

NOTES & NEWS

Soviet Contributions to Malacology in 1975

BY

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WE CONTINUE HERewith the series of annual résumés of malacological papers published by Soviet colleagues which have appeared in the Notes & News Section for the last several years (see *The Veliger* 18 (4): 411-417). We list all the pertinent molluscan papers abstracted in the Referativnyy Zhurnal for 1975. These citations are arranged according to the subject allocations of the Referativnyy.

There were numerous studies in biochemistry, cytology and physiology but a lesser emphasis than usual on commercial aspects of molluscan fisheries. Although far fewer taxonomic novelties were introduced in 1975, some important systematic changes appeared: Minichev proposed a new subclass, the Opisthopneumona, for the Soleolifera, Onchidiida and Rhodopida, and Slavoshevskaya erected a new family, the Falsicingulidae in the Rissoacea. New lesser taxa include: a buccinid by Lus, a *Xylophaga* by Kudinova-Pasternak, a *Deroceras* by Skylar, and two *Mysella* by Skarlato & Ivanova. Golikov & Kusakin introduced new genera related to *Cingula* and *Natica*, respectively, while Nesis described a new genus and species of cheiroteuthid cephalopod.

The results of several symposia, consisting of collections of short papers and abstracts on various aspects of the biology of marine mollusks appeared during the year (see BMIV, BRMA, and GBMO below). Certain of the more important items published in various journals include: Mateeva's major paper on the life cycles and ecology of Arctic gastropods; Goryachev on *Neptunea* in the Bering Sea; Nesis' study of the cephalopods from the Caribbean Sea and Gulf of Mexico; Sirenko on the polyplacophoran *Lepidozona*; and Kafanov on the Cardiidae. Investiga-

tions of interest to biogeographers comprise: Filatova *et al.* on a new discovery of *Neopilina* in the Antarctic; Skarlato on the Soviet Pacific Shelf; Antipova on the Barents Sea; Zorina on Tonkin Gulf; Nikolaev on the land mollusks of the Russian North Central Highland; Piskunov on the buccinids of the Sea of Okhotsk.

In short, a considerable amount of research is conducted annually in the Soviet Union, and we have endeavored to make some of this known to the concerned molluscan investigator in the West.

Abbreviations and symbols we have used are:

- AN - Akademiya nauk (Academy of Science)
- BMIV - Biologiya morskikh mollyuskov i iglokozikh. - Biology of marine mollusks and echinoderms. Vladivostok.
- BRMA - Biologiya razvitiya morsk. organizov. - Biology of the development of marine organisms, Apatity (Kola peninsula).
- ES - English summary.
- GBMO - Gydrobiologiya i biogeografiya shel'fov kholodn. i umeren. vod Mirovogo Okeana., Leningrad, Nauka. - Hydrobiology and biogeography of the cold and temperate shelf waters of the World Oceans. Leningrad, Science Press.
- GZ - Gidrobiol. Zhurnal (Hydrobiological Journal).
- IBV - Issledovaniya po biologiya ryb i promysel okeanogr. - Studies on the biology of fish and on oceanographic fisheries. Vladivostok. (The number indicates the number of the article in these collected papers)
- LMA - Lietuvos TSR mosklu Akademija DARBAI (Trudy Akademii Nauk Litovskoi SSSR). Vilna. (Works of the Academy of Sciences of the Lithuanian Republic of the USSR)
- NTK - Nauchnye trudy Kurskogo gosudarstvennyi pedagogicheskii institut. - Scientific studies of the governmental pedagogical institut of Kursk.
- SID - Sbornik Rabot Instituta biologiya morya Dal'nevost. nauch. tsentr. Akad. Nauk. SSSR. - Papers of the Marine Biological Institute of the Far Eastern Scientific Center, Academy of Science, USSR.
- TAN - Trudy Atlanticheskii nauchno-issledovatel'skii institut rybnogo khozyaistva i okeanografii. (Works of the Atlantic Research Institute of Fisheries and Oceanography)
- TRO - Trudy Instituta Okeanologii. Akademiya Nauk SSSR. (Works of the Institute of Oceanology, Academy of Science, USSR)
- TVNIIMRXO - Trudy Vsesoiuznogo Nauchno-Issledovatel'skogo Instituta morskogo rybnogo Khozyaistva i okeanografii. Articles of the All-Union Research Institute of Marine Fisheries and Oceanography
- VZ - Vopr. zoopsikh. etol. i sravnit. psikh. mosk. un-t. Zoopsychological and etiological problems and comparative psychology, Moscow Univ.
- ZEBP - Zhurnal Evolyutsionnoi biokhimii i fiziologii. (Journal of evolutionary biochemistry and physiology).
- ZZ - Zoologicheskii Zhurnal. (Zoological Journal)

