Rainforest Alliance

Technical Modules

Module 2: BIODIVERSITY CONSERVATION

Sustainable Agriculture Standard

July, 2017
Version 1

The Rainforest Alliance works to conserve biodiversity and ensure sustainable livelihoods by transforming land-use practices, business practices, and consumer behavior.

More information?

For more information about the Rainforest Alliance, visit www.rainforest-alliance.org or contact info@ra.org

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CONTENTS

Contributions of this module

Biodiversity and ecosystems protection is highly important for areas destined to agricultural and cattle production. A farm management system that complies with the 2017 Standard requirements allows to:

- ✓ Implement actions for the conservation of ecosystems and biodiversity;
- ✓ Prevent deforestation and degradation of the ecosystems and their environmental services;
- ✓ Implement a climate-smart agriculture approach, that mitigates the effects of climate change.

This training module provides the following tools to optimize the work of the Technical Community:

- Diagrams explaining objectives and key topics of the Principle 2;
- Information about the related *Rainforest Alliance Terms & Definitions* and its correct interpretation;
- Charts that illustrate all relations between different criteria (from all Principles), which allows a better comprehension of all requirements related to the ecosystems and biodiversity conservation.
- Recommendations to audit complex and conflictive issues.
- Information for the proper implementation and evaluation of the different Rainforest Alliance Parameters that avoid negative impacts in the ecosystems: canopy cover and species diversity, ESIA, vegetative barriers, restoration of zones adjacent to aquatic ecosystems.
- Cases and illustrative examples of complex issues.

The **Guide for the 2017 Standard** is a key tool for the implementation and evaluation of the 2017 Standard requirements.

Principle 2
What is its purpose?

Farms that implement the requirements of this Principle:

PRINCIPLE 2
Biodiversity Conservation

PROTECTION OF ECOSYSTEMS

- No destruction of natural ecosystems or high value conservation (HCV) areas
- Requirements for conservation and restoration
- Requirements for non-destruction and non-degradation

- Rainforest Alliance parameters for preventing negative impacts on ecosystems
- Mapping ecosystems and planning actions
- Environmental impact assessment (ESIA) for major land conversions

PROTECTION OF BIODIVERSITY

FLORA

- Protection and restoration of native species
- NO collection of endangered plant species
- NO introduction of invasive species and management of existing species

FAUNA

- NO hunting of endangered or protected species
- NO hunting and no-introduction of invasive species
- No wildlife to be held in captivity
- Conflicts between humans and wildlife are reduced

New concepts in the 2017 Standard

The 2017 Standard includes a number of new concepts that optimize the requirements for the conservation of ecosystems. Given the importance of those concepts and the need to ensure that they are correctly understood, implemented and assessed, the Rainforest Alliance Standards and Policies Team is developing specific guides. The new concepts related to Principle 2 Biodiversity Conservation are:

- High Conservation Value Areas (HCV)
- Environmental and Social Impact Assessment (EIA)

CONCEPT	CRITERIA
HCV	**CC 2.1:** High Conservation Value (HCV) areas have not been destroyed from November 1, 2005 onward.
ESIA	**CC 1.4:** An independent environmental and social impact assessment (ESIA) is conducted prior to land conversion or the development or expansion of farm infrastructure when required by applicable law or when these proposed changes will exceed Rainforest Alliance ESIA parameters. The ESIA includes written plans and procedures for minimizing and mitigating any negative impacts and enhancing positive impacts. The farm management and group administrator implements and monitors ESIA plans during the installation and operation phases of the new development.

PROTECTION OF ECOSYSTEMS

What are natural ecosystems according to the 2017 Standard?

For the purposes of complying with the requirements related to the conservation of natural ecosystems, it is important to know the Rainforest Alliance definitions and their binding elements.

NATURAL ECOSYSTEMS	
Similar in terms of species composition, structure and function to those that would occur naturally in a given area in the absence of impacts or changes caused by human intervention.	
Aquatic ecosystems	• Aquatic ecosystems include all ecosystems with aquatic environmental conditions (Biotope).
	• They may be marine or freshwater aquatic ecosystems
	• Aquatic ecosystems include : seas, bays, lakes, swamps, lagoons, water springs, rivers and streams, ponds, and pools.
	• Natural wetlands where the land is flooded during the greater part of the year and/or periodically or permanently flooded by shallow waters, e.g. floodplains; wet areas bordering ponds, streams, or the ocean; and shallow depressions that fill with water seasonally.
	• Artificial bodies of water are considered aquatic ecosystems by Rainforest Alliance only if: they have been colonized by one or more endangered species and/or were created to provide a habitat for wildlife.
Terrestrial ecosystems	• Terrestrial ecosystems are those in which animals and plants live in the soil and in the air.
	• The components of the physical space (abiotic factors) of each terrestrial ecosystem determine the type of ecosystem.
	• There are different types of terrestrial habitats, including: deserts, grasslands, jungles and forests.

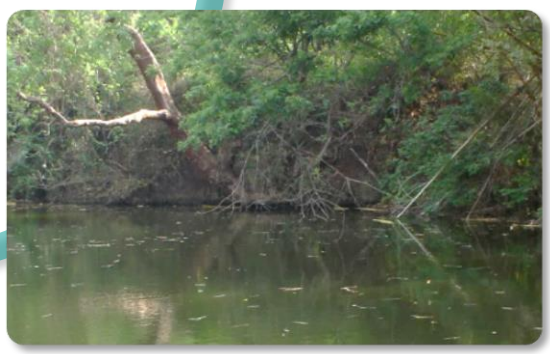
Natural aquatic ecosystems

Springs, wetlands and shallow waters

Flowing and still water bodies

THESE ARE natural aquatic ecosystems

Artificial ponds for native wildlife habitat



Water bodies affected by pollution, erosion, sedimentation

Exceptions:

Although they are water bodies, the following are not considered to be natural aquatic ecosystems:

- Areas seasonally or permanently flooded due to human activities such as: drainage ditches, irrigation tanks, reservoirs, effluent ponds, aquaculture ponds, rice paddies, or gravel pits.
- Artificial pools, water treatment lagoons and irrigation ponds.

Shallow water:

"Water that has little depth including: flood plains; wet areas bordering ponds, streams, or the ocean; and shallow depressions that fill with water seasonally"

Protection of natural aquatic ecosystems

Based on the criteria and the Terms and Definitions (T&D) section of the 2017 Standard, the following actions are required for the protection of natural aquatic ecosystems:

- Conservation and no-destruction for 5 years prior to the initial application for certification or after January 1, 2014, whichever date is earlier (CC-2.2).
- If the ecosystem is in an HCV category, no destruction since November 1, 2005 (CC-2.1).
- NO activities that result in the degradation of aquatic ecosystems: disposal of solid waste or untreated wastewater, intentional introduction of invasive plants, non-sustainable fishing or collection, cattle grazing, changes in water courses (reservoirs, channels, drying, drainage), use of herbicides, pesticides or fire (CC-2.2; CC-3.1; CC-3.2; C-3.20; C- 3.37; C-3.43; T&D Degradation).
- All applicable legislation related to the conservation of aquatic ecosystems is complied with (CC-1.6)-
- Native vegetation is conserved in areas adjacent to aquatic ecosystems (C-2.5).
- Invasive species are not intentionally introduced or released (C-2.12 & A-2.14).
- Water extraction, both from superficial and subterranean sources, complies with all applicable legislation (C-3.15).
- Cattle impact on aquatic ecosystems is minimized by establishing physical barriers between livestock and water bodies and providing access routes (A- 5.26).
- Measures are taken to prevent spray drift of agrochemicals toward aquatic ecosystems when using pesticides that are harmful to aquatic life, contained in the Rainforest Alliance List of Pesticides for Use with Risk Mitigation. These measures are:
  - implementation of Rainforest Alliance non-application zones around aquatic ecosystems or
  - planting of vegetative barriers that comply with Rainforest Alliance parameters for vegetation barriers or
  - other mechanisms that prevent spray drift (C-3.27)

Natural terrestrial ecosystems

The elements that constitute and define different types of natural terrestrial ecosystems depend on environmental and biological factors, such as rain, temperature, altitude and soil conditions. According to the 2017 Standard, terrestrial ecosystems include deserts, grasslands, forests and jungles.

The 2017 Standard includes forests composed of any combination of vegetation (broadleaf, needle leaf, evergreen, deciduous and semi-evergreen), and also different types of forests: humid, rain, dry, lowland, montane and cloud forest.

The 2017 Standard defines forests as tree-covered areas that:

- Are not occupied by agriculture or other specific non-forest land uses; and
- Consist primarily of native plant species; and
- Contain a vegetation structure that generally resembles that of a natural forest of the same age in the same area; or
- Are classified as High Carbon Stock (HCS) forests; or
- Have been regenerating for at least 10 years with minimal human disturbance.

The following are also considered natural terrestrial ecosystems:

- ❑ Scrublands, savannahs and grasslands
- ❑ Woodland areas
- ❑ Peat bogs and paramo
- ❑ Areas of non-forest natural vegetation within forest biomes

Natural terrestrial ecosystems

Exceptions

For the purposes of the 2017 Standard, the following types of terrestrial ecosystems areas are **not** considered Rainforest Alliance natural ecosystems:

- Forestry or fruit tree plantations;
- Tree-covered areas that are managed as diversified food production systems, including traditional and modern management systems such as home gardens, agroforestry systems, and mixed tree-cattle systems; or
- Shade-tolerant crops that are managed as diversified food production systems, including areas that are managed as long-rotation swidden (shifting cultivation) systems under traditional, indigenous people, community, or smallholder land-use systems (even if they otherwise meet the definitions of natural ecosystems) and fallow lands for soil fertility recovery purposes.

Agroforestry systems (example: shade coffee, photo), are ecosystems, but cannot be considered as natural ecosystems for conservation purposes

Pastures are not considered to be natural terrestrial ecosystems by the 2017 Standard (**Not to be confused with Natural Savannahs**).

