

**Amazon's Doomed Species Set to Pay  
Deforestation's 'Extinction Price'**  
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Sample, Ian. "Amazon's Doomed Species Set to Pay  
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# Amazon's Doomed Species Set to Pay Deforestation's 'Extinction Debt'

by Ian Sample

*Ending forest clearance would not save some species from the effects of decades of destruction, scientists find.*

1 The destruction of great swaths of the Brazilian Amazon has turned scores of rare species  
2 into the walking dead, doomed to disappear even if deforestation were halted in the region  
3 overnight, according to a new study.

4 Forest clearing in Brazil has already claimed casualties, but the animals lost to date in the  
5 rainforest region are just one-fifth of those that will slowly die out as the full impact of the loss  
6 of habitat takes its toll. In parts of the eastern and southern Amazon, 30 years of concerted  
7 deforestation have shrunk viable<sup>1</sup> living and breeding territories enough to condemn 38  
8 species to regional extinction in coming years, including 10 mammal, 20 bird and 8 amphibian  
9 species, scientists found.

10 The systematic clearance of trees from the Amazon forces wildlife into ever-smaller patches of  
11 ground.

12 Though few species are killed off directly in forest clearances, many face a slower death  
13 sentence as their breeding rates fall and competition for food becomes more intense.

14 Scientists at Imperial College, London, reached the bleak conclusion after creating a statistical  
15 model to calculate the Brazilian Amazon's "extinction debt", or the number of species headed for  
16 extinction as a result of past deforestation. The model draws on historical deforestation rates  
17 and animal populations in 50 by 50 kilometre squares of land.

18 It stops short of naming the species most at risk, but field workers in the region have drawn  
19 attention to scores of creatures struggling to cope with habitat destruction and other  
20 environmental threats.

21 White-cheeked spider monkeys, which feed on fruits high in the forest canopy, are endangered  
22 largely because of the expansion of farmland and road building. The population of Brazilian  
23 bare-faced tamarins<sup>2</sup> has halved in 18 years, or three generations, as cities, agriculture and  
24 cattle ranching have pushed into the rainforest. The endangered giant otter, found in the slow-

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<sup>1</sup> viable: capable of working successfully

<sup>2</sup> tamarin: endangered primate species

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25 moving rivers and swamps of the Amazon, faces water pollution from agricultural runoff and  
26 mining operations in the area.

27 Writing in the journal *Science*, Robert Ewers and his co-authors reconstructed extinction rates  
28 from 1970 to 2008, and then forecast future extinction debts under four different scenarios,  
29 ranging from “business as usual” to a “strong reduction” in forest clearance, which required  
30 deforestation to slow down 80% by 2020.

31 “For now, the problem is along the arc of deforestation in the south and east where there is a  
32 long history of forest loss. But that is going to move in the future. We expect most of the species  
33 there to go extinct, and we’ll pick up more extinction debt along the big, paved highways which  
34 are now cutting into the heart of the Amazon,” Ewers told the *Guardian* from Belém, northern  
35 Brazil.

36 Under the “business as usual” scenario, where around 62 sq miles (160 sqkm) of forest are  
37 cleared each year, at least 15 mammal, 30 bird and 10 amphibian species were expected to die  
38 out locally by 2050, from around half of the Amazon. Under the most optimistic scenario, which  
39 requires cattle ranchers and soy farmers to comply with Brazilian environmental laws, the  
40 extinction debt could be held close to 38 species.

41 Ewers said the model reveals hotspots in the Brazilian Amazon where conservation efforts  
42 should be focused on the most vulnerable wildlife. “This shows us where we are likely to have  
43 high concentrations of species which are all in trouble, and that becomes a way for directing our  
44 conservation efforts. We are talking about an extinction debt. Those species are still alive, so we  
45 have an opportunity to get in there and restore the habitat to avoid paying that debt,” Ewers  
46 said.

47 The Brazilian Amazon is home to 40% of the world’s tropical forest and one of the most  
48 biodiverse regions on the planet. About 54% of the area is under environmental protection, and  
49 in the past five years, stricter controls and better compliance have driven deforestation rates  
50 down to a historical low.

51 The trend towards less deforestation might not last though. Under pressure from the financial  
52 crisis, the Brazilian government has proposed a rapid development programme in the Amazon  
53 to fuel the economy. The move foresees the construction of more than 20 hydroelectric power  
54 plants in the Amazon basin and an extensive push into the rainforest.

55 Environmentalists are further concerned about an overhaul to Brazil’s Forest Code, which is  
56 widely expected to weaken the protection of the rainforest, and potentially speed up

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57 deforestation once more, according to an article in *Science* by Thiago Rangel, an ecologist at  
58 the Federal University of Goiás in Brazil. “Extinction debts in the Brazilian Amazon are one debt  
59 that should be defaulted on,” he writes.

60 Reducing the rate that extinction debts build up is not enough to preserve the Amazon’s  
61 biodiversity, Rangel argues. “The existing debt may eventually lead to the loss of species. To  
62 prevent species extinctions, it is necessary to take advantage of the window of opportunity for  
63 forest regeneration. Restored or regenerated forests initially show lower native species richness  
64 than the original forests they replaced, but they gradually recover species richness, composition  
65 and vital ecosystems functions, reducing extinction debt and mitigating local species loss,” he  
66 writes.

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