We thank Mrs. Mary Jo Dent for her careful typing of the manuscript.

GENERAL

DMITRIEVA, E. F. & YA. S. SHAPIRO

1974. Granulated "metal-degid" - the intestinal effects of an active toxin ["Degid" prepared by the Proshim Co. in France]. *Zapiski Leningradskogo s-kh. instituta* 239: 110 - 113

GOLIKOV, A. N. & N. F. SMIRNOVA

1974. The stability of several gastropod and bivalve species in the Chupa Inlet of the White Sea to extreme environmental influences in relation to the evolution of resistance. *Issled. fauny morei, Leningrad, Nauka* 13 (21): 307 - 319 [The effects of drying, freshwater invasion and extreme temperature were studied]

IVAN'KOVA, A. F.

1974. Suitability of different organs of terrestrial mollusks homogenized for disc-electrophoresis in polyacrilamide gel in systematic and populational analysis. *Moscow Univ. (Manuscript Dep. in VINITI Jan. 30 1975, No. 227-75 Dep.)*

KAFANOV, A. I.

1974. Evolutionary changes in temperature toleration of marine bivalves in the North Pacific. *BMIV*, pp. 70 - 72

KALABUSHKIN, B. A. & YU. P. ALTUKHOV

1974. Stable polymorphism in an isolated population of *Littorina squalida* of the Busse Lagoons from the Holocene climatic optimum to the present. *BMIV*, p. 61 [Comparing the phenotypic and genotypic frequencies of Recent and subfossil samples, the authors suggest that for 2000 generations no displacement of gene-frequencies occurred in an isolated population of the snail *Littorina squalida*]

KRASNOV, E. V. et al.

1974. Ratios of isotopes of calcium and magnesium in the shells of *Pecten* as indicators of the temperature conditions of their environments. *BMIV*, pp. 88 - 91

KUDINSKII, O. YU.

1974. Zoogeographic regularity of oögenesis and the principles for selecting a subject for experimental investigation. *BRMA*, pp. 100 - 113 [Reasons are given why *Testudinalia tessellata* would make a satisfactory test animal for studies of oögenesis]

LAZAREVA, A. I. & I. M. KHOKHUTKIN

1974. Seasonal changes in the polymorphic structure of two populations of the terrestrial mollusk *Bradybaena fruticum* (Müll.). *Ekologiya* 6: 71

SIRENKO, B. I.

1974. On the evolution of the chiton genus *Lepidozona* Pilsbry. *BMIV*, pp. 142 - 144 [The genus consists of 30 species in the North Pacific of which 15 were studied. Originating on the Asiatic coast in the Oligocene, *Lepidozona* spread along the Shelf. Some Recent species appeared in the Miocene in subtropical waters while certain species, such as *L. nipponica*, now distributed in the Yellow Sea and on the shores of Japan, appeared later. The high latitude polar species apparently arose at the end of the Pliocene in the relatively cold waters of the central Kuril Islands. In the nearby Aleutians, the Aleuto-Kamchatka species *L. ima* evolved, from which the American species, *L. retiporosus*, was derived. *L. kobjakovae* developed in the second half of the Pleisto-

cene in the northwestern part of the Sea of Okhotsk as a consequence of lowering temperature]

SUMANOV, V. B.