According to the Terms & Definitions section of the 2017 Standard a *Pasture* is: "*A type of grazing unit enclosed and separated from other areas by fencing or other barriers and devoted to the production of forage.*"

Protection of natural terrestrial ecosystems

Based on the criteria and the Terms and Definitions (T&D) section of 2017 Standard, the following actions are required for the protection of natural terrestrial ecosystems:

- If they belong to an HCV category, no destruction since November 1, 2005 (CC-2.1).
- Conservation and no-destruction in the five-year period prior to the initial application for certification or after January 1, 2014, the earliest date (CC-2.2 and CC-5.1).
- NO activities that result in the degradation of terrestrial ecosystems: disposal of solid waste or untreated wastewater, intentional introduction of invasive plants, non-sustainable fishing or collection, cattle grazing, changes in water courses (reservoirs, channels, drying, drainage), use of herbicides, pesticides or fire (CC-2.2; T&D Degradation).
- The implementation of a Sustainable Management plan for ecosystem conservation on a farm includes activities such as: harvesting non-endangered species or their parts, in a manner and quantity that does not exceed their capacity for regeneration; or the use of natural ecosystems non-consumptive purposes, e.g. recreation, education or tourism (T&D Conservation).

- No degradation of ecosystems in protected areas (CC-2.3).
- An environmental and social impact assessment (ESIA) is conducted if land conversions exceed Rainforest Alliance parameters. (CC-1.4).
- Use of fire is restricted to protect the ecosystems (C-3.9).
- Waste management does not affect the ecosystems (C-3.37 and C-3.43).
- The negative effects on ecosystems from the use of biomass as energy are minimized (B- 3.45).
- Steps are taken to protect ecosystems and pollinators when pesticides harmful to pollinators are used, contained in the Rainforest Alliance List of pesticides for use with Risk Mitigation (C-3.29).
- Steps are taken to prevent drift from agrochemicals toward aquatic ecosystems when using pesticides harmful to wildlife, contained in the Rainforest Alliance List of Pesticides for Use with Risk Mitigation. These measures are:
  - implementation of Rainforest Alliance non-application zones around aquatic ecosystems; or
  - planting of vegetative barriers that comply with the Rainforest Alliance parameters for vegetative barriers; or
  - other mechanisms that prevent spray drift (C -3.27).

Non-destruction and non-degradation of natural terrestrial ecosystems

Based on the criteria and the Terms and Definitions (T&D) section of the 2017 Standard, the following actions are required for the protection of natural terrestrial ecosystems:

- NO mining or soil removal
- NO disposal of solid waste or untreated wastewater
- NO intentional introduction of invasive species
- If wildlife or plant species are collected, this is done sustainably and without affecting populations
- Grazing of livestock is regulated with the implementation of sustainable practices (T&D Conserved- Sustainable Management)
- Use of herbicides, pesticides or fire is regulated within the IPM plan.

The following activities are considered as destruction of terrestrial ecosystems:

- Conversion to another land use
- Logging or vegetation harvesting that reduces the arboreal biomass.
- Development of infrastructure

Protected Areas

Protected areas are spaces dedicated to the general protection of biodiversity.

Protected area:

"An area of land that is declared or designated as protected by local authorities because of its recognized natural, ecological and/or cultural values, to achieve the long-term conservation of nature with associated ecosystem assets and cultural values."

The competent local authorities have information on Natural Protected Areas and their respective management category; therefore, it is recommended that farms establish contact with those authorities to obtain maps and/or details of the location of these areas.

It is important that the auditor knows and is familiar with the system of protected areas and their management categories in the region where the audit is conducted, in order to determine which practices should be adopted by farms with respect to nearby protected areas, in accordance with current legislation.

The 2017 Standard prohibits any activity that contributes to the degradation of Natural Protected Areas

Some management categories for protected areas include [but are not limited to]:

- ✓ Nature reserve
- ✓ Wildland area
- ✓ National park
- ✓ Natural monument
- ✓ Protected area with sustainable use of natural resources
- ✓ Wildlife refuge
- ✓ Forestry reserve
- ✓ Private reserve
- ✓ UNESCO biosphere reserve

Farms can implement some good practices to prevent the degradation of protected areas:

- ✓ Map the farm and its production plots, including the boundaries of nearby protected areas.
- ✓ Establish a collaborative relationship with the competent authorities to support monitoring and protection activities.
- ✓ Protect adjoining areas through actions such as reforestation and non-use of pesticides.
- ✓ Comply with the Rainforest Allianceparameters for vegetative barriers and the Rainforest Alliance parameters for restoration.

Good practices
for assessing compliance with CC-2.3

During an audit, the auditors assess whether steps are being taken to prevent the degradation of protected areas (PAs) in areas adjoining or near the farms. Some good practices that auditors can use in their assessment are:

Prior to the field visit find out :

- If the farm contains, is located close to or adjoined to a protected area (PA).
- Applicable law related to the management of the PA.
- Potential conflicts in the area related to the PA.

In the field - Documents

- Do the maps of the farm include in-farm, nearby or adjoining PAs?
- Are there agreements or relations with local authorities responsible for PAs?
- Are actions for the protection of the PA implemented and recorded?

In the field – interviews

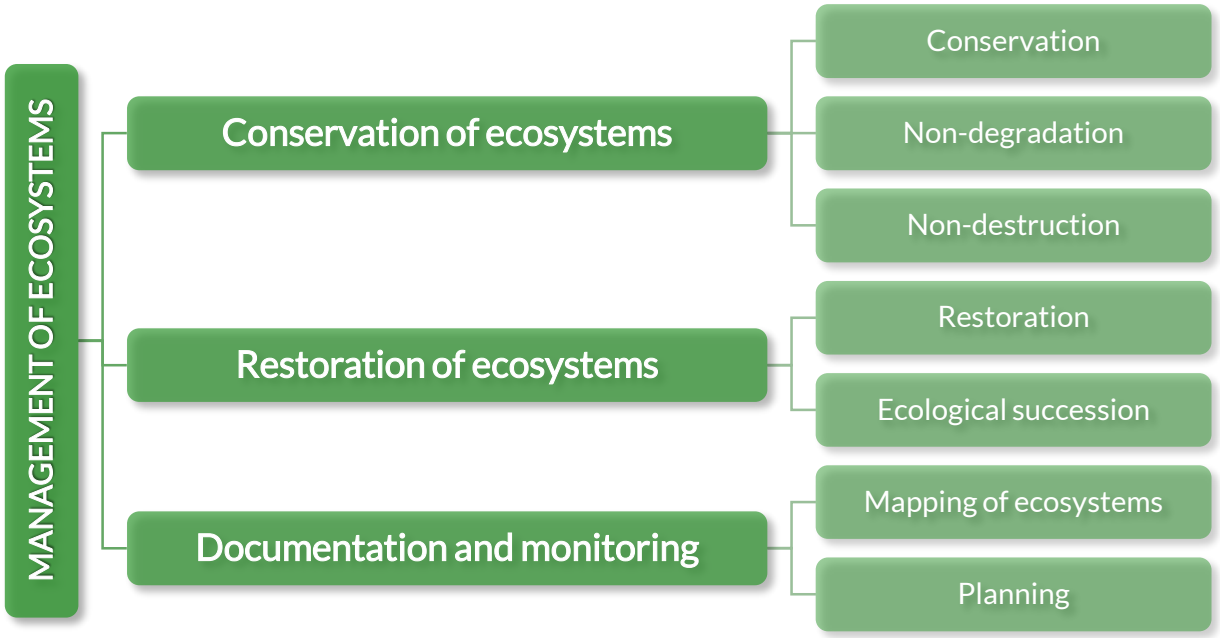
- Is there awareness of the existence of the PA and the measures for protecting it?
- Is there any conflict related to the PA?
- Are resources from the PA used?

In the field – inspection

- Are the boundaries with the PA marked?
- Are the Rainforest Alliance parameters applied to prevent negative impacts on the PA?
- Are there actions for the protection of the PA e.g.: reforestation, protection of native vegetation, and no-disposal of waste to natural ecosystems.

Management of natural ecosystems

It is important to take into account that, according to the 2017 Standard and its Principle II approach, all actions related to the management, conservation and restoration apply only to those ecosystems considered **natural ecosystems** according to the RAS definition.

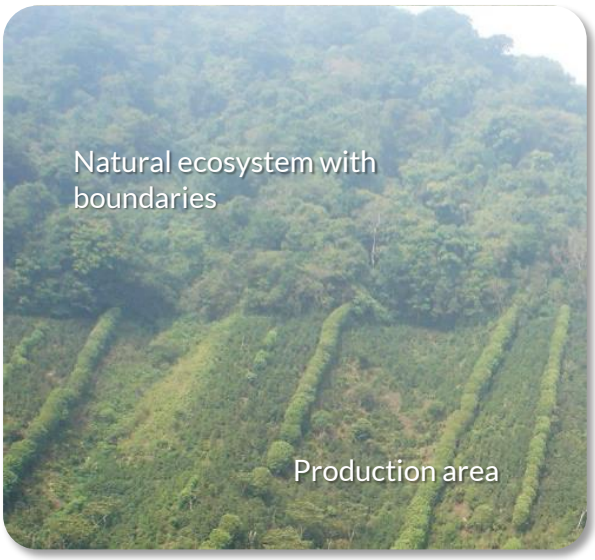


The concept of sustainable production includes the management of natural ecosystems.

The actions contemplated in the management of natural ecosystems are:

- Conserve (conservation, non-degradation, non-destruction);
- Restore (restoration or natural ecological succession).

Rainforest Alliance considers that a natural ecosystem is conserved if it is protected against direct or indirect human degradation. Restoration requires actions to facilitate the recovery of natural ecosystems.



Natural ecosystems conservation
Related criteria

Criteria directly related to natural ecosystems conservation

- **CC-2.1:** High Conservation Value (HCV) areas have not been destroyed from November 1, 2005 onward.
- **CC-2.2:** Farms conserve all natural ecosystems and have not destroyed forest or other natural ecosystems in the five-year period prior to the date of initial application for Rainforest Alliance certification or after January 1, 2014, whichever date is earlier.
- **CC-2.3:** Production activities do not degrade any protected area.
- **C-2.5:** Existing native vegetation outside natural ecosystems is maintained, including: a) existing agroforestry shade tree cover; b) existing vegetated zones adjacent to aquatic ecosystems; and c) large native trees, except when these pose hazards to people or infrastructure.

