FOLIA MALACOLOGICA
Folia Malacol. 24(4): 205–208
ISSN 1506-7629
The Association of Polish Malacologists
Faculty of Biology, Adam Mickiewicz University
Bogucki Wydawnictwo Naukowe
Poznań, December 2016
http://dx.doi.org/10.12657/folmal.024.024

# ANDRZEJ ŁYSAK (1932–2015) – OBITUARY

Professor Andrzej Łysak passed away on the 11th of December 2015, in Kraków. He was one of the most eminent Polish ichthyologists of the late 20th century and the founder of the Polish heliculture, known also as snail farming. This new branch of livestock production and animal husbandry is concerned with commercial production of land snails of the genus *Helix*.

Andrzej Łysak was born on the 24th of July 1932 in Kraków. In 1933–1939, with his father Jan, mother Janina, and his elder brother Jan, he lived in Bereźnica (near the town of Stryj, now Stryi in Ukraine), where his father was a teacher of tillage, animal husbandry, and veterinary aid in the nearby agricultural schools in Dobryszyce, Bereźnica, Piekary, and Czernihów. In 1939, the Professor's father became a school inspector in Lviv. The Professor's mother worked in the same schools, where she taught horticulture, pomology, nursery production, and apiculture. As a boy, Andrzej Łysak attended primary school in Bereźnica. In 1939–1941, because of the increasing threats to well-educated Polish families from the Soviets and Ukrainian nationalists, the Łysaks found shelter in Stryi and Lviv, whereas in 1941–1943 they lived in Leśniowice. At that time, the Professor's father managed three private properties, and this was the family's source of income. In 1943, the Łysaks moved to Myślenice near Kraków. From 1945 till his death, the Professor lived in Kraków. There, he attended the Bartłomiej Nowodworski High and Middle School, passed his school-leaving exams in 1950 and started his studies at the Faculty of Agriculture, Agricultural College, to obtain the title of Engineer in 1953. In 1955 he defended his MSc thesis "Assessment of the amount of blood in cattle by using T-1824 preparation". However, his later research and career focused on ichthyology and fishery. His haematological and endocrinological research on the common carp (*Cyprinus carpio*), started in 1955 at the Department of Hydrobiology, Polish Academy of Sciences, where he began to work as assistant at the Experimental Station in Gołysz, brought him renown among ichthyologists. In 1963 he defended (with honours) his PhD thesis "Isotope study on new thyroid secretion centres in the common carp, with the use of iodine $I^{131}$" at the Agricultural College in Kraków. It was the first study to show that the carp had two active centres of distribution of thyroid secretion cells: pharyngeal and renal. The study earned him the 3rd Class Award of the Polish Minister of Higher Education, Science and Technology. In the same year he became Associate Professor at the Department of Fishery, Agricultural College, Kraków. In 1972, based on his habilitation thesis "Iodine metabolism in the ontogeny of common carp in relation to ambient temperature", he was made Assistant Professor of Agricultural Sciences and was awarded the 2nd Class Award by the Polish Minister of Higher Education, Science and Technology.

Ministry of Science and Higher Education
Republic of Poland
Folia Malacologica is funded by the Ministry of Science and Higher Education, Republic of Poland under agreement no. 646/P-DUN/2016 allocated to the activities of disseminating science

