SCIENTIFIC MISCONDUCT

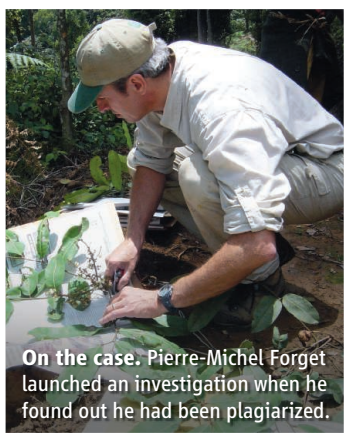
Reviewer's Déjà Vu, French Science Sleuthing Uncover Plagiarized Papers

Last August, Patrick Jansen, an ecologist at Wageningen University in the Netherlands, thought a paper he was asked to review for the *International Journal of Biodiversity and Conservation* (*IJBC*) seemed familiar. Suspicious, he ran it through the Turnitin antiplagiarism software often used by instructors to catch students who have copied others' work.

Jansen was startled to find that about 90% of the text was copied from a 2007 paper in *Conservation Biology* that he had coauthored with ecologist Pierre-Michel Forget of France's National Museum of Natural History. The paper submitted to *IJBC* examined how human hunting of small animals negatively affected the dispersal of seeds of the Moabi tree, *Baillonella toxisperma*, in the Republic of the Congo. Jansen and Forget's original paper reported on the crabwood tree, *Carapa procera*, in French Guiana and Surinam. But aside from the different tree and location, the two papers were nearly identical, including the text, figures, tables, and statistical analyses.

After a few insistent e-mails to the journal, Forget and Jansen were given the name of the submitted paper's corresponding author: Serge Valentin Pangou, director of the Study and Research Group on Biological Diversity (GERDIB) in Brazzaville, the Congo's capital. While GERDIB is not well known internationally, it is an important institution in the Congo that often carries out ecological and environmental studies for the government, researchers familiar with it say. And according to foreign scientists who have worked in the Congo, as its director, Pangou serves as a powerful gatekeeper who can grant research permits to them, as well as to Congolese graduate students and junior researchers.

Forget, whose father was a well-known private detective in France, began investigating Pangou's published scientific papers, eventually concluding that at least nine of them, published between 2006 and 2011, were plagiarized in whole or in part. An investigation by *Science* supports Forget's conclusions and also finds that some of Pangou's coauthors were unaware that their names were used. The affair has already led to the retraction of four papers on which Pangou is the corresponding author, as well as the rejection of the paper submitted to *IJBC*.



On the case. Pierre-Michel Forget launched an investigation when he found out he had been plagiarized.

Pangou tells *Science* that he accepts "all of the responsibility" for the papers that have already been withdrawn, but he contends that he did not deliberately engage in plagiarism, chalking it up to "the abusive utilization of bibliograph[ies]" which he "regrets sincerely." He did, however, admit to *Science* that he added some authors to papers without their knowledge.

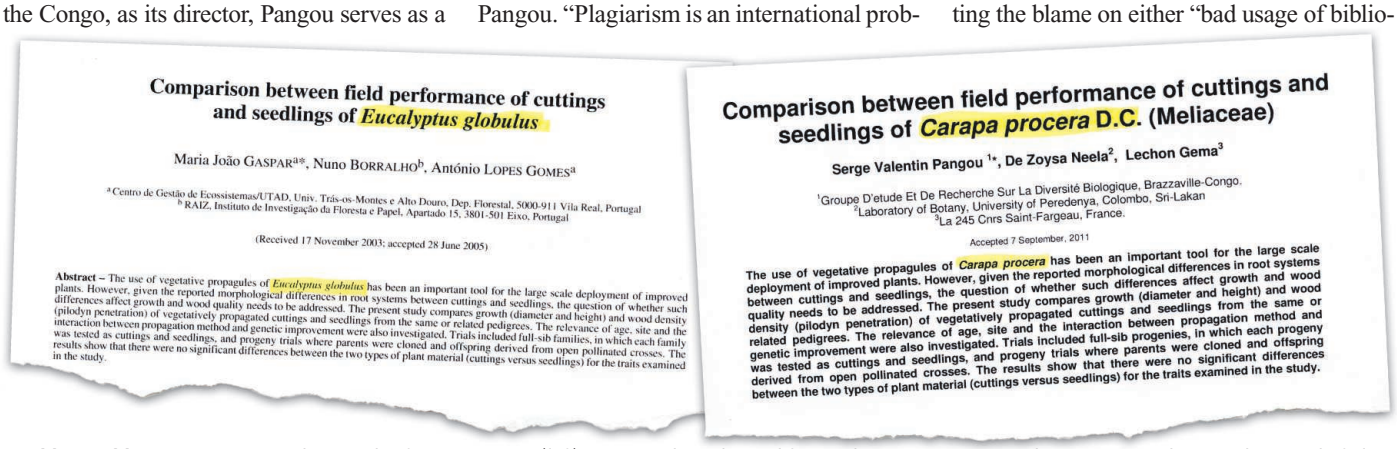
Forget, who has worked for many years in Africa, says he became "obsessed" with the case and persisted even after some colleagues suggested privately that he might be harming African science by exposing the alleged misdeeds of a high-level research official like Pangou. "Plagiarism is an international problem, not an African one," he says.

