2017

Hopeful monsters - In defense of quests to rediscover long-lost species

David M. Watson

Robert A. Davis
Edith Cowan University, robert.davis@ecu.edu.au

10.1111/conl.12386
Originally published as: David, W. M., & Davis, R. A. Hopeful Monsters–in Defence of Quests to Rediscover Long-Lost Species. *Conservation Letters.10*(4) 382-383. Original article available here

Conservation Letters
A journal of the Society for Conservation Biology
Open Access

VIEWPOINT

Hopeful Monsters—In Defense of Quests to Rediscover Long-Lost Species

David M. Watson[1] & Robert A. Davis[2]

[1] Institute for Land, Charles Sturt University, Water and Society, PO Box 789, Albury, Australia
[2] School of Science, Edith Cowan University, Joondalup, Australia

Keywords
Lazarus species; flagship species; extinction; engagement.

Correspondence
David M. Watson, Institute for Land, Charles Sturt University, Water and Society, PO Box 789, Albury, Australia.
Tel: +61 2 6051 9992;
E-mail dwatson@csu.edu.au

Received
24 April 2017
Accepted
7 June 2017

doi: 10.1111/conl.12386

Wild goose chase, snipe hunt, fool's errand—these retorts typify responses of many biologists to news that someone is searching for a species considered extinct. Although these ventures can damage reputations and may offer false hope regarding the finality of extinction, genuine conservation gains often result, even for those quests that prove unsuccessful. As well as enhanced protection for regions where rediscovered species persist and new information of direct management relevance for co-occurring species, well-planned searches for long-lost species represent valuable engagement opportunities to raise awareness in the wider community about biodiversity conservation and science generally. Indeed, we suggest that "Lazarus species" (organisms rediscovered having been presumed extinct, after Dawson *et al.* 2006) provide beacons of hope in an increasingly desperate scramble to conserve species, shining a light on dark diversity and reminding us that population trajectories can have exceedingly long tails.

A recent analysis documented 351 amphibian, bird and mammal species that have been rediscovered since 1889, rediscoveries occurring with increasing frequency leading Scheffers *et al.* (2011) to suggest "we are confident that many species presently thought to have gone extinct by experts remain extant, particularly those species that are known only from type specimens." Their careful analyses make striking reading and beg the question—if all these supposedly extinct species keep re-appearing, why aren't we prioritizing our efforts to find them? Several conservation organizations have done just that (Birdlife International's 47 birds that haven't been seen for up to 147 years; Conservation International's 100 lost amphibian species and The Search for Lost Species which is a worldwide quest to find and protect missing species), using the hope of rediscovery to boost fund-raising, often discovering undescribed species in the process.

If it is likely that many lost species are still extant, why don't scientists devote greater efforts to rediscovering them? A primary impediment is attitudinal—to many ecologists and conservation scientists, species rediscovery is regarded as more folly than fieldwork and can be laden with politics. As an example, one of us (RAD) observed living Night Parrots in Western Australia in 2005 and the subsequent written account represented the first

official record of the species in 93 years. Despite being scrutinized and accepted by peers, doubts were frequently aired regarding the veracity of the sighting and the underlying motivations in announcing it. The sighting came from land owned and managed by a mining company and this sighting was instrumental in securing significant investment in Night Parrot surveys across inland Australia. In the course of that work, additional discoveries were made at three localities, Australia's two largest wildlife conservation organizations acquired properties and began managing them specifically for Night Parrots. Rather than research scientists, much of this initial survey work was conducted by dedicated naturalists in their own time, including the recent discovery and photograph of Night Parrots in Western Australia and putative recording of Night Parrot vocalizations in the Northern Territory. This leads us to the second impediment to rediscoveries—funding. It is exceedingly difficult to procure the requisite funding for expeditions on the premise that a species might be rediscovered. Consequently, most rediscoveries result from happenstance or personally-funded expeditions and painstaking detective work. We think it's time that we changed our attitude and realized the benefits that arise from such quests.

