
Biodiversity Compliance Assessment in Organic Agricultural Systems: Summary of Major Noncompliance Indicators & Detailed Guidance of Positive Compliance Approaches



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Biodiversity Compliance Assessment in Organic Agricultural Systems

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Biodiversity Compliance Assessment in Organic Agricultural Systems

Introduction

Biodiversity Compliance Assessment in Organic Agricultural Systems is designed to assist farmers and certification bodies in assessing farms' compliance with the National Organic Program's (NOP) requirements for managing farm systems in a manner that protects and improves natural resources:

- “Foster cycling of resources, promote ecological balance, and conserve biodiversity.” (§205.2)
- “Maintain or improve the natural resources—the physical, hydrological, and biological features, including soil, water, wetlands, woodlands, and wildlife—of the operation.” (§205.200 and §205.2)
- “Minimize soil erosion.” (§205.203a)
- “Does not contribute to contamination of crops, soil, or water by plant nutrients, pathogenic organisms, heavy metals, or residues of prohibited substances.” (§205.203c)
- “Perennial cropping systems employ means such as alley cropping, intercropping, and hedgerows to introduce biological diversity in lieu of crop rotation.” (§205.205)
- “The producer must use management practices to prevent crop pests, weeds, and diseases.” (§205.206)
- “Establishment of appropriate pasture conditions and sanitation practices to minimize the occurrence and spread of diseases and parasites.” (§205.238)
- “Must establish and maintain livestock living conditions [without] risk to soil or water quality.” (§205.239)

As some of the terms and concepts related to biodiversity are rather specialized and may be unfamiliar to some members of the organic community, this document contains practical, farm-based information about how each of the biodiversity requirements related to the NOP may be addressed.

Chart A, Summary of Major Noncompliance Indicators, gives a quick glance at the most problematic biodiversity issues in organic farming systems, and how these issues relate to the NOP requirements.

Chart B, Detailed Guidance of Positive Compliance Approaches, provides a more thorough explanation of all biodiversity issues in a positive light. These charts are linked by reference numbers listed in the left hand columns.

In Chart B, the second to left column shows the requirements of the Organic System Plan (OSP) approved by the National Organic Standards Board (NOSB). A recently updated version of the OSP is available at <http://www.attra.org/attra-pub/PDF/OSPtemplates.pdf>. The information to the right of the wide dividing line of this chart comes from Wild Farm Alliance's *Biodiversity Conservation: An Organic Certifier's Guide*. This text is intended to increase and unify organic certifiers' and farm inspectors' understanding of the standards related to biodiversity by providing a range of examples for each of the provisions of the OSP. The columns titled "Verification Item" and "Compliance Indicators" clearly identifies biodiversity issues and illustrates practical examples of positive approaches to managing biodiversity as part of an organic farm system.

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Definition of Terms

Biodiversity includes variety in all forms of life, from bacteria and fungi to grasses, ferns, trees, insects, amphibians, reptiles, birds, and mammals. It encompasses the diversity found at all levels of organization, from genetic differences between individuals and populations (groups of related individuals) to the types of natural communities (groups of interacting species) found in a particular area. Biodiversity also includes the full range of natural processes upon which life depends, such as pollination, nutrient cycling, carbon and nitrogen fixation, predation, and the recolonization of areas by native plants.

Crop rotation is the practice of alternating the annual crops grown on a specific field in a planned pattern or sequence in successive crop years so that the same species or family are not grown without interruption on the same field. Perennial cropping systems employ means such as alley cropping, intercropping, and hedgerows to introduce biological diversity in lieu of crop rotation.

Ecological function of riparian areas refers to processes, such as the riparian soils' unique capacity to break down toxins; to uses, such as how riparian habitat supports beneficial insects and larger wildlife; and to riparian habitat's ability to prevent bank erosion.

Natural hydrology refers to the natural sinuosity of a river, the natural flooding of wetlands, and the natural recharging of groundwater.

Natural resources of the operation include the physical, hydrological, and biological features of a production operation, including soil, water, wetlands, woodlands, and wildlife.

Organic production is a production system that is managed in accordance with the Organic Foods Production Act to respond to site-specific conditions by integrating cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity.

Pasture is land used for livestock grazing that is managed to provide feed value and to maintain or improve soil, water, and vegetative resources.

Priority habitats are those in need of special conservation attention, usually determined by a statewide or regional biodiversity assessment. Priority habitats have declined significantly from their historic range. For example, white oak savannas were historically common in Oregon and now only cover 1-2% of the previous range. Priority habitats may also be vegetation types not well represented in existing conservation networks.

Priority species include threatened and endangered species, species of special concern (potentially at risk), and keystone species (those whose presence uniquely affect other species and the ecosystem, such as beavers, whose dams create habitat for many other species).¹

Riparian area is defined as a zone of transition from an aquatic to a terrestrial ecosystem, dependent upon surface or subsurface water, that reveals through the zone's existing or potential soil-vegetation complex the influence of such surface or subsurface water. A riparian area may be located adjacent to a lake, reservoir, estuary, pothole, spring, bog, wet meadow, muskeg or ephemeral, intermittent or perennial stream.

