
4 EO SPECIFICATIONS

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4.1 Purpose of EO Specifications

Element Occurrence information represents one of the principal tools of heritage inventory, and serves as the basis for conservation planning. Building a quality EO database depends on clear and consistent EO specifications. Occurrences identified according to the specifications for a given Element are mapped, recorded in an Element Occurrence file, and assigned conservation ranks (*i.e.*, EO ranks) that reflect estimated viability. EOs and their ranks can be used to determine priorities for conservation site selection. Having consistently applied EO specifications across the range of an Element is especially beneficial for multi-jurisdictional and rangewide planning.

EO specifications are used to delineate and differentiate EOs. In other words, EO specifications define precisely what evidence constitutes a valid EO (*i.e.*, the minimum size, quality, or persistence required), and what distances or factors separate one principal EO from another. This will affect the number of EOs tracked. Low thresholds for minimum size or quality in the EO specifications (*i.e.*, lax criteria) may result in a proliferation of EOs having little practical conservation value, and high development and maintenance costs for biologists and data managers. Conversely, high thresholds (*i.e.*, stringent criteria) may result in a failure to designate EOs for significant occurrences of an Element.

Although the number of principal EOs is often used as one of many factors in determining Element conservation priorities (*i.e.*, Element ranks), this number should be used judiciously. For some Elements, the number of EOs may be, in part, a result of fragmentation of historically more extensive occurrences. Whether a given Element in such a fragmented landscape is represented as a single large principal EO having multiple sub-EOs or multiple small principal EOs is of little importance in ranking the Element; both means of recordation should reflect the reduced viability of the Element at that location. In such situations, consistent delineation of the EOs is important, and should be based on separation distances that are useful for delineating viable units that are practical for conservation action.

EO specifications should be based on the best available information on the biological and ecological factors that determine the estimated viability of an Element. In some cases, especially for invertebrates and other cryptic species, the best available information will consist of indirect and/or circumstantial evidence (*e.g.*, for many nocturnal moths, evidence of presence coupled with habitat patch size and quality).

For communities, EO specifications information may be organized according to the spatial patterns and ecological dynamics typical of groups of Elements. These groups can be described as matrix, large patch, small patch, and linear (see Appendix C: Spatial Patterns of Different Community Types). Ecological factors and ranking considerations may be similar for Elements within a group that share the same spatial patterns and dynamics; thus, EO specifications for Elements within a particular group may also be similar.

EO specifications should be developed for principal EOs in a *global* context. Conservation planning is often conducted rangewide or across an ecoregion, and the information available from multiple jurisdictions for this planning should be consistent, requiring that global specifications be applied in the delineation of principal EOs throughout the range of an Element. Because sub-EOs are generally defined locally and not aggregated across jurisdictions, global specifications for sub-EOs are typically not needed. Individual jurisdictions may develop local specifications for sub-EOs as they find useful and appropriate. However, in cases where sub-EOs for an Element are widely tracked, it may be useful to develop global specifications for sub-EOs; these should be incorporated with the text for the principal EO specifications.

4.2 Minimum Criteria for EOs

For species, EO specifications should outline the minimum criteria for defining precisely what constitutes an occurrence of that Element. The minimum essential criteria for determining an EO should be derived from the known biology, ecology, phenology, and/or reproductive behaviors of the Element, as appropriate. Accordingly, the minimum EO criteria for many species typically requires a single persisting, recurring, or potentially persisting or recurring individual. For some species, the specifications might include a minimum required size (population and/or area) and essential characteristics of the environment that sustain or contribute to that Element's survival and/or recurrence (*e.g.*, for migratory species). (See Sections 2.5 through 2.11 for further discussion about what constitutes an EO.)

For communities, minimum criteria for EOs are implicit in the classification of the Element. A brief description of the Element (*e.g.*, composition, structure) that includes information on characteristics that distinguish it from similar communities should be provided in a global Element summary field. Any area that is large enough to be classified as a particular community Element has, in essence, met the minimum criteria for an occurrence of that community type. Practically, however, minimum sizes may be helpful and should be provided in the EO specifications. Recommended minimum sizes for the different community pattern types are: 2 hectares for matrix; 0.4 hectare for large patch; 0.05 hectare for small patch; and 30 meters in length for linear. Stands/areas below the recommended minimum size become difficult to judge in terms of community type characteristics, and, if isolated, become heavily influenced by edge effects. For conservation purposes, generally only larger sized occurrences of each community type are tracked and the threshold for minimum size is seldom approached.