In 1977, Professor Łysak went to Nigeria, to Ahmadu Bello University in Zaria, where he lectured in fishery. In 1979, before his return to Poland, he became Associate Professor. In 1980, after his return from Africa, he became head of the Department of Fishery, Faculty of Animal Husbandry, Warsaw University of Life Sciences. In 1984, he was transferred to the National Research Institute of Animal Production in Kraków, to become head of the Independent Laboratory of Fish Biology and Aquatic Habitats. In 1985, he became full professor. His later research was concerned with fish physiology and toxicology, applied ichthyobiology, and aquatic habitat protection, as well as the use of cultures of saprophytic bacteria for biodegradation and utilization of livestock wastewaters. During seven years (1982–1988) he was member of a working group of the European Inland Fisheries Advisory Commission (EIFAC/FAO), where he supervised research on aquatic toxicology. Besides, his own studies were concerned with natural populations of salmonids in alpine and subalpine zones of Europe, including Poland, and focused on the physiological condition, growth rate, and qualitative composition of natural food of two species of high-mountain trout. In 1985–2005, the Professor conducted a long-term project "Formation of ichthyofauna of the Tresna Reservoir after its complete drying followed by flooding" in a cascade of reservoirs (Tresna, Porąbka, and Czaniec) on the river Soła. In 1991, the Independent Laboratory of Fish Biology was merged with the Department of Technology, Ecology and Economics of Animal Production, National Research Institute of Animal Production, Kraków-Balice.

In 1996, the Professor embarked on research in heliculture and malacology. That year, the first Polish experimental snail farm, specialising in commercial production of the edible garden snail (*Helix aspersa*, syn. *Cornu aspersum*), was established on the initiative of the Management of the National Research Institute of Animal Production, under scientific supervision of Professor Andrzej Łysak. It was the foundation of the new Polish branch of animal production known as heliculture, alternative according to the EU nomenclature and forming a specific niche in the Polish conditions. Several such farms had existed in Poland under supervision of researchers from the French research institute INRA. To access the basic information (unavailable in Poland) about the nutritional requirements of the snails, the composition of forage mixtures or conditions of snail culture in the farm during the reproductive phase, and the commercial production phase, the Professor got in touch with researchers from a French experimental farm owned by the INRA (Magneraud, Bretagne). This led to a scientific exchange between the research teams from both countries. Based on his own experience and the results of his original research, he modified the French technology of the garden snail production by adapting it to the Polish climatic, environmental and economic conditions. Among the results were recommendations regarding the snail forage mixture formulas, including Polish equivalents of French components, as well as original ones, adapted to the climate of southern Poland for cultured populations of the small-sized European subspecies (*H. aspersa aspersa*) and the large-sized African subspecies (*H. aspersa maxima*). For many years, the Professor organised seminars for snail farmers at that farm, where they also received breeding material of excellent quality. Largely thanks to the Professor's work, during the last 20 years, large snail farms and snail processing plants were established and new ones are under development. Some of them produce about 100 tonnes of snails per year.

Another direction of his research on heliculture was an attempt to develop a protocol for propagation and intensive production of the Roman snail (*Helix pomatia*). The results are encouraging, especially those concerning intensive reproduction of the species in snail farms. The Professor studied the biology and physiology of *Helix* spp., and experimented with the effects of injection of gonadotropic hormones on maturity of their gonads and the impact of magnetic field on the snail development. Besides, he investigated cannibalism among newly hatched *H. aspersa*. He also participated in long-term research projects on the establishment and development of naturalised populations of *H. pomatia* with the use of commercially produced young. The results of research of the Professor and his team were published in renowned scientific journals, while implementation instructions and other publications were addressed to commercial snail farmers. The results were presented during annual malacological seminars organised by the Association of Polish Malacologists, of which he was member, as well as at international seminars of the European Society for New Methods in Agricultural Research (ESNA). Unfortunately, the Professor did not live to see the 20th anniversary of the experimental snail farm established by himself, which was celebrated at the beginning of 2016, a month after his death. The farm, with its team of two researchers and a technician, still exists, implementing his research programme.

In 2002, the Professor retired but remained scientifically active at the National Research Institute of Animal Production. As member of the Association of Polish Malacologists, he actively participated in its work, taking part in about a dozen annual malacological seminars in different parts of our country. Professor Andrzej Łysak authored or co-authored over 100 original articles as well as more than 40 scientific reports/evaluations for the needs of water

management, fishery, angling, heliculture, and malacology. He presented his results at numerous conferences and symposia both in Poland and abroad. He continued scientific research till the last days of his life. His last article on a Roman snail population of farmed origin in natural plots, co-authored by Dr M. Ligaszewski, was posthumously published in the Annals of Animal Sciences.