Soil and water quality are observable indicators of the physical, chemical, or biological condition of soil and water, including the presence of environmental contaminants.

Wild crop is any plant or portion of a plant that is collected or harvested from a site that is not maintained under agricultural management.

¹ To obtain a list of the federally endangered and threatened species present in any U.S. watershed, go to: www.natureserve.org/explorer/. See instructions for using this website in "Resources for Information" on the next page.

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Resources for Information

Invasive Species: National Invasive Species Information Center (www.invasivespeciesinfo.gov) provides information and pictures of invasive species found in the United States.

Natural Resources Conservation Service Practice Standards: These documents provide guidance on many of the topics related to biodiversity and may be found at www.nrcs.usda.gov/Technical/Standards/nhcp.html.

Examples of subjects discussed include:

- Conservation Cover
- Conservation Crop Rotation
- Constructed Wetland
- Early Successional Habitat Development/Management
- Filter Strip
- Fish Passage
- Grassed Waterway
- Hedgerow Planting
- Riparian Forest Buffer
- Riparian Herbaceous Cover
- Stream Bank and Shoreline Protection
- Stream Crossing
- Stream Habitat Improvement and Management
- Tree/Shrub Establishment
- Upland Wildlife Habitat Management
- Water and Sediment Control Basin
- Wetland Creation
- Wetland Enhancement
- Wetland Restoration
- Wetland Wildlife Habitat Management
- Windbreak/Shelterbelt Establishment
- Windbreak/Shelterbelt Renovation

Priority Species: To obtain a list of the federally endangered and threatened species present in any U.S. watershed, go to:

www.natureserve.org/explorer/

- On the right side of the page, click on the word Species (which is located directly under the Species Quick Search slot).
- Of the three tabs on the left header, click on Location.
- On the left toward the top, there are 3 locations listed; click on U.S. Watersheds.
- In the middle of the page, use the buttons to select the State and the Watershed, then click Search Now.

For the species protected by the U.S. Endangered Species Act, look at the column USES, which gives these designations: LE—Listed endangered; LT—Listed threatened; PE—Proposed endangered; PT—Proposed threatened; C—Candidate; SC—Special concern; PDL—Proposed for delisting; SAE or SAT—Listed endangered or threatened because of similarity of appearance; PSAE or PSAT—Proposed endangered or threatened because of similarity of appearance.

CHART A. SUMMARY OF MAJOR NONCOMPLIANCE INDICATORS

Detailed Guidance Ref # ²	NOP Standard **§205.200 & §205.2 applicable to all below	Indicator of Major Noncompliance
		GENERAL IMPACTS
12–15	**	Inappropriate or excessive use of water results in death of native species and severe impacts to ecosystems.
15,24,50–54	**	Riparian habitat is not allowed to recolonize; a vegetative buffer that protects water quality is absent.
		IMPACTS ON NATIVE PLANTS
2,3,4,14,15,19,20,23,27,51,58,59,75,76,78	**	Native plants, including at-risk priority species, are killed by farming, ranching, and wild harvesting practices.
		IMPACTS ON NATIVE WILDLIFE
25,41,50,51	**	Poorly planned fences or denuded riparian habitat stops or severely impacts movement of wildlife through the farm.
2,3,4,14,15,24,25,27,45,46,47,51,59,64,75,76,78	**	Wildlife, including at-risk priority species, is killed by farming, ranching, or wild harvesting practices.
37,63–69	**	Producer kills problem wildlife, including priority species, without first trying practices that allow co-existence.
		IMPACTS FROM LAND MANAGEMENT PRACTICES
2,23,24,27	**	Cropland has replaced a primary ecosystem (desert, prairie, scrubland, forest) since the certification of the farm.
2,16,42,52,53,56,57,77	** , §205.203	Soil erosion or nutrient pollution is caused by farming, ranching, and wild harvesting practices.
19,39,40	** , §205.205	Little or no effort is made to incorporate diversity in plant covers and crops.
2,30–35,42,56,60,61	** , §205.206	Harmful invasive species spread due to farming, ranching, and wild harvesting practices.
		IMPACTS SPECIFICALLY RELATED TO LIVESTOCK PRODUCTION
51,53,56	** , §205.238	Overgrazing causes unsanitary conditions.
52,56,57	** , §205.239	Overgrazing degrades soil or water quality.

² Reference numbers refer to a range of verification items and biodiversity compliance indicators in Chart B that can help to determine whether there is a major noncompliance.

