



What Works in Conservation



2020

EDITED BY

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Sutherland, W.J., Dicks, L.V., Petrovan, S.O., and Smith, R.K. *What Works in Conservation 2020*. Cambridge, UK: Open Book Publishers, 2020. <https://doi.org/10.11647/OBP.0191>

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What Works in Conservation Series | ISSN: 2059-4232 (Print); 2059-4240 (Online)

ISBN Paperback: 978-1-78374-833-4

ISBN Hardback: 978-1-78374-834-1

ISBN Digital (PDF): 978-1-78374-835-8

ISBN Digital ebook (epub): 978-1-78374-836-5

ISBN Digital ebook (mobi): 978-1-78374-837-2

ISBN Digital (XML): 978-1-78374-838-9

DOI: 10.11647/OBP.0191

Funded by Arcadia, DEFRA, ESRC, MAVA Foundation, NERC, Natural England, Robert Bosch Stiftung, Synchronicity Earth, South West Water and Waitrose Ltd.

Cover image: A close up shot of the underside of a Dwarf Cavendish (*Musa acuminata*) by Ben Clough, CC BY-SA 3.0. Wikimedia http://commons.wikimedia.org/wiki/File:Dwarf_cavendish_leaf_2.jpg. Cover design: Heidi Coburn

7. PRIMATE CONSERVATION

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Scope of assessment: for wild primate species across the world.

Assessed: 2017.

Effectiveness measure is the median % score for effectiveness.

Certainty measure is the median % certainty of evidence for effectiveness, determined by the quantity and quality of the evidence in the synopsis.

Harm measure is the median % score for negative side-effects to the group of species of concern.

This book is meant as a guide to the evidence available for different conservation interventions and as a starting point in assessing their effectiveness. The assessments are based on the available evidence for the target group of species for each intervention. The assessment may therefore refer to different species or habitat to the one(s) you are considering. Before making any decisions about implementing interventions it is vital that you read the more detailed accounts of the evidence in order to assess their relevance for your study species or system.

Full details of the evidence are available at
www.conservationevidence.com

There may also be significant negative side-effects on the target groups or other species or communities that have not been identified in this assessment.

A lack of evidence means that we have been unable to assess whether or not an intervention is effective or has any harmful impacts.

7.1 Threat: Residential and commercial development

Based on the collated evidence, what is the current assessment of the effectiveness of interventions for residential and commercial development?	
Likely to be beneficial	<ul style="list-style-type: none">• Remove and relocate 'problem' animals
No evidence found (no assessment)	<ul style="list-style-type: none">• Relocate primates to non-residential areas• Discourage the planting of fruit trees and vegetable gardens on the urban edge

Likely to be beneficial

● Remove and relocate 'problem' animals

Three studies, including one replicated, before-and-after trial, in India, Kenya, the Republic of Congo and Gabon found that most primates survived the translocation. One study found that all translocated rhesus monkeys remained at the release site for at least four years. Another study showed that after 16 years, 66% of olive baboons survived and survival rate was similar to wild study groups. The third study showed that 84% of gorillas released in the Republic of Congo and Gabon survived for at least four years. *Assessment: likely to be beneficial (effectiveness 60%; certainty 50%; harms 10%).*

<https://www.conservationevidence.com/actions/1422>

No evidence found (no assessment)

We have captured no evidence for the following interventions:

- Relocate primates to non-residential areas
- Discourage the planting of fruit trees and vegetable gardens on the urban edge biodiversity-friendly farming.

7.2 Threat: Agriculture

Based on the collated evidence, what is the current assessment of the effectiveness of interventions for agriculture?	
Likely to be beneficial	<ul style="list-style-type: none"> • Humans chase primates using random loud noises
Unknown effectiveness (limited evidence)	<ul style="list-style-type: none"> • Prohibit (livestock) farmers from entering protected areas • Use nets to keep primates out of fruit trees
No evidence found (no assessment)	<ul style="list-style-type: none"> • Create natural habitat islands within agricultural land • Use fences as biological corridors for primates • Provide sacrificial rows of crops on outer side of fields • Compensate farmers for produce loss caused by primates • Pay farmers to cover the costs of non-harmful strategies to deter primates • Retain nesting trees/shelter for primates within agricultural fields • Plant nesting trees/shelter for primates within agricultural fields • Regularly remove traps and snares around agricultural fields • Certify farms and market their products as 'primate friendly' • Farm more intensively and effectively in selected areas and spare more natural land • Install mechanical barriers to deter primates (e.g. fences, ditches)

	<ul style="list-style-type: none">• Use of natural hedges to deter primates• Use of unpalatable buffer crops• Change of crop (i.e. to a crop less palatable to primates)• Plant crops favoured by primates away from primate areas• Destroy habitat within buffer zones to make them unusable for primates• Use GPS and/or VHF tracking devices on individuals of problem troops to provide farmers with early warning of crop raiding• Chase crop-raiding primates using dogs• Train langur monkeys to deter rhesus macaques• Use loud-speakers to broadcast sounds of potential threats (e.g. barking dogs, explosions, gunshots)• Use loud-speakers to broadcast primate alarm calls• Strategically lay out the scent of a primate predator (e.g. leopard, lion)• Humans chase primates using bright light
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Likely to be beneficial

● Humans chase primates using random loud noise

One controlled, replicated, before-and-after study in Indonesia found that in areas where noise deterrents were used, along with tree nets, crop raiding by orangutans was reduced. One study in the Democratic Republic Congo found that chasing gorillas and using random noise resulted in the return of gorillas from plantation to areas close to protected forest. *Assessment: likely to be beneficial (effectiveness 50%; certainty 40%; harms 0%).*

<https://www.conservationevidence.com/actions/1449>



Unknown effectiveness (limited evidence)

● **Prohibit (livestock) farmers from entering protected areas**

One before-and-after site comparison study in Rwanda found that numbers of young gorillas increased after removal of cattle from a protected area, alongside other interventions. One before-and-after study in Rwanda, Uganda, and the Democratic Republic of Congo found that gorilla numbers declined following the removal of livestock, alongside other interventions.

Assessment: unknown effectiveness — limited evidence (effectiveness 50%; certainty 30%; harms 0%).

<https://www.conservationevidence.com/actions/1432>

● **Use nets to keep primates out of fruit trees**

A controlled, replicated, before-and-after study in Indonesia found that areas where nets were used to protect crop trees, crop-raiding by orangutans was reduced. *Assessment: unknown effectiveness — limited evidence (effectiveness 40%; certainty 30%; harms 20%).*

<https://www.conservationevidence.com/actions/1442>

No evidence found (no assessment)

We have captured no evidence for the following interventions:

- Create natural habitat islands within agricultural land
- Use fences as biological corridors for primates
- Provide sacrificial rows of crops on outer side of fields
- Compensate farmers for produce loss caused by primates
- Pay farmers to cover the costs of non-harmful strategies to deter primates
- Retain nesting trees/shelter for primates within agricultural fields
- Plant nesting trees/shelter for primates within agricultural fields
- Regularly remove traps and snares around agricultural fields
- Certify farms and market their products as 'primate friendly'
- Farm more intensively and effectively in selected areas and spare more natural land

- Install mechanical barriers to deter primates (e.g. fences, ditches)
- Use of natural hedges to deter primates
- Use of unpalatable buffer crops
- Change of crop (i.e. to a crop less palatable to primates)
- Plant crops favoured by primates away from primate areas
- Destroy habitat within buffer zones to make them unusable for primates
- Use GPS and/or VHF tracking devices on individuals of problem troops to provide farmers with early warning of crop raiding
- Chase crop-raiding primates using dogs
- Train langur monkeys to deter rhesus macaques
- Use loud-speakers to broadcast sounds of potential threats (e.g. barking dogs, explosions, gunshots)
- Use loud-speakers to broadcast primate alarm calls
- Strategically lay out the scent of a primate predator (e.g. leopard, lion)
- Humans chase primates using bright light.

