**ESM Table S1** *Alnus* decline – pollen sites; Site category: A – primary sites, B – secondary sites; Decline: a– present, b– no recovery, c– weak or not recorded; Age of the event (median): start of the decline, minimum value, recovery to the earlier level; EPD – European Pollen Database.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Site No. | Site Name | Geogr. coordinates | Site cat. | Decline | Declinefrom-to (%) | Datingmethod | Age of the event(AD) | Comment | Source of data |
| a | b | c |
| 1 | Lake Racze/Wolin Island | 53o55’N 14o40’E | A | x |  |  | 18.5-8.4(54.6%) | 14C dates | 8009001100 |  | Latałowa M (1992) |
| 2 | Kołczewo | 53o55’N 14o40’E | A | x | x |  | 26.7-9.7(63.7%) | 14C dates | 9th c. | Lack of the top of the profile  | Latałowa M (1992) |
| 3 | Wolin II/00 | 53 o50’N 14 o37’E | A | x |  |  | 10.7-2.1(80%) | 14C dates | 10th c. |  | Pędziszewska A (unpubl.) |
| 4 | Lake Racze/Miedwie | 53o18’N 14o51’E | A | x |  |  | 20.2-10.8(46.5%) | 14C dates | 8009751070 |  | Bloom K (2015) |
| 5 | Lake Zarańskie | 53o34’N 15o49’E | B | x |  |  | 20.4-10.6(48%) | Pollen stratigraphy | ca. 9-10th c. |  | Noryśkiewicz AM (2014) |
| 6 | Lake Gągnowo | 53o37’N 15o48’E | A | x |  |  | 21-9.3(56%) | 14C dates | 10th c. |  | Noryśkiewicz AM (unpubl.) |
| 7 | Bagno Kusowo | 53o48’N 16o35’E | A | x |  |  | ca. 13-<5(61.5%) | 14C dates | 9009501100 |  | Lamentowicz M et al. (2015) |
| 8 | Lake Kwiecko | 54o01’N 16o42’E | B | x |  |  | ca. 30-5(83.3%) | Pollen stratigraphy | 9-10th c. |  | Madeja J (2012) |
| 9 | Słowińskie Błota/85 | 54o25’N 16o30’E | A | x |  |  | 24.2-4.9(79.8%) | 14C dates | 8609601170 |  | Latałowa M (unpubl.) |
| 10 | Kluki | 54o42’N 17o17’E | A | x |  |  | 20.6-3.7(82%) | 14C dates | 9-10th c. |  | Tobolski K (1987); EPD |
| 11 | Darżlubie Forest | 54o42’N 18o10’E | A | x | x |  | 10.8-4.2(61.1%) | 14C dates | 10th c. | Lack of the top of the profile  | Latałowa M (1982) |
| 12 | Gołębiewo/GI | 54o27’N 18o30’E | A | x |  |  | 11.2-3.2(71.43%) | 14C dates | 1040 |  | Pędziszewska A and Latałowa M (2016) |
| Site No. | Site Name | Geogr. coordinates | Site cat. | Decline | Declinefrom-to (%) | Datingmethod | Age of the event(AD) | Comment | Source of data |
| 13 | Gdańsk-PszennaGranary Island | 54o20’N 18o 39’E | A | x |  |  | 44.1-2.2(95%) | 14C dates | 880 940 1200  | A hiatus around the decline | Święta-Musznicka J and Latałowa M (2016) |
| 14 | Gdańsk-ŻytniaGranary Island | 54o20’N 18o 39’E | A | x |  |  | 49.5-3.7(92.5%) | 14C dates | 9-10th c. |  | Święta-Musznicka J and Latałowa M (2016) |
| 15 | Lake Godziszewskie | 54o5’N 18o33’E | B | x |  |  | 30.1-3.8(87.4%) | Pollen stratigraphy | ca. 9-10th c. |  | Miotk G (1986); EPD |
| 16 | Stążki/2013 | 54o25’N 18o05’E | B | x |  |  | ca. 15-2(87%) | Age/depth model | ca. 10th c. |  | Gałka M et al. (2013) |
