

บรรณานุกรม

- กรมประมง กระทรวงเกษตรและสหกรณ์ (2540) ภาพปลาและสัตว์น้ำของไทย. องค์การค้ำของ
ครูสภา กรุงเทพมหานคร.
- พิรเดช ทองอำไพ (2537) ฮอร์โมนพืชและสารสังเคราะห์: แนวทางการใช้ประโยชน์ใน
ประเทศไทย. วี บี บุ๊คเซ็นเตอร์ กรุงเทพมหานคร.
- ภรณ์ อุทโยภาส (กำลังจัดพิมพ์) การศึกษาชนิดและจำนวนสัตว์ไม่มีกระดูกสันหลังที่เป็นอาหาร
ของปลาน้ำจืด. ภาควิชาเทคโนโลยีชีวภาพ คณะวิทยาศาสตร์และเทคโนโลยี
มหาวิทยาลัยธรรมศาสตร์ รังสิต ปทุมธานี (อัคราเสนา).
- ดร. วิทย์ เทียงบุญธรรม (2539) พจนานุกรมสัตว์และพืชในประเทศไทย. บริษัทรวมสาส์น (1977)
จำกัด กรุงเทพมหานคร.
- คุณหญิงสุชาดา ศรีเพ็ญ (2542) พรรณไม้ในในประเทศไทย. อมรินทร์พริ้นติ้งแอนด์พับลิชชิ่ง จำกัด
(มหาชน) กรุงเทพมหานคร.
- สุรศักดิ์ วงศ์กิตติเวชกุล (2540) สารานุกรมปลาไทย. บริษัทซัพพลาย จำกัด กรุงเทพมหานคร
- ดร. สัมพันธ์ คัมภีรานนท์ (2527) ฮอร์โมนพืช. โรงพิมพ์สามเจริญพานิช กรุงเทพมหานคร
- Alados, C. L., Escos, J. and Emlen, J. M. (1993) Developmental instability as an indicator of
environmental stress in the Pacific hake (*Merluccius productus*). *Fishery Bulletin*, **91**:
587-593.
- Alekseeva, T. A., Zinichev, V. V. and Zotin, A. T. (1992) Energy criteria of reliability and
stability of development. *Acta Zoologica Frennica*, **191**: 159-165.
- Ames, L. J., Felley, J. D. and Smith, M. H. (1979) Amounts of asymmetry in centrarchid fish
inhabiting heated and nonheated reservoirs. *Transactions of the American Fisheries
Society*, **108**: 489-495.
- Bailit, H. L., Workman, P. L., Niswander, J. D. and Maclean, C. J. (1970) Dental asymmetry as an
indicator of genetic and environmental conditions in human populaions. *Human Biology*,
42: 626-638.
- Balmford, A., Jones, I. L. and Thomas, A. L. R. (1993) On avain symmetry: evidence of natural
selection for symmetrical tails and wings in birds. *Proceeding of the Royal Society of
London Series B*, **252**: 245-251.