7.3 Threat: Energy production and mining

Based on the collated evidence, what is the current assessment of the effectiveness of interventions for energy and production mining?	
No evidence found (no assessment)	<ul style="list-style-type: none">• Minimize ground vibrations caused by open cast mining activities• Establish no-mining zones in/near watersheds so as to preserve water levels and water quality• Use 'set-aside' areas of natural habitat for primate protection within mining area• Certify mines and market their products as 'primate friendly' (e.g. ape-friendly cellular phones)• Create/preserve primate habitat on islands before dam construction

No evidence found (no assessment)

We have captured no evidence for the following interventions:

- Minimize ground vibrations caused by open cast mining activities
- Establish no-mining zones in/near watersheds so as to preserve water levels and water quality
- Use 'set-aside' areas of natural habitat for primate protection within mining area
- Certify mines and market their products as 'primate friendly' (e.g. ape-friendly cellular phones)
- Create/preserve primate habitat on islands before dam construction.

7.4 Threat: Transportation and service corridors

Based on the collated evidence, what is the current assessment of the effectiveness of interventions for transportation and service corridors?	
Likely to be beneficial	<ul style="list-style-type: none"> • Install rope or pole (canopy) bridges
No evidence found (no assessment)	<ul style="list-style-type: none"> • Install green bridges (overpasses) • Implement speed limits in particular areas (e.g. with high primate densities) to reduce vehicle collisions with primates • Reduce road widths • Impose fines for breaking the speed limit or colliding with primates • Avoid building roads in key habitat or migration routes • Implement a minimum number of roads (and minimize secondary roads) needed to reach mining extraction sites • Re-use old roads rather than building new roads • Re-route vehicles around protected areas • Install speed bumps to reduce vehicle collisions with primates • Provide adequate signage of presence of primates on or near roads



Likely to be beneficial

● Install rope or pole (canopy) bridges

One before-and-after study in Belize study found that howler monkey numbers increased after pole bridges were constructed over man-made gaps. Two studies in Brazil and Madagascar found that primates used pole bridges to cross roads and pipelines. *Assessment: likely to be beneficial (effectiveness 50%; certainty 50%; harms 0%).*

<https://www.conservationevidence.com/actions/1457>

No evidence found (no assessment)

We have captured no evidence for the following interventions:

- Install green bridges (overpasses)
- Implement speed limits in particular areas (e.g. with high primate densities) to reduce vehicle collisions with primates
- Reduce road widths
- Impose fines for breaking the speed limit or colliding with primates
- Avoid building roads in key habitat or migration routes
- Implement a minimum number of roads (and minimize secondary roads) needed to reach mining extraction sites
- Re-use old roads rather than building new roads
- Re-route vehicles around protected areas
- Install speed bumps to reduce vehicle collisions with primates
- Provide adequate signage of presence of primates on or near roads.

7.5 Threat: Biological resource use

7.5.1 Hunting

Based on the collated evidence, what is the current assessment of the effectiveness of interventions for hunting?	
Likely to be beneficial	<ul style="list-style-type: none"> • Conduct regular anti-poaching patrols • Regularly de-activate/remove ground snares • Provide better equipment (e.g. guns) to anti-poaching ranger patrols • Implement local no-hunting community policies/traditional hunting ban • Implement community control of patrolling, banning hunting and removing snares
Unknown effectiveness (limited evidence)	<ul style="list-style-type: none"> • Strengthen/support/re-install traditions/taboo that forbid the killing of primates • Implement monitoring surveillance strategies (e.g. SMART) or use monitoring data to improve effectiveness of wildlife law enforcement patrols • Provide training to anti-poaching ranger patrols
No evidence found (no assessment)	<ul style="list-style-type: none"> • Implement no-hunting seasons for primates • Implement sustainable harvesting of primates (e.g. with permits, resource access agreements) • Encourage use of traditional hunting methods rather than using guns • Implement road blocks to inspect cars for illegal primate bushmeat



	<ul style="list-style-type: none"> • Provide medicine to local communities to control killing of primates for medicinal purposes • Introduce ammunition tax • Inspect bushmeat markets for illegal primate species • Inform hunters of the dangers (e.g., disease transmission) of wild primate meat
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Likely to be beneficial

● Conduct regular anti-poaching patrols

Two of three studies found that gorilla populations increased after regular anti-poaching patrols were conducted, alongside other interventions. One study in Ghana found a decline in gorilla populations. One review on gorillas in Uganda found that no gorillas were killed after an increase in anti-poaching patrols. *Assessment: likely to be beneficial (effectiveness 70%; certainty 50%; harms 0%).*

<https://www.conservationevidence.com/actions/1471>

● Regularly de-activate/remove ground snares

One of two studies found that the number of gorillas increased in an area patrolled for removing snares, alongside other interventions. One study in the Democratic Republic of Congo, Rwanda, and Uganda found that gorilla populations declined despite snare removal. *Assessment: likely to be beneficial (effectiveness 60%; certainty 40%; harms 0%).*

<https://www.conservationevidence.com/actions/1475>

● Provide better equipment (e.g. guns) to anti-poaching ranger patrols

Two studies in the Democratic Republic of Congo and Rwanda found that gorilla populations increased after providing anti-poaching guards with better equipment, alongside other interventions. One study in Uganda found that no gorillas were killed after providing game guards with better equipment. *Assessment: likely to be beneficial (effectiveness 50%; certainty 40%; harms 0%).*

<https://www.conservationevidence.com/actions/1476>

- **Implement local no-hunting community policies/traditional hunting ban**

Four studies, one of which had multiple interventions, in the Democratic Republic of Congo, Belize, Cameroon and Nigeria found that primate populations increased in areas where there were bans on hunting or where hunting was reduced due to local taboos. One study found that very few primates were killed in a sacred site in China where it is forbidden to kill wildlife. *Assessment: likely to be beneficial (effectiveness 60%; certainty 40%; harms 0%).*

<https://www.conservationevidence.com/actions/1478>

- **Implement community control of patrolling, banning hunting and removing snares**

Two site comparison studies found that there were more gorillas and chimpanzees in an area managed by a community conservation organisation than in areas not managed by local communities and community control was more effective at reducing illegal primate hunting compared to the nearby national park. A before-and-after study in Cameroon found that no incidents of gorilla poaching occurred over three years after implementation of community control and monitoring of illegal activities. *Assessment: likely to be beneficial (effectiveness 70%; certainty 50%; harms 0%).*

<https://www.conservationevidence.com/actions/1482>

Unknown effectiveness (limited evidence)

- **Strengthen/support/re-install traditions/taboo that forbid the killing of primates**

One site comparison study in Laos found that Laotian black crested gibbons occurred at higher densities in areas where they were protected by a local hunting taboo compared to sites where there was no taboo. *Assessment: unknown effectiveness — limited evidence (effectiveness 60%; certainty 10%; harms 0%).*

<https://www.conservationevidence.com/actions/1479>



● **Implement monitoring surveillance strategies (e.g. SMART) or use monitoring data to improve effectiveness of wildlife law enforcement patrols**

