

JEREMY F. HARRISON/Associated Press

arty, a graduate student in the College of Health and Human s hope the pants will be part of a training regimen for astro- for long periods of time.

tested by OSU of Earth gravity

training astronauts for a stay on Mars

ck the director of the
ontrol Lab in OSU's Col-
and Human Perform-
verseeing the project.

tion also could help ac-
roke victims who need
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tists will use the waders
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the astronauts' balance.

ronauts encountered
is about 16 percent of
they left after only a

onauts would have to en-
avity for a much longer
se the planet is about 47
s from Earth at its clos-

onauts would land on
closest point in orbit and
to wait 500 days until
nets are that close again

se air pressure to sim-
in gravity. Air from a
forced into the pants,
sealed at the waist. The
ssure on the lower part
and raises the center of

"We're creating a high-pressure envelope from the waist down," Korienek said.

The Mars pants are still in the prototype stage.

The pants reduce the ground reaction force, or the pressure of the person on the ground, by about 20 pounds by supporting part of the body weight on a high-pressure cushion of air.

Although the pants don't produce an actual weight loss, a person would register 20 pounds less if he stood on a scale, Korienek said.

Scientists hope to develop a mobile model, perhaps with a backpack air compressor, within two months.

OSU scientists also have been experimenting with robotic arms.

By simulating human limbs, researchers are hoping to develop arms for amputees. By using computer chips, designers hope the arms can make precise movements, such as picking up a cup of coffee or switching a remote control. The same technology could be used on the space shuttle to create a new arm that would make precise movements to help construct the international space station.

habitat in the United States," Gogans said.

Oaks provide important habitat for birds, said Carol Jorgensen, a

rural areas also eliminated many oaks because they're often deemed a safety hazard if left too close to houses.

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New non-native species invading Puget Sound

■A scientific team finds 11 new arrivals in the estuary, but none appear to have the harmful potential of previous invaders

By JOHN GRIFFITH

Correspondent, The Oregonian

A team of scientists has reported finding 11 newly established exotic algae and invertebrate species during a recent Puget Sound expedition.

Although none of the species is thought to have the disruptive potential of zebra mussels, the exotic organisms pose threats to the marine environment of the sound.

"Puget Sound is in better shape than San Francisco Bay, but it's certainly starting to hurt in several ways," said Andrew Cohen, a member of the team.

Some of the new species probably came in ballast water discharged by ships from Asia.

The team of 19 scientists with expertise in exotic and native algae and invertebrate species found a total of 39 non-native species during a six-day expedition in September. Of the 39 species, 11 had not been seen before in Puget Sound.

The discovery brings the documented number of non-native species in the sound to 52, still well below San Francisco Bay. More than 250 non-native species have established populations and now make up about 90 percent of the biomass in the big California estu-

ary.

So-called invader species can disrupt public and private property and damage the health of the environment.

Diseases such as cholera, and plankton that cause toxic red tides have moved around the world in ballast water.

However, seemingly less pernicious organisms can be harmful to their new environment. They can interrupt the local food web, tripping over native species or diverting the normal flow of nutrients. For example, soon after the Amur River clam established itself in northern San Francisco Bay in 1986, annual blooms of algae ceased.

The blooms were nutrient pulses for the entire bay system. Tiny animals that depend on the algae suffered, causing disruption up the food ladder, Cohen said.

Cohen, who works at the San Francisco Estuary Institute, was one of the organizers of the Puget Sound expedition. Among those on the team were John Chapman of Oregon State University's Hatfield Marine Sciences Center in Newport and Jim Carlton, formerly of the University of Oregon Institute of Marine Biology at Charleston, who now works in Connecticut.

Less kills sea lions on Oregon beaches

rior has marine mammal concerned.

at something strange is says Keith Chandler, di- Seaside Aquarium and on the marine mammal network, authorized e National Marine Fish-

his year, at least 60 Cali- lions died in California ie acid poisoning, which ently got by eating small ed on plankton. Northern ches now are closed to ussel harvesting to pre- ir from domoic acid.

dying along the West Coast from food shortages because of El Niño. Death from bacterial infection of leptospirosis also is common this time of year.

However, scientists hope to learn the cause of the current, more unusual Oregon sea lion deaths.

"Is this just the first wave that is going to show us that more and more of these animals are coming because of the food shortage?" said Debbie Duffield, biology professor at Portland State University and marine mammal stranding network coordinator for the north Oregon coast. "Or is this the first wave

that's going to be causing more and more problems as it goes?"

The behavior of the most recent dying animals is sorrowful and strange. They are lethargic. Some wag their heads and appear to have little control of their flippers. Some twitch. One at Coos Bay moved as if only part of its body was able to respond to brain waves. Some are visibly underweight.

Even dead, seals and sea lions are protected by the Marine Mammal Protection Act. The law primarily forbids unauthorized human actions that kill, annoy or cause marine mammals to alter their behavior.

should not be permitted to get near sea lion carcasses because of leptospirosis contagion, which can kill pets and their owners.

Although the cause of the odd deaths in Oregon is unknown, from May 24 to Oct. 20, 60 California sea lion deaths were attributed to domoic acid in California, mostly near San Luis Obispo. Sick animals there also exhibited strange behavior.

Domoic acid is produced by several specific plankton of the genus Pseudo-nitzschia. It is a natural toxin. Some researchers think it was responsible for the 1961 Monterey Bay, Calif., seabird attack that