4.3 Separating EOs

Principal EOs are typically separated from other principal EOs, either by barriers or breaks, or by specified distances across intervening areas. For species, separation distances will be measured across unsuitable habitat or suitable but apparently unoccupied habitat. For communities,

separation distances will be measured across intervening areas of different natural or semi-natural communities, or cultural vegetation.

4.3.1 Barriers

In addition to minimum criteria for identifying an EO, known barriers for Elements, either naturally occurring or manmade, should also be described in the EO specifications.

For species, barriers are those that almost completely prevent movement or dispersal of the Element, thereby obstructing or severely limiting gene flow. These barriers are usually abrupt, and may be relatively narrow. Typical instances of barriers for a given species should be specified in the EO specifications for that Element (*e.g.*, four-lane divided highways may limit bog turtle movement; dams exceeding 3½ meters [approximately 20 feet] in height may restrict movement of salmon; large rivers may limit small mammal movement; deserts may curtail movement of montane insects; tidal inlets greater than a certain width may be a barrier for beach plants).

For community EOs, barriers may be obstacles that limit the expansion or alter the function of communities. In effect, these barriers separate populations of most of the component species within the community, thus obstructing or severely limiting gene flow. Barriers may be common for many aquatic and wetland communities, but are typically less common for many upland terrestrial communities.

4.3.2 Separation Distances

In addition to barriers that totally, or almost completely, prevent movement and/or dispersal, distances of intervening area that restrict movement may also separate EOs. These distances are used to delineate the population units between which gene flow is significantly reduced. For comparison, IUCN (1996) characterizes reduced gene flow between units as “typically one successful migrant individual or gamete per year or less”.⁹ For most species, data from gene flow studies does not exist; thus, decisions on separation distances should be made on the basis of best information available. Also, consideration of gene flow is not applicable to Elements that disperse widely (*e.g.*, birds, wind-dispersed plants or insects), Elements having very long generation times (*e.g.*, giant tortoises, plants characterized by long-term seed banking or dormancy, persisting clones), or Elements that are dependent on rare but recurrent phenomena for dispersal (*e.g.*, floods, major storms).

The intent of assigning values for separation distances is to achieve consistency in the manner in which EOs are defined and mapped. The degree of restriction to movement and/or to dispersal of the Element resulting from the intervening area determines the distance(s) required to separate one EO from another. Thus, areas that are highly restrictive to the Element’s movement or dispersal require smaller distances for separating EOs than areas less prohibitive to movement or dispersal.

Several factors may be used to set separation distance(s) for EOs (see Section 4.3.2.5, Factors Determining Separation Distances). The factors used to determine separation distances for EOs should be cited as justification in the EO specifications.

⁹ This IUCN guideline is used to define *subpopulations*. Because IUCN defines the *population* “as the total number of individuals of the taxon”, the IUCN concept of subpopulation most closely approximates the EO concept in this Standard.

4.3.2.1 Species: Separation by Unsuitable and Suitable Habitats

When applicable, two separation distances should be specified for species Elements: one across unsuitable habitat, and another across apparently suitable habitat that is not known to be occupied (regardless of whether surveyed).¹⁰ The use of these distances in defining EOs is designed to reflect hypothesized differences in gene flow across suitable *vs.* unsuitable habitats. However, for some species Elements, there will likely be no significant differences in gene flow across the different habitats. In these cases, only one separation distance need be specified. To promote consistency in the application of separation distances, they should be measured along the shortest route of expected travel of the Element between the edges of the known or minimally estimated occupied habitat, although this may not be a straight line (see Section 7, EO Spatial Representation).