One before-and-after study in Nigeria found that more gorillas and chimpanzees were observed after the implementation of law enforcement and a monitoring system. *Assessment: unknown effectiveness — limited evidence (effectiveness 60%; certainty 30%; harms 0%).*

<https://www.conservationevidence.com/actions/1481>

● **Provide training to anti-poaching ranger patrols**

Two before-and-after studies in Rwanda and India found that primate populations increased in areas where anti-poaching staff received training, alongside other interventions. Two studies in Uganda and Cameroon found that no poaching occurred following training of anti-poaching rangers, alongside other interventions. *Assessment: unknown effectiveness — limited evidence (effectiveness 70%; certainty 30%; harms 0%).*

<https://www.conservationevidence.com/actions/1477>

No evidence found (no assessment)

We have captured no evidence for the following interventions:

- Implement no-hunting seasons for primates
- Implement sustainable harvesting of primates (e.g. with permits, resource access agreements)
- Encourage use of traditional hunting methods rather than using guns
- Implement road blocks to inspect cars for illegal primate bushmeat
- Provide medicine to local communities to control killing of primates for medicinal purposes
- Introduce ammunition tax
- Inspect bushmeat markets for illegal primate species
- Inform hunters of the dangers (e.g., disease transmission) of wild primate meat.

7.5.2 Substitution

Based on the collated evidence, what is the current assessment of the effectiveness of interventions for substitution?	
Unknown effectiveness (limited evidence)	<ul style="list-style-type: none"> • Use selective logging instead of clear-cutting • Avoid/minimize logging of important food tree species for primates
No evidence found (no assessment)	<ul style="list-style-type: none"> • Use patch retention harvesting instead of clear-cutting • Implement small and dispersed logging compartments • Use shelter wood cutting instead of clear-cutting • Leave hollow trees in areas of selective logging for sleeping sites • Clear open patches in the forest • Thin trees within forests • Coppice trees • Manually control or remove secondary mid-storey and ground-level vegetation • Avoid slashing climbers/lianas, trees housing them, hemi-epiphytic figs, and ground vegetation • Incorporate forested corridors or buffers into logged areas • Close non-essential roads as soon as logging operations are complete • Use 'set-asides' for primate protection within logging area • Work inward from barriers or boundaries (e.g. river) to avoid pushing primates toward an impassable barrier or inhospitable habitat • Reduce the size of forestry teams to include employees only (not family members) • Certify forest concessions and market their products as 'primate friendly' • Provide domestic meat to workers of the logging company to reduce hunting



Unknown effectiveness (limited evidence)

● Use selective logging instead of clear-cutting

One of two site comparison studies in Africa found that primate abundance was higher in forests that had been logged at low intensity compared to forest logged at high intensity. One study in Uganda found that primate abundances were similar in lightly and heavily logged forests. One study in Madagascar found that the number of lemurs increased following selective logging. *Assessment: unknown effectiveness — limited evidence (effectiveness 60%; certainty 35%; harms 30%).*

<https://www.conservationevidence.com/actions/1485>

● Avoid/minimize logging of important food tree species for primates

One before-and-after study in Belize found that black howler monkey numbers increased over a 13 year period after trees important for food for the species were preserved, alongside other interventions. *Assessment: unknown effectiveness — limited evidence (effectiveness 60%; certainty 20%; harms 0%).*

<https://www.conservationevidence.com/actions/1494>

No evidence found (no assessment)

We have captured no evidence for the following interventions:

- Use patch retention harvesting instead of clear-cutting
- Implement small and dispersed logging compartments
- Use shelter wood cutting instead of clear-cutting
- Leave hollow trees in areas of selective logging for sleeping sites
- Clear open patches in the forest
- Thin trees within forests
- Coppice trees
- Manually control or remove secondary mid-storey and ground-level vegetation.
- Avoid slashing climbers/lianas, trees housing them, hemi-epiphytic figs, and ground vegetation
- Incorporate forested corridors or buffers into logged areas
- Close non-essential roads as soon as logging operations are complete
- Use 'set-asides' for primate protection within logging area

Primate Conservation

- Work inward from barriers or boundaries (e.g. river) to avoid pushing primates toward an impassable barrier or inhospitable habitat
- Reduce the size of forestry teams to include employees only (not family members)
- Certify forest concessions and market their products as 'primate friendly'
- Provide domestic meat to workers of the logging company to reduce hunting.

7.6 Threat: Human intrusions and disturbance

Based on the collated evidence, what is the current assessment of the effectiveness of interventions for human intrusions and disturbance?	
Unknown effectiveness (limited evidence)	<ul style="list-style-type: none"> • Implement a 'no-feeding of wild primates' policy • Put up signs to warn people about not feeding primates • Resettle illegal human communities (i.e. in a protected area) to another location
No evidence found (no assessment)	<ul style="list-style-type: none"> • Build fences to keep humans out • Restrict number of people that are allowed access to the site • Install 'primate-proof' garbage bins • Do not allow people to consume food within natural areas where primates can view them

Unknown effectiveness (limited evidence)

● Implement a 'no-feeding of wild primates' policy

A controlled before-and-after study in Japan found that reducing food provisioning of macaques progressively reduced productivity and reversed population increases and crop and forest damage. *Assessment: unknown effectiveness — limited evidence (effectiveness 40%; certainty 20%; harms 0%).*

<https://www.conservationevidence.com/actions/1502>

● **Put up signs to warn people about not feeding primates**

One review study in Japan found that after macaque feeding by tourists was banned and advertised, the number of aggressive incidents between people and macaques decreased as well as the number of road collisions with macaques that used to be fed from cars. *Assessment: unknown effectiveness — limited evidence (effectiveness 30%; certainty 10%; harms 0%).*

<https://www.conservationevidence.com/actions/1507>

● **Resettle illegal human communities (i.e. in a protected area) to another location**

One review on gorillas in Uganda found that no more gorillas were killed after human settlers were relocated outside the protected area, alongside other interventions. One before-and-after study in the Republic of Congo found that most reintroduced chimpanzees survived over five years after human communities were resettled, alongside other interventions. *Assessment: unknown effectiveness — limited evidence (effectiveness 65%; certainty 15%; harms 0%).*

<https://www.conservationevidence.com/actions/1515>

No evidence found (no assessment)

We have captured no evidence for the following interventions:

- Build fences to keep humans out
- Restrict number of people that are allowed access to the site
- Install 'primate-proof' garbage bins
- Do not allow people to consume food within natural areas where primates can view them.

7.7 Threat: Natural system modifications

Based on the collated evidence, what is the current assessment of the effectiveness of interventions for natural system modifications?

**No evidence found
(no assessment)**

- Use prescribed burning within the context of home range size and use
- Protect important food/nest trees before burning

No evidence found (no assessment)

We have captured no evidence for the following interventions:

- Use prescribed burning within the context of home range size and use
- Protect important food/nest trees before burning.