| 16a | Stążki/2008 | 54o25’N 18o05’E | A | x |  |  | ca. 10-3(ca. 70%) | 14C dates | 10th c. |  | Lamentowicz M et al. (2008a) |
| 17 | Bukrzyno/BI | 54o14’N 18o01’E | A | x |  |  | 10.3-2.4(76,7%) | 14C dates | 89010001040 |  | Pędziszewska A (2008) |
| 18 | Lake Suminko | 54o11’N 17o47’E | A | x |  |  | 11.1-4(64%) | 14C dates | 8609401060 |  | Pędziszewska A et al. (2015) |
| 19 | Lake Czechowskie | 53o52’N 18o14’E | A | x |  |  | 14.5-1.8(88%) | 14C datesvarves | 96910241135 |  | this paper |
| 20 | Lake Wielkie Gacno | 53o47’N 17o30’E | B |  |  | x | - | Age/depth model | - | The event unclear | Hjelmroos-Ericksson M (1981) |
| 21 | Lake Ostrowite | 53o47’N 17o35’E | B |  |  | x | - | Age/depth model | - | The event unclear | Milecka K (2005) |
| 22 | Lake Suszek | 53o43’N 17o46’E | B | x |  |  | ca. 22-12(45.5%) | Pollen stratigraphy | ca. 9-10th c. |  | Miotk-Szpiganowicz G (1992) |
| 23 | Tuchola | 53o34’N 17o54’E | B | x |  |  | ca.8-2(75%) | Pollen stratigraphy | 9-10th c. | “One sample event” | Lamentowicz M et al. (2008b) |
| 24 | Lake Kęsowo | 53o33’N 17o43’E | B | x |  |  | ca. 20-11(45%) | Pollen stratigraphy | 9-10th c.  |  | Miotk-Szpiganowicz G (1992) |
| 25 | Lake Jelonek | 53o45’N 18o23’E | B | x |  |  | ca. 10-3(70%) | Pollen stratigraphy | ca. 9th c. |  | Filbrandt-Czaja A (2009) |
| Site No. | Site Name | Geogr. coordinates | Site cat. | Decline | Declinefrom-to (%) | Datingmethod | Age of the event(AD) | Comment | Source of data |
| 26 | Zawada | 53o37’N 18o35’E | B | x |  |  | 17.8-11,4(36%) | Pollen stratigraphy | ca. 9-10th c. | A hiatus around the decline | Noryśkiewicz B (2004) |
| 27 | Lake Mukrz I | 53o31’N 18o07’E | B | x |  |  | 19.6-10.2(48%) | Pollen stratigraphy | ca. 9-10th c. |  | Noryśkiewicz AM (2006) |
| 28 | Gruczno | 53o22’N 18o19’E | B | x |  |  | 19-3.7(80.5%) | Pollen stratigraphy | ca. 9th c. |  | Noryśkiewicz AM (2016) |
| 29 | Lake Czyste | 53o17’N 18o29’E | A | x |  |  | 12.9-4,8(62.8%) | 14C dates | 770820850 |  | Noryśkiewicz AM (2013) |
| 30 | Lake Mełno | 53o26’N 19o00’E | B | x |  |  | 20.5-5,2(74.1%) | Pollen stratigraphy | 9-10th c. |  | Noryśkiewicz AM (2013) |
| 31 | Linje | 53o11’N 18o18’E | B | x | x |  | 17.9-4(77.7%) | Pollen stratigraphy | 10th c. |  | Noryśkiewicz AM (2013) |
| 31a | Linje | 53o11’N 18o18’E | A | x |  |  | ca. 16-8( 50%) | 14C dates | 9-10th c. |  | Marcisz K et al. (2015) |
| 32 | Lake Kamionkowskie | 53o08’N 18o46’E | B | x |  |  | 14.7-5,5(62.6%) | Pollen stratigraphy | ca. 10th c. |  | Noryśkiewicz AM (2013) |
| 33 | Gronowo | 53o06’N 18o48’E | A | x |  |  | 15.5-3,6(76.8%) | 14C dates | 8809901210 |  | Noryśkiewicz AM (2013) |