For all species Elements, the distance of unsuitable habitat needed to separate EOs is always less than or equal to the distance of apparently suitable but unoccupied habitat needed to separate EOs. Because the unsuitable habitat cannot support the Element, a specified distance of this habitat can be more prohibitive to dispersal and residence by the Element than the same distance of apparently suitable habitat. Thus, separation by unsuitable habitat is presumed to be more definitive. Further survey work is unlikely to result in the discovery that the separation was inaccurate. It is also unlikely that unsuitable habitat will become occupied over time, and therefore, the separation between two EOs will presumably remain.

4.3.2.2 Communities: Separation by Different Community Types

For community Elements, habitat suitability or unsuitability is not applicable. Instead, community EOs may be separated by expanses of different natural or semi-natural community types, or cultural vegetation. Intervening natural and semi-natural areas will likely inhibit the expansion or function of community EOs to a lesser degree than intervening cultural vegetation. In a like manner, intervening natural and semi-natural areas with similar kinds of habitat characteristics will inhibit expansion or function of a community less than those with very different kinds of characteristics. For example, bogs separated by intervening areas of upland jack pine on bedrock are more definitively identified as distinct EOs than bogs separated by areas of black spruce swamp.

4.3.2.3 Separation Across Mixed Areas

Frequently, the area located between populations or patches may consist of a mixture of apparently suitable and unsuitable habitat, or a mixture of other natural or semi-natural community types and/or cultural vegetation. When applying EO specifications, if no mixed habitat guidance is provided, the separation distances to be applied should be conceptually based on the relative amounts of apparently suitable and unsuitable habitat.¹¹

¹⁰ If the suitability of a particular habitat is unknown, then treat it as if it were suitable.

¹¹ Conceptually, if $(s \div S) + (u \div U) \geq 1$, then there is more than one EO, where S = recommended minimum distance of apparently suitable habitat, U = recommended minimum distance of unsuitable habitat, s = actual distance of apparently suitable habitat, and u = actual distance of unsuitable habitat.

4.3.2.4 Recommended Minimum Separation Distances

Minimum values for separation distances have been recommended to ensure that EOs are not separated by unreasonably small distances, which would lead to the identification of unnecessarily fragmented populations as potential targets for conservation planning or action. For species Elements, minimum separation distances are generally 1 km¹² or greater for both unsuitable habitat, and for apparently suitable habitat that is not known to be occupied. For communities, the minimum separation distance delineated for intervening areas of different natural or semi-natural communities is 1 km or greater, and a distance of at least 0.5 km for interjacent areas of cultural vegetation. Table 4.1 summarizes the recommended minimum separation distances for species and community EOs.

Table 4.1 - Recommended Minimum Separation Distances

Type of Separation	Species EOs	Community EOs
barrier	qualitatively defined	qualitatively defined
unsuitable habitat	≥ 1 km	N/A
apparently suitable habitat not known to be occupied	≥ 1 km	N/A
cultural vegetation	N/A	≥ 0.5 km
different natural or semi-natural communities	N/A	≥ 1 km

Although some Elements may occur as truly separate populations at scales of separation less than 1 km, the practical value (for conservation planning and action) of delineating finer-scale EOs is often questionable. Nevertheless, a few Elements may require separation distances that are less than the established minimum; in such cases, these distances should be justified in the EO specifications.

4.3.2.5 Factors Determining Separation Distances

Several factors that may be considered when determining separation distances to be written in the EO specifications for a given Element:

a) Dispersal Distance

For species Elements, dispersal distance is the distance that individuals or propagules (*e.g.*, pollen, seeds, spores, larvae) travel from an existing location to a new location. Success of dispersal

¹² The new recommended minimum of 1 km is more than twice the old distance of ¼ mile suggested in the Natural Heritage Program Model Operations Manual (The Nature Conservancy 1988). The recommended minimum separation distances are derived from a poll of representative programs throughout the Heritage Network, and have been tested through a pilot implementation in the Eastern Region.

depends on whether suitable habitat for establishment is reached within that distance. Typical dispersal distance for an Element is rarely known and may be extremely variable. However, since dispersal allows genetic connectivity between otherwise apparently distinct populations, separation distances between EOs should be greater than the distance of routine dispersal events.