Other related criteria*

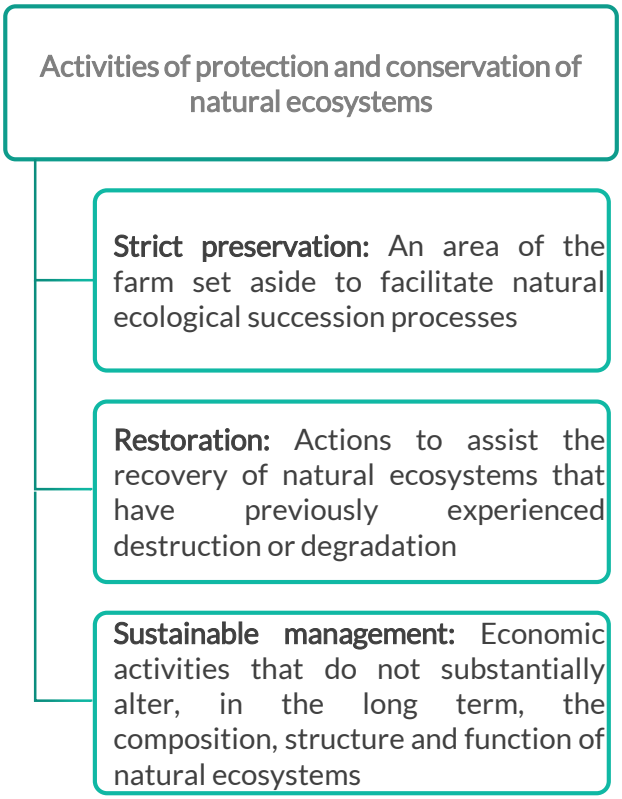
- **CC-1.4:** An independent environmental and social impact assessment (ESIA) is conducted prior to land conversion or the development or expansion of farm infrastructure when required by applicable law or when these proposed changes will exceed Rainforest Alliance ESIA parameters. The ESIA includes written plans and procedures for minimizing and mitigating any negative impacts and enhancing positive impacts. The farm management and group administrator implements and monitors ESIA plans during the installation and operation phases of the new development.
- **C-3.9:** Fire may be used only for pest control, only as prescribed by the IPM plan and only if it creates less negative environmental impact than other pest control measures. To protect nearby natural ecosystems, infrastructure, and communities, fire is applied only by trained workers with fire suppression tools, personal protective equipment, and access to water for firefighting, and only when wind speed and direction create minimal risk of uncontrolled burning. If fire is used, fire use areas and history are indicated on updated farm maps.
- **C-3.37:** Waste storage, treatment and disposal practices do not pose health or safety risks to farmers, workers, other people, or natural ecosystems.
- **A-3.43:** The farm management and group administrator check service providers who remove oil, plastic and sewage waste and ensure that the contractors' disposal and recycling methods do not pose risks to natural ecosystems, drinking water supplies, or the health and safety of people living near the disposal sites.
- **CC-5.1:** The farm management and group administrator implement a mechanism to confirm that cattle sold as certified are born and raised on Rainforest Alliance certified farms for their entire lives; or cattle spend at least six months on Rainforest Alliance certified farms and spend all other portions of their lifespan on farms that:
  - Do not use forced labor;
  - Have not legitimately disputed communities' land use rights; and
  - Have not destroyed forests, protected areas or other natural ecosystems subsequent to January 1, 2014.

** On the topic of conservation of natural ecosystems, see also the criteria related to non-degradation of natural ecosystems, further on.*

Actions for the natural ecosystems conservation

Natural ecosystems may be conserved through a combination of any of the following three activities:

1. **Strict preservation.** Farms should identify and demarcate areas of the property with natural ecosystems or potential conservation areas, promoting ecological succession as a first option.
2. **Restoration.** Activities such as planting native species and eliminating non-native species in areas affected by previous alteration, are measures that may contribute to the restoration of ecosystems.
3. **Sustainable management.** Production activities, farm management and use of resources carried out appropriately through efficient sustainable management.



The implementation of a sustainable management system for natural ecosystem conservation on a farm includes activities such as:

- Harvesting non-endangered species, or their parts, in a manner and quantity that does not exceed their regenerative capacity.
- Sustainable livestock grazing in a traditional or modern unfenced system, within forests, scrubland, savannahs or other non-forest ecosystems, provided that animal population densities and management practices do not degrade the ecosystem by significantly affecting the composition of species, causing soil erosion or other negative impacts.
- Sustainable fishing or harvesting of other aquatic species; or
- Use of natural ecosystems for non-consumptive purposes such as recreation, education or tourism.

How to assess actions for the natural ecosystems conservation?

To assess whether farms are conserving ecosystems, several aspects should be checked during an audit. Some good practices are:

- Check that the farm maps correctly indicate the location of production areas, natural ecosystems and conservation areas (within the farm or its area of influence).
- Check to see if there are any plans to expand crops areas or any infrastructure that could represent a risk to the environment
- Assess whether the farm is implementing ecosystem conservation activities, e.g. reforestation, protection of native and riparian vegetation, facilitation of ecological succession, nurseries with native forest species, providing education for workers and communities.
- Determine whether the farm management plans or activities include specific measures to prevent negative impacts on natural ecosystems; assess whether the measures proposed in the plan are implemented and are useful in preventing damage.
- Determine whether production activities have been sustainably planned.
- Has the farm implemented the Rainforest Alliance parameters to prevent negative impacts in natural ecosystems?.
- Does the farm's risk analysis consider potential negative effects on natural ecosystems and their mitigation measures?
- If agricultural areas have been expanded, is there a management plan that complies with Rainforest Alliance parameters to prevent degradation or destruction of natural ecosystems?
- If there are new crop areas, is there any damage to nearby ecosystems? Are there signs of soil removal, felling of vegetation, sediments in water bodies? Can the farm demonstrate that the new areas did not affect the ecosystems during their installation?

Non-degradation and non-destruction of natural ecosystems

The 2017 Standard prohibits the destruction of natural ecosystems during the five-year period prior to the date of the initial application for Rainforest Alliance certification, or after January 1, 2014 (Critical Criterion). This prohibition includes any natural ecosystem mentioned at the beginning of this document, including Natural Protected areas.

Understanding the concepts of degradation and destruction

Destruction of ecosystems	Degradation of ecosystems
• Conversion of a natural ecosystem to a different land use, or other activities that alter its composition, structure or function.	• Alteration or degradation of a natural ecosystem that results in negative impacts
• Conversion to agricultural land, pastures, tree plantations, or any other land use.	• Any discharge of solid waste or untreated wastewater to the environment; pollution and modification of water bodies.
• Large-scale logging or other vegetation harvesting that result in the permanent or long-term reduction of biomass by 75% or more.	• Activities involving the removal of soil, construction of drainage systems or any alteration of water bodies.
• Development of infrastructure or buildings, except for small-scale construction for eco-tourism, education or research.	• Introduction of invasive species and collection of wildlife exceeding the regenerative capacity of those species.
• Construction of permanent reservoirs and draining or drying of aquatic ecosystems.	• Use of pesticides or fire for pest or weed control in natural ecosystems or protected areas.

The 2017 Standard <u>does not</u> consider the following items as disturbances to natural ecosystems:

Activities defined as restoration or sustainable management; unintentional colonization by invasive species; or ecosystem alterations caused by force majeure events, including war, riots, crimes, or natural phenomena such as hurricanes, floods, earthquake, and volcanic eruptions; as well as other situations defined in the 2017 Certification Rules.

Non-degradation of natural ecosystems
Related criteria

The NON-degradation of natural ecosystems includes requirements in the criteria of Principle 2 and Principle 3 (*Also see the Rainforest Alliance Parameters in Terms and Definitions, and the Certification Rules*).

- **A-2.8:** Rainforest Alliance restoration parameters are implemented for all aquatic ecosystems.
- **CC-3.1:** Wastewater from processing operations is not discharged into aquatic ecosystems unless it has undergone treatment to meet Rainforest Alliance industrial wastewater parameters. Wastewater from processing operations is not applied to land with very sandy or highly permeable soils, where slopes exceed 8%, or where the water table is seasonally or permanently high. Wastewater from processing operations may not be applied to soil unless it has undergone treatment to remove particulates and toxins and to reduce acidity and complies with additional Rainforest Alliance industrial wastewater parameters for irrigation. Wastewater from processing operations may not be mixed with clean water for the purpose of meeting Rainforest Alliance industrial wastewater parameters.
- **CC-3.2:** Untreated sewage is not discharged into aquatic ecosystems.
- **C-3.9:** Fire may be used only for pest control, only as prescribed by the IPM plan and only if it creates less negative environmental impact than other pest control measures. To protect nearby natural ecosystems, infrastructure, and communities, fire is applied only by trained workers with fire suppression tools, personal protective equipment, and access to water for firefighting, and only when wind speed and direction create minimal risk of uncontrolled burning. If fire is used, fire use areas and history are indicated on updated farm maps.
- **C-3.20:** Greywater is collected and managed through treatment or drainage systems, and is
- **C-3.27:** Farms apply substances listed in the Rainforest Alliance List of Pesticides for Use with Risk Mitigation as having risk to aquatic life only if Rainforest Alliance non-application zones around aquatic natural ecosystems are enforced or vegetative barriers are established compliant with Rainforest Alliance parameters for vegetative barriers or other effective mechanisms to reduce spray drift. Farms apply substances listed in the Rainforest Alliance List of Pesticides for Use with Risk Mitigation as having risk to wildlife only if Rainforest Alliance non-application zones around natural ecosystems are enforced or vegetative barriers are established compliant with Rainforest Alliance parameters for vegetative barriers or other effective mechanisms to reduce spray drift.

Non-degradation of natural ecosystems
Other related criteria

- **C-3.29:** Farms apply substances listed in the Rainforest Alliance List of Pesticides for Use with Risk Mitigation as having risks for pollinators only if:
  - Less toxic, efficacious pesticides are not available;
  - Exposure to natural ecosystems is minimized by complying with Rainforest Alliance non-application zones or by establishing vegetative barriers compliant with Rainforest Alliance parameters for vegetative barriers or by implementing other effective mechanisms to reduce spray drift; and
  - Contact of pollinators with these substances is further reduced through:
    - Substances are applied only when pollinators are not active; or
    - Substances are not applied to flowering weeds or flowering weeds are removed; and
    - Substances are applied while the crop is not in peak flowering period. Not applicable to banana, cocoa, grapes, lemon grass, pineapple, psyllium, sugar cane, and tea.
  - if bee hives are used, they are temporarily covered during application, and hive bees are provided with a clean water source outside the treated area.

- **C-3.37:** Waste storage, treatment and disposal practices do not pose health or safety risks to farmers, workers, other people, or natural ecosystems.