| 34 | Lake Strażym | 53o20’N 19o27’E | B | x |  |  | 19.2-4,5(76.6%) | Pollen stratigraphy | ca. 9-10th c. |  | Noryśkiewicz B (1987); EPD |
| 35 | Lake Zwiniarz | 53 o26’N 19o 50’E | B | x |  |  | 19.3-5,6(71%) | Pollen stratigraphy | ca. 9-10th c. |  “One sample event” | NoryśkiewiczA(unpubl.) |
| 36 | Gązwa | 53o52’N 21o13’E | A | x |  |  | ca. 15-3(80%) | 14C dates | ca. 8th c. | „One sample event” | Gałka M et al. (2015) |
| 37 | Lake Salęt | 53o56’N 21o19’E | B | x |  |  | - | 14C dates | - | - | Szal M et al. (2014) |
| 38 | Lake Mikołajki | 53o46’N 21o35’E | B |  |  | x | - | Pollen stratigraphy | - | Slight decline difficult to date | Ralska-Jasiewiczowa M (1966); EPD |
| Site No. | Site Name | Geogr. coordinates | Site cat. | Decline | Declinefrom-to (%) | Datingmethod | Age of the event(AD) | Comment | Source of data |
| 39 | Lake Wojnowo | 53o57’N 21o49’E | B | x |  |  | - | Age/depth model | ca. 5th c. | Problem with dating? | Wacnik A et al. (2014) |
| 40 | Lake Miłkowskie | 53o51’N 21o50’E | B |  |  | x | - | Age/depth model | - | The event unclear | Wacnik A et al. (2014) |
| 41 | Lake Łazduny | 53o51’N 21o57’E | B | x |  |  | ca. 15-3(80%) | 14C dates | ca. 890 | Short, distinct decline  | Wacnik A et al. (2012) |
| 42 | Lake Żabińskie | 54o07’N 21o58’E | A | x | x |  | ca. 11-2(82%) | 14C datesvarves | 8709201090 |  | Żarczyński M et al. (2019) |
| 43 | Mechacz Wielki (MW/I) | 54o18’N 22o18’E | A | x |  |  | ca. 12-3(75%) | 14C dates | 10th c. |  | Gałka M et al. (2017) |
| 44 | Lake Szurpiły | 54o13’N 22o53’E | A | x |  |  | ca. 12-5(58%)  | Age/depth model, varves | 8309301010 |  | Kinder M et al. (2013); Kupryjanowicz M and Fiłoc M (2016) |
| 45 | Lake Wigry | 54o01’N 23o04’E | B |  |  | x | - | Age/depth model | - | decline difficult to date | Kupryjanowicz M (2007) |
| 46 | Kładkowe Bagno | 53o18’N 23o22’E | B |  |  | x | - | Pollen stratigraphy | - | Several small episodes difficult to date | Kupryjanowicz M (2004) |
| 47 | Maliniak | 53o11’N 23o19’E | B | x |  |  | 6.2-3.7(40.3%) | Age/depth model | - | The decline weakly expressed  | Kupryjanowicz M and Szal M (2015) |
| 48 | BIA/318C,Białowieża Forest | 52°44’40.8’’N 23°53’40.4’’E | A | x |  |  | 13.1-2.1(84%) | 14C dates | 10th c. |   | Zimny M (2014) |
| 49 | BIA/314D,Białowieża Forest | 52°44’45.7’’N23°50’09.5’’E | A | x |  |  | 16-4.9(69.4%) | 14C dates | 10th c. |  | Zimny M (2014) |
| 50 | BIA/340G,Białowieża Forest | 52°44’11.2’’N 23°50’13.0’’E | A | x |  |  | 8.9-0.7(92.1%) | 14C dates | 10th c. |  | Zimny M (2014); Latałowa M et al. (2015) |
| 51 | BIA/317C,Białowieża Forest | 52°44’33.2’’N 23°52’37.1’’E | A | x |  |  | 11.8-4.3(63.6%) | 14C dates | 10th c. |  | Zimny M (2014) |
| Site No. | Site Name | Geogr. coordinates | Site cat. | Decline | Declinefrom-to (%) | Datingmethod | Age of the event(AD) | Comment | Source of data |