For many Elements, a small percentage of individuals or propagules may disperse great distances. While potentially significant for establishing new populations and for reducing genetic differentiation of populations, these rare, long-distance dispersal events should not be factored into separation distances. For migratory species, dispersal distance is not a useful concept for determining separation between populations since these Elements may typically disperse over enormous distances. Considering dispersal distances in determining separation distances for such Elements may lead to impracticably large EOs.

b) Home Range

In the absence of information about dispersal distance for animals, home range size may be a useful surrogate for that knowledge based on a presumed relationship between the two. For some animals, home range is the average area occupied, utilized, and/or defended by an individual, either during its lifetime or for a given breeding season. The true extent of home range is often not well known, and may vary from year to year, and between different habitats. Generally, separation distances should be at least three times the average home range for the Element (*i.e.*, based on the length of the largest axis). In cases where the area of a home range is not known but information is available on movement (excluding dispersal and migration), use three times the distance of that movement. This distance would ensure that EOs that are, in fact, distinct remain separate despite fluctuating home range boundaries through defining adequate space between them to allow for such fluctuations.

c) Spatial Patterns of Occurrence

The relative degree of spatial patchiness of an EO is an important factor when determining separation distances for EO specifications. Spatial patterns can be measured by the size of the EO, separation between EOs, and/or the surrounding context of the EO (*e.g.*, the degree of unsuitability of the surrounding landscape).

For matrix communities, it may be difficult to develop separation distance guidelines due to their extensive and complex spatial patterns. Large readily recognizable stands that qualify as distinct EOs according to the separation distance guidelines may, nonetheless, be connected by smaller less apparent stands located within the prescribed separation distance. When such cases are found in natural or semi-natural landscapes, the smaller and larger stands may be grouped into one principal EO, with sub-EOs used to define the individual stands. However, in more altered landscapes, the intervening small stands are less likely to create a meaningful connection between the large stands; thus, large stands would be maintained as separate principal EOs.

d) Temporal Patterns of Occurrence

Changes in spatial patterns over time, including many successional phenomena, may also be considered when writing EO specifications. In general, separation distance guidelines will depend on the rate of change.

If spatial changes occur relatively frequently (*e.g.*, within a practical time frame of 25 years), then separation distance guidelines should be adjusted to incorporate the relatively dynamic temporal/spatial nature of an occurrence. In other words, because a principal EO with dynamic characteristics represents all potential varying locations of that population or community over a given time period, it encompasses an area larger than what is actually occupied at the time of survey. Thus, greater separation distances should be specified to ensure that a shifting population or patch is not recorded as multiple separate occurrences over time.

On the other hand, if spatial changes occur relatively infrequently (*e.g.*, the population or community remains at a particular location for longer than 25 years), then for all practical purposes, separation distance guidelines should reflect the relatively stable nature of the occurrence. In other words, temporal factors should be considered largely irrelevant, and separation distance guidelines should be based on current factors only.

Temporal patterns of occurrence may be an important consideration for many species (*e.g.*, birds that are dependent on grassland communities; plants characterized by seed banking that may only be apparent for discontinuous periods of time). Temporal patterns of occurrence may also be an important consideration for very dynamic communities (*e.g.*, meadow and marsh communities that move up and down streams in relation to beaver dams). In each of these cases, occurrences may not appear to persist locally if considered at one time only, but do persist in the larger landscape over a longer time frame.

e) Comparability with Similar Functional Groups

Similarity in components of species biology or community processes (*e.g.*, a - d above) between Elements may be an important consideration in developing EO specifications. This functional similarity is often found in groups that are related through taxonomy, shared ecological factors, or some combination of the two (*e.g.*, “alliance” for communities, “genus” for species, ecological groups within an alliance). However, groups may be functionally related without having any taxonomic relation (*e.g.*, conifer and mixed matrix communities occurring in the same pattern in a boreal ecoregion, riffle-dwelling mussel species occurring in similar patterns of abundance). Functionally similar Elements should have comparable separation distances; it would normally not make sense to specify separation distances for functionally similar Elements that differ by an order of magnitude.

These factors to be considered in determining separation distances may be dependent on other components (*e.g.*, landscape may affect dispersal distance, population density may influence home range size, and sex may determine average movement distance). Although multiple factors may influence the decision on separation distances specified, the most significant factor(s) should be provided as justification in the EO specifications.

