

The Moon now has hundreds of artefacts

Should they be protected?

Washington, United States

Three rovers, six US flags, dozens of probes that either landed successfully or crashed, the Moon is dotted with hundreds of objects as a result of space exploration.

Some experts are calling to grant them heritage status to protect them from future tourists and human activity.

It all started on September 13, 1959 when Soviet probe Luna 2 smashed into Mare Imbrium, its 390 kilograms (859 pounds) of mass vaporizing, no doubt, on impact.

It was followed in succession by more Luna probes, then it was the Americans' turn with the Ranger and Surveyor programs.

And then, on July 20, 1969, the first humans, Neil Armstrong and Buzz Aldrin.

The pair spent 22 hours on the Sea of Tranquility. They left behind everything that wasn't necessary to taken back: the lunar module's descent stage, cameras, lunar boots, tongs, commemorative objects, and four "defecation collection devices."

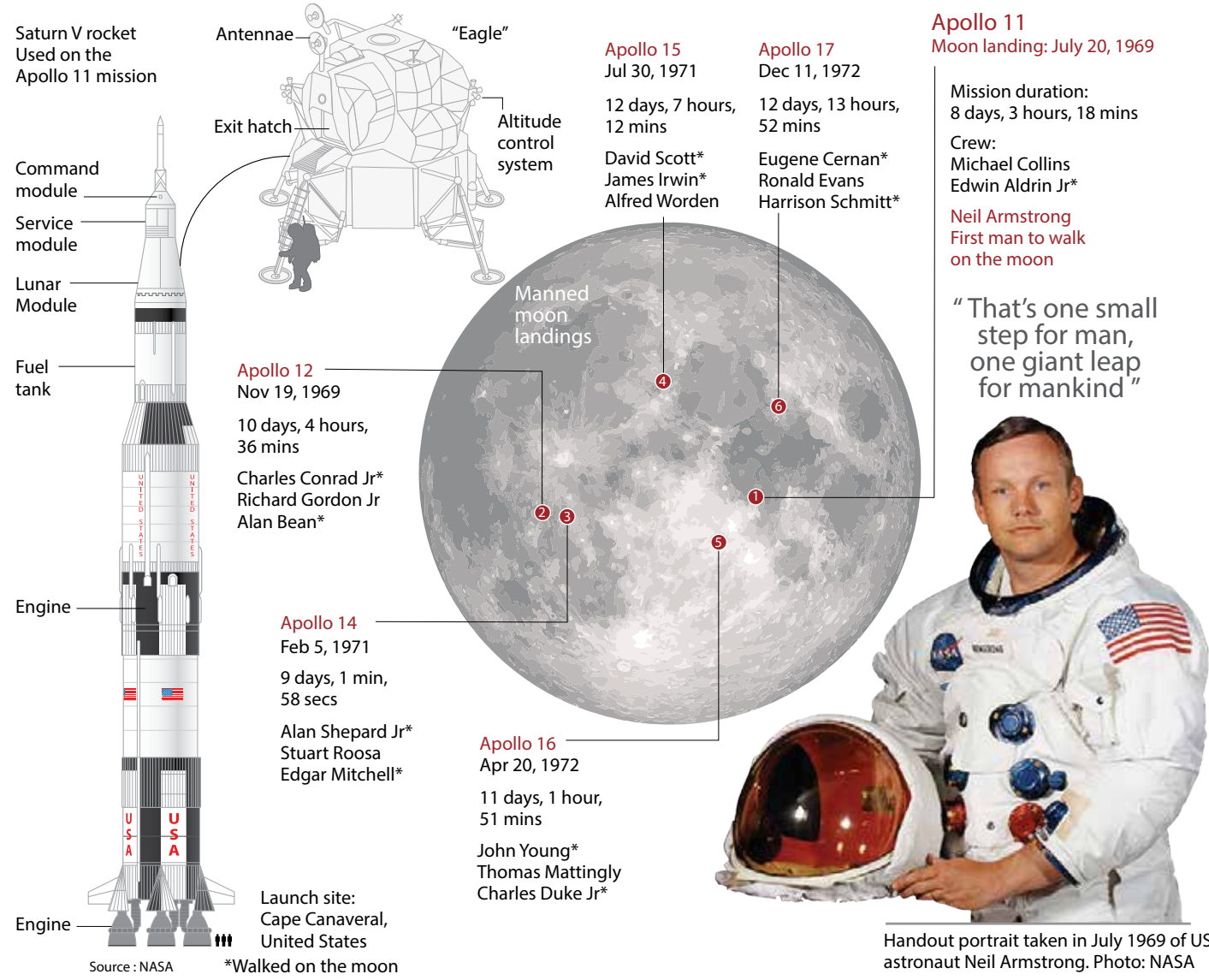
Five more successful Apollo missions left behind hundreds of additional objects.

