RESULTS FOR SPECIES*

Modification to Standard Method

Most of the data used for assembling the portfolio was derived from participating Natural Heritage programs. The analyses were based on data received before August 1, 2000. Massachusetts element occurrence data were assembled manually by TNC staff from published reports and expert interviews and placed in an interim database, as official data was not available from the Massachusetts Natural Heritage and Endangered Species Program. All element occurrences ranked A (excellent), B (good), or C (fair) by Heritage programs were included in the portfolio, provided their rank was supported by expert review – both by the expert teams and again by state teams comprised of Heritage Programs and Chapter Offices. In many cases, occurrences of species had either not been assigned an EO Rank or had been given a rank of "E," meaning that the occurrence is extant but has not been given a rank. In both cases these occurrences were reviewed by the expert teams and appropriate Heritage program or TNC staff.

The LNE-NP plan does include some species EOs that do not meet the minimum viability criteria. They were included because state participants assured the team that better information supporting a higher viability rank was available but had not yet found its way into the databases. The remaining unranked and "E" ranked occurrences were not accepted into the portfolio. EOs for which there was insufficient documentation and knowledge, but where there was reason to suspect that the EO was viable, were given a provisional viability rank of *maybe* (M) and placed on a list for further inventory and evaluation pending future inclusion in the portfolio.

In the LNE-NP plan, some species targets with Restricted distributions but larger number of known meta-populations were assigned a larger than standard numerical goal of 30.

Summaries of Results for Species

A total of 3,317 Element Occurrences were considered by the planning team for inclusion in the portfolio (Map 9. Element Occurrence Viability). Appendix 1 contains the following lists and tables:

- Table: List of all Primary and Secondary Targets
- Table: Distribution and Viability of EOs across Subsections
- Table: Success towards Conservation Goals

Appendix 2 contains the following lists and tables:

- Table: List of Secondary Targets
- Table: Portfolio Sites that Capture Viable Secondary Target EOs
- Table: Secondary Targets with EOs in Portfolio Sites and 10 Year Action Sites

A short list of migratory birds were also included as secondary targets. The birds chosen as secondary targets all had Partners in Flight risk scores of 19 or more. Additionally, the Expert Team considered whether the LNE-NP ecoregion provided habitat for a

* Anderson, M.G. and S.L. Bernstein (editors). 2003. Results for species. Based on Barbour, H. 2001. Lower New England – Northern Piedmont Ecoregional Conservation Plan; First Iteration. The Nature Conservancy, Conservation Science Support, Northeast & Caribbean Division, Boston, MA.

significant portion of their global population. The result was a list of 11 bird species that fit both criteria (Appendix 2).

Vertebrates

Eight vertebrates were selected as primary target species. A total of 365 EOs were evaluated from which 76 were selected for the Portfolio. Goals were met and exceeded (doubled and quadrupled) for two of the eight vertebrate species; timber rattlesnake and bog turtle. These two species will receive an unnecessarily high level of conservation attention unless these occurrences are removed from the portfolio during the second iteration. Including marginal EOs makes for an inefficient portfolio. Alternatively, and as may be the case with the Bog Turtle, we may raise the goal to meet new federal recovery plan goals. None of the other vertebrate species came close to meeting their goals.

Invertebrates

57 invertebrate species were chosen as primary target species. A total of 419 EOs were evaluated from which 213 were selected for the Portfolio. Goals were met for seven species, including dwarf wedgemussel, karner blue butterfly, and ringed boghaunter. Many species did not meet their goals because of a lack of occurrences to choose from in the database. 15 invertebrate targets had no EOs documented in BCD. Extensive inventory is required for the majority of invertebrate targets as 50 species (88%) did not meet their goals.