| 52 | BIA/131C, Białowieża Forest | 52°47’59.5’’N 23°50’51.3’’E | A | x |  |  | 18.2-10.1(44.5%) | 14C dates | 10th c. |  | Zimny M (2014); Latałowa M et al. (2015, 2016) |
| 53 | BIA/161 A, Białowieża Forest | 52°47’55.0’’N 23°50’48.7’’E | A | x |  |  | - | 14C dates | 10th c. | The decline unclear; sediment disturbances  | Pędziszewska A (unpubl.) |
| 54 | Czerlon | 52°41’17.8’’N 23°44’09.2’’E | A | x |  |  | 12.8-1.4(89.1%) | 14C dates | 10th c. |  | Latałowa M et al. (2016) |
| 55 | Lake Błędowo | 52o32’N 20o40’E | B | x |  |  | 14.1-7.5(46.8%) | Pollen stratigraphy | ca. 9-10th c. |  | Bińka K et al. (1991); EPD |
| 56 | Lake Gościąż | 52o35’N 19o21’E | B | x |  |  | 18.8-11.8(37.2%) | 14C dates | ca. 9-10th c. | Weak data in the section of the *Alnus* decline | Ralska-Jasiewiczowa M et al. (1998); EPD |
| 57 | Lake Białe | 52o29’N 19o31’E | B | x |  |  | - | Age/depth model | ca. 10th c. | Weak data in the section of the *Alnus* decline | Wacnik A et al. (2011) |
| 58 | Lake Steklin | 52o57’N 19o01’E | B |  |  | x | - | Pollen stratigraphy | - | The event unclear | Noryśkiewicz B (1982); EPD |
| 59 | Lake Gopło | 52o38’N 18o21’E | B | x |  |  | 12.5-4.7(62.4%) | Pollen stratigraphy | ca. 9-10th c. |  | Jankowska B (1980) |
| 60 | Lake Kamionek | 52o35’N 17o23’E | B | x |  |  | ca. 22-10(50.5%) | Pollen stratigraphy | ca. 9-10th |  | Filbrandt-Czaja A (1998) |
| 61 | Lake Skrzetuszewskie | 52o33’N17o21’E | B |  |  | x | - | 14C dates | - | The event unclear | Tobolski K (1991); EPD |
| 62 | Lake LednicaI/86 | 52o33’N 17o23’E | B | x |  |  | 17.02-7.6(58.3%) | Pollen stratigraphy | ca. 9-10th c. |  | Makohonienko M (1991); EPD |
| 63 | Lake Głęboczek | 52o 39’N 17o38’E | B | x |  |  | ca. 19-7(63%) | Pollen stratigraphy | ca. 9-10th c. |  | Makohonienko M (2000) |
| 64 | Lake Świętokrzyskie | 52o32’N 17o35’E | B | x |  |  | 21.5-6.1(71.6%) | Pollen stratigraphy | ca. 9-10th c. |  | Makohonienko M (2000); EPD |
| Site No. | Site Name | Geogr. coordinates | Site cat. | Decline | Declinefrom-to (%) | Datingmethod | Age of the event(AD) | Comment | Source of data |
| 65 | Lake Baba | 52o25’N 17o22’E | B |  |  | x | - | Pollen stratigraphy | - | The event unclear | Milecka K (1998) |
| 66 | Giecz 4/90 | 52o19’N 17o21’E | B | x | x |  | ca. 28-12(57.1%) | Pollen stratigraphy | ca. 9-10th c. |  | Milecka K (1998) |
| 67 | Lake Wonieść | 51o59’N 16o42’E | A | x |  |  | ca. 16-5(68.8%) | Age/depth model  | ca. 9th c. |  | Dörfler W (2011) |
| 68 | Lake Paklicko Wielkie | 52 o19’N 15o30’E | B | x |  |  | 13.8-4.3(69%) | 14C dates | 10th c. |  | Noryśkiewicz AM (unpubl.) |
| 69 | Lake Długie | 52 o28’N 15 o26’E | B | x |  |  | 18.8-4.1(78%) | Pollen stratigraphy | 10th c. |  | Noryśkiewicz AM (unpubl.) |

