions of weather systems. Without the presence of pesky mountain ranges to go around or over, weather systems speed across the flat terrain, saving their energy for a grand collision. The classic Midwest thunderstorm scenario occurs when cold air from Canada rushes south and overrides warm, moist air that has drifted in from the Gulf of Mexico. The air masses collide and the warm air boils up to develop thunderstorms that stretch amazingly high into the atmosphere.

“Midwest thunderstorms can reach tens of thousands of feet — several miles,” said Buehner.

On the other hand, Puget Sound thunderstorms tend to be much smaller in vertical development, struggling even to reach 20,000 feet, he said.

In order to generate an intense tornado, you need an intense thunderstorm. Some thunderstorms get so large (both horizontally and vertically) that the interior of the storm itself begins to rotate as the warm air rises. The interior rotation creates a huge vacuum and sets the stage for producing not just one tornado, but many.

Huge thunderstorms, with ro-

tating interiors called mesocyclones, frequently develop in the Midwest and are the source of many tornado outbreaks. In April 1974, a super tornado outbreak spawned 148 tornadoes in 11 states in just 16 hours, according to the National Oceanic and Atmospheric Administration (NOAA).

“East of the Rockies, thunderstorms have a mesocyclone,” Buehner said.

On our side of the Rocky Mountains, thunderstorms just don’t have the energy to get the same powerful internal rotation going.

So where do Puget Sound thunderstorms come from if we don’t have that warm, moist Gulf of Mexico air? The good old Puget Sound convergence zone.

A unique breeding ground

Puget Sound is special. You don’t need a meteorologist to tell you that. Guarded by the Olympic Mountains to the west and the Cascade Mountains to the east, the 100-mile long Puget Sound stretches from Olympia north to Bellingham.

But don’t be fooled. The breathtaking mountain vistas on either side of Puget Sound are nothing more than fancy windscreens.

Air masses blow in from the Pacific Ocean, hit the Olympics and are forced to divide around this majestic 8,000-foot-high windscreen. Some of the thwarted ocean air moves around the northern side of the Olympics heading east, then turns south to rush in to Puget Sound. The other mass of ocean air gets routed south parallel to the coastline, then heads east, making

its way inland to Olympia, where it rushes north.

In the middle of Puget Sound, the air masses converge.

“The convergence tends to develop in Snohomish County as the air flows through the Strait of Juan de Fuca,” said Buehner.

The converging air is really in a pickle now. Boxed in by the Olympics to the west and the Cascades to the east, the converging air has nowhere to go but up, resulting in an unstable air mass. A Puget Sound thunderstorm is born.

“Tornadoes are born from thunderstorms; thunderstorms are born

from an unstable atmosphere,” said Buehner. “You can get a tornado anytime, though Washington has two peak tornado seasons. We tend to get tornadoes in the transitional seasons — spring and fall.”

Forecasting severe storms

Weather forecasting moved forward leaps and bounds with the introduction of Doppler radar technology in the 1960’s. Doppler radar is used to peer into severe thunderstorms for signs of mesocyclone rotation.

As weather forecasting tech-

nology has improved, so has the lead time for issuing tornado warnings. In the past 10 years, tornado warning lead times have increased from five to 12 minutes, according to NOAA. But what about long-term forecasts?

“We don’t know of any connections,” said Cliff Mass, a professor in the atmospheric sciences department at the University of Washington.

So while Washington may get rain and flooding in spades, you can expect tornadoes to remain a weather peculiarity more than anything else.

120 ARTISTS

DOWNTOWN BELLEVUE

JULY 28 - JULY 30



TRUST US WITH YOUR
HOME'S COMFORT

SUNDANCE

Energy Services, Inc.

- Free Estimates
- Decorative Gas Heating Fireplaces/Logs
- Gas Furnaces
- Tank & Tankless Water Heaters
- Air Conditioning & Heat Pumps
- Indoor Air Quality
- Retractable Awnings
- Solar Water & Pool Heating

24 Hour service every day of the year.
(425) 481-9660
1-800-888-1045
10228 Main St., Bothell, WA 98011
www.sundanceenergy.com

6TH Street

fair

a taste of the arts

presented by
Bank of America

ORIGINAL ARTWORK

JEWELRY • PAINTINGS
HOME DECOR
SCULPTURE • WOODWORKING
AND MORE

www.bellevuedowntown.com/events

Produced by:
 BELLEVUE DOWNTOWN
ASSOCIATION