CHART B. DETAILED GUIDANCE OF POSITIVE COMPLIANCE APPROACHES

PART 1: BIODIVERSITY OF THE WHOLE FARM

(pp. 8–9 of *Biodiversity Conservation: An Organic Certifier’s Guide*)

Ref #	Organic System Plan Requirement (Approved by NOSB)	Verification Item	Compliance Indicators
1		How Does the Farmer Document Efforts to Support Biodiversity?	
2	<p>Does your field map include features such as hedgerows, woodlands, riparian zones, and special habitats? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>Field map shows features such as hedgerows, woodlands, riparian zones, areas affected by invasive species, erosion-prone areas, and special habitats.</p>	<p>Map indicates biodiversity features and/or problem areas, such as:</p> <ul style="list-style-type: none"> • Hedgerows • Woodlands • Wetlands • Riparian zones • Waterways • Name of the watershed in which the farm lies • Connections to drainages at higher and lower elevations • Areas affected by invasive species • Erosion-prone areas • Nearby public natural resource lands and protected areas • Special habitats <p>Map indicates appropriate use of features meant as biodiversity features.</p>
3	<p>List native plants present, and/or wildlife seen moving through farm: (note priority species).</p>	<p>Farmer recognizes presence of at-risk priority species³ and adjusts farm management with these species in mind.</p>	<p>Farmer is aware of native plants and wildlife in the region of the farm, especially the priority species. Actively maintains systems that support priority species. Has adequate documentation of management practices that support priority species. Does not kill priority species.</p>

³ Priority species include threatened and endangered species, species of special concern (potentially at risk), and keystone species (those whose presence uniquely affect other species and the ecosystem, such as beavers, whose dams create habitat for many other species).

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Ref #	Organic System Plan Requirement (Approved by NOSB)	Verification Item	Compliance Indicators
4		List farm's wildlife and dominant native plants.	Maintains written documentation of wildlife species that have been observed on the farm. Maintains a list of the dominant native plants on the farm. Priority species are highlighted on the list.
5	What steps do you take to plan/provide for biodiversity conservation?	What Steps Does the Farmer Take to Plan/Provide for Biodiversity Conservation?	
6	<input type="checkbox"/> understand farm's location within watershed	Understands the farm's location within watershed.	Knows the name of the watershed in which the farm lies. Can explain relationships between the farm and geographical features within the farm's watershed (ex., uses topographic map to explain the farm's relationship to other geographical features). Farm plan illustrates understanding of the farm's relationship to other geographical features in the local watershed (ex., connections to drainages at higher and lower elevations than the farm).
7	<input type="checkbox"/> ascertain what native plants and animals existed on the land before it was a farm	Knows about the plant and animal species that are indigenous to the area.	Has researched the plant and animal species that are indigenous to the farm's bioregion. Includes information about indigenous plant and animal species in the Farm Plan. Can describe or give examples of indigenous plant and animal species during the inspection interview.
8	<input type="checkbox"/> learn about regional natural areas and conservation priorities	Knows about regional natural areas and conservation priorities.	Can describe or give examples of regional natural areas during the inspection interview. Can describe conservation priorities within the region of the farm during the inspection interview.
9	<input type="checkbox"/> work with neighbors/others to enhance biodiversity (connectivity, restoration, etc.)	Works with neighbors/others to enhance connectivity/restoration for wildlife and native plants.	Farmer works with neighbors to manage common natural resources. Works with others (neighbors, conservationists, researchers, etc.) on biodiversity issues. Maintains membership in a regional conservation group. Maintains a conservation plan as a participant in a government-sponsored conservation program.
10	<input type="checkbox"/> other (describe/explain)		

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Ref #	Organic System Plan Requirement (Approved by NOSB)	Verification Item	Compliance Indicators
11	How do you manage water for the needs of crops/livestock, native species, and riparian ecosystems?	How Does the Farmer Manage Water Needs for Crops/Livestock, Native Species, and Ecosystems?	
12	<input type="checkbox"/> plant regionally appropriate crops	When planning the farm's crops, minimize irrigation by considering crops' irrigation requirements compared with expected rainfall patterns.	Documentation of consideration of irrigation requirements when choosing crops. Documentation of use of evapotranspiration figures as a planning tool for irrigation systems and applications of water to cropland.
13	<input type="checkbox"/> conserve water	Conserve water (using best available methods and actions).	Uses irrigation methods that conserve water, thereby benefiting natural ecosystems. No evidence of irrigation severely depleting surface water to the point of diminishing habitat for aquatic species. Does not overuse water with the goal of maintaining allotments or water rights.
14	<input type="checkbox"/> manage water for priority species	Plan and manage irrigation systems with consideration of priority species living in the farm's watershed.	Surface waters affected by farming operations are sufficient to allow priority species to thrive. Farmer works with neighbors to time irrigations to ensure that creek levels are always sufficient for priority species.
15	<input type="checkbox"/> retain/restore vegetated riparian buffers/wetlands <input type="checkbox"/> protect/improve natural hydrology/ecological function of riparian areas	Enhance vegetation and natural hydrology ⁴ /ecological function ⁵ of riparian areas.	Farm system shows no evidence of filling in or destroying riparian areas. Riparian areas contain appropriate vegetation (ex., structurally diverse vegetation buffers of trees, shrubs, grasses, and forbs specific to the site) that supports positive hydrological functions, stabilizes banks, and serves as a natural filter for pollutants. Riparian areas are wide enough to benefit priority species. Farm system shows evidence of management of riparian areas to allow natural restoration and maintenance of riparian vegetation (ex., from seeds present in soil or from birds bringing in seeds).