7.8 Threat: Invasive and other problematic species and genes

7.8.1 Problematic animal/plant species and genes

Based on the collated evidence, what is the current assessment of the effectiveness of interventions for problematic animal/plant species and genes?	
No evidence found (no assessment)	<ul style="list-style-type: none">• Reduce primate predation by non-primate species through exclusion (e.g. fences) or translocation• Reduce primate predation by other primate species through exclusion (e.g. fences) or translocation• Control habitat-altering mammals (e.g. elephants) through exclusion (e.g. fences) or translocation• Control inter-specific competition for food through exclusion (e.g. fences) or translocation• Remove alien invasive vegetation where the latter has a clear negative effect on the primate species in question• Prevent gene contamination by alien primate species introduced by humans, through exclusion (e.g. fences) or translocation



No evidence found (no assessment)

We have captured no evidence for the following interventions:

- Reduce primate predation by non-primate species through exclusion (e.g. fences) or translocation
- Reduce primate predation by other primate species through exclusion (e.g. fences) or translocation
- Control habitat-altering mammals (e.g. elephants) through exclusion (e.g. fences) or translocation
- Control inter-specific competition for food through exclusion (e.g. fences) or translocation
- Remove alien invasive vegetation where the latter has a clear negative effect on the primate species in question
- Prevent gene contamination by alien primate species introduced by humans, through exclusion (e.g. fences) or translocation.

7.8.2 Disease transmission

Based on the collated evidence, what is the current assessment of the effectiveness of interventions for disease transmission?	
Trade-off between benefit and harms	<ul style="list-style-type: none"> • Preventative vaccination of habituated or wild primates
Unknown effectiveness (limited evidence)	<ul style="list-style-type: none"> • Wear face-masks to avoid transmission of viral and bacterial diseases to primates • Keep safety distance to habituated animals • Limit time that researchers/tourists are allowed to spend with habituated animals • Implement quarantine for primates before reintroduction/translocation • Ensure that researchers/tourists are up-to-date with vaccinations and healthy • Regularly disinfect clothes, boots etc.

	<ul style="list-style-type: none"> • Treat sick/injured animals • Remove/treat external/internal parasites to increase reproductive success/survival • Conduct veterinary screens of animals before reintroducing/translocating them • Implement continuous health monitoring with permanent vet on site • Detect and report dead primates and clinically determine their cause of death to avoid disease transmission
<p>No evidence found (no assessment)</p>	<ul style="list-style-type: none"> • Implement quarantine for people arriving at, and leaving the site • Wear gloves when handling primate food, tool items, etc. • Control ‘reservoir’ species to reduce parasite burdens/pathogen sources • Avoid contact between wild primates and human-raised primates • Implement a health programme for local communities

Trade-off between benefit and harms

● Preventative vaccination of habituated or wild primates

Three before-and-after studies in the Republic of Congo and Gabon, two focusing on chimpanzees and one on gorillas, found that most reintroduced individuals survived over 3.5-10 years after being vaccinated, alongside other interventions. One before-and-after study in Puerto Rico found that annual mortality of introduced rhesus macaques decreased after a preventative tetanus vaccine campaign, alongside other interventions. *Assessment: trade-offs between benefits and harms (effectiveness 70%; certainty 40%; harms 30%).*

<https://www.conservationevidence.com/actions/1549>



Unknown effectiveness (limited evidence)

● **Wear face-masks to avoid transmission of viral and bacterial diseases to primates**

One before-and-after study in Rwanda, Uganda and the Democratic Republic of Congo found that gorilla numbers increased while being visited by researchers and visitors wearing face-masks, alongside other interventions. One study in Uganda found that a confiscated chimpanzee was successfully reunited with his mother after being handled by caretakers wearing face-masks, alongside other interventions. *Assessment: unknown effectiveness — limited evidence (effectiveness 50%; certainty 5%; harms 0%).*

<https://www.conservationevidence.com/actions/1537>

● **Keep safety distance to habituated animals**

One before-and-after study in the Republic of Congo found that most reintroduced chimpanzees survived over five years while being routinely followed from a safety distance, alongside other interventions. One before-and-after study in Rwanda, Uganda and the Democratic Republic of Congo found that gorilla numbers increased while being routinely visited from a safety distance, alongside other interventions. However, one study in Malaysia found that orangutan numbers declined while being routinely visited from a safety distance. *Assessment: unknown effectiveness — limited evidence (effectiveness 40%; certainty 10%; harms 0%).*

<https://www.conservationevidence.com/actions/1538>

● **Limit time that researchers/tourists are allowed to spend with habituated animals**

One before-and-after study in Rwanda, Uganda and the Democratic Republic of Congo found that gorilla numbers increased while being routinely visited during limited time, alongside other interventions. One controlled study in Indonesia found that the behaviour of orangutans that spent limited time with caretakers was more similar to the behaviour of wild orangutans than that of individuals that spent more time with caretakers. *Assessment: unknown effectiveness — limited evidence (effectiveness 40%; certainty 10%; harms 0%).*

<https://www.conservationevidence.com/actions/1539>

● **Implement quarantine for primates before reintroduction/translocation**

Six studies, including four before-and-after studies, in Brazil, Madagascar, Malaysia and Indonesia have found that most reintroduced primates did not survive or their population size decreased over periods ranging from months up to seven years post-release, despite being quarantined before release, alongside other interventions. However, two before-and-after studies in Indonesia, the Republic of Congo and Gabon found that most orangutans and gorillas that underwent quarantine survived over a period ranging from three months to 10 years. One before-and-after study in Uganda found that one reintroduced chimpanzee repeatedly returned to human settlements after being quarantined before release alongside other interventions. *Assessment: unknown effectiveness — limited evidence (effectiveness 50%; certainty 10%; harms 0%).*

<https://www.conservationevidence.com/actions/1541>

● **Ensure that researchers/tourists are up-to-date with vaccinations and healthy**

One before-and-after study in Rwanda, Uganda and the Republic of Congo found that gorilla numbers increased while being visited by healthy researchers and visitors, alongside other interventions. However, one controlled study in Malaysia found that orangutan numbers decreased despite being visited by healthy researchers and visitors, alongside other interventions. *Assessment: unknown effectiveness — limited evidence (effectiveness 30%; certainty 10%; harms 0%).*

<https://www.conservationevidence.com/actions/1546>

● **Regularly disinfect clothes, boots etc.**

One controlled, before-and-after study in Rwanda, Uganda and the Democratic Republic of Congo found that gorilla numbers increased while being regularly visited by researchers and visitors whose clothes were disinfected, alongside other interventions. *Assessment: unknown effectiveness — limited evidence (effectiveness 50%; certainty 10%; harms 0%).*

<https://www.conservationevidence.com/actions/1547>

● **Treat sick/injured animals**

Eight studies, including four before-and-after studies, in Brazil, Malaysia, Liberia, the Democratic Republic of Congo, The Gambia and South Africa

found that most reintroduced or translocated primates that were treated when sick or injured, alongside other interventions, survived being released and up to at least five years. However, five studies, including one review and four before-and-after studies, in Brazil, Thailand, Malaysia and Madagascar found that most reintroduced or translocated primates did not survive or their numbers declined despite being treated when sick or injured, alongside other interventions. One study in Uganda found that several infected gorillas were medically treated after receiving treatment, alongside other interventions. One study in Senegal found that one chimpanzee was reunited with his mother after being treated for injuries, alongside other interventions. *Assessment: unknown effectiveness — limited evidence (effectiveness 50%; certainty 20%; harms 0%).*

<https://www.conservationevidence.com/actions/1550>

● **Remove/treat external/internal parasites to increase reproductive success/survival**

Five studies, including four before-and-after studies, in the Republic of Congo, The Gambia and Gabon found that most reintroduced or translocated primates that were treated for parasites, alongside other interventions, survived periods of at least five years. However, four studies, including one before-and-after study, in Brazil, Gabon and Vietnam found that most reintroduced primates did not survive or their numbers declined after being treated for parasites, alongside other interventions. *Assessment: unknown effectiveness — limited evidence (effectiveness 40%; certainty 5%; harms 0%).*

