

Jordan's airborne monuments men discover, protect sites

October 12 2016, by Sam Mcneil



This May 5, 2010 photo provided by Aerial Photographic Archive for Archaeology in the Middle East, APAAME, taken from a helicopter, shows extensive construction around archaeology in Madaba, Jordan. For the past 19 years, Robert Bewley and colleague David Kennedy have flown above Jordan to photograph, discover and preserve archaeology. Photographing dozens of Roman, Ottoman, Byzantine, Nabatean, Neolithic and British imperial sites, the pair have made two major discoveries: mysterious man-made rock structures in Jordan's deep desert and "catastrophic" urban sprawl destroying and threatening sites across the kingdom. (David Kennedy/APAAME via AP)

The helicopter door opens and Robert Bewley leans out hundreds of feet above the Hisban Roman ruins outside Amman, Jordan. Feet on the struts, the Oxford University archaeologist begins snapping photos as the chopper circles the ancient stones.

Sheep flock far below amid marble columns from 1,700 years ago. After a few minutes, Bewley squawks directions into a radio headset, and the helicopter banks towards another site sitting on a cliff above a major highway.

"To discover sites if we were just out on the ground would be really difficult," Bewley said. "In an hour's flying we can record between 10-20 sites and once they're recorded through digital photography, that's a record that will last forever."

Bewley and colleague David Kennedy aim to discover and preserve archaeology through a growing archive of sites across the Middle East and North Africa with 91,000 images.

While Roman, Ottoman, Byzantine, Nabatean, Neolithic and British imperial sites have been uncovered, the pair has also revealed in the past 19 years both mysterious man-made rock structures and "catastrophic" urban sprawl destroying and threatening sites across the kingdom.

Refugees fleeing wars in the Palestinian territories, Iraq and Syria have decimated Jordan's land and water resources over the past few decades, Kennedy said.



In this Sept. 27, 2016 photo, Robert Bewley uses his radio headset to guide helicopter pilots from the Jordanian air force to an archaeological site in Jordan. Bewley and his colleague David Kennedy have spent the past 19 years in an ongoing project documenting from the air archaeological sites around Jordan. Since, they've revealed from the air mysterious rock structures in the bleak eastern desert – and witnessed "catastrophic" urban sprawl destroying and threatening sites across the kingdom. (AP Photo/Sam McNeil)

"I could see the archaeology was disappearing, and one of the things that's been quite shocking since then is to see that the process is accelerating," he said. "It's now at an almost catastrophic level."

Their photographs show the northern city of Jerash slowly enveloping Roman ruins there. Other photos show site after site bulldozed, roads cut through Nabatean temples and Roman forts, and a Neolithic cemetery ransacked by looters. An Umayyad palace visible one year ago is now gone, razed to make way for an olive orchard.

Destruction of antiquities is clear from the air, but so are 2,000 enormous man-made rock structures once known as "the works of the old men" in Jordan's bleak basalt desert.

Their 4,000-9,000-year old weathered stones blend into the rocky landscape, and lay camouflaged for millennia. Before the invention of flight, famous colonial travelers like Gertrude Bell walked right past them, Kennedy said.

"For all practical purposes they saw nothing," he said.



This Sept. 11, 2006 photo provided by Aerial Photographic Archive for Archaeology in the Middle East, APAAME, taken from a helicopter, shows Qasr Bshir, a 3rd century Roman fort, one of the best preserved of its kind, in southern Jordan. For the past 19 years, Robert Bewley and colleague David Kennedy have flown above Jordan to photograph, discover and preserve archaeology. While Roman, Ottoman, Byzantine, Nabatean, Neolithic and British imperial sites have been uncovered, the pair has also revealed both

mysterious man-made rock structures and "catastrophic" urban sprawl destroying and threatening sites across the kingdom. (David Kennedy/APAAME via AP)

British pilots delivering mail between Cairo and Baghdad in the 1920s first noticed the structures starkly contrasting with the pale desert floor. Not knowing what they were, the pilots nicknamed them "kites" after crude children's drawings. World War II halted the photography, until Kennedy and Bewley soared over with Nikon cameras.

"Just by going up a few hundred feet, we could see that there were literally thousands of kites there," Kennedy said.