⁴ Natural hydrology refers to the natural sinuosity of a river, the natural flooding of wetlands, and the natural recharging of groundwater.

⁵ Ecological function of riparian areas refers to processes, such as riparian soils' unique capacity to break down toxins, support of beneficial insects and larger wildlife within riparian habitats, and prevention of bank erosion by riparian vegetation.

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Ref #	Organic System Plan Requirement (Approved by NOSB)	Verification Item	Compliance Indicators
			<p>Cleaning alternate sides of ditch banks to preserve the stream bank's filtering processes.</p> <p>Riparian areas and adjacent floodplains are managed in coordination with regional or watershed planning efforts to support the larger hydrological system.</p>
16	<input type="checkbox"/> other (describe/explain)		<p>Methods are in place to reduce soil loss and prevent sedimentation and pollution in natural bodies of water:</p> <ul style="list-style-type: none"> • Minimizing tillage to lessen soil erosion. • Contoured planting rows to reduce erosion of cropland. • Vegetation buffers designed to catch sediments and contaminants are maintained in road ditches and at the end of crop furrows. • Sediment basins are placed at the low end of fields to capture eroded soil before it leaves the farm. • Catchment basins are placed at higher elevations in fields in order to catch and hold runoff, releasing it over a wide area so that it does not form gullies. • Retaining or planting appropriate native vegetation to protect stream banks. • Fertilizers and composts are managed to avoid contamination of waterways that can cause algal blooms, oxygen deprivation, and imbalances of aquatic plant and animal populations. • Fertilizers and composts are not stored in close proximity to waterways or wells. • No gray water from compost/fertilizer is observed leaching into waterways or wellhead areas. • Nutrient needs of crops are calculated so that fertilizer applications do not result in excess nutrients in runoff water or ground water.

PART 2: BIODIVERSITY OF UNCULTIVATED LAND AREAS

(pp. 10–12 of *Biodiversity Conservation: An Organic Certifier's Guide*)

Ref #	Organic System Plan Requirement (Approved by NOSB)	Verification Item	Compliance Indicators
17	What actions do you take to provide habitat for pollinators, insect predators, birds, and bats?	What Actions Does the Farmer Take to Provide Habitat for Beneficial Species?	
18	<input type="checkbox"/> bird/bat/bee boxes	Provide bird/bat boxes or bee blocks/areas for bee nests.	<p>Birdhouses are present and maintained.</p> <p>Bat boxes are used to enhance habitat for bats.</p> <p>Bee blocks, bundles of stems, straws, or native vegetation, such as decaying vines with hollow stems, are present to support native tunnel-nesting bees.</p> <p>Native trees are planted or conserved for roosting and nesting habitat of birds, bats, native bees, and other wildlife.</p> <p>Refuges of undisturbed soils are left for ground bees to create nesting burrows.</p> <p>Roosting sites that encourage predatory birds are conserved or provided.</p> <p>Farm structures such as barns and sheds provide habitat for beneficial birds and bats.</p>
19	<input type="checkbox"/> hedgerows/windbreaks	Plant hedgerows/windbreaks.	<p>Hedgerows are maintained.</p> <p>Hedgerows contain sequentially flowering plants of different sizes, primarily natives, providing pollen, nectar, and cover for priority species and other wildlife.</p> <p>Windbreaks are maintained.</p> <p>Windbreaks include a complex mix of plants, including natives, to create habitat and shelter for a variety of insects, birds, and other animals.</p> <p>Hedgerows and windbreaks are:</p> <ul style="list-style-type: none"> • Installed in wide swaths • Linked to natural areas on and off the farm, where feasible.
20	<input type="checkbox"/> maintain/provide natural roosting/nesting/foraging sites	Maintain/provide natural roosting/nesting/	<p>Where applicable, trees (trunks over 6" in diameter) and dead snags are retained in or near cropping areas.</p> <p>Trees have been planted where they can grow for extended periods in order to replace trees that have been removed to create cropping areas.</p>

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Ref #	Organic System Plan Requirement (Approved by NOSB)	Verification Item	Compliance Indicators
		foraging sites.	Native flowering hedgerows or large patches of shrubs and trees are retained or established in areas not intended for crop production. Unused areas, like field corners and fencerows, are actively managed in ways to increase native habitat.
21	<input type="checkbox"/> other (describe/explain)		
22	How are you restoring and/or protecting natural areas?	What Actions Does the Farmer Take to Restore and Protect Natural Areas?	
23	<input type="checkbox"/> manage for native plants/wildlife specific to the site	Increase the diversity of <u>wildlife</u> on the farm by providing food, water, shelter, and nesting sites.	All native animal species present on the farm since certification are still present. If wildlife habitats have been eliminated from the farm, they have been restored/mitigated elsewhere. New types of indigenous wildlife habitats have been established with the intent of increasing the wildlife diversity on the farm.
24		Increase or enhance the diversity of native <u>plant species</u> with intentional plantings and by leaving natural areas undisturbed.	All native plant species, present on the farm since certification, are still present. If native plant habitats have been eliminated from the farm, they have been restored/mitigated elsewhere. New types of indigenous plant habitats have been established with the intent of increasing the native plant diversity on the farm.
25	<input type="checkbox"/> preserve/restore wildlife corridors	Preserve/restore wildlife corridors/large blocks of habitat.	Natural areas, especially large blocks of habitat where feasible, are retained and managed to accommodate the full range of species native to the farm's environment. Natural ecosystem function is restored through efforts such as: <ul style="list-style-type: none"> • Improving the natural function of a creek by allowing periodic flooding • Removing or plugging drain tiles to allow land to revert to wetland • Retaining fallen trees in a streambed to provide wildlife habitat • Preserving standing dead trees as nesting sites • Managing a pond for native species (ex., tethering a log in the pond to provide a safe basking platform for turtles) • Allowing beavers, a keystone species, to build a dam Farm fencing is organized so that wildlife can move through areas such as streams, riparian zones, and established migration corridors.

