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Heavy metals posing a threat to Kinabatangan wildlife

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KOTA KINABALU: Heavy metal pollution from unknown sources around plantations is posing a threat to Sabah's wildlife, according to groundbreaking research.

A scientific study conducted over eight years since 2013 on small carnivores found 13 different types of metal in their fur, and – worryingly – lead, mercury, chromium and cadmium, too.

Carried out under the Kinabatangan Small Carnivore Programme (KSCP) which evaluated the health of small carnivores in the area, the study's findings were published in the latest issue of the *Journal of Environmental Research*.

The study also pushed for more in-depth investigation into identifying the sources of the heavy metals as this is a crucial step in protecting wildlife, human welfare and economic development.

Project leader and the first author of the research paper, Dr Meaghan Evans, said the metals found in wild Malayan civets and palm civets could be dangerous to not just the animals but humans, too.

"The biological effects following exposure to these different metals range from relatively small issues such as skin irritation to markedly more serious repercussions like infertility and even death," she said.

For their research, the team captured and collected samples from wild Malayan and common palm civets, shaving a small section of fur on each animal to draw blood samples for lab analysis.

The team found that certain metal levels in civet fur were associated with the animal's age, weight, proximity to tributaries and access to oxbow lakes.

"During sampling events, we also fitted GPS collars on the male civets to document each animal's use of the forest and/or plantations.

"This allowed us to directly test the potential influence of agriculture on the metal levels we observed.

"Civets that spent time on oil palm plantations had significantly elevated concentrations of aluminium, lead and cadmium in their fur samples compared with animals that stayed in protected forests," said Evans.

"Although this data does not definitely identify the plantations as explicit sources (incidental or deliberate) of metals, our research certainly supports future evaluations of agricultural practises with sector partners," she said.

"With this project, we harnessed this flexibility to establish these animals as indicator species, meaning that we could identify the biological extent of metal contamination within the Kinabatangan Floodplain," she said, adding that the area was largely converted into oil palm plantations with no formal evaluation being carried out on the environmental disturbance that caused the metals pollution.

Sabah Wildlife Department assistant director Mohd Soffian Abu Bakar said the study was groundbreaking as it coincided with the post-mortem report on the deaths of three Borneo pygmy elephants from cadmium poisoning last month.

"Although neither of these studies directly identified the original source of these metals, both provided irrefutable evidence of animal exposure to inorganic pollutants," said Mohd Soffian.

Danau Girang Field Centre director Dr Benoit Goossens said it would be carrying out further studies to identify the sources of these metals and how animals were being exposed to them.

The work of the KSCP is funded through research grants from the Houston and Phoenix Zoos in the United States, Ocean Park Conservation Foundation Hong Kong and Yayasan Sime Darby.



Gathering data: Dr Evans fixing a GPS collar on an anaesthetised Malayan civet.