4.3.3 Feature Labels and Location Use Classes

To help ensure consistency in describing EOs, specific labels used for an Element should be described in the EO specifications, as appropriate.

4.3.3.1 Feature Labels

The use of feature labels for describing EOs is optional (see Section 2.3, Feature Labels). A feature label will not affect the status of an EO as either a principal EO or sub-EO. Since not all programs will track feature labels for a given Element, meaningful analyses of aggregated sub-EO data are not possible. If widely used, feature labels for particular Elements may be provided in the EO specifications to foster consistency in labeling EOs among different programs.

4.3.3.2 Location Use Class

Location use classes should always (and only) be specified in the EO specifications for migratory Elements with multiple occupied-habitat EOs (including aerial, anadromous, and marine Elements), since for conservation planning purposes, migratory Elements with disjunct areal requirements may have different conservation priorities during different seasons (see Section 2.4, Location Use Classes). Protection of these distinct habitats is essential for the survival of the Element.

For migratory Elements having seasonally disjunct occupied habitats, there will be at least two location use classes, typically a “breeding” class and a “nonbreeding” class. Many species will also have a “migratory stopover” class. In cases where these migratory Elements have some nonmigratory populations, there may be a need for an additional “nonmigratory” class. (See Appendix A: Migratory Status and Location Use Class.)

4.4 Inferred Extent for Some Animal Species

[Although this section is included here, it is not part of the Draft EO Data Standard developed through a formal design and acceptance process by the EO Working Group. It is based on information obtained during an EO workshop convened in September, 1999, to collect requirements for a Heritage Data Management System (HDMS) currently under development. Approximately half of the participants at this workshop were members of the EO Working Group. Subsequent information on this topic has been provided by zoologists Larry Master and Geoff Hammerson.]

Most EOs are located in an area of suitable habitat that exceeds the spatial requirements for the Element. However, principal EOs are developed on the basis of what was actually observed in the field, without inclusion of any unsurveyed but available suitable habitat at that location (see Section 7.17.2 for the single exception to this model). While EOs accurately reflect what is known from underlying survey information, an EO with a confidence extent = “N” (or perhaps “?”) may not effectively illustrate the likely extent of the Element at that location. (See Section 2.1 for further discussion on confidence extent.) In such cases, after the principal EO has been mapped, a separate inferred extent (IE) feature could be created for some animals to better illustrate the potentially/probably occupied habitat, and could be utilized in analyses for which estimates of occupied area would be useful (e.g., conservation planning, environmental review).

An IE feature is developed by adding a specific IE distance to the underlying spatial data for the Element at that location. For animals that are known to utilize a home range, an IE distance should be provided in the EO specifications for the Element. The IE distance is an approximate spatial requirement for a particular species, typically based on the average home range (specifically, a distance equal to the diameter of the median home range). However, for some animals (e.g.,

pond-breeding amphibians, rattlesnakes moving from a den) the IE distance represents the distance from an initial location (in any direction) that would encompass the ultimate destination of 75-90% of the dispersing adult individuals. See Section 7.17.1 Inferred Extent for a more detailed description of the use of IE distance.

4.5 Characteristics of Good EO Specifications

To ensure accuracy, practicality, reliability, and consistency in defining EOs (within the constraints of the information available), EO specifications should

- a) have global application, addressing the Element throughout its range;
- b) be specific, not ambiguous; avoid the use of adjectives and/or phrases that could be interpreted differently, such as “recent”, “large”, “somewhat”;
- c) provide minimum criteria for determining a species EO, or provide recommended minimum size for a community EO;
- d) provide examples of typical barriers, if they exist;
- e) provide separation distances for species that differentiate one EO from another across:
(1) unsuitable habitat, and (2) apparently suitable habitat that is not known to be occupied;
- f) provide separation distances for community types that differentiate one EO from another across: (1) different natural or semi-natural communities, and (2) intervening areas of cultural vegetation;
- g) provide justification for separation distances specified above, including citation if available (unless the recommended minimum separation distances [described in Section 4.3.2.4 above] are used);
- h) address all potential location use classes;
- i) optionally, state any widely used feature labels that might facilitate communication;
- j) provide an inferred extent distance for animals that utilize a home range;
- k) be peer reviewed (along with EO rank specifications); all data centers within the range of the Element will be invited to review the EO specifications. Comments should be received from a minimum of two reviewers, including at least one from the appropriate Central/Regional Zoology, Botany, or Ecology program staff. In addition, review by other experts (either within or outside of the Heritage Network) familiar with the Element or the taxonomic group to which it belongs is encouraged;
- l) include the author(s); and
- m) include the date that the EO specifications were most recently substantially revised (such that previous versions are obsolete and occurrences should be re-evaluated using the revised specifications).