- Beacham, T. D. (1990) A genetic analysis of meristic and morphometric variation in chum salmon (*Oncorhynchus keta*) at three different temperatures. *Canadian Journal of Zoology*, **68**: 225-229.
- Bengtsson, B. E., Bengtsson, A. and Himberg, M. (1985) Fish deformities and pollution in some Swedish waters. *Ambio*, **14**(1): 32-35.
- Brandt, M. and Siegel, M. I. (1978) The effects of stress on cortical bone thickness in rodents. *American Journal of Physical Anthropology*, **49**: 31-34.
- Brown, C. R. and Brown, M. B. (1998) Intense natural selection on body size and wing and tail asymmetry in cliff swallows during severe weather. *Evolution*, **52**(5): 1461-1475.
- Campbell, N. A. (1996) *Biology*, 4th ed. The Benjamin/Cummings. New York.
- Campbell, W. B., Emlen, J. M. and Hershberger, W. K. (1998) Thermally induced chronic developmental stress in coho salmon integrating measures of mortality, early growth and developmental instability. *OIKOS*, **81**: 398-410.
- Carbonell, R. and Telleriá, J. L. (1998) Increased asymmetry of tarsus-length in three populations of Blackcaps *Sylvia articapilla* as related to proximity to range boundary. *IBIS*, **140**(2): 331-333.
- Clarke, G. M. (1992) Fluctuating asymmetry: a technique for measuring developmental stress of genetic and environmental origin. *Acta Zoologica Fennica*, **191**: 31-35.
- Clarke, G. M. (1993) Fluctuating asymmetry of invertebrate populations as a biological indicator of environmental quality. *Environmental Pollution*, **82**: 207-211.
- Clarke, G. M. (1994) Developmental stability analysis: an early-warning system for biological monitoring of water quality. *Australian Biologist*, **7**(2): 94-102.
- Clarke, G. M. and McKenzie, J. A. (1987) Developmental stability of insecticide resistant phenotypes in blowfly: a result of canalizing natural selection. *Nature*, **325**: 345-346.
- Cowart, M. N. and Graham, J. H. (1999) Within-and-among individual variation in fluctuating asymmetry of leaves in the Fig (*Ficus carica* L.). *International Journal of Plant Science*, **160**(10): 116-121.
- Doyle, W. J., Kelley, C. and Siegel, M. I. (1977) The effects of audiogenic stress in the growth of long bones in the laboratory rat (*Rattus norvegicus*). *Growth*, **41**: 183-189.
- Emlen, J. M., Freeman, D. C. and Graham, J. H. (1993) Nonlinear growth dynamics and the origin of fluctuating asymmetry. *Genetica*, **89**: 77-96.

- Evans, M. R., Martins, T. L. F. and Haley, M. (1994) The asymmetrical cost of tail elongation in redbilled streamertails *Proceeding of the Royal Society of London Series B*, **256**: 97-103.
- Fraser, F. C. (1994) Developmental instability and fluctuating asymmetry in man. In Markow, T. A. (Ed.) *Developmental instability and evolutionary implications*. Kluwer Academic Publishers, The Natherland.
- Freeman, D. C., Graham, J. H. and Emlen, J. M. (1994) Developmental stability in plants: symmetries, stress and epigenesis. In Markow, T. A. (Ed.) *Developmental instability and evolutionary implications*. Kluwer Academic Publishers, The Natherland.
- Freeman, D. C., Turner, W. A., McArthur, E. D. and Graham, J. H. (1991) Characterization of a narrow hybrid zone between two subspecies of big sagebrush (*Atrémia tridentata*: Asteraceae). *American Journal of Botany*, **78**: 805-815.
- Gam, S. M., Lewis, A. B. and Kerewsky, R. S. (1967) Buccolingual size asymmetry and its developmental meaning. *Angle Orthodontist*, **37**: 186-193.
- Gileva, E. A. and Kosereva, N. L. (1994) Decrease in fluctuating asymmetry among house mice in territories polluted with chemical and radioactive mutagens. *Russian Journal of Ecology*, **25**: 225-228.
- Gill, H. S. (1993) Description of a new genus of goby from southern Australia, including osteological comparisons with related genera. *Record Western Australian Museum*, **16(2)**: 175-210.
- Graham, J. H., Emlen, J. M. and Freeman, D. C. (1993) Developmental stability and its applications in ecotoxicology. *Ecotoxicology*, **2**: 175-184.
- Graham, J.H., Emlen, J. M., Freeman, D. C., Leamy, L. J. and Kieser, J. A. (1998) Directional asymmetry and the measurement of developmental instability. *Biological Journal of the Linnean Society*, **64**: 1-16.
- Graham, J. H. and Felley, J. D. (1985) Genomic coadaptation and developmental stability within introgressed populations of *Enneacanthus gloriosus* and *E. obesus* (Pisces, Centrarchidae). *Evolution*, **39**: 104-14.
- Graham, J. H., Freeman, D. C. and Emlen, J. M. (1994) Antisymmetry, directional asymmetry, and dynamic morphogenesis. In Markow, T. A. (Ed.) *Developmental instability and evolutionary implications*. Kluwer Academic Publishers, The Natherland.