Forget's investigation also raises questions about how rapidly journals react to such charges. As Forget contacted journals, some acted quickly. The editors of the botany journal *Candollea* immediately retracted a 2009 paper by Pangou and three co-authors that turned out to be largely copied from an earlier paper in the *Journal of Tropical Ecology*. It also included sections from the Ph.D. thesis of one of Forget's colleagues. *Candollea* accompanied the retraction notice with a short editorial denouncing plagiarism.

Others were slower off the mark, Forget says. The editors of *Food Chemistry*, published by Elsevier, took months to act after being informed by an author of a 2011 paper in the journal that his paper had been plagiarized by Pangou just months later in the *International Research Journal of Plant Science* (*IRJPS*). Only after an inquiry by *Science* late last month did Elsevier notify *IRJPS*'s editors about the offending paper and ask for a retraction, which they then quickly did.

Wendy Hurp, Elsevier's publisher for food science journals, says the delay in dealing with the accusation was due to an "oversight" and that Elsevier usually acts quickly to run suspected papers through the CrossCheck antiplagiarism database. In this particular case, Hurp's team found that 59% of Pangou's paper was identical to the earlier one in *Food Chemistry*.

In two of the four cases in which papers have been retracted, Pangou has written on official GERDIB stationery to the editors involved, taking overall responsibility but putting the blame on either "bad usage of biblio-



Comparison between field performance of cuttings and seedlings of *Eucalyptus globulus*

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Abstract – The use of vegetative propagules of *Eucalyptus globulus* has been an important tool for the large scale deployment of improved plants. However, given the reported morphological differences in root systems between cuttings and seedlings, the question of whether such differences affect growth and wood quality needs to be addressed. The present study compares growth (diameter and height) and wood density (pilodyn penetration) of vegetatively propagated cuttings and seedlings from the same or related pedigrees. The relevance of age, site and the interaction between propagation method and genetic improvement were also investigated. Trials included full-sib families, in which each family was tested as cuttings and seedlings, and progeny trials where parents were cloned and offspring derived from open pollinated crosses. The results show that there were no significant differences between the two types of plant material (cuttings versus seedlings) for the traits examined in the study.

Comparison between field performance of cuttings and seedlings of *Carapa procera* D.C. (Meliaceae)

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PHOTO CREDIT: © PIERRE-MICHEL FORGET

Double trouble. A 2005 paper in the *Annals of Forest Science* (*left*) was copied nearly word for word in a 2011 paper in the *International Research Journal of Plant Science* (*right*) that has since been retracted. Serge Pangou has admitted sole responsibility.

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graphic review" or on a "junior researcher" co-author. When *Science* asked about that co-author, Pangou said he had lost track of her; attempts by *Science* to find the researcher have so far failed.

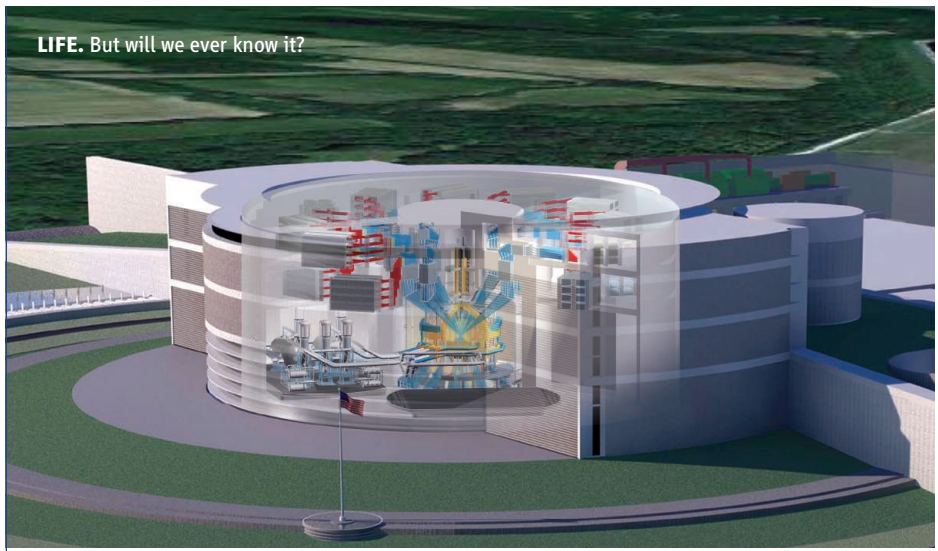
Three co-authors contacted by *Science* said Pangou has either not been in touch with them recently or not informed them that they were listed as co-authors on his papers. One, a Sri Lankan researcher named Neela de Zoysa, appears on four of the papers Forget says are plagiarized, and on another one published last year whose originality has not yet been questioned. She is identified in the papers as being at the University of Peradeniya in Sri Lanka, a position she held long ago in the 1980s, but de Zoysa, reached in Massachusetts where she has lived since 1991, says she had no knowledge of the papers and has had no contact with Pangou since 1985. De Zoysa, who has since worked at Harvard and Brandeis universities but is now an independent botanist, says she met Pangou briefly in Paris at a workshop that year. Pangou, when informed of de Zoysa's statements by *Science*, said in an e-mail that he had been telling "half-truths" and "wished to personally address my apologies" to her.