<https://www.conservationevidence.com/actions/1551>

● **Conduct veterinary screens of animals before reintroducing/translocating them**

Twelve studies, including seven before-and-after studies, in Brazil, Malaysia, Indonesia, Liberia, the Republic of Congo, Guinea, Belize, French Guiana and Madagascar found that most reintroduced or translocated primates that underwent pre-release veterinary screens, alongside other interventions, survived, in some situations, up to at least five years or increased in population size. However, 10 studies, including six before-and-after studies, in Brazil, Malaysia, French Guiana, Madagascar, Kenya, South Africa and Vietnam found that most reintroduced or translocated primates did not survive or their numbers declined after undergoing pre-release veterinary screens, alongside other interventions. One before-and-after study in Uganda, found that one

reintroduced chimpanzee repeatedly returned to human settlements after undergoing pre-release veterinary screens, alongside other interventions. One controlled study in Indonesia found that gibbons that underwent pre-release veterinary screens, alongside other interventions, behaved similarly to wild gibbons. *Assessment: unknown effectiveness — limited evidence (effectiveness 50%; certainty 10%; harms 0%).*

<https://www.conservationevidence.com/actions/1553>

● **Implement continuous health monitoring with permanent vet on site**

One controlled, before-and-after study in Rwanda, Uganda and the Republic of Congo found that numbers of gorillas that were continuously monitored by vets, alongside other interventions, increased over 41 years. *Assessment: unknown effectiveness — limited evidence (effectiveness 60%; certainty 20%; harms 0%).*

<https://www.conservationevidence.com/actions/1554>

● **Detect and report dead primates and clinically determine their cause of death to avoid disease transmission**

One controlled, before-and-after study in Rwanda, Uganda and the Republic of Congo found that numbers of gorillas that were continuously monitored by vets, alongside other interventions, increased over 41 years. *Assessment: unknown effectiveness — limited evidence (effectiveness 40%; certainty 10%; harms 0%).*

<https://www.conservationevidence.com/actions/1556>

No evidence found (no assessment)

We have captured no evidence for the following interventions:

- Implement quarantine for people arriving at, and leaving the site
- Wear gloves when handling primate food, tool items, etc.
- Control 'reservoir' species to reduce parasite burdens/pathogen sources
- Avoid contact between wild primates and human-raised primates
- Implement a health programme for local communities.

7.9 Threat: Pollution

7.9.1 Garbage/solid waste

Based on the collated evidence, what is the current assessment of the effectiveness of interventions for garbage and solid waste?	
No evidence found (no assessment)	<ul style="list-style-type: none">• Reduce garbage/solid waste to avoid primate injuries• Remove human food waste that may potentially serve as food sources for primates to avoid disease transmission and conflict with humans

No evidence found (no assessment)

We have captured no evidence for the following interventions:

- Reduce garbage/solid waste to avoid primate injuries
- Remove human food waste that may potentially serve as food sources for primates to avoid disease transmission and conflict with humans.

7.9.2 Excess energy

Based on the collated evidence, what is the current assessment of the effectiveness of interventions for excess energy?	
No evidence found (no assessment)	<ul style="list-style-type: none">• Reduce noise pollution by restricting development activities to certain times of the day/night

No evidence found (no assessment)

We have captured no evidence for the following interventions:

- Reduce noise pollution by restricting development activities to certain times of the day/night.

7.10 Education and Awareness

Based on the collated evidence, what is the current assessment of the effectiveness of interventions for education and awareness?	
Unknown effectiveness (limited evidence)	<ul style="list-style-type: none"> • Educate local communities about primates and sustainable use • Involve local community in primate research and conservation management • Regularly play TV and radio announcements to raise primate conservation awareness • Implement multimedia campaigns using theatre, film, print media, discussions
No evidence found (no assessment)	<ul style="list-style-type: none"> • Install billboards to raise primate conservation awareness • Integrate local religion/taboo into conservation education

Unknown effectiveness (limited evidence)

● Educate local communities about primates and sustainable use

One before-and-after study in Cameroon found that numbers of drills increased after the implementation of an education programme, alongside one other intervention. *Assessment: unknown effectiveness – limited evidence (effectiveness 50%; certainty 0%; harms 0%).*

<https://www.conservationevidence.com/actions/1563>

● **Involve local community in primate research and conservation management**

One before-and-after study in Rwanda, Uganda and the Democratic Republic of Congo found that gorilla numbers decreased despite the implementation of an environmental education programme, alongside other interventions. However, one before-and-after study in Cameroon found that gorilla poaching stopped after the implementation of a community-based monitoring scheme, alongside other interventions. One before-and-after study in Belize found that numbers of howler monkeys increased while local communities were involved in the management of the sanctuary, alongside other interventions. One before-and-after study in Uganda found that a reintroduced chimpanzee repeatedly returned to human settlements despite the involvement of local communities in the reintroduction project, alongside other interventions. *Assessment: unknown effectiveness — limited evidence (effectiveness 50%; certainty 20%; harms 0%).*

<https://www.conservationevidence.com/actions/1565>

● **Regularly play TV and radio announcements to raise primate conservation awareness**

One before-and-after study in Congo found that most reintroduced chimpanzees whose release was covered by media, alongside other interventions, survived over five years. *Assessment: unknown effectiveness — limited evidence (effectiveness 50%; certainty 5%; harms 0%).*

<https://www.conservationevidence.com/actions/1569>

● **Implement multimedia campaigns using theatre, film, print media, and discussions**

Three before-and-after studies in Belize and India found that primate numbers increased after the implementation of education programs, alongside other interventions. Three before-and-after studies found that the knowledge about primates increased after the implementation of education programmes. One before-and-after study in Madagascar found that lemur poaching appeared to have ceased after the distribution of conservation books in schools. One study in four African countries found that large numbers of people were informed about gorillas through multimedia campaigns using theatre and film. *Assessment: unknown effectiveness — limited evidence (effectiveness 40%; certainty 10%; harms 0%).*

<https://www.conservationevidence.com/actions/1571>



No evidence found (no assessment)

We have captured no evidence for the following interventions:

- Install billboards to raise primate conservation awareness
- Integrate local religion/taboo into conservation education.

7.11 Habitat protection

7.11.1 Habitat protection

Based on the collated evidence, what is the current assessment of the effectiveness of interventions for habitat protection?	
Likely to be beneficial	<ul style="list-style-type: none"> • Create/protect habitat corridors
Unknown effectiveness (limited evidence)	<ul style="list-style-type: none"> • Legally protect primate habitat • Establish areas for conservation which are not protected by national or international legislation (e.g. private sector standards and codes) • Create/protect forest patches in highly fragmented landscapes
No evidence found (no assessment)	<ul style="list-style-type: none"> • Create buffer zones around protected primate habitat • Demarcate and enforce boundaries of protected areas

Likely to be beneficial

● Create/protect habitat corridors

One before-and-after study in Belize found that howler monkey numbers increased after the protection of a forest corridor, alongside other interventions. *Assessment: likely to be beneficial (effectiveness 65%; certainty 41%; harms 0%).*

<https://www.conservationevidence.com/actions/1580>



Unknown effectiveness (limited evidence)