Plants

42 plant species were chosen as primary target species. A total of 334 EOs were evaluated from which 154 were selected for the Portfolio. Goals were met for 10 species, including northeastern bulrush, ram's-head lady's-slipper orchid, and Maryland bur-marigold. Only two species have distributions that are restricted to this ecoregion; Ogden's pondweed and basil mountain mint. Neither species met its conservation goal and both require additional inventory.

Additional inventory is required for most species but several things need to be kept in mind.. 1) The global rank for an element in many cases reflects the amount of inventory done for a species or group. Additional inventory for many will undoubtedly lead to revisions to the global rank for the species. Some may drop to G4 or G5 and no longer need to be part of the portfolio as primary targets. 2) Many species, even with extensive inventory will not meet their goals because they are naturally rare. This is acceptable where it can be shown that there never were sufficient populations to meet the goal. Alternatively, reintroduction and/or the restoration of extant sites with poor current viability, or introduction at sites with suitable habitat, should be considered.

Secondary Targets

The expert teams selected 14 vertebrate animals, 24 invertebrate animals, and 47 plant species as secondary targets. A total of 818 occurrences for 69 secondary targets were evaluated, of which 241 were captured in Portfolio Sites. Of these, 124 occurrences were selected as 10-year action occurrences. However, most secondary targets are poorly

documented in BCD making analysis very difficult. There were no occurrences in the database for 18 secondary targets.

Secondary target occurrences selected for the portfolio were not evenly distributed among species. 13 secondary target species had no occurrences selected, and 26 species had no occurrences identified as 10-year action occurrences. Additionally, 45 secondary targets had 3 or less occurrences selected for the portfolio, and 56 secondary targets had 3 or less occurrences selected as 10-year action occurrences. Some of the secondary targets require interior forest conditions or require large home-ranges, yet only 67 secondary target occurrences (for all species) were captured by Tier 1 matrix forest occurrences. Of these, only 36 were captured in Tier 1 10-year matrix forest occurrences. Table 3 provides a tabular accounting of secondary target element occurrence by portfolio status.

Table 3. The status of secondary target element occurrences in matrix and patch sites chosen for other targets.

Secondary Targets Inside:	All Secondary eos	% Secondary eos
Tier 1 Matrix	67	8.19
Tier 1 Matrix 10yr Site	36	4.40
Tier 2 Alternate Matrix	23	2.81
Not in a Matrix Site	728	89.00
In Portfolio Patch Site	174	21.27
In Portfolio Patch 10yr Site	88	10.76
Total secondary eos	818	
Total Secondary eos in portfolio	**241**	**29.46**
Total Secondary eos in 10yr portfolio	**124**	**15.16**

Secondary target species require additional evaluation and occurrence selection for the LNE-NP portfolio. With assistance from Heritage Programs, occurrences need to be identified and selected for targets that are not represented or under-represented in the portfolio. This will require inventory and the development of target and stratification goals. In the interim, however, we can presume that some undocumented secondary targets will be captured by other portfolio occurrences.

Birds

Eleven species of migratory bird were selected as secondary target species. The Expert Team believes that Tier 1 Preferred Sites for matrix-forming forest communities will provide adequate protection for the following forest-dependent bird species:

- Black-throated Blue Warbler in northern hardwood forests,
- Cerulean Warbler in swamps and bottomlands within matrix sites,
- Louisiana Waterthrush in deciduous forests mid-region,
- Prothonotary Warbler in larger swamps and bottomlands in the Piedmont,
- Wood Thrush in deciduous forests mid-region,
- Worm-eating Warbler in deciduous forests midregion.

Additional review of Portfolio sites will be required to ensure that an adequate number of suitable habitats have been selected regionwide for the remaining five species.

- Blue-winged Warbler in wet, old fields and moist, early successional woodlands,
- Golden-winged Warbler in old fields, forest openings, and thickets in the Piedmont and NY,

- Prairie Warbler in open sandy areas with shrubs, and dry brushy pasture,
- Bicknell's Thrush in stunted conifer forests at high elevation in Lower New England.