**References**

Bińka K, Cieśla A, Łącka B et al. (1991) The development of Błędowo Lake (central Poland) – a palaeoecological study. *Studia Geologica Polonica* 100: 7–85.

Bloom K (2015) *Wpływ czynników naturalnych i gospodarki pradziejowej na sukcesję roślinności w rejonie Jeziora Raczego na Ziemi Pyrzyckiej w holocenie. Studium paleoekologiczne*. PhD Thesis, University of Gdańsk, Poland.

Dörfler W (2011) Paleoecological reconstruction of the Bronze Age landscape around Lake Wonieść, Great Poland. In: Hildebrandt-Radke I, Czebraszuk J, Dölfler W and Müller J (eds) *Anthropogenic pressure in the Neolithic and Bronze Age in the central-European Lowlands*. Poznań: Bogucki Wydawnictwo Naukowe & Bonn, Germany: Dr. Rudolf Habelt GmbH, Studien zur Archäologie in Ostmitteleuropa 8, pp.67–77.

Filbrandt-Czaja A (1998) Historia roślinności północnej części Lednickiego Parku Krajobrazowego ze szczególnym uwzględnieniem czynnika antropogenicznego. *Biblioteka Studiów Lednickich* 3: 9–41.

Filbrandt-Czaja A (2009) *Studia nad historią szaty roślinnej i krajobrazu Borów Tucholskich*. Toruń: Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika.

Gałka M, Miotk-Szpiganowicz G, Goslar T et al. (2013) Palaeohydrology, fires and vegetation succession in the southern Baltic during the last 7500 years reconstructed from a raised bog based on multi-proxy data. *Palaeogeography, Palaeoclimatology, Palaeoecology* 370: 209–221.

Gałka M, Miotk-Szpiganowicz G, Marczewska M et al. (2015) Palaeoenvironmental changes in Central Europe (NE Poland) during the last 6200 years reconstructed from a high-resolution multi-proxy peat archive. *The Holocene* 25: 421–434.

Gałka M, Tobolski K, Lamentowicz Ł et al. (2017) Unveiling exceptional Baltic bog ecohydrology, autogenic succession and climate change during the last 2000 years in CE Europe using replicate cores, multi-proxy data and functional traits of testate amoebae. *Quaternary Science Reviews* 156: 90–106.

Hjelmroos-Ericsson M (1981) *Holocene development of Lake Wielkie Gacno area, northwestern Poland*. PhD Thesis, 10, Lund University, Sweden.

Jankowska B (1980) Szata roślinna okolic Gopła w późnym glacjale i holocenie oraz wpływ osadnictwa na jej rozwój w świetle badań paleobotanicznych. *Przegląd Archeologiczny* 27: 5–41.

Kinder M, Tylmann W, Enters D et al. (2013) Construction and validation of calendar-year time scale for annually laminated sediments – an example from Lake Szurpiły (NE Poland). *GFF* 135: 248–257.

Kupryjanowicz M (2004) The vegetation changes recorded in sediments of Kładkowe Bagno peat bog in Puszcza Knyszyńska Forest, north-eastern Poland. *Acta Palaeobotanica* 44: 175–193.

Kupryjanowicz M (2007) Postglacial development of vegetation in the vicinity of the Wigry lake. *Geochronometria* 27: 53–66.

Kupryjanowicz M and Fiłoc M (2016) Badania palinologiczne Jaćwieży. In: Bitner-Wróblewska A, Brzeziński W and Kasprzycka M (eds) *Archeologia Jaćwieży. Dawne badania i nowe perspektywy*. Warszawa: Państwowe Muzeum Archeologiczne, Stowarzyszenie Starożytników, pp.133–157.

Kupryjanowicz M and Szal M (2015) Palinologiczne ślady osadnictwa prehistorycznego w centralnej części Puszczy Knyszyńskiej. In: Wawrusiewicz A, Januszek K and Manasterski D (eds) *Obiekty obrzędowe Pucharów Dzwonowatych z Supraśla. Złożenie darów – przejęcie terenu czy integracja kulturowa?* Białystok: Muzeum Podlaskie w Białymstoku, pp.225–241.

Lamentowicz M, Gałka M, Lamentowicz Ł et al. (2015) Reconstructing climate change and ombrotrophic bog development during the last 4000 years in northern Poland using biotic proxies, stable isotopes and trait-based approach. *Palaeogeography, Palaeoclimatology, Palaeoecology* 418: 261–277.

Lamentowicz M, Obremska M and Mitchell E (2008a) Autogenic succession, land-use change, and climatic influences on the Holocene development of a kettle-hole mire in Northern Poland. *Review of Palaeobotany and Palynology* 151: 21–40.