● Legally protect primate habitat

Two reviews and a before-and-after study in China found that primate numbers increased or their killing was halted after their habitat became legally protected, alongside other interventions. However, one before-and-after study in Kenya found that colobus and mangabey numbers decreased despite the area being declared legally protected, alongside other interventions. Two before-and-after studies found that most chimpanzees and gorillas reintroduced to areas that received legal protection, alongside other interventions, survived over 4–5 years. However, one before-and-after study in Brazil found that most golden lion tamarins did not survive over seven years despite being reintroduced to a legally protected area, alongside other interventions, yet produced offspring that partly compensated the mortality. One controlled, site comparison study in Mexico found that howler monkeys in protected areas had lower stress levels than individuals living in unprotected forest fragments. *Assessment: unknown effectiveness — limited evidence (effectiveness 60%; certainty 30%; harms 0%).*

<https://www.conservationevidence.com/actions/1578>

● Establish areas for conservation which are not protected by national or international legislation (e.g. private sector standards and codes)

Two before-and-after studies in Rwanda, Republic of Congo and Belize found that gorilla and howler monkey numbers increased after the implementation of a conservation project funded by a consortium of organizations or after being protected by local communities, alongside other interventions. *Assessment: unknown effectiveness — limited evidence (effectiveness 60%; certainty 10%; harms 0%).*

<https://www.conservationevidence.com/actions/1579>

● Create/protect forest patches in highly fragmented landscapes

One before-and-after study in Belize found that howler monkey numbers increased after the protection of forest along property boundaries and across

cleared areas, alongside other interventions. *Assessment: unknown effectiveness — limited evidence (effectiveness 40%; certainty 10%; harms 0%).*

<https://www.conservationevidence.com/actions/1581>

No evidence found (no assessment)

We have captured no evidence for the following interventions:

- Create buffer zones around protected primate habitat
- Demarcate and enforce boundaries of protected areas.

7.11.2 Habitat creation or restoration

Based on the collated evidence, what is the current assessment of the effectiveness of interventions for habitat creation or restoration?	
Unknown effectiveness (limited evidence)	<ul style="list-style-type: none">• Plant indigenous trees to re-establish natural tree communities in clear-cut areas
No evidence found (no assessment)	<ul style="list-style-type: none">• Restore habitat corridors• Plant indigenous fast-growing trees (will not necessarily resemble original community) in clear-cut areas• Use weeding to promote regeneration of indigenous tree communities

Unknown effectiveness (limited evidence)

● Plant indigenous trees to re-establish natural tree communities in clear-cut areas

One site comparison study in Kenya found that group densities of two out of three primate species were lower in planted forests than in natural forests. *Assessment: unknown effectiveness — limited evidence (effectiveness 30%; certainty 5%; harms 0%).*

<https://www.conservationevidence.com/actions/1584>



No evidence found (no assessment)

We have captured no evidence for the following interventions:

- Restore habitat corridors
- Plant indigenous fast-growing trees (will not necessarily resemble original community) in clear-cut areas
- Use weeding to promote regeneration of indigenous tree communities.

7.12 Species management

7.12.1 Species management

Based on the collated evidence, what is the current assessment of the effectiveness of interventions for species management?	
Likely to be beneficial	<ul style="list-style-type: none">• Guard habituated primate groups to ensure their safety/well-being
Unknown effectiveness (limited evidence)	<ul style="list-style-type: none">• Habituate primates to human presence to reduce stress from tourists/researchers etc.• Implement legal protection for primate species under threat
No evidence found (no assessment)	<ul style="list-style-type: none">• Implement birth control to stabilize primate community/population size

Likely to be beneficial

● Guard habituated primate groups to ensure their safety/well-being

One study in Rwanda, Uganda and the Congo found that a population of mountain gorillas increased after being guarded against poachers, alongside other interventions. *Assessment: likely to be beneficial (effectiveness 60%; certainty 40%; harms 0%).*

<https://www.conservationevidence.com/actions/1523>



Unknown effectiveness (limited evidence)

● Habituate primates to human presence to reduce stress from tourists/researchers etc.

Two studies in Central Africa and Madagascar found that primate populations increased or were stable following habituation to human presence, alongside other interventions. One study in Brazil found that golden lion tamarin populations declined following habituation to human presence, alongside other interventions. *Assessment: unknown effectiveness – limited evidence (effectiveness 40%; certainty 20%; harms 10%).*

<https://www.conservationevidence.com/actions/1519>

● Implement legal protection for primate species under threat

Three of four studies in India, South East Asia, and West Africa found that primate populations declined after the respective species were legally protected, alongside other interventions. One of four studies in India found that following a ban on export of rhesus macaques, their population increased. One study in Malaysia found that a minority of introduced gibbons survived after implementing legal protection, along with other interventions. *Assessment: unknown effectiveness – limited evidence (effectiveness 40%; certainty 30%; harms 0%).*

<https://www.conservationevidence.com/actions/1524>

No evidence found (no assessment)

We have captured no evidence for the following interventions:

- Implement birth control to stabilize primate community/population size.

7.12.2 Species recovery

Based on the collated evidence, what is the current assessment of the effectiveness of interventions for species recovery?	
Unknown effectiveness (limited evidence)	<ul style="list-style-type: none"> • Regularly and continuously provide supplementary food to primates • Regularly provide supplementary food to primates during resource scarce periods only • Provide supplementary food for a certain period of time only • Provide additional sleeping platforms/nesting sites for primates • Provide artificial water sources
No evidence found (no assessment)	<ul style="list-style-type: none"> • Provide salt licks for primates • Provide supplementary food to primates through the establishment of prey populations

Unknown effectiveness (limited evidence)

● **Regularly and continuously provide supplementary food to primates**

Two of four studies found that primate populations increased after regularly providing supplementary food, alongside other interventions, while two of four studies found that populations declined. Four of four studies found that the majority of primates survived after regularly providing supplementary food, alongside other interventions. One study found that introduced lemurs had different diets to wild primates after regularly being providing supplementary food, along with other interventions. *Assessment: unknown effectiveness — limited evidence (effectiveness 50%; certainty 30%; harms 60%).*

<https://www.conservationevidence.com/actions/1526>

● **Regularly provide supplementary food to primates during resource scarce periods only**

Two studies found that the majority of primates survived after supplementary feeding in resource scarce periods, alongside other interventions. One study

in Madagascar found that the diet of introduced lemurs was similar to that of wild lemurs after supplementary feeding in resource scarce periods, alongside other interventions. *Assessment: unknown effectiveness – limited evidence (effectiveness 40%; certainty 10%; harms 10%).*

<https://www.conservationevidence.com/actions/1527>

● **Provide supplementary food for a certain period of time only**

Six of eleven studies found that a majority of primates survived after supplementary feeding, alongside other interventions. Five of eleven studies found that a minority of primates survived. One of two studies found that a reintroduced population of primates increased after supplementary feeding for two months immediately after reintroduction, alongside other interventions. One study found that a reintroduced population declined. Two studies found that abandoned primates rejoined wild groups after supplementary feeding, alongside other interventions. *Assessment: unknown effectiveness – limited evidence (effectiveness 40%; certainty 0%; harms 0%).*

<https://www.conservationevidence.com/actions/1528>

● **Provide additional sleeping platforms/nesting sites for primates**

One study found that a translocated golden lion tamarin population declined despite providing artificial nest boxes, alongside other interventions. One of two studies found that the majority of gorillas survived for at least seven years after nesting platforms were provided, alongside other interventions. One of two studies found that a minority of tamarins survived for at least seven years after artificial nest boxes were provided, alongside other interventions. *Assessment: unknown effectiveness – limited evidence (effectiveness 20%; certainty 0%; harms 0%).*

<https://www.conservationevidence.com/actions/1530>

● **Provide artificial water sources**

Three of five studies found that a minority of primates survived for between 10 months and seven years when provided with supplementary water, alongside other interventions. Two of five studies found that a majority of primates survived for between nine and ten months, when provided with

supplementary water, alongside other interventions. *Assessment: unknown effectiveness – limited evidence (effectiveness 20%; certainty 10%; harms 0%).*

<https://www.conservationevidence.com/actions/1531>

No evidence found (no assessment)

We have captured no evidence for the following interventions:

- Provide salt licks for primates
- Provide supplementary food to primates through the establishment of prey populations.