All told, the Moon has about a hundred sites where people have left their mark, according to For All Moonkind, a non-profit that seeks to preserve human heritage in space.

That's about 167 tonnes of material. Legally, "the sites themselves aren't protected at all," said Michelle Hanlon, a law professor at the University of Mississippi who co-founded For All Moonkind in 2017 after the head of the European Space Agency Jan Wörner joked that he wanted to bring back the American flag.

"So the boot prints, the rover

Walking on the Moon



ploration of space, you're running up against the basic premise of the Outer Space Treaty," Jack Beard, a space law professor from the University of Nebraska, said.

To be sure, the treaty says each space object must be registered by its country, a safeguard against irresponsible behaviour by private entities.

These artefacts also remain the property of the entity which placed them, effectively barring theft.

But its loopholes concern lawyers, space agencies and the UN, and not only over the issue of protecting heritage.

Moon traffic is likely to grow in the coming decades and the vague principles of cooperation enshrined in the treaty are not seen as sufficient to regulate it.

In 2019 alone, a Chinese robot landed on the Moon, a private Israeli probe crashed, and India will send a probe.

US astronauts are scheduled to visit its southern pole in 2024, where there is ice.

Hundreds of space start-ups have sprung up, many of which want to exploit the water and mineral resources of the Moon and asteroids. What would happen if they quarreled with one another?

"It's clear that there is potential for conflict," Tanja Masson, a professor of space law at Leiden University in The Netherlands told AFP.

"There's a need for rules so that it does not become the Wild West."

She suggests the creation of an international body to distribute priority rights, without granting sovereignty, as is done to manage satellites in geostationary orbit.

tracks, where items are on the site, which is so important, from an archaeological standpoint, they have no protection," she added.

Hanlon fears the Apollo sites will one day attract the attention of tourists, who could kick up lunar dust that cuts like glass and can be highly damaging.

"If somebody were to get too close to the LEM, there's

nothing in international law right now that says you can't just drive a rover right up to it, and actually take a peek at it," she said. "We need protections against inadvertent as well as intentional acts."

Waste centres?

NASA has adopted recommendations, for example,

that future expeditions should not land within two kilometers (1.2 miles) of Apollo sites.

In the US Congress, senators have introduced a "One Small Step to Protect Human Heritage in Space" bill.

But the Outer Space Treaty of 1967 is very explicit: "Outer space, including the moon and other celestial bodies, is not subject to na-

tional appropriation by claim of sovereignty, by means of use or occupation, or by any other means."

"Once you start making exclusionary zones, and stopping other countries from their free use and ex-



A camera left by the Apollo 12 crew during their landing on the moon 19 and 20, 1969



The final parking spot for the Apollo 15 Lunar Rover on August 1, 1971

Graves dug in missing teen search empty: Vatican

Vatican City, Holy See

The mystery surrounding the disappearance of an Italian teenager 36 years ago deepened Thursday after two graves at the Vatican thought to possibly hold her remains were discovered to be empty.

Not only were Emanuela Orlandi's remains not found, the tombs did not even hold the remains of the two princesses supposed to be buried there in the Teutonic Cemetery in the tiny city state, the Vatican said in a statement.

"No human findings or funeral urns were found," it said.

The Vatican dig followed an anonymous tip-off that the cemetery may be the last resting place of Orlandi, the daughter of a Vatican employee, who was



A demonstrator holds a poster of Emanuela Orlandi reading "Missing" during Pope Benedict XVI's Regina Coeli noon prayer in St. Peter's square, at the Vatican

last seen leaving a music class aged 15.

Theories have circulated for decades about who took her and

where her body may lie. The family had been sent a picture of an angel-topped grave in the cemetery, and a message



The opening of one of two tombs within the Vatican's grounds in the Teutonic Cemetery

which simply read: "Look where the angel is pointing".

A second, similar grave alongside the first was also opened to

rule out any misunderstandings over which grave was meant.

The tombs belonged to two princesses, buried in 1836 and

1840.

The Vatican said it had informed their descendants of Thursday's discovery that their remains were missing.

It said it would look into when work was done on the tombs in a bid to find out what happened to them.

"Documentary checks are underway on the structural interventions that took place in the area... in a first phase at the end of the 19th century, and in a second more recent phase between the 60s and 70s of the last century," the Vatican said.

The Holy See expressed its "attention and closeness to the suffering of the Orlandi Family and in particular to Emanuela's mother," who still lives inside the Vatican.