Lamentowicz M, Cedro A, Gałka M et al. (2008b) Last millennium palaeoenvironmental changes from a Baltic bog (Poland) inferred from stable isotopes, pollen, plant macrofossils and testate amoebae. *Palaeogeography, Palaeoclimatology, Palaeoecology* 265: 93-106.

Latałowa M (1982) Postglacial vegetational changes in the eastern Baltic coastal zone of Poland. *Acta Palaeobotanica* 22: 179–249.

Latałowa M (1992) Man and vegetation in the pollen diagrams from Wolin Island (NW Poland). *Acta Palaeobotanica* 32: 123–249.

Latałowa M, Zimny M, Jędrzejewska B et al. (2015) Białowieża Primeval Forest: A 2000-year Interplay of Environmental and Cultural Forces in Europe's Best Preserved Temperate Woodland. In: Kirby KJ and Watkins C (eds) *Europe's Changing Woods and Forests: From Wildwood to Managed Landscapes*. Wallingford: CAB International, pp.243–264.

Latałowa M, Zimny M, Pędziszewska A et al. (2016) Postglacjalna historia Puszczy Białowieskiej – roślinność, klimat i działalność człowieka. *Parki Narodowe i Rezerwaty Przyrody* 35: 3–49.

Madeja J (2012) Local Holocene vegetation changes and settlement history based on pollen analysis of Lake Kwiecko sediments, West-Pomeranian Lake District, NW Poland. *Acta Palaeobotanica* 52: 105–125.

Makohonienko M (1991) Materiały do postglacjalnej historii roślinności okolic Lednicy. Część II. Badania palinologiczne osadów Jeziora Lednickiego – rdzeń I/86 i Wal/87. In: Tobolski K (ed) *Wstęp do paleoekologii Lednickiego Parku Krajobrazowego*. Poznań: Wydawnictwo Naukowe Uniwersytetu Adama Mickiewicza, Biblioteka Studiów Lednickich 1, pp.63–70.

Makohonienko M (2000) *Przyrodnicza historia Gniezna*. Bydgoszcz-Poznań: Wydawnictwo Homini.

Marcisz K, Tinner W, Colombaroli D et al. (2015) Long-term hydrological dynamics and fire history over the last 2000 years in CE Europe reconstructed from a high-resolution peat archive. *Quaternary Science Reviews* 112: 138–152.

Milecka K (1998) Historia działalności człowieka w okolicach Giecza i Wagowa w świetle analizy pyłkowej. *Biblioteka Studiów Lednickich* 3: 43–95.

Milecka K (2005) *Historia jezior lobeliowych zachodniej części Borów Tucholskich na tle postglacjalnego rozwoju szaty leśnej*. Poznań: Wydawnictwo Naukowe Uniwersytetu Adama Mickiewicza.

Miotk G (1986) Badania palinologiczne osadów z północnego obrzeża Jeziora Godziszewskiego koło Tczewa (Województwo Gdańskie). *Badania Fizjograficzne nad Polską Zachodnią. Seria A, Geografia Fizyczna* 36: 123–136.

Miotk-Szpiganowicz G (1992) The history of the vegetation of Bory Tucholskie and the role of man in the light of palynological investigations. *Acta Palaeobotanica* 32: 39–122.

Noryśkiewicz AM (2006) *Historia cisa w okolicy Wierzchlasu w świetle analizy pyłkowej*. Toruń: Instytut Archeologii Uniwersytet Mikołaja Kopernika & Towarzystwo Przyjaciół Dolnej Wisły.

Noryśkiewicz AM (2013) *Historia roślinności i osadnictwa ziemi chełmińskiej w późnym holocenie. Studium palinologiczne*. Toruń: Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika.

Noryśkiewicz AM (2014) Vegetation and settlement history as reflected by pollen analysis. In: Chudziak W and Kaźmierczak R (eds) *The Island in Żółte on Lake Zarańskie. Early Medieval Gateway into West Pomerania*. Toruń: Institut of Archaeology, Nicolaus Copernicus University, pp.367–560.

Noryśkiewicz AM (2016) Osadnictwo w północno-zachodniej części strefy chełmińsko-dobrzyńskiej w świetle analizy palinologicznej. In: Chudziak W and Noryśkiewicz AM (eds) *Wczesnośredniowieczny zespół osadniczy w Kałdusie. Studia archeologiczno-paleobotaniczne*. Toruń: Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika, pp.173–193.