- **A-3.43:** The farm management and group administrator check service providers who remove oil, plastic and sewage waste and ensure that the contractors' disposal and recycling methods do not pose risks to natural ecosystems, drinking water supplies, or the health and safety of people living

- **B-3.45:** If biomass energy is used, the farm management and group administrator minimize the direct or indirect effects of biomass use on natural ecosystems through actions such as:
  - Planting trees to increase the availability of biomass energy from tree plantations.
  - When biomass is purchased, ensuring that it originates from sources not associated with the destruction of forests or other natural ecosystems.
  - Installing energy-efficient drying and processing infrastructure.
  - Supporting increased energy efficiency in domestic fuelwood use by workers, farmers and their families through training, or facilitating access to energy-efficient cook stoves.

- **A-5.26:** Cattle's negative impact on aquatic ecosystems is reduced by ensuring that cattle receive water and feed within pasture lots and that there are physical barriers between cattle and aquatic ecosystems. Routes where cattle cross aquatic ecosystems are selected and managed in ways that minimize damage.

Compensation for minor destruction of ecosystems with advance notification

Section 11 (2017 Certification Rules)

Rainforest Alliance Certification Rules establish a mechanism of compensation for minor destruction of ecosystems, after notifying the Certification Body in advance.

a. If destruction of natural ecosystems - but never for HCV areas - up to 1% of the total certified land area is planned by a certified farm manager or group administrator, it will not be a cause for certificate cancellation provided that the responsible CB was informed beforehand and authorized this minor destruction under the following conditions:

   i. Destruction of natural ecosystems will take place only for the reason of installing new farm infrastructure or repairing previously existing farm infrastructure (roads, irrigation infrastructure, including pumping facilities, channels, ponds, reservoirs, dams, and impoundments), permanently installed machinery, and facilities for washing, processing, or packing) or for smallholder farms for the purpose of planting food crops;

   ii. Applicable law is complied with.

Compensation for unannounced minor destruction of ecosystems

Section 12.1 (2017 Certification Rules)

a. Minor destruction of natural ecosystems - but never for HCV areas - that have inadvertently been conducted by a certified farm manager or member farm of a certified group administrator or certified group administrator is permitted only under the following conditions:

   i. The destruction event is the first one during the organization's Rainforest Alliance certification history;

   ii. The converted area is located outside of HCV areas, protected areas, or land that is illegal to convert;

   iii. A plan with objectives, quantitative targets and parameters, time-bound management actions, resources and responsible personnel for the required restoration is prepared by an ecological restoration specialist and submitted for approval to the Rainforest Alliance within three months of the date of destruction, including the following requirements:

      A. The destruction is mitigated through restoration in the or close to the converted area or by setting-aside for conservation at least a 1:1 ratio of ecologically comparable areas;

      B. The converted natural ecosystem area is taken out of agricultural production and designated with the aim to restore the area to its former natural condition;

      C. On larger farms, destruction of natural ecosystems of up to 2% of the farm area or 50 hectares (whichever is less) is only permitted if such destruction is compensated by at least a 1:1 ratio of ecologically comparable areas, as specified in a time-bound plan prepared by a qualified professional and approved by the Rainforest Alliance or its representative;

      D. Destruction of up to 10% of the farm area or 1 hectare (whichever is less) is permitted without the need for compensation. In the case of smallholder groups, these thresholds apply at the level of each member farm.

How to determine whether degradation or destruction has occurred?

Determining whether destruction or degradation of ecosystems has occurred is a challenge, especially if this has taken place in the past.

The following tools can help determine the possible degradation or destruction of ecosystems:

- **Interviews with local communities:** compile information on any production changes in the area, alteration of areas, diversion of water courses, deforestation, extraction of material from the ground, etc.
- **Consultations with governmental or local authorities:** examine any records of changes and permits granted in previous years covered by the Standard; plans and permits in process.
- **Images:** historical and current aerial photos and satellite images that help reconstruct the status of the area.
- **Soil use or vegetation maps:** help to determine the viability of activities in situ.

Some warning signs to consider when determining destruction, degradation or deforestation, are:

- ✓ New production areas.
- ✓ New infrastructure.
- ✓ Sale or storage of large quantities of timber.
- ✓ Purchase of new land.
- ✓ Significant increase in production.
- ✓ Evidence of soil removal.
- ✓ New roads and access points.
- ✓ The farm has diverted water courses
- ✓ Flooded areas that still contain terrestrial vegetation similar to that around the edges, showing recent flooding.
- ✓ Zones with evidence of drainage or drying of water, adjacent to areas where the vegetation is different.

All this information is useful for analyzing each case and making informed decisions. None of these items alone constitutes irrefutable evidence of degradation or destruction

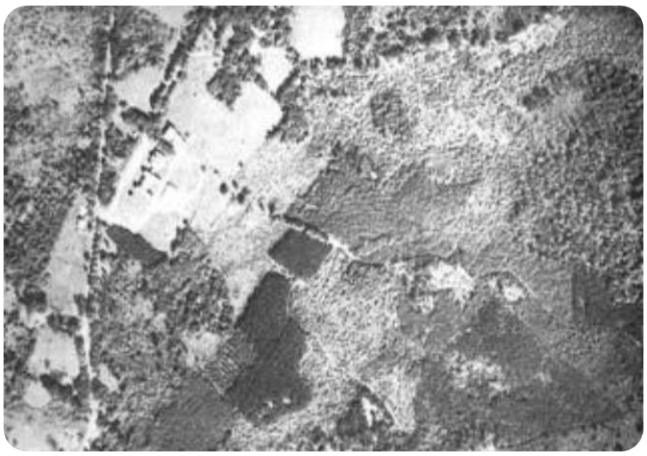
How to determine whether degradation or destruction has occurred?

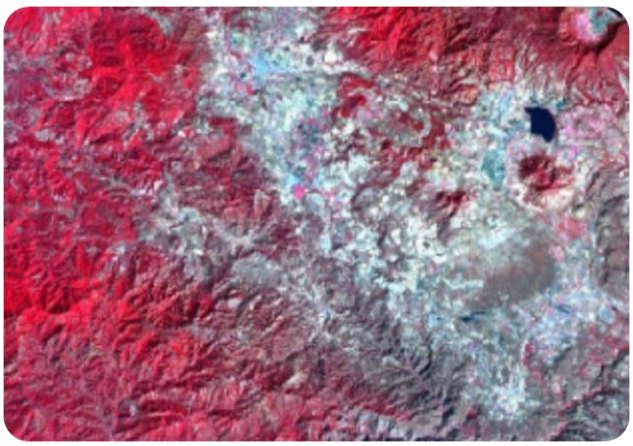
Other warning signs of possible destruction include:

- ✓ Historical maps of the farm show new production areas, and/or the reduction of conservation areas.
- ✓ Evidence of deforestation on the farm, such as: stored timber, remains of trees, discarded tree bark, improvised sawmills.
- ✓ Construction machinery stored on the farm, evidence of infrastructure being built, soil removal, construction of drainage systems, etc.
- ✓ Evidence of alteration of natural ecosystems in the field. For example: colonization of open spaces by pioneer species, a possible result of deforestation.

Aerial photographs

Satellite images





Good practices in action
A case study

During the first certification audit of a palm oil farm, the audit team conducts an exhaustive field visit.

The farm has forested areas and there are several water courses within its boundaries and in the adjacent zones. After touring the farm installations, areas with mature crops and those in production, the team decides to inspect the rest of the property .

During the visit, the audit team notices several factors which are recorded as photographic evidence *(See photos on the following page)*:

- A large number of plants are detected in the nurseries, ready for transfer to the field. There are several areas with young trees planted recently.
- The remains of felled and burned trees are scattered in several areas of the parcels.
- Logs are dumped in areas with young palms, some covered with natural vegetation; there are planks of wood piled up in several places.
- There are remains of tree trunks in the form of planks, showing that timber has been used.
- Several water courses do not have riparian vegetation growing on their banks and some of these areas are even cultivated.
- People are seen removing recently cut firewood from the property.
- In the higher parts of the farm, where the entire property can be viewed in greater detail, it is possible to see that the plantation extends to the very edge of the remaining forests.
- Growing among the palms is a certain type of vegetation typically found in recovering areas or those in the early stages of ecological succession.

To avoid arousing suspicions in these irregular situations, the producer is interviewed and asked about the farm's practices for planting new plants. The team requests information about new areas, agricultural schedules and the density of plantations.

In his answers, the producer never mentions the felling of trees or clearing of land; and he accuses third parties of cutting and stealing timber.

Once the audit has been completed, the audit team analyzes all the evidence and information obtained. It decides to investigate further, given the suspicions that forest and aquatic ecosystems have recently been destroyed on that farm.

The team uses past aerial and satellite photographs to compare these with the current status of the plots on the farm. These show that the planted areas were covered with forests in previous years.

By combining all this information, it is clear that forest areas have been destroyed to plant new palms and that the natural ecosystems have been altered. The team determines that farm is non-compliant with Critical Criterion 2.2 corresponding to non-destruction of ecosystems.

Photographic Evidence

New plantation areas

Plants in nursery, size for planting in field

Water courses with felled vegetation

Felled vegetation and pioneer species

Use of timber

Good practices in action

Several aspects of the audit team's work enabled it to effectively gather all the evidence:

Planning and Analysis

A visit was planned to the more remote parts of the farm, facilitating the discovery of new plantation zones; aerial photos were analyzed to compare the farm's current situation with conditions in the past.

Connect the data

Various data were connected to deduce farm practices. For example, the presence of young plants in nurseries, remains of wooden boards used as bridges that denote the use of timber, people removing firewood, etc.

Thorough Observation

The farm was observed from high areas to confirm the location of forests and water courses and better assess their status.

Photographic evidence

Photographic evidence was collected without alerting the producer that something bad was occurring.

This allowed the team to make an exhaustive inspection without creating ill will among local people.

Natural ecosystem restoration according to the 2017 Standard

For restoration activities and the implementation of the **Rainforest Alliance restoration parameters** the following species should be included:

- native species.
- Nitrogen-fixing species.
- threatened or endangered species.

Does not include exotic or introduced species, or invasive species.

Native vegetation already present outside the natural ecosystems is maintained, including trees in buffer zones, large native trees, and vegetative cover from agroforestry.

Large native tree

"A living or dead native tree taller than 15 meters and wider than 60 cm diameter at breast height."