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Ref #	Organic System Plan Requirement (Approved by NOSB)	Verification Item	Compliance Indicators
			<p>Farm includes sufficient vegetation in stream corridors to protect passing wildlife from predators.</p> <p>Linkages and corridors (such as riparian zones), which provide safe passage for wildlife, are preserved and restored.</p> <p>Farm includes sufficient vegetation along established wildlife trails to provide cover for animals as they move across the farm.</p> <p>The farm is linked to other habitats in a regional conservation network.</p>
26	<input type="checkbox"/> establish legal conservation areas	Establish legal conservation areas (ex., conservation easements).	Farm has established conservation areas through legal mechanisms such as conservation easements, wetland mitigation agreements, and so on.
27	<input type="checkbox"/> native habitats not converted to farmland since certification	Existing priority native habitats not converted to farmland since certification.	Since the farm's certification, areas of primary ecosystem (desert, prairie, wetland, scrubland, woodland) have been preserved.
28	<input type="checkbox"/> other (describe/explain)		
29	What actions do you take to control invasive plant/animal species, especially those threatening natural areas?	What Actions Does the Farmer Take to Control Invasive Species, Especially Those Threatening Natural Areas?	
30	List problem invasives:	List problem invasive species (plants and animals). ⁶	
31	<input type="checkbox"/> learn about invasives	Knowledge, monitoring, and timely control of invasive species.	<p>Farmer knows which species are considered invasive in farm's locality.</p> <p>Farmer knows which invasive species are specific threats to natural areas—both on and off the farm.</p> <p>Farmer can provide examples of monitoring systems for specific types of invasive species.</p> <p>Farmer can provide examples of practices and materials used to control invasive plants and animals.</p>

⁶ Please refer to the website of National Invasive Species Information Center (<http://www.invasivespeciesinfo.gov>).

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Ref #	Organic System Plan Requirement (Approved by NOSB)	Verification Item	Compliance Indicators
32	<input type="checkbox"/> use weed- and pest-free seed/planting stock/soil amendments/mulches	Preventing introduction of invasive species.	<p>Farmer takes measures to ensure use of weed- and pest-free inputs, including:</p> <ul style="list-style-type: none"> • Seeds • Planting stock • Soil amendments • Mulches • Compost <p>Farmer cleans farm implements after each use.</p>
33	<input type="checkbox"/> monitor for new introductions and control immediately	Monitoring invasive species.	<p>Farmer can describe the program used for monitoring <u>introduction</u> of invasive species.</p> <p>Farmer can describe the program used for monitoring <u>existing</u> invasive species.</p> <p>Farmer has records documenting activities to monitor for invasive species.</p>
34	<input type="checkbox"/> suppress invasives using organic methods	Controlling invasive species.	<p>Populations of invasive plants and animals are:</p> <ul style="list-style-type: none"> • Under control (not increasing over time, displacing native habitat, or spreading to neighboring farms or natural areas) • Able to be controlled using organic methods <p>Farmer can describe the program used to control species.</p> <p>Farmer has records of controlling invasive species.</p> <p>Organic methods result in control of the invasive species.</p>
35	<input type="checkbox"/> other (describe/explain)		Farmer participates in a regional program to control invasive species.

PART 3: BIODIVERSITY OF CROPLAND AREAS

(pp. 13–15 of *Biodiversity Conservation: An Organic Certifier’s Guide*)

Ref #	Organic System Plan Requirement (Approved by NOSB)	Verification Item	Compliance Indicators
36	How do you <u>conserve</u> and <u>provide habitat</u> for wildlife?	<i>How Does the Farmer Conserve Wildlife?</i>	
37	List problems with wildlife.	List problems with wildlife on cropland.	
		Implement management practices for conserving wildlife on cropland.	Farmer works to manage wildlife problems by finding ways to coexist with wildlife and limiting damage to crops and farming systems. Farmer demonstrates awareness of the ecological importance of keystone species ⁷ such as prairie dogs or beavers and manages such species to minimize negative impacts on biodiversity.
38	How do you <u>conserve</u> and <u>provide habitat</u> for wildlife?	<i>How Does the Farmer Provide Habitat for Wildlife?</i>	
39	<input type="checkbox"/> companion planting/ intercropping	Manage for crop diversity (ex., companion planting/ intercropping)	Perennial crops have vegetated understories. Plantings at field borders provide habitat, food, and shelter. Plantings of herbs and flowers within fields provide nectar, pollen, cover, and other habitat for small animals and insects. <ul style="list-style-type: none"> • Insectary plantings are designed and executed to encourage specific beneficial insects such as pollinators. • Companion planting is practiced to create a more diverse environment in a field.
40	<input type="checkbox"/> crop diversity		

⁷ Keystone species: Species whose presence uniquely affect other species and the ecosystem, such as beavers, whose dams create habitat for many other species.