- Hallgrímsson, B. (1998) Fluctuating asymmetry in the mammalian skeleton: evolutionary and developmental implications. *Evolutionary Biology*, **30**: 187-251.
- Harrison, R. M. (1996) *Pollution: causes, effects and control*, 3rd ed. The Royal Society of Chemistry, London.
- Hicks, M. V. (1981) Bilateral asymmetry in yellow perch (*Perca flavescens*) as an indicator of environmental contamination. M.S. Thesis, Ohio State University, USA.
- Jagoe, C. H. and Haines, T. A. (1985) Fluctuating asymmetry in fishes inhabiting acidified and unacidified lakes. *Canadian Journal of Zoology*, **63**: 130-138.
- Karr, J. R. (1991) Biological integrity: a long neglected aspect of water resource management. *Ecological Application*, **I**: 66-84.
- Kieser, J. A. (1992) Fluctuating odontometric asymmetry and maternal alcohol consumption. *Annals of Human Biology*, **19**: 513-520.
- Kieser, J. A., Groeneveld, H. T. and Preston, C. B. (1986) Fluctuating odontometric asymmetry in the Lengua Indians of Paraguay. *Annals of Human Biology*, **13**(5): 489-498.
- Leary, R. F., Allendorf, F. W. and Knudsen, K. L. (1991) Effects of rearing density on meristics and developmental stability of rainbow trout. *Copeia*: 44-49.
- Leary, R. F., Allendorf, F. W. and Knudsen, K. L. (1992) Genetic, environmental, and developmental causes of meristic variation in rainbow trout. *Acta Zoologica Fennica*, **191**: 79-95.
- Lerner, I. M. (1954) *Genetic homeostasis*. Wiley, New York.
- Lewis, W. M. Jr (1970) Morphological Adaptations of Cyprinodontoids for inhabiting oxygen deficient waters. *Copeia*, **2**: 319-326.
- Ligon, J. D., Kimball, R. and Merola-Zwartjes, M. (1998) Mate choice by female red junglefowl: the issue of multiple ornaments and fluctuating asymmetry. *Animal Behaviour*, **55**: 41-50.
- Livshits, G., Davidi, L., Kobylansky, E., Ben-Amitai, D., Levi, Y. and Marlob, P. (1988) Decreased developmental stability as assessed by fluctuating asymmetry of morphometric traits in preterm infants. *American Journal of Medical Genetics*, **29**: 793-805.
- Livshits, G. and Kobylansky, E. (1991) Fluctuating asymmetry as possible measure of development homeostasis in humans: a review. *Human Biology*, **63**: 441-446.

- Leung, B. and Forbes, M. R. (1997) Modelling fluctuating asymmetry in relation to stress and fitness. *OIKOS*, **78**(2): 397-405
- Mather, K. (1953) Genetical control of stability in development. *Heredity*, **7**: 297-336.
- McKenzie, J. A. (1987) Insecticide resistance in the Australian sheep blowfly—message for pesticide usage. *Chemical Industry*, **8**: 266-269.
- McKenzie, J. A. and Clarke, G. M. (1988) Diazonin resistance, fluctuating asymmetry and fitness in the Australian sheep blowfly, *Lucilia cuprina*. *Genetics*, **120**: 213-220.
- Mednick, S. A., Machon, R. A. and Huttenen, M. O. (1988) Adult schizophrenia following prenatal exposure to an influenza epidemic. *Archives of General Psychiatry*, **45**: 189-192.
- Mitton, J. B. (1994) Enzyme heterozygosity, metabolism, and developmental stability. In Markow, T. A. (Ed.) *Developmental instability and evolutionary implications*. Kluwer Academic Publishers, The Netherlands.
- Møller, A. P. (1990) Fluctuating asymmetry in male sexual ornaments may reliably reveal male quality. *Animal Behaviour*, **40**: 1185-1187.
- Møller, A. P. (1992) Female swallow preference for symmetrical male sexual ornaments. *Nature*, **357**: 238-240.
- Møller, A. P. (1993) The function of symmetric flowers. Submitted to *Journal of Evolutionary Biology*.
- Møller, A. P. (1998) Developmental instability of plants and radiation from Chernobyl. *OIKOS*, **81**: 444-448
- Møller, A. P. and Eriksson, M. (1993). Patterns of fluctuating asymmetry in flowers: Implications for sexual selection in plants. *Journal of Evolutionary Biology*, **6**: 481-491.
- Møller, A. P. and Eriksson, M. (1995) Flower asymmetry and sexual selection in plants. *OIKOS*, **73**: 15-22.
- Møller, A. P. and Pomiankowski, A. (1994) Fluctuating asymmetry and sexual selection. In Markow, T. A. (Ed.) *Developmental instability and evolutionary implications*. Kluwer Academic Publishers, The Netherlands.
- Møller, A. P. and Zamora-Muñoz, C. (1997) Antennal asymmetry and sexual selection in a Cerambycid beetle. *Animal Behaviour*, **54**: 1509-1515.