Other activities for the restoration of native vegetation include the use of native trees as border plantings and as barriers around homes and infrastructure, **live fences**, shade trees and permanent agroforestry systems

Live fences: Lines of closely spaced shrubs and tree species planted in such a manner as to separate crop and pasture areas, or to define property boundaries supporting barbed or plain wire fencing. Living fences cannot consist of dead fence posts only.

Different **Rainforest Alliance Parameters** have been established for the restoration of zones adjacent to aquatic ecosystems, for canopy cover and for species diversity. These parameters are analyzed below.

Natural ecosystem restoration according to the Standard

According to the 2017 Standard, ecosystems can be restored through re-population with **native species**, elimination of **invasive species** and other non-native species and the facilitation of natural ecological succession in natural ecosystems that have suffered previous destruction or degradation.

Restoration	
Restoration	**Ecological succession**
• Planting native species and eliminating non-native species. • Containing and reducing invasive species already present. • Implementation of Rainforest Alliance restoration parameters.	• Natural ecological succession in areas set aside by the farm and excluded from production activities. • Promotion of natural ecological succession in altered, destroyed or degraded ecosystems and in riparian zones.

Invasive species

"A species or subspecies that is not native to a given place, and whose presence or introduction in that place causes or is likely to cause economic harm, environmental harm, or harm to human health".

Each country may have a list of invasive species, drawn up with national experts for each group of organizations. A first step should be to consult the regulatory body about the existence of this list.

Check the list of invasive species:

http://www.issg.org/worst100_species.html

For the purposes of this Standard, crop or livestock species are not considered invasive species.

Native species

Species, subspecies, or lower taxon occurring within its current natural range, i.e., the range it occupies without direct or indirect introduction or care by humans.

It refers both to vegetative and animal species.

Natural ecosystems restoration
Related criteria

Criteria directly related to ecosystem restoration

- **C-2.6:** The farm management and group administrator develop a map that includes natural ecosystems and agroforestry canopy cover or border plantings with estimated vegetation coverage and estimated percentage of native species composition. If the farm or group of member farms have less than 10% total native vegetation cover or less than 15% total native vegetation cover for farms growing shade-tolerant crops, the farm management and group administrator develop and implement a plan to progressively increase or restore native vegetation, including:
  - restoration of zones adjacent to aquatic ecosystems;
  - restoration of cultivated areas with marginal productivity to natural ecosystems; or
  - Inclusion of native trees as border plantings and barriers around homes; and
  - infrastructure, live fences, shade trees and permanent agroforestry systems.
- **C-2.7:** If zones adjacent to aquatic ecosystems are not protected according to Rainforest Alliance restoration parameters, a plan is developed and implemented to restore these zones.
- **A-2.8:** Rainforest Alliance restoration parameters are implemented for all aquatic ecosystems.
- **A-2.9:** Farms with shade-tolerant crops have at least 15% total native vegetation coverage across the farm or group of farms or a shade canopy fulfilling the Rainforest Alliance canopy cover and species diversity parameters. Farms or groups of farms with non shade-tolerant crops have at least 10% total native vegetation coverage across the farm or group of farms.
- **A-2.14:** Efforts are implemented to contain and reduce invasive plants already present on the farm.

Other criteria related to ecosystem restoration

- **C-3.8:** Farms reduce water and wind erosion through practices such as ground covers, mulches, re-vegetation of steep areas, terracing, filter strips, or minimization of herbicide use.
- **C-3.10:** Farms implement practices such as crop rotation, planting of nitrogen-fixing ground covers or cover crops, or application of compost or mulch to maintain or enhance soil health.
- **C-3.45:** If biomass energy is used, the farm management and group administrator minimize the direct or indirect effects of biomass use on natural ecosystems through actions such as:
  - Planting trees to increase the availability of biomass energy from tree plantations.
  - When biomass is purchased, ensuring that it originates from sources not associated with the destruction of forests or other natural ecosystems.
  - Installing energy-efficient drying and processing infrastructure.
  - Supporting increased energy efficiency in domestic fuelwood use by workers, farmers and their families through training, or facilitating access to energy-efficient cook stoves.

Rainforest Alliance restoration parameters

The Rainforest Alliance Standard requires that all aquatic ecosystems be provided with buffer zones along their contours.

The buffer zones around water courses, springs, wetlands, rivers and other water bodies should consist of remnants of native vegetation or restored vegetation. They may also include agroforestry systems that comply with Rainforest Alliance parameters for canopy cover and species diversity

The width of the buffer zones will depend on the width of the water bodies they protect:

WIDTH OF WATER BODY	BUFFER ZONE
Water courses less than 5 meters wide	5 m wide
Water courses 5-10 meters wide	8 m wide
Rivers wider than 10 m	15 m wide

Under criterion C-2.7, if a farm does not meet the buffer zone requirements, a plan with a defined schedule must be established for implementing the Rainforest Alliance restoration parameters progressively and completing them in time for the third certification audit (Year 6). This complies with the requirements of criterion A-2.8 for the full restoration of the zones adjacent to water bodies.

Width of the buffer zone

The width should be measured on both sides of the water body and during its normal flow in the rainy season, but not in flood conditions.

To determine compliance with Rainforest Alliance restoration parameters, the auditors visit water bodies within the farm; or they verify the progressive implementation of the restoration plan and the progress achieved.

The restoration plan documents form part of the farm's management system.

Canopy cover
according to the 2017 Standard

The 2017 Standard requires farms to progressively achieve minimal percentages of native vegetation cover. This percentage is assessed across the farm or in the entire group of member farms, according to the type of crops.

TYPE OF CROP	% OF NATIVE VEGETATION TO BE ACHIEVED
Shade-tolerant	15 %
Non shade-tolerant	10 %

If a farm does not achieve this percentage of native vegetation coverage during the first certification audit, the auditors assess whether the farm or group of member farms has a progressive restoration plan. This plan should have a fixed term and the completion period should not exceed the date of the third certification audit (Year 6).

Shade-tolerant crop

A crop species that is adapted to live under full or partial shade. This includes, but is not necessarily limited to, cardamom, cinnamon, cocoa, coffee, macadamia, nutmeg, and vanilla.

Rainforest Alliance parameters for canopy cover and species diversity:

To achieve level A in the continuous improvement criteria, the shade-tolerant crops that do not fulfill the specified percentages of native vegetation have the option of complying with Rainforest Alliance parameters for canopy cover and diversity of native species.

OPTIONS FOR SHADE-TOLERANT CROPS	
% of native vegetation	**Rainforest Alliance Parameter**
15% native vegetation cover.	Minimum canopy cover **or** Minimum number of native species per hectare

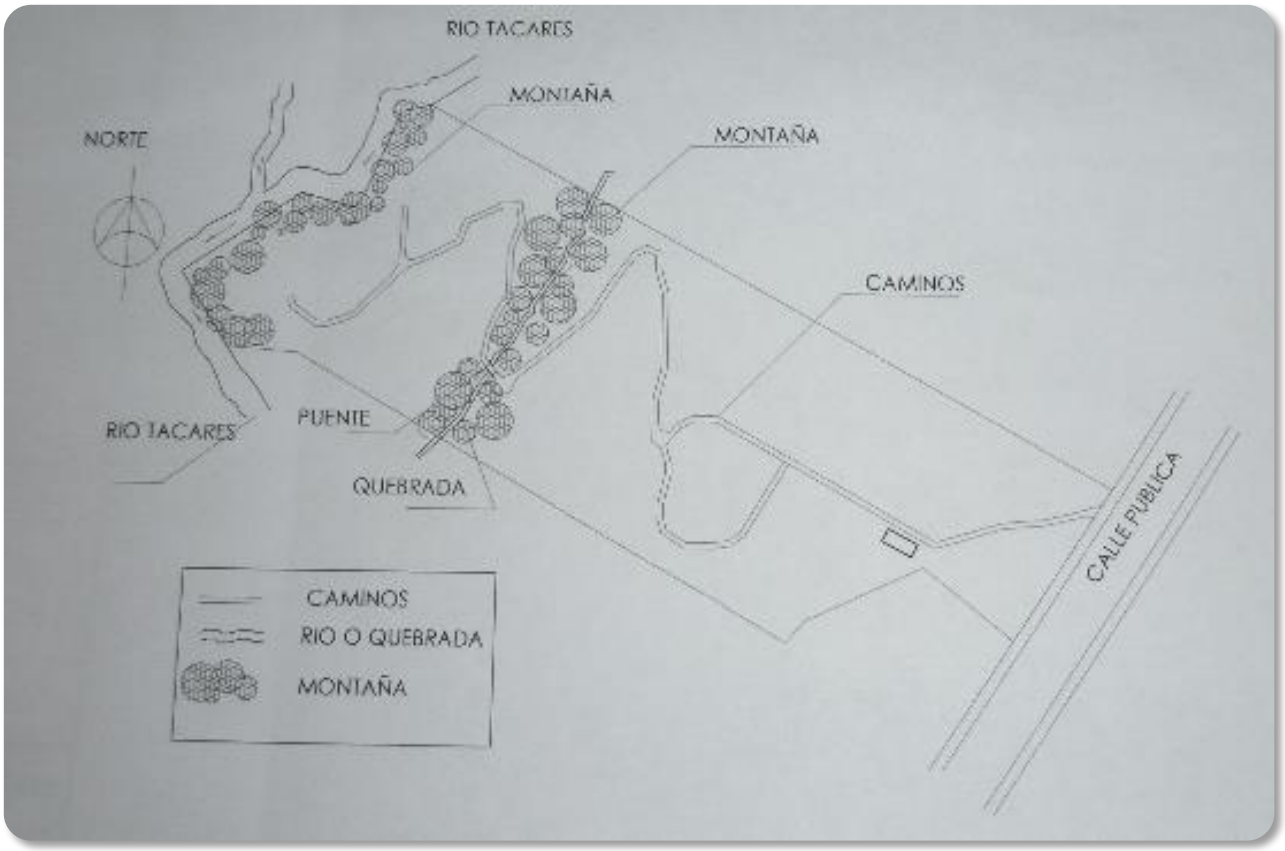
The Parameters are defined by crop and by geographical region as shown in the Table below:

Crop and regions	Minimum canopy cover	Minimum No. of native tree species
Coffee: Africa, Asia, Latin America and the Caribbean	40	12
Cocoa: West Africa, East Africa, South East Asia, Latin America and the Caribbean	30	5
Clove, Vanilla: East Africa	40	12
Pepper: South East Asia	20	12

Canopy cover and species diversity
Related criteria

- **C-2.6:** The farm management and group administrator develop a map that includes natural ecosystems and agroforestry canopy cover or border plantings with estimated vegetation coverage and estimated percentage of native species composition. If the farm or group of member farms have less than 10% total native vegetation cover or less than 15% total native vegetation cover for farms growing shade-tolerant crops, the farm management and group administrator develop and implement a plan to progressively increase or restore native vegetation, including:
  - Restoration of zones adjacent to aquatic ecosystems;
  - Restoration of farmed areas of marginal productivity to natural ecosystem; or
  - Incorporation of native trees as border plantings and barriers around housing and infrastructure, live fences, shade trees, and permanent agroforestry systems.