1975. Ammoniac saltpeter as a chemical control of mollusks on the marshy pastures of Tel'man Kolkhoz. *Trudy Buryatskogo Instituta estestv. nauk. Buryat. Phil. Sib. otd. AN SSSR (Studies of the Buriat Institute of Natural Sciences, Siberian Section, Academy of Sciences USSR)* Vyp. 13, Zool. Ser., Vyp. 1, pp. 72 - 74

MORPHOLOGY

BOBROVA, I. F.

1974. Comparative study of the contractile apparatus in the smooth muscles of several bivalve mollusks. *Sbornik rabot. Institut tsitol. Akad. Nauk. SSSR* 16: 15 - 17

BOBROVA, I. F., V. F. MASHANSKII & A. L. DROZDOV

1974. The nature of the ultra-structure of the contracting apparatus in adductors of marine bivalves. *BMIV*, pp. 15 - 17

OSTROUMOVA, N. K.

1975. Fine structure of the dorsal body and peripheral nerves of the giant land snail *Achatina fulica*. *ZZ* 54 (1): 119 - 212 (ES)

RAKOV, V. A.

1974. The morphology of the larvae of the Pacific oyster *Crassostrea gigas* Thun. *IBV* 5: 15 - 18

SAVITSKII, V. O.

1974. Structure of the siphonal system of the Palaeotaxodonta (Bivalvia) and its significance for nuculanid systematics. *BMI* V, pp. 134 - 137

SHILEYKO, L. V. & A. A. SHILEYKO

1975. On the morphology of the proximal section of the sexual apparatus of the Stylommatophora (Gastropoda, Pulmonata). *Nauk. dokl. vyssh. shkoly. Biol. nauki (Scientific report of the University of Biological Sciences)* no. 1: 7 - 13

SLAVOSHEVSKAYA, L. V.

1975. The morphology of the sexual apparatus of *Falsicingula athera* and the systematic placement of the genus *Falsicingula* Habe (Gastropoda, Rissoacea). *ZZ* 54 (4): 510 - 516 (ES) [Placed in new family, Falsicingulidae, distinguished sexually from Assimineidae]

STUMBUR, KH.

1975. Biometrical characteristics of the shell of Recent *Nautilus*. "ENSV tead. Akad. toimetus Kelmia geol." *Izv. geol.* 24 (1): 80 - 90 (Estonian, ES)

ZUEV, G. V.

1975. Growth and measurement of the brain during ontogenesis of oceanic squids. *Ekologiya* no. 4: 70 - 73

SYSTEMATICS AND FAUNISTICS

ANTIPOVA, T. V.

1974. The specific composition and distribution of the bivalves in the Barents Sea. *GBMO*, p. 85 [69 species in 23 families. 25 Arctic and High Arctic, 20 boreal, the rest Arctic-Boreal]

ASADOV, S. M., N. N. AKRAMOVSKII & D. G. DZHABBAROV

1975. A study of the land mollusks of the Lesser Caucasus in the Azerbaidzhan SSR. *Isv. AN Azerbaidzhan SSR, Ser. biol.*

