California (Carter and Erickson 1992; Varoujean and Williams 1995; Ralph and Miller 1995; Ralph *et al.* 1995b; Strong *et al.* 1995). Conversely, marine concentrations tend to be low where onshore habitat is limited.

The distribution of marbled murrelets in the marine environment changes after the nesting season. This suggests that proximity to their nesting habitat is important for marbled murrelets during the breeding season even though food may be more abundant elsewhere (Ralph et al. 1995b). However, it could be that changes in prey distribution and abundance occur coincidentally with the end of the nesting season. Marbled murrelets have been documented to use a variety of prey species, which suggests that they are capable of exhibiting flexibility regarding food resources available to them during the nesting season. Therefore, the Service believes that the condition of inland nesting habitat is an important factor explaining distributions in the marine environment during the nesting season.

*Issue 3:* Commenters suggested that suitable nesting habitat (defined as mature forests with approximately two remnant old-growth trees per acre) is under-used and not a limiting factor for marbled murrelets.

*Service Response:* There may be localized situations where habitat that is currently suitable for nesting is not currently occupied. The ability of this species to rapidly colonize new areas is unknown, but is likely to be low for several reasons—(1) population numbers are low and scattered in some areas; (2) marbled murrelets have a low reproductive rate, providing few young to serve as colonizers; (3) this species evolved to use nesting habitat that was relatively stable from year-to-year, and may be less adaptive to the loss of nesting areas in a given year (Divoky and Horton 1995); and (4) potentially suitable habitat may be scattered and not necessarily high-quality habitat, both of which may result in a lag time for colonization.

However, the Service continues to believe that nesting habitat is a limiting factor in some areas because of the close association of marbled murrelet nests to older forest habitat, the amount of which has been reduced significantly (See Issue 1). All marbled murrelet nests located as of January 1994 in Washington, Oregon, and California have been associated with forests considered to be older forest or which contain late-successional components (Hamer and Nelson 1995b). In addition, at-sea distributions of marbled murrelets during the nesting season along coastal Oregon and California shorelines

roughly correspond to inland distributions of late-successional forests (See Issue 2).

*Issue 4:* One commenter disagreed with the use of sites identified as occupied by marbled murrelets under the Pacific Seabird Group protocol as a criteria for critical habitat designation, because the commenter believes that some of the behaviors that resulted in occupied status were not indicative of nesting.

Service Response: The Service used all available information in the selection of areas for proposed designation of critical habitat. Survey information was only one of the criteria considered in selecting areas for proposed critical habitat designation. Survey results (including occupied sites, marbled murrelet presence, and lack of detections) were used as indicators of the presence/absence of marbled murrelets in specific areas. However, survey efforts were minimal in many areas, and coverage of areas was discontinuous. Such information was of limited use in proposing critical habitat in portions of the range.

*İssue 5:* Several commenters raised issues related to nest predation and predator numbers. These were primarily related to the effects of timber harvest and forest edge on predator numbers and marbled murrelet nest predation rates. The appropriateness of applying nest predation studies from other regions of the country to the Pacific Northwest was also raised.

Service Response: The Service has amended the proposed rule to reflect the comments and to provide additional documentation on statements related to predation. The Service believes, however, that existing data still indicate that nest predation is a significant issue in forest edge, even if the causes are unclear. Nelson and Hamer's (1995b) analysis of nest predation indicates that marbled murrelet nests nearer to forest edges experience significantly higher predation rates than nests in the forest interior. Studies have also been completed or are underway in the Pacific Northwest since the proposed rule that indicate the timber harvest in a forest can increase nest predation rates on forest birds under some circumstances (Vega 1993; Bryant 1994; C. Chambers, pers. comm. 1994). It is recognized, however, that additional research on this subject is needed.

*Issue 6:* Several commenters recommended that the Service designate all Federal lands before considering designating State or private lands.

Service Response: In proposing murrelet critical habitat, the Service examined all areas, regardless of ownership, that may be essential for the conservation of the species. The Service did propose Federal lands first, however, if in a given area, Federal lands were insufficient to meet the conservation needs of the species, other lands were also proposed.

Issue 7: Several commenters, including the Marbled Murrelet Recovery Team, recommended the inclusion or exclusion of specific areas in the proposed designation of critical habitat. Some commenters recommended including all important marine environments, all potential or recruitment habitat, historic areas, or all suitable habitat in the designation. Several commenters recommended that the Service include additional criteria for identifying critical habitat, including, but not limited to, foraging areas in the marine environment; all occupied habitat; buffer areas; flight corridors; minimum nest limb height; minimum nest stand canopy height; and canopy closure and stand size.

Service Response: All such recommendations were examined carefully. Specific areas were not included in the proposal if they did not meet the Act's criteria for designation as critical habitat, and were added if they met the Act's criteria for designation. The Service based its murrelet critical habitat proposal on the principal biological or physical features that are essential to the conservation of the species and that require special management considerations or protection.

In the marine environment, the Service agrees that maintaining aquatic habitat is essential to the marbled murrelet, and that marine conditions may affect distribution and survival of the species. Addressing anthropogenic sources of mortality and degradation of habitat quality in aquatic habitats will be an important component in recovering marbled murrelet populations. However, the Service does not believe that special management consideration or protection is required in the marine environment beyond those provided by existing Federal laws and regulations, which was discussed in the Previous Management Efforts section. Therefore, the Service did not include areas in the marine environment. Some terrestrial occupied sites were not included because they may not require special management or protection beyond that provided by existing Federal laws and regulations or they were not considered essential to the conservation of the species due to location, site conditions, or history. Therefore, not all areas occupied by the