Professor Andrzej Łysak was a Renaissance man. In addition to his exceptional scientific output, he enjoyed numerous meetings with friends (usually organised by himself), participated in high-mountain expeditions, was a keen skier, but also a passionate gardener and a food connoisseur, as he acquired a taste for fine dining during his travels to different regions of the world.

MACIEJ LIGASZEWSKI
National Research Institute of Animal Production
translated by Sylwia Ufnalska

## PROFESSOR ANDRZEJ ŁYSAK – LIST OF MOST IMPORTANT PAPERS IN ICHTHYOLOGY

**ŁYSAK A.** 1959. Die Blutentnahme von Fischen zu diadnostischen Zwecken sowie deren Einfluss auf das spätere Blutbild und den Zuwachs. Acta Hydrobiol. 1: 37–54.

**ŁYSAK A.** 1959. Haematologic observations on the small whitefish (*Coregonus albula* L.) and on hybrids of small whitefish x whitefish (*Coregonus Albula* x *Coregonus lavareatus maraenoides*). Acta Hydrobiol. 2: 139–147.

**ŁYSAK A.**, WÓJCIK K. 1960. Elektroforetyczne badania krwi karpi żywionych paszami o różnej zawartości białka. Acta Hydrobiol. 3: 49–61.

**ŁYSAK A.**, SOLEWSKI W. 1960. Vplyv furfurola na vodne zivocichy. Zoologickie Listy (Praha) 9: 349–355.

**ŁYSAK A.** 1961. Further investigations on the influence of blood sampling in carp on the blood picture and rate of growth. Acta Hydrobiol. 3: 261–279.

**ŁYSAK A.** 1962. Thyroid secretory centers in carp (*Cyprinus carpio* L.) revealed by means of iodine $I^{131}$. Bull. Pol. Acad. Sci. 12: 548–554.

**ŁYSAK A.** 1964. Thyroid centers in carp and in some other teleost fishes revealed by iodine I 131. Acta Biol. Cracov. ser. Zool. 7: 21–50.

**ŁYSAK A.** 1966. Accumulative ability of radio-iodine 131 in some teleost fish species. Rev. Roum. Biol. ser. Zool. 11: 213–218.

**ŁYSAK A.**, CENA K. 1970. Study on thermal adaptation and stimulation rate of thyroid gland in carp, tench and trout. Pol. Arch. Hydrobiol. 17: 265–271.

**ŁYSAK A.** 1971. The influence of environment temperature and of thyrotrophin on iodine metabolism in carp (*Cyprinus carpio* L.). Pt. 1. Results of investigations. Pol. Arch. Hydrobiol. 18: 409–418.

**ŁYSAK A.** 1971. The influence of environment temperature and of thyrotrophin on iodine metabolism in carp (*Cyprinus carpio* L.). Pt.2. Results of chromatographic analysis. Pol. Arch. Hydrobiol. 18: 419–423.

**ŁYSAK A.**, MARCINEK J. 1972. Multiple toxic effect of simultaneous action of some chemical substances on fish. Roczn. Nauk Roln. 94: 53–63.

**ŁYSAK A.** 1972. Funkcje gardzielowych i pozagardzielowych ośrodków tarczycznych u karpia (*Cyprinus carpio* L.) we wczesnych stadiach rozwojowych. Zesz. Nauk. WSR Kraków, Ser. Rozpr. 23: 1–49.

**ŁYSAK A.**, HOCHSTIN M. 1972. Z dziejów ustawodawstwa rybackiego w Małopolsce. Zesz. Nauk. AR, Kraków 66: 37–44.

**ŁYSAK A.** 1978. Radioiodine uptake in young carp (*Cyprinus carpio* L.) retarded in growth. Acta Hydrobiol. 20: 297–303.