The above characteristics may be used as a checklist when developing or reviewing EO specifications.

4.6 Developing EO Specifications

Poorly conceived EO specifications are likely to be interpreted differently by different individuals and/or at different times, and result in inconsistently identified EOs. This can misdirect conservation activities. Ensuring that specifications are developed in accordance with the characteristics listed above can be accomplished, in part, by following standard guidelines. Separation distances and barriers should be identified in the EO specifications, as should location use classes and feature labels, where appropriate.

When developing EO specifications, an Element should be considered throughout its range. Characteristics of Elements may vary significantly in different parts of the range (*e.g.*, for species using different habitat in different ecoregions). In such cases, specific minimum criteria and separation distances could be provided in the EO specifications for the different portions of, or habitats in, the range; however, this should be done with great caution.

In the absence of global EO specifications for a particular Element, jurisdictions are encouraged to develop them in coordination with Central Zoology, Botany, or Ecology (rather than diverting resources into the development of multiple interim local guidelines). In situations where developing global EO specifications is not feasible, interim local guidelines can be developed.

Central Zoology, Botany, and Ecology will maintain separate draft EO specifications while new editions of specifications are being developed and reviewed; this will ensure that they are not confused with the current operational specifications until the review process is completed and any revisions incorporated.

Sources of information for developing EO specifications should include the scientific literature, scientific experts in and outside of the Heritage Network, those conservation data centers that track the Element, and personal field experience with the Element. Any information that would contribute to the detail and completeness of the EO specifications for a particular Element should be forwarded to Central Heritage Operations. Any questions or comments on specifications should be directed to Central Zoology, Botany, or Ecology.

Since inventory and research continually yield new biological and ecological information, the development of EO specifications is an iterative process that incorporates new data. However, due to the collective cost to data centers in implementing revisions, specifications should only be revised when there is substantial new information that would correct any existing specifications as they relate to EO viability or other conservation considerations. Central Zoology and Botany may make minor editorial changes to EO specifications to ensure stylistic consistency. It is recommended that data centers make copies of new EO specifications as they are created or received for archiving in manual files; as subsequent editions of specifications are developed for an Element, archived copies can provide information on the previous criteria utilized in identifying occurrences of that Element.

To prevent duplication of effort when developing EO specifications, it may be practical to develop a set of criteria that would be broadly applicable to an entire functional group of Elements, identified as a “specifications group”. Because Elements within a particular specifications group have similar components of species biology or community processes, EO specifications for the Elements within that group would differ only minimally, if at all. The EO specifications developed for the group could later be modified as appropriate for a particular Element in the specifications group, at which point the Element would be removed from the group; the initial set of group EO specifications would continue to be applied to the Elements remaining in the specifications group, however. Central Zoology, Botany, and Ecology should maintain documentation on EO specifications developed for specifications groups.

In cases when information on a particular Element is scant or incomplete (due to lack of thorough research or secretive behaviors of the Element), it may be useful to identify another Element that is presumed or hypothesized to be functionally similar and base the EO specifications for the lesser-known Element on those of the better-known Element. Alternatively, if a specifications group comprised of functionally similar Elements can be identified, then the lesser-known Element could be added to the group and the EO specifications developed for the group utilized.