- **A-2.9:** Farms with shade-tolerant crops have at least 15% total native vegetation coverage across the farm or group of farms or a shade canopy fulfilling the Rainforest Alliance canopy cover and species diversity parameters. Farms or groups of farms with non shade-tolerant crops have at least 10% total native vegetation coverage across the farm or group of farms.



Rainforest Alliance Parameters
canopy cover and species diversity

Farms choosing the option of the Rainforest Alliance requirements should comply with both parameters, canopy cover and number of native species.

Shade-tolerant crop without a percentage of native vegetation, and with no canopy cover

Shade-tolerant crops with canopy cover, but without diversity of native species

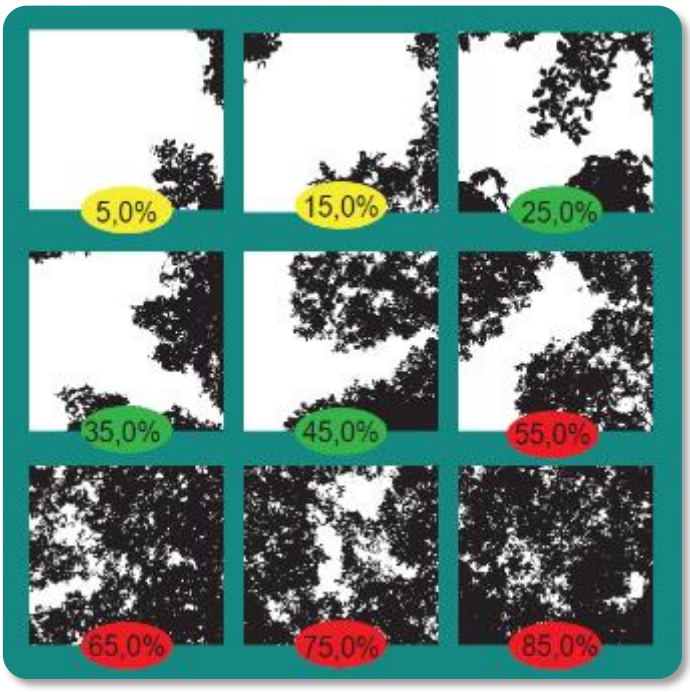
Shade tolerant crops with canopy cover and diversity of native species

Estimating
canopy cover and species diversity

Minimum canopy cover is the percentage of the total area covered by tree canopies, excluding crop trees. It is based on estimates calculated during the period of the year when the tree foliage is most dense, e.g. during the rainy season, and never after pruning the shade canopy.

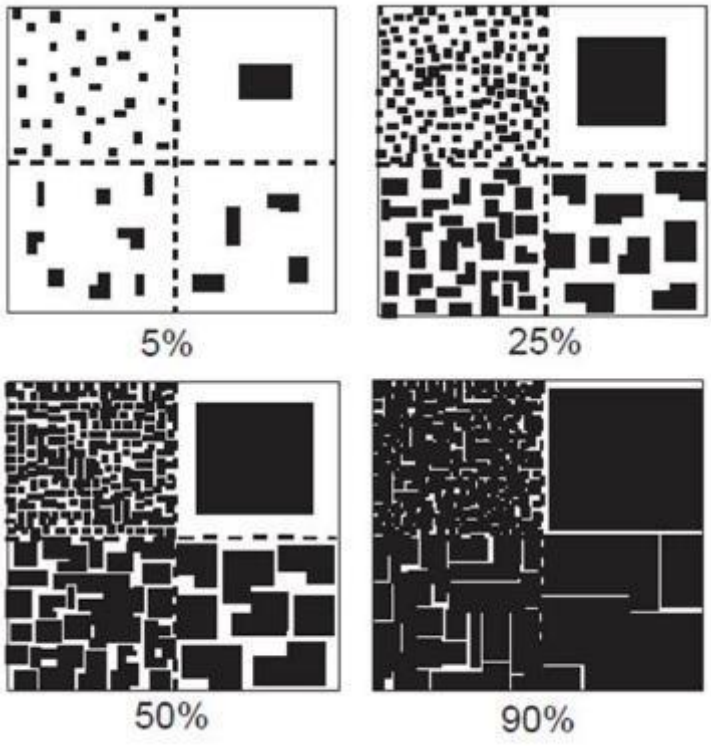
Estimates of **minimum canopy cover** can be made using optical devices or by the very well-trained eye of an auditor (*See section further on*).

Some percentages of shade are illustrated in the following diagrams.



Estimating
Canopy cover and species diversity

Estimation of canopy cover percentages



Estimating the number of native species per hectare

To estimate the number of native species per hectare, the auditors can do a count of native species in smaller parcels and extrapolate to determine the number of 5 or 12 native species per 10,000 m2 required by these parameters.

Another rapid and efficient method of calculating the percentage of shade in the field is to use photographs:

Steps:

- Focus the camera lens to take the photos with the widest angle available, so that each photo covers the largest area possible.
- In a vertical position, take the photos pointing upwards, capturing the canopy cover.
- Repeat the process at various locations in each parcel, covering areas with different characteristics
- Analyze the photographs on a computer to visualize the percentages of shade, by comparing them with reference figures.

Rainforest Alliance Non-application Zones and Rainforest Alliance parameters for vegetative barriers

Farms that apply substances classified in the "Rainforest Alliance List of Pesticides for Use with Risk Mitigation" as harmful to aquatic life and wildlife must comply with at least one of the following conditions:

- Implement Rainforest Alliance non-application zones around natural ecosystems and human activity areas, or
- Implement Rainforest Alliance parameters for vegetative barriers, or
- Implement other mechanisms of proven effectiveness to reduce spray drift.

Rainforest Alliance Non-application Zones:

Non-application zones apply to all natural ecosystems, both aquatic and terrestrial, as well as to areas of human activity.

Non-application Zones are areas in which pesticides are not applied, with the aim of protecting natural ecosystems; these should comply with the following conditions:

- 5 meters, if applied by mechanical, hand-assisted and targeted application methods, such as for example knapsack sprayers, banding, baiting, specific granule placement, soil or plant injection, seed treatments and weed wiping;
- 10 meters, if applied by broadcast or pressurized spray application methods, such as for example motorized sprayers or spray booms, air blast sprayers, foggers (Ultra Low Volume fogging machines) depending on the equipment's technical specifications.

Rainforest Alliance parameters for vegetative barriers

Rainforest Alliance has defined some parameters for establishing vegetative barriers that must be complied with on farms that use substances classified in the "Rainforest Alliance List of Pesticides for Use with Risk Mitigation" as harmful to aquatic life and wildlife, and where non-application zones have not been implemented. The conditions for establishing these barriers are:

RAINFOREST ALLIANCE PARAMETERS FOR VEGETATIVE BARRIERS

- Barriers are as high as the crop height or the height of the equipment's application valves over the ground, whichever is higher;
- Barriers are composed of plants that maintain their foliage all year, but which are permeable to airflow, allowing the barrier to capture pesticide drops;
- Preference is given to native species.

Non-application zones of pesticides and vegetation barriers

Related criteria

- **C-3.27:** Farms apply substances listed in the Rainforest Alliance List of Pesticides for Use with Risk Mitigation as having risk to aquatic life only if Rainforest Alliance non-application zones around aquatic natural ecosystems are enforced or vegetative barriers are established compliant with Rainforest Alliance parameters for vegetative barriers or other effective mechanisms to reduce spray drift. Farms apply substances listed in the Rainforest Alliance List of Pesticides for Use with Risk Mitigation as having risk to wildlife only if Rainforest Alliance non-application zones around natural ecosystems are enforced or vegetative barriers are established compliant with Rainforest Alliance parameters for vegetative barriers or other effective mechanisms to reduce spray drift.

- **C-3.28:** Farms establish and maintain non-crop vegetative barriers compliant with Rainforest Alliance parameters for vegetative barriers or Rainforest Alliance non-application zones between pesticides applied to crops and areas of human activity.

- **C-3.29:** Farms apply substances listed in the Rainforest Alliance List of Pesticides for Use with Risk Mitigation as having risks for pollinators only if: :

  - Less toxic, efficacious pesticides are not available;

  - Exposure to natural ecosystems is minimized by complying with Rainforest Alliance non-application zones or by establishing vegetative barriers compliant with Rainforest Alliance parameters for vegetative barriers or by implementing other effective mechanisms to reduce spray drift; and

  - Contact of pollinators with these substances is further reduced through:

    - Substances are applied only when pollinators are not active; or

    - Substances are not applied to flowering weeds or flowering weeds are removed; and

    - Substances are applied while the crop is not in peak flowering period. Not applicable to banana, cocoa, grapes, lemon grass, pineapple, psyllium, sugar cane, and tea.