7.12.3 Species reintroduction

Based on the collated evidence, what is the current assessment of the effectiveness of interventions for species reintroduction?	
Likely to be beneficial	<ul style="list-style-type: none"> • Reintroduce primates into habitat where the species is absent
Unknown effectiveness (limited evidence)	<ul style="list-style-type: none"> • Translocate (capture and release) wild primates from development sites to natural habitat elsewhere • Translocate (capture and release) wild primates from abundant population areas to non-inhabited environments • Allow primates to adapt to local habitat conditions for some time before introduction to the wild • Reintroduce primates in groups • Reintroduce primates as single/multiple individuals • Reintroduce primates into habitat where the species is present • Reintroduce primates into habitat with predators • Reintroduce primates into habitat without predators



Likely to be beneficial

● **Reintroduce primates into habitat where the species is absent**

One of two studies found that primate populations increased after reintroduction into habitat where the species was absent, alongside other interventions. One study in Thailand found that lar gibbon populations declined post-reintroduction. One study in Indonesia found that an orangutan population persisted for at least four years after reintroduction. Eight of ten studies found that a majority of primates survived after reintroduction into habitat where the species was absent, alongside other interventions. Two studies in Malaysia and Vietnam found that a minority of primates survived after reintroduction into habitat where the species was absent, alongside other interventions. *Assessment: likely to be beneficial (effectiveness 60%; certainty 40%; harms 0%).*

<https://www.conservationevidence.com/actions/1590>

Unknown effectiveness (limited evidence)

● **Translocate (capture and release) wild primates from development sites to natural habitat elsewhere**

Four studies found that the majority of primates survived following translocation from a development site to natural habitat, alongside other interventions. One study in French Guyana found that a minority of primates survived for at least 18 months. One study in India found that rhesus macaques remained at sites where they were released following translocation from a development site to natural habitat, alongside other interventions. *Assessment: unknown effectiveness — limited evidence (effectiveness 60%; certainty 30%; harms 10%).*

<https://www.conservationevidence.com/actions/1558>

● **Translocate (capture and release) wild primates from abundant population areas to non-inhabited environments**

One study in Belize found that the majority of howler monkeys survived for at least 10 months after translocation from abundant population areas

to an uninhabited site, along with other interventions. *Assessment: unknown effectiveness — limited evidence (effectiveness 50%; certainty 20%; harms 0%).*

<https://www.conservationevidence.com/actions/1559>

● **Allow primates to adapt to local habitat conditions for some time before introduction to the wild**

Two of three studies found that primate populations declined despite allowing individuals to adapt to local habitat conditions before introduction into the wild, along with other interventions. One study in Belize found an increase in introduced howler monkey populations. Ten of 17 studies found that a majority of primates survived after allowing them to adapt to local habitat conditions before introduction into the wild, along with other interventions. Six studies found that a minority of primates survived and one study found that half of primates survived. One study found that a reintroduced chimpanzee repeatedly returned to human settlements after allowing it to adapt to local habitat conditions before introduction into the wild, along with other interventions. One study found that after allowing time to adapt to local habitat conditions, a pair of reintroduced Bornean agile gibbons had a similar diet to wild gibbons. *Assessment: unknown effectiveness — limited evidence (effectiveness 50%; certainty 10%; harms 0%).*

<https://www.conservationevidence.com/actions/1564>

● **Reintroduce primates in groups**

Two of four studies found that populations of introduced primates declined after reintroduction in groups, alongside other interventions, while two studies recorded increases in populations. Two studies found that primate populations persisted for at least five to 55 years after reintroduction in groups, alongside other interventions. Seven of fourteen studies found that a majority of primates survived after reintroduction in groups, alongside other interventions. Seven of fourteen studies found that a minority of primates survived after reintroduction in groups, alongside other interventions. One study found that introduced primates had a similar diet to a wild population. *Assessment: unknown effectiveness — limited evidence (effectiveness 50%; certainty 20%; harms 0%).*

<https://www.conservationevidence.com/actions/1567>



● **Reintroduce primates as single/multiple individuals**

Three of four studies found that populations of reintroduced primates declined after reintroduction as single/multiple individuals, alongside other interventions. One study in Tanzania found that the introduced chimpanzee population increased in size. Three of five studies found that a minority of primates survived after reintroduction as single/multiple individuals, alongside other interventions. One study found that a majority of primates survived and one study found that half of primates survived. Two of two studies in Brazil and Senegal found that abandoned primates were successfully reunited with their mothers after reintroduction as single/multiple individuals, alongside other interventions. *Assessment: unknown effectiveness – limited evidence (effectiveness 20%; certainty 10%; harms 0%).*

<https://www.conservationevidence.com/actions/1589>

● **Reintroduce primates into habitat where the species is present**

One of two studies found that primate populations increased after reintroduction into habitat where the species was absent, alongside other interventions. One study in Malaysia found that an introduced orangutan population declined post-reintroduction. One study found that a primate population persisted for at least four years after reintroduction. Eight of ten studies found that a majority of primates survived after reintroduction into habitat where the species was absent, alongside other interventions. Two studies found that a minority of primates survived after reintroduction into habitat where the species was present, alongside other interventions. *Assessment: unknown effectiveness – limited evidence (effectiveness 50%; certainty 30%; harms 0%).*

<https://www.conservationevidence.com/actions/1591>

● **Reintroduce primates into habitat with predators**

Eight of fourteen studies found that a majority of reintroduced primates survived after reintroduction into habitat with predators, alongside other interventions. Six studies found that a minority of primates survived. One study found that an introduced primate population increased after reintroduction into habitat with predators, alongside other interventions. *Assessment: unknown effectiveness – limited evidence (effectiveness 50%; certainty 10%; harms 0%).*

<https://www.conservationevidence.com/actions/1593>

● **Reintroduce primates into habitat without predators**

One study in Tanzania found that a population of reintroduced chimpanzees increased over 16 years following reintroduction into habitat without predators. *Assessment: unknown effectiveness — limited evidence (effectiveness 50%; certainty 5%; harms 0%).*

<https://www.conservationevidence.com/actions/1592>

7.12.4 *Ex-situ* conservation

Based on the collated evidence, what is the current assessment of the effectiveness of interventions for <i>ex-situ</i> conservation?	
Unknown effectiveness (limited evidence)	<ul style="list-style-type: none">• Captive breeding and reintroduction of primates into the wild: born and reared in cages• Captive breeding and reintroduction of primates into the wild: limited free-ranging experience• Captive breeding and reintroduction of primates into the wild: born and raised in a free-ranging environment• Rehabilitate injured/orphaned primates• Fostering appropriate behaviour to facilitate rehabilitation

Unknown effectiveness (limited evidence)

● **Captive breeding and reintroduction of primates into the wild: born and reared in cages**

One study in Brazil found that the majority of reintroduced golden lion tamarins which were born and reared in cages, alongside other interventions, did not survive over seven years.