Roughly 4,500 "kites" of regional variety have since been found across the Fertile Crescent in Armenia, Turkey, Syria, Jordan, Egypt, the West Bank, Saudi Arabia and Yemen, according to the Lyon-based Global Kites Project.

"My god it was just amazing what you cannot see on the ground," said Gary Rollefson, a professor emeritus at Whitman College who has worked in Jordan since 1978. "We could tell there were some humps over there, but the distribution or density of these things was just overwhelming."

Their peculiar geometry—pennants, circles and fans—drew archaeologists like Rollefson to dig in Jordan's barren eastern desert.



This Sept. 11, 2006 photo provided by Aerial Photographic Archive for Archaeology in the Middle East, APAAME, taken from a helicopter, shows Qasr Bshir, a 3rd century Roman fort, one of the best preserved of its kind, in southern Jordan. For the past 19 years, Robert Bewley and colleague David Kennedy have flown above Jordan to photograph, discover and preserve archaeology. While Roman, Ottoman, Byzantine, Nabatean, Neolithic and British imperial sites have been uncovered, the pair has also revealed both mysterious man-made rock structures and "catastrophic" urban sprawl destroying and threatening sites across the kingdom. (David Kennedy/APAAME via AP)

Rollefson has found oak, duckweed, cattails and tamarisk pollen in red mud at a Neolithic site called Wisad Pools. Other archaeologists have found animal bones. The discoveries have led archaeologists to reach a consensus, he said.

"There's no question, that place was a lot greener than it is today," Rollefson said. "There used to be a heck of a lot more water than there is

today."

The evidence suggests the kites were massive hunting traps used to corral wild game in a much greener environment. People would drive herds between stone walls that would slowly narrow the running animals into dead-end pits six-feet deep.

"They become like a Safeway meat market," Rollefson said. "Just leave them down there until you want to eat them."

At first Kennedy wasn't allowed to fly when he began the Aerial Photographic Archive for Archaeology in the Middle East in 1978. He spent 25 years collecting aerial photos and old maps before Google Earth made satellite images widespread.



In this Sept. 27, 2016 photo, Robert Bewley checks the flight path of a helicopter piloted by Jordanian air force to GPS coordinates of archaeological

sites in Jordan. For the past 19 years, Bewley and colleague David Kennedy have flown above Jordan to photograph, discover and preserve archaeology. Photographing from helicopters dozens of Roman, Ottoman, Byzantine, Nabatean, Neolithic and British imperial sites, the pair have made two major discoveries: mysterious man-made rock structures in Jordan's deep desert and "catastrophic" urban sprawl destroying and threatening sites across the kingdom. (AP Photo/Sam McNeil)

The Aerial Archaeology in Jordan project took to the skies in 1997 when the head of the air force, Prince Faisal, brother to reigning King Abdullah II, authorized flights on Jordanian military helicopters. A decade later, Kennedy and Bewley increased the range and number of flights after receiving grants from the Packard Humanities Institute adding up to \$2.5 million.

Bewley said the aerial perspective, even in an age of Google Earth, can inform and lead to new discoveries.

Andreas Zirbini, a research associate at Oxford University, has flown with the pair to photograph limestone outcroppings in northwestern Jordan outside the city of Irbid. These geological features are telltale signs of ancient agriculture.

Hi-resolution photos and GPS coordinates enable Zirbini to identify quarries, wine presses, reservoirs, and tombs.

"Even from the helicopter it might not look like something, but I know there's a 90-percent chance there will be something human-made," he said.



This June 1, 2010 photo provided by Aerial Photographic Archive for Archaeology in the Middle East, APAAME, taken from a helicopter, shows the Crusader-era Shaubak Castle in Jordan. For the past 19 years, Robert Bewley and colleague David Kennedy have flown above Jordan to photograph, discover and preserve archaeology. Photographing dozens of Roman, Ottoman, Byzantine, Nabatean, Neolithic and British imperial sites, the pair have made two major discoveries: mysterious man-made rock structures in Jordan's deep desert and "catastrophic" urban sprawl destroying and threatening sites across the kingdom. (David Kennedy/APAAME via AP)

Kennedy and Bewley moved their database to Oxford where it is now part of the larger region-wide Endangered Archaeology in the Middle East and North Africa project. With new funding from the Augustus Foundation, the pair aims to expand the scope of historic and contemporary images—and keep flying.