- Moodie, G. E. E. (1977) Meristic variation, asymmetry and aspects of the habitat of *Culaea inconstans* (Kirtland) the brook stickleback, in Manitoba. *Canadian Journal of Zoology*, **55**: 398-404.
- Moodie, G. E. E. and Reimchen, T. E. (1976) Phenetic variation and habitat differences in *Gasterosteus* populations of the Queen Charlotte Islands. *Systematic Zoology*, **25**: 49-61.
- Mooney, M. P., Siegel, M. I. and Gest, T. R. (1985) Prenatal stress and increased fluctuating asymmetry in the parietal bones of neonatal rats. *American Journal of Physical Anthropology*, **68**: 131-134.
- Moriarty, F. (1988) *Eotoxicology: the study of pollutants in ecosystems*, 2nd ed. Academic Press, New York.
- Morris, M. and Casey, K. (1998) Female swordtail fish prefer symmetrical sexual signal. *Animal Behaviour*, **55**: 33-39.
- O'Callaghan, E., Sham, P., Takei, N., Glover, G. and Murray, R. M. (1991) Schizophrenia after prenatal exposure to 1957 A2 influenza epidemic. *Lancet*, **337**:1248-1250.
- Ozernyuk, N. D., Dyomin, V. I., Prokofyev, E. A. and Androsova, I. M. (1992) Energy homeostasis and developmental stability pp. 167-175 in *Developmental Stability in Natural Population*, edited by Zakharov V. M. and Graham, J. H. Volume **191**, *Acta Zoologica Fennica*, Finnish Zoological Publishing Board, Helsinki.
- Palmer, A. R. (1994) Fluctuating asymmetry analyses: a primer. In Markow, T. A. (Ed.) *Developmental instability and evolutionary implications*. Kluwer Academic Publishers, The Natherland.
- Palmer, A. R. and Strobeck, C. (1986) Fluctuating asymmetry: measurement, analysis, patterns. *Annual Review of Ecology Systematics*, **17**: 391-421.
- Palmer, A. R. and Strobeck, C. (1992) Fluctuating asymmetry as a measure of developmental stability: Implications of non-normal distributions and power of statistical tests. *Acta Zoologica Fennica*, **191**: 57-72.
- Palmer, A. R., Strobeck, C. and Chippindale, A. K. (1994) Bilateral variation and the evolutionary origin of macroscopic asymmetries. In Markow, T. A. (Ed.) *Developmental instability and evolutionary implications*. Kluwer Academic Publishers, The Natherland.