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Ref #	Organic System Plan Requirement (Approved by NOSB)	Verification Item	Compliance Indicators
			<p>Intercropping to introduce diversity in both annual and perennial cropping systems.</p> <p>Crop rotations provide increased plant diversity over time.</p>
41	<input type="checkbox"/> wildlife-friendly fences	<p>If fences are used, erect wildlife-friendly fences.</p>	<p>Fences surround only the fields, not the whole farm, to provide protection for crops while allowing wildlife easier routes around the fenced areas.</p> <p>Fences do not block known migration routes.</p> <p>Fences are constructed of smooth wire instead of barbed wire.</p> <p>Fences are constructed of materials that allow small animals to pass through them.</p>
42	<input type="checkbox"/> manage fallow fields for wildlife	<p>Manage fields to leave food/cover for wildlife.</p>	<p>Grain stubble is left in the fields after harvest to provide food for wildlife.</p> <p>Cover crops are grown when fields are not planted to crops to provide green browse, control erosion, displace invasive weeds, and provide temporary wildlife cover.</p> <p>Fallow fields are flooded, if appropriate, to provide habitat for waterfowl and shore birds.</p>
43	<input type="checkbox"/> other (describe/explain)		
44	<p>How do you schedule farm practices to benefit wildlife?</p>	<p><i>How Does the Farmer Schedule Farm Practices to Benefit Wildlife?</i></p>	
45	<input type="checkbox"/> avoid nests during breeding season	<p>Avoid impacting species' reproductive cycles.</p>	<p>Farmer can demonstrate knowledge of the lifecycles of wildlife that reproduce on the farm, including:</p> <ul style="list-style-type: none"> • Nesting birds, bats, mammals and beneficial insects • Denning/burrowing mammals, amphibians, and reptiles • Spawning fish • Other key animal species in the farm's environment <p>Farming methods preserve sites in which animals raise their young:</p> <ul style="list-style-type: none"> • Delaying hay and grain harvest to allow ground-nesting birds to fledge and newborn four-legged animals to move out of the field. • Clearing non-crop vegetation before bird breeding season, so birds do not become established in areas that must be worked during nesting season. • Preventing disturbance in areas where mammals hibernate or rear young.

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Ref #	Organic System Plan Requirement (Approved by NOSB)	Verification Item	Compliance Indicators
46	<input type="checkbox"/> stagger mowing/tilling practices	Use mowing/tillage practices that provide temporary refuge.	Farmer can cite examples of timing farm practices to accommodate the needs of wildlife. Farmer staggers mowing and tilling of different areas to preserve blocks of habitat to which animals can move.
47	<input type="checkbox"/> plan fields to leave food/cover for wildlife	Manage crop fields to leave food/cover for wildlife (ex., rice/corn stubble).	At harvest time, a small portion of the crop or its stubble is left standing to provide food or cover for native wildlife. Farmer works in alternate areas within the ecosystem: <ul style="list-style-type: none"> • Crop rotations planned so that food, water, and cover for priority species and other wildlife are always available. • Alternate mowing of field grasses, leaving 25–30-foot strips around hayfields when harvesting to provide wildlife refuges in undisturbed sites. • Cleaning alternate sides of ditch banks to provide wildlife refuge.
48	<input type="checkbox"/> other (describe/explain)		

PART 4: BIODIVERSITY IN LIVESTOCK PRODUCTION SYSTEMS

(pp. 16–18 of *Biodiversity Conservation: An Organic Certifier's Guide*)