- n., no. 2: 100 - 106
- EVSEEV, G. A.
1974. The bivalve fauna of Vostok Bay in the Sea of Japan during the postglacial transgression. BMIV, pp. 42 - 43
- FILATOVA, Z. A., N. G. VINOGRADOVA & L. I. MOSKALEV
1975. The neopilina mollusks (Class Monoplacophora) in the Antarctic. Okeanologiya 15 (1): 143 - 145 (ES) [Data on a new discovery of *Neopilina* in one of the trenches of the Scotia Sea in 4664-5631 m on the occasion of the 11th trip (1971-1972) of R/V *Akademik Kurchatov*]
- GALKIN, YU. I.
1974. Long term alterations of trochids (Gastropoda, Prosobranchia) in the Barents Sea. GBMO: 83 - 84 [Changes from 1835 to 1973]
- GOLIKOV, A. N. & O. G. KUSAKIN
1974. Supplement to the testaceous Gastropoda fauna of the Kuril Island littoral. SID, no. 1: 289 - 299 (ES) [19 species new to the region were found including 2 new to science. Rectifications in the distribution of 8 species are made. Two new genera: *Boreocingula*, type *Cingula martyni*, Dall and *Boreonatica*, type *Natica clausa* Broderip & Sowerby]
1974. The littoral shelled gastropods of the Far Eastern seas of the USSR. BMIV: 33 - 34 [Details of species composition in the lower Boreal Ainska subregion of northern Japan and the high boreal Aleutian or Bering subregion are presented]
- GORYACHEV, V. N.
1974. The distribution of species of the genus *Neptunea* Bolten in the Bering Sea (Mollusca, Gastropoda, Prosobranchia). TVNIIMRXO 99: 133 - 142 (ES)
- KAFANOV, A. I.
1974. The composition, systematics and evolutionary history of *Clinocardium* (Mollusca, Cardiidae). ZZ 53 (10): 1466 - 1476 (ES)
1974. Zoogeographic features and evolution of the Cardiidae fauna in the Arctic and temperate waters of the northern hemisphere. GBMO, pp. 23 - 24
- KARABAIEVA, S. D.
1973. On the vertical distribution of mollusks (Bradybaenidae, Helicidae) in the Zailiskii Alatau. Biologiya i geografiya, Alma-Ata, pp. 104 - 109
- KLUMOV, S. K. & V. L. YUKHOV
1975. *Mesonychoteuthis hamiltoni* Robson, 1925 (Cephalopoda, Oegopsidae) and its significance in the diet of sperm whales in Antarctic waters. Antarktika. Dokladi Komis, vyp. 14, Moskva, Nauka, pp. 159 - 189 [Further descriptions and other investigations of this cephalopod first described from fragments in the stomach of a sperm whale]
- KRESTYANINOV, YU. S.
1975. The mollusks of the genus *Pupilla* Turton 1831 in the terrestrial malacofauna of Chelyabinsk Region (Mollusca, Gastropoda, Pupillidae). Vopr. zoologii 4, Chelyabinsk, pp. 89 - 95 [Four species: *Pupilla bigranata*, *P. triplicata*, *P. sterri*, and *P. muscorum*]
- KUDINOVA-PASTERNAK, R. K.
1975. Mollusks of the genus *Xylophaga* (Bivalvia, Pholadidae) found in the wreckage of a sunken vessel in the Sea of Scotia. TRO 103: 179 - 182 [*Xylophaga atlantica* Richards, 1942 and a new species, *X. rhyabtsikovi* were found in 1660 - 1664 m]
- KUDINSKII, O. YU.
1974. New data on the range of *Testudinalia tessellata* (Prosobranchia, Docoglossa). BRMA, pp. 114 - 118 [The species extends further into the Arctic Region than previously suspected]
- LUS, V. YA
1975. A new species of mollusk, *Tacita zenkevitchi* (Buccinidae), from the deep abyss of the Peru-Chile Trench, with a description of egg deposition and development stages. TRO 103: 162 - 178 (ES)
- MATEKIN, P. V. & A. F. IVAN'KOVA
1974. Species-specific esterase activity in albumens of several terrestrial mollusks (Bradybaenidae and Helicidae) detected by disc-electrophoresis. ZZ 53 (11): 1623 - 1629 (ES)
- MINICHEV, YU. S.
1975. The systematic placement of the gastropod mollusks Soleolifera. Biol. Morya No. 1, pp. 31 - 38 (ES) [Withdrawn from Euthyneura and placed in a new subclass Opisthopneumona to include Onchidiida, Soleolifera, and Rhodopida]
- NESIS, K. N.
1974. The squid families Ommastrephidae, Thysanoteuthidae, Onychoteuthidae and Gonatidae in the Pacific Ocean. BMIV, p. 114 - 117
1974. The systematic [hierarchy] of Recent cephalopods. Biol. Mosk. o-va ispyt. prirod. Otd. biol. 79 (5): 81 - 93 (ES)
1975. The cephalopods of the interior American seas. TRO 100: 259 - 288 (ES) [Exploration took place in the Gulf of Mexico, the Caribbean, and the Puerto Rican Trench. A new genus and species of Cheiroteuthidae was discovered; *Berrya* reduced to synonymy of *Danoctopus*. Numerous new records for the region made; specimens of several rare species recovered, plus numerous new zoogeographical and faunistic observations]
- NIKISHINA, E. F., T. I. ZBARAKH, YU. I. MAYOROV & V. V. ANDREEV
1974. Mollusks of small rivers under various hydrological conditions. Sb. nauch. tr. Yaroslav. gos. ped. in-t. (Collection of scientific studies of the government pedagogical institute of Yaroslav), 123: 63 - 67 [Collections were made in the Goretovka and Solonitse Rivers. *Hydrobia steini* and *Valvata profunda* are newly reported from the Volga Basin]
- NIKOLAEV, V. A.
1974. New data on the variability and distribution of northern Russian *Cepaea vindobonensis* (Fér.). NTK 29 (122): 153 to 160
1974. Terrestrial mollusks of the Russian north central highlands. NTK 29 (122): 143 - 152
- PISKUNOV, A. I.
1974. The specific composition, distribution, and various other features of the biology of the gastropod family Buccinidae in the Sea of Okhotsk. BMIV, pp. 121 - 123 [35 species in 6 genera, including *Neptunea*, *Buccinum* and *Ancistrolepsis*, were studied. Species of *Volutopsis* were most common in the North. All buccinids studied have a sex ratio of 1 : 1]
- SKARLATO, O. A. & M. B. IVANOVA
1974. Littoral bivalve mollusks of the Kuril Islands. SID, no. 1, pp. 300 - 317 (ES) [39 species and 2 subspecies of which 2 species and 2 subspecies are new: *Mysella kurilensis*, *M. kurilensis litoralis*, *M. gurjanovae*, and *M. gurjanovae elongata*]

