

Western Ecological Research Center

Publication Brief for Resource Managers

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Effects of Radio Transmitters on the Reproductive Performance of Cassin's Auklets

Radio telemetry is a widely used tool for determining individual movements of free-ranging birds, but it has been used in only a few studies of alcids (e.g., puffins, murre, and auklets) in the past. With the development of smaller transmitters and better attachment methods that increased transmitter retention times, several recent studies have used radio telemetry on small alcid species. Yet, few studies have investigated whether transmitters affect alcids. Externally attached transmitters may affect breeding alcids, because these birds fly long distances from their nests to feed (ranging up to 40 km) and their underwater pursuit of prey may reach depths as great as 28 m.

In a radio telemetry study by USGS, Humboldt State University, and the University of California-Davis, scientists investigated effects of transmitters on the reproductive success of breeding Cassin's auklets in the California Channel Islands. They reported their results in a recent issue of the *Wildlife Society Bulletin*.

The authors attached external radio transmitters to one parent in each of 108 Cassin's auklet pairs and used 131 unmarked, but handled, auklet pairs as controls. All birds were marked with leg bands. Chicks raised by unmarked pairs had faster mass growth rates, faster wing growth rates, greater peak fledging masses, and higher fledging success than chicks raised by radio-marked parents. Fledging success was reduced more when the authors radio-marked the male (50% fledged) rather than the female parent (77% fledged). After fledging their first chick, unmarked pairs were more likely to initiate a second nest (radio-marked: 7%, unmarked: 39%) but did not hatch a second egg (radio-marked: 4%, unmarked: 25%) or fledge a second chick (radio-

Management Implications:

- The authors suggest caution in using radio telemetry to evaluate the reproductive performance of small alcids, but the technique is still valuable to assess their at-sea movements and foraging ranges.
- Radio marking females, instead of males, may minimize adverse effects on reproductive success.

marked: 4%, unmarked: 18%) significantly more often than radio-marked pairs.

The authors found 12 radio-marked individuals nesting during subsequent years; each bird had shed its transmitter and the site of attachment was healed, indicating few long-term effects. In addition, radio-marked auklets foraged in similar areas compared to unmarked auklets that were surveyed concurrently by aircraft at sea. Therefore, although attaching radio transmitters to Cassin's auklet parents reduced their breeding success, transmitters did not appear to influence their foraging ranges and at-sea distributions.

Ackerman, J. T., J. Adams, J. Y. Takekawa, H. R. Carter, D. L. Whitworth, S. H. Newman, R. T. Golightly, and D. L. Orthmeyer. 2004. Effects of radio transmitters on the reproductive performance of Cassin's auklets. *Wildlife Society Bulletin* 32(4):1229-1241.