Ref #	Organic System Plan Requirement (Approved by NOSB)	Verification Item	Compliance Indicators
49	How do you protect riparian areas and sensitive habitats?	<i>How Does the Farmer Protect Riparian Areas and Sensitive Habitats?</i>	
50	<input type="checkbox"/> fence without impacting	If fencing is necessary near riparian areas, methods are used that minimize impacts on wildlife.	Fencing is located, designed, and managed to keep out predators, but corridors are left for wildlife when possible. Fences do not block known migration routes. Fences are constructed of smooth wire instead of barbed wire. Fences are constructed of materials that allow small animals to pass through them.
51	<input type="checkbox"/> control sensitive area access	Control access to sensitive riparian areas.	Sensitive habitats, including riparian vegetation, easily trampled vegetation, and priority plant species, are protected from impacts by animals. Access to sensitive habitats is controlled by managing the frequency, intensity, and timing of livestock grazing. A livestock watering system is established away from riparian areas—animals are not allowed to drink from streams, creeks, or rivers. If livestock require access to the other side of a waterway, a fence chute (such as a fenced road or bridge across a stream) restricts livestock's impact.
52	<input type="checkbox"/> prevent bank erosion	Prevent bank erosion.	Stream banks are protected from livestock trampling. Careful management of stream bank soils and vegetation to prevent erosion. (This allows groundwater to accumulate during the wet season and be released to flow into the stream during dry periods, helping to prevent intermittent stream flow that affects the populations of aquatic animals and other organisms that rely on natural water resources.)
53	<input type="checkbox"/> animals fed away from water	Feed animals in areas that are appropriately distant from riparian areas.	Mineral blocks and feeding zones are used to disperse livestock and keep animals away from natural bodies of water. Feeding stations do not contribute to pollution of water bodies through runoff of animal waste or gray water.
54	<input type="checkbox"/> other (describe/explain)		

Biodiversity Compliance Assessment in Organic Agricultural Systems

Ref #	Organic System Plan Requirement (Approved by NOSB)	Verification Item	Compliance Indicators
55	What are you doing to improve your pasture or rangeland?	<i>How Does the Farmer Improve Pasture or Rangeland?</i>	
56	<input type="checkbox"/> prevent overgrazing	Prevent overgrazing.	<p>The frequency, intensity, and timing of livestock grazing are managed to minimize negative impacts to soil, vegetation, and ecosystem health.</p> <p>Stocking rates are set with consideration of the ecology of pasture and rangelands.</p> <p>Pastures and rangelands are grazed in a manner that encourages a variety of healthy, vigorous plants.</p> <p>Grazing systems minimize infestation by invasive plant species.⁸</p> <p>Grazing in areas prone to erosion is carefully controlled; animals are not allowed to graze in areas subject to severe erosion.</p>
57	<input type="checkbox"/> reseed trampled/eroded areas	Reseed/protect trampled or eroded areas.	<p>Stocking rates are set to prevent trampling damage to soil and plant cover.</p> <p>Heavily used areas such as pathways and areas of congregation are reseeded after animals are rotated out of the area.</p>
58	<input type="checkbox"/> plant native pasture	Use native species to restore pastures.	<p>Pastures and rangelands are comprised of a mix of grasses and forbs (non-woody plants that are not grasses).</p> <p>Restoration of trampled and eroded areas is done with native perennial grasses and forbs, for the benefit of wildlife as well as livestock.</p> <p>Invasive plant species are controlled and establishment of new invasive species is prevented.</p>
59	<input type="checkbox"/> active grazing management system	Employ ecologically sound grazing systems.	<p>The forage areas are actively managed, based on site-specific considerations.</p> <p>Movable fencing or other systems are used to create a rotation system for forage areas.</p> <p>Grazing takes into account habitat needs, including reproduction and migration of priority species and other wildlife.</p>
60	<input type="checkbox"/> prescribed burning	Use prescribed burning to reduce non-native weeds.	<p>Non-native weeds are controlled with minimal impact.</p> <p>Different types of livestock are introduced to control unwanted plant species (ex., goats browsing on woody plants and weedy forbs).</p> <p>Prescribed burning is conducted with the assistance of experts to control invasive weeds.</p>
61	<input type="checkbox"/> other (describe/explain)		

⁸ For more information, refer to USDA National Invasive Species Information Center's website: <http://www.invasivespeciesinfo.gov>.

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Ref #	Organic System Plan Requirement (Approved by NOSB)	Verification Item	Compliance Indicators
62	What wildlife-friendly management practices do you use?	<i>What Wildlife-Friendly Management Practices Does the Farmer Use?</i>	
63	List problems with predators or other wildlife.	List problems with wildlife in the livestock operation.	
64	What wildlife-friendly management practices do you use?	Describe wildlife-friendly management practices.	Operator can describe livestock-friendly management practices, for example: <ul style="list-style-type: none"> • Livestock do not impact priority species or special habitats. • Share pastures with non-predatory/priority wildlife, such as native grazers. • Refrain from shooting, trapping, or poisoning native predators as a method for protecting livestock.
65	<input type="checkbox"/> guard animals	Implement systems that manage the effects of predators on livestock while respecting role of predators in the natural ecosystem.	Use guard animals, for example: <ul style="list-style-type: none"> • Llamas • Donkeys • Dogs Large livestock furnishes protection for smaller animals (ex., cattle herded with sheep, goats, and calves). Operator makes frequent and unpredictable appearances in pastures.
66	<input type="checkbox"/> grazing scheduled when predation pressure low		For susceptible pastures, grazing is scheduled when predation pressure is low.
67	<input type="checkbox"/> livestock spend night in protected area		House livestock overnight in protected area.
68	<input type="checkbox"/> circumstances of livestock death documented		Document circumstances of livestock death so there are accurate records of predation and other causes. Records allow analysis of livestock fatality patterns over time, allowing determination of whether a native predator was responsible, and if so, which predator. Record observations of individual predator animals' behavior toward livestock in order to create appropriate plans for controlling specific predators. Operator kills a native predator only after documenting it has made multiple killings of livestock.
69	<input type="checkbox"/> other (describe/explain)		