Noryśkiewicz B (1982) Lake Steklin a reference site for the Dobrzyń-Chełmno Lake District, northern Poland: Report on palaeoecological studies for the IGCP Project Number 158B. *Acta Palaeobotanica* 22: 65–83.

Noryśkiewicz B (1987) History of vegetation during the Late-Glacial and Holocene in the Brodnica Lake District in the light of pollen analysis of Lake Strażym deposits. *Acta Palaeobotanica* 27: 283–304.

Noryśkiewicz B (2004) Vegetation and settlement history in the area of Lake Zawada in the north-eastern part of the Świecie District (northern Poland). *Acta Palaeobotanica* 44: 195–215.

Pędziszewska A (2008) *Późnoholoceńska historia wybranych fitocenoz leśnych z udziałem grabu (Carpinus betulus L.) i buka (Fagus sylvatica L.) na Pojezierzu Kaszubskim*. PhD Thesis, University of Gdańsk, Poland.

Pędziszewska A and Latałowa M (2016) Stand-scale reconstruction of late Holocene forest succession on the Gdańsk Upland (N. Poland) based on integrated palynological and macrofossil data from paired sites. *Vegetation History and Archaeobotany* 25: 239–254.

Pędziszewska A, Tylmann W, Witak M et al. (2015) Holocene environmental changes reflected by pollen, diatoms, and geochemistry of annually laminated sediments of Lake Suminko in the Kashubian Lake District (N Poland). *Review of Palaeobotany and Palynology* 216: 55–75.

Ralska-Jasiewiczowa M (1966) Bottom sediments of the Mikołajki Lake (Masurian Lake District) in the light of palaeobotanical investigations. *Acta Palaeobotanica* 7: 3–118.

Ralska-Jasiewiczowa M, Goslar T, Madeyska T et al. (1998) *Lake Gościąż central Poland. A monographic study part 1*. Kraków: W. Szafer Institute of Botany, Polish Academy of Sciences.

Szal M, Kupryjanowicz M and Wyczółkowski M (2014) Late holocene changes in vegetation of the Mrągowo Lakeland (NE Poland) as registered in the pollen record from Lake Salęt. *Studia Quaternaria* 31: 51–60.

Święta-Musznicka J and Latałowa M (2016) From wetland to commercial centre: the natural history of Wyspa Spichrzów (“Granary Island”) in medieval Gdańsk, northern Poland. *Vegetation History and Archaeobotany* 25: 583–599.

Tobolski K (1987) Holocene vegetational development based on the Kluki reference site in the Gardno-Łeba Plain. *Acta Palaeobotanica* 27: 179–222.

Tobolski K (1991) Dotychczasowy stan badań paleobotanicznych i biostratygraficznych Lednickiego Parku Krajobrazowego. In: Tobolski K (ed) *Wstęp do paleoekologii Lednickiego Parku Krajobrazowego*. Poznań: Wydawnictwo Naukowe Uniwersytetu Adama Mickiewicza, Biblioteka Studiów Lednickich 1, pp.11–34.

Wacnik A, Ralska-Jasiewiczowa M and Madeyska E (2011) Late Glacial and Holocene history of vegetation in Gostynin area, central Poland. *Acta Palaeobotanica* 51: 249–278.

Wacnik A, Goslar T and Czernik J (2012) Vegetation changes caused by agricultural societies in the Great Mazurian Lake District. *Acta Palaeobotanica* 52: 59–104.

Wacnik A, Kupryjanowicz M, Mueller-Bieniek A et al. (2014) The environmental and cultural contexts of the late Iron Age and medieval settlement in the Mazurian Lake District, NE Poland: combined palaeobotanical and archaeological data. *Vegetation History and Archaeobotany* 23: 439–459.

Zimny M (2014) *Późnoholoceńska historia roślinności Puszczy Białowieskiej*. PhD Thesis, University of Gdańsk, Poland.

Żarczyński M, Wacnik A, Tylmann W (2019) Tracing lake mixing and oxygenation regime using the Fe/Mn ratio in varved sediments: 2000 year-long record of human-induced changes from Lake Żabińskie (NE Poland). *Science of Total Environment* 657: 585-596.