SKLYAR, I. YA.

1975. A new species of slug of the genus *Deroceras* (Gastropoda, Limacidae) from the Crimea. Vestnik Zoologii no. 4, pp. 73 - 76 (ES) [*Deroceras* (*Liolytopelte*) *hamatum* is described as a new species, related to *D. (L.) caucasica*, but differing in the nature of the internal shell and penial characteristics]

SOBOLEVA, T. N.

1975. The land mollusks of the Zalaitsky and Kunga Alatau. In-t. Zool. AN Kazakhstan SSR. Alma-Ata. (Manuscript Dep. in VINITI Aug. 18, 1975, No. 2465-75 Dep.) [46 species and subspecies listed]

ZATRAVKIN, M. N.

1975. The hydromalacofauna in the vicinity of Kostroma City, Pleshchev Island, and Nerl' River (of the Volga). Vestnik Zoologii no. 4, pp. 16 - 19 (ES)

ZORINA, I. P.

1975. On the bivalve molluscan fauna of Tonkin Gulf. ZZ 54 (3): 455 - 458 (ES) [In 2206 dredgings 6050 specimens were recovered belonging to 140 species in 7 families]

ZUEV, G. V. & CH. M. NIGMATULLIN

1975. On the distribution of North Atlantic squid *Ommastrephes bartrami* Lesueur 1821. TAN 58: 187 - 192 (ES)

BIOLOGY AND ECOLOGY

AGAROVA, I. YA.

1974. Gametogenesis and characteristics of the reproductive cycle of *Macoma balthica* (L.) (Tellinacea, Eulamellibranchia) on the sandy littoral part of the Barents Sea. BRMA, pp. 143 - 157

BELOGRUDOV, E. A.

1974. On some characteristics of the settling of larvae on test-panels, and the growth of the young scallop *Mizuhopecten yessoensis* Jay and other organisms in Pos'eta Bay, Sea of Japan. BMIV, pp. 7 - 8

BERGER, V. YA.

1975. Changes in salinity during ontogenesis and the reproductive strategy of the White Sea mollusk *Littorina saxatilis*. Biol. morya No. 1: 43 - 50 (ES)

BERGER, V. YA. & N. M. KOVALEVA

1974. Adaptability of littorinids to changes in salinity in the Sea of Japan and the effect of such adaptability on the evolution in the genus *Littorina*. ZZ 53 (10): 1459 - 1465 (ES)

FILIPPOVA, YU. A.