- Pankakoski, E. (1985) Epigenetic asymmetry as an ecological indicator in muskrats. *Journal of Mammalogy*, **66**: 52-57.
- Pankakoski, E., Koivisto, I. and Hyvärinen, H. (1992) Reduced developmental stability as an indicator of heavy metal pollution in the common shrew *Sorex araneus*. *Acta Zoologica Fennica*, **191**: 57-72.
- Pankakoski, E., Väisänen, R. A. and Nurmi, K. (1987) Variability of muskrat skulls: measurement error, environmental modification and size allometry. *Systematic Zoology*, **36**: 35-51.
- Parsons, P. A. (1992) Evolutionary adaptation and stress: the fitness gradient. *Evolutionary Biology*, **26**: 191-223.
- Parsons, P. A. (1993) Stress, metabolic cost and evolutionary change: from living organism to fossil pp. 140-156 in *Evolutionary Patterns and Processes*, edited by Lees, D. R. and Edwards, D., Academic Press, London.
- Perzigian, A. J. (1977) Fluctuating dental asymmetry: variation among skeletal populations. *American Journal of Physical Anthropology*, **47**: 81-88.
- Polak, M. (1994) Parasites increase fluctuating asymmetry of male *Drosophila nigrospiracula*: implications for sexual selection. In Markow, T. A. (Ed.) *Developmental instability and evolutionary implications*. Kluwer Academic Publishers, The Netherlands
- Poranee Utayopas (1997) *Fluctuating asymmetry of fish populations as bioindicator of environmental quality in aquatic ecosystems*. Ph. D. Thesis. Murdoch University, Western Australia
- Potthoff, T. (1984) Clearing and staining techniques. In Moser, H. G., Richards, W. J., Cohen, D. M., Fahay, M. P., Kendall, A. W. Jr and Richardson, S. L. (Eds.). *Ontogeny and systematics of fishes*. American Society of Ichthyologists and Herpetologists Special Publication No 1. pp. 35-37.
- Reimchen, T. E. (1997) Parasitism of asymmetrical pelvic phenotypes in stickleback. *Canadian Journal of Zoology*, **75**: 2084-2094.
- Rice, W. R. (1989) Analysing tables of statistical tests. *Evolution*, **43**: 223-225.
- Sakai, K-I. And Shimamoto, Y. (1965) Developmental instability in leaves and flowers of *Nicotiana tabacum*. *Genetics*, **51**: 801-812.
- Sánchez-Galán, S., Linde, A. R., Izquierdo, J. I. and García-Vázquez, E. (1998) Micronuclei and fluctuating asymmetry in brown trout (*Salmo trutta*): complementary methods to biomonitor freshwater ecosystems. *Mutation Research*, **412**: 219-225.

- Sciulli, P. W., Doyle, W. J., Kelley, C., Siegel, P. and Siegel, M. I. (1979) The interaction of stressors in the induction of increased levels of fluctuating asymmetry in the laboratory rat. *American Journal of Physical Anthropology*, **50**: 279-284.
- Sham, P. C., O'Callaghan, E. O., Takei, N., Murray, G. K., Hare, E. H. and Murray, R. M. (1992) Schizophrenia following prenatal exposure to influenza epidemics between 1939 and 1960. *British Journal of Psychiatry*, **160**: 461-466.
- Shavelson, R. J. (1988) *Statistical reasoning for the behaviour sciences*, 2nd ed. Allyn and Bacon, Boston.
- Sheridan, L. and Pomiankowski, A. (1997) Female choice for spot asymmetry in the Trinidadian guppy. *Animal Behaviour*, **54**: 1523-1529.
- Siegel, M. I. and Doyle, W. J. (1975a) The differential effects of prenatal and postnatal audiogenic stress on fluctuating asymmetry. *Journal of Experimental Zoology*, **191**: 211-214.
- Siegel, M. I. and Doyle, W. J. (1975b) The effects of cold stress on fluctuating asymmetry in the dentition of the mouse. *Journal of Experimental Zoology*, **193**(3): 385-389.
- Siegel, M. I. and Doyle, W. J. (1975c) Stress and fluctuating limb asymmetry in various species of rodents. *Growth*, **39**: 363-369.
- Siegel, M. I., Doyle, W. J. and Kelley, C. (1977) Heat stress, fluctuating asymmetry and prenatal selection in the laboratory rat. *American Journal of Physical Anthropology*, **46**: 121-126.
- Siegel, M. I. and Mooney, M. P. (1987) Perinatal stress and increased fluctuating asymmetry of dental calcium in the laboratory rat. *American Journal of Physical Anthropology*, **73**: 267-270.
- Siegel, M. I., Mooney, M. P. and Taylor, A. B. (1992) Dental and skeletal reduction as a consequence of environmental stress. *Acta Zoolologica Fennica*, **191**: 145-149.
- Siegel, M. I. and Smookler, H. H. (1973) Fluctuating dental asymmetry and audiogenic stress. *Growth*, **37**: 35-39.
- Smith, B. H., Garn, S. and Cole, P. M. (1982) Problems of sampling and inference in the study of fluctuating asymmetry. *American Journal of Physical Anthropology*, **58**: 281-289.
- Sokal, R. R. and Rohlf, J. F. (1981) *Biometry*. W. H. Freeman & Co, San Francisco.
- Sokal, R. R. and Rohlf, J. F. (1995) *Biometry* 3rd ed. W. H. Freeman & Co, San Francisco.