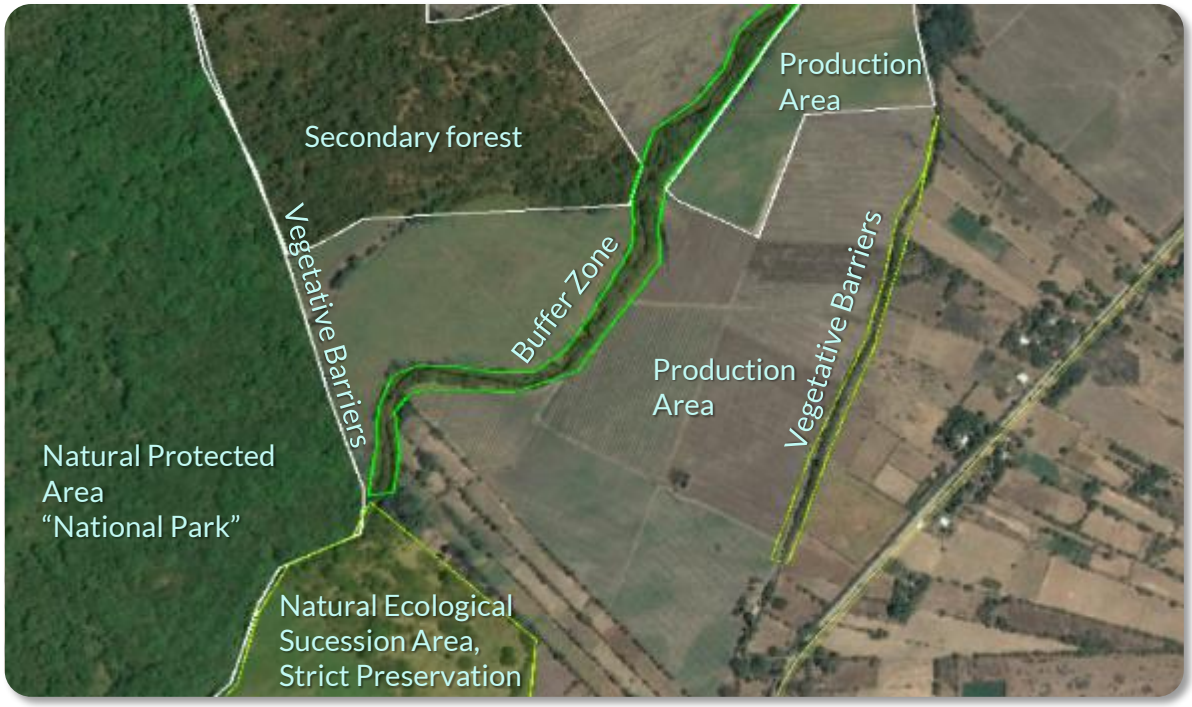
  - If bee hives are used, they are temporarily covered during application, and hive bees are provided with a clean water source outside the treated area.

Natural ecosystem management
Documentation and monitoring

Mapping of natural ecosystems

The farm management and the group administrator should document on a map all of the farm's natural ecosystems, together with the canopy cover of the agroforestry systems or border plantings if these are shade-tolerant crops.

Mapping is carried out for the purpose of estimating the natural vegetation cover present on the farm and designing a plan to achieve an optimum level of natural vegetation, where necessary. The layout and design of the map depends on the complexity of the farm.



Which aspects should be included in the map?

- Location of each production parcel.
- Roads, housing and other infrastructure.
- All natural ecosystems present on the farm.
- Adjoining land, including protected areas.
- Buffer zones.
- Areas under natural regeneration.
- Vegetative barriers.
- Canopy cover of agroforestry systems.
- Estimate of vegetation cover and percentage of native species.
- Areas in which fire has been used as part of IPM.

Natural ecosystem management
Documentation and monitoring

Plans and documentation included by the 2017 Standard:

The 2017 Standard requires the farm management and the group administrator to develop a plan with a fixed schedule in cases where:

1. The farm or group of member farms do not comply with the required percentage of total native vegetation cover across the farm
2. Buffer zones (adjacent to natural ecosystems) are not protected according to Rainforest Alliance restoration parameters.

In both cases the plan must have a well-defined completion schedule, and its implementation is at Level C of the Rainforest Alliance Standard, which means it should be established in Year 0, and completed in Year 6 (since it forms part of Level A, or high level of sustainability).

The plan to restore native vegetation should include :

a) restoration of riparian zones (adjacent to natural ecosystems);

b) restoration of marginally-productive cultivated areas to natural ecosystems; or

c) incorporation of non-crop native trees as border plantings and barriers around housing and infrastructure, live fences, shade trees and permanent agroforestry systems.

Ecosystem management
Documentation and monitoring

Criteria directly related to documentation and monitoring

- **C-2.6:** The farm management and group administrator develop a map that includes natural ecosystems and agroforestry canopy cover or border plantings with estimated vegetation coverage and estimated percentage of native species composition. If the farm or group of member farms have less than 10% total native vegetation cover, or less than 15% total native vegetation cover for farms growing shade-tolerant crops, the farm management and group administrator develop and implement a plan to progressively increase or restore native vegetation, including:
  - Restoration of zones adjacent to aquatic ecosystems;
  - Restoration of farmed areas of marginal productivity to natural ecosystem; or
  - Incorporation of native trees as border plantings and barriers around housing and infrastructure, live fences, shade trees, and permanent agroforestry systems.

- **C-2.7:** If zones adjacent to aquatic ecosystems are not protected according to Rainforest Alliance restoration parameters, a plan is developed and implemented to restore these zones.

Other criteria related to documentation and monitoring

- **CC-1.1:** A farm baseline assessment is conducted and documented. The assessment is reviewed and updated at least once per year. The assessment includes:
  - A farm map indicating the location of each production plot, roads, buildings, other infrastructure, natural ecosystems, and abutting land uses including protected areas.
  - A boundary delineation of the certificate's geographic extent;
  - Information on each production plot, including type of crop or pasture, crop or pasture varieties and crop or herd density, crop age or renovation stage for perennial crops and rotation cycle for annual crops; and production level.
  - A tabulation of the total farm area, total production area, and total area of natural ecosystems.

Preparations for assessing natural ecosystem conservation

To assess aspects related to ecosystem conservation the auditors should prepare their audit considering the following recommendations:

- It is important to plan sufficient time for carrying our the field audit; if the farm or group of farms present natural terrestrial ecosystems (forests, grasslands, etc.) or aquatic ecosystems (springs, rivers, wetlands, etc.), strict conservation areas, or areas close to protected natural areas; a visit to these areas is recommended.
- An appropriate level of physical fitness may be essential in some cases.
- It is advisable to review the following documents:
  - Historical satellite images of the area where the farm or group of farms is located to identify any changes in land use or destruction of natural ecosystems.
  - National lists or maps showing the location of Natural Protected areas in the country where the audit is being conducted, or of the specific area where the farm is located.
  - Consult the country's environmental agency about the existence of a list of invasive plant species, endangered species etc.

Some aspects may be difficult to assess; therefore, it is necessary to review all the evidence possible. Auditors should know where to find this evidence in the field. Some key points include (but are not limited to) the following:

- Review plans to expand production areas, in order to determine possible destruction of ecosystems,
- Request current maps of the farm, and any available historical maps or aerial or satellite images.
- Review plans and records on reforestation, creation of nurseries, or purchase of native trees,
- Review training plans on topics of conservation and non-degradation of natural ecosystems,
- Review records of activities, arrangements or agreements to prevent possible degradation of Natural Protected areas, if the farm adjoins such areas,
- Determine whether the activities planned annually on the farm are subject to Sustainable Management,
- Consult with neighboring communities or local governments to find out about the history/background of the farm.

PROTECTION OF BIODIVERSITY

Biodiversity protection key issues

Protection of Biodiversity

Farms that implement the 2017 Standard maintain and increase the diversity of wildlife species and populations on the farm. This helps to diversify production systems, and to conserve native habitats and their biodiversity.

Certified farms prohibit the hunting of wildlife species, minimize the propagation of invasive species and take special steps to prevent conflicts between agricultural activities and wildlife, in addition to protecting endangered species at all times.

The 2017 Standard requirements allow the farm to:

- Identify and protect wildlife present on the farm and in its area of influence.
- Implement activities for the protection and conservation of biodiversity
- Avoid activities detrimental to biodiversity.

VALUE ADDED OF BIODIVERSITY PROTECTION FOR THE FARM

Ecosystem services such as:

- Pollination
- Pest control
- Water purification
- Soil protection and conservation
- Nitrogen-fixing
- Crop resilience

Native vegetation

Protection of native vegetation species:

The 2017 Standard requires farms to maintain existing native vegetation; protect and increase native vegetation by means of restoration plans; and include species that form part of natural ecosystems and that form a canopy over shade-tolerant crops.

Actions for the protection of native vegetation:

- Identify native species.
- Maintain native vegetation already existing on the farm.
- Include native vegetation in restoration plans.
- Comply with Rainforest Alliance parameters for canopy cover and species diversity.
- Comply with Rainforest Alliance parameters for restoration and live barriers
- Protect large native trees.

*If farms with shade-tolerant crops (such as: coffee, cocoa, cloves, vanilla, pepper) exceed the **Rainforest Alliance parameters for canopy cover and species diversity**, these can be managed for purposes of increasing productivity or improving the control of pests and diseases, provided that the Rainforest Alliance parameters are observed in all stages of the management activities.*

Conservation of native vegetation
Related criteria

- **C-2.5:** Existing native vegetation outside natural ecosystems is maintained, including:
  - Existing agroforestry shade tree cover;
  - Existing vegetated zones adjacent to aquatic ecosystems; and
  - Large native trees, except when these pose hazards to people or infrastructure.

- **C-2.6:** The farm management and group administrator develop a map that includes natural ecosystems and agroforestry canopy cover or border plantings with estimated vegetation coverage and estimated percentage of native species composition. If the farm or group of member farms have less than 10% total native vegetation cover or less than 15% total native vegetation cover for farms growing shade-tolerant crops, the farm management and group administrator develop and implement a plan to progressively increase or restore native vegetation, including:
  - Restoration of zones adjacent to aquatic ecosystems;
  - Restoration of farmed areas of marginal productivity to natural ecosystem; or
  - Incorporation of native trees as border plantings and barriers around housing and infrastructure, live fences, shade trees, and permanent agroforestry systems.

- **A-2.9:** Farms with shade-tolerant crops have at least 15% total native vegetation coverage across the farm or group of farms or a shade canopy fulfilling the Rainforest Alliance canopy cover and species diversity parameters. Farms or groups of farms with non shade-tolerant crops have at least 10% total native vegetation coverage across the farm or group of farms.
- **C-2.10:** Endangered species of plants are not collected, except for: a) Non-commercial collection for traditional medicinal use; or b) Conservation or scientific research purposes, and only with prior permission from local authorities.
- **C-2.12:** Invasive species are not intentionally introduced or released. Existing invasive plant species or their parts are not disposed in aquatic ecosystems.
- **A-2.14:** Efforts are implemented to contain and reduce invasive plants already present on the farm.