"We frequently find ourselves smiling with delight because you can't

speak very often because of the sound of the helicopter. But as your flying over them you find yourself grinning foolishly because there's something rather remarkable opening up beneath you going on and on and on into the distance," Kennedy said.

Over 6.6 million people have viewed the archive online (www.apaame.org)—which has more than 1,000 pages of photos—and 161 research projects have used the images, Bewley said.

"We don't want them to be just sitting in an archive so it's an online database of photographs that people can look at and be able to do their research on," he said. "The purpose of taking the photographs is that people will use them in the future."



This Oct. 11, 2015 photo provided by Aerial Photographic Archive for Archaeology in the Middle East, APAAME, taken from a helicopter, shows a well-preserved and complex prehistoric hunting trap known as a kite atop a black

basalt mesa in Jordan's eastern desert. For the past 19 years, Robert Bewley and colleague David Kennedy have flown above Jordan to photograph, discover and preserve archaeology. Photographing dozens of Roman, Ottoman, Byzantine, Nabatean, Neolithic and British imperial sites, the pair have made two major discoveries: mysterious man-made rock structures in Jordan's deep desert and "catastrophic" urban sprawl destroying and threatening sites across the kingdom. (Don Boyer/APAAME via AP)



This June 1, 2004 photo provided by Aerial Photographic Archive for Archaeology in the Middle East, APAAME, taken from a helicopter, shows a two-lane road cut through a prehistoric hunting trap known as a kite, in Jordan. Low stone walls would lead gazelle and other wild game into 6-foot deep pits where Neolithic people would "just leave them down there until you want to eat them... like a Safeway meat market," said Gary Rollefson, a professor emeritus at Whitman College. The photo is part of a 91,000-image archive of archaeology across the Middle East, run by Robert Bewley and David Kennedy who have spent 19 years flying over Jordan to photograph, discover and preserve archaeology. (David Kennedy/APAAME via AP)



In this Sept. 11, 2006 photo provided by Aerial Photographic Archive for Archaeology in the Middle East, APAAME, taken from a helicopter, clouds cover the Byzantine church of Mar Elias near the city of Ajloun in northern Jordan. The photo is part of a 91,000-image archive of archaeology across the Middle East run by Robert Bewley and David Kennedy, who have spent 19 years flying over Jordan to photograph, discover and preserve archaeology. Photographing dozens of Roman, Ottoman, Byzantine, Nabatean, Neolithic and British imperial sites, the pair have made two major discoveries: mysterious man-made rock structures in Jordan's deep desert and "catastrophic" urban sprawl destroying and threatening sites across the kingdom. (David Kennedy/APAAME via AP)



This Sept. 10, 2006 photo provided by Aerial Photographic Archive for Archaeology in the Middle East, APAAME, taken from a helicopter, shows the Roman site of Machaerus, which ancient sources say John the Baptist was imprisoned and killed. For the past 19 years, Robert Bewley and colleague David Kennedy have flown above Jordan to photograph, discover and preserve archaeology. Photographing dozens of Roman, Ottoman, Byzantine, Nabatean, Neolithic and British imperial sites, the pair have made two major discoveries: mysterious man-made rock structures in Jordan's deep desert and "catastrophic" urban sprawl destroying and threatening sites across the kingdom. (Francesca Radcliffe/APAAME via AP)



This May 22, 2012 photo provided by Aerial Photographic Archive for Archaeology in the Middle East, APAAME, taken from a helicopter, shows a well-preserved and complex prehistoric hunting trap known as a kite atop a black basalt mesa in Jordan's eastern desert. Low stone walls would lead gazelle and other wild game into 6-foot deep pits where Neolithic people would "just leave them down there until you want to eat them... like a Safeway meat market," said Gary Rollefson, a professor emeritus at Whitman College. The photo is part of a 91,000-image archive of archaeology across the Middle East, run by Robert Bewley and David Kennedy who have spent 19 years flying over Jordan photographing sites. (David Kennedy/APAAME via AP)