4.7 Templates for Writing EO Specifications

Using a template when drafting EO specifications may help ensure that they are well written and include all information necessary to accurately and consistently define an EO. Figures 4.1 through 4.3 show templates that should be used when writing EO specifications. These models represent three general categories of Elements: species Elements with one type of occupied-habitat EO; migratory species Elements with multiple, disjunct types of occupied-habitat EOs (*i.e.*, Elements having location use classes); and community Elements. For examples of EO specifications developed using the templates, see Appendix D. For complete definitions of data fields in the templates, see Appendix F [to be completed during Phase 2 of the EO Design Project]. Separation distances should be determined on the basis of one or more of the factors described in Section 4.3.2, Separation Distances.

**Figure 4.1 - EO Specifications Template for Species Elements Having
No Location Use Classes**

SPECS GROUP (name of specifications group, if applicable)

MINIMUM EO CRITERIA (minimum criteria for valid EO)

EO Separation

SEPARATION BARRIERS (example[s] of typical barriers that would separate EOs)

SEPARATION DISTANCE – UNSUITABLE HABITAT (in kilometers)

SEPARATION DISTANCE – SUITABLE HABITAT (in kilometers)

ALTERNATE SEPARATION PROCEDURE

(procedure for separating EOs if one or both separation distances cannot be specified)

SEPARATION JUSTIFICATION

(basis for separation distances, including citation if available)

Feature

FEATURE LABELS (widely used feature labels)

Inferred Extent

IE DISTANCE (distance to be used as buffer for creating IE features, in kilometers)

IE NOTES (notes relating to the specified IE distance)

Edition

SPECS AUTHOR (significant contributors to specifications)

SPECS EDITION DATE (YYYY-MM-DD)

SPECS NOTES (internal notes relating to development of specifications)

Note: Inferred extent attributes are utilized for some animal Elements only.

Figure 4.2 - EO Specifications Template for Migratory Species Elements Having Location Use Classes

<p>SPECS GROUP (name of specifications group, if applicable)</p> <p>LOCATION USE CLASSES (list of classes for Element [for example, BREEDING, NONBREEDING])</p>
<p><i>attributes below repeat for each location use class for the Element</i></p>
<p>LOCATION USE CLASS (specific class from list of classes for Element)</p> <p>MINIMUM EO CRITERIA (minimum criteria for valid EO of specified class)</p> <p>EO Separation</p> <p>SEPARATION BARRIERS (example[s] of typical barriers that would separate EOs of specified class)</p> <p>SEPARATION DISTANCE – UNSUITABLE HABITAT (in kilometers)</p> <p>SEPARATION DISTANCE – SUITABLE HABITAT (in kilometers)</p> <p>ALTERNATE SEPARATION PROCEDURE (procedure for separating EOs of specified class if one or both separation distances cannot be specified)</p> <p>SEPARATION JUSTIFICATION (basis for separation distances for specified class, including citation if available)</p> <p>Feature</p> <p>FEATURE LABELS (widely used feature labels for specified class)</p> <p>Inferred Extent</p> <p>IE DISTANCE (distance to be used as buffer for creating IE features for specified class, in km)</p> <p>IE NOTES (notes relating to the specified IE distance)</p> <p>Edition</p> <p>SPECS AUTHOR (significant contributors to specifications for specified class)</p> <p>SPECS EDITION DATE (YYYY-MM-DD)</p> <p>SPECS NOTES (internal notes relating to development of specifications)</p>

Figure 4.3 - EO Specifications Template for Community Elements

SPECS GROUP (name of specifications group, if applicable)

MINIMUM SIZE (minimum size for valid EO)

EO Separation

SEPARATION BARRIER (example[s] of typical barriers that would separate EOs)

SEPARATION DISTANCE – CULTURAL VEGETATION (in kilometers)

SEPARATION DISTANCE – DIFF NAT/SEMI-NAT COMM (in kilometers)

ALTERNATE SEPARATION PROCEDURE

(procedure for separating EOs if one or both separation distances cannot be specified)

SEPARATION JUSTIFICATION

(basis for separation distances, including citation if available)

Feature

FEATURE LABELS (widely used feature labels)

Edition

SPECS AUTHOR (significant contributors to specifications)

SPECS EDITION DATE (YYYY-MM-DD)

SPECS NOTES (internal notes relating to development of specifications)