1974. Feeding in oceanic squids of the family Ommastrephidae. TVNIIMRXO 99: 123 - 132 (ES)

GINZBURG, A. S.

1975. The role of sperm concentration in the formation of the zygote in bivalve mollusks. Biol. morya No. 1: 51 - 57 (ES)

GUL'BIN, V. V.

1974. The ecology of the gastropod *Collisella cassis* on the Kuril Shelf. BMIV: 35 - 37

KAS'YANOV, V. L., A. F. KUKIN, L. A. MEDVEDEVA & N. P. KHOMULLO

1974. Dates of the mass reproduction of bivalve species in the Sea of Japan. BMIV: 66 - 69

KUTISHEV, A. A. & A. V. DROZDOV

1974. Hermaphroditism and the sexual structure of a population of *Crenomytilus grayanus* Dunker. Vestnik Moskov. univ.

Biol. Pochvoved. [Reports on Biology, Univ. of Moscow, Soil Science], no. 6, pp. 11 - 13 (ES)

MARIKOVSKII, P. I.

1974. Insect enemies of the gastropod *Bradybaena*. Ekologiya 6: 69 - 70

MATVEEVA, T. A.

1974. Features of the reproductive cycle of several bivalve mollusks of Pos'eta Bay (Sea of Japan). GBMO: 64 - 65

1974. The ecology and life cycle of numerous species of gastropod mollusks in the Barents and White Seas. Issled. fauny morei, Leningrad, Nauka 13 (21): 65 - 190

MIKHALEVICH, E. B., V. YU. GOLUBYATNIKOV & A. V. ZYARLITSEV

1975. Some observations on feeding of the small pond snail *Lymnaea* (*Galba*) *truncatula* Müll. under laboratory conditions. Sb. nauch. tr. Yaroslav. gos. ped. in-t (Collection of scientific works of the Yaroslav Government Pedagogical Institute) 134: 98 - 100

MITROPOL'SKII, V. I.

1975. On the behavior of the Sphaeriidae. VZ, pp. 87 - 88

NAUMOV, A. D.

1974. Vertical distribution and range of *Portlandia arctica* (Gray) in the White Sea. GBMO: 97

NESIS, K. N.

1975. The behavior of cephalopods. VZ: 88 - 91

NIGMATULLIN, CH. M.

1975. Quantitative [analysis] of the food of species of cephalopods of the Spanish Saharan and Mauritanian Shelf. TAN 58: 177 - 186 (ES)

REZNICHENKO, O. G. & I. N. SOLDATOVA

1974. Ecological and horological sketch of the insular settling of *Mytilus edulis* in the Bay of Peter the Great. GBMO: 62 - 63

SADYKHOVA, I. A.

1974. The character of the measured distribution and growth of *Nuculana pernula* in the White Sea. GBMO: 95 - 96

SEMEANOVA, N. L.

1974. The distribution and quantitative development of the bivalve *Macoma balthica* (L.) in connection with problems of pollution. 9-ya Sessiya uch. soveta po probl.: "Biol. resursy Belogo Morya i vnutren vodoemov Evrop. Severa" [Report of the 9th Session of the Council on "The Biological Resources of the White Sea and Interior Reservoirs of Northern Europe"], Petrozavodsk: 245 - 247

SHEVTSOV, G. A.

1974. Characteristics of the feeding of Pacific squid in the Kuril-Hokkaido Region. BMIV: 161 - 162

1974. Several features of the biology of the squid *Beryteuthis magister* from the region of the Commander Islands. GBMO: 68 - 69

SKALKIN, V. A.

1974. Some characteristics of the biology of the white scallop *Chlamys albidus* in the region of Onkotan Island, Kuril Beds. BMIV: 145 - 146

SKARLATO, O. A.

1974. The biogeographical division into districts of the shelf of Soviet Far Eastern Seas on the basis of an analysis of the bivalve molluscan fauna. GBMO: 18 - 19

Vovk, A. N.

