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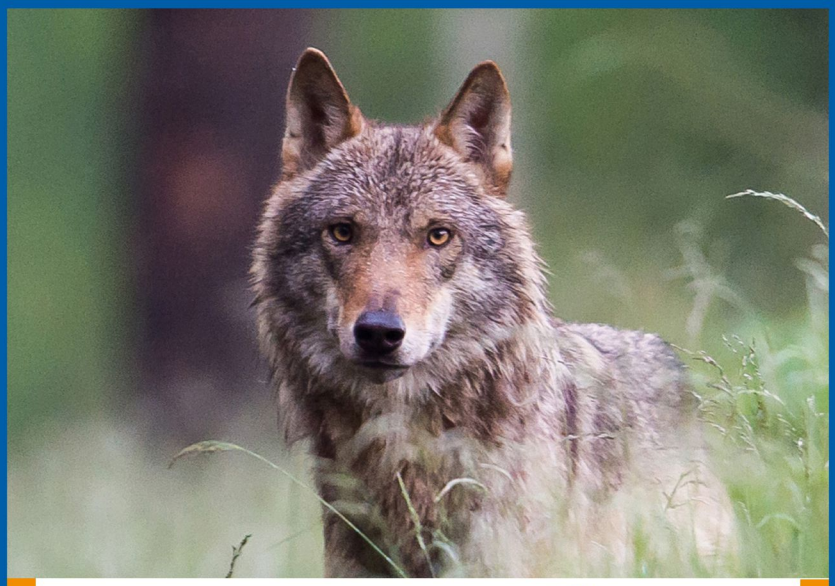
October 4th - 7th, 2017
Berlin Germany



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What affects intraspecific genetic structure in planktivorous seabird species?

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The comparison of intraspecific structure and biology in closely related species may allow us to reveal the factors influencing population differentiation. In this study we analysed intraspecific structure based on the mitochondrial control region in four planktivorous alcid species breeding in the North Pacific – crested auklet (*Aethia cristatella*, CA), whiskered auklet (*A. pygmaea*, WA), parakeet auklet (*A. psittacula*, PA) and ancient murrelet (*Synthliboramphus antiquus*, AM). We then compared the biology of these species and discussed possible factors affecting the formation of population structure. We collected 40 - 128 samples of each species from 4 - 5 sites and amplified the fragment of the control region (408 - 670 bp) with primers CGL-001, CGH-549, and additionally ca_cr652L, ca_cr960H for WA. We found that haplotypic diversity (h) was relatively high in all species studied: h(CA) = 0.99 ± 0.001, h(WA)=0.99 ± 0.006, h(PA) = 0.99 ± 0.006, h(AM) = 0.94 ± 0.017. Nucleotide diversity (π) was relatively high in three species: π(CA) = 0.014 ± 0.008, π(PA) = 0.012 ± 0.007, π(AM) = 0.01 ± 0.005, but in WA it was half the size (π = 0.006 ± 0.004). We found no intraspecific structure in CA or AM (Φ_{ST}(CA) = 0.018 and Φ_{ST}(AM) = 0.005, $p > 0.05$). In WA and PA we detected differentiation between American and Asian groups (Φ_{ST}(WA) = 0.095, Φ_{ST}(PA) = 0.084, $p < 0.05$). Coalescent analysis (in IMa2) showed that mitochondrial lineages of these groups diverged about 12.6000 years ago in WA and about 92.000 years ago in PA. In WA, the Asian group consisted of two subgroups: Commander Islands and islands of the Okhotsk Sea (Φ_{ST} = 0.074, $p < 0.05$), which diverged about 36.000 years ago. Our results indicated that intraspecific structure in WA and PA was shaped in the late Pleistocene as a result of range fragmentation into two refuges. The same did not occur in their relatives, CA and AM, probably because they form colonies with higher density and larger numbers of birds than WA and PA, and so need much more time to shape genetic differentiation. Also, WA and PA feed much closer to colonies than CA and AM, and migration behaviour differs among these species. At least in the Bering Sea WA and PA tend to winter within the sea where they breed, while CA and AM travel considerably within their range after the breeding season. Thus, the main factors influencing intraspecific genetic structure for seabirds with similar range, diet and ocean regime are probably factors that determine species mobility, and, particularly, migration behaviour, distance to feeding grounds and natal fidelity.