Conservation of native vegetation
Added value to the farms

The conservation of native vegetation is one of the main purposes of the Principle II in the 2017 Rainforest Alliance Standard, due to the native vegetation contribution towards natural ecosystems and agroecosystems within the certified operations

Maintaining native vegetation and implementing the Rainforest Alliance parameters for canopy and species diversity, as well as those related to barriers and buffer zones, generates value added for the farm, since it contributes to the maintenance of carbon reserves and makes production systems more resilient to the challenges of climate change.

Other benefits of protecting native vegetation include:

- ✓ Protection and conservation of water sources,
- ✓ Protection of watersheds,
- ✓ Protection, conservation and recovery of soils,
- ✓ Protection or conservation of biodiversity,
- ✓ Mitigation of emissions and the fixing, reduction, sequestration, storage and absorption of greenhouse gases,
- ✓ Maintenance of ecological processes,
- ✓ Contribution to scenic beauty.

Assessing compliance with protection of native vegetation

The auditors look for evidence both in the field and in the farm's restoration records and plans. Some good practices include:

- ✓ Review farm maps and confirm the identification of all natural ecosystems and strict preservation areas,
- ✓ Have information about key native species of the place in order to identify them,
- ✓ Review restoration plans and plans for the implementation of Rainforest Alliance Parameters,
- ✓ Check for the existence of reforestation programs, or implementation of ecological succession plans,
- ✓ Make field visits to conservation areas, natural terrestrial and aquatic ecosystems, buffer zones, Rainforest Alliance non-application zones, vegetative barriers, boundaries between crop and human activity areas and natural ecosystems, and canopy cover in the case of shade-tolerant crops.

Wildlife Protection

Protection of wildlife species:

Farms support the protection of native fauna species by prohibiting hunting, minimizing the propagation of invasive species and taking steps to minimize conflicts between humans and wildlife. Native fauna species living around the farm benefit from ecosystem restoration plans, but it is also necessary to establish direct mechanisms for their protection and conservation. The criteria of the 2017 Standard for the protection of native fauna species are presented below:

Criteria directly related to the protection of wildlife

- **CC-2.4:** Animals that are endangered or protected are never hunted or killed. Animals are not hunted on the farm, with the following exceptions:
  - Smallholders may hunt non-endangered species for non-commercial use only; and
  - Vertebrate pest wildlife may be hunted only in accordance with the farm's integrated pest management (IPM) plan, and only as a measure of last resort.

  Explosives or toxic substances are never used for hunting, fishing, or control of wildlife pests. Control of rodents follows Rainforest Alliance rodenticide risk management requirements.
- **C-2.11:** Wildlife is not held in captivity. Captive animals that were present on the farm before the earliest certification date may be held only for non-commercial purposes for the remainder of their lives if not mistreated.
- **C-2.13:** Farms minimize human-wildlife conflicts affecting workers, wildlife, crops, or farm assets through the siting and design of farm infrastructure and fencing; maintenance or establishment of wildlife corridors to facilitate wildlife movement while minimizing conflict; and training workers in procedures and emergency responses for addressing crop damage or wildlife attacks.

Other criteria related to the protection of wildlife

- **C-3.27:** Farms apply substances listed in the Rainforest Alliance List of Pesticides for Use with Risk Mitigation as having risk to aquatic life only if Rainforest Alliance non-application zones around aquatic natural ecosystems are enforced or vegetative barriers are established compliant with Rainforest Alliance parameters for vegetative barriers or other effective mechanisms to reduce spray drift. Farms apply substances listed in the Rainforest Alliance List of Pesticides for Use with Risk Mitigation as having risk to wildlife only if Rainforest Alliance non-application zones around natural ecosystems are enforced or vegetative barriers are established compliant with Rainforest Alliance parameters for vegetative barriers or other effective mechanisms to reduce spray drift.

Wildlife Protection

Some elements that the auditors may consider when assessing the protection of wild fauna species are:

- Evidence that hunting is prohibited on the farm,
- Placement of signs,
- Trained guards or rangers,
- Access gates,
- Education for farm workers and farm residents.

In order to protect native fauna on farms, the 2017 Standard requires the prohibition of hunting of wildlife species by means of any weapon, trap, poison or the use of dogs.

According to the Standard, native fauna should not be kept in captivity. In exceptional cases, where keeping wildlife in captivity is permitted, the auditors will determine whether there is evidence of mistreatment or abuse. Clear signs of mistreatment include:

- Animals beaten or handled with sharp objects.
- Signs of abuse, neglect or cruelty, such as abscesses, hematomas or open wounds.
- Poor physical condition or untreated physical lesions.
- Malnutrition, lack of food and water.
- Confinement in enclosures with poor hygiene and little space for the animal's mobility

Smallholders may hunt or fish wildlife species solely for non-commercial purposes and only species that are not threatened or endangered. In the case of authorized subsistence hunting by smallholders, explosives or toxic substances may not be used under any circumstances.

Wildlife Protection

In some cases, ecological conditions may encourage a particular wildlife species to become a pest for production systems. If this occurs, and the pest reaches levels that could affect the crop's productivity and it is necessary to control it, the auditors will assess whether:

- ✓ An IPM plan* has been designed and implemented that contemplates the control or elimination of that pest.
- ✓ The pest should first be controlled using cultural or mechanical methods. The use of chemical substances is a last resort.

Find complementary information on this Topic in Principle 3: Integrated pest management

In the case of rodent pests, when cultural or mechanical methods prove ineffective, the use of rodenticides is permitted only inside buildings such as warehouses, packing plants and homes, so long as these comply with Rainforest Alliance Requirements for the management of Rodenticides.

If it is necessary to use these substances in the field, the farm should: provide technical justification, ensure their targeted use and guarantee continuous supervision. Bait stations and rodent activity should be monitored in order to remove bait stations containing rodenticides if they are no longer necessary.

Wildlife protection Added value to the farms

Natural ecosystems are vital to ensure efficient nutrient cycles, use of solar energy and biodiversity conservation.

Production systems rely enormously on the ecosystem services provided by natural ecosystems, such as: pollination, control of populations, nutrient cycles, etc. Wild fauna play an important role in balancing natural ecosystems, and therefore it is essential to ensure their protection.

Wildlife species can serve as biological controls for some pests in production areas; they also provide other environmental services such as seed propagation and contributions to the health of ecosystems, and they are an essential part of the food chains.

Endangered species in the 2017 Standard

The criteria of the Rainforest Alliance Standard for biodiversity management requires that endangered species be protected and not be collected or removed from their habitats.

According to the criteria, **endangered species** are defined as :

"Species of plants, animals and fungi designated as threatened or endangered by the national laws or classification systems, or included as threatened in the IUCN Red List of Threatened Species .™"

Endangered plant species

Threatened or endangered plant species may not be felled or cut; removed or collected.

The collection of endangered plants is permitted only :

1. For traditional medicinal purposes, provided that this action is NOT for commercial purposes.
2. Species may be collected for conservation purposes or for scientific research.

In the latter case, prior permission or authorization must be obtained from the national regulatory body; a permit from CITES is also required if the vegetation collected is to be removed from its country of origin.

Endangered animal species

Threatened or endangered species of wild fauna are protected through the prohibition of hunting or fishing.

- Endangered species may not be hunted or killed by smallholders for subsistence purposes.
- Threatened or endangered species may not kept in captivity, except for those animals that are on a farm as part of a rehabilitation program established by the competent local authorities.

CITES

The Convention on International Trade in Endangered Species of Wild Fauna and Flora, requires that all import, export, re-export or introduction of endangered species be subject to controls. Each Party to the CITES Convention must designate an administrative and technical authority to manage these controls.

Red List
of threatened species

The IUCN has a global Red List of threatened species.

The IUCN's different categories of threat are:

- Critically endangered
- Endangered
- Vulnerable
- Near threatened
- Least concern.

By law some countries have established a list of endangered species. It is also important to take this list into account, since it defines the conservation category in a manner specific to a given country or region. It is also advisable to consult the competent environmental authorities of each country/region.

Invasive species
in the 2017 Standard

Invasive species are not introduced, propagated or released intentionally into any natural ecosystem within the farm, as the 2017 Standard considers this action to cause degradation of ecosystems.

By Year 6, the 2017 certification standards require farms to have implemented efforts to contain and reduce the propagation of invasive plants already present. These species or their parts may not be deposited in aquatic ecosystems.

Invasive species may be eliminated using any method established by a competent professional. If conditions warrant, the use of herbicides or fire may be permitted; however, in those cases such actions must be based on the opinion of a competent professional and included in the Integrated Pest Management Plan.

On cattle farms, the selection of non-invasive forage species should be considered as part of a forage and pasture management plan.

Best practices
for assessing requirements related to endangered, invasive and native species

Some best practices and competencies that facilitate the auditors' work in assessing compliance with the requirements are:

- Basic knowledge of the wildlife typical of the area where the audit is being carried out.
- Ability to identify invasive vegetation species, or obtain up-to-date lists of local invasive species.
- Knowledge of the region's main native plant species
- Consult the national legislation related to wildlife.
- Consult lists of threatened or endangered species in the area of influence of the farm or group of farms.

Some sources of information and documentation to consider when assessing wildlife management are:

- The farm's training plan on conservation issues and non-degradation of natural ecosystems,
- Records of activities, arrangements or agreements with local authorities and organizations, to support the protection of wildlife, if the farm is adjacent to Natural Protected Areas.
- Implementation of actual Sustainable Management of the activities planned annually on the farm,
- Information from neighboring communities or local governments about the history of the farm.
- Records and controls of specimens held in captivity, if the farm has wildlife species in captivity.
- Evidence of protection against hunting, such as signs, installation of gates or restricted access, surveillance or farm guards.

Reducing conflicts with wildlife

Farms implement actions to reduce any conflicts that wildlife could cause in their productive activities.

Conflicts with wildlife include (but are not limited to):

- Conflicts with crops,
- Conflicts with livestock,
- Use or refuge in buildings,
- Invasion of housing areas,
- Damage to farm equipment or assets.

As an initial step for reducing conflicts between farm activities and wildlife, the establishment of biological corridors is recommended to facilitate the movement of species, preventing them from leaving the ecosystems and entering areas of human and agricultural activity.

Biological Corridors:

Contribute to the connectivity of natural ecosystems, instead of converting the landscape into farming areas that create barriers for wildlife

Farms can prevent the entry of wildlife that could cause problems through the siting and design of agricultural infrastructure and physical fences.

Farms are also required to train their workers so that they are capable of responding to an emergency, or to conflicts that could cause damage to production systems and to the people who work in them.