Location, location, location

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As housing developments sprout across the United States, smart growth proponents have urged communities to cluster developments in concentrated pockets, instead of the more standard and familiar 'sprawl.' Cluster developments create a far smaller 'footprint' on the environment, affecting a smaller portion of the land area than dispersed houses. The initial motivation for cluster development was to protect open space, farmland, and rural character. Yet few studies exist that empirically demonstrate that such concentrated development patterns are indeed better for the surrounding environment.

Now a study in this month's *Ecological Applications*, a journal of the Ecological Society of America, finds that while cluster development is indeed much easier on the surrounding environment, the location of housing developments is key.

Charlotte Gonzalez-Abraham and Volker Radeloff (University of Wisconsin-Madison) and colleagues focused their study of housing patterns and habitat loss on Northern Wisconsin over a 50+ year time period. While the number of houses in the study area increased by 353 percent from 1937 to 1999, the amount of habitat lost was far lower than expected, underscoring the effectiveness of cluster development in minimizing habitat loss.

Supported by federal grants from the U.S. Forest Service Northern Research Station, the researchers determined the environmental impact of cluster development by mapping 27,419 houses from historic aerial photos for five time periods in 17 townships in northern Wisconsin.

“The percentage growth of disturbed land area was much lower than for housing growth; in the most extreme case, a 1658 percent increase in the number of houses resulted in only a 204 percent increase in the disturbed land area,” says Radeloff.

Development in northern Wisconsin was already clustered in 1937 and as new houses were constructed, they were generally placed within the vicinity of existing homes. In contrast, the national trend in the U.S. has been toward more dispersed housing since the 1940s.

Environmental effects begin during housing construction and their impact on wildlife populations and the landscape continues for decades. During housing construction, natural vegetation is removed or disturbed—sparking soil erosion—and habitat is lost and fragmented. Wildlife movement is restricted by roads and fences, bird nests may be abandoned, and non-native species may move into the area.

Gonzalez-Abraham, Radeloff, and colleagues found that in their northern Wisconsin study area habitat loss was greatest (up to 60 percent) in deciduous forests and lowest in wetlands. But they also found that houses were strongly clustered alongside lakeshores. One of their study areas, the Northern Highlands, boasts one of the highest concentrations of kettle lakes in the world, offering appealing recreational and scenic amenities and drawing extensive housing growth.

“People and wildlife are often drawn to the same places and that exacerbates the environmental effects of houses,” notes Radeloff.

Around lakeshores, those effects can include loss of ground-nesting birds, green frogs, wood turtles, and loss of habitat for fish as lakeshore residents clear away aquatic vegetation and woody debris. Also, the value of lakes as a natural amenity diminishes when shores are too densely developed, a concern of citizens and land use planners in

northern Wisconsin.

Clustering housing developments clearly help lessen damage to the surrounding environment and to plants and animals say the authors. But the question of where houses are placed in the landscape is crucial.

“Some areas are going to be more important to avoid than others because of their conservation value,” says Radeloff. “High density development in areas such as lakeshores means degrading habitat we prize for its scenic and recreational value. In order for clustered development to reduce the impacts of housing developments, clusters must be located away from sensitive areas.”

Source: Ecological Society of America