Two of two studies in Brazil and French Guiana found that more reintroduced primates that were born and reared in cages, alongside other interventions, died post-reintroduction compared to wild-born monkeys. *Assessment: unknown effectiveness — limited evidence (effectiveness 0%; certainty 15%; harms 0%).*

<https://www.conservationevidence.com/actions/1594>



● **Captive breeding and reintroduction of primates into the wild: limited free-ranging experience**

One of three studies found that the majority of captive-bred primates, with limited free-ranging experience and which were reintroduced in the wild, alongside other interventions, had survived. One study in Madagascar found that a minority of captive-bred lemurs survived reintroduction over five years. One study found that reintroduced lemurs with limited free-ranging experience had a similar diet to wild primates. Reintroduction was undertaken alongside other interventions. *Assessment: unknown effectiveness – limited evidence (effectiveness 30%; certainty 10%; harms 0%).*

<https://www.conservationevidence.com/actions/1595>

● **Captive breeding and reintroduction of primates into the wild: born and raised in a free-ranging environment**

One study in Brazil found that the majority of golden lion tamarins survived for at least four months after being raised in a free-ranging environment, alongside other interventions. One study found that the diet of lemurs that were born and raised in a free-ranging environment alongside other interventions, overlapped with that of wild primates. *Assessment: unknown effectiveness – limited evidence (effectiveness 40%; certainty 10%; harms 0%).*

<https://www.conservationevidence.com/actions/1596>

● **Rehabilitate injured/orphaned primates**

Six of eight studies found that the majority of introduced primates survived after rehabilitation of injured or orphaned individuals, alongside other interventions. One study found that a minority of introduced primates survived, and one study found that half of primates survived. One of two studies found that an introduced chimpanzee population increased in size after rehabilitation of injured or orphaned individuals, alongside other interventions. One study found that an introduced rehabilitated or injured primate population declined. One review found that primates living in sanctuaries had a low reproduction rate. One study found that introduced primates had similar behaviour to wild primates after rehabilitation of injured or orphaned individuals, alongside other interventions. *Assessment: unknown effectiveness – limited evidence (effectiveness 50%; certainty 10%; harms 0%).*

<https://www.conservationevidence.com/actions/1597>

● **Fostering appropriate behaviour to facilitate rehabilitation**

Three of five studies found that a minority of primates survived after they were fostered to encourage behaviour appropriate to facilitate rehabilitation, alongside other interventions. Two studies found that the majority of reintroduced primates fostered to facilitate rehabilitation along other interventions survived. Three studies found that despite fostering to encourage behaviour appropriate to facilitate rehabilitation, alongside other interventions, primates differed in their behaviour to wild primates. *Assessment: unknown effectiveness — limited evidence (effectiveness 10%; certainty 10%; harms 0%).*

<https://www.conservationevidence.com/actions/1600>

7.13 Livelihood; economic and other incentives

7.13.1 Provide benefits to local communities for sustainably managing their forest and its wildlife

Based on the collated evidence, what is the current assessment of the effectiveness of interventions for providing benefits to local communities for sustainably managing their forest and its wildlife?	
Unknown effectiveness (limited evidence)	<ul style="list-style-type: none">• Provide monetary benefits to local communities for sustainably managing their forest and its wildlife (e.g. REDD, employment)• Provide non-monetary benefits to local communities for sustainably managing their forest and its wildlife (e.g. better education, infrastructure development)

Unknown effectiveness (limited evidence)

- **Provide monetary benefits to local communities for sustainably managing their forest and its wildlife (e.g. REDD, employment)**

One before-and-after study in Belize found that howler monkey numbers increased after the provision of monetary benefits to local communities alongside other interventions. However, one before-and-after study in

Rwanda, Uganda and the Congo found that gorilla numbers decreased despite the implementation of development projects in nearby communities, alongside other interventions. One before-and-after study in Congo found that most chimpanzees reintroduced to an area where local communities received monetary benefits, alongside other interventions, survived over five years. *Assessment: unknown effectiveness — limited evidence (effectiveness 50%; certainty 25%; harms 0%).*

<https://www.conservationevidence.com/actions/1509>

● **Provide non-monetary benefits to local communities for sustainably managing their forest and its wildlife (e.g. better education, infrastructure development)**

One before-and-after study India found that numbers of gibbons increased in areas where local communities were provided alternative income, alongside other interventions. One before-and-after study in Congo found that most chimpanzees reintroduced survived over seven years in areas where local communities were provided non-monetary benefits, alongside other interventions. *Assessment: unknown effectiveness — limited evidence (effectiveness 40%; certainty 10%; harms 0%).*

<https://www.conservationevidence.com/actions/1510>

7.13.2 Long-term presence of research/tourism project

Based on the collated evidence, what is the current assessment of the effectiveness of interventions for the long-term presence of research/tourism project?	
Likely to be beneficial	• Run research project and ensure permanent human presence at site
Trade-off between benefit and harms	• Run tourism project and ensure permanent human presence at site
Unknown effectiveness (limited evidence)	• Permanent presence of staff/managers



Likely to be beneficial

● Run research project and ensure permanent human presence at site

Three before-and-after studies, in Rwanda, Uganda, Congo and Belize found that numbers of gorillas and howler monkeys increased while populations were continuously monitored by researchers, alongside other interventions. One before-and-after study in Kenya found that troops of translocated baboons survived over 16 years post-translocation while being continuously monitored by researchers, alongside other interventions. One before-and-after study in the Congo found that most reintroduced chimpanzees survived over 3.5 years while being continuously monitored by researchers, alongside other interventions. However, one before-and-after study in Brazil found that most reintroduced tamarins did not survive over 7 years, despite being continuously monitored by researchers, alongside other interventions; but tamarins reproduced successfully. One review on gorillas in Uganda found that no individuals were killed while gorillas were continuously being monitored by researchers, alongside other interventions. *Assessment: likely to be beneficial (effectiveness 61%; certainty 40%; harms 0%).*

<https://www.conservationevidence.com/actions/1511>

Trade-off between benefit and harms

● Run tourism project and ensure permanent human presence at site

Six studies, including four before-and-after studies, in Rwanda, Uganda, Congo and Belize found that numbers of gorillas and howler monkeys increased after local tourism projects were initiated, alongside other interventions. However, two before-and-after studies in Kenya and Madagascar found that numbers of colobus and mangabeys and two of three lemur species decreased after implementing tourism projects, alongside other interventions. One before-and-after study in China found that exposing macaques to intense tourism practices, especially through range restrictions to increase visibility for tourists, had increased stress levels and increased infant mortality, peaking at 100% in some years. *Assessment: trade-off between benefit and harms (effectiveness 40%; certainty 40%; harms 40%).*

<https://www.conservationevidence.com/actions/1512>

Unknown effectiveness (limited evidence)

● Permanent presence of staff/managers

Two before-and-after studies in the Congo and Gabon found that most reintroduced chimpanzees and gorillas survived over a period of between nine months to five years while having permanent presence of reserve staff. One before-and-after study in Belize found that numbers of howler monkeys increased after permanent presence of reserve staff, alongside other interventions. However, one before-and-after study in Kenya found that numbers of colobus and mangabeys decreased despite permanent presence of reserve staff, alongside other interventions. *Assessment: unknown effectiveness — limited evidence (effectiveness 40%; certainty 30%; harms 0%).*

<https://www.conservationevidence.com/actions/1517>