PATCH

Model Uses PATCH is a physical model that provides population viability modeling for territorial terrestrial vertebrate species.

Major Categories Habitat Classification; Population Modeling

Subject Knowledge Level
Intermediate

Minor Categories Population Viability Analysis; Habitat Suitability

Technical Difficulty Level
Intermediate

Model Type Physical Model

Geographic in Nature?
No

Abstract
PATCH is a spatially explicit, individual-based, life history simulator designed to project populations of territorial terrestrial vertebrate species through time. PATCH is ideal for investigations involving wildlife species that are mobile habitat specialists. PATCH's data requirements are minimal: provided with habitat maps, specifications for habitat use (territory size and habitat affinity), vital rates (survival and reproduction), and parameters for species' movement behavior, a simulation can be enerated.

Future Developments
Enhancements anticipated for future versions of the PATCH model include:

- Simulation of species interactions
- Co-simulation of male and female populations and their interactions
- Scenario-specific life cycle event sequences that are user-defined at run time
- The flexibility to use multiple habitat and stressor maps
- A mechanism for simulating irregular home ranges or territories
- The ability to model wildlife aggregations such as colonies or herds
- Explicit inclusion of density dependence effects

Model Limitations
None noted

Model Features

Interface Controls:

- Habitat Controls
- Projection Matrix
- Life History Parameters
- Life History Controls

The PATCH graphics windows include:

- GIS Image Window
- Legend Window
- Zoom Window

Required Data Types
Habitat maps; Specifications for habitat use (territory size and habitat affinity); Vital rates (survival and reproduction); Parameters for species' movement behavior

Model Outputs
PATCH's outputs fall into two general categories: pattern-based metrics and demographic analyses. Pattern-based outputs include patch-by-patch descriptions of landscapes, assessments of the number, quality, and spatial orientation of breeding sites, and map-based estimates of the occupancy rate and the source-sink behavior of breeding habitat. PATCH's principal demographic outputs include several measures of

population size as a function of time, realized survival and fecundity rates (rates that reflect the limitations on a population imposed by habitat quality and landscape pattern), and assessments of the occupancy rate and source-sink behavior of the breeding sites present in a landscape.

Source
The Western Ecology Division is located at:
200 S.W. 35 Street
Corvallis, Oregon 97333
Phone: 541-754-4600

Source (URL)
http://www.epa.gov/wed/pages/models/patch/patchmain.htm

Hardware Requirements
Windows or UNIX Compatible

Supported Platforms

DOS	☐	**UNIX**	☒
Windows	☒	**Macintosh**	☐

Software Requirements
The most recent version requires a windows operating system. Older versions require a Unix operating system

Cost, Licensing and Availability
Free. Downloadable from PATCH website