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BIOLOGICAL DIVERSITY OF THE SPECIES OF THE GENERA:
Otiorynchus, *Trachyphloeus* AND *Phyllobius*
(Curculionidae: Otiorynchinae) IN THE FAUNA OF MACEDONIA

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In this work, the author presents her own results of the researches of many years about the biological diversity of the species of the genera: *Otiorynchus*, *Trachyphloeus* and *Phyllobius* in the fauna of Macedonia. Most of these species have been collected in the meadows in the high mountains throughout Macedonia, by means of the standard methods for collecting this group of insects. Based on the taxonomic-faunal analysis, presence has been established of 40 species; of which 26 belong to the genus *Otiorynchus*, 2 to the genus *Trachyphloeus*, and 12 to the genus *Phyllobius*. In the list of established species, the presence of new and endemic species is especially significant for the fauna of Macedonia. This has been the result of the specific geological, geographical and climate conditions that are dominant in the region. All these species are phytophagous and so are known as huge pests for certain plant species. Therefore these insect species have economic impact as well.

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ODREĐIVANJE SPOLA U NEKIH VRSTA KITOVA (Cetacea)
POMOĆU LANČANE REAKCIJE POLIMERAZOM

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Pri istraživanju biologije kitova znanstvenici često nailaze na probleme prilikom prikupljanja podataka na terenu. Ponekad nije moguće morfološki odrediti spol životinje čije je truplo pronađeno u uznapredovalom stanju truljenja. Također je teško ili čak nemoguće promatranjem u prirodi odrediti spol žive jedinke, budući da u većine vrsta kitova spolni dimorfizam nije izražen. Ovim istraživanjem pokušali smo uvesti pouzdanu molekularno-genetičku metodu kojom bi se određivao spol kitova na uzorcima tkiva

uzetih s lešina, kao i na biopsijama kože živih jedinki. Ukupna DNA je izolirana iz mišićnog tkiva 49 jedinki; 27 dobrih dupina (*Tursiops truncatus*), 9 plavobijelih dupina (*Stenella coeruleoalba*), 7 glavatih dupina (*Grampus griseus*), 2 krupnozuba dupina (*Ziphius cavirostris*), 2 velika sjeverna kita (*Balaenoptera physalus*) i 2 uzorka neidentificiranih vrsta. U jednom slučaju je DNA izolirana iz kože. Svi su uzorci uzeti s lešina različitih stupnjeva raspadanja. Lančanom reakcijom polimerazom uz tri oligonukleotidne početnice umnoženi su dijelovi ZFY i ZFX homolognih gena na Y- i X-kromosomima. Proizvodi reakcije, različite duljine i specifični za spol, razdvajani su elektroforezom u 1% agaroznom gelu. Uspješno je određen spol na 40 uzoraka. Pokazalo se da metoda nije primjenjiva u slučajevima raspadnutog tkiva, ali je pouzdana i učinkovita kad se primijeni na svježim ili dobro očuvanim uzorcima.

SEX DETERMINATION IN SOME CETACEAN SPECIES BY THE POLYMERASE CHAIN REACTION

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Investigations of cetacean biology often encounter problems in gaining information from the field. It is not always possible to morphologically determine sex of an animal whose carcass was found in an advanced state of decomposition. Determining the gender of living cetaceans is also difficult or impossible, since in most species sexually dimorphic characters are poorly marked. The purpose of this study was to introduce a reliable method for molecular sexing of cetaceans that could be used on tissue samples from carcasses, as well as on skin biopsies from living animals. Total DNA was extracted from muscle tissue of 49 cetacean specimens; 27 bottlenose dolphins (*Tursiops truncatus*), 9 striped dolphins (*Stenella coeruleoalba*), 7 Risso's dolphins (*Grampus griseus*), 2 Cuvier's beaked whales (*Ziphius cavirostris*), 2 fin whales (*Balaenoptera physalus*) and 2 samples of unidentified species. In one case DNA was extracted from skin. All samples were taken from corpses in different state of decomposition. The introduced method uses polymerase chain reaction (PCR) to amplify regions on ZFY and ZFX, which are the homologous genes located on Y- and X-chromosomes, respectively. Three oligonucleotide primers were employed to produce fragments specific for the ZFY and ZFX sequences. Amplification products differed in length and therefore gave distinct, sex-specific bands on 1% agarose gel after electrophoresis. The sex of 40 cetacean specimens was success-



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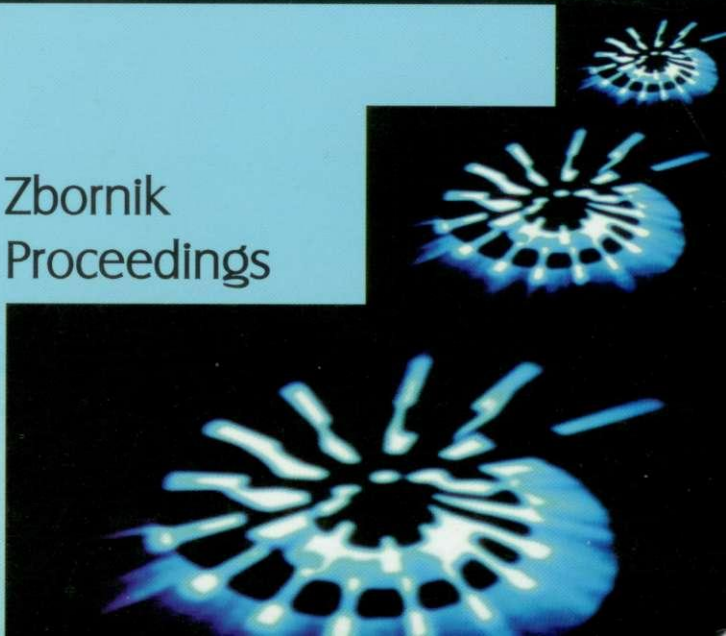
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