One such benefit is umbrella protection often afforded to entire ecosystems associated with iconic lost species. In 2004 and 2005, a series of sightings of a large black and white woodpecker with a red crest were made in the Cache River National Wildlife Refuge of Arkansas, announced in a peer-reviewed article as evidence that the Ivory-billed Woodpecker is extant (Fitzpatrick *et al.* 2005). Also in 2005, a series of observations consistent with Ivory-billed Woodpeckers was made in the Choctawhatchee River Basin of western Florida (Hill *et al.* 2006). In the following decade, these sightings catalyzed exhaustive searches in both regions and, although other sightings were reported, doubts surfaced and verified photographic evidence has yet to be produced. While opinion on the veracity of these observations varies, they were instrumental in the formation of the Big Woods Conservation Partnership, a consortium of national, state and regional organizations that manages the largest remnant of native forest in the northern Mississippi valley.

While rediscovery can spearhead reservation and increase awareness about a particular habitat or region, it may come too late for the rediscovered species. Fisher (2011) found that 60% of rediscovered mammals remain critically endangered or endangered and 8% are likely to become extinct. This was corroborated by Scheffers *et al.* (2011) who found that most species were acutely threatened post rediscovery: of 99 rediscovered amphibians, over 55% were listed as endangered or critically endangered, 4% as extinct/extinct in the wild and 26% considered data deficient. These grim outcomes for rediscovered species often result from the continuation of the threats that caused their initial demise coupled with the fact that 95% of all missing species have restricted ranges and so are likely predisposed to decline.

Since long-lost species characteristically persist in inaccessible and poorly explored places, quests to search for them often discover new species, highlighting cryptic diversity and reaffirming the continued existence of little known taxa and assemblages (Loxdale *et al.*, 2016). We regard this new knowledge to be the greatest contribution of funded expeditions to seek out lost species, using iconic flagships to capture the public's interest and showcase the fundamental roles of field identification skills and biodiversity monitoring. Regardless of how blurry the resultant photographs of a long-lost species might be, the emerging distributional data and population estimates of extant species, and thorough inventories of incipient threats and key stakeholders are invaluable, doubly so when scrutinized by an engaged general public. The finality of extinction can make communicating conservation science a succession of bad news stories, but the occasional unlikely rediscovery must be celebrated. Rediscovering long-lost species can maintain hope, rekindle wonder, engage the wider community in conservation practice, and should play a pivotal role in transitioning from crisis management to strategic protection.

References

Dawson, M.R., Marivaux, L., Li, C.K., Beard, K.C. & Metais, G. (2006). *Laonastes* and the "Lazarus effect'' in recent mammals. *Science*, **311**, 1456-1458

Fisher, D.O. (2011). Cost, effort and outcome of mammal rediscovery: neglect of small species. *Biol. Conserv.*, **144**(5), 1712-1718.

Fitzpatrick, J.W., Lammertink, M., Luneau Jr., M.D. *et al.* (2005). Ivory-billed woodpecker (*Campephilus principalis*) persists in continental North America. *Science*, **308**, 1460-1462.

Hill, G.E., Mennill, D.J., Rolek, B.W., Hicks, T.L. & Swiston, K.A. (2006). Evidence suggesting that Ivory-billed Woodpeckers (*Campephilus principalis*) exist in Florida. *Avian Conserv. Ecol.*, **1**(3), 2. http://www.ace-eco.org/vol1/iss3/art2/

Loxdale, H.D., Davis, B.J. & Davis, R.A. (2016). Known knowns and unknowns in biology. *Biol. J. Linn. Soc.*, **117**(2), 386-398.

Scheffers, B.R., Yong, D.L., Harris, J.B.C., Giam, X. & Sodhi, N.S. (2011). The world's rediscovered species: back from the brink? *PLoS ONE*, **6**(7), e22531. https://doi.org/10.1371/journal.pone.0022531