- Somarakis, S., Kostikas, I. and Tsimenides, N. (1997) Fluctuating asymmetry in the otoliths of larva fish as an indicator of condition conceptual and methodological aspects. *Journal of Fish Biology*, **51**: 30-38.
- Soulé, M. and Baker, B. (1968) Phenetics of natural populations. IV. The population asymmetry parameter in the butterfly *Coenonympha tullia*. *Heredity*, **23**: 611-614.
- Soulé, M. E. and Cuzin-Roudy, J. (1982) Allomeric variation. 2 Developmental instability of extreme phenotypes. *American Naturalist*, **120**: 765-786.
- Swaddle, J. P. (1996) Reproductive success and symmetry in zebra finches. *Animal Behaviour*, **51**: 203-210.
- Swaddle, J. P. and Cutthill, I. C. (1994a) Female zebra finches prefer symmetric males. *Nature London*, **367**:165-166.
- Swaddle, J. P. and Cutthill, I. C. (1994b) Female zebra finches prefer males with symmetric chest plumage. *Proceeding of the Royal Society of London; Series B*, **258**: 267-271.
- Swaddle, J. P., Witter, M. S. and Cuthill, I. C. (1994) The analysis of fluctuating asymmetry. *Animal Behaviour*, **48**: 986-989.
- Thornhill, R. (1992) Female preference for the pheromone of males with low fluctuating asymmetry in the Japanese scorpionfly (*Panorpa japonica*: Mecoptera). *Behaviour Ecology*, **3**: 277-283.
- Townsend, G. C. and Brown, T. (1980) Dental asymmetry in Australian Aborigines. *Human Biology*, **52**: 661-73.
- Valentine, D. W. and Soulé, M. (1973) Effects of *p*, *p'*-DDT on developmental stability of pectoral fin rays in the grunion *Leuresthes tenuis*. *Fishery Bulletin*, **71**(4): 921-26.
- Valentine, D. W., Soulé, M. E. and Samollow, P. (1973) Asymmetry analysis in fishes: a possible statistical indicator of environmental stress. *Fishery Bulletin*, **71**: 357-70.
- Van Valen, L. (1962) A study of fluctuating asymmetry. *Evolution*, **16**: 125-42.
- Vermeij, G. J. (1987) *Evolution and escalation: an ecological history of life*. Princeton University Press, Princeton.
- Vøllestad, L. A., Ejeld, E., Haugen, T. and Øxnevad, S. A. (1998) Developmental instability in grayling (*Thymallus thymallus*) exposed to methylmercury during embryogenesis. *Environmental Pollution*, **101**: 349-354.

- Wiener, J. G. and Rago, P. J. (1987) A test of fluctuating asymmetry in bluegills (*Lepomis macrochirus* Rafinesque) as a measure of pH - related stress. *Environmental Pollution*, **44**: 27-36.
- Zakharov, V. M. (1989) Future prospects for population phenogenetics. *Sov. Sci. Rev. F. Physiol. Gen. Biol.*, **4**: 1-79.
- Zakharov, V. M. (1992) Population phenogenetics: analysis of developmental stability in natural populations. *Acta Zoolologica Fennica*, **191**: 7-30.
- Zakharov, V. M., Pankokoski, E., Sheftel, B. I., Peltonen, A. and Hanski, I. (1991) Developmental stability and population dynamics in the common shrew *Sorex araneus*. *American Naturalist*, **138**: 797-810.
- Zakharov, V. M. and Yablokov, A. V. (1990) Skull asymmetry in the Baltic grey seal: effects of environmental pollution. *Ambio*, **19**(5): 266-269.
- Zink, R., Smith, M. and Patton, J. L. (1985) Association between heterozygosity and morphological variance. *Journal of Heredity*, **76**: 415-420.
- Zvereva, E. L., Kozlov, M. V. and Haukioja, E. (1997) Stress responses of *Salix borealis* to pollution and defoliation. *Journal of Applied Ecology*, **34**: 1387-1396.