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Short communication

Critical habitat designation under the US Endangered Species Act: How are biological criteria used?

Karen E. Hodges*, Jason Elder

Biology and Physical Geography, University of British Columbia Okanagan, 3333 University Way, Kelowna, BC, Canada V1V 1V7

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ABSTRACT

Critical habitat designation under the US Endangered Species Act (ESA) is not working as Congress intended. Issues include the use of science during designation, the costly and litigious delays in designation that have led to repeated lawsuits, and the potential overlap with other ESA protections. In this paper, we address a neglected aspect of critical habitat designation: how the biologically-based designation criteria of the US Fish and Wildlife Service are used during the designation process. We primarily examine whether taxon (within terrestrial animals) or legal status (whether critical habitat was designated after a court challenge) affect the use of the criteria. Court-ordered cases used more criteria than non-court-ordered cases. There were also differences in use of criteria with respect to taxon and region, and a weak relationship with the year of designation. Criteria that focused on discrete elements, such as nest sites or locations where required food species occurred, were used more often than criteria that addressed broader ecological needs such as space for normal behaviour or representation of historic range conditions. Revising the critical habitat designation criteria and enforcing their consistent use during designation would be helpful for conservation of imperiled species in the United States.

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1. Introduction

Many species at risk of extinction in the United States are declining because of habitat loss and degradation (Wilcove et al., 1998; Lawler et al., 2002). The US Endangered Species Act (ESA), one of the oldest such acts in the world, requires designation of critical habitat for listed species in recognition that protecting habitats is necessary to support recovery of imperiled species (Patlis, 2001). Similar provisions exist in Canada's 2002 Species at Risk Act and Australia's 1992 Endangered Species Protection Act, as well as in several state or provincial laws.

In the US, listed species with critical habitat appear to perform better than species without (Taylor et al., 2005; Suckling and Taylor, 2005). The history of the implementation of ESA has, however, been dominated by a low rate of designation of critical habitat (Hoekstra et al., 2002), despite the statutory requirement for it; two possible findings, 'not prudent' and 'not determinable' were intended by Congress to be rarely used but instead have been heavily used (Hagen and Hodges, 2006). Many lawsuits have been filed to counter this lack of designation; the courts have uniformly found that designation is non-discretionary and have imposed deadlines for

* Corresponding author: Tel.: +1 250 807 8763; fax: +1 250 807 8005.

E-mail addresses: karen.hodges@ubc.ca (K.E. Hodges), jelder2005@yahoo.ca (J. Elder).

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designation. Since 1997, all critical habitat designation by the US Fish and Wildlife Service (FWS) has been as a result of these court-ordered decisions (Manson, 2003, 2004).

FWS, the agency that is responsible for designation of critical habitat for terrestrial species, has repeatedly expressed a desire to develop a streamlined approach to critical habitat designation to reduce some of the current problems (USFWS, 1999; GAO, 2003). Previous analyses of the designation problems have focused primarily on process, timing, the required economic analyses, and cost (e.g. Patlis, 2001; Hoekstra et al., 2002). To date, there has been little analysis about how the biological criteria created by the FWS are used during designation. The FWS currently uses guidelines for designating critical habitat that were formulated in 1984, then updated in 2001 to apply to the National Marine Fisheries Service as well (Table 1). The 1984 guidelines replaced a set of 1975 guidelines that covered the same broad biological issues, albeit with different wording (Table 1).

Our objective in this paper is to characterize how these biological designation criteria are used in practice by the FWS. We focus on four main factors that may impact use of the criteria: court-ordered status, taxon, region, and date of designation. Criteria use might differ with court-ordered status if these high-profile cases engender more attention to the designations. Taxa vary in their biology (e.g. habitat and dietary specificity, mobility, range size), as well as in how well known they are scientifically, so criteria use might vary with taxon. Finally, region and year of designation might affect use of criteria due to experience with designation or different FWS cultures in different places and times. ESA has also been amended several times, as well as subjected to substantial case law for its interpretation, so a temporal signature could reflect variation in interpretation through time. Regions also vary with respect to the number of listed species and the dominant threats facing listed species, which could lead to

variation in use of criteria by region. We therefore focus our analysis on four descriptive questions:

- (1) Which of the FWS criteria are the major ones used for designation of critical habitat?
- (2) Are there differences in which criteria are emphasized for species that received critical habitat without court intervention and species for which critical habitat was court-ordered?
- (3) Are different criteria emphasized for different taxa?
- (4) Does the lead region or the year of designation affect how many criteria are used as critical habitat is designated?

2. Methods

Our analysis is based on the terrestrial animals (mammals, birds, reptiles, amphibians, snails, insects, and arachnids) that had critical habitat as of December 2006. At that time, the FWS Threatened and Endangered Species System (TESS)- (USFWS, 2006) webpage showed that 476 species had critical habitat out of 1311 listed domestic species (as of February 2008 that had climbed to 508 of 1351 species). Agency guidelines (USFWS, 1984, 2001) preclude designating critical habitat for foreign species. We considered distinct population segments as distinct records for analysis. We excluded aquatic species (marine mammals, sea turtles, fish, clams, and crustaceans) because aquatic and terrestrial habitat requirements are often quite different. We excluded plants because plants are not mobile, so locations of populations may be more easily identifiable than for mobile species, and because ~85% of at-risk plants with critical habitat (245 species) are the result of a single court-ordered case in Hawaii (Conservation Council for Hawaii v. Babbitt, 1998), so analysis within this taxon

Table 1 – The US Fish and Wildlife Service criteria for designation of critical habitat under the Endangered Species Act

1984, 2001 Criteria ^a	1975 Criteria ^b	Subcriteria ^c	Name used hereafter
1 – Space for individual and population growth, and for normal behavior	(1) Space for normal growth, movements, or territorial behavior	No sub-category	Space
2 – Food, water, air, light, minerals, or other nutritional or physiological requirements	(2) Nutritional requirements, such as food, water, minerals	2a. Food 2b. Water 2c. Other physiological needs	Resources
3 – Cover or shelter	(4) Cover or shelter	No sub-category	Cover
4 – Sites for breeding, reproduction, rearing of offspring, germination, or seed dispersal	(3) Sites for breeding, reproduction, or rearing of offspring	4a. Reproductive sites 4b. Protection from predators 4c. Special needs for juvenile habitat 4d. Special needs for adult habitat	Reproduction
5 – Habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species	(5) Other biological, physical, or behavioral requirements	5a. Protection from disturbance 5b. Representativeness of historical range	Distribution

a Taken verbatim from the 1984 USFWS criteria (updated in 2001 to include NMFS).
 b Taken verbatim from the 1975 USFWS criteria; note that the numbering was slightly different than in 1984 and 2001.
 c We subdivided three of the criteria for more detailed analyses. Hereafter, we use ‘subcriteria’ to include the undivided criteria 1 and 3 and the subcriteria specified for the other criteria.

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