**ŁYSAK A.**, DJURDIEVIC D. 1979. The nature of thyroid hormone in blood of carp (*Cyprinus carpio* L.). Pol. Arch. Hydrobiol. 26: 183–189.

**ŁYSAK A.** 1985. Comparison of three species of Cichlidae family as the last link in the sewage treatment proces in North Nigeria. Ann. Anim. Sci. 18: 87–93.

**ŁYSAK A.** 1989. Intenzitet metabolizma u šarana (*Cyprinus carpio* L.) u prvoj fazi rasta meren potrošnjom kiseonika i metodom vezivanja radiojoda. Veterinarski Glasnik 43: 221–364.

PUDO J., **ŁYSAK A.**, OCKIYA A. J. F. 1990. The interdependence of phytoplankton and fish in tropical, brackish waters of fishponds of southern Nigeria. Acta Hydrobiol. 32: 227–235.

**ŁYSAK A.**, POLAK S., STRUTYŃSKI J., LIGASZEWSKI M., MIERNIK W., ŁOJEK J. 1995. Rola stawów rybnych w eliminacji zanieczyszczeń wód. Zesz. Nauk. Akad. Roln. Wrocław, Zootech. XL, 271: 203–226.

**ŁYSAK A.**, LIGASZEWSKI M., MACH-PALUSZKIEWICZ Z. 1996. Wzrost pstrągów tatrzańskich na tle innych stanowisk wysokogórskich rodziny Łososiowatych. In: KOWNACKI A. (ed.). Przyroda Tatrzańskiego Parku Narodowego a Człowiek. Vol. II. Tatrzański Park Narodowy, Kraków-Zakopane, pp. 100–104.

**ŁYSAK A.**, MACH-PALUSZKIEWICZ Z., LIGASZEWSKI M., SURÓWKA K. 1996. Poziom metali ciężkich w tkankach pstrągów tatrzańskich, w latach 1990–1994. In: KOWNACKI A. (ed.). Przyroda Tatrzańskiego Parku Narodowego a Człowiek. Vol. II. Tatrzański Park Narodowy, Kraków-Zakopane, pp. 105–107.

**ŁYSAK A.**, LIGASZEWSKI M. 1998. Skład ichtiofauny zbiornika zaporowego Tresna przed i po całkowitym spuszczeniu (1988–1995). Roczn. Nauk. PZW 11: 65–80.

**ŁYSAK A.** 1999. Cel i charakter badań podjętych przez Instytut Zootechniki w dorzeczu dolnej Płoni. In: ŁYSAK A. (ed.). Ekologia rzeki Płoni ze szczególnym uwzględnieniem wpływu ścieków z zakładu doświadczalnego IZ w Kołbaczu. Wyd. IZ PIB, Kraków, pp. 3–10.

**Łysak A.**, Ligaszewski M., Mach-Paluszkiewicz Z. 1999. Ocena toksyczności oczyszczonych ścieków organicznych zrzucanych do rzeki Płoni w latach 1991–1994. In: Łysak A. (ed.). Ekologia rzeki Płoni ze szczególnym uwzględnieniem wpływu ścieków z zakładu doświadczalnego IZ w Kołbaczu. Wyd. IZ PIB, Kraków, pp. 11–19.

**Łysak** A., Ligaszewski M., Mach-Paluszkiewicz Z. 1999. Wpływ oczyszczonych ścieków organicznych na stan ichtiofauny rzeki Płoni w latach 1991–1994. In: Łysak A. (ed.). Ekologia rzeki Płoni ze szczególnym uwzględnieniem wpływu ścieków z zakładu doświadczalnego IZ w Kołbaczu. Wyd. IZ PIB, Kraków, pp. 20–39.

**Łysak A.**, Malinowski E. 1999. Propozycje działań proekologicznych zmierzających do powstrzymania skutków nadmiernego zanieczyszczenia i biologicznej biodegradacji omawianego regionu. In: Łysak A. (ed.). Ekologia rzeki Płoni ze szczególnym uwzględnieniem wpływu ścieków z zakładu doświadczalnego IZ w Kołbaczu. Wyd. IZ PIB, Kraków, pp. 49–56.

