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A record of alien Pelophylax species and widespread mitochondrial DNA transfer in Kaliningradskaya Oblast' (the Baltic coast, Russia)

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Аннотация

Alien species can strongly impact local environments and compete against native species, which can lead to their extinction. Marsh frogs of the Pelophylax ridibundus complex are one of the most invasive amphibians in Northern Eurasia. It was previously thought that three water frog species of the genus Pelophylax (the marsh frog, P. ridibundus, the pool frog, P. lessonae and their hemiclinal hybrid, the edible frog, P. esculentus) inhabited Kaliningradskaya Oblast' along the Russian Baltic coast. However, based on our study of the intron-1 of the nuclear serum albumin gene, two other marsh frog species were detected (the Balkan marsh frog, P. kurtmuelleri, and the Anatolian marsh frog, P. cf. bedriagae) as well as putative hybrids between P. ridibundus and P. cf. bedriagae. The majority of individuals of P. ridibundus and hybrids between P. ridibundus and P. cf. bedriagae had mitochondrial (mt) DNA of P. lessonae, while all others featured the P. kurtmuelleri mtDNA. The prevalence of P. lessonae mtDNA haplotypes in populations of P. ridibundus from the Baltic Coast of Russia suggests that local individuals of the latter species originated from crosses between P. esculentus individuals. Two hypotheses could explain the records of P. kurtmuelleri and P. cf. bedriagae in the region. The establishment of local populations of the first species could have occurred via postglacial dispersal from the Balkan refugium. The origin of local P. cf. bedriagae could be an occasional introduction of individuals from the Ponto-Caspian region. Since our study is preliminary (19 individuals), in the future it would be important to continue the study of water frogs in Kaliningradskaya Oblast' and neighboring countries by applying multiple genetic markers. Additional genetic markers will enable researchers to study routes of dispersal and introductions of marsh frogs, to clarify peculiarities of their hybridization and distribution, and to evaluate the impact of P. kurtmuelleri and P. cf. bedriagae on the reproduction success of hybridogenous populations and abundance of local amphibians.

Ключевые слова

Ключевые слова автора: Pelophylax cf. bedriagae; Pelophylax kurtmuelleri; invasive species; introduction; hybridolysis; hybridization; postglacial dispersal

KeyWords Plus: WATER FROGS; MARSH FROG; ESCULENTUS COMPLEX; GENETIC DIVERSITY; GENUS PELOPHYLAX; RIDIBUNDUS; ANURA; KURTMUELLERI; POPULATIONS; AMPHIBIA

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