

## Editorial

# Conservation science takes to the air

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The current issue of TCS includes nine papers encompassing an exciting range of conservation topics.

One article highlights the use of drone technology, originally designed for military use, for environmental and conservation applications. The authors (**Koh and Wich**) tested this technology in Aras Napal in Sumatra, Indonesia. They show how this inexpensive technology (compared with satellite imagery or conventional airplane-based aerial surveys) allows for near real-time mapping of local land cover, monitoring of illegal forest activities, and surveying of large animal species. The technology can be used for one-time surveys or consecutive surveys of the same areas.

**Scheffers et al** investigate how unregulated hunting and the bushmeat trade can severely affect wildlife populations, particularly in a national park in southern Luzon in the Philippines. Most of the bushmeat was sold and consumed by residents of the local community and nearby towns. The authors argue that due to limited law enforcement in the study area, conservation efforts should aim at teaching local hunters to avoid endangered species or encouraging them to monitor local animal populations.

**Jaafar and Giam** argue that the media can play an important role in educating the public on conservation issues, but that both misinformation and omission of information may compromise its effectiveness. They examine the reaction to the discovery of the carcass of an 11 m long, 14.5 ton whale shark (*Rhincodon typus*) – one of the largest fish ever recorded - in the Arabian Sea. The whale shark was towed to Karachi harbor. News stories about the incident were characterized by misinformation. The authors argue that reporting on such newsworthy events should be an opportunity to educate the public on marine conservation and the ecology of whale sharks, but scientists need to take proactive roles in correcting errors in mass-media articles.

**Granados et al.** examine how Increasing human settlement and disturbance adjacent to protected areas have intensified competition between people and elephants for resources and living space in the vicinity of Bénoué National Park in northern Cameroon. Using satellite-derived positions from 2007 to 2009, the researchers found that more than half of all elephant movement occurred

outside the national park, indicating a high potential for human-elephant conflict. The authors emphasize the need for land-use planning to reduce elephant-human conflict.

**Kumara et al.**, investigate population parameters of Asian elephants in the Biligiri Rangaswamy Temple Tiger Reserve in southern India and argue that the use of the distance sampling technique may yield more accurate results than the traditional block counts or dung counts. The authors collected data on location, number and age-sex classes through direct elephant sightings, using rangefinders, global positioning systems and compass. They estimated the existence of 713 elephants in 610 km<sup>2</sup> of the sanctuary and noted that a high percentage of males less than 30 years old and a low immature:adult female ratio suggest that poaching is affecting the population.

Little is known about the current distribution of regionally endemic species in the tropics, such as the Ecuadorian capuchin monkey, found in western Ecuador and extreme northern Peru. Using ground surveys and interviews with local inhabitants **Jack and Campos** report on the current distribution of this neotropical primate in western Ecuador. The authors found that the capuchins displayed a preference for mature forest near streams and also used degraded forest frequently. Populations are threatened by habitat loss, hunting, and harassment by farmers. The authors note that some remaining populations have the potential to grow if effective protection can be established.

Human intervention to accelerate or sustain forest restoration is an important approach to conservation of degraded tropical forests. **Roman et al.**, tested the early performance of 16 early and mid-succession native tree species in abandoned cattle pasture dominated by the invasive African grass, *Cynodon plectostachyus*, within the Lacandon rainforest region in southeast Mexico. They found that removing grass significantly improves the performance of many of the experimental tree species and suggest that restoration plantings with early- and mid- successional tree species may be an important strategy for forest recovery.

**Bitany et al.**, argue that the study of local awareness and perceptions of illegal resource harvesting is necessary for designing efficient wildlife resources conservation programs. The authors examined awareness and attitudes related to wildlife hunting practices among local communities in the Magu, Bunda and Serengeti districts in the western part of Tanzania's Serengeti National Park. They found that members of these communities were fairly aware of the occurrence of illegal hunting practices, but knowledge about legal hunting systems was limited. They also noted that the extent of awareness of these practices varied by age, gender, and level of education, with limited awareness observed among women and those with higher education levels. The authors suggest that enhanced education programs and promotion of alternative livelihood options may decrease dependence on wildlife resources.

Dung beetles are one of most diverse groups of insects in the tropics and play a critical role in various ecosystem processes, such as recycling of matter, nutrients and energy, as well as in seed dispersal and in soil aeration. Members of this animal community are particularly sensitive to native habitat loss caused by humans, but insufficient data have been gathered on the geographic distribution of many species. **Campos and Lobo** modeled the distribution of species of dung-beetles belonging to the genus *Eurysternum*, in order to identify areas that are not yet adequately surveyed. The authors used 22,000 georeferenced records of the 53 currently recognized species of this genus and explored the main macroclimatic variables which may explain the distribution of these species. Their study showed that annual mean temperature and annual precipitation are the

variables with the greatest explanatory capacity and that species with wide climatic niches would primarily inhabit the rainiest and coldest American locations. The authors conclude that future surveys need to be conducted in these areas to improve our understanding of the biogeography and taxonomy of this genus.

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