

How SHC Population Objectives Fit into the Conservation of Healthy Ecosystems

A fundamental principle of SHC is the need to set measurable objectives for how an ecological system will function. Ecological functions include many things including carbon sequestration, nutrient storage, flood storage, healthy wildlife populations, uninterrupted energy flow, etc. The SHC framework can aid in efficiently attaining objective levels of any of these functions, but the functions must be specified. It is not sufficient to say that our objective is to maintain a healthy ecosystem because “ecosystem health” is inherently un-measurable without being more specific.

The U.S. Fish and Wildlife Service’s core mission is the conservation of trust species including migratory birds, marine mammals, inter-jurisdictional fish, and threatened and endangered species, as well as individuals of other species that inhabit National Wildlife Refuge System lands. The Service does many things such as forming partnerships; protecting, restoring, and managing habitat; regulating take; reviewing permits; and public education and outreach that are critical to fulfilling its population conservation mission.

Because of our mission, the Service will normally express its objectives for ecosystem (or Refuge) function in terms of capacity to sustain trust species. An example of a mission-oriented objective the Service might adopt is for the endangered Fender’s blue butterfly of the Pacific Northwest:

Maintain a minimum growth rate of 1.55 at three independent sites within each of three ecological sub-regions.

The objective is based on the minimum growth rate needed to ensure a 95% probability that at least one site survives 100 years, given an initial population size of 300 and variation in growth rate of 0.79.

Of course, by conserving populations, we are providing the collateral benefits of other ecological functions. When possible, the Service should be explicit about these collateral benefits (for example, tons of CO₂ equivalents sequestered by restoring habitat for our trust species). However, our focus remains fixed on our mission. By expressing our goals for ecosystem function in terms of a desired population response, and by working with other agencies mandated to conserve other ecosystem functions, the Service will play a prominent part in conserving healthy ecosystems.