Ligaszewski M., **Łysak A.** 2002. Wyniki wieloletnich badań (1991–1994 i 1998–2001) nad wpływem gnojowicy bydlęcej i świńskiej na środowisko wód otwartych i stawów rybnych. Zesz. Nauk. Akad. Roln. Kraków 393, Inżynieria Środowiskowa 23: 201–212.

Ligaszewski M., **Łysak A.**, Pilarczyk A. 2003. Health status, blood picture and heavy metal concentrations in tissues of carp (*Cyprinus carpio* L.) in their third year of rearing in ponds fertilized with cattle slurry. Ann. Anim. Sci. 3: 207–212.

**Łysak A.**, Ligaszewski M. 2011. Środowiskowe i ekonomiczne uwarunkowania poprawy stanu ichtiofauny użytkowanych wędkarsko wód południowej Polski. In: Chorodyński A. (ed.). Środowiskowe i ekonomiczne uwarunkowania poprawy stanu ichtiofauny użytkowanych wędkarsko wód południowej Polski. Krakowska Akademia im. Andrzeja Frycza Modrzewskiego, Kraków, pp. 107–132.

## LIST OF MOST IMPORTANT PAPERS IN MALACOLOGY AND HELICULTURE

**Łysak A.**, Ligaszewski M., Mach-Paluszkiewicz Z., Juchno D. 2002. Farming and histological effects of gonadotropin stimulation in edible snails of the *Helix* genus. Ann. Anim. Sci. 2: 87–96.

Ligaszewski M**., Łysak A.,** Surówka K. 2005. Skład chemiczny mięsa winniczków (*Helix pomatia* L.) z populacji naturalnej i pochodzącej od niej populacji hodowlanej. Roczniki Naukowe Zootechniki 32: 33–40.

Ligaszewski M., **Łysak A.**, Węglarzy K. 2005. Porównanie tempa wzrostu i kondycji ciała wylęgu ślimaków jadalnych: *Helix aspersa* i winniczka (*Helix pomatia*). Roczniki Naukowe Zootechniki 32: 47–53.

**Łysak A.**, Węglarzy K., Ligaszewski M., Mach-Paluszkiewicz Z., Barabasz W. 2006. Wpływ żywienia ślimaków z rodzaju *Helix* czystą celulozą na wyniki odchowu i skład treści mikrobiocenotycznej przewodu pokarmowego. Roczniki Naukowe Zootechniki 33: 125–132.

Ligaszewski M., **Łysak A.**, Mach-Paluszkiewicz Z. 2007. Reproductive performance of *Helix pomatia* (Gastropoda: Pulmonata: Helicidae) and survival of its hatchlings under farm conditions. Am. Malacol. Bull. 22: P 1–6. https://doi.org/10.4003/0740-2783-22.1.1

Ligaszewski M., **Łysak A.**, Janas P., Mach-Paluszkiewicz Z. 2011. The effect of magnetic field on farmed populations of *Helix aspersa* O. F. Müller, 1774. Folia Malacol. 19: 41–49. https://doi.org/10.2478/v10125-011-0002-y

Ligaszewski M., Pol P., Radkowska I., Surówka K., **Łysak A.** 2014. Results of research on the active species protection of the Roman snail (*Helix pomatia* Linnaeus, 1758) using farmed snails in the second year of life. First season of the study. Ann. Anim. Sci. 14: 377–389. https://doi.org/10.2478/aoas-2013-0068

Ligaszewski M., Pol P., Radkowska I**., Łysak A.** 2016. Observations on the maturation and development of a Roman snail (*Helix pomatia* Linnaeus, 1758) population of farmed origin in natural plots. Ann. Anim. Sci. 16: 1163–1173. https://doi.org/10.1515/aoas-2016-0018