PART 5: BIODIVERSITY GOALS, TIMELINE & MONITORING

(pp. 1–7, 22 of *Biodiversity Conservation: An Organic Certifier’s Guide*)

Ref #	Organic System Plan Requirement (Approved by NOSB)	Verification Item	Compliance Indicators
70	Have you assessed the farm for biodiversity problems and greatest opportunities, and developed goals and a timeline for biodiversity conservation?	<i>Has the Farmer Reviewed Conservation Options and Developed a Biodiversity Plan?</i>	
71	Have you assessed the farm for biodiversity problems and greatest opportunities?	Farmer has assessed the farm for practices and actions that meet the needs of the farm and the larger ecosystem.	Farmer has prioritized actions based on regional conservation goals, priority species and sensitive habitats, invasive species and eroded areas. Farmer has prioritized actions based on value to the farming operation.
72	Have you developed goals and a timeline for biodiversity conservation?	Developed goals and a timeline for addressing biodiversity.	Farm plan addresses biodiversity conservation goals. Farm plan contains timelines for achieving biodiversity goals. Farm plan includes description of procedure for monitoring biodiversity.
73	How do you monitor farm biodiversity?	Implement a system for monitoring changes in biodiversity.	Farmer has documentation of latest biodiversity assessment: <ul style="list-style-type: none"> • Date of last biodiversity assessment. • Person conducting the assessment.
			Farmer has records of latest biodiversity assessment: <ul style="list-style-type: none"> • Plan for biodiversity monitoring is documented. • How are results of the farmer’s assessment documented? • Are records sufficient?
		Is outcome of latest assessment in line with biodiversity plan and goals?	

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Ref #	Organic System Plan Requirement (Approved by NOSB)	Verification Item	Compliance Indicators
	<input type="checkbox"/> visually <input type="checkbox"/> species count <input type="checkbox"/> other		<p>Elements of biodiversity monitored by the farmer:</p> <ul style="list-style-type: none"> • Biodiversity plan • Biodiversity goals: <ul style="list-style-type: none"> – Monitor progress on achieving goals – Review and update goals • Map of natural resource features on the farm • Knowledge of issues related to biodiversity (ex., location in the watershed, regional conservation priorities, conservation activities undertaken by other farmers, governmental programs, etc.) • Lists required in biodiversity plan: <ul style="list-style-type: none"> – Wildlife and dominant native plants present (including notations for priority species) – Problem invasive species (plants and animals) – Problems with wildlife on cropland – Problems with wildlife in livestock operation • Monitoring plan: review and update procedures <p>Assessment methods used by the farmer during the latest biodiversity assessment:</p> <ul style="list-style-type: none"> • Mapping • Photographic documentation • Analytical samples • Plant and animal population surveys • Species counts • Other (please describe)

PART 6: BIODIVERSITY OF WILD HARVEST ENTERPRISES

(p. 19 of *Biodiversity Conservation: An Organic Certifier's Guide*)

Ref #	Organic System Plan Requirement (Approved by NOSB)	Verification Item	Compliance Indicators
74	How do you maintain or improve the sustainability of the harvested species?	<i>How Does the Harvester Maintain or Improve the Sustainability of the Harvested Species?</i>	
75	<input type="checkbox"/> harvest from stable populations	Harvest from stable populations.	<p>Harvesting does not threaten the sustainability of species being collected; only stable and sustainable populations are used for wild harvest operations.</p> <p>Efforts are made to learn whether other harvesters are working in the same area. If multiple parties are harvesting from the same population, efforts are coordinated to prevent over-harvest.</p> <p>Agency or non-governmental organization responsible for management of the collection area has been notified of harvest activities.</p> <p>Licenses for the harvest activity have been obtained, if applicable.</p>
76	<input type="checkbox"/> minimize disruption of priority species/ sensitive habitats	Minimize disruption of priority species/sensitive habitats.	<p>Harvesting does not impact viability of priority species in the surrounding environment.</p> <p>Harvesting does not impact nearby sensitive habitats.</p>
77	<input type="checkbox"/> avoid erosion	Avoid erosion.	Harvesting does not create erosion.
78	<input type="checkbox"/> allow re-establishment	Allow re-establishment of populations sufficient to replenish harvested materials.	<p>Sufficient individuals of the harvested species are left in the habitat to allow the population to replenish itself on an annual basis.</p> <p>Harvester fosters re-establishment of the harvested species by re-planting or other activities.</p>
79	<input type="checkbox"/> monitor wild crop sustainability	Monitor wild crop sustainability.	<p>The harvested species and its habitat are monitored to ensure sustainability through assessment techniques that are compared over time, including:</p> <ul style="list-style-type: none"> • Mapping • Photographic documentation • Analytical samples • Plant and animal population surveys • Species counts • Other (please describe)
80	<input type="checkbox"/> other (describe/explain)		