1975. The position of the long panned squid *Loligo pealei* Les. in the ecosystem. TAN 58: 168 - 176 (ES)

PHYSIOLOGY

ALIMOV, A. F.

1974. The intensity of interchange in freshwater bivalve mollusks. Ekologiya, no. 1: 10 - 20

ALYAKRINSKAYA, I. O.

1974. Hemoglobin containing hemolymphs of the species of *Astarte* in the White Sea (Bivalvia, Eulamellibranchia). ZZ 53 (9): 1304 - 1307 (ES)

BERGER, V. YA., A. N. PAKHOMOV & A. G. MUKHLENOV

1975. A study of the isozymes of esterases and lactic dehydrogenases in the adaptation of the mollusk *Littorina littorea* L. to changes in the environmental salinity. Zh. obshch. biol. 36 (4): 579 - 584 (ES)

BUBNOVA, N. P.

1974. The consumption and assimilation of carbohydrates from the marine benthos by the detritus feeding mollusks *Macoma balthica* L. and *Portlandia arctica* (Gray). Okeanologiya 14 (5): 912 - 916 (ES)

DMITRIEVA, E. F. & YA. S. SHAPIRO

1975. Functional changes in the reticulated slug, *Deroceras reticulatum* when poisoned with "metal-degid", a product by Proshim Co., France. Zapiski Leningradskogo s.-kh. instituta 270: 115 - 118

DZYUBA, S. M.

1974. Morphological characteristics of the sexual organs of *Crenomytilus grayanus* in various seasons. BRMA: 158 - 164

GURINA, V. I.

1975. An investigation of RNK and albumen in the epithelial tissues of mollusks in regard to their adaptation to changes in the environmental salinity. Tsitologiya 17 (3): 298 - 303 (ES)

KALINSTRATOVA, E. N. & V. V. POPOV

1974. Secondary induction of the external cornea in the freshwater mollusk *Lymanaea stagnalis* L. under various conditions. Rol' faktorov vnesh. sredy v ontogeneze, Moskva (The role of external factors in ontogenesis, Moscow), p. 21

KARTAVTSEV, YU. F.

1974. Electrophoretic investigation of several albumens of the *Crenomytilus grayana*. BMIV: 62 - 65

KHLEBOVICH, V. V. & T. G. L'VOVA

1975. Salinity preferences of *Hydrobia ulvae* in the White Sea. ZZ 54 (2): 175 - 180 (ES)

KHOLODOVA, YU. D., V. P. VENDT & N. V. VASHCHENKO

1974. Seasonal changes in the sterine composition and its relationship to the calcium transport system in the tissue of the snail, *Helix pomatia*. Ukr. biokhim. zh. [Ukrainian Biochemical Journal] 46 (6): 725 - 731 (Ukrainian, ES)

1974. Sterine hemolymphs in neural and muscular tissues of *Helix pomatia*. Ukr. biokhim. zh. [Ukrainian Biochemical Journal], 46 (5): 621 - 626 (ES)

KOZLITINA, L. M.

1974. The resistance of the cells of *Mytilus* to changes in salinity. BMIV: 78 - 80

KRASNOV, E. V. & L. A. POZDNYAKOVA

1975. The ratio of calcium and magnesium in the calcite of marine molluscan shells as an indication of specific and non-specific reactions. Dokl. Akad. Nauk SSSR, 220 (6): 1432 to 1434

KRUOLYANSKAYA, Z. YA. & D. A. SAKHAROV

1975. The appearance of biogenetic monoamines in the development of the nervous system of the embryonic mollusk *Lymanaea stagnalis*. Ontogenez 6 (2): 194 - 197 (ES)

KUDINSKII, O. YU.

1974. Compensatory regulation of fecundity as seen in the marine prosobranch *Testudinaria tessellata* Müll. BRMA: 119 to 132

MARGULIS, B. A. & G. P. PINAEV

1974. Comparative investigation on the fractional composition of contractile albumens in the adductor 'catch' muscles in mollusks. BMIV: 105 - 106

NISTRATOVA, S. N.