This Oct. 16, 2010 photo provided by Aerial Photographic Archive for Archaeology in the Middle East, APAAME, taken from a helicopter, shows destructive bulldozer tracks around Kheirbat al-Wahid archaeological site in Jordan. For the past 19 years, Robert Bewley and colleague David Kennedy have flown above Jordan to photograph, discover and preserve archaeology. Photographing dozens of Roman, Ottoman, Byzantine, Nabatean, Neolithic and British imperial sites, the pair have made two major discoveries: mysterious man-made rock structures in Jordan's deep desert and "catastrophic" urban sprawl destroying and threatening sites across the kingdom. (Stafford Smith/APAAME via AP)



This May 5, 2010 photo provided by Aerial Photographic Archive for Archaeology in the Middle East, APAAME, taken from a helicopter, shows urban sprawl that surrounds an archaeological site known as "Miller #86" in Jordan. For the past 19 years, Robert Bewley and colleague David Kennedy have flown above Jordan to photograph, discover and preserve archaeology. Photographing dozens of Roman, Ottoman, Byzantine, Nabatean, Neolithic and British imperial sites, the pair have made two major discoveries: mysterious man-made rock structures in Jordan's deep desert and "catastrophic" urban sprawl destroying and threatening sites across the kingdom. (David Kennedy/APAAME via AP)



This June 1, 2010 photo provided by Aerial Photographic Archive for Archaeology in the Middle East, APAAME, taken from a helicopter, shows a well-preserved and complex prehistoric hunting trap known as a kite atop a black basalt mesa in Jordan's eastern desert. Low stone walls would lead gazelle and other wild game into 6-foot deep pits where Neolithic people would "just leave them down there until you want to eat them... like a Safeway meat market," said Gary Rollefson, a professor emeritus at Whitman College. The photo is part of a 91,000-image archive of archaeology across the Middle East, run by Robert Bewley and David Kennedy who have spent 19 years flying over Jordan photographing sites. (Stafford Smith/APAAME via AP)



This Oct. 1, 2015 photo taken from a helicopter shows extensive construction around Roman era archaeology in Tell al-Husn, Jordan. The aerial photo is part of a 91,000-image archive of archaeology across the Middle East based at the University of Oxford run by Robert Bewley and David Kennedy who have spent 19 years flying over Jordan photographing sites. (Matthew Dalton/APAAME via AP)



In this Sept. 27, 2016 photo, Jordanian air force helicopter pilots and archaeologist Robert Bewley ready a helicopter for a mission to photograph archaeological sites in Jordan. Bewley and colleague David Kennedy have flown above Jordan to photograph, discover and preserve archaeology. Photographing from helicopters dozens of Roman, Ottoman, Byzantine, Nabatean, Neolithic and British imperial sites, the pair have made two major discoveries: mysterious man-made rock structures in Jordan's deep desert and "catastrophic" urban sprawl destroying and threatening sites across the kingdom. (AP Photo/Sam McNeil)



This Sept. 27, 2016 aerial photo shows the outskirts of Amman, Jordan. For the past 19 years, Robert Bewley and colleague David Kennedy have flown above Jordan to photograph, discover and preserve archaeology. Photographing from helicopters dozens of Roman, Ottoman, Byzantine, Nabatean, Neolithic and British imperial sites, the pair have made two major discoveries: mysterious man-made rock structures in Jordan's deep desert and "catastrophic" urban sprawl destroying and threatening sites across the kingdom. (AP Photo/Sam McNeil)



This Oct. 19, 2014 photo provided by Aerial Photographic Archive for Archaeology in the Middle East, APAAME, taken from a helicopter, shows extensive construction around the Shuqayra archaeological site in Khierbet el-Qusubah, Jordan. The photo is part of a 91,000-image archive of archaeology across the Middle East run by Robert Bewley and David Kennedy who have spent 19 years flying over Jordan to photograph, discover and preserve archaeology. Photographing dozens of Roman, Ottoman, Byzantine, Nabatean, Neolithic and British imperial sites, the pair have made two major discoveries: mysterious man-made rock structures in Jordan's deep desert and "catastrophic" urban sprawl destroying and threatening sites across the kingdom. (Don Boyer/APAAME via AP)

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