Another co-author on Pangou's papers is Théophile Bouki, a forest engineer who works for the African Network of Model Forests in Yaoundé, Cameroon, and who recently received his doctoral degree in France. Bouki, who spent time in Brazzaville as a student and knows Pangou, is listed as a co-author on four papers Forget has concluded are plagiarized, including the *Candollea* paper. Bouki says Pangou never showed him the papers ahead of time and that in at least one case he was completely unaware of its publication. In a telephone interview, Pangou agreed that Bouki had nothing to do with the alleged plagiarism.

In an earlier e-mail to *Science*, Pangou said that the retractions and accusations had already "demolished my scientific career," adding that he had "learned my lesson" and that "such failings will not happen anymore."

One Western scientist who works in the Congo and knows Pangou, but who asked not to be identified, says that "years of government neglect" of the war-torn country's scientific effort, along with the Congo's "isolation from the international community," has led to a failure to teach ethical standards to researchers, even though there are "a number of well-trained and honest people here who are trying to make a difference."

Indeed, Forget says that his crusade against plagiarism is for the benefit of the younger generation of African scientists. As for Pangou, the son of a detective believes "the case is now closed." **–MICHAEL BALTER**



LIFE. But will we ever know it?

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ENERGY RESEARCH

Report on Future of Fusion Research Says U.S. Should Hedge Its Bets

The United States should fund a national program of research into inertial fusion energy, but it's too early to pick a winning technology. So says an interim report released this week from a committee that has been surveying research at national laboratories and universities since July 2010 on behalf of the National Research Council (NRC) of the U.S. National Academies. This interim conclusion will come as a relief to many in the field who have been concerned that the National Ignition Facility (NIF) at Lawrence Livermore National Laboratory—the world's largest and most advanced inertial fusion facility—would come to dominate the U.S. research effort (*Science*, 28 October 2011, p. 445).

Most fusion research focuses on magnetic confinement, using powerful electromagnets to contain a thin plasma of hydrogen isotopes and heat it until the nuclei fuse. Inertial confinement is an alternative method in which small capsules of hydrogen-isotope fuel are crushed to produce the intense temperature and pressure needed for fusion to occur.

Although researchers have been working on inertial confinement fusion for more than 50 years, no device has yet achieved "ignition," a self-sustaining fusion reaction that generates at least as much energy as it consumes. NIF, which was completed in 2009, is aiming to achieve ignition before the end of September this year. With this prospect in view, the Department of Energy asked NRC to carry out this review and formulate a road map for research toward a power-producing demonstration reactor. In the past, the United States has taken a scattershot approach toward inertial confinement fusion research, supporting different techniques through a variety of funding channels.

In its interim statement—released on 7 March to help with federal budget planning—the committee concluded that "many of the technologies needed … are still at an early stage of technological maturity." Those technologies include the "driver" used to crush the fuel capsule, such as lasers, heavy ion beams, or powerful pulses of electric current. The driver can also be trained either directly onto the fuel capsule or indirectly onto a heavy metal container, which then heats the capsule inside by bathing it in x-rays. Other issues for a power reactor will be developing a reaction chamber that can withstand intense neutron bombardment for years on end and discovering a way to produce the fuel capsules quickly and cheaply. (A reactor may consume a million or more capsules every day.)

The interim report notes that while "there have been impressive R&D efforts to develop a wide range of driver technologies, … very little effort has been spent on developing the technology of the reactor chambers or on addressing materials problems peculiar to inertial fusion."

The most thorough forward look at a future inertial fusion plant was carried out by staff at NIF. It resulted in a conceptual design dubbed the Laser Inertial Fusion Energy

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