1974. Neural regulation of cardiac activity in bivalves. BMIV: 118 - 120

PETRUNKAYA, V. V., N. N. KUVSHINOV & V. N. KARNAUKHOV

1974. The characteristics of tissue respiration in the mollusks. Dokl. Akad. Nauk SSSR 219 (2): 492 - 495

ROMANENKO, V. D., N. P. GALAGAN & V. D. SOLOMATINA

1975. The influence of calcium in the surrounding water on the tissue metabolism of phosphates in *Anodonta cygnea* L. GZ 11 (3): 32 - 37 (ES) [Increasing the content of calcium in the surrounding water rarely changes the metabolism of phosphates in molluscan tissues]

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M. I. TERESHCHENKO

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Shells Inhabited

by *Pagurus hirsutiusculus* (Dana)
at Coyote Point Park,
San Francisco Bay, California

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THE HERMIT CRAB *Pagurus hirsutiusculus* (Dana, 1851) (Anomura: Paguridae) is a common inhabitant of both rocky and shelly substrates at Coyote Point Park on the

western shore of San Francisco Bay in San Mateo, California. On June 5, 1976, 230 individuals were examined below the bluffs at Point San Mateo and in rocky rubble near remains of the old pier at the northwestern end of Peninsula Beach during a 0.15m tide. Of these hermit crabs, 200 utilized empty shells of the mud snail *Ilyanassa obsoleta* (Say, 1822), 26 inhabited shells of the oyster drill *Urosalpinx cinerea* (Say, 1822), 1 used a shell of the channeled whelk *Busycotypus canaliculatus* (Linnaeus, 1758), 3 small animals inhabited shells of the checkered periwinkle *Littorina scutulata* Gould, 1849; and 1 was found in the dactyl of a shed chela of the crab *Cancer* sp. Individuals seen during collecting trips to intertidal areas at the park during 0.60m to -0.60m tides during 1970 to 1975 also usually inhabited shells of *I. obsoleta* or *U. cinerea* except for 8 animals found in shells of *B. canaliculatus*, 2 in shells of *L. scutula*, and 1 in a shell of the black turban snail *Tegula funebris* (A. Adams, 1855).

It is noteworthy that almost all of the shells used by *Pagurus hirsutiusculus* belong to species introduced into San Francisco Bay from the Atlantic coast of the United States (CARLTON, 1975). PACKARD (1918) was the first to record *Urosalpinx cinerea* and *Ilyanassa obsoleta* from the vicinity of Point San Mateo. SCHMITT (1921) made the first notation of *P. hirsutiusculus* at Point San Mateo. Assuming that the hermit crabs started using the shells of the introduced gastropods by 1921, the crabs have been using these shells for at least 55 years.

What shells did the hermit crabs use as coverings before the arrival of the introduced gastropods? SCHMITT (1921) related the presence of *Pagurus hirsutiusculus* in San Francisco Bay to the availability of shells of both the wrinkled thais *Nucella lamellosa* (as *Thais lamellosa*) and the dog whelk *Nassarius mendicus* (as *Nassa mendica*). During 1970 to 1976, only 3 individuals of *Nucella lamellosa* were seen at Coyote Point, while no *Nassarius mendicus* ever were found during the same interval of time.

Other than *Nucella lamellosa*, 6 species of native gastropods occur at Coyote Point. Of these 6, the limpets *Collisella digitalis* (Rathke, 1833), *C. pelta* (Rathke, 1833), and *C. strigatella* (Carpenter, 1864), and the western white slipper shell *Crepidula nummaria* Gould, 1846 have shells that either are cap-shaped or boat-shaped, and are unsuitable for use by hermit crabs. *Tegula funebris* is very rare at Coyote Point, being known from a single shell seen in 1974. The only native gastropod that is both common and has a suitable shell is *Littorina scutulata*. However, this species has a small shell, from 8 to 13mm in height (MCLEAN, 1969), while an average specimen of *Pagurus hirsutiusculus* from San Francisco



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